

Spring 1997

Focal Spot, Spring 1997

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SPRING, 1997

VOLUME 28, NUMBER 1

FOCAL SPOT

MALLINCKRODT

EARNING
LOW TO LIVE



PROGRESS THROUGH PARTNERSHIP



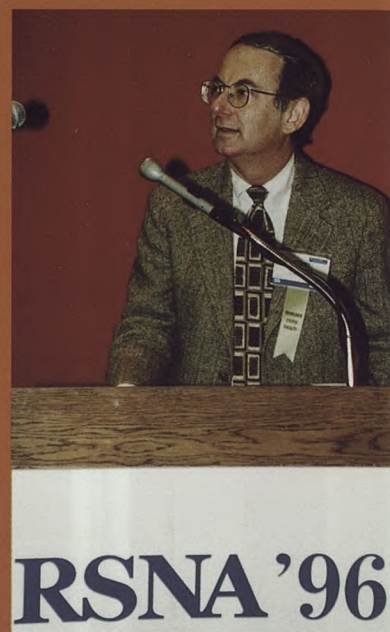
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The 82nd Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA), December 1 through December 6, 1996, Chicago, Illinois.

1) MIR's electronic radiology laboratory provided software refinements for RSNA's fourth Digital Imaging and Communications in Medicine (DICOM) demonstration. This popular exhibit shows how radiologic images and medical information stored in the DICOM format can be transferred successfully from one computer to another, regardless of the make and model of equipment used.

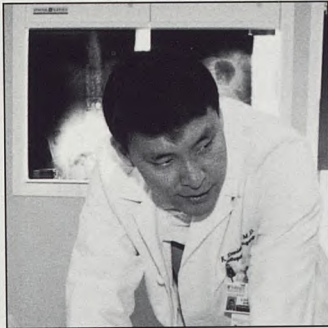
2) Stuart Sagel, MD, chief of chest radiology and director of computed tomography, presided over "Introduction to research symposium for diagnostic radiology residents."

3) Louis Gilula, MD, chief of musculoskeletal radiology, was the presiding officer for the "Musculoskeletal (miscellaneous)" scientific session.

4) Joshua Shimony, MD, research resident, presented "Automated radiographic outcome analysis of orthopedic total joint arthroplasties."

5) Dr. Barbara Carroll, from Duke University Medical Center, introduced Harold Bennett, MD, PhD, assistant professor of radiology, who spoke on "Application of a new oral US contrast agent in evaluation of gastric and duodenal ulcers."

5



GETTING RID OF PAIN

During their lifetime, approximately four-fifths of the American population will suffer from some degree of low back pain, and many will undergo surgery to relieve the pain. A collaborative study is testing the effectiveness of selective nerve-root injection, a low-risk, cost-effective alternative to lumbar spine surgery.

10 LEARNING HOW TO LIVE

Working with a St. Louis community service organization, researchers developed a breast cancer education program to teach urban minority women about the benefits of screening mammography and to dispel the fears and myths about the disease. These women are learning that by sharing knowledge about breast cancer, more women will live.



17



A NO-LOSE TREATMENT FOR CANCER PATIENTS

Preserving a patient's appearance is an important consideration in the treatment of facial skin cancer. Results of a recent Mallinckrodt Institute study show that radiation treatment can successfully treat the cancer without sacrificing cosmesis.

2 SPOT NEWS

21 FYI



ON THE COVER:

An enthusiastic member of the "Learn, Share, and Live" program, Mrs. LaVerne Tarrant shows a beaded necklace representing the sizes of lumps in the breast that can be detected by screening methods. Photography by Tim Parker.

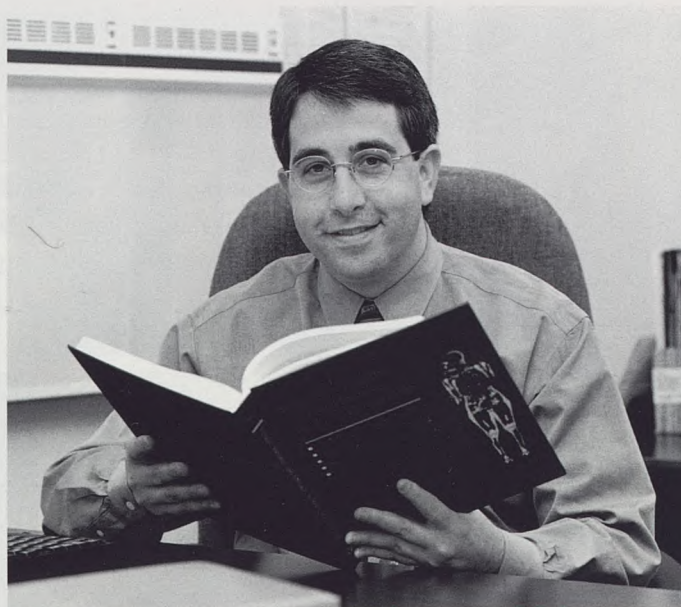
SPOT NEWS

Raichle named AAAS fellow

On February 5 in Seattle, Washington, Marcus Raichle, MD, professor of radiology and of neurology, and codirector of the Division of Radiological Sciences, was officially named a fellow of the American Association for the Advancement of Science (AAAS). At 144,000 members, AAAS is the world's largest federation of scientists.

Raichle pioneered the use of cyclotron-produced, short-lived radionuclides for the measurement of cerebral blood flow and metabolism. He now heads a team of researchers who are using positron emission tomography and a new technology called functional magnetic resonance imaging to study the human brain. That research has produced breakthroughs in understanding psychiatric disorders and in the development of functional maps of the brain's sensory and language information-processing areas.

In 1996, Raichle was elected to the National Academy of Sciences — one of the highest honors accorded a United States scientist — in recognition of his distinguished and continuing achievements in original research.



Mirowitz authors MRI text

Scott Mirowitz, MD, associate professor of radiology, radiologist-in-chief at Barnes-Jewish Hospital north, and codirector of body magnetic resonance imaging, is the author of *Pitfalls, Variants, and Artifacts in Body MR Imaging*. Published by Mosby-Year Book, Inc. of St. Louis, the book is a reference of MRI artifacts and anatomic variants that can be mistaken for pathology.

In the 520-page book, more than 1,000 high-quality MR images are included, along with detailed descriptions of MRI findings and a review of the relevant literature. Chapters on the chest and cardiovascular system, abdomen, pelvis, musculoskeletal system, and spine provide up-to-date, clinically relevant methodology for making informed, accurate diagnoses.

Journal honors reviewers

Since 1985, the Editorial Board of *Radiology*, a leading scientific journal, annually has honored the most prolific manuscript reviewers. According to the journal's editorial office, of the more than 1,500 individuals who have reviewed manuscripts for *Radiology* since 1985, only 43 have completed 150 or more reviews. Listed below are the six Mallinckrodt Institute physicians, along with the number of manuscripts each reviewed, who were among those honored:

- Daniel Picus, MD, professor of radiology and chief of vascular and interventional radiology — 199 reviews.
- Barry Siegel, MD, professor of radiology and director of the Division of Nuclear Medicine — 193 reviews.
- Dennis Balfe, MD, professor of radiology — 178 reviews.
- Michael Vannier, MD, professor of radiology — 166 reviews.
- Marilyn Siegel, MD, professor of radiology — 157 reviews.
- William Middleton, MD, associate professor of radiology and head of ultrasonography — 152 reviews.



Since 1986 the Radiological Society of North America (RSNA) has awarded Research and Education Fund Grants to young investigators as they begin careers in radiology research and education and in related scientific disciplines. Among those receiving the 1996 awards were two MIR researchers: Ty Bae, MD, PhD, instructor in radiology, (far left) received an RSNA Research Resident grant. Pamela Woodard, MD, instructor in radiology, was named the Siemens Medical Systems/RSNA Fellow. Also on hand for the presentation in December at RSNA's 82nd Scientific Assembly and Annual Meeting were (second from left) Woodard's scientific advisor Mark Haacke, PhD, professor of radiology and director of the magnetic resonance imaging research laboratory, and (far right) Bae's scientific advisor Jeffrey Brown, MD, associate professor of radiology, director of clinical research, and codirector of magnetic resonance imaging.

Matching Program results announced

Fourteen physicians will join the Mallinckrodt Institute staff in June to begin their first year of training in diagnostic radiology. These promising young trainees come to MIR from excellent medical schools, representing the United States from coast to coast and border to border: University of Utah; University of Illinois, Urbana; University of Hawaii; Case Western Reserve; University of Texas, Houston; University of Michigan; Washington University; New York University; Northwestern University; Tulane University; and Wayne State University.

Davidson earns HFMA fellowship

Linda M. Davidson, CPA, CMCP, manager of clinical support services, has earned the certification designation of Fellow of The Healthcare Financial Management Association (HFMA).

Davidson is among the less than seven percent of healthcare professionals who have successfully earned the HFMA designation, which involves an assessment of the candidate's technical proficiency as well as an understanding of professional and managerial responsibility. The assessment process gauges knowledge of the healthcare industry, understanding of healthcare financial theory and practice, and comprehension of management and information systems. In earning the fellowship designation, Davidson demonstrated specialized knowledge in managed care.

HFMA is the nation's leading organization for more than 34,000 professionals involved in the financial management of healthcare institutions and providers. According to Richard Clarke, HFMA president and CEO, "In an era when healthcare financial management is characterized by change, it's more important than ever to have accomplished financial managers on staff."

