

1990

Department of Radiology-Annual Executive Summary Report-July 1, 1989 to June 30, 1990

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Thomas Jefferson University

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Thomas
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DEPARTMENT OF RADIOLOGY

ANNUAL REPORT

JULY 1, 1989 - JUNE 30, 1990

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

DEPARTMENT DIVISIONS AND DIRECTORS

General Diagnostic Radiology	Robert M. Steiner, M.D.
Mammography/Ambulatory Radiology	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	Matthew D. Rifkin, M.D.
Pediatric Radiology	George W. Gross, M.D.
Physiological Research	P. Macke Consigny, Ph.D.
Radiological Physics	John M. Boone, Ph.D. Peter N. Burns, Ph.D. Simon Vinitzki, Ph.D. Talin A. Tasciyan, Ph.D.

DEPARTMENTAL COMMITTEES AND CHAIRMEN

Advisory Committee	Alfred B. Kurtz, M.D.
Education Committee	Vijay M. Rao, M.D.
Research Committee	Matthew D. Rifkin, 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

Professors

David C. Levin, M.D.
Stephen A. Feig, M.D.
Barry B. Goldberg, M.D.
Carlos Gonzalez, M.D.
Alfred B. Kurtz, M.D.
Esmond M. Mapp, M.D.
Vijay M. Rao, M.D.
Matthew Rifkin, M.D.
Robert M. Steiner, M.D.
Richard J. Wechsler, M.D.

Research Professor

Gary S. Shaber, M.D.

Clinical Professor

Mark M. Mishkin, 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.

Associate Professors

Peter N. Burns, Ph.D.
Geoffrey A. Gardiner, Jr., M.D.
George W. Gross, M.D.
David Karasick, M.D.
Stephen Karasick, M.D.
Donald G. Mitchell, M.D.
Laurence Needleman, M.D.

Research Associate Professors

P. Macke Consigny, Ph.D.
Simon Vinitzki, Ph.D.

Assistant Professors

Lorna Blum, M.D.
Joseph Bonn, M.D.
John M. Boone, Ph.D.
D. Lawrence Burk, Jr., M.D.
Stephen M. Cohen, M.D.
Emily Fox Conant, M.D.
Rick I. Feld, M.D.
Adam E. Flanders, M.D.
Pamela L. Hilpert, M.D., Ph.D.
Barbara L. McComb, M.D.
Catherine W. Piccoli, M.D.
Marcelle J. Shapiro, M.D.
Paul W. Spirn, M.D.
Kevin L. Sullivan, M.D.
Talin A. Tasciyan, Ph.D.

Clinical Assistant Professors

Archibald A. Alexander, M.D.
Sharon R. Segal, D.O.
Terri Tuckman, M.D.

Instructors

Huynh T. Doan, M.D.
David P. Friedman, M.D.
Cindy Isaacson, M.D.
Elaine Wolk, 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., Associate Professor of Surgery [primary]
Associate Professor of Radiology [secondary]
- Ronald J. Jensh, Ph.D., Professor of Anatomy [primary]
Professor of Radiology [secondary]
- Donald Myers, M.D., Clinical 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 Assistant Professor of Medicine [primary]
Clinical Assistant Professor of Radiology [secondary]
- Stanton N. Smullens, M.D., Associate 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]
- Jerome J. Vernick, M.D., Clinical Professor of Surgery [primary]
Clinical Associate Professor of Radiology [secondary]
- Paul Walinsky, M.D., Professor of Medicine [primary]
Professor of Radiology [secondary]
- Ronald J. Wapner, M.D., Associate Professor of Obstetrics and Gynecology [primary]
Associate Professor of Radiology [secondary]

ADJUNCT FACULTY

Adjunct Professors

- Dov Jaron, Ph.D. (Drexel University)
Vernon L. Newhouse, Ph.D. (Drexel University)
John Mitchell Reid, Ph.D. (Drexel University)
Joseph L. Rose, Ph.D. (Drexel University)
Henrietta Rosenberg, M.D. (Children's Hospital of Philadelphia)
Melvin Tecotzky, Ph.D. (Agfa-Gevaert)

Adjunct Associate Professor

- John M. Krall, Ph.D. (American College of Radiology)

Adjunct Assistant Professors

- Paul A. Dubbins, M.S.S.B., F.R.C.R. (Plymouth, England)
Peder C. Pedersen, Ph.D. (Drexel University)
Kawan Soetanto, D.Sc., M.D. (Drexel University)
Harry Zegel, M.D. (St. Agnes Hospital)

Adjunct Clinical Assistant Professor

- S. Bruce Greenberg, M.D. (St. Christopher's Hospital for Children)

RADIOLOGY RESIDENTS

1990-1991

Stephen F. Domiano, M.D., Chief Resident
Andrew S. Gallant, M.D., Chief Resident

FIRST 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.

SECOND YEAR RESIDENTS

Daniel M. Golding, M.D.
Eric Huettl, M.D.
Rajesh I. Patel, M.D.
Robert J. Rapoport, M.D.
Evan S. Siegelman, M.D.

THIRD YEAR RESIDENTS

Stephen F. Domiano, M.D.
Andrew S. Gallant, M.D.
Kenneth R. Kaplan, M.D.
Jonathan M. Shapiro, M.D.

FOURTH YEAR RESIDENTS

Mark O. Cosentino, M.D.
Vikram S. Dravid, M.D.
Valerie T. Greco-Hunt, M.D.
Deborah L. Rubin, M.D.

RADIOLOGY FELLOWS

CARDIOVASCULAR/ INTERVENTIONAL

John M. Dawsey, M.D.
John L. Howard, M.D.
Michael C. Soulen, M.D.
Jeffrey R. Weissmann, M.D.

NEURORADIOLOGY/ENT

Van Thong Ho, M.D.
Jack I. Lane, M.D.
Michael B. Miller, M.D.
Andrew H. Shaer, M.D.
Barry M. Tom, M.D.

ULTRASOUND/CT/MRI

Frederick P. Ayers, M.D.
Christopher J. Connors, M.D.
Gia DeAngelis, M.D.
Flavius F. Guglielmo, M.D.
Thomas G. Helinek, M.D.
Scott R. Kaneff, M.D.
Julio J. Mata, M.D.
Raymond M. Montecalvo, M.D.
Jason Sagerman, M.D.
Gary S. Sudakoff, M.D.
Ronald H. Wachsberg, M.D.

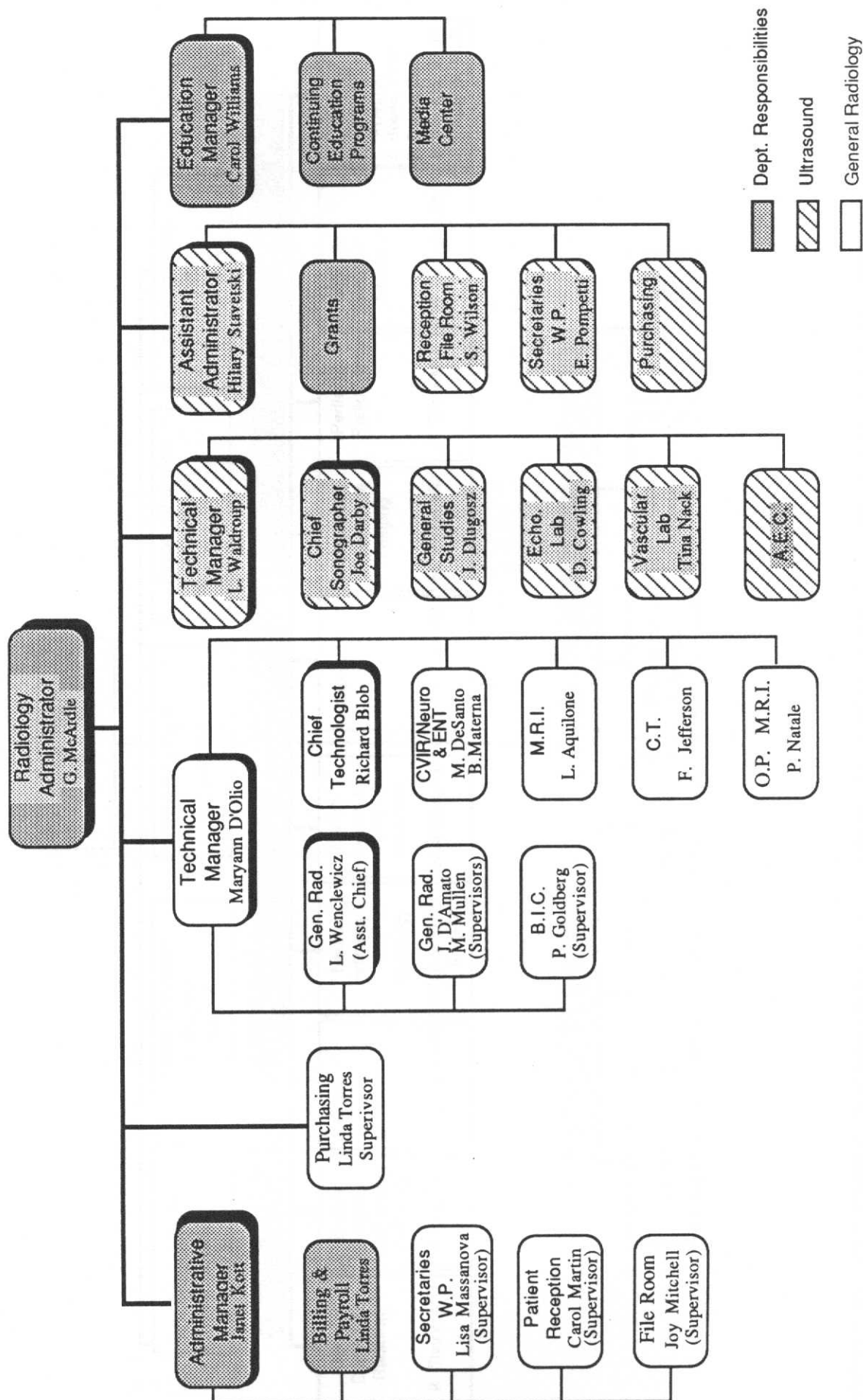
BREAST IMAGING/ULTRASOUND

Annina N. Wilkes, M.D.

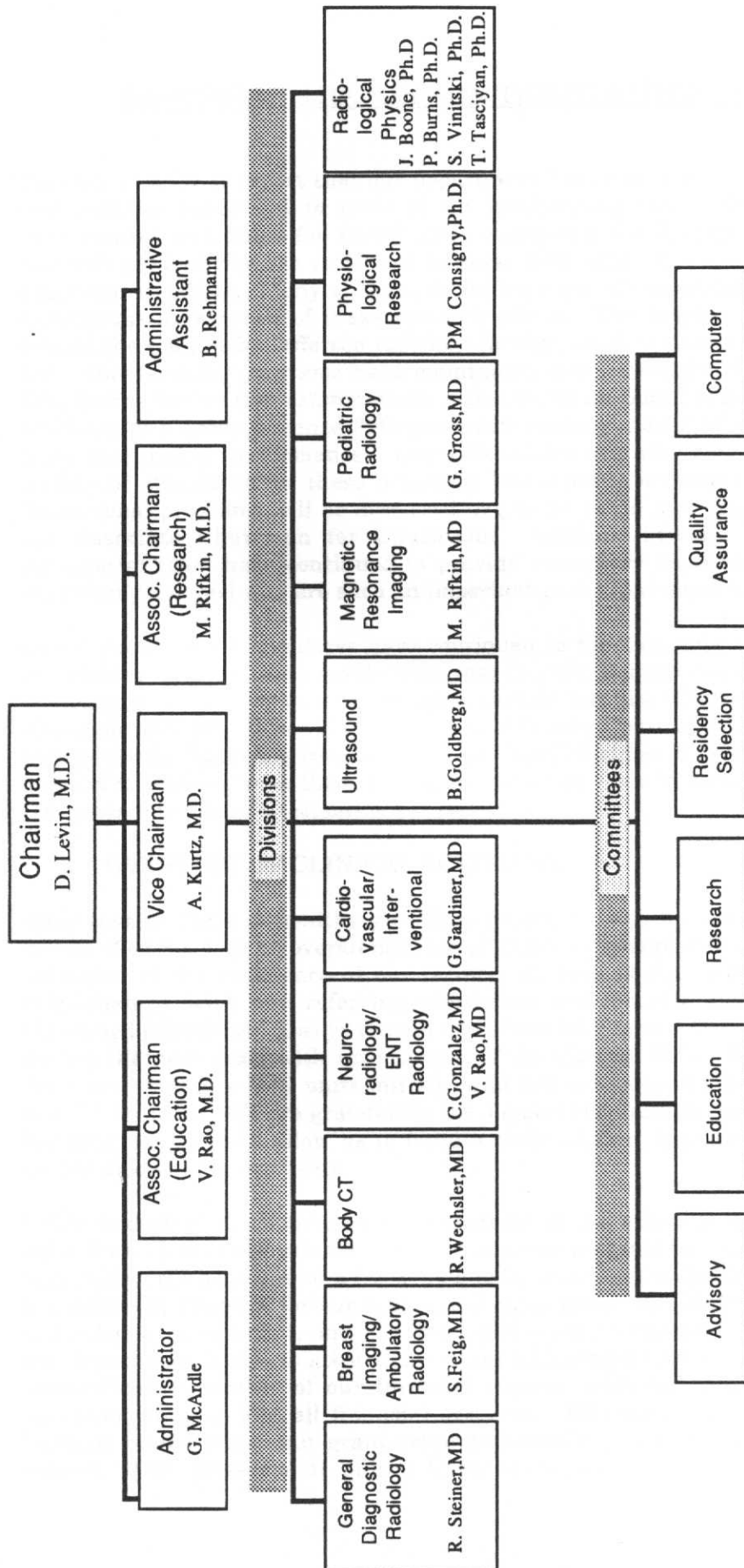
MRI

Karen E. Lovett, M.D.
Adam G. Trybus, Jr., M.D.

Department of Radiology



Department of Radiology



CHAIRMAN'S REPORT ON THE STATE OF THE DEPARTMENT

I'm very pleased to report that our department has once again had a fine year during 1989-1990. Our practice continued to grow at an accelerating rate. New clinical services have been implemented and plans for significantly expanding the department have been developed. Our research productivity has continued to grow, with solid achievements by both our clinical faculty and basic scientists. Many of them, including some of the younger ones, are developing national reputations as a result of these research efforts. The lengthy list of invited presentations all around the country by Jefferson radiology faculty, which is part of this report, amply attests to this fact. Our teaching programs have maintained their reputation for excellence. As an example of this, during the written examinations of the American Board of Radiology this past fall, our senior residents as a group attained 99th percentile ranking among all radiology residency programs - a truly astounding performance. Our fellowships are also very popular, and the number and quality of applicants for these programs has steadily increased during the past several years. Educational programs will be discussed in greater detail in a separate report by Vijay Rao, M.D., our Associate Chairman for Education. Administratively, Mr. George McArdle and his managerial team have continued to provide exemplary leadership for the more than 200 non-physician personnel who are such an important part of our department.

Our departmental committees have continued to function effectively. The membership of these committees remains fairly stable from year to year, but our departmental Advisory Committee is re-elected every two years, and the latest election has just taken place. Aside from myself and our vice-chairman, Dr. Alfred Kurtz, the new Advisory Committee consists of Drs. Barry Goldberg, George Gross, Laurence Needleman, Vijay Rao, Matthew Rifkin, and Richard Wechsler. I look forward to working with them during the next two years in setting policies and discussing issues that pertain to future directions of our department.

I. OVERVIEW OF CLINICAL ACTIVITIES

After several years of healthy growth in procedure volume, we can report another banner year during 1989-90, with an overall increase of 11.2%, compared with 8.4% the previous year. This is a reflection of the excellence of our faculty, as well as the steps we have taken to strengthen relationships with our referring physicians and provide high quality service to patients. Continued growth will always remain one of our long term goals. We expect the trend to continue during the next year, with the opening of the Clinical Office Building (COB). This will house Jefferson's two new MRI units initially, and will subsequently include new outpatient ultrasound and CT facilities. We are grateful for the support the hospital has given us in developing this new building, since it will allow us to build a truly modern, high technology cross-sectional imaging center strictly for outpatients.

