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## Department of Radiology-Annual Report-July 1, 1993 to June 30, 1994

David C. Levin  
*Thomas Jefferson University*

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University

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College

# DEPARTMENT OF RADIOLOGY

ANNUAL REPORT

JULY 1, 1993 - JUNE 30, 1994

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



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## **DEPARTMENT OF RADIOLOGY**

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

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

1993/94

## **DEPARTMENT DIVISIONS AND DIRECTORS**

General Diagnostic Radiology	Robert M. Steiner, M.D.
Breast Imaging	Stephen A. Feig, M.D.
Body CT	Richard J. Wechsler, M.D.
Neuroradiology/ENT Radiology	Carlos F. Gonzalez, M.D. Vijay M. Rao, M.D.
Cardiovascular/Interventional Radiology	Geoffrey A. Gardiner, Jr., M.D.
Ultrasound	Barry B. Goldberg, M.D.
Magnetic Resonance Imaging	Donald G. Mitchell, M.D.
Pediatric Radiology	George W. Gross, M.D.
Physiological Research	P. Macke Consigny, Ph.D.
Radiological Physics	Simon Vinitzki, Ph.D. Flemming Forsberg, Ph.D. Andrew A. Maidment, Ph.D.
Outcomes Research	Robert J. Harford, Ph.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	George W. Gross, M.D.
Quality Assurance Committee	Paul W. Spirn, M.D.
Computer Committee	Gary S. Shaber, M.D.

## DEPARTMENT FULL TIME FACULTY - 1993-94

### Professors

David C. Levin, M.D.  
Stephen A. Feig, M.D.  
Barry B. Goldberg, M.D.  
Carlos F. Gonzalez, M.D.  
David Karasick, M.D.  
Alfred B. Kurtz, M.D.  
Donald G. Mitchell, M.D.  
Vijay M. Rao, M.D.  
Robert M. Steiner, M.D.  
Richard J. Wechsler, M.D.  
Simon Vinitzki, Ph.D.

Emily F. Conant, M.D.  
Diane M. Deely, M.D.  
David E. Eschelmann, M.D.  
Rick I. Feld, M.D.  
Flemming Forsberg, Ph.D.  
David P. Friedman, M.D.  
Ethan J. Halpern, M.D.  
Eric K. Outwater, M.D.  
Catherine W. Piccoli, M.D.  
Bhaskara K. Rao, M.D.  
Ana Salazar, M.D.  
Mark E. Schweitzer, M.D.  
Marcelle J. Shapiro, M.D.

### Clinical Professors

Stephen Karasick, M.D.  
Mark M. Mishkin, M.D.

### Research Professor

Gary S. Shaber, M.D.

### Associate Professors

Adam E. Flanders, M.D.  
Geoffrey A. Gardiner, Jr., M.D.  
George W. Gross, M.D.  
Anna S. Lev-Toaff, M.D.  
Laurence Needleman, M.D.  
Kevin L. Sullivan, M.D.

### Clinical Associate Professor

Paul W. Spirn, M.D.

### Research Associate Professors

P. Macke Consigny, Ph.D.  
Robert J. Harford, Ph.D.

### Assistant Professors

Archibald A. Alexander, M.D.  
Joseph Bonn, M.D.

### Clinical Assistant Professors

Levon Nazarian, M.D.  
Jason E. Sagerman, M.D.  
Sharon R. Segal, D.O.  
Lisa M. Tartaglino, M.D.  
Terri Tuckman, M.D.  
Elaine Wolk, M.D.

### Research Assistant Professors

Saundra M. Ehrlich, M.S.  
Ji-Bin Liu, M.D.

### Instructors

Jane S. Hughes, M.D.  
Cindy Isaacson, M.D.  
Andrew A. Maidment, Ph.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]

Chan Hee Park, M.D., Professor of Radiation Oncology and Nuclear Medicine [primary]  
Professor of 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]

Nagalingam Suntharalingam, Ph.D., Professor of Radiation Oncology and  
Nuclear Medicine (Medical Physics) [primary]  
Professor of Radiology (Medical Physics) [secondary]

Madhukar L. Thakur, M.D., Professor of Radiation Oncology and Nuclear Medicine [primary]  
Professor of Radiology [secondary]

Jerome J. Vernick, M.D., Clinical Professor of Surgery [primary]  
Clinical 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**  
**RESIDENTS/FELLOWS**  
**1993-1994**

**RESIDENTS**

Eric W. Emig, M.D., Chief Resident  
Robert E. Epstein, M.D., Chief Resident

**FIRST YEAR RESIDENTS**

Joseph Bucich, M.D.  
Kristen M. Gerndt, M.D.  
Melissa J. Graule, M.D.  
Asha M. Kovalovich, M.D.  
Rita S. Patel, M.D.  
Dieu-Thu Vo, M.D.

**THIRD YEAR RESIDENTS**

Eric W. Emig, M.D.  
Victoria Kong Endo, M.D.  
Robert E. Epstein, M.D.  
William B. Morrison, M.D.

**SECOND YEAR RESIDENTS**

Adam R. Fisher, M.D.  
Charles E. Martin, M.D.  
Timothy J. Murphy, M.D.  
Daniel Radack, M.D.  
Gautham P. Reddy, M.D.  
Charul P. Saini, M.D.

**FOURTH YEAR RESIDENTS**

Jeannete G. Greer, M.D.  
Bruce E. Hall, M.D.  
Joseph F. Mammone, M.D.  
James T. Tsatalis, M.D.  
Corinne B. Winston, M.D.

**FELLOWS**

**ULTRASOUND/CT/MRI**

William G. Batte, M.D.  
Neville Glajchen, M.D.  
Daniel M. Golding, M.D.  
Teresa J. Karcnik, M.D.  
Sarah Kremer, M.D.  
Denis R. Lincoln, M.D.  
Eileen T. McGlynn, M.D.

**NEURO/MRI**

Chris Chernesky, M.D.  
Paul Radecki, M.D.

**MRI**

Evan Siegelman, M.D.

**NEURORADIOLOGY/ENT**

Deborah M. Ancona-Schultz, M.D.  
Stewart R. Berliner, M.D.  
James P. Elder, Jr., M.D.  
William Millar, M.D.  
Robert J. Rapoport, M.D.

**MUSCULOSKELETAL**

Neil Roach, M.D.

**CARDIOVASCULAR/  
INTERVENTIONAL**

Rajesh Patel, M.D.  
Charles Sutton, M.D.  
Mark A. Westcott, M.D.

**BREAST IMAGING/ULTRASOUND**

Steven Sferlazza, M.D.

**DEPARTMENT OF RADIOLOGY**  
**DAVID C. LEVIN, M.D., CHAIRMAN**  
**CLINICAL DIVISIONS 1993-94**

**GENERAL DIAGNOSTIC RADIOLOGY**  
(incorporating pulmonary, skeletal, gastrointestinal, and genitourinary radiology).

**Directed by** Dr. Robert Steiner.  
Drs. Emily Conant, Diane Deely, Cindy Isaacson, David Karasick, Stephen Karasick, Anna Lev-Toaff, Ana Salazar, Mark Schweitzer, Gary Shaber, Paul Spirn, Richard Wechsler

**BREAST IMAGING/AMBULATORY RADIOLOGY**

**Directed by** Dr. Stephen Feig.  
Drs. Emily Conant, Jane Hughes, Cindy Isaacson, Anna Lev-Toaff, Catherine Piccoli, Annina Wilkes, Elaine Wolk

**PEDIATRIC RADIOLOGY**

**Directed by** Dr. George Gross.  
Drs. Archie Alexander, David Karasick, Stephen Karasick

**CARDIOVASCULAR/INTERVENTIONAL RADIOLOGY**

**Directed by** Dr. Geoffrey Gardiner.  
Drs. Joseph Bonn, David Eschelman, Marcelle Shapiro, Kevin Sullivan

**NEURORADIOLOGY/ENT RADIOLOGY**

**Directed by** Drs. Carlos Gonzalez and Vijay Rao.  
Drs. Adam Flanders, David Friedman, Mark Mishkin, Lisa Tartaglino

**ULTRASOUND**

**Directed by** Dr. Barry Goldberg.  
Drs. Archie Alexander, Rick Feld, Ethan Halpern, Alfred Kurtz, Anna Lev-Toaff, Donald Mitchell, Levon Nazarian, Eric Outwater, Laurence Needleman, Catherine Piccoli, Bhaskara Rao, Jason Sagerman, Ana Salazar, Sharon Segal, Terri Tuckman, Annina Wilkes

**BODY COMPUTED TOMOGRAPHY**

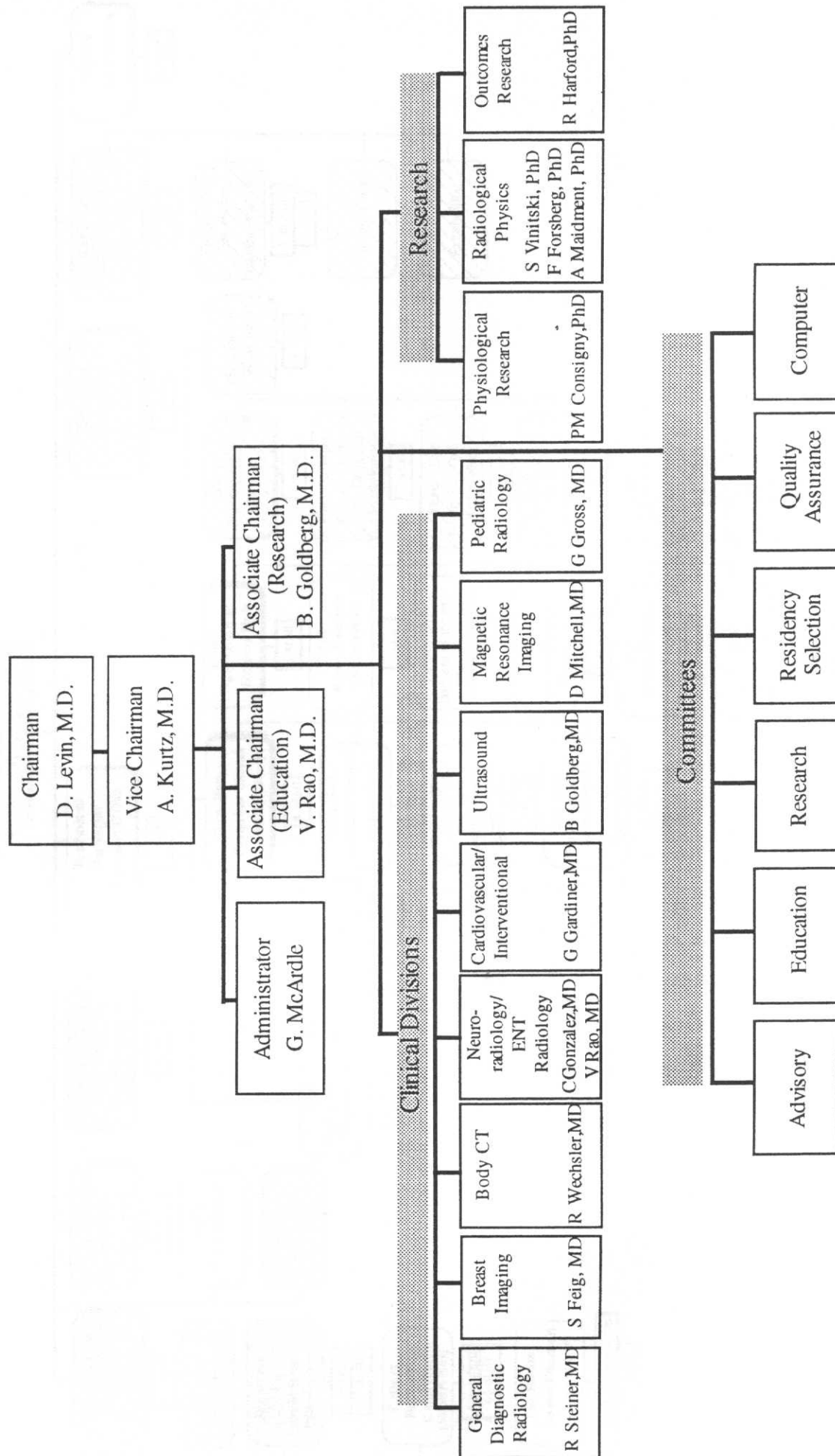
**Directed by** Dr. Richard Wechsler.  
Drs. Emily Conant, Rick Feld, Ethan Halpern, Alfred Kurtz, Anna Lev-Toaff, Levon Nazarian, Laurence Needleman, Bhaskara Rao, Jason Sagerman, Paul Spirn, Robert Steiner, Ana Salazar

**MAGNETIC RESONANCE IMAGING**

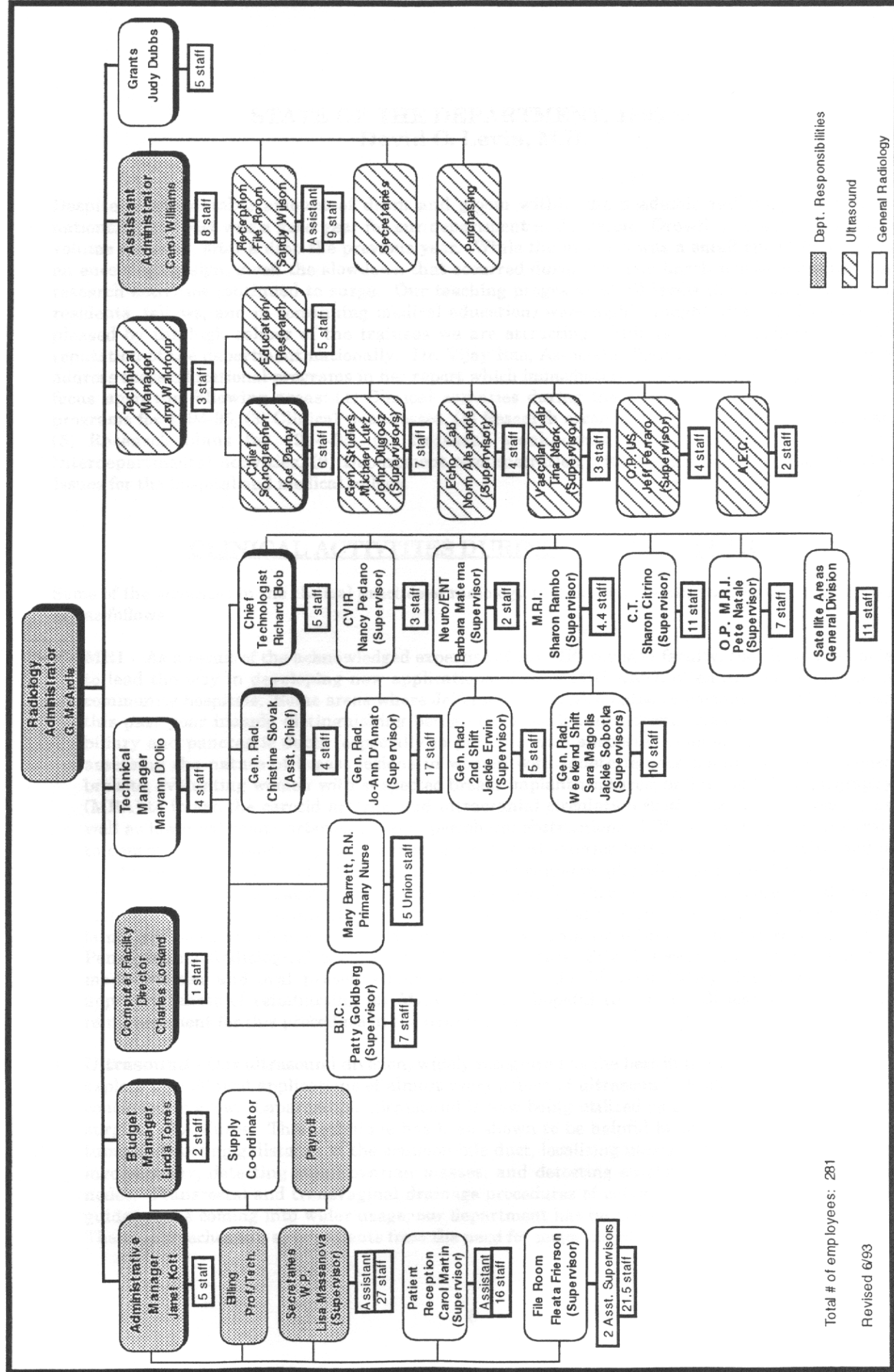
**Directed by** Dr. Donald Mitchell  
Drs. Diane Deely, Eric Outwater, Catherine Piccoli, Mark Schweitzer



# Department of Radiology



# Department of Radiology Administration



Total # of employees: 281

Revised 6/93

## **STATE OF THE DEPARTMENT, 1993-94**

### **David C. Levin, M.D.**

Despite a considerable amount of doom and gloom within the academic radiology community nationally, 1993-94 was a good year for our department at Jefferson. Growth in clinical procedure volume resumed, after a drop the previous year. While the increase was a small one (1.0%), this is an encouraging sign, given the slowdown that occurred during the two harsh winter months. Our research activities continued to surge. Our teaching programs at all levels (for medical students, residents, fellows, and in continuing medical education) were highly sought after, and I am very pleased by the high caliber of the trainees we are attracting. This is a direct reflection of the reputation of the department nationally. Dr. Vijay Rao, Associate Chairperson for Education, will address these educational programs in her report which immediately follows this one. My report will focus upon the following areas: (1) Clinical activities during the past year, (2) Planned clinical programs for 1994-95, (3) Clinical weaknesses, (4) Research accomplishments during the past year, (5) Research plans for 1994-95, (6) Research weaknesses, (7) Extramural funding, (8) Interdepartmental activities, (9) Department administration, (10) Departmental goals, and (11) Issues for the hospital and medical college.

### **CLINICAL ACTIVITIES DURING THE PAST YEAR**

Some of the advances in the clinical practice of radiology that occurred within our different divisions are as follows:

- **MRI** - As a result of the acknowledged expertise of our MRI division faculty, they have been able to lead the way in developing new applications of body MRI which often are not available in community hospitals. Some areas where Jefferson has implemented important clinical advances this past year include distinguishing benign from malignant adrenal masses; evaluating the biliary and pancreatic ducts (especially in patients with suspected common bile duct calculi); assessing the nature of breast lesions in women with indeterminate mammograms or dense breasts; evaluating women with suspected breast implant ruptures; and using MR angiography (MRA) to image the carotid arteries and intracranial circulation (both arterial and venous) as well as lower extremity arteries distal to peripheral obstructions. MRA has actually been shown to demonstrate patency of post-obstructive peripheral arteries better than angiography, and it can therefore provide vital information to vascular surgeons planning peripheral bypasses. In many cases, MRA can substitute for catheter angiography, thereby saving the patient risk, pain, cost, and unnecessary hospitalization. It is frustrating that this clinically efficacious procedure is not yet being reimbursed by Medicare or Pennsylvania Blue Shield. At the request of the Pennsylvania Radiological Society, Drs. Adam Flanders, Eric Outwater, Don Mitchell, and I made written and oral presentations to Blue Shield's Medical Policy Committee on the appropriateness of reimbursing for MRA. We are hopeful that this will lead to approval of reimbursement for this procedure in the near future.
- **Ultrasound** - Our ultrasound division, widely recognized as the best in the country, continued to explore new clinical applications of almost every aspect of ultrasound. Endoluminal ultrasound continued to grow. Laparoscopic ultrasound is now being utilized as an adjunct to a number of surgical procedures. This technique has been shown to be helpful in operative staging of liver tumors, detecting gallstones in the common bile duct, localizing uterine fibroids for laparoscopic myomectomy, detecting small ovarian masses, and detecting enlarged retroperitoneal lymph nodes. Transrectal and transvaginal drainage procedures of pelvic abscesses under ultrasound guidance are coming into wider usage; our department has pioneered some of these techniques. These approaches can save patients from the need for major surgery.