SPOT NEWS

Academic fellowship goes to McFarland

Elizabeth Gerard McFarland, MD, assistant professor of radiology, is one of four radiology investigators nationwide to receive a 1997 GE-AUR Radiology Research Academic Fellowship. The award was presented for her research of a novel computed tomography (CT) post-processing technique, which produces three-dimensional computer-simulated flight paths through the colon ("virtual" endoscopy) in the detection of colonic polyps. The project is entitled "Colonic polyp detection with spiral CT colonography: validation and prospective evaluation of CT, barium enema, and endoscopy."

Sponsored by the Association of University Radiologists and GE Medical Systems, a leading supplier of medical diagnostic imaging technology, GE-AUR Fellowships encourage young investigators to pursue careers in radiology research. The two-year award provides a \$50,000 annual stipend.

Luker's NIH grant to support cholesterol research

Gary Luker, MD, instructor in radiology, received the Mentored Clinical Scientist Development Award from the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH). The grant is part of the NIH's program to provide opportunities for young doctors to learn research skills under the mentorship of an established investigator.

According to Luker's project mentor, David Piwnica-Worms, MD, PhD, head of the Institute's molecular radiopharmacology laboratory, "To my knowledge, Doctor Luker is the first Mallinckrodt Institute of Radiology trainee to receive this grant, which sets an important precedent for new, high quality pathways to academic careers in radiology."

Piwnica-Worms, Luker, and a team of researchers have been studying the phenomenon of multidrug

resistance (MDR), which occurs when a tumor cell, after exposure to a single chemotherapeutic agent, becomes nonresponsive to other chemotherapy drugs that have a slight chemical resemblance. When P-glycoprotein (Pgp) — a large molecule that appears on the surface of MDR tumors — is activated by an MDR-inducing agent, the protein acts as a one-way highway, rapidly transporting the administered drug and any "member" drugs out of the cell.

Recent studies show that MDR1 Pgp, which is present in some normal tissues such as the liver and kidneys, may be involved in intracellular trafficking of cholesterol. Luker's five-year NIH grant in the amount of \$342,636 will support his research on "MDR1 P-glycoprotein and cholesterol trafficking." Luker proposes that "studying the poorly understood process of intracellular transport of cholesterol will allow the clinician-scientist to learn and to integrate laboratory methods used for recombinant DNA, assessment of vesicular transport, quantification of lipids, and transport kinetics and inhibition."

Woodard to train in medical journalism

As one of four recipients of the 1997 Melvin M. Figley Fellowship in Radiology Journalism, Pamela Woodard, MD, instructor in radiology, will learn from the masters the fundamentals of medical journalism. Sponsored by the American Roentgen Ray Society (ARRS), the fellowship encourages academic radiology careers and stimulates interest in high quality radiology journalism.

The fellowship aims to improve the quality of radiology publications by teaching journalism skills early in the academician's career and by providing training for manuscript reviewers and future editors. After completing the program, fellowship recipients, as core teachers, can share their skills and knowledge of medical journalism with colleagues.

During the month-long fellowship, Woodard will visit the editorial office of the *American Journal of Roentgenology* (AJR), one of the nation's leading scientific publications, where she will receive hands-on experience in medical writing, manuscript preparation, peer review, manuscript editing, and the ethics of scientific journalism. She will also visit AJR's printing plant to observe the printing process.

The pain may start in the back, then **shoot toward the hip,** thigh, or foot. Or it may settle where it began,

throbbing and aching, making every move a misery. Either way, low back pain is a major health problem, affecting nearly 80 percent of all Americans during their lifetime and leading to more than 250,000 lumbar spine operations each year.

Now a new study, performed jointly by radiologists at Mallinckrodt Institute of Radiology (MIR) and orthopedic surgeons and neurosurgeons at the Washington University School of Medicine (WUSM), is testing whether or not some patients with

back pain can avoid surgery by undergoing a selective nerve-root injection. By delivering an anesthetic, which in some cases may contain a steroid, to the inflamed **nerve** tissue, the injection works to block the affected nerve and to relieve the patient's suffering.

Getting rid of PAIN

by Candace O'Connor

Getting rid of PAIN

If it is successful, the nerve-root injection will have a two-fold benefit. Perhaps most important to the patient is the removal of the pain. "Very often patients are in terrible pain when they arrive at the examination room; some are using wheelchairs because walking exacerbates the pain. After the nerve-root injection, the pain is gone in many patients and they are able to walk comfortably again," says Louis Gilula, MD, chief of the Institute's musculoskeletal radiology section and one of the investigators for the study.

The second benefit is the cost. The average charge for a nerve-root injection is \$700; for surgery, it is in the \$20,000 to \$30,000 range. "If even five percent of those patients who start the study do not have to undergo surgery, that will still be a good result. It will save at least one hundred thousand dollars," says Yuming Yin, MD, the study's coinvestigator who is a research associate at Mallinckrodt Institute.

The impetus for the MIR/WUSM study came from the early anecdotal success with nerve-root injections achieved by various physicians around the country. These pain management experts, radiologists, and anesthesiologists, among others, were not part of a funded study.

Since the MIR/WUSM study began in early December, 1996, at least two new patients each week have participated. They are referred by Daniel Riew, MD, the study's principal investigator who is an assistant professor in the medical school's Department of Orthopaedic Surgery; two of his colleagues, Doctors Keith Bridwell and Lawrence Lenke; and Carl Laurysen, MD, Department of Neurological Surgery. Eventually, they hope to enroll a total of 100 patients in this study, which is funded by a \$20,000 grant from Innovations in Health Care, a program of the BJC Health System.

"Our hope is that ultimately nerve-root injection will be a viable alternative to surgery for some patients with leg pain due to nerve compression in the back," says Riew. "We also want to save the patients, their insurance companies, and BJC Health System hospitals from the significant costs that can accrue in the care and management of these patients."

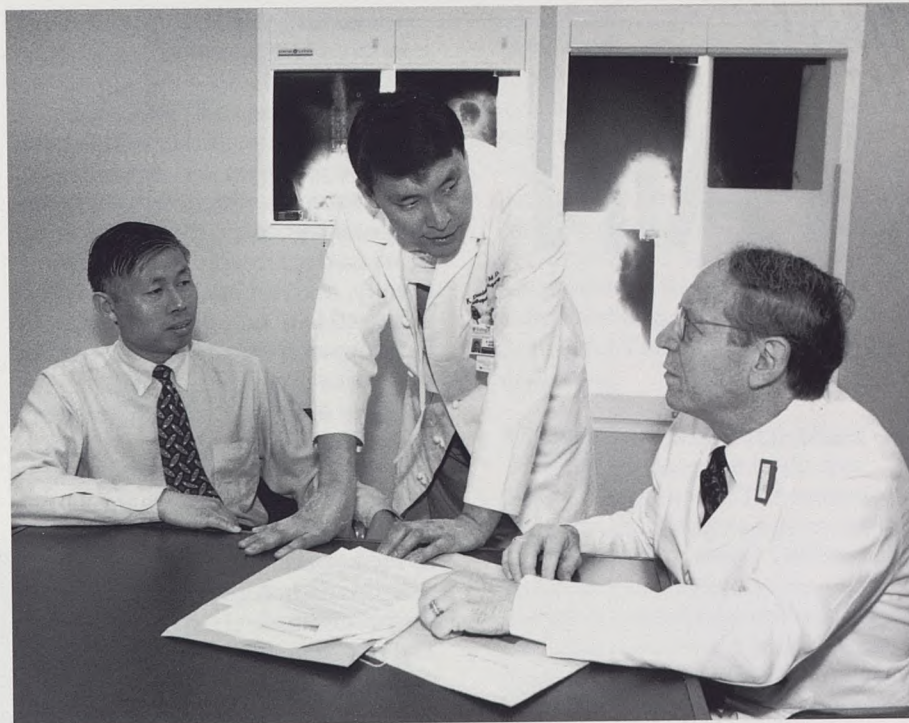


aching

According to Gilula, patients come in with different underlying problems. Some may have spinal stenosis, in which enlarged bone parts can press on nerves and cause pain. Others have slipped or herniated discs that also produce nerve pressure. Occasionally, nerves around the facet joints become inflamed or irritated.

"If the patient can wait long enough, some of these problems may resolve on their own," says Gilula. "Other problems, like those associated with spinal stenosis, may not. But even here, the problem may be caused by a twisting injury that suddenly causes inflammation of the nerve. Nerve-root injection can reduce that inflammation. If we can help patients to get over this acute phase, they may have a very good outcome, especially if they receive ancillary treatment—such as therapy—to strengthen their back."

Patients in the Washington University study have already tried at least six weeks of standard, conservative options—anti-inflammatory medicine, physical therapy, and activity modification—under the care of their own physician. Since these options did not work, the patients were referred to an orthopedic surgeon, who determined through physical exam and special tests, such as magnetic resonance imaging or computed tomography-myelogram, that the underlying problem was spinal nerve compression. Usually the next step for these patients is surgery.



(left to right) Drs. Yuming Yin, Daniel Riew, and Louis Gilula

Instead, as participants in this study, they will first receive nerve-root injections. A control group composed of half of the patients will be injected with a small dose of marcaine, an anesthetic, which is believed anecdotally to provide temporary pain relief. The other half will get marcaine plus a long-acting steroid which should offer more lasting benefit. Neither the patients nor the referring physician know which patients receive the steroid. However, no one has objectively proven that the steroid rather than the anesthetic itself has produced long-term relief from the pain.