Other important developments have occurred in the administrative and technical spheres. Dr. John Boone has revamped our quality assurance program for radiographic equipment and is now supervising the activities of a full time quality assurance technologist. Dr. Peter Burns has begun a similar QA program for our ultrasound equipment. Mr. McArdle has reviewed the problem of technologist recruitment, and has developed several important mechanisms for seeing to it that our department is able to attract and retain technologists for our many clinical areas. He has also streamlined a number of our financial reports, with full computerization of our capital and operating budgets and all financial accounts. Hilary Stavetski, Assistant Administrator, has likewise computerized our grant accounts, including both federal and commercial manufacturer grants. Our professional billing forms have been revised to be more personal and "user

friendly". Our billing agent has instituted a toll-free number for patients who have questions about their bills. We have also instituted a patient ombudsman system, with a telephone extension for any patient to call to discuss problems relating to services performed by our department.

We spent a considerable amount of time addressing the thorny issue of the use of the new low osmolar contrast agents (LOCAs). While these agents are associated with somewhat fewer adverse reactions than the older high osmolar agents, they are extremely expensive. If we had gone to routine use of these agents, the hospital's annual contrast budget would have risen from \$400,000 to over \$4,000,000. After an extensive review of this issue among our departmental contrast committee, the hospital administration, the legal department, the risk management group, and the hospital's ethics committee, we have developed a rational policy which entails use of LOCAs only for specific clinical indications. We have also developed a patient data form which is now being used on all patients undergoing intravenous contrast injections (primarily for IVPs and CT studies) to develop a data base for determining the efficacy of this policy.

The joint venture between our department, the hospital administration, and TME, Inc. (a Houston-based medical ventures firm) to build an outpatient MRI center in Langhorne, Pennsylvania has come to fruition. The new center opened in February 1990 and so far has been successful. We are now averaging seven MRI studies per day there, which is above TME's initial projection, and we will obviously look to future expansion of that aspect of our practice. TME has been an excellent company to work with and this initial collaboration has been an interesting learning experience for us.

II. CLINICAL SERVICES, NEW PROGRAMS, NEW FACILITIES (by division)

A. GENERAL DIAGNOSTIC RADIOLOGY: An overall increase in exam volume occurred in this division, with an 8% increase in abdominal films, 12% increase in chest films, 4% increase in musculoskeletal plain films, and a 6% increase in upper GI series. Very slight declines were seen in IVPs and barium enemas. Gastroenterology has developed a swallowing center, and this had led to an increased number of swallowing studies performed by our GI section. "B readings" by the chest section have increased, with the provision of services to several outside organizations. The orthopaedic radiology suite on 8-NH is now operating smoothly. The staff radiologists in the general diagnostic division have attempted to combine coverage of several of the clinical services to allow them to operate more efficiently; this has met with mixed success, and we are still attempting to realign certain aspects of the rotations.

B. PEDIATRIC RADIOLOGY: A very healthy 20% increase occurred in the volume of pediatric radiographic examinations. Dr. Gross and I have had initial discussions with the pediatric radiologists at the A.I. duPont Institute, and our expectation is that further integration of TJUH and the Institute will greatly benefit all aspects of pediatric radiology in both institutions.

C. BREAST IMAGING: Mammography volume continued to grow at an even more rapid pace than in the previous year, with an overall increase of over 13% during 1989-90. New clinical innovations which have started this past year include the use of needle hookwire devices for pre-biopsy localization studies. These devices are somewhat more accurate and are less likely to become dislodged than hypodermic needles. Another procedure being done with increasing frequency is breast cyst aspiration. A daily quality assurance program for film processing has been instituted.

D. CARDIOVASCULAR/INTERVENTIONAL RADIOLOGY (CVIR): The CVIR division has been the fastest growing division in the department recently, with a 46% increase in procedure volume during the past year. Aside from this volume increase, a number of innovative new interventional procedures are now being performed. These include fallopian tube recanalization via a transcervical approach, use of the Palmaz stent in treating venous or dialysis graft

obstructions, use of multiple Gianturco stents for both benign and malignant strictures of the biliary tract, and percutaneous insertion of the "bird's nest" inferior vena cava filter in patients at risk of pulmonary embolism. The CVIR, ultrasound, and body CT divisions are collaborating in treating patients with abdominal and pelvic abscesses. An interesting new procedure which is still undergoing clinical trials is the use of intraarterial ultrasound.

E. NEURORADIOLOGY/ENT RADIOLOGY: A large increase in CT scans (32%) by this division occurred during 1989-90. Many of these were in ENT diseases. Myelography was one of the few procedures in our department that showed a decline in volume, as the use of MRI partially replaces it. A very important new clinical activity was the opening of the TME outpatient MRI center in Langhorne. As indicated earlier, this center is off to a good start and should provide considerable additional material for this division in future years. Drs. Rao and Gonzalez were also involved in planning the new MRI facility in the COB.

F. DIAGNOSTIC ULTRASOUND: This division showed almost a 9% volume increase during the past year, with over 40,000 studies performed. This represents another milestone for our ultrasound group, which, under Dr. Barry Goldberg's leadership, has become the busiest, most widely renowned, and most productive such group in the country. Another color Doppler scanner was added, thereby allowing us to provide color Doppler imaging in all areas of the division, including echocardiography, the vascular lab, abdominal, and obstetrical ultrasound. The Antenatal Evaluation Center has continued to develop, although growth here has not been as rapid as had been anticipated. Transesophageal echocardiography is an important new service which has been added. In a more experimental area, a new endoluminal unit was obtained on a trial basis for research, and Dr. Goldberg has begun initial studies of patients with bladder, urethral, and ureteral lesions; it is expected that this technology will be expanded to other organ systems in the coming year.

G. BODY CT: Body CT volume continued to grow, with an 11% increase in the number of studies performed. We are about at the limit for the single body CT scanner on 3-NH. New solid state detectors and the HTD software package are being added and should allow us to increase patient throughput next year. The body CT reading room has been enlarged to accommodate the need for new viewing space. One very useful new procedure that has come into wider use during the past year has been CT arterial portography. This should allow for more precise determination of the extent of liver metastases and will aid in selection of patients who are candidates for liver resection. A new policy was instituted of directly calling results to referring physicians on all outpatient CT examinations.

H. MRI: Almost 3300 MRI examinations were performed this past year. This represents a relatively small increase compared with the previous year, because our current MRI unit is at maximal utilization. A large amount of Dr. Rifkin's time during the past year was taken up by planning for the two new MRI units in the COB. Fortunately, this process has gone well for the most part, and we are fully committed to developing the best outpatient MRI facility in center city Philadelphia. We have tremendous talent on our faculty, and there is thus no reason why this goal can't be accomplished. Additional time was required in the planning of the TME MRI unit in Langhorne. Many new services have been offered on our existing unit this past year. These include high resolution imaging of the TMJs and the prostate; fat suppressed MR imaging of the orbits, liver, and pancreas; and 3-D chemical shift imaging of the pituitary gland and knee.

III. PLANNED CHANGES AND INNOVATIONS

Our most significant new project is the opening of the COB, which will take place in the fall of 1990. Initially, this building will house two new General Electric 1.5 T Signa MRI units. They will allow us, at long last, to provide all necessary MRI services to our referring physicians. They will also allow us to enhance our MRI research productivity even further. The second and third phases

in developing the COB will be to open a large outpatient ultrasound facility, and then a new CT scanner. Planning for these two new facilities is currently underway.

The transfer of many of our ultrasound outpatients (perhaps as many as 60%) to the COB will allow us to reassign and renovate space in our ultrasound division on Main/Thompson-7 and Main-8. We are currently working on the plans for these renovations, which will allow us to continue to grow in specialized areas like the AEC, echocardiography, vascular ultrasound, and endoluminal ultrasound.

Our body CT unit on 3-NH will be upgraded this year, with installation of new solid-state detectors and the HTD package. These upgrades will allow us to both improve image quality and patient throughput. The latter is particularly important, since we currently have trouble keeping up with the demand for body CT services. A related development will be the installation of laser imagers in the body CT and Main-10 areas, as well as in the COB. Laser imagers are now replacing the older multiformat cameras for producing CT and MR images, and they will provide not only higher-quality studies but also will improve our image management and distribution capability.

In MRI, the unit on Main-10 will receive the 4.0 software package; the two new units in the COB will already have this software incorporated as they are installed.

Planning is currently underway in conjunction with the departments of surgery and medicine to develop a Jefferson Vascular Disease Center. This center will provide a comprehensive and multi-disciplinary approach to the workup and management of patients with peripheral vascular disease. In addition to clinic facilities, it will incorporate fluoroscopy equipment for the operating room to allow combined surgical/interventional radiology approaches to some patients with multi-level disease, as well as ultrasound equipment to monitor procedures and provide better follow-up. We expect the new Vascular Disease Center to attract more of these patients to Jefferson.

In the Breast Imaging Center, a sixth mammography room will be opened to meet the steadily increasing demand for breast imaging services. Some office space renovations will also be undertaken.

Our department is providing considerable capital budget and operating support to help the needs of other departments. Two new x-ray units will be opened in Jefferson's new Emergency Department. Two more units will be opened in the Patient Testing Center. Also, a new fluoroscopy unit will be opened in the Gastroenterology suite for assisting with endoscopic procedures.

A major addition to our teaching program will be the construction of a new library in the Core 4 area on 3-NH. The new library will replace the dingy and disorganized existing library, and will be 50% larger and completely modernized. Core 4 will be closed as a radiographic area and new office space will be opened there, in addition to the library. The Franklin head unit in Core 4 has already been relocated, and the polytome room will be transferred to Core 1, where a complete new polytome unit will be installed.

Finally, several important patient care administrative services will be added. Patient tracking will commence in ultrasound, and we anticipate that this will be as successful as it has been on the 3rd floor. A digital dictation system for the entire department will also be installed, probably late in 1990. This is a badly needed innovation, which is already in operation in many other large hospital radiology departments. It provides a number of logistic advantages, including making just-dictated verbal reports immediately available to clinicians who can call into the system from anywhere in the hospital or an outside telephone. It will also allow us to increase the efficiency of report transcription.

IV. RESEARCH ACCOMPLISHMENTS

By all criteria, the department once again had an outstanding year in terms of research productivity. At the 1989 RSNA meeting (the largest medical meeting in the world) we had a total of 31 presentations. As in the previous year, this was one of the largest representations among all academic radiology departments. Scientific research papers were presented by Drs. Kurtz, Boone, Rao, Rifkin, Consigny, Burns, Bonn, Vinitski, Galkin, Cohen, Hilpert, Needleman, Mitchell, myself (2), and Kashdan. Refresher courses or symposia were presented by Drs. Rifkin, Spirn, Kurtz, Steiner, and myself. In addition, there were ten scientific or historical exhibits. Jefferson radiologists were also strongly represented at numerous other national radiology meetings.

In terms of active research grant support, members of our faculty had grant or subcontract support from federal or other agencies during 1989-90 of \$539,600 direct costs plus \$246,300 indirect costs, for a total of \$785,900. The faculty members holding these awards were Drs. Boone, Consigny (3), Goldberg (4), Mishkin, Needleman, and Rifkin. Over the entire award periods of grants which were active as of 6/30/90, the total direct costs are \$1,121,000 and the indirect costs are \$559,100. The department is also increasingly successful in obtaining industrial grant support. During the past year, approximately \$200,000 cash support was obtained from six different industrial sources. These grants were obtained by Drs. Flanders, Hilpert, Mitchell, Sullivan (2) and myself. Many other companies contributed equipment and software for us to use in research.

Since radiology does not have its own institute at the NIH, we tend to be generally under-represented in NIH grant funding. There have been many valuable research projects that have been carried out entirely with departmental support during the past year. These include studies of the hemodynamic effects of the Palmaz stent, cross sectional imaging of abdominal wall hernias, a comparison of MRI/arthrography/ultrasound/surgery in rotator cuff tears, MRI findings in acute trauma of the cervical spine and their correlation with neurological findings, an experimental study of Doppler ultrasound in liver tumors following intravenous contrast administration, ultrasound evaluation of deep pelvic structures in early normal pregnancy, lithotripsy of biliary duct stones with ultrasound guidance, correlation of MRI with arthrography and arthroscopy in TMJ disease, correlation of MRI structural findings with emotional and cognitive function in multiple sclerosis, endorectal ultrasound in staging of rectal carcinoma, variable flip angle imaging with fat suppression in combined gradient and spin echo MRI, the effect of experimental angioplasty on release of growth factors that stimulate smooth muscle cell proliferation, and analysis of placental resistance and impedance in experimental animals. This is only a partial enumeration of our research interests. The list of departmental publications in the peer-reviewed literature has increased once again; this is of course another important measure of our research productivity.

Within recent months, additional grant proposals have been submitted by our faculty members and are currently pending. Drs. Tasciyan, Boone, and Burns have all submitted proposals to the Whitaker Foundation. Dr. Goldberg submitted a proposal to the American Cancer Society on tumor detection and characterization with endoluminal ultrasound. Dr. Burns submitted a proposal to the NIH on ultrasound contrast for tumor diagnosis. Dr. Boone submitted a proposal to NIH for developing a filter wheel system for equalization in chest radiography. Dr. Consigny submitted a proposal to the local American Heart Association affiliate on characterization of smooth muscle cell mitogens released from arteries after angioplasty.

V. FUTURE RESEARCH PLANS

Most of our divisions have ambitious research goals for the 1990-91 academic year. In the **Division of Cardiovascular/Interventional Radiology**, Dr. Geoffrey Gardiner, Jr. is organizing a transluminal revascularization registry which will expand from its current base in the Delaware Valley to become the first such nation-wide registry involving multiple academic centers. The

goal is to develop a large procedural and follow-up database on patients undergoing percutaneous interventions for peripheral vascular disease. Grant funding will be sought. The division is also one of 25 around the country which will participate in a registry studying the relative effects of standard ionic vs. low osmolar contrast agents in arteriography. The use of a tunable dye laser in fragmenting gallstones will be studied. Gianturco stents will be clinically tested in treating dialysis graft strictures, as well as malignant venous strictures. Endoluminal ultrasound will be used to study patients with peripheral vascular disease. A phase 2 clinical trial of the Palmaz stent will commence in patients with renal artery stenosis. Chemical shift imaging and magnetic resonance spectroscopy studies of experimental atherosclerotic plaques will be carried out in conjunction with Drs. Vinitski and Consigny. The efficacy of combined therapy with Iridium-192 and the Gianturco stents will be analyzed in patients with malignant biliary strictures. Studies of the thrombogenicity of Anthron heparinized catheters will be carried out. Finally, a prospective comparison of CT, MRI and angiography is underway to assess resectability in patients with pancreatic carcinoma. The **Neuroradiology/ENT Radiology Division** will investigate the MRI findings in organic dementias in conjunction with members of the department of neurology. Additional MRI studies of TMJ dysfunction will be carried out. Attempts will be made to obtain improved resolution on MRI studies of the pituitary fossa by using 3-D fat-suppressed gradient echo imaging with gadolinium. In conjunction with the department of neurosurgery, an interesting model of cerebral aneurysms has been developed in rabbits. This model will be used for studying flow dynamics in these lesions, as well as coil embolization as a mode of treatment. Under an NIH subcontract obtained by Dr. Mishkin, Jefferson is one of a small number of centers across the country participating in a blinded clinical trial of the use of steroid pretreatment in reducing adverse drug reactions to LOCAs. In the **Division of Diagnostic Ultrasound**, color Doppler studies of the eye and orbit will be carried out. Color Doppler will also be used to evaluate the neonatal intracranial circulation in normal infants and those with right common carotid artery ligation following the use of ECMO. Dr. Needleman will continue work on his NIH-funded grant to study pregnancy-induced hypertension. As part of this, he and Dr. Peter Burns and others have developed an interesting experimental model in sheep with embolized placentas and will use this to study Doppler wave form indices in animals with raised systemic pressures. This year of the grant will also see the start of screening in human patients to detect possible complications of this condition. Another clinical study will assess the value of identifying the yolk sac during the first trimester of pregnancy, using both abdominal and vaginal ultrasound approaches. Further assessment of potential ultrasound contrast agents will be carried out, involving quantitative dose-response studies in animals. Interesting and potentially valuable studies of endoluminal ultrasound in non-vascular structures will be carried out. Areas to be studied include the mediastinum, bronchi, pancreatic ducts, endometrial canal, fallopian tubes, urethra, bladder, ureters, renal pelvis, and biliary tract. The **Division of Magnetic Resonance Imaging** will evaluate methods of improving spin echo T1 contrast of the liver and pancreas by using shorter TEs and fat suppression. Studies will be carried out, using paramagnetic and superparamagnetic contrast agents, to evaluate the pulmonary parenchyma and pulmonary emboli. Dr. Rifkin will continue his NIH-funded RDOG grant to evaluate prostate disease with endorectal ultrasound and MRI. He is also using newly developed rectal RF coils in prostate imaging. New surface coils will be used to try and improve MR imaging of the shoulder, wrist, and TMJ. The **Division of Body CT** will continue its studies of the CT findings in patients with transplanted livers, with particular emphasis on the significance of calcification of the superior and inferior vena caval anastomoses, the detection of subhepatic necrosis, and early rejection. They will also continue some of their innovative clinical studies in the detection of axillary metastases in women with breast carcinoma. In the **Division of General Diagnostic Radiology**, correlation of electron microscopy and chest radiographic changes will be made in patients with alveolar cell carcinoma. They will also study the radiographic aspects of non-tuberculous mycobacterial disease. Correlation between hysterosalpingography and laparoscopy will be carried out, as will correlation between arthrography and MRI in patients with diseases of the wrist joint. In the **Division of Pediatric Radiology**, Dr. Gross will work with Dr. Boone on the fascinating concept of using neural networks in pediatric imaging. The **Division of Breast**

Imaging will study radiologic-pathologic correlations in patients with mucinous breast carcinoma. They will also study benefit/risk comparisons for mammographic screening based on new 1990 National Academy of Sciences risk estimates. Doppler studies of breast lesions will be carried out, in conjunction with the division of diagnostic ultrasound.