- **CT - Helical CT technology** has replaced the older single slice capability on our COB and Gibbon 3 CT scanners. The body CT division has completed conversion of our CT protocols to take advantage of this new technology for all our non-neurological studies. Our initial experience suggests that it will greatly improve accuracy and anatomic detail in studies of the neck, thorax, abdomen, pelvis, and extremities. A dramatic new application of helical technology is CT angiography. Using 3-D surface rendering or maximum intensity projection algorithms, we can obtain information noninvasively which is sometimes comparable to that from angiography. Currently we are evaluating renal artery stenosis with this technique and also using it to try and detect small pulmonary arteriovenous malformations.
- **Neuroradiology/ENT Radiology** - New MRI techniques such as magnetization transfer and tissue segmentation volumetric analysis have been incorporated into our clinical practice. Other recently developed techniques, such as fast spin echo (FSE) imaging, have become more widely used. FSE has significantly improved MRI of the spine and spinal cord and has allowed us to replace a large number of myelograms. This is another good example of how new technology allows a noninvasive outpatient examination to replace an invasive procedure requiring hospitalization. Yet another example of this, as noted above, is MRA. Strikingly clear images of the carotid and intracranial vessels can now be obtained noninvasively using MRA, and this makes it possible to eliminate the need for catheter angiography in many cases.
- **Cardiovascular/interventional radiology (CVIR)** - The CVIR division has become heavily involved in percutaneous placement of semi-permanent and permanent venous access lines. The increasing popularity of this approach among other Jefferson clinical services has been due to the fact that we are able to place them almost immediately when they are ordered, without the expense and delay involved in scheduling an operating room. Fluoroscopic guidance allows precision in the placement of these lines, and the peripheral insertion sites reduce the risk of infection, pneumothorax, or hemorrhage. Another growth area is in the use of complex procedures like transjugular intrahepatic portosystemic shunts (TIPS). These procedures provide patients with advanced liver disease with alternative treatment for intractable ascites or recurrent gastrointestinal hemorrhage due to portal hypertension and varices. The CVIR division has also continued to work cooperatively with vascular surgery to perform dual-approach procedures in the operating room. These procedures combine radiologic balloon angioplasty or stent placement at one level (usually of the iliac arteries) with surgical graft placement at another level (usually the superficial femoral artery). This collaborative approach minimizes cost and reduces length of stay by providing simultaneous treatment of multi-level vascular disease.
- **Breast Imaging Center (BIC)** - We acquired a new mammography unit from Bennett X-ray Technologies that allows inclusion of significantly more posterior breast tissue in the image field and also provides more comfortable breast compression for patients. We will continue to work with manufacturers to provide a major clinical test site for new and better breast imaging equipment of this sort. Stereotactic core breast biopsy cases continue to be referred from a variety of different sources. This procedure offers women a quicker, cheaper, and less invasive alternative to open surgical biopsy of breast lesions. As is the case with many new techniques that alter referral patterns, acceptance of stereotactic core breast biopsy has been slow, but we are hoping to convince more referring physicians of its efficacy.
- **General diagnostic radiology** - There has been a considerable increase in percutaneous bone biopsies. Most of these procedures are directed at vertebral body lesions of suspected metastatic or inflammatory origin. This is another good example of how interventional radiological procedures can now substitute for more formidable and costly open surgical procedures. I am very pleased that our colleagues in the department of orthopedic surgery recognize this and are referring patients in increasing numbers. The general diagnostic division has also further

solidified its relationship with Magee Rehabilitation Hospital and is now reading all of their cases by noon and returning the films to them before their evening medical rounds.

Several areas of our practice showed solid growth in case volume. These include body MRI (up 8.9%), neuro MRI (up 4.0%), head and neck MRI (up 5.2%), body CT (up 5.6%), neuro CT (up 6.0%), head and neck CT (up 3.9%), bone radiography (up 8.7%), abdominal radiography (up 6.9%) and pediatric radiography (up 5.1%). A continuing healthy trend is a growing preponderance in outpatient procedures vs. inpatient procedures. This past year, outpatient examinations comprised 52.6% of our total volume and inpatients 47.4%.

### **PLANNED CLINICAL PROGRAMS FOR 1994-95**

Some important new equipment acquisitions have been approved in the hospital's 1994-95 capital budget. These include the addition of echo planar imaging (EPI) capability to our Main 10 MRI scanner, a 5X hardware/software upgrade for one MRI unit in the COB (our other two MRI units have already received this upgrade), conversion of our CT scanner on Main 10 to spiral technology, upgrades of our digital subtraction angiography units, new mammography units, and new ultrasound scanners for the BIC and ultrasound divisions.

In the **MRI** division, we will add a night shift on our Main 10 scanner five nights per week. Thus, our weekday operations will be 24 hours per day for inpatients. Inpatient MRI backlogs have existed for several years but we expect this change to eliminate the problem, thereby shortening length of stay for some patients. Working in conjunction with our corporate partner, TME, Inc., a new MRI unit will be opened in Bala Cynwyd. Our off-campus MRI facility in Langhorne has been a resounding success and we expect to duplicate this in Bala. Our **Neuroradiology/ENT radiology** division began covering the radiology service at Wills Eye Hospital on July 1, 1994. This is our first collaborative venture with the department of radiology at Pennsylvania Hospital. With the addition of a large and active new group of neurosurgeons at TJUH and Wills Eye Hospital and the addition of new CT, MRI and angiographic facilities at Wills, we hope to be able to make this a permanent relationship. The **CVIR** division is currently assisting the hospital administration in planning extensive renovations of our CVIR facilities. These renovations will result in the addition of a third procedure room containing a tilting angiographic table. With the growth in number and variety of interventional procedures being performed, it has now become necessary to add tilt table capability; this will greatly facilitate certain types of procedures such as percutaneous biliary drainages. The addition of the third room will allow outpatients to be treated more expeditiously. The division also plans to expand its involvement in recanalizing thrombosed dialysis shunts. At the **BIC**, we will shortly have two stereotactic core breast biopsy units in operation, one from each of the two major manufacturers. We plan to open a new screening mammography facility in the basement of the COB. Some problems relating to the fringe fields of the MRI units upstairs necessitated a change in the architectural plans, and this has caused a delay. We anticipate opening this screening mammography center sometime during the coming year. The BIC will replace three of its older mammography machines with the newer superior Bennett units referred to earlier. We also plan to complete a computerized reporting, patient scheduling, and database system for the BIC and the new COB screening mammography center. In the **General Diagnostic Radiology** division, a new fluoroscopic unit will be installed on Gibbon 3, fitted with digital fluoroscopic capability. This will allow barium studies of the GI tract to be done more quickly and will incorporate rapid sequence filming.

## **CLINICAL WEAKNESSES**

Similar problems currently exist in the CVIR division and the Breast Imaging Center - a lack of needed space and, to some extent, a shortage of personnel. The crowded conditions in CVIR are interfering with good patient care in several respects. Outpatients frequently are delayed because the two procedure rooms are tied up with urgent or prolonged cases. This has created dissatisfaction among some patients, as well as the inability to perform routine preventive maintenance on the equipment. There is no place to perform minor surgical procedures, such as lymphangiography or the removal of subcutaneously implanted venous access lines. We now have to use the holding area in CVIR for these things, and this is not a satisfactory arrangement. We are also falling short in our ability to monitor the recovery of conscious sedation patients. The planned construction of a larger CVIR facility with a third procedure room and joint scheduling, reception, and recovery areas shared with the cardiac catheterization laboratories should alleviate these problems.

In the BIC, we have about reached the limit of our ability to provide sympathetic and efficient breast imaging services to patients. The number of complaints is on the increase. Most of them focus upon long waits before phone calls are answered, being rushed through the system without the time for proper explanations, and the lack of privacy. When the BIC was opened in 1987, it was quite adequate for the 30-40 studies we were doing per day, but it is no longer adequate for the 100 studies being done currently. Hopefully the opening of the screening mammography facility in the COB will decompress the stressful conditions that currently exist.

Patients and referring physicians have sometimes reported running into problems when trying to schedule examinations. These include: (1) busy signals and long delays in answering the phone, (2) occasional rudeness of schedulers, and (3) difficulty scheduling multiple studies on the same visit. Since scheduling is a major gateway to our practice, we are quite concerned and are taking steps to try to improve the situation.

In this day and age, it is obviously vital for the hospital to reduce its operating cost. Mr. George McArdle has done an admirable job, working in conjunction with hospital administration, in reducing the number of personnel in the department by 25 over the last three years. However, I think this is about the limit of our ability to cut. Radiology is obviously an important provider of service to patients and a large source of revenue to the hospital. I hope the success of our clinical operations will not be jeopardized by requests for further cuts.

## **RESEARCH ACCOMPLISHMENTS DURING THE PAST YEAR**

As well as we did in research in 1992-93, this past year was even better. During the course of the year 46 separate grants were in force - 7 from the NIH, 8 from foundations or medical organizations, and 31 from industry. The current year total value (direct plus indirect) of these grants was \$2,828,000, which included approximately \$593,000 of indirect costs provided to the medical college. The large number of industrial grants is a manifestation of the excellent reputation for research our department has built.

Major medical meetings like the RSNA (the largest medical meeting in the entire world) are a good benchmark of a department's research productivity. This meeting is highly competitive, with an acceptance rate for papers of only 35-40%. At the 1993 RSNA, 46 scientific papers were presented by our faculty members or trainees, and another 16 presentations were made as refresher courses or exhibits. The RSNA does not keep data on individual institutions, but I am confident this places us in the top 10 research departments in the country, and perhaps even the top 5. In the field of ultrasound, the most important annual national meeting is that of American Institute of Ultrasound



in Medicine. At this year's AIUM meeting, no less than 8% of all papers presented came from Jefferson.

I am particularly pleased to see some of our junior faculty members receive prestigious rewards for their research. Dr. Ethan Halpern was one of only three radiologists in the country this year to receive a General Electric Radiology Research Academic Fellowship (GERRAF) award. This is for a two year project in which he will investigate the comparative efficacy of MRA, spiral CT angiography, and Doppler ultrasound in the detection of renal artery stenosis. Dr. Flemming Forsberg won a Whitaker Foundation grant for his project on nonstationary spectral analysis of ultrasound Doppler signals. Dr. Eric Outwater won the award for the outstanding scientific paper in MR for his presentation at the Society of Computed Body Tomography/Magnetic Resonance. The paper was entitled "Endorectal Coil MR Imaging of Prostatic Carcinoma: Assessment of Diagnostic Criteria for Capsular Penetration". Dr. Andrew Maidment received an RSNA seed grant for a study on 3-D morphologic analysis of breast calcifications. In addition, Dr. Adam Flanders completed the second and final year of his RSNA Scholar award for studying the relationship between MRI findings and the ultimate clinical outcome of spinal cord injury.

Some of the research highlights by division include the following: In MRI Dr. Mark Schweitzer has been one of the most prolific investigators in the country in musculoskeletal MRI, as reflected in his publications list later in this report. He has been particularly effective as a mentor for residents and fellows by helping them define research goals and carry out projects. Dr. Cathy Piccoli has worked at developing new applications for breast MRI and is attempting to secure NIH funding to support her research. Dr. Eric Outwater has done interesting new work in biliary and pelvic MRI. Dr. Don Mitchell has continued his outstanding research productivity with publications in major journals on hepatobiliary imaging and new pulse sequences in abdominal MRI, and as lead investigator of a multi-institutional study of the use of contrast-enhanced MRI to differentiate hepatic metastases from cavernous hemangiomas. In Ultrasound, Dr. Alfred Kurtz continued his NIH-funded research on the detection and staging of ovarian cancer, while Dr. Larry Needleman completed his NIH-funded work on Doppler screening for pregnancy-induced hypertension. Dr. Barry Goldberg was active on three NIH grants. Dr. Needleman also headed a Phase 1 human trial of the use of a unique ultrasound intravascular contrast agent which has been shown to last for more than five minutes and produce significant enhancement of vessels throughout the body. This contrast will potentially increase the specificity of ultrasound examinations. Drs. Rick Feld and Ji-Bin Liu have continued their research into the effectiveness of laparoscopic ultrasound in animals and humans. Dr. Anna Lev-Toaff headed a project on the use of oral contrast material to help improve visualization of the pancreas. Dr. Lev Nazarian began some interesting studies on the use of ultrasound in assessing skin and tendon lesions. A striking discovery made by him and several of his colleagues has been the detection of clinically unsuspected subcutaneous satellite lesions in melanoma patients. Members of the Body CT division have studied the CT findings in liver transplantation (Dr. Feld), the role of delayed imaging in preoperative CT arterial portography (Dr. Nazarian), characterization of tarsal coalition (Dr. Wechsler), and the CT findings in pulmonary MAI infection (Dr. Salazar).

In the Neuroradiology/ENT radiology division, Drs. Gonzalez and Vinitski have developed a novel MRI tissue segmentation and volumetric analysis technique. This has been used to measure lesions and follow patients with multiple sclerosis, tumors, and temporal lobe epilepsy. Dr. Gonzalez has also worked with a model based on angiography to study the hemodynamics of brain aneurysms. Dr. Vijay Rao used magnetization transfer techniques to study head and neck tumors. As noted above, Dr. Flanders continued his RSNA Scholar-funded research on MRI in spinal cord injury. Dr. Lisa Tartaglino studied the use of fast spin echo (FSE) techniques in the diagnosis of multiple sclerosis and other myelopathies. She is also comparing MRA, Doppler ultrasound, and conventional angiography in the diagnosis of cervical cerebrovascular disease. Dr. David Friedman recently completed a unique analysis of the quality of MRI provider sites in the Delaware Valley, working in conjunction with a number of other faculty members in the department and researchers from

Pennsylvania Blue Shield. Our principal collaborator at Blue Shield, Dr. Joseph Ricci, recently told me that the results of this project have been presented to insurance groups and HCFA and have been met with great interest. At the BIC, Dr. Stephen Feig started work on two funded NIH grants - one dealing with the clinical evaluation of digital mammography and the other as part of the multicenter trial of stereotactic core breast biopsy. An interesting study was published by Dr. Anna Lev-Toaff on the stability of malignant breast calcifications. In the General Diagnostic division, Dr. Robert Steiner is studying the use of high resolution CT in limited and diffuse scleroderma. Dr. Stephen Karasick studied the efficacy of defecography. In Pediatric Radiology, Dr. George Gross studied the radiologic aspects of CNS, thoracic, and abdominal complications of ECMO bypass support.

Our basic science faculty was productive as well. Mack Consigny, Ph.D. studied the release of extracellular matrix degrading enzymes after angioplasty, the thrombogenicity of metallic intravascular stents, methods of delivering drugs directly to the walls of arteries during angioplasty, and the effect of a tyrosine kinase inhibitor on angioplasty-induced smooth muscle cell proliferation. Flemming Forsberg, Ph.D. used animal models to estimate volume flow using time domain correlation and ultrasonic flowmetry, and also studied nonstationary spectral analysis of ultrasound Doppler signals. Andrew Maidment, Ph.D. studied dynamic range requirements for digital mammography and analyzed the spatial-frequency-dependent detection quantum efficiency of optically coupled digital mammography detectors. He also worked on developing a scanned-slot digital mammography detector for clinical use. Simon Vinitski, Ph.D. worked on fast magnetization transfer MRI techniques for imaging cerebral vessels, optimizing T2-weighted pulmonary imaging using short E-space FSE, tissue segmentation techniques based on a 3-D feature map, and a method to remove MR image misregistration artifacts. In the area of health services research, I published a study about the Jefferson experience with developing and implementing a cost containment mechanism in the use of low-osmolar contrast agents, and another done in conjunction with Pennsylvania Blue Shield on referral patterns and self-referral in diagnostic imaging in private office settings throughout the state.

Department investigators as a group again compiled a solid record of publications. As shown later in this report, we produced 331 peer-reviewed papers, published abstracts, or book chapters.

## RESEARCH PLANS FOR 1994-95

We intend to continue our efforts to secure outside grant funding to support research in the department. Our grants coordinator, Ms. Judy Dubbs, has been of great assistance to departmental investigators in helping them write and administer grants. Several interesting proposals in ultrasound are now pending with the NIH. These include studies of the use of ultrasound contrast agents, detection of osteoporosis using acoustic emission, and tumor evaluation using 2-D and 3-D endoluminal ultrasound. Drs. Barry Goldberg, Flemming Forsberg and Ji-Bin Liu have collaborated on these. Mathew Thakur, Ph.D. submitted a proposal on simplified labeling of antibodies with Tc-99m and Re-186. In addition, 2 foundation grants and 9 industry grants are currently pending.

Within the MRI division, Dr. Schweitzer will continue his studies in musculoskeletal MRI, Dr. Piccoli will continue her breast MRI research, Dr. Outwater will study the role of MRI in female pelvic diseases, and Dr. Mitchell will focus upon hepatic and biliary MRI, as well as on the use of contrast agents in MRI. Our Ultrasound division has ambitious research plans, as always. During the coming year, the group will further study the use of ultrasound contrast agents in both animals and humans. They will also study the feasibility of 3-D ultrasound. The clinical role of laparoscopic ultrasound will be further assessed. Dr. Kurtz will continue work on his NIH ovarian cancer grant. In CT, research will be carried out on the CT findings in scleroderma as well as on the sensitivity, specificity and accuracy of CT angiography in suspected renal artery stenosis. In

**Neuroradiology/ENT Radiology**, Dr. Gonzalez is planning a grant submission to NIH on the use of computer simulation in flow models to study hemodynamics of brain aneurysms. He will also collaborate with investigators from the department of neurology on NIH grant submissions relating to MR regional volumetric evaluation of multiple sclerosis and MR 3-D segmentation in brain tumor therapy. Dr. Flanders will complete his RSNA Scholar project on spinal cord injury. Dr. Rao will assess the role of fat suppression MRI in head and neck disease and of FSE in temporomandibular joint disease. The **CVIR** group will begin work on a very interesting new technique of transluminal placement of vascular grafts. This work is being done in conjunction with the division of vascular surgery. They will act as the core laboratory for clinical trials of two important devices - the Palmaz stent in superficial femoral arteries (sponsored by Johnson and Johnson) and a new stainless steel Greenfield inferior vena cava filter (sponsored by Boston Scientific Corporation). They will also begin several research projects based on data from the STAR registry, the largest multi-center registry of peripheral angioplasty procedures in the country. In the **BIC**, Drs. Feig and Maidment will continue work on their NIH-funded project on clinical evaluation of digital mammography and will introduce the first full field digital mammography unit to be installed in this country. Dr. Feig and his clinical colleagues will continue accruing cases as part of their NIH-funded project on stereotactic core breast biopsy. In the **General Diagnostic Radiology** division, Dr. Deely will carry out a prospective comparison of the accuracy of cytologic and histologic specimens after bone marrow biopsy. In **Pediatric Radiology**, Dr. Gross will continue his research on the imaging findings in neonates on ECMO and will also work with others to study an intriguing new technique, liquid ventilation of newborns in respiratory failure. In **Nuclear Medicine**, Dr. Park will evaluate the accuracy of Tc-99m Sestamibi in identifying breast malignancy. Finally, we will continue our work in **health services/outcomes research**. Drs. Flanders, Rao, Steiner and I have obtained some interesting Medicare data from 9 midwestern states showing utilization of various vascular ultrasound and interventional procedures by different specialists. Dr. Stephen Karasick will be submitting a paper for publication comparing trends in utilization of barium enemas and colonoscopy. The untimely death of Robert Harford, Ph. D. saddened all of us, but we have now been able to recruit Claire Spettell, Ph. D. to replace him. Dr. Spettell has excellent credentials and we are looking forward to her joining the department this September. I am confident that she will help us continue and improve our active involvement in health services research in radiology and to eventually become one of the leading centers in this important new aspect of our field.

## **RESEARCH WEAKNESSES**

At the moment, all our NIH funding is under auspices of faculty physicians as principal investigators. We need to see more involvement by our Ph.D. scientists in securing NIH funding.

The CVIR division has done an excellent job at organizing the SCVIR Transluminal Arterial Revascularization (STAR) registry. It is the largest multicenter registry of peripheral vascular interventions currently existing in this country and is the brainchild of Dr. Geoffrey Gardiner, Jr. He deserves great credit for spearheading this project. One serious problem has been the lack of a satisfactory computer program to allow entry of data and subsequent extraction of information from the database. A program is now being written by an outside programmer on a contract basis, and it is hoped that this will enable Dr. Gardiner and his colleagues to mine the research potential of the registry.

Finally, I would like to see more high quality, peer-reviewed publications from our breast imaging division and our chest radiology section.

## EXTRAMURAL FUNDING

As noted earlier, our department had a total of 46 extramurally funded research projects in progress during the 1993-94 academic year. These brought in (based on full year funding of all the projects) over \$2.8 million in extramural support, of which approximately \$2.2 million was direct costs and almost \$600,000 was overhead to Jefferson. Probably the most striking change was the great increase in industrially funded projects - 31 this year past compared with 14 the previous year. As noted earlier in this report (under "Research Plans") we intend to continue actively seeking NIH grants, and we will also continue to pursue foundation and industrial funding. Because of limitations in NIH funding for diagnostic imaging and our success in obtaining industrial support, I see the latter area as one of the most promising for future growth in extramural funding.