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Getting rid of PAIN

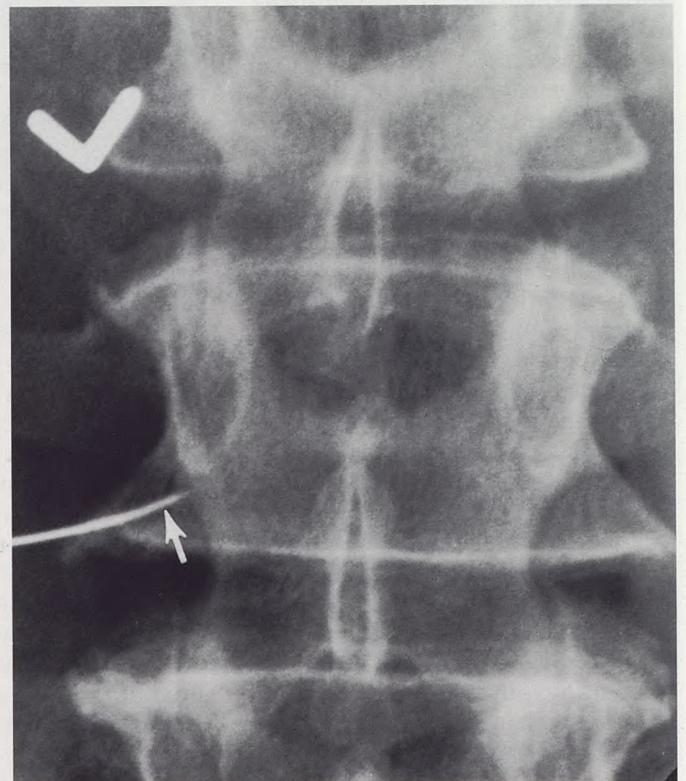
The radiologist performs these injections very precisely, guiding a very thin needle into position through the use of fluoroscopy. Once the source of the pain is verified, the physician injects a contrast material, which highlights the shape of the nerve root and confirms correct needle placement. Finally, marcaine or marcaine plus a steroid is injected. The patient is awake and comfortable throughout the entire procedure, which requires only local anesthetic and takes 20 to 30 minutes.

After the needle is removed, the radiologist compares the patient's pain level to the pain estimate made before the procedure. The physician also uses other measures, such as pain distribution before and after the procedure, to determine the success rate of the injection and to confirm the appropriate level of the nerve block.

A thin needle (arrow) is placed in the area of a nerve causing the patient pain. This nerve, which is not visible, is coming out of the lumbar spine (low back).

"For a large number of patients, the pain is gone or markedly diminished immediately following the procedure," says Gilula. "In a second group it will take longer for the pain to diminish, ranging from a few hours to a few days. In some patients, pain relief can continue over several days. In a third group, nothing will happen, and we may decide to place the needle at a different level in order to block the nerve more completely or to repeat the injection in two or more weeks."

This study will not only determine how successful corticosteroid



pulsat

nerve-root injections are in eliminating—or postponing—the need for surgery. It will also determine if marcaïne alone may have significant, long-lasting pain-relief value.

"Some people might question why we don't inject steroids anyway," says Gilula. "But as a physician, I don't like to have patients undergo anything that isn't really necessary. Plus, no one has really determined the importance of the steroid. Rarely, patients can also have what is called a 'steroid flare,' in which the patient has severe pain for a few hours follow-

ing a steroid injection. Using anesthetic alone would eliminate that possibility."

Results in this randomized, double-blind study — the first one nationally to examine the effectiveness of steroid nerve-root injections — are still pending. After the yearlong data collection period ends in December, 1997, researchers plan to complete follow-up on all patients during the succeeding six months. All participants will submit outcome questionnaires six months following injection; patients who choose to have surgery will be considered as treatment failures.

Although the study is still in its early stages, one benefit has already emerged: the successful collaboration among radiology, neurological surgery, and orthopedic staff members. The design of the study and the grant proposal were a joint

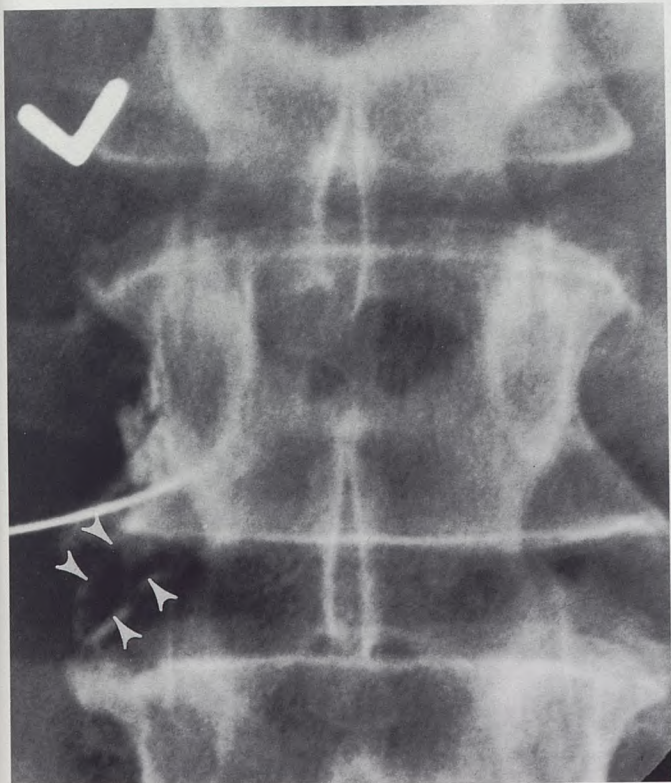
Contrast (dye), which appears as white material, has been injected. This contrast outlines a structure (between arrowheads) which is the existing nerve. Once this nerve is identified, medication is injected around the nerve.

effort by Riew and Yin, with input from Gilula, who holds academic appointments as professor of radiology, of orthopedic surgery, and of plastic surgery. On a day-to-day basis, the departments of Orthopedic Surgery and Neurological Surgery provide the patients and perform initial testing to pinpoint the source of the patient's pain. Gilula's staff performs the injections, and Yin is in charge of data gathering.

"We are really dependent on one another to do this study," says Riew. "The musculoskeletal radiology section is technically superb; Doctor Gilula runs an incredible organization. And Doctor Yin has been instrumental in this study—we certainly couldn't have done any of this without him. It is a very nice working relationship."

In the future, Gilula and his group would like to study the effectiveness of other nerve blocks as well. They are now assembling a cervical spine study and eventually hope to study other types of blocks.

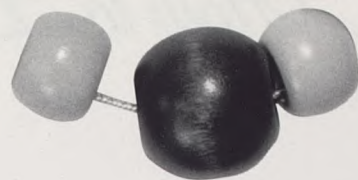
When any of these procedures are successful, it is satisfying for patient and physician alike. "When a doctor is treating a patient who is in a huge amount of pain," says Gilula, "it's very gratifying to enable that patient to get rid of the pain and to function better and more easily." ■



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Learning



The medical community possesses a great deal of information about breast cancer, but attempts to educate the community about the disease often prove unsuccessful. For example, a diagnostic X ray called screening mammography is the most sensitive technique for detecting early breast cancer, and studies have shown that this test translates into saved lives and more treatment options, such as breast preserving surgery. Unfortunately, the early detection benefits of mammography have not been assimilated well by low-income, urban minority women. Case in point: Although African-American women are less likely to have breast cancer than other women, they are more likely to die from the disease, possibly due to delayed detection. Researchers at Mallinckrodt Institute of Radiology have developed an education program, based on health-behavior theory and targeted to reach these particular women. The program is teaching women to teach themselves to live. by Joanna B. Downer

How to Live

How to Live

The

“Learn, Share, and Live” program, as it was eventually named, began as a Cancer Education Grant from the National Cancer Institute (NCI), with Celette Sugg Skinner, PhD, assistant professor of radiology, as principal investigator and Roslyn Sykes, RN, PhD, visiting research assistant professor of medicine, as program manager.

Unlike the few available programs that were targeted for rural populations, “Learn, Share, and Live” was designed to work through an existing urban social network to try to ensure a lasting impact on the community. With introductions from Sykes and Edwin Fisher, PhD, professor of psychology and director of the Center for Health Behavior Research, Skinner approached Grace Hill Neighborhood Services in St. Louis for permission to work with their volunteer program, The System to Assure Elder Services (STAES), which was organized in 1979 to support independent living.

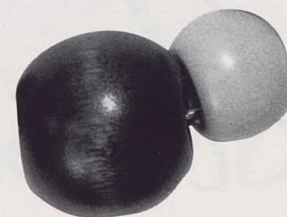
In “Learn, Share, and Live,” three core-training sessions were designed to educate and train STAES volunteers at each of two sites. These volunteers would then pass on to their peers the information they had learned and would encourage them to have screening mammography. Baseline surveys at each site identified the women’s initial beliefs about breast cancer risks, causes, detection, and treatment.

“We based the program on what we knew was important in other groups and on our own baseline surveys. We found some issues that were specifically and almost uniquely important in this group that had not been widely reported — for instance, beliefs about risk factors for breast cancer,” Skinner explains. “We also found that few of the women talked about cancer.”

To be effective, the program needed to replace misperceptions with correct information. This was accomplished by directly addressing the concerns and by giving women the necessary tools to share what they learned with others.

The learning objectives were set in the grant — to teach that mammography was beneficial and why, to be able to identify why someone had not had a mammogram and to overcome the barriers that she presented, and to prove that program participants could encourage screening among their peers. Findings from the baseline surveys and input from community members who were recruited to serve on steering committees directed how these objectives could be attained.