Our basic scientists also have innovative plans. Dr. Macke Consigny will continue his work on identification and characterization of smooth muscle cell mitogens released from arteries following percutaneous transluminal angioplasty in experimental animals. He will also work with researchers from the department of surgery to study the feasibility of seeding arteries that have undergone angioplasty with microvascular endothelial cells to see if this may be a useful method of reducing restenosis. Dr. John Boone will attempt to develop a filter wheel equalization system for digital subtraction angiography and chest radiography. He will investigate possible applications of neural networks in several areas of both pediatric and adult imaging. He will also work on dual phosphor screens for dual energy radiography. Drs. Simon Vinitzki and Talin Tascyian have a number of MRI-related projects. Plans are underway to collaborate with Advanced NMR Systems, Inc. in Massachusetts on echo planar MRI. In addition, they will work on developing time of flight MR angiography by creating ultrashort echo time 2DFT and 3DFT imaging to obtain a number of slices which are highly sensitive to flow. They are completing work on a project on phase contrast MR angiography. Narrow/mixed bandwidth acquisition and chemical shift imaging will be used to obtain high resolution MR images of the prostate, TMJs, wrists, and orbits. Dr. Peter Burns will perform additional animal experiments to test a new Doppler index he has devised which may prove useful for measuring placental resistance in patients with clinical pregnancy-induced hypertension. He will perform dose/response studies in animals receiving new ultrasound contrast agents. He will also work on tissue characterization using endoluminal ultrasound, principally in non-vascular areas.

VI. PROBLEMS

No matter how well things are going, there are always problems in an organization this large and complex. Ours include the following:

- **Operating budget support by the hospital** - Radiology in center city Philadelphia has become extremely competitive. We are meeting that competition effectively, as evidenced by a 47% increase in procedure volume over the last four years. However, if we are to maintain this kind of growth, it is critical that we receive the necessary personnel support from the hospital. We have recently been understaffed in our word processing center, the film library, and in technical assistants (who help our radiologists work more efficiently by handling such chores as hanging and removing films, making phone calls, tracking down old films, etc.) We have run into some resistance from the hospital this year in providing us this necessary personnel support. While our procedure volume has increased over 11%, the hospital approved only a 4% increase in our non-physician workforce. This discrepancy impairs our ability to provide good service to referring physicians and patients.
- **Clinical space needs** - There are several areas of the department that have outgrown their current space. The CVIR division is a primary example. Interventional radiology has grown so rapidly in the last several years that a third procedure room may well be needed within the next year or two. The neuroradiology/ENT radiology and MRI divisions, both located on 10-Main, are both critically short of space right now. The opening of the COB will help somewhat. Pediatric radiology should be relocated from 3-NH to 7-Thompson/7-Main or 8-Main. Dr. Gross needs to be closer to the pediatric in-patient services, and also to ultrasound.
- **Capital budget** - Too much of our capital budget is currently going (or planned) to support the needs of other departments. This includes two new radiographic rooms for the Patient Testing Center, two new rooms for the emergency department, a new fluoroscopy unit for the division of

gastroenterology, and probably another portable fluoroscopy unit for the Department of Urology. We certainly are anxious to support the needs of our colleagues in these other departments. However, expenditures like these could impact the dollars available to provide new and replacement equipment within the Department of Radiology. It is to be hoped that the hospital will recognize the importance of strong capital budget support for Radiology's internal needs. We have large renovations ahead, as indicated above. We will also have major requirements for new ultrasound and CT equipment in the COB and perhaps another interventional radiology procedure room.

- **Turnaround of radiology reports** - One area where we have clearly fallen down is in the "turnaround" of radiology reports. Rather than improving, the time it takes to accomplish this turnaround has lengthened during the past year. There are many reasons for this, not the least of which is our added work load (it should be pointed out here that our procedure volume has increased considerably more than the size of our physician staff during the past four years). The aforementioned shortages in personnel in the word processing center and film library have compounded the problem, as has the lack of a digital dictation system. We must place major emphasis during the next year on improving our report turnaround time, and hopefully the resolution of some of these other issues will allow us to do that.

- **Research space** - Just as our clinical productivity has increased, so has our research productivity. The basic scientists on our faculty (Drs. Boone, Burns, Vinitski, Tasciyan, and Consigny) are all doing productive work, but several of them do not have the amount of space I would like to be able to give them. Dr. Burns is working in a very cramped laboratory on Main 8. Dr. Consigny currently has good space in the department of physiology for his in vitro research, but it isn't clear whether this will continue to be available to him. With the opening of the Life Sciences Building, a large amount of potential research space will become available elsewhere on the campus, and it is vitally important to Radiology's academic goals that our research space needs be better accommodated.

- **Restrictions on the use of MRI** - Although our MRI group (both physicians and physicists) has generated an extraordinary amount of high quality research and publications during the past three years, the limited availability of magnet time has meant that we have had to forego involvement in certain aspects of this technology. This is particularly true of both cardiac MRI and MR angiography. These areas both have tremendous potential, but we have not been able to develop them here because of the huge clinical demand for brain, spine, musculoskeletal, and abdominal MRI studies. When the two new magnets open up this fall, we will have to play "catch-up" in these two areas.

VII. GOALS

Having identified certain problem areas in the previous section of this report, one of our primary goals is to do everything possible to solve them. In particular, we will concentrate on improving our turnaround time of radiology reports, and taking all other necessary steps to continue providing superior services to referring physicians and patients. This leads directly to another important goal of ours, which is the continued expansion of our clinical practice, particularly in the outpatient sphere. During the next several years, a number of our divisions will have good opportunities to increase their outpatient capabilities - especially MRI, CT, ultrasound, breast imaging, neuroradiology, and perhaps CVIR. Other important goals are the following:

- We have a number of plans in the works for renovation or expansion of our physical space, and these plans must be implemented carefully and thoughtfully. Most important of these is, of course, the COB. In addition to the two new MRI units, this will house an out-patient ultrasound facility containing six examining rooms, as well as a new CT scanner which will be used for both neuro and body studies. The Breast Imaging Center will continue to expand, with the installation of a

sixth mammography room and also some renovations of the office and film library space. This fall we will be completely renovating Core 4, which will house a new and expanded radiology library and additional office space. Some major renovations will take place in the ultrasound division on 7-Main/Thompson and 8-Main after the outpatient ultrasound facility opens in the COB. When the new CT scanner opens in the COB, the old Technicare HPS CT on Main-10 will close, and this will give us some badly needed new space on that floor. Finally, there is some likelihood that a third procedure room will be needed in our CVIR division. Thus, in spite of all the renovations that have occurred over the last few years, more lie ahead.

- Radiologists are constantly bombarded with information about complex and seemingly exciting new technologies that appear on the horizon virtually every month. Careful assessment of these technologies is necessary; it is often difficult to resist the temptation to acquire the latest expensive device before its utility or even its viability become apparent. Technology assessment therefore remains one of our important goals. Two primary examples of this problem are picture archiving and communications systems (PACS) and 3-D workstations for reconstruction of CT and MR images. During the past several years, we have been ready to plunge into both these new technologies, but have held back at the last minute when it became obvious that they weren't yet fully developed or ready for use in a department like ours.

- The merger between Jefferson and the A.I. duPont Institute promises to be an excellent development for the entire medical school. From our point of view, it is an opportunity to expand our teaching and research programs in pediatric radiology. An important goal is therefore to develop a productive working relationship with the excellent group of pediatric radiologists at the Institute.

- A Jefferson Vascular Disease Center is already in the planning stages, and one of our important goals is to work with the departments of surgery and medicine on developing this center. This impacts our CVIR, ultrasound, and MRI divisions. Because of the ubiquitous nature of cardiovascular disease, this is an important area of expansion, not only for our department but for the entire university.

- Outcomes research/technology assessment is a fertile and growing field, stimulated in part by the recent designation of a new federal agency, the Agency for Health Care Policy and Research (AHCPR). This agency will have equivalent status to the NIH, and it is clear that the Department on Health and Human Services will be placing major emphasis on this type of research in the coming years. An important goal for us is to become involved in this area. Dean Gonnella has generously offered to fund a position in the department of radiology for a health services researcher to develop this kind of program. Recruitment for the position is currently underway, and I hope to have the individual in place by the end of 1990.

VIII. ISSUES FOR THE COLLEGE AND UNIVERSITY

One could talk about many things in this section, but since this report is already overly long, I will confine myself to the one issue which, in my opinion, is paramount for Jefferson. That is the restoration of center city Philadelphia. Within the past several years, the problems of public safety, trash, and homelessness have combined to make this area a less desirable one for patients, students, and workers. As the largest employer in center city, TJU has a clear responsibility to participate in this restoration. The Special Services District is a prime example of one of the innovative approaches that is now being planned by a group of businessmen, institutions, and residents in this area. Full support for this and similar initiatives is necessary. Philadelphia is a great and historic city (better in many ways than Boston!) and it has been a mecca of American medicine for two centuries. We must work to keep it that way.

IX. CONCLUSION

At the conclusion of this report, it is appropriate to acknowledge the contributions of others aside from our radiology faculty. I am particularly grateful to George McArdle, who has once again provided invaluable administrative leadership for this department. There doesn't seem to be anything I can ask Mr. McArdle to do that he doesn't accomplish quickly and effectively. His advice is always thoughtful and appropriate. Virtually every aspect of our academic and clinical missions have benefited from his expertise. In addition, he has developed an outstanding administrative team who report to him, all of whom are similarly dedicated and hardworking. The names of these individuals appear on the organizational chart of the department.

TJUH continues to be one of the best-run hospitals in the country. Michael J. Bradley, Senior Vice President and Chief Executive Officer of the Health Services Division, is an important reason for this and we are saddened that he is leaving Jefferson. However, I have full confidence in Thomas J. Lewis, III, Hospital Executive Director and Chief Operating Officer. His energy, ability, and knowledge of the intricacies of running a hospital are extraordinary. Mr. Lewis will keep this hospital running smoothly without skipping a beat, and we look forward to continuing to work with him in the future. Bart Murtaugh, Assistant Executive Director, has been a very supportive and effective contact for us with the hospital administration. Dean Gonnella is another individual who deserves special praise; I don't know of another medical school dean in the country who has developed a better reputation within his institution for fairness, dedication, integrity, and effective leadership. Many others among his team at the medical school have also been most helpful.

Finally, a special tribute is due to Lewis W. Bluemle, Jr., M.D. upon his retirement from the presidency of Jefferson. He has been an outstanding leader for years, and he has all our best wishes for a healthy and productive retirement. In this report a year ago, in contemplating the choice of his successor, I stated that "it is vital that the person chosen have goals and a management philosophy that are completely compatible with those of Jefferson's present senior officers". Dr. Paul Brucker has now been chosen as our new president, and I am delighted by the choice. His goals and management philosophy clearly are compatible - in fact, in many ways he has been one of their major architects. I was privileged to serve on the presidential search committee and have never seen such a major ground swell of support as occurred when Dr. Brucker became a candidate. He is an outstanding physician and leader, and Jefferson's future is bright in his hands.



David C. Levin, M.D.
Chairman

TEACHING PROGRAMS

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

INTRODUCTION

As the Radiology Department of a large university hospital dedicated to the education and training of physicians, our primary goal is to produce skilled radiologists who will be well prepared to meet the medical challenges of the future. Toward this end our educational programs continue to expand and diversify as our facilities and imaging technologies enlarge. Each year a multitude of teaching programs for medical students, residents, fellows, non-radiology house staff and several continuing medical education (CME) courses are offered by the Department of Radiology. Because of the excellent reputation of our department both nationally and internationally, there has been a steadily increasing interest in less formal visiting fellowship programs among outside practicing radiologists. The Division of Ultrasound experienced another active year with numerous visiting fellows and on-going teaching courses. The interest in similar programs offered by the Divisions of Body Computed Tomography, Breast Imaging, Magnetic Resonance Imaging, Cardiovascular/Interventional Radiology and Neuroradiology/ENT is also on the increase. Carol Williams, B.S., R.D.M.S., the Education Manager, did an outstanding job of supervising all educational courses. The **Third Annual Hodes Lecture** in honor of Phillip J. Hodes, M.D. was a great success. The invited speaker, Alexander Margulis, M.D, is currently Associate Chancellor, Special Projects and Director of the Magnetic Resonance Science Center of the University of California, San Francisco. Dr. Margulis is a pioneer in the introduction of MRI and other new imaging techniques. He gave an outstanding presentation on "The Present and Future of Diagnostic Imaging." The lecture and reception were attended by approximately 150 guests.

A. TEACHING PROGRAMS FOR MEDICAL STUDENTS

Freshmen Medical Students: Under the direction of Vijay M. Rao, M.D., the Radiological Anatomy course emphasizing cross-sectional anatomy by CT and MRI for first year students was expanded to include 15 hours of instruction this year from 10 hours the previous year. Designed in conjunction with Dr. Richard Schmidt from the Department of Anatomy, the anatomy course allows the availability of a radiologist, as a consultant in the dissection laboratory for two hours per week, for five sessions. In addition, this year our department presented five one-hour lectures in radiologic anatomy to the entire freshman class.

Junior and Senior Medical Students: The department offers five separate electives in radiology for junior and senior medical students. One or more of these courses were elected by 148 junior and senior class members of the Jefferson Medical College and by 15 students from other medical schools.

General Radiology Elective RAD 401-01: This course is under the direction of Vijay Rao, M.D. Although structured, the course has the flexibility of accommodating the special needs of each student. This is a very popular elective not only with the Jefferson students but also with students from other institutions. The RAD 401 elective was completed by 137 students either at Thomas Jefferson University Hospital or at affiliated hospitals and outside institutions. A number of

house staff members from the Department of Medicine also took this elective and found it to be a worthwhile experience. The students are assigned, in small groups of 3 or 4, to different areas which include general diagnostic radiology (thoracic, skeletal, genitourinary, and gastrointestinal radiology), cardiovascular/interventional radiology, neuroradiology, body CT, ultrasound, and nuclear medicine. Students have the opportunity to interact on a one-to-one basis with faculty members, fellows and residents. The students attend 2-3 hours of conferences daily. An extensive teaching file is available for review. Students enrolled in RAD 401-01 have rated this course as one of the most enjoyable learning experiences of their senior year, with many commenting that it should be a requirement for all medical students.

Neuroradiology Elective RAD 403-01: This elective is supervised by Mark M. Mishkin, M.D. and was selected this past year by one student. Students attend teaching conferences and are exposed to an array of neuroradiological procedures including angiograms, myelograms, computed tomography, and magnetic resonance imaging.

Pediatric Radiology Elective RAD 405-01: This elective is supervised by George W. Gross, M.D. and was taken by 5 students. The students participate in plain film interpretation and observe special diagnostic procedures on pediatric patients.

Cross-Sectional Imaging (Ultrasound, Computed Tomography, and Magnetic Resonance) Elective RAD 406-01: This elective is supervised by Barry B. Goldberg, M.D. and Rick I. Feld, M.D. Each medical student rotates for an interval of two weeks in ultrasound, one week in CT, and one week in MR. An extensive videotape library on cross-sectional imaging is available for their use. This course was completed by 5 senior students.