In terms of specific areas which offer the greatest potential for extramural funding, I feel those areas are breast imaging, functional imaging and spectroscopy of the brain using echo planar and related MR techniques, the use of contrast agents in ultrasound, development of radiolabeled receptor-specific biomolecules, and health services/outcomes research in radiology.

## INTERDEPARTMENTAL ACTIVITIES

We continue to collaborate with almost every other clinical department in various clinical and research programs. As was noted in this report last year, we have developed a close working relationship between several of our divisions and the Jefferson Cancer Institute, headed by Dr. Carlo Croce. Dr. Croce's appreciation of the importance of combining basic research with clinical science has been refreshing and insightful. Several radiology investigators have continued to work with him and his colleagues in developing program projects, and we look forward to continuing this collaboration.

Jefferson is working toward the establishment of a clinical cancer center and a cardiovascular center. Radiology plays a central role in both these areas, and I am pleased to be a member of the advisory boards of both these centers. We will fully and enthusiastically cooperate in developing these two critically important facilities.

Another aspect of our interdepartmental activity has been the initiation of relationships with our radiology colleagues at two major new Jefferson-affiliated institutions - Pennsylvania Hospital and the Main Line Health System. We are now collaborating with the department of radiology at Pennsylvania Hospital in providing radiology services to the Wills Eye Hospital and Dr. Robert Campbell and I are jointly negotiating with Wills in the hopes of making that relationship a permanent one. This joint venture is appropriate since Jefferson's new neurosurgery group will practice as a unit at TJUH, Pennsylvania Hospital, and Wills. Our developing relationship with the radiologists at the Main Line Health System has come about through the possibility that TME, Inc. may acquire an already-existing MRI unit in Wayne. Dr. Hayler Osborn, chairman of the department of radiology at Bryn Mawr Hospital, and I have had discussions about jointly operating that facility if the acquisition occurs.

## DEPARTMENT ADMINISTRATION

Mr. George McArdle, departmental administrator, continues to be a tremendous asset to our department, as well as a great source of support to me personally. His administrative leadership and that of our senior personnel who report to him have been outstanding. A number of major renovations to the department will be carried out during the coming year, all of which have been planned by Mr. McArdle, working in conjunction with various faculty members and myself. These



include a new fluoroscopy room on Gibbon 3, a screening mammography center in the COB, a new CVIR suite on Gibbon 5 which will incorporate a badly needed third procedure room, a new office suite on Main 8 which will allow the nuclear medicine physicians to relocate back into their clinical area, and new reading and conference rooms for the MRI and Neuroradiology/ENT radiology divisions on Main 10.

Two major administrative transitions occurred the past year with the amalgamation of the Ford Road Campus radiology department into our own, and the incorporation of the nuclear medicine division into our department as of July 1 of this year. Mr. McArdle put a tremendous amount of work into both these projects and they have been accomplished smoothly as a result. In addition, we will soon be adding another remote MRI unit (TME Bala). Mr. McArdle and his team have completed a host of other projects which are almost too numerous to mention. Some of the most important ones are the incorporation of RVU data into our department financial and management reports, the development of computerized methods to track utilization of services by managed care patients under capitated contracts, the development of patient tracking capability in the ultrasound division, planning for the installation of a complex image transmission system in ultrasound (our department will be the test site for this system which will be developed by DuPont), updating unit costing within the department, reallocation of time slots among our word processing center personnel to enable more reports to be typed on weekends, development of a continuing medical education program for radiology and ultrasound technologists, making necessary changes in MRI scheduling to accommodate more patients, computerization of CVIR's equipment inventory through bar coding technology, and generating a marketing concept for the department of radiology through the hiring of Ms. Rene Johnson as patient referral coordinator.

## **DEPARTMENT GOALS**

**Practice Expansions** - Our major goal in the clinical sphere is to expand our practice. As noted earlier, we were able to show a small increase in procedure volume this year (despite the adverse winter weather), thereby reversing the downtrend which occurred last year. We hope to see this growth accelerate in the future. This will be a most difficult challenge because of the widespread retrenchment occurring in healthcare and the recognized need to reduce diagnostic testing. Nevertheless, radiological services will continue to be needed in huge numbers in an area the size of the Delaware Valley, and the goal can therefore be achieved if we are good enough to beat the competition.

We are actively engaged in a number of activities designed to increase our practice. (1) We are trying to recruit new referral sources who are currently using other radiology groups or doing it themselves. Professional interpretations for mobile ultrasound companies are another possible source of expansion. (2) As noted earlier, we will begin operation of another MRI unit in Bala Cynwyd and perhaps in Wayne, both in conjunction with TME, Inc. (3) We are attempting to develop a permanent relationship with Wills Eye Hospital for the provision of radiology services to ophthalmology patients and the large new neurosurgery center that will open there this academic year. (4) Ms. Rene Johnson has been added to our department staff, with the title of patient referral coordinator. Ms. Johnson is an experienced medical marketer who is contacting potential new physician referral sources. Some of her efforts have already borne fruit and I think her work could result in noticeable growth in our practice.

**Teleradiology** - This is clearly a "wave of the future". After years of research and development by industry, teleradiology equipment now has finally become high enough in quality and low enough in cost to make it a reasonable possibility for acquisition by our department. As a large academic department with a national reputation and acknowledged subspecialty expertise in many areas, we can use this expertise to expand our practice through teleradiology. This could be done by providing

consultations or overreading studies done in other hospitals, or by setting up remote imaging facilities and transmitting the images back into our main department for interpretation. For example, the Pennsylvania Radiological Society is organizing a statewide network of radiology groups, of which we are a member. Several people in that organization have suggested to me the possibility of having our department provide consultative services for other smaller radiology groups through teleradiology. Our departmental computer committee will be looking into acquiring hardware and software for this purpose.

**Service Improvements** - We will continue to study ways to improve our service to patients and referring physicians. Some of the key areas under study are ways to centralize scheduling of examinations and to speed up the turnaround time of our reports.

**Research** - In the research sphere, an important goal is to increase the amount of extramural funding, particularly NIH funding for our Ph.D. scientists. As noted earlier, the general productivity of the department in peer-reviewed research has grown dramatically in recent years and it is important that this trend continue. We have an outstanding faculty, and I am confident we can maintain our status as one of the top research radiology departments in the country. The challenge will be to do this while at the same time dealing with the need to do more studies with fewer resources and for less practice income.

**Teaching** - In the area of education, we do not currently plan to expand the size of our training programs, but will always be attempting to improve them wherever possible. Dr. Vijay Rao has developed excellent feedback mechanisms through which our trainees can provide input and critiques of our programs, and we take these very seriously. Every suggestion is considered, and we are already implementing some of the changes suggested this past year.

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

Jefferson's most important goal is to maintain its competitive position in the face of dramatic realignments and restructuring of the health care market in the Delaware Valley. I am very pleased with the direction taken so far by our institutional leadership - the development of working relationships with both Pennsylvania Hospital and the Main Line Health System. As contrasted with the activities of some of our competition in the area, Jefferson has aligned itself with two viable and respected institutions. Having developed these relationships, the hospital must define the exact structure of the relationships. If done properly, it will enhance the position of all partners.

As was mentioned in this report last year, the hospital has a large stake in competing for managed care contracts. We in the department of radiology support this goal. We have already begun working with Keystone Health Plan East patients under a capitated contract and will continue participating in the hospital's negotiations with other major managed care companies in the Delaware Valley. The hospital must make sure that the interests of all its clinical departments are fairly represented, which is sometimes quite difficult to accomplish. A physician-hospital organization is now in the process of being developed, and one of its main purposes will be to deal with the challenges of managed care.

It was recently announced that because of requirements of the tax code, significant reorganization of the faculty practice plan will be undertaken. This has aroused considerable concern on the part of faculty members. It is extremely important that any restructuring be done in such a way as to minimize the impact on faculty incomes, fringe benefits and pension plans. The good relationships between faculty physicians and the college must be maintained through frequent dialogue as the changes occur.



To remain competitive, the hospital must reduce its costs as much as possible. George McArdle has been able to eliminate through attrition 25 positions within the department of radiology during the last three years. These were positions that were felt to be expendable. As noted earlier, I feel we've now reached the bottom of the barrel and cannot afford to further cut positions at a time when our practice has begun expanding again. We will continue to do whatever we can to help the hospital achieve its vital goal of cost containment.

Finally, the development of the Jefferson Cancer Center is off to a good start, under the clinical leadership of Dr. Robert Comis. At the same time, it is important for the hospital to develop a cardiovascular center. For several reasons, progress has not been as rapid in this area. Because of the widespread prevalence of cardiovascular disease and the many talented faculty members with this kind of expertise in the departments of radiology, surgery and medicine, the strongest possible efforts are called for in developing a Jefferson Cardiovascular Center.

## **TEACHING PROGRAMS**

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

This year Radiology saw a sudden paucity of desirable positions in both academic and private practice sectors because of the fear of impending health-care reform. I am pleased to report that in spite of this shortage, our graduates found themselves highly competitive and were successful in obtaining positions of their choice. Our department continues to enjoy national recognition for the quality of our teaching programs for residents, fellows and medical students. Several new continuing medical education (CME) programs were added this year. Our faculty should be congratulated for their continued effort in ensuring high caliber of teaching programs in spite of mounting pressures to be more and more clinically productive.

### **RESIDENCY TRAINING PROGRAM**

Once again, we were very satisfied with the results of the residency match program (NIRMP). We filled all of our positions with choice candidates. George W. Gross, M.D., Chairman of the Residency Selection Committee has done an excellent job each year. Based on the performance of our five graduating residents, our program ranked in the 97th percentile for radiologic physics and 86th percentile in diagnostic radiology in the written examination given by the American Board of Radiology.

It is gratifying to note that four of these five residents chose to remain with us to pursue their fellowship training in Cross-Sectional Imaging, Body MRI, Mammography and Neuro/Body MRI. One resident will do a fellowship training in Neuroradiology at the Johns Hopkins Medical Institutions.

Restructuring of resident rotations has resulted in increased working contact between the senior and junior residents in general radiology. This has promoted teaching of the junior residents by the senior residents. The residents are also now more involved in teaching medical students enrolled in the radiology elective 401 course. A new full-time emergency department rotation was implemented this year to complement the existing evening and weekend coverage in the ED. A radiologist now reads all the x-ray studies done "on line" in the ED, and is available for consultation around the clock. We are making headway in unified educational activities with some of our affiliated institutions. Our residents now spend one month in pediatric radiology at the Alfred I duPont Institute during the third year. The residents from Pennsylvania Hospital are invited to attend the summer Radiologic Physics course given by our physicists.

Our residents continued to be very active in presenting scientific papers at national radiology meetings such as the AUR and the RSNA this year.

### **TRAINING PROGRAMS FOR FELLOWS**

We saw a further increase in the number of extremely well-qualified applicants for fellowships in all of the areas offered by our department which include Cardiovascular/Interventional Radiology, Neuroradiology/ENT Radiology, Ultrasound/CT/MRI, Body MRI, Musculoskeletal Radiology and Breast Imaging. Our Neuroradiology/ENT Radiology and CVIR fellowships are accredited by the ACGME. A new fellowship program designed to provide combined training in both body MRI and neuro/head and neck MRI was completed by two fellows this year. Both of them were very satisfied with their training and obtained highly desirable positions. Our visiting fellowships once again remain very popular in the various subspecialty areas. Because of our

international reputation, several physicians from overseas have chosen to pursue their research theses in our department.

Under the aegis of Jefferson Ultrasound Research and Education Institute, several physicians from central and eastern Europe, particularly the Ukraine, have received training in an intensive three-month program during the past year. Some of the lectures are being delivered principally in their native language, starting with Ukrainian, and future plans include Russian and Armenian.

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

I am pleased with the program critiques completed by the medical students enrolled in the RAD 401 course. Paul Spirn, M.D., has continued to do a great job of fine tuning this course. The students now have structured rotations for 3 weeks, elective rotations in the 4th week and also have the option of participating in evening call duties with a resident. The radiology lectures on cross sectional anatomy with CT and MRI correlation for the freshman class during the gross anatomy course were well received, as in the past. We are still awaiting an answer from the JMC Curriculum Committee to our proposal of incorporating radiology lectures into the Introduction to Clinical Medicine (ICM) course for the sophomore students.

### **CONTINUING MEDICAL EDUCATION PROGRAMS**

This year the CME activities were expanded in spite of the drain on faculty time.

**First Annual Penn-Jeff Conference:** This new conference was instituted under the co-direction of Geoffrey Gardiner, M.D. in conjunction with the interventional radiology faculty from both Jefferson and the Hospital of the University of Pennsylvania. This was an academically oriented meeting modeled after the Gordon Conferences. The faculty from the two institutions discussed and reviewed the recent important developments in interventional radiology. This was attended by about 50 radiologists.

**Weekend Cardiac Radiology Review:** 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, 1994. It was attended by approximately 100 radiologists and was very well received.

**Fourteenth Annual Leading Edge in Diagnostic Ultrasound Conference:** The ultrasound division's Fourteenth Annual Leading Edge in Diagnostic Ultrasound held in Atlantic City was a major success. In addition, the Division of Ultrasound also offered about 40 one to five day continuing medical education courses in ultrasound applications for abdomen, obstetrics and gynecology, Doppler ultrasound in vascular diagnosis, urologic and prostate ultrasound, neonatal brain, ultrasound in surgery and echocardiography.

**Seventh Annual Hodes Lecture:** In honor of Philip J. Hodes, M.D. the Seventh Annual Hodes Lecture was given and was very successful. The guest speaker was James H. Thrall, M.D., Radiologist-in-Chief, Massachusetts General Hospital and Juan M. Taveras Professor of Radiology at the Harvard Medical School, Boston, Massachusetts who gave an outstanding presentation on "Strategic Moves in Academia: Competing in an Era of Shrinking Grants and Reimbursements".

**Radiology Grand Rounds:** Grand Rounds in Radiology were held bi-weekly and included 16 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.

## PUBLICATIONS

The exchange educational program with Semmelweis Medical University, sponsored by the Soros Foundation has been approved for another year. Each year two faculty members from our department are invited as visiting professors to lecture in Hungary, and in exchange, two of the Hungarian radiologists come here for six weeks to learn new techniques and enhance their expertise in the various radiologic subspecialties. In October 1993, David Levin, M.D. and Vijay Rao, M.D. were invited to speak at the Semmelweis Medical University, Budapest and the Postgraduate Radiology Course in Sopron, Hungary.

## FUTURE GOALS

Our future goals include continued updating of the educational curriculum for students, residents and fellows in order to keep pace with the rapid advances in radiology. It is imperative that we teach medical students the most efficient and cost effective diagnostic imaging workup of patients at an early stage of their education. We hope to hear favorably from the JMC Curriculum Committee so that radiology lectures can be incorporated into the Introduction to Clinical Medicine Course for sophomore students. Since we are on the cutting edge of the newer modalities, we hope to continue to expand our CME courses. Our faculty is committed to maintaining excellence of our teaching programs at all levels of training.

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330. Winston CB, Mitchell D, Outwater EK, Ehrlich S: Pancreatic MRI: Comparison of five pulse sequences. *JMRI* 4(P):75, 1994.
331. Winston CB, Mitchell D, Outwater EK, Ehrlich S: Pancreatic signal intensity on T1-weighted fat-saturation images: Clinical correlation. *JMRI* 4(P):74, 1994.

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November 1994

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November 1994

March 20, 1994

April 15, 1994

May 1, 1994

May 15, 1994

## FORMAL SCIENTIFIC PRESENTATIONS

### ARCHIE A. ALEXANDER, M.D.

- |                                  |   |
|----------------------------------|---|
| August 31, 1993                  | St. Vincent Medical Center of Richmond and Bayley Seton Hospital, Staten Island, New York<br>"Color Doppler imaging of the prostate"  |
| October 12-16, 1993              | The 8th Congress of the European Federation of Societies for Ultrasound in Medicine and Biology, Innsbruck, Austria <ul style="list-style-type: none"> <li>• "Transperoneal guided prostate biopsy in cases of abdominoperoneal resection"</li> <li>• "Transrectal color and pulse Doppler analysis of the normal rectal wall and tumors with histopathologic correlation"</li> <li>• "Color Doppler signal detection of residual disease within irradiated rectal cancer histopathologic correlation"</li> <li>• "Transrectal drainage of deep pelvic abscesses via an endfire probe"</li> </ul> |
| November 8-10, 1993              | 63rd Annual Meeting of the Japan Society of Ultrasonics in Medicine, Chiba, Japan<br>"Recent advances in color Doppler of the abdomen"  |
| November 28-<br>December 3, 1993 | The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL <ul style="list-style-type: none"> <li>• "Accuracy of transrectal US and CT for TNM staging of irradiated rectal cancers"</li> </ul>  |
| March 20-23, 1994                | The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD <ul style="list-style-type: none"> <li>• "Transrectal drainage of deep pelvic abscesses via an endfire transrectal probe"</li> <li>• "Transrectal and pulse Doppler analysis of the normal rectal wall and tumors with histopathologic correlation"</li> </ul>  |
| April 16-17, 1994                | Oklahoma State Radiological Society, Baptist Medical Center, Oklahoma City, Oklahoma <ul style="list-style-type: none"> <li>• "Real time compression and color contrast venography"</li> <li>• "Non-invasive imaging of arterial insufficiency"</li> <li>• "Ultrasonographic contrast agents and tumor vascularity"</li> </ul>  |
| May 4 - 6, 1994                  | The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ <ul style="list-style-type: none"> <li>• "Prostate and rectal imaging"</li> </ul>   |
| May 25-28, 1994                  | The 12th Annual Conference of the Canadian Society of Diagnostic Medical Sonographers, Regina, Saskatchewan, Canada <ul style="list-style-type: none"> <li>• "Endoluminal ultrasound"</li> </ul>  |



**JOSEPH BONN, M.D.**

- September 29, 1993      Western Angiography and Interventional Radiology Society  
Annual Meeting, Portland, OR
- "Initial experience with a 4 French PICC and CO<sub>2</sub> guidance"
  - "Treatment of obstructive cholangiocarcinoma with Gianturco stents and intraductal Iridium-192"
- October 22, 1993      Hospital of the University of Pennsylvania Hepatobiliary  
Interventional Radiology Symposium, Philadelphia, PA
- "Liver transplants: Vascular interventions"
- November 29, 1993 -      The 79th Scientific Assembly and Annual Meeting of the  
December 3, 1993      Radiological Society of North America, Chicago, IL
- "Venography with carbon dioxide as a contrast agent"
- December 1, 1993      Annual Meeting of the International Society of Biliary Radiology,  
Chicago, IL
- "Treatment of obstructive cholangiocarcinoma with Gianturco stents and intraductal Iridium-192"
- March 20-24, 1994      19th Annual Scientific Meeting of the Society of Cardiovascular and  
Interventional Radiology, San Diego, CA
- "Intravascular US as an alternative to contrast-enhanced vena cavography before filter placement: Scientific session"
  - "Peripheral insertion of central venous catheters guided by means of carbon dioxide contrast agent: Scientific session"
  - "Peripherally inserted central venous catheters: Plenary session"
- April 12, 1994      New England Society for Cardiovascular & Interventional  
Radiology, Boston, MA
- "Venous access"
- June 3-4, 1994      First Annual Penn-Jeff Conference on Interventional Radiology,  
Skytop, PA
- "Arterial interventions"
  - "Fallopian tube recanalization"

**EMILY F. CONANT, M.D.**

- November 29-      The 79th Scientific Assembly and Annual Meeting of the  
December 4, 1993      Radiological Society of North America, Chicago, IL
- "Ultrasound evaluation of the silicone breast prosthesis: Physics, false-positive findings, and potential pitfalls" (exhibit-video)
  - "Age analysis of biopsies performed for mammographically detected non-palpable breast lesions"
- April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society,  
New Orleans, LA

- "Correlation of pulmonary involvement in systemic sclerosis (Scleroderma) with anticentromere antibody status"

May 9-13, 1994

The 26th National Conference on Breast Cancer, sponsored by the American College of Radiology, Palm Desert, CA

- "Ultrasound evaluation of the silicone breast implant: In vitro, in vivo and intraoperative studies" (exhibit-video)
- "Age analysis of the positive predictive value (PPV) of biopsies performed for mammographically detected non-palpable breast lesions"