*The researchers used an
image of a dandelion
to teach that the earlier
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the better the chance for cure.*





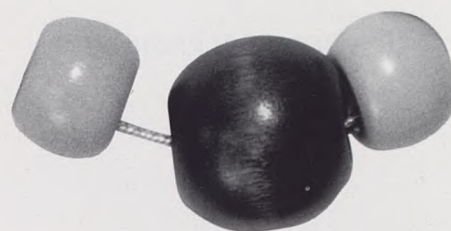
In addition, the steering committees determined the flavor of the program. Site one, trained in 1995, chose the name "Learn, Share, and Live" by combining some members' suggestions. Independently, Site 2 chose the same name a year later, thus demonstrating its suitability. "The name is great, it's perfect," says STAES staff member Geraldine Gandy.

"We had to translate our knowledge into a form that would be understood by women of a different socioeconomic group and background, with different sets of knowledge," says Barbara Monsees, MD, associate professor of radiology and chief of Mallinckrodt Institute's breast imaging section.

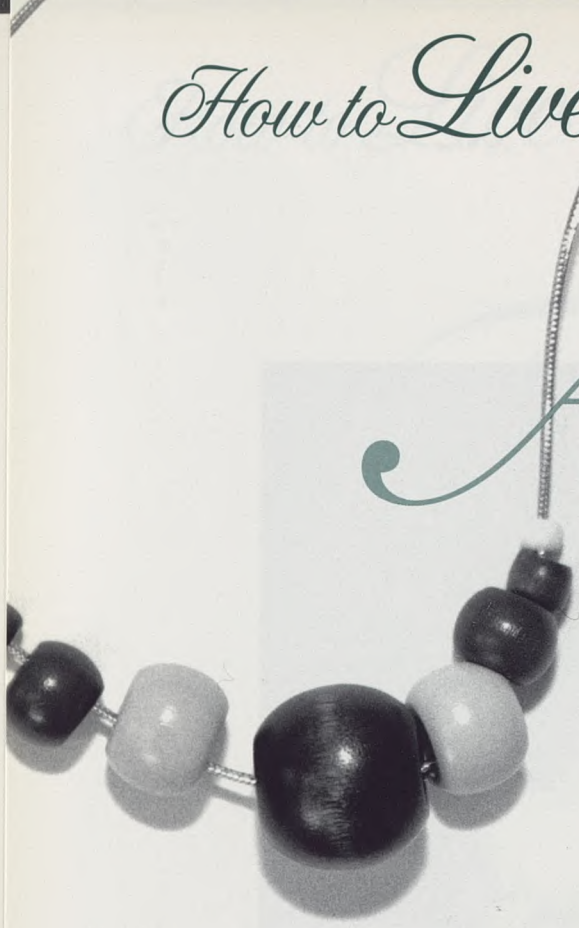
Educational tools were developed by Skinner, Sykes, Monsees, and Dorothy Andriole, MD, assistant professor of surgery, to illustrate the information the women needed and wanted. Final production of the visuals was handled by the Institute's photography lab.

The researchers used an image of a dandelion to teach that the earlier breast cancer is detected, the better the chance for cure. "If a dandelion is cut before it sheds its seeds, it won't spread to the rest of the yard, but if it isn't cut, it will spread its seeds all across the yard. Cancer is the same way, and the women understand that," says Skinner.

Dr. Dorothy Andriole (standing) discussed the importance of knowing what treatment choices are available to women who are diagnosed with breast cancer.



How to Live



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A second very important aspect of the education effort was to teach the benefits of screening mammography; such as, mammography can save lives by detecting breast cancers when they are smaller in size. To illustrate this concept, a necklace consisting of beads of different colors and sizes provided a tangible reminder of the sizes of the lumps in the breast that can be detected by screening methods: mammography, clinical breast examination, and breast self-examination.

The women kept the necklaces and used them to educate others about breast cancer. "One woman told us about giving a presentation at a restaurant when a group of five or six women gathered around her, admiring her beads," says Skinner.

After the three core sessions, steering committees at each site chose how they wanted to share the information in the larger community. One group requested flip charts to present the information at informal meetings in their homes and churches, while the other group brought in the medical center's mammography van, sponsored by Barnes-Jewish Hospital and Mallinckrodt Institute, and arranged appointments in advance.



Dr. Rosalyn Sykes (standing) and Geraldine Gandy

One woman's breast cancer was detected during her screening on the van. When she came to Barnes-Jewish Hospital for care, her experiences were eye-openers for the researchers. "It was not easy for her to get through the system here at the medical center or to make appointments. Transportation was a big problem. There were many obstacles between screening and the end of treatment," explained Skinner.

Monsees agrees. "There are barriers to care. Subsequent to this experience, I have found out that Barnes-Jewish Hospital's Social Work has some limited resources for people in need, such as vouchers for taxis."



Dr. Celette Sugg Skinner

Top: Gretchen Brennes (at far left) a doctoral candidate in the Department of Psychology, is a research assistant with the "Learn, Share and Live" program.

Although it is a lesson the researchers had not expected to learn, it has enhanced their visions for detailed planning of future projects. Skinner believes community and hospital education would help address these problems. "It would be beneficial for STAES to add information about ride-share programs and all of the free and low-cost services provided by other social service agencies and then be able to network with social workers at the hospital. In the hospital, everyone should be able to recognize if a patient is in need and then put that patient in touch with a social worker from the very beginning," Skinner says.

The researchers used surveys to measure the program's success in improving screening mammogra-

phy usage rates and in promoting discussion about breast cancer. The results are very encouraging and indicate that the program could be expanded on a much wider scale through similar social service agencies. Training at Site 1 had a significant positive effect on the women's knowledge about breast cancer and mammography screening rates. The training demonstrated a correction of misperceptions about breast cancer and an increased willingness to talk about breast cancer screening, explains Skinner.

The grant project that developed the "Learn, Share, and Live" program is almost complete, with final data collection this spring. However, the program is far from finished: STAES is writing "Learn, Share, and Live" into its education curriculum for outreach training, says STAES Director Mary Hamilton, LCSW.

"Learn, Share, and Live," a much-needed effort in reaching traditionally underserved populations, and Skinner's future projects should prove to have a lasting positive effect on the communities they touch and teach. ■■■

How to Live

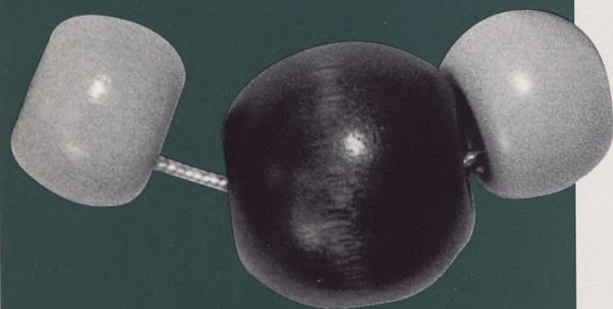
SCREENING GUIDELINES

The American Cancer Society (ACS) recommends the following guidelines for breast cancer detection in asymptomatic women:

Age 20 - 39 Monthly breast self-exam. Clinical breast exam every three years.

Age 40 - 49 Monthly breast self-exam. Annual clinical breast exam. Mammography every one to two years, starting by age 40.

Age 50+ Monthly breast self-exam. Annual clinical breast exam. Annual mammography.



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In January, 1997, the National Institutes of Health (NIH) held a Consensus Development Conference to re-evaluate its stance on routine mammography for women in their 40s.

An independent panel considered written information and heard 32 expert presentations. After extensive deliberation, the 13-member panel issued a draft statement of their conclusions. The panel did not recommend routine mammography screening for women in their 40s and recommended that women of this age should make their own decisions about regular mammography.

Numerous organizations, including the American Cancer Society (*see screening guidelines on this page*) and the American College of Radiology, recommend that women ages 40 to 49 have a mammogram every one to two years. In fact, because women in their 40s have faster growing tumors, the ACS is revisiting its guidelines and is likely to recommend yearly screening for women over the age of 40.

"Everyone had heard the scientific data, and most people felt that there was more than enough evidence to support routine screening for these women, but the panel had disagreed," says Dr. Barbara Monsees, chief of breast imaging at Mallinckrodt Institute, in amazement.

"The NIH panel's statement did not give a balanced appraisal," explains Monsees. The combination of overemphasizing risks, excluding the most recent and compelling data supporting routine screening, and including some factual errors produced "a major discordance between the scientific data presented and the panel's conclusions," she emphasized.

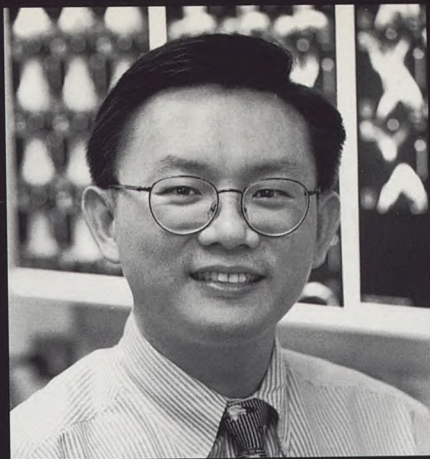
After noting the controversy about NIH's recommendation, Senator Arlen Specter of Pennsylvania called for a hearing before his Appropriations Subcommittee on Labor, Health and Human Services, and Education. Monsees was one of eight people selected to testify at the hearing.

When asked by Specter how money for breast cancer should be allocated, Monsees suggested two ways: continued basic research into prevention and cure plus targeted education and outreach to allow all women — especially those with less access to medical care — to benefit from early detection. **MIR**



Dr. Barbara Monsees

Editor's note: The National Cancer Advisory Board met on February 25 to consider this issue. As Focal Spot went to press, the advisory board was drawing up a recommendation to be presented to the NCI's Executive Committee.