Cardiovascular/Interventional Radiology Elective RAD-407-01: This elective is supervised by Geoffrey A. Gardiner, M.D. and was chosen by one senior student. During the month in Cardiovascular Interventional Radiology, students become familiar with the wide range of interventional procedures performed by the radiologist (especially vascular, biliary, and urinary tract) through first-hand observation of cases.

Unknown Case of the Week for Medical Students and Non-Radiology House Staff: Radiology residents present imaging studies accompanied by clinical information for medical students and non-radiology house staff. The purpose of this weekly case conference is to introduce and teach interpretation of radiographic findings to the residents. Similar pediatric case presentations are given by George Gross, M.D. for the pediatric house staff.

B. RESIDENCY PROGRAM

It is my pleasure to report that each of our four graduating residents passed the written and oral portions of the American Board of Radiology Examination with flying colors. Our program performance in the written part of the examination given in October 1989, was ranked in the 99th percentile for physics and the 99th percentile for diagnostic radiology. Our program performance, which has shown continual improvement in the past few years, has set an unbeatable record. This, in part, is a reflection of our faculty and their dedication and interest in teaching. Three of our graduating residents were accepted into excellent fellowship programs. Thomas Chang, M.D. will begin a fellowship in cross-sectional imaging at West Penn Hospital in Pittsburgh. Flavius Guglielmo, M.D. will be a fellow in Ultrasound/CT/MRI with us at Thomas Jefferson University Hospital. Michael Harned, M.D. will be a fellow in Neuroradiology at New York University Medical Center. Mark DeLaurentis, M.D. will be going to Keesler Air Force Base in Biloxi, Mississippi to fulfill his commitment. We are obviously producing some of the best trained radiologists across the nation. We will be making an effort to recruit some of our own graduates to remain on our faculty following completion of their fellowship training.

Clinical Training: The American Board of Radiology requires four years of training in diagnostic radiology regardless of prior post-graduate training. Our residency training program is designed to encourage sub-specialization among radiology trainees. The core curriculum is completed in three years, during which time all residents rotate through each of the following areas: thoracic radiology, skeletal radiology, genitourinary radiology, gastrointestinal radiology, body CT, cardiovascular/interventional radiology, neuroradiology/ENT, mammography, ultrasound, pediatric radiology, MRI and nuclear medicine. In the fourth year, residents have the option of taking elective rotations in one or several of these areas. However, one six-month block in any of the sub-specialty areas is mandatory. Throughout the four years of residency training, our residents attend 2 hours of scheduled conferences in diagnostic interpretation given daily by attending staff. These conferences are a mixture of didactic lectures and case presentation conferences in which residents have the opportunity to discuss the radiographic findings and differential diagnosis.

Resident Selection: Our residency program has an outstanding national reputation. This past year we received 275 applications for 5 positions, and interviewed 60 applicants. We filled our 5 positions from our top 14 choices in the National Interns and Residents Match Program (NIRMP). The five candidates who will begin residency in July 1991 are from the University of Pennsylvania Medical School, Duke University Medical Center, Jefferson Medical College, Pennsylvania State University Medical School and UMDNJ - Robert Wood Johnson School of Medicine.

C. TRAINING PROGRAMS FOR FELLOWS

Along with continued expansion of the field of Radiology comes the need for subspecialization. The Department of Radiology offers fellowships in each of the following areas: cardiovascular/interventional radiology, neuroradiology/ENT, and ultrasound/CT/MRI. Candidates must be board-certified or in the process of certification. These programs are very popular because of the state-of-the-art equipment, excellent teaching staff consisting of radiologists, and physicists, and research opportunities. In addition, fellowships are available with full emphasis on ultrasound and body MRI; these provide both clinical and research training.

Cardiovascular/Interventional Fellowships: The Cardiovascular/Interventional Fellowship has been extended to three fellowship positions offered yearly for a one year period, under the direction of Geoffrey A. Gardiner, M.D. The program consists of two months in the non-invasive vascular lab and ten months in the combined vascular/interventional service. The ten-month rotation through the vascular/interventional service exposes the fellow to a wide variety of vascular and non-vascular procedures, both diagnostic and interventional. Daily ward rounds and morning work conferences are held, during which time all cases are reviewed and patient management decisions are made.

Neuroradiology/ENT Fellowship: The Neuroradiology/ENT Fellowship is a two year program with two fellows appointed each year for a total of four fellows. This fellowship is under the direction of Carlos F. Gonzales, M.D. The Division has state-of-the-art angiography (including digital subtraction), myelography, CT and MRI equipment located adjacent to dedicated Neuroradiology/ENT film interpretation and consultation areas. Training is provided in interpretation of plain films, tomograms, CT and MRI examinations as well as in the technical aspects and interpretation of myelograms, neuroangiograms and in interventional neuroradiologic procedures.

Ultrasound/CT/MRI Fellowship: This fellowship is under the direction of Barry Goldberg, M.D. The ultrasound portion of this program offers training in adult and pediatric abdomen and pelvis, neonatal brain, obstetrics and gynecology, small parts (including testes, neck and breast), peripheral vascular, echocardiography, endosonography, intra-operative ultrasound, and aspiration-biopsy and abscess drainage techniques. In body CT, training is given in chest, abdomen and extremities. Aspiration-biopsy and abscess drainage techniques are taught during the body CT rotation. MRI training consists of all aspects of body and extremity studies and the physics involved with image production.

D. CONTINUING MEDICAL EDUCATION PROGRAMS

Radiology Grand Rounds: The Grand Rounds in Radiology program was held bi-weekly and covered topics of interest in all radiology subspecialties. In the 16 Grand Rounds sessions given during the year, 12 were presented by outside invited speakers and 4 by department faculty. A program of speakers and their topics is included at the end of this section.

Radiology Research Conferences: The bi-weekly Radiology Research Conferences were continued this year under the direction of Matthew D. Rifkin, M.D. This conference allows the faculty, residents and fellows in the department the opportunity to present the results of their research activities. A listing of the research conference topics and their presenters is also included at the end of this section.

Tenth Annual Leading Edge in Diagnostic Ultrasound Conference: The ultrasound division's Tenth Annual Leading Edge in Diagnostic Ultrasound, held in Atlantic City, was a major success. This year's meeting featured conference tutorials on color Doppler ultrasound, abdominal and obstetric ultrasound. The meeting was attended by over 700 individuals including physicians, biomedical engineers, scientists and administrators.

Continuing Medical Education Courses: During the academic year, the Division of Ultrasound also offered 40 continuing medical education courses lasting 1-5 days in ultrasound applications for abdomen, obstetrics and gynecology, Doppler ultrasound in vascular diagnosis, prostate, neonatal brain, physics and instrumentation, cross-sectional anatomy, and echocardiography. Several new programs on color Doppler and renal and gall bladder lithotripsy were added.

We are proud of our teaching programs. Our trainees can be found all over the world practicing their skills acquired through one or more of the many programs we offer.

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RADIOLOGY GRAND ROUNDS

September 12, 1989	Hysterosalpingography 1. Diagnosis of Peritubal Adhesions 2. Value in Tubal Ligation Reversal	Stephen Karasick, M.D. Thomas Jefferson University Hospital - Radiology Philadelphia, Pennsylvania
September 26, 1989	CT of the Bile Ducts	Dennis Balfe, M.D. Mallinckrodt Institute of Radiology St. Louis, Missouri
October 10, 1989	3D Applications in Neuroradiology	James Zinreich, M.D. Johns Hopkins Medical Institute Baltimore, Maryland
October 24, 1989	Venous Imaging	Laurence A. Needleman, M.D. Thomas Jefferson University Hospital - Radiology Philadelphia, Pennsylvania
November 7, 1989	Transcatheter Management of Neoplasms	Sidney Wallace, M.D. MD Anderson Hospital and Tumor Institute Houston, Texas
November 21, 1989	Visual Perception and Lung Cancer Detection	Harold Kundel, M.D. Hospital of the University of Pennsylvania Philadelphia, Pennsylvania
December 5, 1989	High Resolution CT of the Lung	David Naidich, M.D. New York University Medical Center New York, New York
December 12, 1989	Vascular Malformations: Angiographic Diagnosis and Treatment	Robert I. White, Jr., M.D. Yale University School of Medicine New Haven, Connecticut
January 2, 1990	The Radiographic Assessment of the Pre- and Postoperative Hallux Valgus Foot	David Karasick, M.D. Thomas Jefferson University Hospital - Radiology Philadelphia, Pennsylvania
January 16, 1990	Breast Ultrasound	Ellen Mendelson, M.D. University of Pittsburgh School of Medicine Pittsburgh, Pennsylvania

January 30, 1990	MRI Applications in Angiography	Robert Edelman, M.D. Beth Israel Hospital Boston, Massachusetts
February 13, 1990	Magnetic Resonance Imaging of Cerebrovascular Diseases	Herbert I. Goldberg, M.D. Hospital of the University of Pennsylvania Philadelphia, Pennsylvania
February 27, 1990	Child Abuse in America - Implications for the Radiologist	George W. Gross, M.D. Thomas Jefferson University Hospital - Radiology Philadelphia, Pennsylvania
March 13, 1990	Penn Pet Scanner and Its Clinical Applications	Gerd Muehllehner, Ph.D. Hospital of the University of Pennsylvania Philadelphia, Pennsylvania
March 27, 1990	The Role of Ultrasound in the Evaluation of Patients Pre and Post Liver and Kidney Transplant	Leon Skolnick, M.D. University of Pittsburgh School of Medicine Pittsburgh, Pennsylvania
May 22, 1990	Biological Effects of Weak Electromagnetic Fields	G. Jerome Beers, M.D. Boston University Medical Center Boston, Massachusetts

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RESEARCH CONFERENCES

Sept. 19, 1989	Ionic and Non-Ionic Contrast: Is there a Dilemma?	Mark Mishkin, M.D.
Oct. 3, 1989	The Animal Lab	P. Macke Consigny, Ph.D.
	Fast Limited Flip Angle MR Angiography	Talin Tasciyan, Ph.D.
Oct. 17, 1989	Control of Imaging and Interventional Procedures in Community Hospital Radiology Departments	David C. Levin, M.D.
Oct. 31, 1989	Center of Excellence	Dov Jaron, Ph.D.
Nov. 14, 1989	Bone Marrow MRI in Polycythemia Vera, Myelofibrosis and Aplastic Anemia	Robert M. Steiner, M.D.
	Endorectal US and MR Imaging: Accuracy for Staging Prostate Cancer	Matthew D. Rifkin, M.D.
Jan. 9, 1990	Intra-arterial Chemotherapy and Limb-Sparing Resection of Extremity Osteosarcomas With 2-Year Follow-Up	Kevin L. Sullivan, M.D.
	Improved Angioplasty Hemodynamics After Palmaz Vascular Stent Placement	Joseph Bonn, M.D.
Jan. 23, 1990	Fast 3D Chemical Shift Imaging	Simon Vinitski, Ph.D.
	Predictive Value of the Short Femur in the Detection of In Utero Skeletal Dysplasia	Alfred B. Kurtz, M.D.

Feb. 6, 1990	Criteria for the Detection of Tumor Blood Flow with Doppler US	Peter Burns, Ph.D.
	MRI of Bone Marrow	Robert M. Steiner, M.D.
Feb. 20, 1990	Shoulder Injuries in the Phillies	Jorge Torres, M.D.
	Computer Simulation in Blood Flow	Hector Ortega, M.D.
	Non-Vascular Intraluminal Ultrasound	Barry B. Goldberg, M.D.
Mar. 6, 1990	MRI of Bone Marrow	Robert M. Steiner, M.D.
	Neural Network Applications in Radiology	John Boone, Ph.D.
Mar. 20, 1990	The Yolk Sac is a Poor Predictor in Early Pregnancy	Alfred Kurtz, M.D.
Apr. 3, 1990	Chemical Shift MR Imaging of Fatty Liver: Clinical and In Vitro Results	Thomas Chang, M.D.
Apr. 17, 1990	MR Imaging in Chronic Myeloproliferative Disease	Kenneth Kaplan, M.D.
	<i>In Vitro</i> Ablation of Gallbladder Mucosa	Michael Soulen, M.D.
May 15, 1990	Neural Networks: Radiographic Interpretation of Neonatal Chest X-rays	Valerie Greco-Hunt, M.D.
	Variable RF Excitation in Fast Inversion Recovery Technique	Simon Vintiski, Ph.D.
May 29, 1990	Outcomes Research	David C. Levin, M.D.

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ABSTRACTS

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119. Vinitski S, Thakur M, Consigny PM, Mitchell DG, Blob R, Lin S, Eley CSG, Rifkin MD: MR imaging of pulmonary parenchyma and emboli by paramagnetic and superparamagnetic contrast agents. *Magn Reson Imag* 8(S1): 148, 1990.
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SCIENTIFIC PRESENTATIONS

LORNA BLUM, M.D.

October 5, 1989

CT/MRI Program, Community College of Philadelphia, Philadelphia, PA

- "Three dimensional anatomy and pathology of the chest"

May 2-4, 1990

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

- Case presentation

JOSEPH BONN, M.D.

November, 1989

American Heart Association 62nd Scientific Sessions, New Orleans, LA

- "Improved angioplasty hemodynamics after Palmaz vascular stent placement"

November 26 -
December 1, 1989

The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Improved angioplasty hemodynamics after Palmaz vascular stent placement"

March 28, 1990

Society of Cardiovascular and Interventional Radiology 15th Annual Course, Miami Beach, FL

- "New devices: Stents, atherectomy and laser" (workshop session)

JOHN M. BOONE, Ph.D.

July, 1989

Annual Meeting of the American Association of Physicists in Medicine, Memphis, TN

- "Neural networks versus human performance in a basic detection task"
- "Detector optimization for dual energy mammography"

August, 1989

Conference on Computer Applications in Radiation Therapy, Philadelphia, PA

- "Neural networks in radiology"

September, 1989

American Association of Physicists in Medicine (Delaware Chapter), Board Review Course for Residents and Invited Faculty, Philadelphia, PA

- "Basic Physics for residents"

January, 1990

Invited Faculty, University of Pennsylvania, Philadelphia, PA
• "Digital radiography"

D. LAWRENCE BURK, JR. M.D.

October 21, 1989

MR Musculoskeletal Imaging Symposium, Milwaukee, WI
• "Imaging strategies"

October 31, 1989

Hospital of the University of Pennsylvania, Philadelphia, PA
• "Imaging strategies"
• "MR shoulder"

November 6-10, 1989

Magnetic Resonance Imaging: Techniques and Imaging Methodology, Hospital of the University of Pennsylvania, Philadelphia, PA
• "Methodology for imaging the musculoskeletal system"
• "MR of the knee: Part I"

November 9, 1989

Delaware Valley Magnetic Resonance Imaging Society, Philadelphia, PA
• "Shoulder MRI"

February 5, 1990

Grand Rounds, Department of Diagnostic Radiology, Hahnemann University Philadelphia, PA
• "Orthopedic MRI"

February 25, 1990

Educational Program, Eighth Annual Meeting of the Society for Magnetic Resonance Imaging, Washington, DC
• "Knee MRI"

May 20, 1990

The Philadelphia Orthopedic Review Course, Philadelphia, PA
• "Orthopedic imaging"

June 1, 1990

Beebe Medical Center, Lewes, DE
• "Mobile MRI"

PETER N. BURNS, Ph.D.

July, 1989

American Association for Physicists in Medicine Annual Meeting, Memphis, TN
• "Quality control of ultrasound Doppler devices"

September, 1989

International Perinatal Doppler Society, Paris, France
• "Role of an acute embolization sheep model in the investigation of uteroplacental Doppler signals"
• "Hemodynamics and signal analysis for fetal Doppler studies"

- September, 1989 3rd Drexel Symposium on Ultrasound Imaging, Drexel University, Philadelphia, PA
- "Estimation of vascular impedance using Doppler ultrasound"
- November 26 -
December 1, 1989 The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Criteria for the identification of tumor blood flow using Doppler ultrasound"
- February, 1990 University of California at San Diego Medical Center, San Diego, CA
- "Duplex imaging"
- March, 1990 The 34th Annual Convention of the American Institute of Ultrasound in Medicine, New Orleans, LA
- "Doppler ultrasound hemodynamic basis": Categorical Course
- March, 1990 4th Annual Clinical Seminar in Diagnostic Ultrasound, West Penn Hospital, Pittsburgh, PA
- "Doppler ultrasound and tumor blood flow"
- April, 1990 Guest Faculty, Australian Society for Ultrasound in Medicine 4th Annual Vascular Workshop, Sydney, Australia
- "Physics of Doppler"
 - "Artifacts in Doppler ultrasound"
 - "The future of imaging"
- May, 1990 University of Pennsylvania Medical Image Processing Group, Philadelphia, PA
- "Quantitative Doppler ultrasound"
- May 2-4, 1990 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Principles of color Doppler"
 - "Co-ordinator of color Doppler": Tutorial Day

STEVEN M. COHEN, M.D.