June 4, 1994

Meeting of the American College of Rheumatology, New York, NY

- "Sarcoidosis in patients with systemic sclerosis (Scleroderma)" (exhibit)

#### **P. MACKE CONSIGNY, Ph. D.**

August 12, 1993

Third Annual Southern New England Symposium on Peripheral Vascular Disease, Newport, RI

- "Pathophysiology of atherosclerotic vascular disease"
- "Pathophysiology of vascular interventions"

October 3, 1993

Annual Meeting of Western Angiographic and Interventional Society, Portland, OR

- "Attachment of endothelial cells to denuded arterial surfaces"

January 10, 1994

Sixth Annual International Symposium on Vascular Diagnosis and Intervention, Miami, FL

- "Natural history of plaque formation"
- "Overview of experimental approaches to restenosis"

February 23, 1994

Fourth International Congress on Vascular and Interventional Radiology as a Therapeutic Alternative, Las Palmas Grand Canary Island, Spain

- "Pathophysiology of angioplasty"

March 20-24, 1994

The 19th Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, San Diego, CA

- "Local delivery of an anti-proliferative drug with use of hydrogel-coated angioplasty balloons"
- "Drug delivery into the arterial wall after angioplasty"

June 5, 1994

First Annual Penn-Jeff Conference on Interventional Radiology, Skytop, PA

- "New developments in the basic science of cardiovascular interventions"

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

November 28-  
December 3, 1993

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Utility of biopsy gun in percutaneous biopsy of osteolytic lesions"

## **STEPHEN A. FEIG, M.D.**

- |                                  |   |
|----------------------------------|---|
| October 1-3, 1993                | Breast Imaging, Department of Radiology, University of Toronto, Toronto, Canada <ul style="list-style-type: none"> <li>• "Breast calcifications"</li> <li>• "Problem solving mammography"</li> <li>• "Localization of nonpalpable lesions"</li> </ul>   |
| October 16-17, 1993              | Mammography Update 1993, Department of Radiology, Office of Continuing Medical Education, University of Wisconsin Medical School, Madison, WI <ul style="list-style-type: none"> <li>• "Screening controversies"</li> <li>• "Needle localization techniques"</li> <li>• "Solving mammographic dilemmas with special views"</li> </ul>     |
| October 22-24, 1993              | Workshops in Mammography, sponsored by Lankenau Hospital, Wynnewood, PA <ul style="list-style-type: none"> <li>• "Mammographic equipment, technique and quality control"</li> <li>• "Teaching pearls in mammographic interpretation"</li> <li>• "Mammographic interpretation: Problems, pearls and pitfalls"</li> </ul>                   |
| November 5-7, 1993               | 15th ACR Symposium on Mammography, sponsored by American College of Radiology, Commission on Education, Dallas, TX <ul style="list-style-type: none"> <li>• "Equipment"</li> <li>• "Calcifications, Part I"</li> <li>• "Calcifications, Part II"</li> <li>• "Screening"</li> <li>• "Unknown cases presentation"</li> </ul>                |
| November 28-<br>December 3, 1993 | The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL <ul style="list-style-type: none"> <li>• "Risk, benefit, and controversies in mammography" (Refresher Course No. 423)</li> <li>• "New method for testing mammography compression devices" (Scientific Paper No. 981)</li> </ul> |
| December 8, 1993                 | Department of Radiology, Mercy Catholic Medical Center, Darby, PA <ul style="list-style-type: none"> <li>• "Problem solving mammography"</li> </ul>   |
| January 21-23, 1994              | 16th ACR Symposium on Mammography, sponsored by American College of Radiology, Cincinnati, OH <ul style="list-style-type: none"> <li>• "Mammographic equipment"</li> <li>• "Calcifications, Part I"</li> <li>• "Calcifications, Part II"</li> <li>• "Screening"</li> <li>• "Unknown cases presentation"</li> </ul>                        |
| January 28-30, 1994              | Forty-Sixth Annual Midwinter Radiological Conference, sponsored by the Los Angeles Radiological Society, Los Angeles, CA  |

- "Evaluation of breast masses"
  - "Breast calcifications: The good, the bad, and the ugly"
  - "Screening mammography: Controversies and guidelines"
  - "Common mammographic problems and their solutions"
  - "Wording the mammography report and medicolegal issues"
- January 30-  
February 4, 1994
- The 19th Annual Postgraduate Course, Diagnostic Radiology, sponsored by the Department of Radiology, Cornell University Medical College and the New York Hospital, Cerramar Beach, P R
- "Imaging evaluation of breast masses: An organized approach"
  - "Common mammographic problems and their solutions"
  - "Mammographic screening below age 50. Why the hullabaloo?"
- March 10-12, 1994
- Fourth Annual Breast Imaging Conference, Orlando Regional Healthcare System, Lake Buena Vista, FL
- "Needle localization of nonpalpable lesions"
  - "Analysis of microcalcifications"
  - "Microcalcifications viewbox seminar"
  - "Preoperative localization techniques"
- April 14-16, 1994
- University of Arkansas for Medical Sciences, jointly sponsored by Department of Surgery, Office of Continuing Education for Physicians and the American Cancer Society, Little Rock, AR
- "Screening mammography - Current recommendations"
- May 8-13, 1994
- 26th National Conference on Breast Cancer, sponsored by the American College of Radiology, Palm Desert, CA
- "Analysis of calcifications"
  - "Screening women age 40-49: Why do experts disagree?"
  - "Mammographic interpretation - viewbox seminar"
  - "National Digital Mammography Development Group"
- May 18, 1994
- Radiology Visiting Professor Program, Overlook Hospital, Summit, NJ
- "Breast calcifications: Diagnostic criteria and management"
  - "Interesting case presentation"
- May 12-14, 1994
- Women's Diagnostic Imaging, sponsored by the Department of Radiology, Brigham and Women's Hospital and Harvard Medical School, Department of Continuing Education, Boston, MA
- "Evaluation of breast calcifications"
- RICK I. FELD, M.D.**
- October 7, 1993
- Blue Ribbon Lecture, Philadelphia Roentgen Ray Society, Philadelphia PA
- "Color flow ultrasound evaluation of the abdomen"
- October 9, 1993
- Advanced Technology Laboratories, New York, NY
- "Color Doppler update: Abdominal Doppler and scrotal Doppler"
- November 29, 1993  
December 3, 1994
- The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Carotid Doppler sonography" (Refresher Course, Hands-on Workshop)

April 11, 1994

Frontiers in Vascular Technology, The Department of Thoracic and Cardiovascular Surgery, Winthrop University Hospital, Mineola, NY

- "Ultrasound guided compression repair of iatrogenic femoral artery injury"
- "Vascular case studies"
- "Venous imaging"

March 20-23, 1994

The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD

- "Transnasal ultrasound assessment of esophageal involvement in scleroderma correlated to histology and manometry" (exhibit)
- "Endoluminal ultrasound for the detection of gastric varices compared to endoscopy" (exhibit)

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

November 28-  
December 3, 1993

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Peer-review quality assessment method for MR imaging: Brain and spine results from 33 centers"

March 18, 1994.

Radiology Lecture Series, Pennsylvania Hospital, Philadelphia, PA

- "Magnetic resonance angiography: Cerebrovascular applications"

May 27, 1994

Rehabilitation Medicine Grand Rounds, Magee Rehabilitation Hospital, Philadelphia, PA

- "Imaging of low back pain"

#### **FLEMMING FORSBERG, Ph.D**

November 1 - 3, 1993

The IEEE 1993 Ultrasonic Symposium, Baltimore, MD

- "Ultrasonic properties of silicone breast implants"

November 28 -  
December 3, 1993

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "In vivo application of contrast-enhanced harmonic imaging"

March 20 - 23, 1994

The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD

- "In vitro and in vivo comparison of volumetric blood flow measurement technique"
- "Enhancement of Doppler and B-mode signals using a new ultrasound contrast agent: QW360"
- "Artifacts produced by ultrasound contrast agents"



- March 28 - 30, 1994      The 21st International Symposium on Acoustical Imaging, Laguna Beach, CA
- "Maximum and mean blood volume flow measured via time domain correlation and ultrasonic flowmetry: A comparative study" (poster)
- April 24 - 27, 1994      CVI/CVI-Q Investigator Meeting, Colorado Springs, CO
- "In vitro and in vivo comparison of CVI-Q and ultrasonic flowmetry"
  - "Maximum and mean blood volume flow measured via time domain correlation and ultrasonic flowmetry: A comparative study" (poster)
- May 4 - 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Questions and controversies in vascular diagnosis and instrumentation"
- May 13 - 15, 1994      GE Ultrasound National Service Seminar, Milwaukee, WI
- "Doppler principles"
  - "Color flow principles"
- June 6 - 8, 1994      Nineteenth International Symposium on Ultrasonic Imaging and Tissue Characterization, Washington DC
- "RF direct sampling in pulsed Doppler simulations"

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

- November 28-  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Peer review quality assessment method for MR imaging: Ratings of 33 centers"
- May 1-7, 1994      The 32nd Annual Meeting of the American Society of Neuroradiology, Nashville, TN
- "Value of MR angiography in the prospective detection of post-traumatic vertebral artery injury"
  - "Cervical epidural spinal infection: MR imaging characteristics with emphasis on fast spin-echo technique"
  - "Vascular neoplasms and malformations, ischemia, and hemorrhage affecting the spinal cord: MR imaging findings" (exhibit)

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

- November 28, 1993 -  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Lower extremity graft thrombolysis"
- June 4, 1994      First Annual Penn-Jeff Conference on Interventional Radiology, Skytop, PA
- "Vascular diseases - imaging and diagnosis"

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

- July 1-4, 1993                      The 8th International Congress of the Ultrasonic Examination of the Breast, Heidelberg, Germany
- "Quality assurance"
- August 9-12, 1993                Mackinac Island Imaging Conference, William Beaumont Hospital, Royal Oak, MI
- "Color Doppler of the abdomen"
  - "Endovaginal gynecologic ultrasound including color Doppler"
  - "Deep venous thrombosis"
  - "Superficial color Doppler"
  - "Diagnostic uses of miniature ultrasound transducer"
- October 2, 1993                    Ultrasound Imaging Update, Cedars Medical Center, Miami, FL
- "Color Doppler imaging: Present and future applications"
  - "The future of ultrasound: Miniature transducers"
  - "3-D imaging and ultrasound contrast agents"
- October 11, 1993                  Euroson Meeting, Innsbruck, Austria
- "Color Doppler of the abdomen"
  - "Endovaginal gynecologic ultrasound including color Doppler"
  - "Diagnostic uses of miniature ultrasound transducers"
- October 13, 1993                  Session Chairman, Euroson Satellite Symposium, Innsbruck, Austria
- "The potential technique and technology, ultrasound angio vs color Doppler, first clinical results"
- October 15-19, 1993                Intercountry Seminar in Diagnostic Ultrasound, World Health Organization, Nicosia, Cyprus
- "The use of ultrasound in: Abdomen, abdominal aorta, inferior vena cava; liver, gallbladder, biliary tract, pancreas, spleen, peritoneal cavity and gastrointestinal tract and kidney, urinary bladder and ureters"
- October 22-24, 1993                2nd Annual Meeting and Postgraduate Educational Course of the Society of Radiologists in Ultrasound, Chicago, IL
- "Competition for the ultrasound examination: Self-referral, turf battles, marketing, coding and billing"
  - "Endoluminal ultrasound using miniature transducers"
- November 4, 1993                  NIH-Wide Imaging Science Seminar Series, Rockville, MD
- "New horizons in ultrasound: Endoluminal, 3-D and ultrasound contrast enhancement"
- November 8-12, 1993                VI Congresso Nazionale SIUMB; IX Giornate Internazionali di Ultrasonologia, Montecatini Terme, Italia
- "Ultrasound contrast: Recent advances and looking into the future"
- November 28, 1993 -  
December 3, 1993                  The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Gray-scale and color Doppler laparoscopic US: Animal and clinical studies"
- December 10-12, 1993      Cardiovascular Science and Technology Conference of the Association for the Advancement of Medical Instrumentation and the National Heart, Lung and Blood Institute, NIH, Washington, DC
- "Ultrasound contrast agents"
- January 23-28, 1994      18th Annual International Radiology Congress, Singapore
- "Ultrasound contrast agents"
  - "Human resources planning and development for the imaging infrastructure in ultrasound diagnosis"
- February 1, 1994      Ultrasound Angio Seminar of the Indonesian Society of Ultrasound in Medicine, Jakarta, Indonesia
- "New advances in color Doppler imaging"
  - "New ultrasound application and the future"
- February 9, 1994      Visiting Professor, Department of Radiology, Albert Einstein Medical Center, Philadelphia, PA
- "Intraoperative ultrasound techniques including the use of miniature transducers for intraoperative and endoluminal studies"
  - "Peripheral vascular color Doppler ultrasound"
- March 20-23, 1994      The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "Endoluminal ultrasound with miniature catheters" (categorical course)
  - "Government and other influences affecting the future practice of ultrasound"
  - "Endoluminal ultrasound for the detection of gastric varices compared to endoscopy" (exhibit)
- May 4-6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Laparoscopic ultrasound"
  - "Ultrasound contrast agents"
- June 1, 1994      Israeli Ultrasound Society Meeting, Tel Hashomer, Israel
- "State of the art of contrast media in ultrasound"
  - "New horizons in intraluminal ultrasonography"

**CARLOS F. GONZALEZ, M.D.**

- November 12, 1993      Visiting Professor, Javeriana University, Bogota, Colombia
- "The actual role of neuroradiology in neurology, neurosurgery and other specialties"
- November 22, 1993      Invited lecture, Neuroradiology Club, Baltimore, MD
- "MR imaging of degenerative disease of the lumbar spine"

- June 8-10, 1994      Invited lecture, International Review Course of Interventional Neuroradiology, Madrid, Spain
- "Hemodynamics studies of intracranial aneurysms"
- June 14, 1994      Invited lecture, University Hospital, University of Nancy, France
- "Hemodynamic studies of intracranial aneurysms"

**GEORGE W. GROSS, M.D.**

- July 13, 1993      World Congress on Neural Networks, Portland, OR
- "Skeletal age evaluation from hand radiographs using neural networks" (exhibit)
- November 28, 1993 -  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Abdominal complications associated with extracorporeal membrane oxygenation (ECMO) in neonates" (Certificate of Merit Award)
  - "Radiographic and sonographic appearances of thoracic complication of extracorporeal membrane oxygenation (ECMO)"
- February 27 -  
March 3, 1994      The 10th Annual CNMC ECMO Symposium, Keystone, CO
- "Radiographic congestive heart failure following extracorporeal membrane oxygenation (ECMO)"
  - "Neonates with repaired congenital diaphragmatic hernia pleural hemorrhages, mediastinal displacement, and atypical pneumothoraces"
  - "Neonates with congenital diaphragmatic hernia and on extracorporeal membrane oxygenation: Central nervous system complications"
  - "What's the problem? Value of the chest radiograph in identifying complications in neonates on ECMO bypass"
  - "Bypass canulas and other support lines used in ECMO"
- March 7-11, 1994      The Annual Meeting of the Society of Thoracic Radiology, Scottsdale, AZ
- "Chest radiography in ECMO"
- April 29, 1994      The 37th Annual Meeting of the Society for Pediatric Radiology, Colorado Springs, CO
- "Intracranial complications associated with extracorporeal membrane oxygenation in neonates: Patterns and frequency"
  - "Chest radiographic appearances in neonates receiving ECMO - common findings and variations"
  - "Abdominal complications associated with ECMO - common findings and variations"
  - "Grade 1 subependymal hemorrhage prior to and during ECMO in neonates: Frequency and patterns of evolution"
- June 1-3, 1994      Annual Meeting of the European Society for Pediatric Radiology, Brussels, Belgium

- "Chest radiographic appearances in neonates on ECMO - common findings and variations"
- "Intracranial complications associated with ECMO in neonates - patterns and frequency"
- "Abdominal complications associated with ECMO in neonates"
- "Radiographic and sonographic appearances of thoracic complications of ECMO"

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

June 20-24, 1994

The 17th Annual Eastern Shore Medical Conference, Rehoboth Beach, DE

- "Non-invasive evaluation of the renal arteries"

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

August 16, 1993

Presenter, International Skeletal Society, Closed Meeting, Toronto, Canada

- "Plasmacytoma with amyloid"

August 19, 1993

Presenter, International Skeletal Society, Open Meeting, Toronto, Canada

- "Imaging of traumatized elbow"

September 19, 1993

Lecturer, Bryn Mawr Hospital, Bryn Mawr, PA

- "Approach to arthritis"

October 13, 1993

Lecturer, Mercy Catholic Hospital, Philadelphia, PA

- "Trauma in the emergency room"

October 14, 1993

Lecturer, Presbyterian Hospital, Philadelphia, PA

- "Musculoskeletal trauma - role of the radiologist"

April 14-17, 1994

Presenter, Allegheny General Hospital, Allegheny, PA

- "Cervical spine fusion - struts, plugs, and plates"
- "Imaging of the traumatized elbow"
- "Common adult foot disorders"

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

October 7, 1993

Lecturer, Bryn Mawr Hospital, Bryn Mawr, PA

- "Uroradiology - review"

October 27, 1993

Lecturer, Mercy Catholic Hospital, Philadelphia, PA

- "Uroradiology - update"

December 15, 1993

Lecturer, Mercy Catholic Hospital, Philadelphia, PA

- "GI Radiology - fundamentals"

January 10, 1994

Lecturer, Society of Uroradiology, 1994 Annual Postgraduate Course Laguna Niguel, CA



- "Hysterosalpingography" (workshop)
- "Augmentation cystoplasty with stomach: Initial experience in three patients with impaired renal function"

April 24-29, 1994

The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA

- "Evacuation proctography (defecography): Roentgenographic findings in 274 consecutive patients"
- "Gastrocystoplasty: Initial experience in three patients with impaired renal function"

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

October 1, 1993

Guest Lecturer, The University of Michigan Medical School, Ann Arbor, MI

- "Transvaginal ultrasound in the second and third trimesters"
- "Ultrasound evaluation of fetal anomalies"
- "The biophysical profile: Diagnostic capabilities, pitfalls, and accuracy"

November 12-14, 1993

Guest Lecturer, Sixth Annual Review Course, Advanced Ultrasound Techniques in Obstetrics and Gynecology, Scottsdale, AZ

- "First trimester pregnancy"
- "Fetal well-being: Evaluation by ultrasound and Doppler"
- "The uterus: Non-pregnant and postpartum"

November 28-

December 6, 1993

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Basic fetal echocardiography: Beyond the four-chamber view" (Certificate of Merit)

January 5, 1994

Visiting Professor, Overlook Hospital, Summit, NJ

- Case presentations to residents
- "Sonography in the diagnosis of ovarian carcinoma"

February 9-13, 1994

Guest Lecturer, New Orleans Radiology Society, New Orleans, LA

- "First trimester ultrasound: Comparison of trans-abdominal and trans-vaginal techniques"
- "Ultrasound evaluation of the fetal central nervous system and the fetal renal system"
- "Doppler evaluation of the extremities, venous and arterial"
- "The use of ultrasound in the evaluation of ovarian cancer"
- "Ultrasound evaluation of the liver: Focal and diffuse disease"

March 9, 1994

Visiting Professor Conference, Mercy Catholic Medical Center, Fitzgerald Mercy Hospital, Darby, PA

- Case presentations to residents

March 19, 1994

Guest Lecturer, American Institute of Ultrasound in Medicine, Baltimore, MD

- "The post-delivery patient--the pelvis"

- March 20-23, 1994      The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "The ultrasound assessment of growth retardation" (meet the professor session)
- April 5-8, 1994      Guest Lecturer, Harvard Medical School, Brigham and Women's Hospital, Boston, MA
- "First trimester"
  - "Fetal measurements"
  - "Antenatal assessment: Biophysical profile and Doppler"
- April 19, 1994      Visiting Professor, University of Maryland Hospital Medical System, Baltimore MD
- "Peripheral vascular analysis-venous and arterial"
- April 19, 1994      Guest Lecturer, The Maryland Radiological Society, Baltimore, MD
- "Color Doppler in ovarian cancer detection"
- May 5-6, 1994      Co-Director and Lecturer - The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "The first trimester pregnancy: A critical evaluation of what we should see and when"
  - "Ultrasound assessment of fetal well-being"