Every year more than 800,000 people are diagnosed with highly curable basal cell or squamous cell carcinoma. These two types of skin cancer, which tend to grow slowly, make up the majority of all skin cancers diagnosed in the United States and occur most often in older individuals with lightly pigmented skin and of northern European descent.

**A
No-Lose
Treatment for
CANCER
Patients**

CANCER

by Kimberly Goulet

A No-Lose Treatment for CANCER Patients

Results of a recent study conducted by Clifford Chao, MD, instructor in radiology and chief of head and neck oncology at Mallinckrodt Institute of Radiology's Radiation Oncology Center, have shown that salvage irradiation (reirradiation of recurrent cancer) is a viable alternative to surgery for some patients with recurrent facial skin cancer.

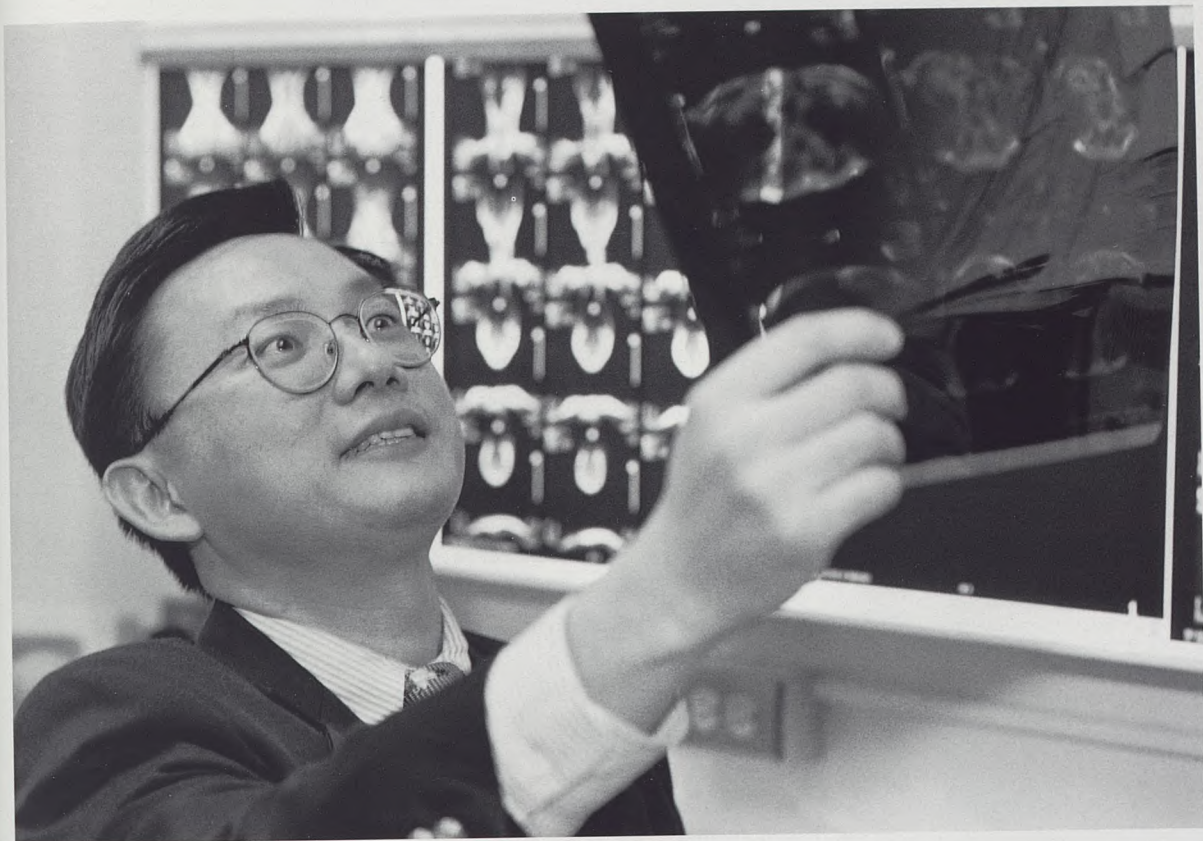
Three treatment methods have been commonly used in cases of skin cancer: surgery, topical chemotherapy, and radiation treatment. Because these treatments have comparable cure rates, the primary consideration when determining the course of care for a patient with facial skin cancer is preserving the person's appearance, or cosmesis. According to Chao, "When skin cancer occurs on areas other than the face, surgery is clearly the treatment of choice. However, when the cancer occurs on the face, particularly on the eyelid, lip, nose, or ear, radiation treatment can be used successfully to treat the cancer without sacrificing the patient's cosmesis."

Through his research, Chao wanted to determine if salvage irradiation could be used on skin that has been previously irradiated to treat skin cancer. Recurrence of skin cancer could be the result of unsuccessful initial radiation treatments or a new lesion in an adjacent area. Surgery has traditionally been considered the mainstay salvage for patients with recurrent lesions. However, because facial skin is thin and taut, excision and closure are not recommended for previously irradiated skin. As a result of his research, Chao concluded that salvage irradiation is a feasible treatment alternative for recurrent skin cancer of the face when cosmesis is a concern.

Chao cited the nose as an area of special concern because it is the most common site for facial skin cancer and because it is particularly problematic for preserving cosmesis. The results of surgical reconstruction of the nose are typically not as satisfactory as the natural nose.



The patient shown above had a recurrent basal cell carcinoma in the slope region of the nose, which was successfully treated with salvage irradiation. (1) The radiation field used in the initial treatment. (2) The portal of reirradiation. (3) Nine months after salvage irradiation.



Dr. Chao's research on "Reirradiation of Recurrent Skin Cancer of the Face" was published in the scientific journal, *Cancer*.

According to Chao's research, the ideal candidate for salvage irradiation is a patient whose biologic effective dose (BED) for previous treatment at 5 millimeter depth was 55 gray (Gy) — a measurement of absorbed radiation dose — and a maximum accumulated dose of 110 Gy on the skin surface. "In my analysis, if the first time around the patient is given a BED to 55 Gy, and the second time around additional radiation with accumulated BED to 110 Gy is

given, seven out of nine patients will be cured without side effects — with good cosmesis," commented Chao. "Patients have an eighty percent chance of being cured. That's very good, even when compared with treatment the first time around." The cure rate for first skin cancers ranges from 80 to 95 percent for basal cell carcinoma to a slightly lower 65 to 80 percent for squamous cell carcinoma.

Although surgery offers a less time-involved cure for skin cancers, the effect on a patient's cosmesis warrants the use of radiation treatments. According to Chao, the patient receives radiation treatments daily for four to six

weeks. A side effect of the treatment is skin redness or irritation in the second half of the treatment period, which can be easily minimized with the use of ointments and medications.

Three-dimensional (3-D) treatment planning can be used for facial skin cancer in cases where the disease is in areas adjacent to critical structures. For example, for lesions near the eye, 3-D treatment planning can help prevent damage to the eye. **MIR**

A No-Lose Treatment for CANCER Patients

HOW TO HELP GUARD AGAINST SKIN CANCER

•**Do not** get too much sun. Try to avoid the sun when its rays are strongest — between 10 a.m. and 3 p.m.

•**Those** who cannot avoid being exposed to the sun should wear clothing to cover up as much of the skin as possible. A sunscreen with a sun protection factor (SPF) of at least 15 should be applied to the exposed areas.


•**Do not** use sunlamps or go to tanning salons.

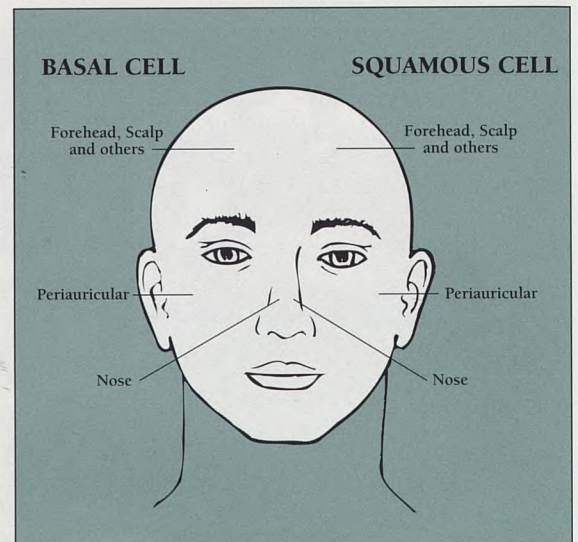
•**Any** unusual blemish, mole, or other marking on the skin, especially one that changes in size or color, should be checked by a doctor.

Excerpted from the American Cancer Society's Facts on Skin Cancer

The limitation of salvage irradiation for cancer in most body structures is the concept of residual damage. For example, if you have treated the spinal cord with a certain amount of radiation, reirradiation would not be recommended because the spinal cord “remembers” what kind of damage has occurred. Reirradiation in this case would most likely cause neurological damage. Certain tissue can recover, certain tissue cannot.

Chao's research has demonstrated that skin will recover from prior radiation. If the radiation tolerance dose for skin (70 Gy) is not exceeded during initial treatment, complications are minimized. “If the skin receives fifty or sixty Gy the first time and the tumor comes back in a few months or even years later and the patient needs to be treated again, it can be done safely because the skin is partially repaired from prior damage,” said Chao. The exact mechanism as to why the skin is able to recover while structures like the spinal cord cannot is still under investigation.

Chao hopes his study will help to make dermatologists and plastic surgeons more aware of the viability of salvage irradiation in cases of recurrent skin cancer. According to Chao, “If the reirradiation fails, surgery can still be done. For the patients, it's a no-lose situation. Patients do not lose anything by utilizing salvage irradiation first.” 