- November 26 -
December 1, 1989 The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Color Doppler imaging of the eye and orbit"
- March 27, 1990 Community Medical Center, Scranton, PA
- "Appropriate utilization of MRI vs CT"
- May 2-4, 1990 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Ophthalmic uses of color Doppler"
 - "Small parts scanning" - workshop course

P. MACKE CONSIGNY, Ph.D.

September, 1989

The Alexandria Hospital, Alexandria, VA

- "Arterial wall pathophysiology": Laser angioplasty course

November 26 -
December 1, 1989

The 75th Scientific Assembly and Annual Meeting of
the Radiological Society of North America, Chicago, IL

- "Smooth muscle cell mitogens and restenosis after balloon angioplasty"

March, 1990

Society for Cardiovascular and Interventional Radiology,
Miami, FL

- "Effects of balloon angioplasty and laser-assisted balloon angioplasty on atherosclerotic rabbit arteries"

April, 1990

Federation of American Societies for Experimental
Biology, Washington, DC

- "Endothelin increases arterial sensitivity to serotonin"

May, 1990

The Alexandria Hospital, Alexandria, VA

- "Pathophysiology of vascular intervention": Tutorial in vascular interventional techniques

STEPHEN A. FEIG, M.D.

July 1-8, 1989

The 17th International Congress of Radiology, Paris, France

- "Screen-film mammography: The image and its quality"

July 27, 1989

Department of Radiology, Hahnemann University School of
Medicine, Philadelphia, PA

- "Breast masses"

August 4-6, 1989

The Ninth Annual Pittsburgh Breast Imaging Seminar
sponsored by the Radiology Departments of Magee-Women's,
Montefiore, Shadyside and the Western Pennsylvania
Hospitals, Pittsburgh, PA

- "Film-screen mammography equipment, positioning and technique"
- "Evaluation of breast masses by mammography and ultrasound"
- "Quality assurance"
- "Screening controversies"

September 8-10, 1989

Workshop in Mammography, sponsored by Mammography,
Inc., Chicago, IL

- "Mammographic technique and equipment"
- "Imaging evaluation of circumscribed breast masses"
- "Mammographic interpretation - problems, pearls and pitfalls"
- "Quality assurance in mammography"

- October 13-15, 1989 ACR Symposium on Mammography, sponsored by the American College of Radiology, Lake Buena Vista, FL
- "Quality assurance"
 - "Breast calcifications"
 - "The mammography report"
- October 25, 1989 Department of Radiology, State University of New York, Downstate Medical School, Brooklyn, NY
- "Breast calcifications"
- October 30, 1990 Department of Radiology, The Medical Center of Delaware, Christiana Hospital, Newark, DE
- "Breast calcifications"
- November 1, 1989 Department of Radiology, University of British Columbia School of Medicine, Vancouver General Hospital, Vancouver (British Columbia), Canada
- "Evidence of benefits from screening - results of trials in USA and Europe"
- November 2-3, 1989 British Columbia Cancer Foundation/Research Centre Vancouver (British Columbia), Canada
- "Mammographic evaluation and management of breast masses"
 - "Film-screen mammography, equipment, technique and positioning"
- November 10, 1989 Department of Radiology, Ohio State University School of Medicine, Ohio State University Hospital, Columbus, OH
- "Differential diagnosis of breast calcifications"
- November 10, 1989 Central Ohio Radiologic Society, Columbus, OH
- "Evaluation of breast masses by mammography and ultrasound"
- November 14, 1989 Department of Radiology, Presbyterian Medical Center, Philadelphia, PA
- "Evaluation of mammographic calcifications"
- November 26 -
December 1, 1989 The 75th Scientific Assembly and Annual Meeting, Radiological Society of North America, Chicago, IL
- "Methods for testing film processors used in mammography"
- November 30, 1989 Annual Meeting, Society of Breast Imaging, Chicago, IL
- "Estimation of radiation risk from screening mammography, recent trends and comparison with expected benefits"
- December 13, 1989 South Florida Radiological Society, Miami, FL
- "Breast calcifications"

- January 24, 1990 New York County Medical Society Conference on Mammography Screening, New York Academy of Medicine, New York, NY
- "Technical aspects and limitations of mammography"
- February 14, 1990 Department of Diagnostic Radiology, University of Kansas Medical Center, College of Health Sciences and Hospital, Kansas City, KS
- "Mammographic and sonographic evaluation of breast masses and asymmetric densities"
- February 14, 1990 Department of Radiology, St Lukes Hospital of Kansas City, Kansas City, MO
- "Practical solutions to common mammographic problems"
 - "Imaging management of breast masses by mammography and ultrasound"
- February 14, 1990 Greater Kansas City Radiological Society, Kansas City, MO
- "Mammographic evaluation of breast calcifications"
- February 27, 1990 Philadelphia Mammography Society, Philadelphia, PA
- "Differential diagnosis, imaging workup and clinical management of breast calcifications"
- March 15-18, 1990 24th National Conference on Breast Cancer, sponsored by the American College of Radiology, New Orleans, LA
- "What is the present risk from mammographic radiation?"
 - "Analyzing mammographically detected calcifications"
 - "Quality assurance for mammography"
 - "The breast imaging report"
- April 4, 1990 Department of Radiology, Mercy Catholic Medical Center, Darby, PA
- "Breast calcifications: Mammographic-pathologic correlation"
- April 30, 1990 Radiology Grand Rounds, Christiana Hospital, The Medical Center of Delaware, Newark, DE
- "Differential diagnosis and imaging management of breast masses"
- May 13-18, 1990 Ninetieth Annual Meeting of the American Roentgen Ray Society, Washington, DC
- "Evaluation of visual and quantitative methods for mammographic processor control"
 - "Screen-film mammography: Equipment, technique and interpretation, instructional course #313"
- June 10-14, 1990 Sixth International Congress on Breast Diseases of the International Society of Senology, sponsored by the Society for the Study of Breast Diseases and the American Cancer Society, Boston, MA
- "Quality control of the mammographic image"

RICK I. FELD, M.D.

September, 1989

Mt. Sinai Hospital, New York, NY

- "Ultrasound of the liver"

May 2-4, 1990

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

- "Interventional Ultrasound"

ADAM E. FLANDERS, M.D.

July 1-8, 1989

The 17th International Congress of Radiology, Paris, France

- "Review of cervical spinal cord injuries at 1.5 T"

February 8, 1990

The Delaware Valley Magnetic Resonance Imaging Society, Philadelphia, PA

- "MRI of the cervical spine: Special considerations in trauma"

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

January 1990

American Heart Association Scientific Conference on Peripheral and Non-coronary Vascular Disease, Dallas, TX

- "Efficacy of thrombolysis in infrainguinal bypass grafts"

March 1990

Scientific Session. Society of Cardiovascular and Interventional Radiology 15th Annual Course, Miami Beach, FL

- "Angiographic evaluation of the Palmaz endovascular stent: A followup study"
- "Lasers, atherectomy, and vascular stents": Workshop on new devices

March 28, 1990

Society of Cardiovascular and Interventional Radiology 15th Annual Course, Miami Beach, FL

- "New devices: Lasers, atherectomy and vascular stents": (workshop session)

BARRY B. GOLDBERG, M.D.

June 29-July 1, 1989

Sixth International Congress on the Ultrasonic Examination of the Breast, Paris, France

- "Intraoperative sonomammography"

July 2-7, 1989

The 17th International Congress of Radiology, Paris, France

- "Ultrasound contrast agents: Experimental results"
- Chairman, Ultrasound Session: "Doppler"

- September 6-8, 1989 Stein Conference on Imaging in Medicine and Biology: Current Issues and Prospects Seminar, Drexel University, Philadelphia, PA
- "Imaging of organ systems": Panel discussion
- October 5-7, 1989 Eco Italia '89 Meeting, Naples, Italy
- "Ultrasound of the lower extremity"
 - "Ultrasound evaluation of superficial soft tissues"
 - "Obstetrical Doppler Ultrasound"
 - "Endovascular ultrasound"
- October 11-14, 1989 The 5th International Symposium of Digestive Surgery and Endoscopy and Twelfth European Post-Graduate Course of Gastrointestinal Endoscopy, Rome, Italy
- "Color Doppler intraoperative ultrasound"
 - "Advances in ultrasound endoscanning (rectal, vaginal, vascular, and transesophageal)"
 - "Ultrasound in gastrointestinal surgery - latest developments"
- November 1, 1989 Ben Franklin Technology Center, Philadelphia, PA
- "Center for biomedical imaging"
- November 2, 1989 Annual Oration Lecture (Honoring Howard Pollak, M.D.) Philadelphia Roentgen Ray Society, Philadelphia, PA
- "Advances in ultrasound: Color Doppler, endovascular imaging, and contrast agents"
- November 9-11, 1989 Urologic Ultrasound Meeting, Phoenix, AZ
- "Kidney, ureter, and urinary bladder"
 - "Conventional and Color Doppler of the genitourinary tract"
- December 5-6, 1989 Toshiba Lecture, 21st Annual Scientific Meeting of the British Medical Ultrasound Society, Torquay, England
- "History and current perspectives for ultrasound contrast agents"
 - Film preview panel
- January 11, 1990 Center for Biomedical Imaging Seminar, Philadelphia, PA
- "Non-vascular endoluminal ultrasound: Potential applications"
- February 2-3, 1990 13th Annual Advanced Ultrasound Seminar, Lake Buena Vista, FL
- "Factors influencing ultrasound (government, finance, legal, and bioeffects)"
 - "Ultrasound contrast agents"
 - "Endoscanning (endovaginal, endorectal, transesophageal, and endovascular)"
- March 2, 1990 Second Philadelphia Symposium on Biliary Lithotripsy, Philadelphia, PA
- "Gallbladder lithotripsy"

- March 3-7, 1990
- The 34th Annual Convention of the American Institute of Ultrasound in Medicine, New Orleans, LA
- "Tumor evaluation using an intravenous ultrasound contrast agent"
 - "Non-vascular intraluminal ultrasound"
 - Moderator for session: "The ultrasound guidelines: Medical, legal, regulatory, and economic implications."
- March 8-11, 1990
- Diagnostic Imaging Advisory Panel Meeting, Cayman Islands, British West Indies
- "Ultrasound"
- March 12, 1990
- Cowen and Company Health Care Industry Conference, Boston, MA
- "Applications of albuterol in radiologic ultrasound"
- March 16-17, 1990
- Society of American Gastrointestinal Endoscopic Surgeons (SAGES) 2nd World Congress of Endoscopic Surgery, Atlanta, GA
- "Pre and postoperative ultrasound in gastrointestinal surgery"
 - Panel discussion: "Ultrasound and the surgeon"
- April 4, 1990
- Grand Rounds, Department of Pediatrics, Children's Hospital of Philadelphia, PA
- "Applications of duplex and color Doppler in infants and children"
- April 19-20, 1990
- Chicago Radiological Society, Chicago, IL
- "Advances in Ultrasound: Color Doppler, endovascular ultrasound, and contrast agents"
- Department of Radiology, Michael Reese Hospital, Chicago, IL
- "Color Doppler ultrasound (non-peripheral vascular and non-cardiac)"
- Department of Radiology, University of Chicago, Chicago, IL
- "Color Doppler ultrasound (non-peripheral vascular and non-cardiac)"
- April 27, 1990
- Susan F. Meltzer Memorial Lecture, Medical College of Pennsylvania, Philadelphia, PA
- "Advances on ultrasound: Color Doppler, contrast agents, and endoluminal ultrasound"
- May 1-3, 1990
- The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Non-atherosclerotic peripheral vascular abnormalities"
 - "Endoluminal ultrasound"
- May 6-11, 1990
- Seventh Congress of the European Federation of Societies for Ultrasound in Medicine and Biology, Jerusalem, Israel
- "State of the art in endosonography": The Francis Weill Lecture

- "Ultrasound contrast agents"
- "State of the art in prostate ultrasound"

May 17, 1990

American Roentgen Ray Society 1990 Annual Meeting,
Washington, D.C.

- "The non-vascular applications of endoluminal ultrasound"

CARLOS F. GONZALEZ, M.D.

January 26, 1990

Pennsylvania Hospital, Philadelphia, PA

- "Orbital imaging, Part I"

February 9, 1990

Pennsylvania Hospital, Philadelphia, PA

- "Orbital imaging, Part II"

May 16, 1990

Mercy Catholic Medical Center, Darby, PA

- "MRI of trauma of the central nervous system"

GEORGE W. GROSS, MD.

July 1-8, 1989

The 17th International Congress of Radiology, Paris, France

- "Efficacy of digital radiography in neonatal necrotizing enterocolitis"

April, 1990

Annual Meeting of the Society for Pediatric Radiology,
Cincinnati, OH

- "Demonstration of recto-urethral fistula associated with imperforate anus using augmented-pressure distal colostogram"
- "Limited slice CT in the evaluation of sinus pathology in children"
- "Interhemispheric fissure width (IHF) in neonates on ECMO"

PAMELA L. HILPERT, M.D., Ph.D.

November 26 -
December 1, 1989

The 75th Scientific Assembly and Annual Meeting of
the Radiological Society of North America, Chicago, IL

- "Enhanced detection of hepatomas in woodchucks following intravenous ultrasound contrast agent."

March 28, 1990

Department of Radiology, Meadowlands Hospital,
Rutherford, NJ

- Obstetrics and Gynecology Grand Rounds

April 21, 1990

Ultrasound Study Day, Peterborough District Hospital,
Peterborough, England

- "Advances in ultrasound: Ultrasound contrast agents"

DAVID KARASICK, M.D.

- August 10, 1989 Telephone Conference - National Cancer Institute,
Philadelphia, PA
• "Musculoskeletal tumors"
- October 3, 1989 PaACEP Emergency Medicine Board Review Course, Cherry
Hill, NJ
• Radiology workshop
- October 12, 1989 Department of Radiology, Mercy Catholic Medical Center,
Darby, PA
• "Skeletal trauma"
- January 4, 1990 Philadelphia Roentgen Ray Society, Philadelphia PA
• Panel moderator

STEPHEN KARASICK, M.D.

- November 15, 1989 Department of Radiology, Mercy Catholic Medical Center,
Darby, PA
• "Interesting GU cases"
- April 9, 1990 Philadelphia Roentgen Ray Society Blue Ribbon Lecture,
Philadelphia, PA
• "Hysterosalpingography"
- May 18, 1990 Annual Meeting of the Pennsylvania Radiological Society
Hershey, PA
• "Current concepts in hysterosalpingography"

ALFRED B. KURTZ, M.D.

- October 19, 1989 The New Jersey Institute of Ultrasound in Medicine,
Summit, NJ
• "The routine analysis of the fetus"
- November 2-4, 1989 Guest faculty, Advanced Ultrasound Techniques in Obstetrics
and Gynecology Course, Phoenix Perinatal Associates,
Maternal Fetal Medicine, Scottsdale, AZ
• "Routine approach to OB/Ultrasound"
• "Biophysical profile: A radiologist's approach"
• "Fetal thorax"
• "Panel of OB Doppler"
• "Fetal urinary tract "

November 26 -
December 1, 1989

The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "US measurements of the fetus: Parameters needed for accurate assessment "
- "Predictive value of the short femur in the detection of in utero skeletal dysplasias"

February 7, 1990

Visiting Professor Conference, Department of Medical Imaging, Residency Training Program, Mercy Catholic Medical Center, Darby, PA.

- "Ultrasound evaluation of the skeletal system"

March 4-7, 1990

The 34th Annual Convention of the American Institute of Ultrasound in Medicine, New Orleans, LA

- "The yolk sac is a poor predictor in early pregnancy"
- Program Chairman, Special Sessions
- Co-director, Masters Program in Ob/Gyn:
 - a. "Professor's work in progress"
 - b. "Biometry for the 1990's, What do I do in my lab?"
 - c. "Early pregnancy: What's new in the normal and abnormal?"
 - d. "Unsolved problems in ultrasound-macrosomia, oligohydramnios, fetal maturity "(Moderator)
 - e. "Fetal surveillance: Is the biophyisic profile over the hill or just coming of age?"