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

- September 9-10, 1993      Cleveland Clinic Foundation, Cleveland, OH
- "Plain film analysis of adult heart disease"
  - "Self-referral in diagnostic imaging: What are its economic and social consequences"
  - "How to understand transposition of the great vessels using embryologic concepts"
- September 15, 1993      Medical Grand Rounds, Abington Memorial Hospital, Abington, PA
- "A debate - barium enema vs colonoscopy in detection of colon neoplasms"
- October 6, 1993      National Institute for Vascular Surgery, Semmelweis University, Budapest, Hungary
- "Coronary angioplasty"
- October 8-9, 1993      Hungarian Radiology Society, Sopron, Hungary
- "Current status of femoropopliteal angioplasty"
  - "The extent of self-referral in ultrasound in the USA"
  - "Renal angioplasty"
- October 28-29, 1993      Western Pennsylvania Hospital, Pittsburgh, PA
- "Economic and ethical issues associated with self-referral in diagnostic imaging in Pennsylvania"
  - "Coronary angiography interpretation"

- "Angiography of congenital heart disease - Tetralogy of Fallot, tricuspid atresia, and double outlet right ventricle"
  - "Renal angioplasty - what does the data show"
- November 28, 1993 -  
December 1, 1993
- The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Referral to radiologists versus self-referral for abdominal and pelvic ultrasound in hospitals and private offices: A comparison based on 1991 Pennsylvania Blue Shield data"
  - "Comparison of self-referral for skeletal radiography in private offices and hospitals in Pennsylvania during 1991"
  - "Diagnostic and interventional coronary angiography"
  - "Comparative utilization rates and costs of barium enema study, sigmoidoscopy, and colonoscopy: Eight year trends"
- January 5, 1994
- Georgetown University Hospital, Washington, DC
- "Economic consequences of self-referral in diagnostic imaging"
- March 7, 1994
- Society of Magnetic Resonance, Dallas, TX
- "Turf issues in cardiac MRI and other cardiac imaging"
- March 20-23, 1994
- The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "Self-referral vs referral to radiologists in obstetrical ultrasound: A 1991 statewide analysis in Pennsylvania"
- March 28, 1994
- Medical College of Wisconsin, Milwaukee, WI
- "Intracardiac shunts: Angiographic evaluation"
- March 28, 1994
- Milwaukee Roentgen Ray Society, Milwaukee, WI
- "Self-referral in diagnostic imaging: Cost and quality implications"
- April 22, 1994
- Diagnostic Imaging Conference (Radiology-Industry Partnerships: The Academic Perspective), San Francisco, CA
- "Opportunities for the imaging industry: Prospects and challenges in the '90s"
- April 23, 1994
- Diagnostic Imaging Conference (Self-Referral Issues), San Francisco, CA
- "Opportunities for the imaging industry: Prospects and challenges in the '90s"
- May 6, 1994
- Association of University Radiologists, Boston, MA
- "What it takes to succeed in academics"
- May 23-24, 1994
- Invited Special Lecturer, 52nd Annual Congress of the British Institute of Radiology, Harrogate, England
- "Utilization patterns resulting from self-referral in diagnostic imaging"
  - Performance of radiology by non-radiologists: Cost and quality issues"

**ANNA S. LEV-TOAFF, MD**

- March 20-23, 1994      The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "Evaluation of an oral contrast agent to improve ultrasonic visualization of abdominal anatomy. A Phase I trial"
- April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA
- "Biliary hamartomas: Radiologic/pathologic spectrum"
- May 4 - 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Ultrasound in female infertility"

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

- November 28, 1993  
December 3, 1994      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Bronchoscopic ultrasound" (exhibit)
- March 20-23, 1994      The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "Endoluminal ultrasound evaluation of urethral stent, diverticulaum and periurethral mass"
  - "Transnasal ultrasound assessment of esophageal involvment in scleroderma correlated to histology and manometry" (poster)
  - "Endoluminal ultrasound for the detection of gastric varices compared to endoscopy" (poster)
- February 17-19, 1994      The Biennial Meeting Modern Methods in Urologic Sonography and Laser Therapy, Bochum, Germany
- "Endoluminal ultrasound of genitourinary tract"
- April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA
- "Ultrasound-guided bronchoscopy for the evaluation of lung neoplasm" (exhibit)
- May 13-15, 1994      The 79th Annual Meeting of the Pennsylvania Radiological Society, Hershey, PA
- "Bronchoscopic ultrasound" (exhibit)

**ANDREW A. MAIDMENT, Ph.D.**

- November 28-  
December 4, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Clinical scanned-slot digital mammography detector"
- April 15-16, 1994      The 51st Annual Meeting of the Pennsylvania Society of Radiologic Technologists, Valley Forge, PA
- "Improved bedside chest image quality"

April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA  
• "Optimization of portable chest radiography"

May 11, 1994      Visiting Professor, Bryn Mawr Hospital, Bryn Mawr, PA  
• "Radiographic physics quality assurance methods"

May 25, 1994      Visiting Professor, Bryn Mawr Hospital, Bryn Mawr, PA  
• "Radiographic physics quality assurance methods"

**MARK M. MISHKIN, M.D.**

October 28-31, 1993      Symposium on the Economics of Diagnostic Imaging, Washington, DC  
• "Non-ionic contrast: Societal response to reconversion pressure"

November 12-13, 1993      The Fifth Pan-Philadelphia Neurosurgery Course, Philadelphia, PA  
• "Imaging of intradural diseases of the spine"

January 18, 1994      Hawaii Radiological Society, Maui, HI  
• "National issues affecting radiology"

February 2, 1994      Lecturer, Hong Kong College of Radiologists, Hong Kong, China  
• "Organizational structure of American radiology"

March 3, 1994      Visiting Professor, Henry Ford Hospital, Detroit, MI  
• "Iodinated contrast media-issues involved in selection of ionic and non-ionic agents"  
• "MRA of the carotid artery bifurcation in the neck - 2D and 3D time-of-flight techniques with comparison to ultrasound and angiography"

March 11, 1994      Lecturer, Pennsylvania Radiological Society, Philadelphia, PA  
• "The changing practice of radiology"

March 16, 1994      Lecturer, Massachusetts Radiologic Society, Boston, MA  
• "Health care payment reform and the ACR response"

April 6, 1994      Lecturer, Utah Radiological Society, Salt Lake City, UT  
• "Managed care, capitated care, Clinton care and other issues the ACR is tackling"

April 22, 1994      Visiting Professor, Chambersburg Hospital, Chambersburg, PA  
• "Criteria and rationale for the selection of water soluble iodinated contrast media in today's economic environment"

April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA  
• "Introduction to Research Symposium for Residents"  
• "Attractions of a research career in academic radiology"

May 7, 1994                      Lecturer, Virginia Radiological Society, White Sulphur Springs, W VA  
• "ACR Washington report"

May 17, 1994                      Lecturer, Maryland Radiological Society, Baltimore, MD  
• "Radiology in managed care: The private sector and the federal initiatives"

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

August 14-20, 1993              The Twelfth Annual Meeting of the Society for Magnetic Resonance in Medicine, New York, NY  
• "MRI of the pancreas and biliary system" (Plenary Lecture)  
• "Pulsation artifact in short TR MR imaging and angiography: Exacerbation by signal averaging" (poster)  
• "An intravenous iron agent for hepatic MRI with a 30-year safety record in humans" (poster)

October 7, 1993                  Grand Rounds, Yale University, New Haven, CT  
• "MRI of the liver"

October 13, 1993                  Grand Rounds, Albany Medical College, Albany, NY  
• "MRI of the liver"

October 25, 1993                  Guest Faculty, Harvard Medical School CME MRI Update 93, Boston, MA  
• "MRI of the liver"  
• "MRI of abdominal vessels"  
• "MRI of the adrenal glands"

November 28-  
December 3, 1993              The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL  
• "MR imaging of the abdomen"  
• "Standard-versus triple-dose administration of gadoteridol for focal liver lesions: Quantitative analysis with a multicenter trial"

March 5-9, 1994                  Faculty Educational Program, The First Meeting of the Society of Magnetic Resonance, Dallas, TX  
• "Techniques for abdominal MRI"  
• "Pancreatic MRI: Comparison of five pulse sequences"

April 20-21, 1994                  The Society of Body Computed Tomography/Magnetic Resonance, Seattle, WA  
• "MRI techniques"  
• "MR angiography"

May 13, 1994                      Grand Rounds, Pennsylvania Hospital, Philadelphia, PA  
• "MRI of the abdomen"

May 17, 1994                      Continuing Medical Education, Nyack Hospital, Nyack, NY  
• "MRI of the abdomen"



- May 17, 1994      Guest Lecturer, Greater Delaware Valley Ultrasound Society,  
Philadelphia, PA
- "MRI of the female pelvis"

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

- May 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas  
Jefferson University Hospital, Atlantic City, NJ
- "Interval growth analysis: How important and how accurate?"
- May 20, 1994      Visiting Professor, The New York Hospital - Cornell Medical  
Center, New York, NY
- "Ultrasound board review"

**LAURENCE NEEDLEMAN, M.D.**

- September 30, 1993      Albany Medical School, Albany, NY
- "Intrauterine growth retardation"
  - "Practical aspects of interpreting and performing Doppler"
  - "Color flow: Head to toe"
- October 21-23, 1992      Fellows Meeting of the Society of Radiologists in Ultrasound,  
Chicago, IL
- "Levovist US contrast for arterial disease"
- November 28-  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the  
Radiological Society of North America, Chicago, IL
- "Deep venous thrombosis: Doppler sonography (Hands-on Workshop)"
  - "Vascular applications of US: Peripheral vessels" (Update course)
  - "Basic fetal echocardiography: Beyond the four-chamber view" (poster)
- January 18, 1994      Grand Rounds, Beth Israel Medical Center, New York, NY
- "Vascular ultrasound"
  - "Vascular case demonstrations"
- February 14-18, 1994      Sixth Annual Current Topics in Diagnostic Imaging, NYU Medical  
Center, Post-Graduate Medical School, Cerromar, PR
- "General principles of gynecologic ultrasound"
  - "Principles of Doppler and color Doppler"
  - "Ultrasound potpourri"
- March 10, 1994      Visiting Professor, State University of New York Health Science  
Center at Brooklyn, Brooklyn, NY
- "Doppler and hemodynamics"
- March 12, 1994      Current Concepts in Abdominal & Pelvic Doppler, Lahey Clinic,  
Burlington, MA
- "Abdominal Doppler"

- March 20-23, 1994      The 38th Annual Convention of the American Institute of Ultrasound in Medicine, Baltimore, MD
- "Evaluation of arterial diseases in humans using an ultrasound contrast agent"
  - "Transperineal abscess drainage and aspiration using ultrasound guidance"
- April 17-18, 1994      Spring Weekend Symposium in Diagnostic Ultrasound, New York, NY
- "Doppler of the carotid and vertebral arteries"
  - "Peripheral vascular imaging"
  - "Carotid Doppler workshop"
- May 4 - 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Questions and controversies in vascular instrumentation/diagnosis"
  - "Venous imaging"
- May 13-15, 1994      General Electric National Service Seminar, Milwaukee, WI
- "Ob/gyn ultrasound"
  - "Vascular Doppler/color flow applications"
- June 9, 1994      Jamaica Hospital, Queens, NY
- "Abdominal Doppler ultrasound"

**ERIC K. OUTWATER, M.D.**

- August 17, 1993      The Twelfth Annual Scientific Meeting of the Society of Magnetic Resonance in Medicine, New York, NY
- "Evaluation of a fast spin echo sequence for imaging hepatic lesions"
  - "Evaluation of a fast spin echo sequence for abdominal imaging" (poster)
- November 28-  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "MR imaging of the female pelvic adnexa with multicoil and fast SE: Pathologic correlation" (exhibit)
- March 5-9, 1994      The 12th Annual Meeting of the Society for Magnetic Resonance Imaging, Dallas, TX
- "MR Imaging of hydrosalpinx and hematosalpinx"
- May 8-13, 1994      The 93rd Annual Convention of the American Society of Colon and Rectal Surgeons, Orlando, FL
- "MR imaging of rectal carcinoma before and after preoperative high dose radiation" (presentation and poster)

**CATHERINE W. PICCOLI, M.D.**

- November 11, 1993 Delaware Valley MRI Society, Philadelphia, PA  
• "Current status of breast MRI"
- January 25, 1994 Mammography Society of Philadelphia, Philadelphia, PA  
• "Current status of breast MRI"
- March 6, 1994 Invited Faculty, First Meeting of the Society of Magnetic Resonance, Dallas, TX  
• "Breast MRI: Clinical Update"
- May 4 - 6, 1994 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ  
• "Sonomammography"

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

- October 4, 1993 Visiting Professor, Semmelweis Medical University, Budapest, Hungary  
• "MR imaging of the TMJ"  
• "Skull base imaging"
- October 8, 1993 Visiting Professor, Semmelweis Medical University, Sopron, Hungary  
• "Imaging of the temporal bone"  
• "Residency structure - The Jefferson experience"
- October 21, 1993 Visiting Professor, Division of Neuroradiology, Hospital of the University of Pennsylvania, Philadelphia, PA  
• "Temporal bone imaging: Normal anatomy"
- October 27, 1993 Visiting Professor, Northeastern New York Radiology Grand Rounds, Albany Medical Center, Albany, NY  
• "Internal derangement of the TMJ"
- October 27, 1993 Visiting Professor, Department of Radiology, Albany Medical Center, Albany, NY  
• "Temporal bone imaging"  
• "Interesting head and neck cases"
- November 3, 1993 Visiting Professor, Division of Neuroradiology, Hospital of the University of Pennsylvania, Philadelphia, PA  
• "CT and MR imaging of neck masses"
- November 4, 1993 Visiting Professor, Division of Neuroradiology, Hospital of the University of Pennsylvania, Philadelphia, PA  
• "Temporal bone imaging: Pathology"
- November 10, 1993 Visiting Professor, Division of Neuroradiology, Hospital of the University of Pennsylvania, Philadelphia, PA  
• "MR imaging of orbital diseases"

- November 10, 1993      Visiting Professor, Mercy Catholic Medical Center,  
Fitzgerald Division, Darby, PA
- "Head and neck imaging: Interesting cases"
- November 18, 1993      Visiting Professor, Division of Neuroradiology, Hospital of  
the University of Pennsylvania, Philadelphia, PA
- "Temporomandibular joint imaging"
- November 28 -  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the  
Radiological Society of North America, Chicago, IL
- "Imaging of the temporomandibular joint and the mandible"
  - "Comparison of fast and conventional SE MR imaging in  
the temporomandibular joint"
- May 12, 1994      Visiting Professor, Department of Radiology, Presbyterian  
Medical Center, Philadelphia, PA
- "Interesting head and neck cases"
- May 18, 1994      Invited Lecturer, Jefferson MRI/TME Center, Langhorne, PA
- "MR imaging of the temporomandibular joint"
- May 26, 1994      Invited Speaker, Neuroradiology Club of Northern New Jersey,  
sponsored by the University of Medicine and Dentistry, New Jersey  
Medical School, Newark, NJ
- "Base of skull imaging"
- June 17, 1994      The 1994 International Congress of Head and Neck Radiology,  
Washington, D.C.
- "Temporomandibular joint diseases"

#### **JASON E. SAGERMAN, M.D.**

- May 4 - 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas  
Jefferson University Hospital, Atlantic City, NJ
- Pre-conference color Doppler tutorial
  - Abdominal case presentations
- May 5, 1994      The 42nd Annual Meeting of the Association of University  
Radiologists, Boston, MA.
- "Abdominal CT: Yield in the neurologically impaired patient  
following blunt trauma"

#### **ANA M. SALAZAR, MD**

- November 29, -  
December 3, 1994      The 79th Scientific Assembly and Annual Meeting of the  
Radiological Society of North America, Chicago, IL
- "Mycobacterium-avium-intracellulare (MAI) complex in  
immunocompetent host: A pulmonary pathogen with a distinct  
CT appearance"
  - "Hook-wire localization of small lung nodules for thoracoscopic  
excision"

- April 22, 1994      Visiting Professor, Bridgeport Hospital, Bridgeport, CT
- "Pre-operative localization of pulmonary nodules for video-assisted thoracoscopic resection"

**MARK E. SCHWEITZER, M.D.**

- September 28, 1993      Visiting Professor, George Washington University Hospital, Washington, DC
- "MRI of the shoulder"
  - "Bone and soft tissue tumors"
- November 10, 1993      Guest Speaker, Presbyterian Hospital, Philadelphia, PA
- "Bone tumors"
- November 15, 1993      Guest Speaker, Orthopedic, Radiologic, Pathology Society, Philadelphia, PA
- "Bone tumors"
- November 18, 1993      Guest Speaker, Bryn Mawr Hospital, Philadelphia, PA
- "MR of the shoulder"
- November 28-  
December 5, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Distal clavicular increased signal on MR: Post-traumatic osteolysis or hematopoietic marrow"
  - "MR imaging of reflex sympathetic dystrophy revisited: Enhancement and MR imaging staging"
  - "MR imaging of the elbow in asymptomatic baseball pitchers"
- January 21, 1994      Guest Speaker, Pennsylvania Hospital, Philadelphia, PA
- "MRI of the knee"
- February 16, 1994      Guest Speaker, TME Inc, Langhorne, PA
- "MRI of the foot and ankle"
- March 6, 1994      Society of Magnetic Resonance Imaging, Education Program, Dallas, TX
- "MRI of the foot and ankle"
- March 9, 1994      Skeletal Radiology Group, Closed Meeting, Cardiff, Wales
- "Normal variants in musculoskeletal MRI"
- March 10, 1994      Visiting Professor, Royal College of Radiologists, Cardiff, Wales  
Fifth Skeletal Radiology Refresher Course
- "MRI of the foot and ankle"
  - "Marrow imaging"
- March 13, 1994      Visiting Professor, Bristol University, Bristol, England
- "Normal MR variants that might mimic disease"
- Visiting Professor, Bristol Radiologic Institute, Bristol, England
- Case presentations

- March 14, 1994      Visiting Professor, University of Utrecht, The Netherlands
- "MR of the shoulder"
  - "MR of bone and soft tissue tumors"
- March 16, 1994      Visiting Professor, Ruhr University, Institute for Radiologic and Nuklearmedizin, Bochum, Germany
- "MR of the wrist"
  - "MR of foot and ankle"
  - "MR of the shoulder"
- April 10, 1994      Guest Speaker, Reading Hospital, Reading, PA
- "Normal MR variants that might mimic disease"
  - "Interesting cases"
- April 13, 1994      Guest Speaker, Kent County Hospital, Dover, DE
- "Recent advances in musculoskeletal MRI"
- May 8, 1994      Guest Speaker, Medical College of Pennsylvania, Philadelphia, PA
- "Overview of recent advances in musculoskeletal radiology"
- June 9, 1994      Grand Rounds, Christiana Hospital, Wilmington, DE
- "MR of the shoulder"

**SHARON R. SEGAL, D.O.**

- May 4 - 6, 1994      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Stump the stars"

**GARY SHABER, M.D.**

- June 1-3, 1994      European Society for Pediatric Radiology, Brussels, Belgium
- "Chest radiographic appearances in neonates on ECMO" (exhibit)
  - "Intracranial complications associated with ECMO in neonates - Patterns and frequency" (exhibit)
  - "Abdominal complications associated with ECMO in neonates" (exhibit)
  - "Radiographic and sonographic appearances of thoracic complications of ECMO" (exhibit)

**MARCELLE J. SHAPIRO, M.D.**

- June 17, 1994      Surgical Grand Rounds, Beth Israel Hospital, New York, NY
- "T.I.P.S.: Update on the latest intervention in portal hypertension"



**PAUL W. SPIRN, MD**

- September 29, 1993      AEMC Radiology Guest Lecture Series 1993-1994, Temple University School of Medicine, Philadelphia, PA
- "ICU chest radiology"
- March 10, 1994      Lecturer, Society of Thoracic Radiology, Post-graduate Program, Scottsdale, AZ
- "Video assisted thoracoscopy-focus on pre-operative localization for lung nodule resection"