SIGNS AND SYMPTOMS OF SKIN CANCER

- Any unusual sore, lump, blemish, other skin markings, or change in the way an area of the skin looks or feels **may** be a sign of skin cancer.
- The skin **might** be crusty, scaly, oozing, or bleeding.
- In later stages of the disease, the skin **may** also feel itchy, tender, and painful.
- Most skin problems **do not** turn out to be cancer, but only tests done by a doctor can determine if a growth on the skin is cancerous or might lead to cancer.

Excerpted from the American Cancer Society's Facts on Skin Cancer

THE DIRECTOR'S OFFICE REPORT

All Mallinckrodt Institute faculty and staff names in this section are highlighted in boldface type.

PROMOTION

Paul Hsieh, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology.

NEW STAFF

Mark Mintun, MD, associate professor of radiology, Division of Nuclear Medicine.

DIAGNOSTIC RADIOLOGY RESIDENT

Christopher Thornton, MD, assistant in radiology, transferred into MIR's Diagnostic Radiology Residency Program as a second-year resident. He was a radiology resident at the University of South Florida College of Medicine, Tampa. Thornton received an undergraduate degree and a medical degree from the University of Missouri, Kansas City.

APPOINTMENTS/ ELECTIONS

Thomas Conturo, MD, PhD, assistant professor of radiology and adjunct assistant professor of physics, was appointed as cochairman of the "Animal brain MR imaging: vascular" session at the January meeting in Vancouver, British Columbia, of the International Society of Magnetic Resonance in Medicine. He also was appointed by the Medical Research Council of Canada as a site-visit team member.

Eric Klein, MS, assistant professor of radiology, was appointed as associate editor and elected to a three-year term on the Board of Editors of the *Journal of Medical Physics*. He was appointed to the Technology Assessment Committee of the American Association of Physicists in Medicine.

Scott Mirowitz, MD, associate professor of radiology, chief of radiology at Barnes-Jewish Hospital north, and codirector of magnetic resonance imaging, was appointed to a one-year term on the American College of Radiology's Committee on Education of the Commission on Neuroradiology and Magnetic Resonance. He also was appointed to the Teaching Committee of the Society for Health Services Research in Radiology and to the UNITEDhealthcare Local Imaging Advisory Board.

Robert Myerson, PhD, MD, associate professor of radiology, was appointed to the American College of Radiology's Committee on Residency Training in Radiation Oncology of the Commission on Education.

Joseph Roti Roti, PhD, professor of radiology, associate director of the Radiation Oncology Center, and chief of cancer biology, was appointed to the Department of Energy's Site-Specific Advisory Board for St. Louis County.

Joseph Simpson, MD, PhD, professor of radiology, was elected councilor of the St. Louis Metropolitan Medical Society and was elected as alternate delegate to the Missouri State Medical Association.

Richard Slone, MD, assistant professor of radiology, was appointed to the American College of Radiology Committee on Residency Training in Diagnostic Radiology.

Clark West, MD, assistant professor of radiology and head of emergency and trauma radiology, was reappointed to a one-year term as chairman of the Membership Committee of the Society of Emergency Radiology.

FYI

FELLOWSHIPS/ GRANTS

Duffy Cutler, PhD, assistant professor of radiology, received a two-year grant in the amount of \$524,998 from the U.S. Department of Energy for research on "Radiation dosimetry of Cu-64 labeled radiotherapy agents using positron emission tomography." Co-principal investigator is **Carolyn Anderson, PhD**, assistant professor of radiology.

Mark Haacke, PhD, professor of radiology and director of the magnetic resonance imaging research laboratory, as principal investigator, received a \$750,000 grant from the National Institutes of Health for research on "MRI of coronary artery disease." **Debiao Li, PhD**, assistant professor of radiology, is coprincipal investigator for the three-year grant, and **Pamela Woodard, MD**, instructor in radiology, is coinvestigator. Collaborators are Philip Ludbrook, MD, professor of medicine, Department of Internal Medicine; **Fernando Gutierrez, MD**, associate professor of radiology; Benico Barzilai, MD, associate professor of medicine (cardiology), Department of Internal Medicine; **Jeffrey Brown, MD**, associate professor of radiology; and **Scott Mirowitz, MD**, associate professor of radiology.

Debiao Li, PhD, assistant professor of radiology, as principal investigator, received a five-year grant in the amount of \$544,478 from the National Institutes of Health for research on "Myocardial blood oxygenation assessment using MRI." Coinvestigators are **Robert Gropler, MD**, assistant professor of radiology and of medicine, and **Mark Haacke, PhD**, professor of radiology.

Joseph Roti Roti, PhD, professor of radiology, associate director of the Radiation Oncology Center, and chief of cancer biology, as principal investigator, received a \$227,986 grant from the National Institutes of Health for research on "Nuclear protein content and heat-induced cell killing." Coinvestigator for the grant is **Ryuji Higashikubo, PhD**, assistant professor of radiology. As principal investigator, Roti Roti received a contract extension in the amount of \$2,399,601 from the Motorola Corporation for the project "Research and in vivo-in vitro testing for the carcinogenic potential of FMCW and CMDA 850 Mhz

and acute low intensity microwave exposure and DNA damage." Coinvestigators for the three-year contract extension are Higashikubo; **Clayton**

Hunt, PhD, assistant professor of radiology; **Andrei Laszlo, PhD**, associate professor of radiology; **Robert Malyapa, MD, PhD**, instructor in radiology; **Prabhat Goswami, PhD**, assistant professor of radiology; **Michael Mackey, PhD**, assistant professor of radiology; **Douglas Spitz, PhD**, assistant professor of radiology; **Ming-shun Chen, PhD**, instructor in radiology; **Eduardo Moros, PhD**, assistant professor of radiology; Marie LaRegina, DVM, Department of Comparative Medicine; William Pickard, PhD, Department of Electrical Engineering; **William Straube, MS**, instructor in radiology, and **William Wright**, research assistant.

Peter Shile, MD, assistant professor of radiology, received \$72,500 to fund studies that will evaluate the reliability and validity of the American College of Radiology Breast Imaging and Reporting Data System, known as BI-RADS. Funding sources include Wendy Will Case Cancer Foundation, American Cancer Society, and Barnes-Jewish Hospital Cancer Fund.

HONORS/ AWARDS

Scott Mirowitz, MD, associate professor of radiology, chief of radiology at Barnes-Jewish Hospital north, and codirector of magnetic resonance imaging, was named to the *St. Louis Business Journal's* third annual list of "40 outstanding individuals [in the St. Louis area] under 40 years old."

Farid Shafaie, MD, instructor in radiology, was a contributing author to "The Spine," a chapter in the recently published textbook *MRI of the Musculoskeletal System — A Teaching File*. Lippincott-Raven in Philadelphia, Pennsylvania, is the publisher.

Senturia Lecture

As part of the City-Wide Radiology Conferences, Bruce Hillman, MD, presented the Third Annual Hyman R. Senturia Lecture on February 10 in the Institute's Scarpellino Auditorium. Hillman, who is professor and chairman of the Department of Radiology at the University of Virginia School of Medicine, spoke on "New insights into costs and motivation for self referral."



Mark Haacke, PhD, professor of radiology and director of the magnetic resonance imaging research laboratory, presented "MR coronary angiography" at MR '97, Garmisch-Partenkirchen, Germany, January 25.

Jay Heiken, MD, professor of radiology and chief of abdominal imaging, spoke on "MRI of the liver: what is the role?" at Practical Radiology at Whistler, sponsored by the University of British Columbia, Whistler, British Columbia, February 9 - 14. He presented "CT evaluation of renal masses," "CT of the aorta," "Spiral CT of the abdomen," and "Evaluation of the patient with small bowel obstruction" at Cross-Sectional Imaging, sponsored by the University of Pennsylvania, St. Thomas, Virgin Islands, February 24 - 28. Heiken presented "Tumors of the omentum and mesentery" at the Society of Gastrointestinal Radiologists' Twenty-sixth Annual Meeting and Post-graduate Course, Cancun, Mexico, March 9 - 14.

Paul Hsieh, MD, assistant professor of radiology, as invited lecturer, spoke on "Pelvic trauma" and "MRI of the elbow and wrist" at Cedars-Sinai Medical Center, Los Angeles, California, January 6 and 7.

LECTURES/ PRESENTATIONS

Jeffrey Brown, MD, associate professor of radiology, director of clinical research, and codirector of magnetic resonance imaging, presented "MRI of the liver," "Advances in body MR imaging," "Current concepts in adrenal MR," "MR of the breast," and "MR of the genitourinary tract" at the 3rd International Conference on MRI, Melbourne, Australia, March 12 - 16. He spoke on "Advances in MR angiography," "MR approach to focal liver lesions," and "CT and MR of the adrenal glands" at the University of Mansoura, Mansoura, Egypt, March 25 and 26.

DeWitte Cross, MD, assistant professor of radiology, presented "Relationship between clot location and outcome after basilar artery thrombolysis" at the Working Group in Interventional Neuroradiology Conference, Val d'Isère, France, January 15.

Colin Derdeyn, MD, assistant professor of radiology, spoke on "Anatomic factors predicting the need for intraoperative angiography after aneurysm surgery" at the annual meeting of the Joint Section on Cerebrovascular Surgery of the American Association of Neurological Surgeons, Anaheim, California, February 4.

Matthew Fleishman, MD, instructor in radiology, presented "Evaluation of the relationship between pulmonary artery size and pressure in patients with severe emphysema" at Thoracic Imaging 1997, the annual course meeting of the Society of Thoracic Radiology, Naples, Florida, January 21.