March 15, 1990

Department of Radiology, The Children's Hospital of Philadelphia. Philadelphia, PA

- "Prenatal diagnosis of congenital anomalies":
Refresher Course, Pediatric Radiology 1990

March 28, 1990

Visiting Professor, Department of Radiology Grand Rounds, North Shore University Hospital, Cornell University Medical College, Manhasset, NY

- Case presentation to residents and staff
- "Obstetrical use of endovaginal scanning"

May 19-18, 1990

Ninetieth Annual Meeting of the American Roentgen Ray Society, Washington, DC.

- Instructional course presentation, "Second and third trimester fetal anomalies"
- "The nonvascular applications of endoluminal ultrasound"

DAVID C. LEVIN. M.D.

September 27, 1989

Radiology Grand Rounds, Columbia-Presbyterian Medical Center, New York City, NY

- "Interventional coronary angiography"

- October 28, 1989 Society of Chairmen of Academic Radiology Departments, Washington, DC
- "Should we have more specific residency training requirements?"
- January 22, 1990 American Heart Association Scientific Conference of Peripheral and Noncoronary Vascular Disease, Dallas, TX
- "Practice patterns in peripheral interventions"
- February 1, 1990 American College of Cardiology Course, "Diagnostic and Interventional Cardiac Catheterization-1990", Bethesda, MD
- "Technical and methodological considerations in cine imaging and equipment purchase"
 - "Image acquisition-cine/film and film processing"
- March 13, 1990 23rd Annual Aubrey O. Hampton Lecture of the Massachusetts General Hospital, Boston, MA
- "Turf battles and their implications for the future training of radiologists"
- March 25, 1990 Society for Cardiovascular Catheterization and Interventional Radiology, Miami Beach, FL
- "Political and turf issues in an interventional radiology practice"
- April 12, 1990 Cardiac Catheterization Conference, Christiana Hospital, Wilmington, DE
- "The importance of plaque morphology in coronary angiography"
- April 25, 1990 The 38th Annual Meeting of the Association of University Radiologists, Minneapolis, MN
- "The ideal curriculum for a 4-year radiology residency"

ESMOND MAPP, M.D.

- July 20, 1989 94th Annual National Medical Association Convention, Orlando, FL
- "The many faces of the right lower quadrant of the abdomen"
- August 10, 1989 Visiting Professor, Reading Hospital and Medical Center, Reading, PA
- "The many faces of the right lower quadrant of the abdomen"
- August 30, 1989 Visiting Professor, US Naval Hospital, Pensacola, FL
- "Imaging in colon cancer"

- January 3, 1990 Visiting Lecturer, Mercy Catholic Medical Center,
Philadelphia, PA
- "The many faces of the right lower quadrant of the abdomen"
- March 1, 1990 Film Reading Panel, Philadelphia Roentgen Ray Society
Philadelphia, PA
- Film reading panel
- May 3, 1990 Home Talent Night, Philadelphia Roentgen Ray Society,
Philadelphia, PA
- "Defecography - What is its role?"

BARBARA L. McCOMB, M.D.

- January 10, 1990 Mercy Catholic Medical Center, Darby, PA
- "Evaluating the lateral chest radiograph"
- February 1, 1990 Philadelphia Roentgen Ray Society Meeting, Philadelphia, PA
- Film reading panel

MARK M. MISHKIN, M.D.

- September, 1989 Anterior Cervical Fusion. A New Technique: Conference
sponsored by Jefferson Medical College, Philadelphia, PA
- "Imaging of the cervical spine: A comparison of methods"
- January, 1990 The University of Chicago, Chicago, IL
- "Clinical safety and economic principles: Current perspectives on contrast media"
- January, 1990 Radiology Grand Rounds, Massachusetts General Hospital,
Boston, MA
- "Factors involved in the selection of contrast media in 1990"
- February, 1990 University of Florida, Lake Buena Vista, FL
- "Principles for selection of contrast media: Current perspectives"
- March, 1990 New York University, New York, NY
- "Principles for selection of contrast media: Current perspectives"
- April, 1990 Cardiovascular Imaging in the 1990's, Grand Cayman Islands
- "Contrast media safety: What do we know and how do we know it?"
- April, 1990 University of Texas, Houston, TX
- "Clinical safety and economic principles for selection of an agent": Current perspectives on contrast media

- May, 1990 Symposium Contrast Media 1990: Practical Issues, Boston, MA
- "Contrast media: The worldwide experience"
- May, 1990 Ninetieth Annual Meeting of the American Roentgen Ray Society, Washington, DC
- "Low osmolar contrast agents": Instructional Course #308
 - "Contrast media": Luncheon lecture
- May, 1990 Grand Rounds, University of Massachusetts, Worcester, MA
- "Contrast media: What do we know and how do we know it?"
- June, 1990 Symposium Contrast Media 1990: Practical Issues, Washington, DC
- "Contrast media: The worldwide experience"
- June, 1990 Annual Meeting of the Eastern Radiological Society, Dublin, Ireland
- "Update on the status of non-ionic contrast media"

DONALD G. MITCHELL, M.D.

- September 13, 1989 Visiting Professor and Grand Rounds at the Henry Ford Hospital, Detroit, MI
- "MRI of femoral head osteonecrosis"
 - "The female pelvis: Ultrasound/MRI correlation"
- September 19, 1989 Delaware Valley Vascular Society Annual Meeting, Philadelphia, PA
- "Vascular applications of magnetic resonance imaging"
- September 23, 1989 Quantum Medical Systems: Color Flow Doppler Imaging State of the Art 1989, St. Louis, MO
- "Obstetrics and neonate with color flow Doppler"
 - "Cerebral circulation other than carotid territory with color flow Doppler"
- October 21, 1989 MR Musculoskeletal Imaging Symposium, GEMS-TV Broadcast, Milwaukee, WI
- "Hips and marrow disease"
- November 10, 1989 Magnetic Resonance Imaging: Community Education Course, Hospital of the University of Pennsylvania, Philadelphia, PA
- "Body imaging: Techniques and imaging methodology"
- November 29, 1989 The 75th Anniversary Scientific Assembly and Annual Meeting of the Radiologic Society of North America, Chicago, IL

- January 22, 1990

 - "High field T1-weighted spin-echo MR images of the abdomen: Optimization by decreasing echo time and suppressing signal from fat"

Radiology Grand Rounds, Presbyterian Hospital, Philadelphia, PA

 - "Osteonecrosis of the femoral head"
- February 13, 1990

Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA

 - "Advances in hepatic MRI"
- February 24-28, 1990

Eighth Annual Meeting of the Society for Magnetic Resonance Imaging, Washington, DC

 - "MRI of livers with cirrhosis, iron overload and hepatoma"
 - "Improved pancreatic MRI at 1.5 Tesla"
- February 25, 1990

Evening Tutorial Program, Eighth Annual Meeting of the Society for Magnetic Resonance Imaging, New Orleans, LA

 - "MRI of the liver"
- March 4-7, 1990

The 34th Annual Convention of the American Institute of Ultrasound in Medicine, New Orleans, LA

 - "Evaluation of ocular and orbital pathology with color Doppler imaging"
- March 26, 1990

Radiology Grand Rounds, Johns Hopkins Medical Center, Baltimore, MD

 - "MRI of marrow"
 - "MRI of the liver"
- April 19, 1990

Blue Ribbon Lecture Series, Philadelphia, PA

 - "MRI and ultrasound of the female pelvis"
- April 25, 1990

Lehigh Valley Magnetic Resonance Center, Allentown, PA

 - "MRI of the shoulder"
- May 2-4, 1990

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

 - "Color Doppler pitfalls"
 - "Color Doppler imaging of the brain"

LAURENCE NEEDLEMAN, M.D.

- August 1, 1989

Visiting Professor, Department of Radiology, West Penn Hospital, Pittsburgh, PA

 - "Obstetrical Doppler"
 - "Potpourri of prenatal cases"
- August 1, 1989

Western Pennsylvania Ultrasound Society, West Penn Hospital, Pittsburgh, PA

 - "Lower extremity and abdominal venous thrombosis"

- October 5-7, 1989 Twelfth Annual Seminar in Diagnostic Ultrasound, University of Michigan Medical School, Ann Arbor, MI
- "Doppler applications in obstetrics"
 - "Carotid Doppler"
 - "Venous ultrasound"
 - "Genitourinary Doppler"
- October 11, 1989 Medical Staff, CME Lecture Series, Holy Redeemer Hospital and Medical Center, Meadowbrook, PA
- "Vascular ultrasound"
- October 26, 1989 Annual Meeting of the Society of Radiologists in Ultrasound, Denver, CO
- "Uteroplacental Doppler indices in a sheep model"
- November 26 -
December 1, 1989 The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Uteroplacental Doppler pulsatility indices in a sheep model"
- February 10-17, 1990 Eleventh Annual Intermountain Imaging Conference, Steamboat Springs, CO
- "Evaluating fetal well-being"
 - "Fetal head and neck"
 - "Potpourri of perinatal problems"
 - "Fetal abdomen and gastrointestinal tract"
 - "The pregnancy with abnormal alpha fetoprotein values"
 - "Genitourinary Doppler"
 - "Ultrasound of diffuse liver disease"
 - "Ultrasound of the biliary system"
- March 7, 1990 The 34th Annual Convention of the American Institute of Ultrasound in Medicine, New Orleans, LA
- Meet the Professor Session: "Peripheral venous imaging"
- March 24-25, 1990 Fourth Annual Clinical Seminar in Diagnostic Ultrasound, West Penn Hospital, Pittsburgh, PA
- "Fetal echocardiography"
 - "Obstetrical Doppler"
 - "Carotid Doppler"
 - "Color Doppler survey"
 - "Venous imaging"
- April 3, 1990 Long Island Radiologic Society, Long Island, NY
- "Venous ultrasound"
- April 21-23, 1990 Fourth Congreso Nacional De Ultrasonido, Acapulco, Gro., Mexico
- "El ultrasonido y las malformaciones congénitas y hereditarias"
 - "Actualidad del Doppler a color en obstetricia"
 - "Desayuno con expertos (abdomen)"
 - "El ultrasonido y el sistema urogenital"

- "Ultrasonido Doppler a color en abdomen"
- "Participación del ultrasonido en el manejo de la paciente infértil"
- "Perspectivas del Doppler a color"
- "Aplicaciones del Doppler a color en el sistema vascular periférico"

May 2-4, 1990

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

- "Clinical overview of duplex and color Doppler ultrasound"
- "Panel discussion on color Doppler"
- "Fetal echocardiography"
- "Update on obstetrical Doppler"

May 23, 1990

Radiological Staff, Presbyterian Medical Center, Philadelphia, PA

- "Diffuse liver disease"

VIJAY M. RAO. M.D.

October 5, 1989

ENT Radiology, Philadelphia Roentgen Ray Society, Philadelphia, PA

- Panel moderator

October 25, 1989

Mercy Catholic Medical Center, Darby, PA

- "Head and neck imaging"

November 26 -
December 1, 1989

The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Comparison of spin echo and short TE 3D gradient-echo imaging of the temporomandibular region"

June 1, 1990

Third Annual TMJ Arthrography Course sponsored by Jefferson Medical College of the Thomas Jefferson University, Philadelphia, PA

- "Diagnostic TMJ imaging - MRI arthrography"

MATTHEW D. RIFKIN. M.D.

July 6, 1989

The 17th International Congress of Radiology, Paris, France

- "Prostate imaging"

September 8-9, 1989

Urologic Ultrasound Imaging: A Practical Approach to Prostate, Bladder, and Scrotal Scanning, Palm Springs, CA

- "Anatomy of the prostate: Pathogenesis of disease and how it relates to prostate ultrasound"
- "Staging prostate cancer"
- "Biopsy techniques"
- "Non-prostate GU ultrasound: Kidney, bladder and scrotum"

- February 17-18, 1990 American Urologic Association's "Ultrasound in Urology":
Update 1990, Kansas City, MO
- "Prostate ultrasonography - Methods of examination"
 - "Prostate tumor ultrasound characteristics"
 - "Ultrasound guided biopsy - Methods and indications"
 - "Role of other imaging modalities"
 - "Prostate ultrasound and screening"
- February 23-28, 1990 Eighth Annual Meeting of the Society for Magnetic Resonance
Imaging, Washington, DC
- "Prostate and bladder"
- March 3-7, 1990 The 34th Annual Convention of the American Institute of
Ultrasound in Medicine, New Orleans, LA
- "Normal and abnormal prostate anatomy"
 - "Role of MRI in prostate imaging: US/CT comparisons"
 - "Ultrasound guided biopsy of the prostate. A necessary tool
(even for palpable nodules)"
- March 16, 1990 Radiology Grand Rounds, University of California, San
Francisco, CA
- "Doppler applications in the abdomen"
- March 17, 1990 OB/GYN and Abdominal Sonography: Update 1990,
San Francisco, CA
- "Scrotal ultrasound: Indications and applications"
 - "Prostate ultrasound: Clinical applications in 1990"
- April 20-21, 1990 Transrectal Ultrasound Seminar, Washington, DC
- "Sonographic characteristics in prostate ultrasound"
 - "Prostate ultrasound - Characteristics of BPH"
 - "Ultrasound of prostate cancer"
 - "Staging of prostate cancer"
 - "The transperineal approach"
 - "Scrotal ultrasound - An overview"
- May 2-4, 1990 The Leading Edge in Diagnostic Ultrasound, sponsored by
Thomas Jefferson University Hospital, Atlantic City, NJ
- "Prostate ultrasound: An update"
- June 7, 1990 Abdominal Ultrasound Tutorial, TJUH, Philadelphia, PA
- "Scrotum"
- June 28-30, 1990 Venezuelan Medical Society, Caracas, Venezuela
- "Prostate biopsy techniques"
 - "Prostate cancer screening"
 - "Ultrasound of prostate cancer"
 - "Imaging of benign prostate hyperplasia"

SHARON R. SEGAL, D.O.

- October 19, 1989 The Medical Society of Delaware, Continuing Medical

Education for Physicians, Riverside Hospital, Wilmington, DE
• "Current status of abdominal ultrasound"

May 2-4, 1990

The Leading Edge in Diagnostic Ultrasound, sponsored by
Thomas Jefferson University Hospital, Atlantic City, NJ
• "Stump the stars"

MARCELLE J. SHAPIRO, M.D.

May 16, 1990,

Annual Cardiovascular and Interventional Radiological
Society of Europe Meeting, Brussels, Belgium
• "Chemical shift imaging and magnetic resonance
spectroscopy of atherosclerotic plaque"

PAUL W. SPIRN, M.D.

September 9, 1989

Annual Meeting of the Pennsylvania and New Jersey Thoracic
Society, Philadelphia, PA
• "Radiology in the intensive care unit"

October 19, 1989

Philadelphia Roentgen Ray Society Blue Ribbon Lecture,
Philadelphia, PA
• "ICU chest radiology: A survival guide"

October 24, 1989

Drinker Society for Critical Care Medicine, Philadelphia, PA
• "A user's guide to intensive care radiology"

November 29, 1989

The 75th Scientific Assembly and Annual Meeting of the
Radiological Society of North America, Chicago, IL
• "Critical care chest radiology--Plain film interpretation: A
survival guide": Refresher Course

December 6, 1989

Internal Medicine Grand Rounds, Muehlenberg Hospital,
Plainfield, NJ
• "Practical ICU radiology"

March 2, 1990

New Jersey Thoracic Society/American College of Chest
Physicians 18th Annual Joint Conference, New Brunswick, NJ
• "ICU radiology"

April 11, 1990

Department of Radiology, University of Pittsburgh Medical
Center, Pittsburgh, PA
• "Evaluating support devices in intensive care patients"

April 11, 1990

Pittsburgh Roentgen Ray Society, Pittsburgh, PA
• "Radiology of pulmonary resection"

April 12, 1990

Radiology Grand Rounds, University of Pittsburgh Medical
Center, Pittsburgh, PA

- "Interpreting cardiopulmonary abnormalities in intensive care patients"
- May 14, 1990 Ninetieth Annual Meeting of the American Roentgen Ray Society, Washington, DC
- "A practical approach to intensive care chest radiology": Instructional course
- May 28, 1990 Intensive Care Therapy Conference, Bispebjerg Hospital, Copenhagen, Denmark
- "An American approach to intensive care chest radiology"
- May 30, 1990 Department of Anesthesiology and Radiology, Central Hospital, Esbjerg, Denmark
- "An American approach to intensive care chest radiology"
- June 7, 1990 Department of Radiology, Frederiksberg Hospital, Copenhagen (Frederiksberg), Denmark
- "An American approach to intensive care chest radiology"

ROBERT M. STEINER, M.D.