**ROBERT M. STEINER, M.D.**

- October 22, 1993      First Annual Meeting, American Association for Bronchology, Orlando, FL
- "Ultrasound assisted bronchoscopy using miniature transducer contained catheters"
- November 29, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- December 3, 1993
- "Short E-space T-2 weighted fast spin echo MR imaging of the lung and mediastinum"
  - "US-guided fiberoptic bronchoscopy of peripheral pulmonary masses with catheter-based miniature transducers"
  - "Bronchioalveolar cell carcinoma: Correlation of radiologic appearance, clinical course and cellular ultrastructure"
  - "Bronchoalveolar cell carcinoma: Correlation of cell type through ultrastructure and radiographic presentation"
  - "Failure of bone marrow conversion in sickle cell disease: utilization of the clivus as a marker of hematopoietic activity"
  - "Bronchogenic ultrasound" (exhibit)
- January 8, 1994      Guest Speaker, Bryn Mawr Hospital, Philadelphia, PA
- "Interesting cases"
- January 13-14, 1994      Guest Speaker, The Danish Congress of Diagnostic Radiology Odense, Denmark
- "The radiology of hematologic disorders and new approaches to the diagnosis of pulmonary nodules"
- March 7-11, 1994      Refresher Course Speaker and Moderator, The Annual Meeting of the Society of Thoracic Radiology, Scottsdale, AZ
- "Radiology of connective tissue disorders"
- April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA
- "Ultrasound-guided bronchology for the evaluation of lung neoplasm" (exhibit)
  - "Preference and distribution of thoracic adenopathy in limited and diffuse scleroderma - correlation with interstitial lung disease"
- May 4, 1994      Invited Speaker, Mercy Catholic Medical Center, Philadelphia, PA

- "Interesting case conference"

May 16, 1994

Guest Speaker, North American Society of Cardiac Imaging, San Francisco, CA

- "Teach the teachers symposium on cardiac radiology"

June 30, 1994

Guest Speaker, 7th World Conference on Lung Cancer, Colorado Springs, CO

- "Pulmonary neoplasm symposium"
- "Ultrasound-guided bronchoscopy and thoracoscopy utilizing miniature catheter transducers"

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

November 29, 1993 -  
December 3, 1993

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Venography with carbon dioxide as a contrast agent"

March 21, 1994

The 19th Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, San Diego, CA

- Thrombolysis Workshop

June 3-4, 1994

First Annual Penn-Jeff Conference on Interventional Radiology, Skytop, PA

- "Interventional radiology in cancer"

June 7-10, 1994

CIRSE '94 Annual Meeting and Postgraduate Course of the Cardiovascular and Interventional Radiological Society of Europe, Aghia Pelaghia, Crete

- "Venography with carbon dioxide as a contrast agent"

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

November 29 -  
December 3, 1994

The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Improved lesion detection in spinal Multiple Sclerosis using fast spin-echo MR"

May 2-7, 1994

The 32nd Annual Meeting of the American Society of Neuroradiology, Nashville, TN

- "Craniopagus: MR imaging and color Doppler sonography"
- "Familial spastic paraplegia: MR imaging of affected individuals and screening of carriers"

### **SIMON VINITSKI, Ph.D.**

July 16, 1993

Invited Lecturer, Image Processing Theory and Applications International Conference, San Remo, Italy

- "Tissue characterization by MRI: data segmentation using 3D feature map"

August 14-20, 1993

Twelfth Annual Scientific Meeting of the Society of Magnetic Resonance in Medicine, New York, NY

- "2D and 3D computer simulation of complex blood flow in MR angiography"
  - "Post-processing of MRA images by local contrast enhancement"
- October 28-31, 1993      15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, CA
- "Fast spin echo - inversion recovery imaging"
- November 29 -  
December 3, 1994      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Region-based 3D tissue segmentation in MR imaging"
- March 5-9, 1994      First Meeting of the Society of Magnetic Resonance, Dallas, TX
- "3D segmentation using high resolution MRI: Improved accuracy and stability"
  - "MRA and computer simulation of blood flow in near 90° arterial branches"

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

- November 28-  
December 4, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Comparison of CT and MRI in the detection and characterization of tarsal coalition"
- March 7-11, 1994      Post Graduate Course, The Annual Meeting of the Society of Thoracic Radiology, Scottsdale, AZ
- "Tumors of the pleura"
- April 24-29, 1994      The 94th Annual Meeting of the American Roentgen Ray Society, New Orleans, LA
- "Paracardial lymphadenopathy with hepatic metastases found on CT arterial portography"

**ANNINA N. WILKES, MD**

- November 28-  
December 3, 1993      The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Basic fetal echocardiography, Beyond the four chamber view"

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

### ARCHIE A. ALEXANDER, M.D.

- Member, Advisory Group on Prostate Cancer, American Cancer Society
- Reviewer, *Abdomen Scientific Committee, American Institute of Ultrasound in Medicine*
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*

### JOSEPH BONN, M.D.

- Chairperson, Annual Meeting Workshop Committee, Society of Cardiovascular and Interventional Radiology
- Chairperson, Annual Meeting Scientific Program Committee, Society of Cardiovascular and Interventional Radiology
- Member, Annual Meeting Scientific Program Committee, Society of Cardiovascular and Interventional Radiology
- Member, Annual Meeting Scientific Program Committee, Young Investigator Award Subcommittee, Society of Cardiovascular and Interventional Radiology
- Member Executive Council Advisory Committee, Society of Cardiovascular and Interventional Radiology
- Member, Task Force on Resident Education, Society of Cardiovascular and Interventional Radiology
- Member, Transcatheter Therapy of Peripheral Vascular Disease Committee, Council on Cardiovascular Radiology, American Heart Association
- Associate Editor and Deputy Editor, Interventional-Cardiovascular section, *Radiology*
- Associate Editor, *Journal of Vascular and Interventional Radiology*
- Abstract Reviewer, *Journal of Vascular and Interventional Radiology*
- Distinguished Reviewer Award, *Journal of Vascular and Interventional Radiology*
- Reviewer, Interventional-Cardiovascular section, *Radiology*

### EMILY F. CONANT, M.D.

- Member, Advisory Board, Senator Allyson Schwartz: Women Staying Healthy Together Health Conference
- Member, Mammography Accreditation Program, American College of Radiology
- Reviewer, *American Journal of Roentgenology*

### P. MACKE CONSIGNY, Ph. D.

- Member, Board of Directors, Cardiovascular and Interventional Radiology Research and Education Foundation (CIRREF)
- Member, Executive Council Advisory Committee, Society of Cardiovascular and Interventional Radiology
- Member, Research Committee, Society of Cardiovascular and Interventional Radiology
- Grant reviewer, Binational Science Foundation, Washington, DC
- Distinguished Reviewer Award, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Investigative Radiology*

### **STEPHEN A. FEIG, M.D.**

- Guest Examiner, American Board of Radiology
- Member, Written Examination Committee, American Board of Radiology
- Member, Commission on Standards and Accreditation, American College of Radiology
- Member, Breast Task Force, American College of Radiology
- Member, Section on Breast Disease Syllabus II, Committee on Professional Self-Evaluation and Continuing Education, American College of Radiology
- Chairman, Mammography Practice Accreditation Committee, American College of Radiology
- Member, Clinical Image Reviewer Training Committee, Mammography Accreditation Program, American College of Radiology
- Member, Clinical Image Reviewer Subcommittee, Mammography Accreditation Program, American College of Radiology
- Member, Committee on Mammography Reporting and Data Base System, American College of Radiology
- Member, Program Committee 26th National Conference on Breast Cancer, American College of Radiology
- Center for Disease Control - American College of Radiology Cooperative Agreement for Quality Assurance in Mammography
  - Co-Chairman, Committee on Correlation of Phantom and Clinical Image Quality
  - Member, Committee on Radiologists Education
  - Member, Data Analysis and Research Committee
  - Member, Imaging Systems Focus Group
  - Member, Oversight Committee
  - Member, Quality Assurance Manual Development Committee
- Treasurer, Society of Breast Imaging
- Member, Executive Committee, Society of Breast Imaging
- Member, Scientific Committee 72: Radiation Protection in Mammography, National Council on Radiation Protection and Measurements
- Member, Breast MRI Advisory Group, National Cancer Institute
- Member, Breast Cancer Awareness Committee, American Cancer Society, Philadelphia Division
- Editor, *Breast Diseases, A Year Book Quarterly*
- Co-Editor, *Breast Diseases, An International Journal*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *RadioGraphics* (manuscripts)
- Reviewer, *RadioGraphics* (scientific exhibits)
- Reviewer, *Cancer*
- Reviewer, *Radiology*
- Reviewer, *Breast Cancer Research and Treatment*
- Reviewer, *Journal of the National Cancer Institute*
- Editor's Recognition Award with Distinction, *Radiology*

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

- Secretary, Greater Delaware Valley Ultrasound Society
- Member, Technologist Relations Committee, Philadelphia Roentgen Ray Society
- Abstract Review Chairman (38th Annual Convention), Neurosonography Scientific Papers, American Institute of Ultrasound in Medicine
- Reviewer, *Clinical Imaging*
- Reviewer, *Journal of Vascular and Interventional Radiology*

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

- Research Scholar, Radiological Society of North America
- Consultant, Squibb Diagnostics, Contrast Division
- Member, Squibb Diagnostics Contrast Speakers Bureau
- Reviewer, *Neuroradiology*

**FLEMMING FORSBERG, Ph.D**

- Reviewer, *Radiology*
- Reviewer, *Ultrasound in Medicine and Biology*
- Reviewer, *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control*
- Reviewer, *RSNA 1994: Physics*
- Reviewer, *AIUM 1994: General Abdomen*

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

- Melvin M. Figley Fellowship in Radiology Journalism
- Reviewer, *American Journal of Roentgenology*

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

- Member, Technology Assessment Committee, Cardiovascular and Interventional Radiology Research and Education Foundation
- Member, Editorial Board, *Radiology*
- Member, Editorial Board, *Cardiovascular and Interventional Radiology*
- Member, Editorial Board, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Radiology*
- Reviewer, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Cardiovascular and Interventional Radiology*

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

- President, World Federation for Ultrasound in Medicine and Biology
- Medical Advisor in Ultrasound, World Health Organization
- Chairperson, Archives Committee, World Federation for Ultrasound in Medicine and Biology
- Chairperson, Nominating Committee, World Federation of Ultrasound in Medicine and Biology
- Chairperson, Archives Committee, American Institute of Ultrasound in Medicine
- Treasurer - International Congress on the Ultrasonic Examination of the Breast
- Consultant in Ultrasound, Philadelphia Zoo
- Consultant to United States - Israel Binational Science Foundation
- Member, Board of Censors, Philadelphia Roentgen Ray Society
- Member, Ad Hoc Committee for the Radiology Centennial, Philadelphia Roentgen Ray Society
- Member, Radiology Centennial Exhibits Committee
- Member, Fellowship Committee, American College of Radiology
- Member, Directors Committee, Ben Franklin Technology Center of Southeastern Pennsylvania
- Member, International Commission on Radiology Education, International Society of Radiology



- Member, Awards Committee, American Institute of Ultrasound in Medicine
- Member, International Organizing Committee for the International Congress of the Ultrasonic Examination of the Breast
- Member, Committee on Coding and Nomenclature, American College of Radiology
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Member, Editorial Board, *Journal d'Echographie et de Medicine Ultrasonore*
- Member, Editorial Committee, *Journal Ultrasonido*
- Member, International Advisory Board, *Indian Journal of Medicine Ultrasound*
- Member, Editorial Advisory Board, *Clinics in Diagnostic Ultrasound*
- Member, Editorial Advisory Board, *Ultrasound in Medicine and Biology*
- Editorial Consultant, *Chest*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Cancer*
- Reviewer, *Radiology*

#### **CARLOS F. GONZALEZ, M.D.**

- Volumetric regional analysis of MS lesions of the brain using 3D segmentation was selected as neuroimaging highlight in the Scientific Curriculum Program at the 46th Annual Meeting of the American Academy of Neurology, Washington, DC, May 1-7, 1994

#### **GEORGE W. GROSS, M.D.**

- Certificate of Merit Award, The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

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

- Recipient, GE-AUR fellowship
- Reviewer, *Investigative Radiology*

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

- Board Examiner in Musculoskeletal Radiology, American Board of Radiology
- Consulting Editor, *Skeletal Radiology*
- Book Reviewer, *AJR*
- Reviewer, *AJR*
- Reviewer, *RadioGraphics*
- Reviewer, *Radiology*
- Reviewer, *Skeletal Radiology*

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

- Written Board Examiner, American Board of Radiology
- Oral Board Examiner, American Board of Radiology
- Contribution ACR Laser Disk Teaching File, Gynecologic Imaging

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

- Member, Board of Governors, American Institute of Ultrasound in Medicine
- Secretary, American Institute of Ultrasound in Medicine
- Councilor, Society of Radiologists in Ultrasound (to the American College of Radiology)
- Reviewer, *Radiology*
- Reviewer, *RadioGraphics*
- Reviewer, *American Journal of Obstetrics and Gynecology*
- Reviewer, *Obstetrics and Gynecology*
- Reviewer, *Cancer*
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*
- Editor's Certificate of Recognition, *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
- Secretary-Treasurer, Society of Chairman of Academic Radiology Departments
- Executive Board, Philadelphia Roentgen Ray Society
- Executive Committee, Society of Chairman of Academic Radiology Departments
- Executive Committee, SCARD/AUR/ACR Conjoint Committee on Diagnostic Radiology
- Ad hoc Publications Committee, Association of University Radiologists
- Ad hoc Committee on Society Administrative Reorganization, Society of Cardiovascular and Interventional Radiology
- Executive Council Advisory Committee, Society of Cardiovascular and Interventional Radiology
- Scientific Advisor, RSNA Research and Education Fund, Radiological Society of North America
- Public Information Advisory Board, Radiological Society of North America
- Committee on Research and Technology Assessment of the Interventional Radiology Commission, American College of Radiology
- Budget and Long Range Planning Committees of the Council on Cardiovascular Radiology, American Heart Association
- Committee on Transcatheter Therapy of Peripheral Vascular Disease, Council on Cardiovascular Radiology, American Heart Association
- Cardiac Catheterization Committee, American College of Cardiology
- Economics Committee, Philadelphia Roentgen Ray Society
- Public Relations and Marketing Committee, Pennsylvania Radiological Society
- Committee on Diagnostic Radiology, Pennsylvania Radiological Society
- Ad hoc Committee on Angiography/Interventions, Pennsylvania Radiological Society
- Committee on Blue Cross, Blue Shield, and State Health Care Programs, Pennsylvania Radiological Society
- Program Committee, Pennsylvania Radiological Society
- Publications Committee, Pennsylvania Radiological Society
- Committee on Scientific Affairs, SCARD/AUR/ACR Conjoint Committee on Diagnostic Radiology
- Associate Editor, *Radiology*
- Editorial Board, *Clinical Imaging*
- Editorial Board, *Current Diagnosis*
- Editorial Executive Committee, *Investigative Radiology*
- Editorial Consultant, *Journal of Vascular and Interventional Radiology*
- Reviewer, *American Journal of Roentgenology*

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

- Member, Scientific Exhibits Committee, Pennsylvania Radiological Society 1995
- Reviewer, *Radiology*
- Reviewer, *AJR*

### **MARK M. MISHKIN, M.D.**

- President, American College of Radiology
- President, American College of Radiology Foundation
- President, American College of Radiology Institute
- Board of Chancellors, American College of Radiology
- Board of Directors, American College of Radiology Foundation
- Board of Directors, American College of Radiology Institute
- Representative, Council of Medical Specialty Societies, American College of Radiology
- Member, Budget and Finance Committee, American College of Radiology
- Member, Budget and Finance Committee, American College of Radiology Foundation
- Member, Budget and Finance Committee, American College of Radiology Institute
- Member, Executive Committee, American College of Radiology
- Commission on Education, American College of Radiology
- Consultant, Committee on Drugs and Contrast Media, American College of Radiology
- Executive Committee, Eastern Radiological Society
- Reviewer, *Cancer*
- Reviewer, *Archives of Neurology*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Investigative Radiology*

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

- Radiology's most prolific reviewers, July 1989 to June 1993, Editor's Page, *Radiology* 1994
- 1994 Society of Computed Body Tomography/Magnetic Resonance Lauterbur Award for best MRI paper (\$7200.00; Eric Outwater, M.D., P.I.)
- Chairman, Residency Training Committee, Society for Magnetic Resonance Imaging
- Chairman, Educational Program, Society of Magnetic Resonance
- Faculty, Educational Program, Society of Magnetic Resonance
- Member, International Scientific Committee, Third International Symposium on Budd-Chiari Syndrome
- Member, Ad Hoc Expert Panel, Breast MRI, American College of Radiology
- Program Committee-Physics, Radiological Society of North America
- Editorial Board-MRI, *Radiology*
- Meeting Notes (MR), Radiological Society of North America
- Editor, Body Section, *Current Review of Magnetic Resonance Imaging*
- Co-Editor, Clinical Desktop Section, *MResource Guide*
- Associate Editor, *Journal of Magnetic Resonance Imaging*
- Editorial Board, *Topics in Magnetic Resonance Imaging*
- Editorial Board, *Magnetic Resonance Quarterly*
- Abstract Reviewer, Society of Magnetic Resonance in Medicine
- Abstract Reviewer, Society of Magnetic Resonance
- Reviewer, *Journal of Computer Assisted Tomography*
- Reviewer, *Investigative Radiology*
- Reviewer, *American Journal of Roentgenology*
- Editor's Certificate of Recognition, *Radiographics*

#### LAURENCE NEEDLEMAN, M.D.

- Chairman and Member, Board of Directors, Joint Review Committee on Education in Cardiovascular Technology (representative of the American College of Radiology)
- Member, Board of Directors, Joint Review Committee on Education in Cardiovascular Technology (representative of the American College of Radiology)
- Member, Committee on Economics of the Commission on Ultrasound, American College of Radiology
- Member, Committee on Ultrasound, Pennsylvania Radiological Society
- Member, Society of Radiologists in Ultrasound Professional Practice and Standards Committee
- Member, Task Force on Appropriateness Criteria Expert Panel on Cardiovascular Imaging, American College of Radiology
- Abstract Reviewer, *American Heart Association Annual Meeting*
- Occasional Reviewer, *Journal of Ultrasound in Medicine*
- Occasional Reviewer, *Annals of Internal Medicine*
- Occasional Reviewer, *Hepatology*
- Occasional Reviewer, *Journal of Clinical Ultrasound*
- Reviewer, *Radiology*
- Reviewer, *JVIR*

#### ERIC K. OUTWATER, M.D.

- 1994 SCBT/MR Lauterber Award. Outstanding scientific paper in MR "Endorectal Coil MR Imaging of Prostatic Carcinoma: Assessment of Diagnostic Criteria for Capsular Penetration" presented at the Society of Computed Body Tomography/Magnetic Resonance, Seattle, WA, April 1994
- Vice President, Delaware Valley MRI Society
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*
- Reviewer, Scientific exhibits at RSNA, *Radiographics*

#### CATHERINE W. PICCOLI, M.D.

- Member, Medical Advisory Board, Linda Creed Foundation, Philadelphia, PA
- Clinical Reviewer, ACR Mammography Accreditation Program

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

- Chairperson, Ad Hoc Committee on Curriculum, Association of Program Directors in Radiology
- Member, Awards Committee, American Society of Head and Neck Radiology
- Member, Education Committee, American Society of Head and Neck Radiology
- Ad Hoc Member, Research Manpower Review Committee, NLHBI - National Institute of Health
- Member, Board of Censors, Philadelphia Roentgen Ray Society
- Recipient, 1993 Editor's Recognition Award with Distinction, Stanley S. Siegelman, M.D., Editor, *Radiology*
- Radiographics Panel, The 79th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- Scientific Program Abstract Reviewer, 1994 International Congress of Head and Neck

Radiology

- Reviewer, *Neuroradiology*
- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *Radiology*
- Reviewer, *Journal of Cancer Research*
- Reviewer, *Radiographics*

**ANA M. SALAZAR, M.D.**

- Member, Training and Standards of Care Committee, Society Thoracic Radiology
- Reviewer, *AJR*

**MARK E. SCHWEITZER, M.D.**

- President, Delaware Valley Magnetic Resonance Society
- Member, Educational Committee, Philadelphia Roentgen Ray Society
- Exhibit Reviewer, *Radiographics*
- Reviewer, *Radiology*
- Reviewer, *AJR*
- Reviewer, *Radiographics*
- Reviewer, *Annals of Internal Medicine*
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*

**SHARON R. SEGAL, D.O.**

- Member, Editorial Board, American Osteopathic College of Radiology

**MARCELLE J. SHAPIRO, M.D.**

- President, Philadelphia Angiography and Interventional Radiology Society
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Member, Public Relations and Marketing Committee, Society of Cardiovascular and Interventional Radiology
- Member, Ad-Hoc Committee, Physician Women's Forum, University of Pennsylvania School of Medicine
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Investigative Radiology*
- Reviewer, *Journal of Interventional Radiology*
- Reviewer, *Journal of Vascular & Interventional Radiology*
- Reviewer, *Radiology*