Perry Grigsby, MD, MBA, professor of radiology, spoke on "Radiation therapy for cancer of the uterine cervix - current role and future concepts" at the 16th Annual Meeting of the European Society for Hyperthermic Oncology, Humboldt University, Berlin, Germany, April 2 - 5.

LECTURES/ PRESENTATIONS

Continued from page 23

William McAlister, MD, professor of radiology and chief of pediatric radiology, as visiting professor, gave Pediatric Grand Rounds on "Pediatric sinusitis: an overview" and spoke on "Alimentary tract emergencies in newborns" and "An approach to skeletal dysplasias" at Children's Hospital of Michigan, Wayne State University School of Medicine, Detroit, February 7.

Elizabeth McFarland, MD, assistant professor of radiology, spoke on "Colonic polyp detection with spiral CT colonography" at the SPIE Medical Imaging 1997 International Symposium, Newport Beach, California, February 25.

Tom Miller, MD, PhD, professor of radiology, presented "Registration and fusion of nuclear medicine images" at the Mid-Winter Symposium of the Society of Nuclear Medicine, Palm Springs, California, February 10.

Scott Mirowitz, MD, associate professor of radiology, chief of radiology at Barnes-Jewish Hospital north, and codirector of magnetic resonance imaging, as guest lecturer, presented "Optimizing MR images," "Rapid MRI techniques," "Pitfalls in abdominal MRI," "Cardiovascular MRI," "Pitfalls in knee MRI," and "Techniques and pitfalls in shoulder MRI" at the Argentine Congress of Radiology, Buenos Aires, Argentina, November 4 - 8, 1996.

Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center, presented "Cost-benefit analysis of prostate cancer treatments," "New approaches to management of high risk carcinoma of the uterine cervix," and "Breast conservation therapy" at the 49th Annual Midwinter Oncology Conference, Los Angeles, California, January 17 - 19. As visiting professor, he spoke on "Carcinoma of the endometrium," "Cancer of the uterine cervix," "Carcinoma of the vagina and vulva," and "Radiation oncology in the year 2000" at the Rambam Medical Center, Haifa, Israel, February 11 - 13. Perez presented "Combined radiation therapy and

surgery in carcinoma of the rectum," "Multidisciplinary treatment of carcinoma of the breast," "Irradiation and chemotherapy in carcinoma of the uterine cervix," and "Combination of radiation therapy and surgery in carcinoma of the uterine cervix" at the Congreso Venezolana de Cirugia, Puerto La Cruz, Venezuela, March 9 - 14.

James Purdy, PhD, professor of radiology and associate director of the Radiation Oncology Center and chief of radiation oncology physics, spoke on "Economics of 3D CRT," "Virtual simulation," "Evolution of 3D RTP," and "Evolution of IMRT" at the University of Florida Annual Radiation Oncology Symposium, Orlando, Florida, February 6 - 8.

Marcus Raichle, MD, professor of radiology and of neurology, and codirector of the Division of Radiological Sciences, presented "Language functions as revealed by brain imaging techniques" at the Wenner-Gren Center Foundation and Rodin Remediation Academy International Symposium, Stockholm, Sweden, February 2. He spoke on "The many images of memory" as part of the University College Saturday Seminar series, Washington University, St. Louis, Missouri, February 8. Raichle presented "The brain science of automation" as part of the Neurobiology of Disease Seminar series, Stanford University, Stanford, California, February 13.

Douglas Robertson, MD, PhD, assistant professor of radiology and of orthopedic surgery, moderated the "Imaging osteoporosis" session at the 45th Annual Meeting of the Orthopedic Research Society, San Francisco, California, February 11.

Joseph Roti Roti, PhD, professor of radiology, associate director of the Radiation Oncology Center, and chief of cancer biology, presented "Measurement of DNA damage following in vitro exposure to 835 Mhz or 2450 Mhz electromagnetic radiation" at the Bioelectromagnetics Society meeting, Rockville, Maryland, February 2 - 7. He presented "The role of the nuclear matrix in the lethal response of cells to ionizing radiation," "The nuclear matrix is a target for the lethal effects of heat shock," and "Characterization of a human cell line which proliferates at a temperature above 41° C" at the Molecular Cell Biology and Molecular Genetics Programs Symposium, St. Louis, Missouri, February 22.

Stuart Sagel, MD, professor of radiology and chief of chest radiology, presented "Digital chest radiography: clinical experience" at the annual course meeting of the Society of Thoracic Radiology, Naples, Florida, January 20.

Peter Shile, MD, assistant professor of radiology, presented "Observer productivity reading full-field-of-view digital mammograms: an evaluation of a softcopy workstation supported by a high-capacity high-performance display buffer" at the SPIE Medical Imaging 1997 International Symposium, Newport Beach, California, February 27.

Marilyn Siegel, MD, professor of radiology, spoke on "Pediatric spiral CT" at the Oregon Radiologic Society Meeting, Portland, Oregon, January 15. As visiting professor, she presented "Doppler sonography of the acute pediatric abdomen" and "CT/MR imaging of the pediatric pelvis" at the Oregon Health Sciences University, Portland, January 15. As invited guest speaker, she presented "Ultrasonography of the acute pediatric abdomen" at the Pacific Northwest Ultrasound Society Meeting, Seattle, Washington, January 16. Siegel spoke on "Pediatric gynecologic ultrasonography," "Ultrasonography of the pediatric hepatobiliary system," "Intracranial sonography," and "Sonography of pediatric renal diseases" at the Clinical Ultrasound Symposium, Snowmass, Colorado, February 19 - 21. She presented "Ultrasonography of acute abdominal problems in children" at the Melson Memorial Symposium, St. Louis, Missouri, March 1.

Todd Wasserman, MD, professor of radiology and chairman of radiation oncology at Barnes-Jewish Hospital north, presented "Radiation therapy for advanced prostate cancer" at the Advanced Prostate Cancer: Redefining the Challenge symposium, Houston, Texas, February 14.

Pamela Woodard, MD, instructor in radiology, as a course faculty member, spoke on "Coronary MR angiography" and presented "Comparison of selenium-based digital and conventional screen-film chest radiographs for depicting normal anatomy and CT-proven pathology" at Thoracic Imaging 1997, the annual course meeting of the Society of Thoracic Radiology, Naples, Florida, January 21. As invited lecturer, she presented "Advances in coronary MRA" at Radiology Grand Rounds, The Johns Hopkins Hospital, Baltimore, Maryland, January 30.

Biello Lecture

On March 10, Manuel Brown, MD, vice-chairman of the Department of Radiology and chief of nuclear medicine at the University of Pittsburgh Medical Center, presented the Eleventh Annual Daniel R. Biello Memorial Lecture. Dr. Brown's topic was "The role of nuclear medicine in assessment of infections."



SYMPOSIA

RADIOLOGICAL SOCIETY OF NORTH AMERICA

*The 82nd Scientific Assembly and Annual Meeting
Chicago, Illinois
December 1 - 6, 1996*

Louis Gilula, MD, scientific sessions moderator: musculoskeletal (miscellaneous).

William Middleton, MD, refresher courses codirector: "Special course in diagnostic ultrasound—clinical questions, practical answers": scientific sessions program committee member: ultrasound.

Barbara Monsees, MD, scientific sessions program committee member: general; moderator: breast (screening).

Daniel Picus, MD, scientific sessions program committee member: cardiovascular.

Marilyn Siegel, MD, refresher courses program committee member: pediatric radiology.

Richard Slone, MD, scientific exhibits committee member.

Sharlene Teefey, MD, scientific sessions moderator: ultrasound (musculoskeletal).

Todd Wasserman, MD, scientific sessions program committee member: radiation oncology and radiobiology; moderator: radiation oncology (lymphoma, sarcoma, and pediatrics).

FYI

SYMPOSIA

Continued from page 25

INTRODUCTION TO RESEARCH PROGRAM

Ronald Evens, MD, "The rationale for technology assessment."

INTRODUCTION TO RESEARCH SYMPOSIUM FOR DIAGNOSTIC RADIOLOGY RESIDENTS

Stuart Sagel, MD, "Audio-visual presentation of research."

PLENARY SESSIONS

Special Focus Sessions

William McAlister, MD, "Imaging of pediatric sinusitis: what, when, and why?"

Peter Shile, MD, "Softcopy display issues in digital mammography."

REFRESHER COURSES

Dennis Balfe, MD, "Imaging of the intraabdominal spaces: no guts, just glory."

Louis Gilula, MD, "Ankle tendon imaging: a multi-modality approach."

Michael Darcy, MD, "Interventional urology": "Embolization techniques: a how-not-to workshop."

Jay Heiken, MD, "Spiral (helical) CT: principles and clinical applications."

David Hovsepian, MD, "Hysterosalpingography and selective salpingography (how-to workshop)."

William Middleton, MD, "Special course in diagnostic ultrasound: right upper quadrant pain"; "Practical abdominal color flow sonography (hands-on workshop)"; "Musculoskeletal US (hands-on workshop)."

Tom Miller, MD, PhD, "Nuclear medicine-cardiopulmonary: radionuclide ventriculography."

Henry Royal, MD, "Nuclear medicine - cardiopulmonary: ventilation-perfusion imaging."

Cary Siegel, MD, "Imaging evaluation of testicular cancer."

Marilyn Siegel, MD, "Pediatric spiral CT: challenges of childhood"; "Genitourinary tumors: neuroblastoma."

Sharlene Teefey, MD, "Special course in diagnostic ultrasound: flank pain."