- August 14, 1989 The 8th Annual Meeting of the Society of Magnetic Resonance in Medicine, Amsterdam, The Netherlands
- "Magnetic resonance imaging of myeloproliferative disorders"
- November 26 -
December 1, 1989 The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "MRI of diffuse diseases of bone marrow": Focused symposium on imaging of the musculo-skeletal system"
- January 9, 1990 Annual Meeting of the Society of Thoracic Radiology, Naples, FL
- "Scanlon symposium on pulmonary and cardiac MRI" (Chairman)
- January 19, 1990 Grand Rounds, Reading Hospital, Reading, PA
- "Diffuse diseases of bone marrow: MRI appearance"
- March 2, 1990 John Hopkins School of Occupational Medicine, Baltimore, MD
- "Radiology of occupational lung disease"
- April 9, 1990 Department of Radiology, University of Tennessee, Memphis, TN
- Boards film review
- April 19, 1990 Presbyterian Medical Center, Philadelphia, PA
- Radiology film conference
- April 25, 1990 Cardiac Radiology Research Seminar Speaker, Hospital of the University of Pennsylvania, Philadelphia, PA

- "Cross-sectional imaging of the pericardium"
- May 15, 1990 Grand Rounds, The Hospital of the University of Pennsylvania, Philadelphia, PA
- "Congenital heart disease in the adult patient"
- June 6, 1990 Mercy Catholic Medical Center, Yeadon, PA
- Interesting case conference
- June 19, 1990 Eastern Shore Medical Symposium, Rehobeth Beach, DE
- Invited speaker

KEVIN L. SULLIVAN, M.D.

- March, 1990 Delaware Valley Vascular Surgery Society, Valley Forge, PA
- "Efficacy of infrainguinal graft thrombolysis"
- March, 1990 Society of Cardiovascular and Interventional Radiology 15th Annual Course, Miami Beach, FL
- Thrombolysis workshop

TALIN A. TASCIYAN, Ph.D.

- February 24 -28, 1990 Eighth Annual Meeting of the Society for Magnetic Resonance Imaging, Washington, DC
- "Optimization of imaging parameters in fast LAF angiography"

TERRI TUCKMAN, M.D.

- April 16 -17, 1990 University of Rochester, Rochester, NY
- "Abnormalities of the placenta and cervix"
- "Congenital abnormalities of the central nervous system"

SIMON VINITSKI, Ph.D.

- August 12 - 18, 1989 The 8th Annual Meeting of the Society of Magnetic Resonance in Medicine, Amsterdam, The Netherlands
- "Variable angle in fast inversion recovery technique: Application to high field imaging"
- "The use of gadolinium labeled microspheres and liposomes for magnetic resonance imaging of pulmonary embolism"

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| October 25, 1989 | Department of Radiology, Hospital of the University of Pennsylvania, Philadelphia, PA
• "Variable RF excitation in spin echo imaging" |
| November 9 - 12, 1990 | 11th Annual International Conference of the IEEE/EMBS, Seattle, WA
• "Fast magnetic resonance imaging" (Session Chairman) |
| November 26 - December 1, 1989 | The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• "MR chemical shift imaging and spectroscopy of atheroscleratic plaque" |
| January 10, 1990 | Annual Meeting of the Society of Thoracic Radiology, Naples, FL
• "MRI of lung parenchyma: New developments" |
| January 12, 1990 | Scanlon Memorial Symposium, Naples, FL
• "MRI of lung parenchyma: New developments" |

RICHARD J. WECHSLER, M.D.

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| November 1, 1989 | Mercy Catholic Medical Center, Darby, PA
• "Mediastinal vascular pathology" |
| January 10, 1990 | Annual Meeting of the Society of Thoracic Radiology, Naples, FL
• Annual postgraduate course: "Cases of the day" |

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EXHIBITS AND POSTER PRESENTATIONS

The 17th International Congress of Radiology, Paris, France - 1989

- "Magnetic resonance imaging in bone marrow hyperplastic, hypoplastic and replacement syndromes." (Co-exhibitors: RM Steiner, DG Mitchell, VM Rao, S Murphy, DL Burk, S Vinitski, S Ballas, D Levy, D Radach, M Rifkin)

The 37th Annual Meeting of the Society of Nuclear Medicine, St. Louis, MO - 1989

- "Investigations into the use of gadolinium labeled microspheres and liposomes for magnetic resonance imaging of lung parenchyma." (Co-exhibitors: ML Thakur, S Vinitski, MD Rifkin, S Lin, J DeFulvio, MD Richard, DG Mitchell, D Levy)

The 8th Annual Meeting of the Society of Magnetic Resonance in Medicine, Amsterdam, The Netherlands - 1989

- "Magnetic resonance imaging of myeloproliferative disorders." (Co-exhibitors: RM Steiner, DG Mitchell, VM Rao, S Murphy, M Rifkin, DL Burk, K Kaplan, S Vinitski)
- "The use of gadolinium labeled microspheres and liposomes for magnetic resonance imaging of pulmonary embolism." (Co-exhibitors: S Vinitski, PM Consigny, ML Thakur, SS Lin, MD Rifkin, DG Mitchell, R Blob)

The International Perinatal Doppler Society, 2nd Congress, Paris, France - 1989

- "Color Doppler imaging of neonatal cerebral vessels: Normal vs carotid ligation for extracorporeal membrane oxygenation." (Co-exhibitors: DA Merton, DG Mitchell, L Graziani, H Desai, S Desai, P Wolfson, P Mirsky, L Needleman, BB Goldberg)

The 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL - 1989

- "History of imaging of the biliary tree and the diagnosis of cholelithiasis." (Co-exhibitors: R Feld, AB Kurtz, RK Zeman)
- "Pulmonary embolism: Past, present, and future." (Co-exhibitors: RM Steiner, M Simon)
- "Radiology of osteosarcoma: Past, present, and future." (Co-exhibitors: DL Burk, Jr., MK Dalinka) *Award: Certificate of Appreciation*

- "Meningioma imaging: Past, present, and future." (Co-exhibitors: RM Steiner, MM Mishkin, JM Taveras)
- "The beginnings of diagnostic US". (Co-exhibitors: BB Goldberg, B Kimmelman, R Kondratas)
- "Processor control in mammography." (Co-exhibitors: BM Galkin, SA Feig, L Blum, EB Mendelson, CA Wilson, E Wolk, J Mansfield, K Mansfield) *Award: Certificate of Merit*
- "Application of neural networks to neonatal chest radiographic diagnosis." (Co-exhibitors: GW Gross, V Greco-Hunt, J Boone)
- "Color Doppler imaging of the iliofemoral region." (Co-exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg) *Award: Certificate of Merit*
- "Temporomandibular joint imaging: Mimics of internal derangement." (Co-exhibitors: VM Rao, AD Farole)
- "Evaluation of multiple diagnostic modalities in the diagnosis of cervical spine trauma." (Co-exhibitors: HT Doan, AE Flanders)
- "Imaging of invasive skull base lesions." (Co-exhibitors: HT Doan, AE Flanders, VM Rao, AR Babaria, MM Mishkin)

**Eighth Annual Meeting of the Society for Magnetic Resonance Imaging,
Washington, DC - 1990**

- "MR imaging of pulmonary parenchyma and emboli by paramagnetic and superparamagnetic contrast agents." (Co-exhibitors: S Vinitski, M Thakur, PM Consigny, DG Mitchell, R Blob, S Lin, CSG Eley, M Rifkin)
- "Improvement in spine imaging." (Co-exhibitors: S. Vinitski, A Babaria, A Flanders, TA Tasciyan)

**Annual Meeting of the American Society of Neuroradiology,
Los Angeles, CA - 1990**

- "Unusual cystic lesions of the head and neck: CT and MR characteristics." (Co-exhibitors: BM Tom, VM Rao, DO Mikaelian)
- "CT and MR of non-squamous lesions of the tongue and floor of the mouth." (Co-exhibitors: VM Rao, BM Tom, DO Mikaelian)

**International Joint Conference on Neural Networks,
Washington, DC - 1990**

- "Computer aided radiologic diagnosis using neural networks." (Co-exhibitors: JM Boone, GW Gross, GS Shaber)

**Medicine IV Meeting of the Society of Photo-Optical Engineers,
Newport Beach, CA - 1990**

- "Neural network scatter correction technique for digital radiology." (Co-exhibitors: JM Boone, JA Siebert)
- "Direct scatter distribution measurements-comparison to Monte Carlo simulations." (Co-exhibitors: JA Siebert, JM Boone)

**The 34th Annual Convention of the American Institute of Ultrasound in Medicine,
New Orleans, LA - 1990**

- "Ultrasound contrast agents." (Co-exhibitors: JB Liu, DA Merton, P Hilpert, P Burns, BB Goldberg)
- "Intraoperative Color Doppler imaging" (Co-exhibitors: DA Merton, JB Liu, DG Mitchell, BB Goldberg)

**Ninetieth Annual Meeting of the American Roentgen Ray Society,
Washington, DC - 1990**

- "A new method for processor control in mammography." (Co-exhibitors: SA Feig, BM Galkin, EB Mendelson, EF Conant, E Wolk, L Blum, C Isaacson)

**Annual Meeting of the Pennsylvania Radiological Society,
Hershey, PA - 1990**

- "Color Doppler imaging of the iliofemoral region." (Co-exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg)
- "Magnetic resonance imaging in bone marrow hyperplastic, hypoplastic and replacement syndromes." (Co-exhibitors: RM Steiner, DG Mitchell, VM Rao, S Murphy, DL Burk, S Vinitski, S Ballas, D Levy, D Radach, M Rifkin)

AUDIOVISUAL MATERIALS

American College of Radiology, 1990

- Breast imaging: A guide for clinicians - (slide program). (Co-exhibitors: NL Sadowsky, SA Feig, R McLelland)
- Breast imaging learning file (teaching file). (Co-exhibitors: R McLelland, LW Bassett, GW Eklund, SA Feig, J Janus, DB Kopans, W Logan-Young, JM Martin, ME Peters, EA Sickles)

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HONORS, EDITORIAL ACTIVITIES, SERVICE FOR NATIONAL OR REGIONAL ORGANIZATIONS

JOSEPH BONN. M.D.

- Reviewer, *Clinical Imaging*
- Reviewer, *Radiology*
- Reviewer, *Interventional Radiology*
- ◊ 1989 Editor's Recognition Award with Distinction for Review of *Radiology*

JOHN M. BOONE. Ph.D.

- Co-Chairman, Quantitative Imaging Session, 1989 AAPM Annual Meeting
- Member, AAPM Task Force in Image Intensifiers - TV systems
- Member, AAPM Task Force in Exposure Meters in Diagnostic Radiology
- Reviewer, *Medical Physics*

D. LAWRENCE BURK. Jr. M.D.

- Safety Committee, Society of Magnetic Resonance Imaging
- Reviewer, *Radiology* (Musculoskeletal MRI)
- Reviewer, *RadioGraphics*
- Reviewer, Society of Magnetic Resonance in Medicine (Safety, Musculoskeletal abstracts)
- ◊ Certificate of Appreciation Award, "Radiology of osteosarcoma: Past, present, and future". Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-exhibitor: MR Dalinka)

PETER N. BURNS. Ph.D.

- Consultant, OB/GYN Panel on Fetal Doppler, Food and Drug Administration (FDA)
- Member, Imaging Sciences Special Study Section XB3, National Institutes of Health
- Chairman AIUM Doppler Standards Subcommittee
- Member, AIUM International Committee
- Member, AIUM Standard Committee
- Member, AIUM Nomenclature Subcommittee
- Scientific Program Committee, AIUM Annual Meeting
- Review Committee, International Perinatal Doppler Society
- Editorial Board, *Ultrasound in Medicine and Biology*
- Editorial Board, *Journal of Ultrasound in Medicine*
- Board of Directors, *International Perinatal Doppler Society*
- Editorial Board, *Journal of Vascular Technology*
- Reviewer, *Radiology*
- Reviewer, *American Journal of Physiology*

- Reviewer, *Gastroenterology*
- Reviewer, *IEEE Transactions of Sonics and Ultrasonics*
- Reviewer, *Investigative Radiology*
- Reviewer, *Journal Clinical Ultrasound*
- Reviewer, *Medical Instrumentation*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Circulation*

P. MACKE CONSIGNY, Ph.D.

- Reviewer, *Radiology*
- Reviewer, *Investigative Radiology*
- Reviewer, *Eicosanoids*

STEPHEN A. FEIG, M.D.

- Guest Examiner, American Board of Radiology
- Expert Witness, Mammography Section, Task Force for Standard Setting in Radiology, American College of Radiology
- Member, Committee on Breast Imaging, American College of Radiology
- Member, Committee on ACR Symposia, American College of Radiology
- Member, Committee on Systematized Refresher Courses (Co-Chairman), Faculty on Breast Disease, American College of Radiology
- Member, Breast Task Force, American College of Radiology
- Member, Committee on Mammography Home Study Course, American College of Radiology
- Chairman, Program Committee, 25th National Conference on Breast Cancer, American College of Radiology
- Member, Committee on Mammography Symposia, American College of Radiology
- Member, Committee on Residency Training, American College of Radiology
- Member, Executive Committee, Society of Breast Imaging
- Member, Mammography Advisory Committee, American Registry of Radiology Technologists
- Member, Program Committee, Sixth International Congress on Breast Disease
- Editor, *Breast Diseases, A Year Book Quarterly*
- Co-Editor, *Breast Disease, An International Journal*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *RadioGraphics*
- Reviewer, *Cancer*
- Reviewer, *Radiology*
- ◊ Certificate of Merit Award, "Processor control in mammography" Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-exhibitors: B Galkin, S Feig, EB Mendelson, E Wolk, J Mansfield, K Mansfield)

ADAME E. FLANDERS, M.D.

- Consultant, Squibb Diagnostics Contrast Division
- Appointed Member of the Squibb Diagnostics Contrast Speakers Bureau

GEOFFREY A. GARDINER, Jr. M.D.

- Elected Fellow, Society of Cardiovascular and Interventional Radiology (SCVIR)
- SCVIR Committee on Registries
- Associate Editor, *Journal of Vascular and Interventional Radiology*
- Consulting Editor, *Cardiovascular and Interventional Radiology*
- Reviewer, *Radiology* (Cardiac, Interventional and Vascular sections)

BARRY B. GOLDBERG, M.D.

- Treasurer, World Federation for Ultrasound in Medicine and Biology
- Treasurer, International Congress on the Ultrasonic Examination of the Breast
- Chairman, Archives Committee, American Institute of Ultrasound in Medicine
- Chairman, Archives Committee, World Federation for Ultrasound in Medicine and Biology
- Vice-Chairman, Faculty, Diagnostic Radiology Section, Committee on Systematized Refresher Courses, American College of Radiology
- Co-Chairman, Audit Committee, World Federation for Ultrasound in Medicine and Biology
- Member, Intraoperative Review Committee, 1990 Annual Convention of the American Institute of Ultrasound in Medicine
- Member, 1990 Public Information Advisory Board, Radiological Society of North America
- Member, Intersociety Committee on Systematized Refresher Courses, Commission of Education
- Member, Museum Exhibits Committee, 1995 Centennial Celebration, American College of Radiology
- Member, Awards Committee, American Institute of Ultrasound in Medicine
- Member, International Commission on Radiological Education, Radiological Society of North America
- Member, Technology Advisory Council on the Center for Advanced Sensor Technologies, Advanced Technology Center of Southeastern Pennsylvania
- Member, Committee on Radiology Education in the Third World, Radiological Society of North America
- Member, Executive Committee, International Association for Endosonography
- Member, International Organizing Committee for the International Congress on the Ultrasonic Examination of the Breast
- Member, International Advisory Board, Seventh Congress of the European Federation of Societies for Ultrasound in Medicine and Biology, 1990
- Coordinator of Ultrasonography for Topics in Radiology, *Journal of the American Medical Association*
- Associate Editor, *Surgical Endoscopy, Ultrasound, and Interventional Techniques*
- Editorial Advisory Board, *Clinics in Diagnostic Ultrasound*
- Editorial Advisory Board, *Ultrasound in Medicine and Biology*
- Editorial Advisory Board, *Journal of Clinical Ultrasound*
- Editorial Board, *Journal d'Echographie et de Medicine Ultrasonore*
- Editorial Board, *Archives of Clinical Imaging*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Applied Radiology*
- Reviewer, *Chest*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Pediatrics*
- Reviewer, United States-Israel Bi-national Science Foundation

- ◇ Certificate of Merit Award, "Color Doppler imaging of the iliofemoral region". Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-Exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg)

CARLOS F. GONZALEZ, M.D.