**PAUL W. SPIRN, M.D.**

- Reviewer, *Radiology*

**ROBERT M. STEINER, M.D.**

- President, 1993-94, Philadelphia Roentgen Ray Society
- Chairperson, Chest Accreditation Commission, American College of Radiology
- Chairperson, Training and Standards of Care Committee, Society of Thoracic Radiology
- Chairperson, CME Committee, Society of Thoracic Radiology
- Member, Intersociety Commission, American College of Radiology
- Member, Committee on Diagnostic Radiology, Pennsylvania Radiologic Society
- Member, Nominations Committee, Pennsylvania Radiologic Society
- Member, Budget Committee, Philadelphia Roentgen Ray Society
- Member, Executive Committee, Philadelphia Roentgen Ray Society
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Abstract Reviewer for Annual Meeting, American Heart Association
- Editorial Board, *American Journal of Cardiac Imaging*
- Editorial Board, *Heart and Vessel*
- Abstractor and Reviewer, *Radiology*
- Manuscript and Book Reviewer, *American Journal of Roentgenology*
- Reviewer, *RadioGraphics*
- Reviewer, *Cancer*

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

- Member, Research Committee, Society of Cardiovascular and Interventional Radiology
- Editorial Board, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Radiology*

**TERRI TUCKMAN, M.D.**

- Co-Chairperson, Women Physicians' Forum
- Co-Chairperson, American Medical Women's Association Committee on Dependent Care
- Member, American Medical Women's Association Committee on Maternity and Medicine
- Member, American Medical Women's Association Committee on Gender Equity

**SIMON VINITSKI, Ph.D.**

- Member, Executive Committee, Center of Excellence in Biomedical Engineering, Drexel University, Philadelphia, PA
- Participation in a panel discussion on quantitative MRA. Twelfth Annual Scientific Meeting of the Society of Magnetic Resonance in Medicine, New York, NY, August 1993
- Reviewer, *Magnetic Resonance in Medicine*
- Reviewer, *Medical Physics*
- Reviewer, *Journal of Magnetic Resonance Imaging*

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

- Member, Board of Directors, Pennsylvania Radiological Society
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Member, Chest Radiology Accreditation Committee of the Commission on Standards and Accreditation, American College of Radiology



- Reviewer, *Radiology*
- Reviewer, *Southern Medical Journal*

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

- Certificate of Merit Citation, Radiological Society of North America, "Basic fetal echocardiography, Beyond the four chamber view", Scientific Exhibit, 1993

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APPENDIX

ACTIVE GRANTS

PENDING GRANTS

HYPERLARYNGEAL CONDUCTION

## APPENDIX

**Table 1      ACTIVE GRANTS**

**Table 2      PENDING GRANTS**

**Table 3      FY '93 GRANT INCOME AND EXPENSES**

Table 1

## Active Grants

07/01/93 - 06/30/94

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

Revised 06/30/94

## NIH GRANTS - ACTIVE

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Feig 080-02030	Clinical Evaluation of Digital Mammography	NIH 1 RO1 CA60192	09/30/93 - 08/31/98	\$390,867 -- \$67,825 (-01 year)	\$243,586 -- \$32,173 (-01 year)	\$634,453 -- \$99,998 (-01 year)
Feig 080-05550 Subcontract (UNC)	Stereotactic Breast Biopsy vs Open Surgical Biopsy (RDOG V)	NIH 1 UO1 CA62476	09/30/93 - 09/29/97	\$59,583 -- \$13,557 (-01 year)	\$39,742 -- \$9,043 (-01 year)	\$99,325 -- \$22,600 (-01 year)
Goldberg, B. 080-05274	Development of Ultra- sonic Tissue Character- ization Methods CORE A	NIH (Drexel) 1PO1 CA52823	09/01/90 - 08/31/93	\$75,040 -- \$31,442 (-03 year)	\$48,772 -- \$20,751 (-03 year)	\$123,812 -- \$52,193 (-03 year)
Goldberg, B. 080-03219	Effects of Prenatal US on Postnatal Development	NIH 2RO1HD21678	04/01/86 - 07/31/94	\$952,374 -- \$152,912 (-06 year)	\$358,099 -- \$51,200 (-06 year)	\$1,310,473 -- \$204,112 (-06 year)
Goldberg, B. (Graziani, L.) 080-02548	Ultrasound and Ventilator Studies in Preterm Infants	NIH	05/01/91 - 04/30/96	\$90,624 -- \$22,144 (-03 year)	\$59,216 -- \$14,061 (-03 year)	\$149,840 -- \$36,205 (-03 year)

Kurtz, A. 080-03251	The Detection and Staging of Ovarian Cancer (RDOG IV)	NIH 1RO1 CA59648	09/30/92 - 09/29/95	\$262,682 -- \$87,516 (-02 year)	\$105,610 -- \$57,651 (-02 year)	\$368,292 -- \$145,167 (-02 year)
Needleman, L. 080-03356	Doppler Screening for Pregnancy- Induced Hypertension	NIH 5RO1HD22560	07/01/88 - 05/31/94	\$621,609 -- \$141,947 (-05 year)	\$375,364 -- \$88,895 (-05 year)	\$996,973 -- \$230,842 (-05 year)
TOTAL NIH GRANT FUNDING				\$2,452,779 -- \$517,343 (current year)	\$1,230,389 -- \$273,774 (current year)	\$3,683,168 -- \$791,117 (current year)

# Active Grants

07/01/93 - 06/30/94

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

## FOUNDATION/NON-PROFIT ORGANIZATION GRANTS - ACTIVE

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Consigny, M. 080-01077	Re-endothelialization of Arteries After Angioplasty	American Heart Association	07/01/93 - 06/30/94	\$18,182 -- \$18,182 (-01 year)	\$1,818 -- \$1,818 (-01 year)	\$20,000 -- \$20,000 (-01 year)
Flanders, A. 080-01365	Uses of MRI on Assessing Severity and Forecasting Outcomes of Spinal Cord Injury	RSNA	07/01/92 - 06/30/94	\$90,000 -- \$45,000 (-02 year)	\$0 -- \$0 (-02 year)	\$90,000 -- \$45,000 (-02 year)
Forsberg, F. 080-08113	Nonstationary Spectral Analysis of Ultrasound Doppler Signals	Whitaker Foundation	08/01/93 - 07/31/96	\$146,758 -- \$46,130 (-01 year)	\$29,010 -- \$9,226 (-01 year)	\$175,768 -- \$55,356 (-01 year)
Gardiner, G. 080-08309	SCVIR Transluminal Angioplasty & Revascularization Registry (STAR)	CRREF (Cardiovascular/ Interventional Radiology Research & Education Foundation)	01/01/92 - 12/31/94	\$671,228 -- \$222,273 (-03 year)	\$62,272 -- \$22,227 (-03 year)	\$733,500 -- \$244,500 (-03 year)

Goldberg, B. 080-08124	A Diagnostic Ultrasound Training Program	U.S. AID Agency for International Development	01/01/94 - 12/31/94	\$157,965 ----- \$157,965 (-01 year)	\$0 ----- \$0 (-01 year)	\$157,965 ----- \$157,965 (-01 year)
Goldberg, B. 080-01679	A Diagnostic Ultrasound Training Program	Soros Foundations	01/01/94 - 12/31/94	\$30,550 ----- \$30,550 (-01 year)	\$0 ----- \$0 (-01 year)	\$30,550 ----- \$30,550 (-01 year)
Goldberg, B. 080-01775	A Diagnostic Ultrasound Training Program for Ukrainian Physicians	Soros Foundations	04/03/94 - 07/02/94	\$46,200 ----- \$46,200 (-01 year)	\$0 ----- \$0 (-01 year)	\$46,200 ----- \$46,200 (-01 year)
Maidment, A. 080-01462	3-D Morphological Analysis of Breast Calcifications	RSNA	11/01/93 - 10/31/94	\$23,422 ----- \$23,422 (-01 year)	\$0 ----- \$0 (-01 year)	\$23,422 ----- \$23,422 (-01 year)
TOTAL NON-PROFIT FUNDING				\$1,184,305 -----	\$93,100 -----	\$1,277,405 -----
CURRENT YEAR NON-PROFIT FUNDING				\$589,722 (current year)	\$33,271 (current year)	\$622,993 (current year)



# Active Grants

07/01/93 - 06/30/94

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

## INDUSTRIAL GRANTS - ACTIVE

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Alexander, A. 080-01783	Evaluation of an Ultrasound Contrast Agent in an Animal Model (VX tumors-20 rabbits)	Sterling-Winthrop	04/15/94 - 04/14/95	\$19,132 -- \$19,132 (-01 year)	\$6,868 -- \$6,868 (-01 year)	\$26,000 -- \$26,000 (-01 year)
Bonn, J. 080-01787	A Randomized Trial Comparing Percutaneous Transluminal Angioplasty to the Palmaz Stent in de Novo Lesions of the Superficial Femoral Artery	Johnson & Johnson	04/15/94 - 06/30/96	\$227,810 (14.5 months) -- \$188,532 (-01 year)	\$45,562 (14.5 months) -- \$37,706 (-01 year)	\$273,372 (14.5 months) -- \$226,238 (-01 year)
Consigny, P.M. 080-01318	Effect of Hydrogel Coating on Endothelial Denudation by Angioplasty Balloons	Boston Scientific	09/01/93-08/31/94	\$4,370 -- \$4,370 (-01 year)	\$1,093 -- \$1,093 (-01 year)	\$5,463 -- \$5,463 (-01 year)
Consigny, P.M. 080-01070	Effect of Tyrosine Kinase Inhibition on Angioplast-Induced Smooth Muscle Cell Proliferations in Rabbits	Rhone-Poulenc Rorer #1	04/19/93 - 04/18/94	\$15,532 -- \$15,532 (-01 year)	\$3,883 -- \$3,883 (-01 year)	\$19,415 -- \$19,415 (-01 year)

Consigny, M. 080-01797	Delivery of Heparin to the Rabbit Iliac Artery Using Hydrogel-coated Angioplasty Balloons	Boston Scientific III	04/01/94-03/31/95	\$22,160 -- \$22,160 (-01 year)	\$5,540 -- \$5,540 (-01 year)	\$27,700 -- \$27,700 (-01 year)
Feld, M. 080-01015	Color Doppler US Needle and catheter Enhancement for Percutaneous Biopsies	EchoCath	12/01/92 - 11/30/93	\$5,000 -- \$5,000 (-01 year)	\$0 -- \$0 (-01 year)	\$5,000 -- \$5,000 (-01 year)
Forsberg, F. 080-01313	Assessment of a New Class of Ultrasound Contrast Agents (Animals)	Sonus Pharmaceuticals	09/01/93 - 08/31/94	\$40,160 -- \$40,160 (-01 year)	\$10,040 -- \$10,040 (-01 year)	\$50,200 -- \$50,200 (-01 year)
Forsberg, F. 080-01782	Evaluation of an Ultra- sound Contrast Agent in an Animal Model (6 Rabbits)	Sterling-Winthrop	04/15/94 - 04/14/95	\$10,302 -- \$10,302 (-01 year)	\$3,698 -- \$3,698 (-01 year)	\$14,000 -- \$14,000 (-01 year)
Gardner, G. 080-08337	A Double Blind, Parallel Group, Randomized Trial to Compare the Efficacy & Safety of Enoxaparin 40 MG SC TID and Unfrac- tionated Heparin 5000 IU SC TID During 6-12 Days for Prevention of Deep Venous Thrombosis(DVT) in 850 Patients after Planned Elective Curative Cancer Surgery	Rhone-Poulenc Rorer	04/14/94 - 04/13/95	\$48,640 -- \$48,640 (-01 year)	\$12,160 -- \$12,160 (-01 year)	\$60,800 -- \$60,800 (-01 year)

Goldberg, B. 080-01021	Improved Breast Cancer Screening Using HDI Ultrasound	Advanced Technologies Laboratories	11/24/92 - 12/31/93	\$40,000 -- -- -- -- \$40,000 (-01 year)	\$10,000 -- -- -- -- \$10,000 (-01 year)	\$50,000 -- -- -- -- \$50,000 (-01 year)
Goldberg, B. 080-01377	Study of the Safety, Patient Acceptance and Echogenicity of Levovist	Berlex Labs	09/01/92 - 02/28/94	\$60,053 -- -- -- -- \$60,053 (-01 year)	\$12,278 -- -- -- -- \$12,278 (-01 year)	\$72,331 -- -- -- -- \$72,331 (-01 year)
Goldberg, B. 080-01499	Phase I Clinical Evalua- tion of the Safety and Efficacy of SonoRx in Normal Volunteers	Squibb Diagnostics	07/14/93 - 07/13/94	\$16,632 -- -- -- -- \$16,632 (-01 year)	\$4,158 -- -- -- -- \$4,158 (-01 year)	\$20,790 -- -- -- -- \$20,790 (-01 year)
Goldberg, B. 080-01792	Evaluation of FS069: A Novel Ultrasound Contrast Agent	Molecular Biosystems, Inc.	05/01/94 - 04/30/95	\$58,036 -- -- -- -- \$58,036 (-01 year)	\$20,835 -- -- -- -- \$20,835 (-01 year)	\$78,871 -- -- -- -- \$78,871 (-01 year)
Lev-Toaff, A. 080-01568	A Phase I Clinical Evalua- tion of the Safety & Effi- cacy of SonoRx vs Water in Normal Volunteers	Squibb Diagnostics	11/15/93 - 11/14/94	\$21,763 -- -- -- -- \$21,763 (-01 year)	\$5,440 -- -- -- -- \$5,440 (-01 year)	\$27,203 -- -- -- -- \$27,203 (-01 year)
Lev-Toaff, A. 080-01360	A Phase II Clinical Evalua- tion of the Safety and Efficacy of SonoRx in Patients Highly Suspected of Having Abdominal Pathology	Squibb Diagnostics	09/13/93-01/31/94	\$26,060 -- -- -- -- \$26,060 (-01 year)	\$6,515 -- -- -- -- \$6,515 (-01 year)	\$32,575 -- -- -- -- \$32,575 (-01 year)

Lev-Toaff, A. 080-01788	A Phase III Clinical Evaluation of the Safety and Efficacy of SonoRx in Patients Highly Suspected of Having Abdominal Pathology	Squibb Diagnostics	05/01/94 - 07/30/94	\$16,280 -- \$16,280 (-01 year)	\$4,070 -- \$4,070 (-01 year)	\$20,350 -- \$20,350 (-01 year)
Levin, D. 080-01008	Support for Imaging Research	DuPont	05/01/91 - 04/30/96	\$560,000 -- \$112,000 (-03 year)	\$140,000 -- \$28,000 (-03 year)	\$700,000 -- \$140,000 (-03 year)
Mitchell, D. 080-01195	Contrast Enhanced MRI of the Liver with Intra- venous WIN 59010-2 Injection	Sterling-Winthrop	08/01/93 - 07/31/94	\$74,819 -- \$74,819 (-01 year)	\$18,705 -- \$18,705 (-01 year)	\$93,524 -- \$93,524 (-01 year)
Mitchell, D. 080-08601	A Multicenter, Double- Blind, Multidose, Within Patient Study to Evaluate the Safety, Tolerance, and Efficacy of MP-1177/10 Injection in MRI of the Liver	Mallinckrodt Medical, Inc.	06/03/94 - 11/01/94	\$34,400 -- \$34,400 (-01 year)	\$8,600 -- \$8,600 (-01 year)	\$43,000 -- \$43,000 (-01 year)
Nazarian, L. 080-01093	A Prospective Compar- ative Trial to Evaluate the Renal Effects of Ionic and Nonionic Contrast Media in Patients Scheduled for CECT	Squibb Diagnostics	05/01/93 - 06/30/94	\$6,504 -- \$6,504 (-01 year)	\$1,626 -- \$1,626 (-01 year)	\$8,130 -- \$8,130 (-01 year)

Needleman, L. 080-01799	CT Imaging of the Mesenteric Lymph Nodes and Liver by an Oral Route	Sterling-Winthrop	06/01/94 - 12/31/94	\$34,820 -- -- -- \$34,820 (-01 year)	\$12,500 -- -- -- \$12,500 (-01 year)	\$47,320 -- -- -- \$47,320 (-01 year)
Needleman, L. 080-01329	Open Label Study to Assess the Safety & Efficacy of Albunex in Patients with Suspected Upper Venous Thrombosis	Mallinckrodt	04/01/91 - 12/31/93	\$15,120 -- -- -- \$15,120 (-01 year)	\$2,530 -- -- -- \$2,530 (-01 year)	\$17,650 -- -- -- \$17,650 (-01 year)
Needleman, L. (A. Besarab) 080-01617	The Effects of Normal Versus Anemic Hematocrit on Outcomes of Cardiac Disease in Dialysis Patients: Ancillary Study "The Effect of Increasing Hematocrit on Intra- vascular Access Flow and Pressure	Amgen, Inc.	12/15/93 - 04/15/95	\$14,420 -- -- -- \$10,815 (-01 year)	\$3,605 -- -- -- \$2,704 (-01 year)	\$18,025 -- -- -- \$13,519 (-01 year)
Needleman, L. 080-01608	Evaluation of the Safety, Tolerance, Pharmacokinetics & Ultrasound Contrast Enhancement of QW3600 Injection When Administered Intra- venously to Adult Male Volunteers	Sonus Pharmaceuticals	01/13/94 - 01/12/95	\$10,958 -- -- -- \$10,958 (-01 year)	\$2,740 -- -- -- \$2,740 (-01 year)	\$13,698 -- -- -- \$13,698 (-01 year)

Needleman, L. 080-08603	A Multicenter Safety and Efficacy Evaluation of EchoGen Injection as a Contrast Enhancing Agent for Use in Adult Patients Undergoing Diagnostic Sonography	Sonus Pharmaceuticals	06/20/94 - 11/01/94	\$27,448 -- \$27,448 (-01 year)	\$6,862 -- \$6,862 (-01 year)	\$34,310 -- \$34,310 (-01 year)
Outwater, E. 080-01341	A Phase III Safety and Efficacy Investigation of LumenHance™ in Patients Undergoing MRI of the Abdomen and Pelvis Protocol #41,353-2	Squibb Diagnostics	08/01/93-06/30/94	\$27,840 -- \$27,840 (-01 year)	\$6,960 -- \$6,960 (-01 year)	\$34,800 -- \$34,800 (-01 year)
Outwater, E. 080-01307	A Phase II Safety and Efficacy Investigation of BMS 180549 as a Magnetic Resonance Enhancement Agent for Imaging Well-Perfused Abdominal Organs	Squibb Diagnostics	08/01/93-06/30/94	\$14,790 -- \$14,790 (-01 year)	\$3,698 -- \$3,698 (-01 year)	\$18,488 -- \$18,488 (-01 year)
Piccoli, C. 080-01007	The Clinical Investigation of Prohance as a Contrast Agent in MRI of Breast Pathology	Squibb	11/01/92 - 08/31/93	\$51,840 -- \$51,840 (-01 year)	\$12,960 -- \$12,960 (-01 year)	\$64,800 -- \$64,800 (-01 year)



Piccoli, C. 080-08602	A Multicenter, Double-Blind, Multidose, Within-Patient Study to Evaluate The Safety, Tolerance and Efficacy of MP-1177/10 Injection in MRI of the Breast	Mallinckrodt Medical, Inc.	06/03/94 - 11/01/94	\$34,400 -- \$34,400 (-01 year)	\$8,600 -- \$8,600 (-01 year)	\$43,000 -- \$43,000 (-01 year)
Rao, B.K. 080-01420	Evaluation of Nonparticulate Radio-opaque Contrast Material in Normal Rabbits	Sterling Winthrop	08/12/92 - 12/31/94	\$45,076 -- \$45,076 (-01 year)	\$16,182 -- \$16,182 (-01 year)	\$61,258 -- \$61,258 (-01 year)
Wechsler, R. 080-01022	Evaluation of the Safety & Efficacy of Imagent LN for Detecting Axillary Lymph Node Metastases from Breast Cancer	Alliance Pharmaceutical Corp.	12/03/92 - 12/02/93	\$34,534 -- \$34,534 (-01 year)	\$8,633 -- \$8,633 (-01 year)	\$43,167 -- \$43,167 (-01 year)
			TOTAL INDUSTRIAL FUNDING	\$1,618,899	\$406,341	\$2,025,240
			TOTAL CURRENT YEAR INDUSTRIAL FUNDING	\$1,128,016 (current year)	\$285,584 (current year)	\$1,413,600 (current year)