William Totty, MD, "MR imaging of the shoulder."

SCIENTIFIC SESSIONS

Ty Bae, MD; Richard Slone, MD; Keith Fischer, MD, "Quantitative analysis of lung scans in patients with emphysema undergoing lung volume reduction surgery."

Harold Bennett, MD, PhD; William Middleton, MD; Sharlene Teefey, MD; Tamara Crowe, RT; Barbara Myers, RT; Giuseppe Aliperti, MD**, "Application of a new oral US contrast agent in evaluation of gastric and duodenal ulcers." *Barnes-Jewish Hospital, St. Louis, Missouri. **Washington University School of Medicine, St. Louis, Missouri.

James Brink, MD; Jay Heiken, MD; Howard Forman, MD, MBA; Stuart Sagel, MD; Paul Molina, MD; Paul Brown, MD*****, "Reduction of intravenous contrast material dose in thoracic spiral CT." *University of Pennsylvania, Philadelphia. **University of North Carolina, Chapel Hill. ***Nycomed, Inc., New York, New York.

Keith Fischer, MD; Richard Slone, MD; Samuel Wang, MD; David Gierada, MD; Joel Cooper, MD; Thomas Pilgram, PhD**, "Preoperative lung scan findings associated with 6-month outcome in lung-volume reduction surgery." *Barnes-Jewish Hospital, St. Louis, Missouri. **Washington University School of Medicine, St. Louis, Missouri.

Karthikeyan Kuppusamy, MS; Juergen Reichenbach, PhD; Robert Feiwell, MD; Weili Lin, PhD; Mark Haacke, PhD, "Functional MR imaging of cerebellum, basal ganglia and motor cortex using single-shot echoplanar imaging." *Washington University School of Medicine, St. Louis, Missouri.

Karthikeyan Kuppusamy, MS; Weili Lin, PhD; Gregory Cizek, MD; Azim Celik, MS; Mark Haacke, PhD, "In vivo measurement of regional cerebral blood volume with high-resolution T1-weighted MR imaging: spatial and temporal resolution effects."

Debiao Li, PhD; Mark Haacke, PhD; Robert Dolan, PhD; Richard Walovitch, PhD; Randall Lauffer, PhD; Shantanu Kaushikkar, MS, "MR imaging of coronary arteries with MS-325, an intravascular contrast agent." *EPIX Medical, Inc., Cambridge, Massachusetts.

Weili Lin, PhD; Mark Haacke, PhD; Dana Abendschein, PhD, "Contrast-enhanced MR imaging of abnormal vessel wall in pigs." *Washington University School of Medicine, St. Louis, Missouri.

Thelma Lopes, MD; Douglas Robertson, MD, PhD; Ulrich Kliegis, PhD; Charles Sutherland, MD, "Complex orthopedic consultation for acetabular defects in revision hip arthroplasty." *Hospital Real Beneficencia Portuguesa, Sao Paulo, Brazil. **Washington University School of Medicine, St. Louis, Missouri.

For the Record

Mrs. Wendell Scott (shown at right with Dr. Ronald Evens at a 1972 Washington University commencement, accepting an honorary degree given posthumously to Dr. Wendell Scott) was incorrectly identified as Elizabeth Elliot Mallinckrodt in the fall/winter 1996 issue of *Focal Spot* magazine.



Perry Pickhardt, MD*; **Marilyn Siegel, MD**; **Fernando Gutierrez, MD**, "Symptomatic vascular rings: reliability of chest radiography in diagnosis." *Barnes-Jewish Hospital, St. Louis, Missouri.

Melhem Sharafuddin, MD; Xiaoping Gu, MD*; Jack Titus, MD, PhD*; Myra Urness, BS*; Kurt Amplatz, MD, PhD*, "Rethrombosis following mechanical thrombectomy of subacute inferior vena cava thrombosis in a canine model: rationale for continued anticoagulation." *University of Minnesota Hospital & Clinic, Minneapolis.

Melhem Sharafuddin, MD; Xiaoping Gu, MD*; Jack Titus, MD, PhD*; Myra Urness, BS*; Kurt Amplatz, MD, PhD; Carol Coleman, MD*, "Amplatz patient ductus arteriosus occluder: evaluation in a canine model." *University of Minnesota Hospital & Clinic, Minneapolis.

Joshua Shimony, MD, PhD*; **Douglas Robertson, MD, PhD**; **Jie Yuan, PhD**, "Automated radiographic outcome analysis of orthopedic total joint arthroplasties." *Barnes-Jewish Hospital, St. Louis, Missouri.

Cary Siegel, MD; **William Middleton, MD**; **Sharlene Teefey, MD**; Carl Klutke, MD*; Elspeth McDougall, MD*, "US evaluation of the female urethra." *Washington University School of Medicine, St. Louis, Missouri.

Richard Slone, MD; **Glenn Fletcher, PhD**; **Gregory Reiker, MS**; **Pamela Woodard, MD**; **Stuart Sagel, MD**; **Gilbert Jost, MD**, "Comparison of patient dose and noise with digital and screen-film chest radiographs."

Richard Slone, MD; **David Gierada, MD**; **Keith Fischer, MD**; **Stuart Sagel, MD**; **Harvey Glazer, MD**; **Joel Cooper, MD***, "Radiologic selection criteria for lung volume reduction surgery." *Washington University School of Medicine, St. Louis, Missouri.

Richard Slone, MD; **Pamela Woodard, MD**; **Gilbert Jost, MD**; **Stuart Sagel, MD**, "Comparison of 150- and 117-kVp techniques for clinical chest imaging with a selenium-based digital system."

FYI

SYMPOSIA

Continued from page 27

Thomas Vesely, MD; Jean Audrain, RN*; Daniel Coyne, MD*; Surendra Shenoy, MD*; "Use of Wallstents in the treatment of upper extremity central venous obstruction in hemodialysis patients."

*Washington University School of Medicine, St. Louis, Missouri.

Ge Wang, PhD; Michael Vannier, MD; Margaret Skinner, PhD*; Gary Harding, MSE*; "In situ measurement of cochlear implant electrode position with spiral CT image unwrapping and deblurring." *Washington University School of Medicine, St. Louis, Missouri.

Yi Wang, MS; Mark Haacke, PhD; Debiao Li, PhD; Weili Lin, PhD; Markus Barth, MS*; "Separation of arteries and veins in MR angiography with phase information." *Washington University, St. Louis, Missouri.

Pamela Woodard, MD; James Brink, MD; Larry Horesh, MD; Jay Heiken, MD; Harvey Glazer, MD; Claire Anderson, MD; "Maximum intensity projection images for the detection of acute pulmonary emboli with helical CT: assessment of a utility in a porcine model."

Pamela Woodard, MD; Richard Slone, MD; David Gierada, MD; Gregory Reiker, MS; Gilbert Jost, MD; "Comparison of selenium-based digital and conventional screen-film chest radiography in the depiction of normal anatomy and CT-proved pathology."

Jie Yuan, PhD; Douglas Robertson, MD, PhD; Ge Wang, PhD; Michael Vannier, MD; "Reduction of orthopedic metal artifact with iterative-deblurring reconstruction."

SCIENTIFIC EXHIBITS

David Gierada, MD; Richard Slone, MD; "Early postoperative findings and complications after lung volume reduction surgery."

Glenn Hammer, MD; Mark Bahn, MD, PhD; Weili Lin, PhD; Daniel Silbergeld, MD*; John Miller, MD*; Rachel Cook, undergraduate student**; "Determination of hemispheric language dominance with functional MR

imaging: comparison with intracarotid amobarbital test." *Washington University School of Medicine, St. Louis, Missouri. **Washington University, St. Louis, Missouri.

Gregory Reiker, MS; Richard Slone, MD; Pamela Woodard, MD; Glenn Fletcher, PhD; Stuart Sagel, MD; Gilbert Jost, MD; "Technical and clinical evaluation of a commercial selenium-based digital chest imaging system."

Certificate of Merit Award winner

Richard Slone, MD; David Gierada, MD; Keith Fischer, MD; Ty Bae, MD; Roger Yusen, MD*; Joel Cooper, MD*; "Radiologic selection criteria for lung volume reduction surgery." *Washington University School of Medicine, St. Louis, Missouri.

INFORAD EXHIBITS

Gilbert Jost, MD, electronic communications committee member.

For the fourth consecutive year, RSNA featured a DICOM demonstration. MIR's electronic radiology laboratory (ERL) was awarded a contract to provide software refinements in the DICOM CTN test node implementation and coordination with the participating vendors and to refine the medical image data set utilized for the demonstration.

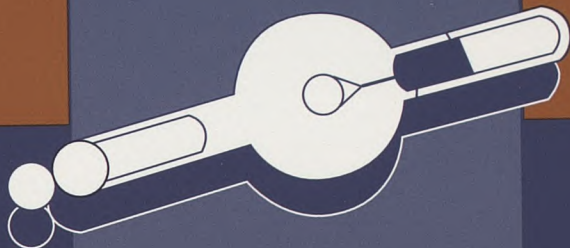
Software architect:
Stephen Moore, MS.

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Richard Slone, MD; David Gierada, MD; Keith Fischer, MD; Ty Bae, MD, PhD; Roger Yusen, MD*; Joel Cooper, MD*; "Radiologic selection criteria for lung volume reduction surgery." *Washington University School of Medicine, St. Louis, Missouri.

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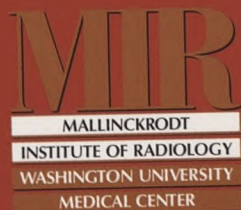
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