- Member, Program Committee, 28th Annual Meeting of the American Society of Neuroradiology

GEORGE W. GROSS, M.D.

- Child Abuse Committee, Pennsylvania Chapter of the American Academy of Pediatrics

PAMELA L. HILPERT, M.D., Ph.D.

- Book Reviewer, Mosby Corporation
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Clinical Imaging*
- Reviewer, *Radiology Report*

DAVID KARASICK, M.D.

- Program Committee, Philadelphia Roentgen Ray Society
- Committee on Medical Imaging Manpower, Philadelphia Roentgen Ray Society
- Board Examiner in Musculoskeletal Radiology, American Board of Radiology
- Consulting Editor, *Skeletal Radiology*
- Musculoskeletal Reviewer, *American Journal of Roentgenology*
- Musculoskeletal Reviewer, *Radiology*
- Musculoskeletal Reviewer, *RadioGraphics*
- Musculoskeletal Reviewer, *Critical Reviews in Diagnostic Imaging*
- Book Reviewer, *American Journal of Roentgenology*

STEPHEN KARASICK, M.D.

- Member, GU Section, Written Examination, American Board of Radiology
- Membership Committee, Philadelphia Roentgen Ray Society
- Reviewer, *RadioGraphics*

ALFRED B. KURTZ, M.D.

- President-elect, Society of Radiologists in Ultrasound
- Chairperson, Committee on Education and Training of the Commission on Ultrasound, American College of Radiology
- Chairperson, Program Committee, Greater Delaware Valley Ultrasound Society
- Member, Commission on Ultrasound, American College of Radiology
- Examiner, Oral Boards, Ultrasound Category, The American Board of Radiology

- Member, Committee on Quality Assurance of the Commission on Ultrasound, American College of Radiology
- Member, Scientific Exhibits Committee, Radiological Society of North America
- Member, Board of Governors, American Institute of Ultrasound in Medicine
- Member, Informational Media Committee, American Institute of Ultrasound in Medicine
- Member, Convention Program Committee, American Institute of Ultrasound in Medicine
- Member, Committee on Ultrasonography, Pennsylvania Radiological Society
- Member, Membership Committee, Greater Delaware Valley Ultrasound Society
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Editorial Board, *RSNA Today*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Obstetrics and Gynecology*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Radiology*
- Reviewer, *RadioGraphics*
- Reviewer *American Journal of Obstetrics and Gynecology*
- ◊ 1989 Editor's Recognition Award with Special Distinction, *Radiology*
- ◊ Certificate of Merit Award, "Color Doppler imaging of the iliofemoral region". Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-Exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg)

DAVID C. LEVIN, M.D.

- 23rd Annual Aubrey O. Hampton Lecturer, Department of Radiology, Massachusetts General Hospital
- Chairman of the Council on Cardiovascular Radiology, American Heart Association
- Council Affairs Committee, American Heart Association
- Assembly Delegate, American Heart Association
- Chairman, Cardiovascular Radiology Program Committee, Radiological Society of North America
- Scientific Advisor, RSNA Research and Education Fund, Radiological Society of North America
- Public Information Advisory Board, Radiological Society of North America
- Scientific Program Committee, Association of University Radiologists
- Ad Hoc Committees on Publications, Annual Meeting Support, and Standards for Responsible Conduct of Research, Association of University Radiologists
- Program Committee, Society of Cardiovascular and Interventional Radiology
- Research Committee, Society of Cardiovascular and Interventional Radiology
- Ad Hoc Committees on Ethics, and Resident Education and Accreditation, Society of Cardiovascular and Interventional Radiology
- Cardiac Catheterization Committee, American College of Cardiology
- Executive Board, Philadelphia Roentgen Ray Society
- Councillor, Society of Chairman of Academic Radiology Departments
- Associate Editor, *Radiology*
- Editorial Executive Committee, *Investigative Radiology*
- Editorial Board, *American Journal of Cardiac Imaging*
- Editorial Board, *Clinical Imaging*
- Editorial Board, *Current Diagnosis*
- Editorial Board, *Journal of Vascular and Interventional Radiology*
- Reviewer, *American Journal of Roentgenology*

- Reviewer, *New England Journal of Medicine*

ESMOND MAPP, M.D.

- Chairman, Nomination Committee, Intersociety Commission of the American College of Radiology
- Membership Chairman, Pennsylvania Radiological Society
- Executive Committee and Member, Intersociety Commission of the American College of Radiology
- Exhibit Committee and Member, Pennsylvania Radiological Society
- Member, Committee on Manpower, American College of Radiology

MARK M. MISHKIN, M.D.

- Chairman, Neuroradiology Section, Written Examination, American Board of Radiology
- Treasurer and Member, Executive Committee of the Eastern Radiological Society
- Chairman, Committee on Drugs and Contrast Media, The American College of Radiology
- Executive Committee, Board of Trustees of the American Registry of Pathology of the Armed Forces Institute of Pathology
- Medical Director, American College of Radiology Institute
- ACR Representative to the Council on Medical Specialty Societies
- Member, Commission on Education, American College of Radiology
- Member, Committee on Radiologic Units Standards and Protection, American College of Radiology
- Member, Radiopharmaceutical Drugs Advisory Committee, Food and Drug Administration
- Reviewer, *Cancer*
- ♦ A. Edward O'Hara, M.D. Award for Excellence in Teaching, Department of Radiology, Thomas Jefferson University Hospital, June 12, 1990

DONALD G. MITCHELL, M.D.

- Fellowship, Council on Cardiovascular Radiology, American Heart Association
- Member, Body Imaging Committee, Society for Magnetic Resonance Imaging
- Member, Doppler/Vascular Section, American Institute of Ultrasound in Medicine
- Abstract Reviewer, 1990 Annual Convention of the American Institute of Ultrasound in Medicine
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*
- Reviewer, *RadioGraphics*
- Reviewer, *Laboratory Medicine*
- ♦ 1989 Editor's Recognition Award with Special Distinction, *Radiology*
- ♦ Certificate of Merit Award, "Color Doppler imaging of the iliofemoral region". Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-Exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg)

LAURENCE NEEDLEMAN, M.D.

- Treasurer and Vice President, Greater Delaware Valley Ultrasound Society
- Member, Joint Review Committee, Education in Cardiovascular Technology (representative of American College of Radiology)
- Teaching File Preparation, American College of Radiology Teaching Collection
- Abstract Reviewer, American Heart Association Annual Meeting
- Reviewer, *Radiology*
- ◊ Certificate of Merit Award, "Color Doppler imaging of the iliofemoral region". Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-Exhibitors: JB Liu, DA Merton, DG Mitchell, L Needleman, AB Kurtz, BB Goldberg)

VIJAY M. RAO, M.D.

- Panel Moderator, Philadelphia Roentgen Ray Society
- Member, Graduate Education Committee of the Blue Ribbon Society, a chapter of the Philadelphia Roentgen Ray Society
- Ad Hoc Member, Research Manpower Committee-NLHBI, National Institutes of Health
- Reviewer, Veterans Administration Grants, (MRI-Immunology Section)
- Reviewer, *Journal of Cancer Research*
- Reviewer, *American Journal of Neuroradiology*

MATTHEW D. RIFKIN, M.D.

- President, Delaware Valley Magnetic Resonance Imaging Society
- Chairman, Endocavitary Review Subcommittee, American Institute of Ultrasound in Medicine
- Chairman, Lower Urinary Tract Review Subcommittee, American Institute of Ultrasound in Medicine
- Chairman, Credentials Subcommittee, Society of Radiologists in Ultrasound
- Chairman, Scientific Program Committee, Delaware Valley MRI Society
- Member, Refresher Course Committee, Radiological Society of North America
- Member, Annual Convention Program Committee, American Institute of Ultrasound in Medicine
- Member, Ultrasound Education Subcommittee, American College of Radiology
- Member, Ultrasound Commission, American College of Radiology
- Member, Executive Committee, Delaware Valley Magnetic Resonance Imaging Society
- Member, Categorical Course Faculty for the Scientific Sessions, American Institute of Ultrasound in Medicine
- Member, Program Committee (CPC), American Institute of Ultrasound Medicine Convention
- Abstracts Reviewer, Society of Magnetic Resonance Imaging in Medicine's Annual Meeting
- Abstracts Reviewer, American Institute of Ultrasound in Medicine's Annual Meeting
- Editorial Board, *Journal of Ultrasound in Medicine*
- Editorial Board, *Uroradiology*
- Editorial Board, *Diagnostic Imaging*
- Reviewer, *Radiology*
- Reviewer, *American Journal of Roentgenology*

- Reviewer, *Investigative Radiology*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Journal Clinical Ultrasound*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Clinical Imaging*
- Reviewer, *Arthritis and Rheumatism*
- Reviewer, *RadioGraphics*
- Consulting Reviewer, *Journal of Urology*
- Consulting Reviewer, *Journal of Computer Assisted Tomography*

GARY S. SHABER, M.D.

- Consultant, National Board of Medical Examiners Reviewer, *Radiology*
- Reviewer, *Radiology*

MARCELLE J. SHAPIRO, M.D.

- Co-chairperson, Program Committee, Philadelphia Angiography and Interventional Radiology Society
- Executive Committee, Medical Alumni Society of the University of Pennsylvania School of Medicine
- Membership, Women in Medicine Committee of the University of Pennsylvania School of Medicine
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*
- Reviewer, *Investigative Radiology*
- Reviewer, *Journal of Interventional Radiology*

ROBERT M. STEINER, M.D.

- Chairman, Program Committee, 1989 North American Society of Cardiac Radiology
- Chairman, Training and Standards Committee, Society of Thoracic Radiology
- Co-ordinator, Scanlon Symposium, Society of Thoracic Radiology
- Member, Governor's Advisory Committee and Nominating Committee (Pennsylvania), American College of Cardiology
- Member, Board of Directors, North American Society of Cardiac Radiology
- Member, Scientific Exhibits Committee and Committee on Diagnostic Radiology, Pennsylvania Radiology Society
- Secretary, Philadelphia Roentgen Ray Society
- Member, Scientific Exhibits Committee, Society of Thoracic Radiology
- Member, Cardiopulmonary Training Committee, Society of Thoracic Radiology
- Member Executive and Budget Committee, Philadelphia Roentgen Ray Society
- Abstract Reviewer, Society of Magnetic Resonance Imaging in Medicine
- Editorial Board, *American Journal of Cardiac Imaging*
- Editorial Board, *Heart and Vessels*
- Editorial Board, *Radiology Reports*
- Editorial Board, *Critical Reviews in Diagnostic Imaging*
- Reviewer and Abstractor, *Radiology*
- Reviewer, *American Journal of Roentgenology*

KEVIN L. SULLIVAN, M.D.

- Visiting Lecturer Committee, Philadelphia Angio/Interventional Society
- Reviewer, *Radiology*

TALIN A. TASCIYAN, Ph.D.

- Reviewer, *Medical Physics*

SIMON VINTSKL, Ph.D.

- Participant, Scanlon Memorial Symposium
- Member, Executive Committee, Center of Excellence in Biomedical Engineering
- Reviewer, *Medical Physics*

RICHARD J. WECHSLER, M.D.

- Chairman, Program Committee, Philadelphia Roentgen Ray Society
- Reviewer of Manuscripts and Books, *Clinical Imaging*

ELAINE WOLK, M.D.

- ◇ Certificate of Merit Award, "Processor control in mammagraphy" Scientific Exhibit at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, 1989 (Co-exhibitors: B Galkin, S Feig, EB Mendelson, E Wolk, J Mansfield, K Mansfield)

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Appendix A

FUNDED RESEARCH

TABLE A

ACTIVE GRANT SUMMARY

Revised 7/90

(Report reflects active grants 7/1/89-6/30/90)

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	PERSONNEL COSTS	OTHER DIRECT COSTS	TOTAL DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Boone, J. (080-02449)	In Vivo X-Ray Spectroscopic Mammography	NCI	9/9/88-8/31/90	13,776	10,000	23,776	11,148	34,924
Consigny, M. (080-08258) (#1)	Angioplasty- Induced Release of Mitogens from Atherosclerotic Arteries	AHA	7/1/89-6/30/90	7,229	9,135	16,364	1,636	18,000
Consigny, M. (080-01468) (#2)	Determination of the Factors Respon- sible for Restenosis after Angioplasty	W.W. Smith	7/1/88-12/31/89	21,415	15,115	36,350	6,689	43,219
Consigny, M. (080-01483) (#3)	Effects of Balloon Angioplasty and Laser Thermal Angioplasty on Atherosclerotic Arteries	AHAF	4/1/88-9/30/89	13,640	6,360	20,000	N/A	20,000

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	PERSONNEL COSTS	OTHER DIRECT COSTS	TOTAL DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Goldberg, B. (080-05231) (#1)	Center of Excellence for Biomedical Imaging (Subcontract through Drexel Univ.)	Ben Franklin Program	9/1/89-8/31/90	16,225	8,369	24,594	0	24,594
Goldberg, B. (#080-03122) (#2)	Effects of Prenatal Ultrasound on Postnatal Development	NICHHD	4/1/88-9/30/89	75,987	53,633	129,620	59,363	188,983
Goldberg, B. (080-05212) (#3)	Ultrasonic Scattering studies in tissue charac- terization (Sub- contract through Drexel Univ.)	NHLBI	9/1/89-8/31/90	12,331	1,417	13,748	8,386	22,134
Goldberg, B. (080-05226) (#4)	Ultrasound Doppler B-Mode Breast Scanner (Sub- contract through Daltex, Inc.)	NCI	9/1/89-8/31/90	17,680	2,433	20,113	11,846	31,959
Mishkin, M. (080-05110)	Study of Non-Ionic Reactions: Can Steroids Modify? (Subcontract through Univ. of Ca., San Diego)	NIH	2/1/90-1/31/91	32,084	526	32,610	20,463	53,073

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	PERSONNEL COSTS	DIRECT COSTS	DIRECT COSTS	INDIRECT COSTS	COSTS FUNDED
Needleman, L. (080-03353)	Doppler Screening for Pregnancy- Induced Hyper- tension	NICHHD	6/1/89-5/31/90	159,136	26,530	185,666	109,440	295,106
Rifkin, M. (080-03369)	National Collab- orative Diagnostic Imaging Project	NCI	8/1/89-7/31/90	27,865	8,738	36,603	17,320	53,923
TOTAL FUNDED ACTIVITY				397,368	142,256	539,444	246,291	785,915

TABLE B

ACTIVE GRANT SUMMARY as of 6/30/90
(Reflects entire award period)

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING PERIOD	PERSONNEL COSTS	OTHER DIRECT COSTS	TOTAL DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Boone, J. (080-02449)	In Vivo X-Ray Spectroscopic Mammography	NCI	9/9/88-8/31/90	13,776	10,000	23,776	11,148	34,924
Consigny, M. (080-08258)	Angioplasty-Induced Release of Mitogens from Atherosclerotic Arteries	AHA	7/1/89-6/30/90	7,229	9,135	16,364	1,636	18,000
Goldberg, B. (080-05231) (#1)	Center of Excellence for Biomedical Imaging (Subcontract through Drexel University)	Ben Franklin Program	9/1/87-8/31/90	80,772	51,002	131,774	0	131,774
Goldberg, B. (080-05212) (#2)	Ultrasonic Scattering Studies in Tissue Characterization (Subcontract through Drexel University)	NHLBI	3/1/82-6/30/92	53,322	6,868	60,190	37,737	97,927

ACTIVE GRANT SUMMARY
(Reflects entire award period)

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING PERIOD	PERSONNEL COSTS	OTHER DIRECT COSTS	TOTAL DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Goldberg, B. (080-05226) (#3)	Ultrasound Doppler B-Mode Breast Scanner (Subcontract through Daltex, Inc.)	NCI	4/1/87-8/31/90	42,073	4,433	46,506	27,945	74,451
Mishkin, M. (080-05110)	Study of Non-Ionic Reactions: Can Steroids Modify (Subcontract through U. of Ca., San Diego)	NIH	2/1/88-1/31/92	66,587	1,078	67,665	41,647	109,312
Needleman, L. (080-03353)	Doppler Screening for Pregnancy-Induced Hypertension	NICHD	7/1/88-5/31/93	567,923	53,686	621,609	375,364	996,973
Rifkin, M. (080-03369)	National Collaborative Diagnostic Imaging Project	NCI	9/4/87-7/31/91	99,982	53,200	153,092	63,662	216,754
TOTAL FUNDED SUPPORT FEDERAL AND STATE *				931,664	189,402	1,120,976	559,139	1,680,115

* in dollars