TOTAL FUNDING	\$5,255,983 -- \$5,255,983 (current year)	\$1,729,830 -- \$1,729,830 (current year)	\$6,985,813 -- \$6,985,813 (current year)
TOTAL CURRENT YEAR FUNDING	\$2,235,081 (current year)	\$592,629 (current year)	\$2,827,710 (current year)

Table 2

## Pending Grants

07/01/93 - 06/30/94

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

Revised 6/30/94

## NIH GRANTS - PENDING

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Goldberg, B. (Reid, J.)	Development of Ultrasound Tissue Characterization Methods-Clinical Core A	NIH	07/01/94 - 06/30/99	\$586,916 -- \$100,417 (-01 year)	\$393,234 -- \$67,279 (-01 year)	\$980,150 -- \$167,696 (-01 year)
Goldberg, B. (Wheatley, M.)	Development of a New Class of Ultrasound Contrast Agents	NIH	07/01/94 - 06/30/99	\$70,504 -- \$16,358 (-01 year)	\$47,238 -- \$10,960 (-01 year)	\$117,742 -- \$27,318 (-01 year)
Goldberg, B.	Breast Cancer Detection Using Ultrasound Contrast	NIH 1 RO1 CA60854	12/01/94 - 11/30/99	\$982,184 -- \$194,265 (-01 year)	\$641,826 -- \$116,600 (-01 year)	\$1,624,010 -- \$310,865 (-01 year)
Goldberg, B. Autometric Inc.	3-D Ultrasound Color Flow Imaging for Tumor Detection and Differentiation	NIH (SBIR) Subcontract	11/01/94 - 10/31/95	\$19,760 -- \$19,760 (-01 year)	\$13,240 -- \$13,240 (-01 year)	\$33,000 -- \$33,000 (-01 year)
Goldberg, B.	Acoustic Emission Monitoring for Osteoporosis Detection	NIH RFA #AR-94-005	04/01/95 - 03/31/99	\$154,557 -- \$658,498 (-01 year)	\$103,553 -- \$363,500 (-01 year)	\$258,110 -- \$1,021,998 (-01 year)

Goldberg, B.	Diagnostic Ultrasound Training Program (For Dr. Andrei Yefimenko)	NCI Courtesy Associates	07/06/94 - 09/15/94	\$4,241 -- -- -- \$4,241 (-01 year)	\$0 -- -- -- \$0 (-01 year)	\$4,241 -- -- -- \$4,241 (-01 year)
Liu, Ji-Bin	Tumor Evaluation by 2D and 3D Endoluminal Ultrasound	NIH 1K08CA63494- 01A1	04/01/94 - 03/31/98	\$252,344 -- -- -- \$60,848 (-01 year)	\$19,123 -- -- -- \$4,484 (-01 year)	\$271,467 -- -- -- \$65,332 (-01 year)
Maidment, A.	Digital Angiography of the Breast	NIH	12/01/94 - 11/30/99	\$348,588 -- -- -- \$92,109 (-01 year)	\$186,764 -- -- -- \$31,873 (-01 year)	\$535,352 -- -- -- \$123,982 (-01 year)
Thakur, M.	Simplified Labeling of Anti- bodies with Tc-99m and Re-186	NIH	04/01/95 - 03/31/98	\$179,481 -- -- -- \$511,838 (-01 year)	\$97,373 -- -- -- \$320,052 (-01 year)	\$276,854 -- -- -- \$831,890 (-01 year)
TOTAL NIH GRANT FUNDING				\$2,598,575 -- -- --	\$1,502,351 -- -- --	\$4,100,926 -- -- --
TOTAL FIRST YEAR NIH FUNDING				\$1,658,334 (-01 year)	\$927,988 (-01 year)	\$2,586,322 (-01 year)

Pending Grants

07/01/93 - 06/30/94

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

FOUNDATION/NON-PROFIT ORGANIZATION GRANTS - PENDING

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Goldberg, B.	A Diagnostic Ultrasound Training Program	U.S. AID Agency for International Development	10/01/94 - 09/30/95	\$177,272	\$0	\$177,272
				---	---	---
				\$177,272 (-01 year)	\$0 (-01 year)	\$177,272 (-01 year)
Halpern, E.	Application of Ultrasound Spiral CT and MR Angiography to Screen for Renal Artery Stenosis	National Kidney Foundation of Delaware Valley	07/01/94 - 06/30/95	\$12,500	\$0	\$12,500
				---	---	---
				\$12,500 (-01 year)	\$0 (-01 year)	\$12,500 (-01 year)
TOTAL FOUNDATION/ NON-PROFIT FUNDING				\$189,772	\$0	\$189,772
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TOTAL FIRST YEAR FOUNDATION FUNDING				\$189,772 (-01 year)	\$0 (-01 year)	\$189,772 (-01 year)

# Pending Grants

07/01/93 - 06/30/94

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

## INDUSTRIAL GRANTS - PENDING

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Alexander, A.	Efficacy of Ultrasound Angiography in Evaluating the Premature Neonatal Brain	Diasonics Ultrasound, Inc.	08/01/94 - 07/31/95	\$6,500 -- \$6,500 (-01 year)	\$0 -- \$0 (-01 year)	\$6,500 -- \$6,500 (-01 year)
Consigny, P.M.	Effect of Tyrosine Kinase Inhibitors on Post-Angioplasty Intimal Hyperplasia	Rhone Poulenc Rorer Pharmaceutical Company	09/01/94 - 08/31/95	\$86,240 -- \$86,240 (-01 year)	\$41,826 -- \$41,826 (-01 year)	\$128,066 -- \$128,066 (-01 year)
Forsberg, F.	In Vitro Characterization of the Acoustic Properties of EchoGen	Sonus Pharmaceuticals	10/01/94 - 09/30/95	\$11,773 -- \$11,773 (-01 year)	\$4,227 -- \$4,227 (-01 year)	\$16,000 -- \$16,000 (-01 year)
Lev-Toaff, Anna	A Phase III Clinical Evaluation of the Safety and Efficacy of SonoRx vs. Water in Patients Highly Suspected of Having Abdominal Pathology	Squibb Diagnostics	09/01/94 - 08/31/95	\$20,480 -- \$20,480 (-01 year)	\$5,120 -- \$5,120 (-01 year)	\$25,600 -- \$25,600 (-01 year)

Mitchell, Donald	A Phase III Open Label Study of GADOLITE Oral Suspension, a Gastrointestinal (GI) Contrast Agent for MRI	Pharmacyclics	07/18/94 - 07/17/95	\$53,180 -- \$53,180 (-01 year)	\$13,300 -- \$13,300 (-01 year)	\$66,480 -- \$66,480 (-01 year)
Nazarian, Levon	Efficacy of Ultrasound Angiography in Differentiating Renal Mass Lesions	Diasonics Ultrasound, Inc.	08/01/94 - 07/31/95	\$6,999 -- \$6,999 (-01 year)	\$0 -- \$0 (-01 year)	\$6,999 -- \$6,999 (-01 year)
Needleman, Larry	Efficacy of Ultrasound Angiography in Evaluating Abnormalities of Carotid and Peripheral Vascular System	Diasonics Ultrasound, Inc.	08/01/94 - 07/31/95	\$6,500 -- \$6,500 (-01 year)	\$0 -- \$0 (-01 year)	\$6,500 -- \$6,500 (-01 year)
Park, Chan H.	An Open-Label, Multicenter Trial to Evaluate the Diagnostic Accuracy of Technetium Tc99m-Sestamibi Scintigraphic Images in Identifying Malignant Breast Lesions in Subjects with Breast Abnormalities Detected by Palpation	The DuPont Merck Pharmaceutical Company	8/1/94 - 7/31/95	\$24,000 -- \$24,000 (-01 year)	\$6,000 -- \$6,000 (-01 year)	\$30,000 -- \$30,000 (-01 year)



Park, Chan H.	An Open-Label, Multicenter Trial to Evaluate the Diagnostic Accuracy of Technetium Tc99m-Sestamibi Scintigraphic Images in Identifying Malignant Breast Lesions in Subjects with Mammographically Detected Non-Palpable Breast Abnormalities Breast Abnormalities	The DuPont Merck Pharmaceutical Company	8/1/94 - 7/31/95	\$24,000 ----- \$24,000 (-01 year)	\$6,000 ----- \$6,000 (-01 year)	\$30,000 ----- \$30,000 (-01 year)
TOTAL INDUSTRIAL FUNDING				\$239,672	\$76,473	\$290,545
TOTAL FIRST YEAR NIH FUNDING				----- \$239,672 (-01 year)	----- \$76,473 (-01 year)	----- \$290,545 (-01 year)
TOTAL FUNDING PENDING				\$3,028,019	\$1,578,824	\$4,581,243
TOTAL FIRST YEAR FUNDING PENDING				----- \$2,087,778	----- \$1,004,461	----- \$3,066,639



PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Feig	Clinical Evaluation of	NIH	\$50,869	\$24,130	\$74,999	\$8,665	\$3,258	\$11,923
080-02030	Digital Mammography	1 RO1						
09/30/93-08/31/94		CA60192						
Feig	Stereotactic Breast Biopsy	NIH	\$13,533	\$9,067	\$22,600	\$0	\$0	\$0
080-05550	vs Open Surgical Biopsy	1 UO1						
09/30/93-09/29/94	(Subcontract - UNC)	CA62476						
Feld, R.	Color Doppler US Needle	EchoCath	\$2,083	\$0	\$2,083	\$2,083	\$0	\$2,083
080-01015	and Catheter Enhancement for Percutaneous Biopsies							
Flanders, A.	Uses of MRI on Assessing	RSNA	\$45,000	\$0	\$45,000	\$45,000	\$0	\$45,000
080-01365	Severity and Forecasting							
07/01/92-06/30/94	Outcomes of Spinal Cord Injury							
Forsberg, F.	Nonstationary Spectral	Whitaker	\$42,286	\$8,457	\$50,743	\$36,106	\$8,457	\$44,563
080-08113	Analysis of Ultrasound	Foundation						
08/01/93-07/31/94	Doppler Signals							
Forsberg, F.	Assessment of a New Class	Sonus	\$35,446	\$8,861	\$44,307	\$35,446	\$8,861	\$44,307
080-01313	of Ultrasound Contrast							
09/01/93-08/31/94	Agents							
Forsberg, F.	Evaluation of an Ultra-	Sterling	\$2,146	\$770	\$2,916	\$0	\$0	\$0
080-01782	sound Contrast Agent in	Winthrop						
04/15/94-04/14/95	an Animal Model							
Gardiner, G.	SCVIR Transluminal Angio-	ORPEF	\$224,478	\$20,022	\$244,500	\$161,834	\$14,237	\$176,071
080-08309	plasty & Revascularization							
01/01/92-12/31/94	Registry (STAR)							

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Gardiner, G.	A Double Blind, Parallel	Rhone	\$10,133	\$2,533	\$12,666	\$0	\$0	\$0
080-08337	Group, Randomized Trial to	Poulenc						
04/14/94-04/13/95	Compare the Efficacy & Safe-	Rorer						
	ty of Enoxaparin 40 mg SC							
	TID and Unfractionated Hep-							
	arin 5000 IU SC TID During							
	6-12 Days for Prevention							
	Deep Venous Thrombosis in							
	850 Patients after Planned							
	Elective Curative Surgery							
Goldberg, B.	Development of Ultra-	NIH	\$5,320	\$3,378	\$8,698	\$31,922	\$20,271	\$52,193
080-05274	sonic Tissue Character-	1PO						
09/01/92-08/31/93	ization Methods CORE A	CA52823						
Goldberg, B.	Effects of Prenatal US on	NIH	\$22,802	\$11,239	\$34,041	\$16,838	\$10,942	\$27,780
080-03219	Postnatal Development	2 RO1						\$0
08/01/92-07/31/94		HD21678						\$0
Goldberg, B.	Ultrasound and Ventilator	NIH	\$9,600	\$2,544	\$12,144	\$9,600	\$2,544	\$12,144
(Graziani, L.)	Studies in Preterm Infants							
080-02548								
Goldberg, B.	A Diagnostic Ultrasound	U.S. AID	\$78,982	\$0	\$78,982	\$69,816	\$0	\$69,816
080-08124	Training Program							
01/01/94-12/31/94								
Goldberg, B.	A Diagnostic Ultrasound	Soros	\$15,475	\$0	\$15,475	\$14,076	\$0	\$14,076
080-01679	Training Program	Foundations						
01/01/94-12/31/94								

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Goldberg, B.	A Diagnostic Ultrasound Training Program (Ukraine)	Soros Foundations	\$46,200	\$0	\$46,200	\$29,954	\$0	\$29,954
080-01775								
04/04/94-06/24/94								
Goldberg, B.	Improved Breast Cancer Screening Using HDI Ultra-sound	Advanced Technologies Laboratories	\$1,600	\$400	\$2,000	\$33,953	\$8,488	\$42,441
080-01021								
11/24/92-12/31/94								
Goldberg, B.	Study of the Safety, Patient Acceptance and Echogenicity of Levovist	Berlex Laboratories	\$9,209	\$2,302	\$11,511	\$9,209	\$2,302	\$11,511
080-01377								
09/01/92-02/28/94								
Goldberg, B.	Phase I Clinical Evaluation of the Safety and Efficacy of SonoRx in Normal Volunteers	Squibb Diagnostics	\$16,880	\$4,220	\$21,100	\$12,328	\$3,082	\$15,410
080-01499								
07/14/93-07/13/94								
Goldberg, B.	Evaluation of FS069: A Novel Ultrasound Contrast Agent	Molecular Biosystems	\$9,673	\$3,473	\$13,146	\$0	\$0	\$0
080-01792								
05/01/94-04/30/95								
Kurtz, A.	The Detection and Staging of Ovarian Cancer (RDOG IV)	NIH 1 RO1 CA59648	\$65,637	\$43,238	\$108,875	\$59,834	\$39,191	\$99,025
080-03251								
09/30/93-09/29/94								
Lev-Toaff, A.	A Phase II Clinical Evaluation of the Safety and Efficacy of SonoRx in Patients Highly Suspected of Having Abdominal Pathology	Squibb Diagnostics	\$25,961	\$6,490	\$32,451	\$29,687	\$7,422	\$37,109
080-01360								
09/16/93-12/31/94								

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Lev-Toaff, A. 080-01568 11/15/93-11/14/94	A Phase I Clinical Evaluation of the Safety & Efficacy of SonoRx vs Water in Normal Volunteers	Squibb Diagnostics	\$13,602	\$3,400	\$17,002	\$16,536	\$4,134	\$20,670
Lev-Toaff, A. 080-01788 05/01/94-07/30/94	A Phase III Clinical Evaluation of the Safety and Efficacy of SonoRx in Patients Highly Suspected of Having Abdominal Pathology	Squibb Diagnostics	\$11,953	\$2,988	\$14,941	\$1,094	\$273	\$1,367
Levin, D. 080-01008 05/01/92-04/30/94	Support for Imaging Research	DuPont	\$93,333	\$23,333	\$116,666	\$119,224	\$29,806	\$149,030
Maidment, A. 080-01462 11/01/93-10/31/94	3-D Morphological Analysis of Breast Calcifications	RSNA	\$13,333	\$0	\$13,333	\$8,003	\$0	\$8,003
Mitchell, D. 080-01195 08/01/93-07/31/94	Contrast Enhanced MRI of the Liver with Intravenous WIN 59010-2 Injection	Sterling Winthrop	\$54,282	\$13,570	\$67,852	\$58,655	\$14,664	\$73,319
Mitchell, D. 080-08601 06/03/94-11/01/94	A Multicenter, Double-Blind, Multidose, Within Patient Study to Evaluate the Safety, Tolerance and Efficacy of MP-1177/10 Injection in MRI of the Liver	Mallinckrodt Medical	\$27,520	\$6,880	\$34,400	\$0	\$0	\$0



PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
<b>Total grant period</b>								
Nazarian, L.	A Prospective Comparative	Squibb	\$5,575	\$1,394	\$6,969	\$7,416	\$1,854	\$9,270
080-01093	Trial to Evaluate the Renal	Diagnostics						
05/01/93-06/30/94	Effects of Ionic and Nonionic							
	Contrast Media in Patients							
	Scheduled for CECT							
Needleman, L.	Doppler Screening for Preg-	NIH	\$7,351	\$4,574	\$11,925	\$7,351	\$4,574	\$11,925
080-03356	nancy-Induced Hypertension	1 RO1						
06/01/92-05/31/94		HD22560						
Needleman, L.	CT Imaging of the Mesen-	Sterling	\$29,846	\$10,715	\$40,561	\$0	\$0	\$0
080-01799	teric Lymph Nodes and	Winthrop						
06/01/94-12/31/94	Liver by an Oral Route							
Needleman, L.	Open Label Study to Assess	Mallinckrodt	\$4,124	\$690	\$4,814	\$0	\$0	\$0
080-01329	the Safety and Efficacy of							
04/01/91-12/31/93	Albunex in Patients with							
	Suspected Upper Venous							
	Thrombosis							
Needleman, L.	The Effects of Normal Ver-	Amgen	\$1,482	\$370	\$1,852	\$889	\$222	\$1,111
(A. Besarab)	sus Anemic Hematocrit on							
080-01617	Outcomes of Cardiac							
	Disease in Dialysis Patients							
Needleman, L.	Evaluation of the Safety, Tol-	Sonus	\$5,022	\$1,255	\$6,277	\$9,466	\$1,370	\$10,836
080-01608	erance, Pharmacokinetics &	Pharma-						
01/13/94-01/12/95	US Contrast Enhancement of	ceuticals						
	QW3600 Injection When Ad-							
	ministered Intravenously to							
	Adult Male Volunteers							

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Needleman, L.	A Multicenter Safety and	Sonus	\$27,448	\$6,862	\$34,310	\$0	\$0	\$0
080-08603	Efficacy Evaluation of Echo-	Pharma-						
06/20/94-11/01/94	Gen Injection as a Contrast	ceuticals						
	Enhancing Agent for Use in							
	Adult Patients Undergoing							
	Diagnostic Sonography							
Outwater, E.	A Phase III Safety and	Squibb	\$23,200	\$5,800	\$29,000	\$20,658	\$5,164	\$25,822
080-01341	Efficacy Investigation of	Diagnostics						
08/01/93-06/30/94	LumenHance in Patients							
	Undergoing MRI of the Ab-							
	domen and Pelvis							
Outwater, E.	A Phase II Safety and	Squibb	\$14,790	\$3,698	\$18,488	\$14,792	\$3,698	\$18,490
080-01307	Efficacy Investigation of	Diagnostics						
08/01/93-06/30/94	BMS 180549 as a Magnetic							
	Resonance Enhancement							
	Agent for Imaging Well-							
	Perfused Abdominal Organs							
Piccoli, C.	A Multicenter, Double-Blind	Mallinckrodt	\$6,880	\$1,720	\$8,600	\$0	\$0	\$0
080-08602	Multidose, Within-Patient							
06/03/94-11/01/94	Study to Evaluate the							
	Safety, Tolerance and							
	Efficacy of MP-1177/10							
	Injection in MRI of the							
	Breast							

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	TOTAL DIRECT COSTS FY'93	TOTAL INDIRECT COSTS FY'93	TOTAL INCOME FY'93	ACTUAL DIRECT EXPENSES FY'93	ACTUAL INDIRECT EXPENSES FY'93	TOTAL EXPENSES FY'93
Grant Number								
Total grant period								
Piccoli, C.	The Clinical Investigation of	Squibb						
080-01007	Prohance as a Contrast	Diagnostics						
11/01/92-08/31/93	Agent in MRI of Breast							
	Pathology							
Rao, B.	Evaluation of Nonparticulate	Sterling	\$21,566	\$7,742	\$29,308	\$20,465	\$7,347	\$27,812
080-01420	Radioopaque Contrast	Winthrop						
08/12/92-12/31/94	Material in Normal Rabbits							
Wechsler, R.	Evaluation of the Safety &	Alliance	\$34,364	\$8,591	\$42,955	\$34,364	\$8,591	\$42,955
080-01022	Efficacy of Imagent LN for	Pharma-						
12/03/92-12/02/93	Detecting Axillary Lymph	ceutical						
	Node Metastases from	Corp.						
	Breast Cancer							
TOTAL ACTIVITY			\$1,221,231	\$271,675	\$1,492,906	\$957,330	\$215,705	\$1,173,035