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Focal Spot, Fall/Winter 1997

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FALL/WINTER, 1997

VOLUME 28, NUMBER 3

FOCAL SPOT

MALLINCKRODT INSTITUTE OF RADIOLOGY

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NEAKING UP
A KILLER



As chairman of the American College of Radiology Board of Chancellors, Ronald Evens, MD, director of Mallinckrodt Institute of Radiology, was at the White House on October 24, 1997, when President Clinton signed legislation to provide the nation's under-served women with access to high-quality mammography screening.

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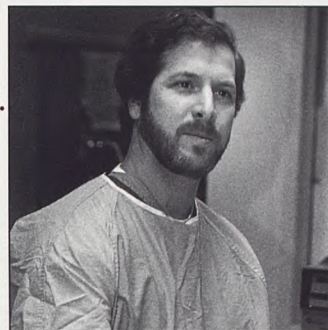


THE COMPUTER EYES HAVE IT

Screening mammography—diagnostic X ray—is the most sensitive technique for detecting early breast cancer, a disease that strikes one in eight women in the United States. Now, researchers have developed an innovative method of training computers to prescreen mammograms, a cost-effective tool that should improve diagnostic accuracy.

7 SNEAKING UP ON A KILLER

Ruptured abdominal aortic aneurysms are the fifth leading cause of death in men over the age of 70. As part of a national clinical trial, interventional radiologists and vascular surgeons are testing whether or not a new method for repairing aortic aneurysms is a viable substitute for traditional surgery.



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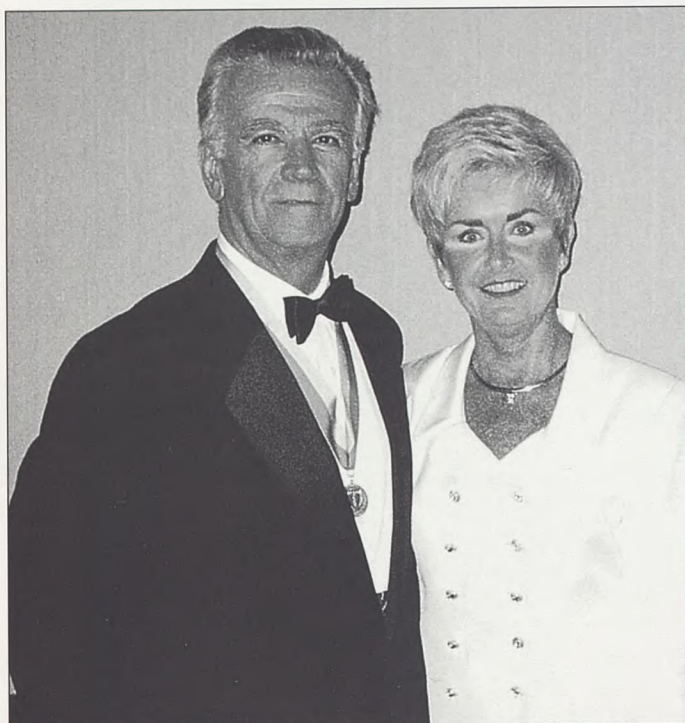
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ON THE COVER:

Washington University Medical Center vascular surgeons and interventional radiologists have performed 21 aortic aneurysm repairs using a new endovascular device. Photography by Tim Parker.

SPOT NEWS



Carlos Perez, MD, and Susie Perez at the ACR Annual Meeting in Atlanta, Georgia.

Perez earns ACR's highest honor

The Gold Medal Award is the American College of Radiology's (ACR) highest accolade, presented only to those individuals who have significantly advanced radiological science and practice. In September at the ACR's annual meeting, Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center, received the coveted award for his outstanding contributions to the specialty of radiation oncology.

Perez is highly regarded for his expertise in the management of patients with gynecologic tumors, with carcinoma of the prostate, and carcinoma of the breast. He is an advocate of the human aspect of medicine,

of providing patients with a genuine sense of caring and an understanding of their disease as well as their psychological and emotional needs.

He arrived at Mallinckrodt Institute in 1960 as a radiation oncology resident. Following three years of MIR residency and a one-year fellowship in radiotherapy at M. D. Anderson Cancer Center in Houston, Texas, Perez returned to the Institute in 1964 as an instructor in radiology. In 1966 he initiated a program for the specific training of radiation therapy technologists; the program became nationally recognized for its standard of excellence.

Perez was named a professor of radiology in 1972 and director of the Radiation Oncology Center in 1976. Under his leadership, MIR's Radiation Oncology Center is a premier radiation ther-

apy facility with a strong research core, a result of teamwork among the scientists in the cancer biology and physics sections and the clinical staff.

In a medical career that spans nearly 40 years, Perez has made valuable contributions to the field of radiotherapy through clinical research, analysis and publication of that research, lectures, and involvement in radiotherapy-related organizations. He is a past president of the American Society for Therapeutic Radiology and Oncology and received the organization's prestigious Gold Medal Award in 1992. He serves as a trustee of the American Board of Radiology and as a member of the National Board of the American Cancer Society. He is coeditor of *Principles and Practices of Radiation Oncology*, the most comprehensive text on the subject, and of *Principles and Practices of Gynecologic Oncology*, which is rapidly becoming the most popular textbook on the specialty.

One of Perez's more visible accomplishments, and perhaps one of his most fulfilling efforts, is the Cancer Information Center (CIC). Established in 1977, the facility was the first of its kind nationwide and was based on Perez's belief that patients respond better to treatment if they are well-informed. Offering medical information and resources for physicians and for patients and their families and friends, the CIC has served as a model for similar centers in the United States and abroad. It is now cosponsored by Barnes-Jewish and Barnard hospitals and supported by the MIR Radiation Oncology Center.

Mirowitz receives RSNA award

To commemorate radiology's 1995 centennial anniversary, the Radiological Society of North America (RSNA) Board of Trustees endowed the Roentgen Centennial Fellow in Radiologic Innovation, a special annual award that allows experienced practitioners to explore and apply innovative solutions to key radiology issues. The 1998 award recipient—Scott Mirowitz, MD, associate professor of radiology, radiologist-in-chief at Barnes-Jewish Hospital north, and codirector of body magnetic resonance imaging—was announced in December at RSNA's 83rd Scientific Assembly and Annual Meeting in Chicago.

A program of the Research and Education Fund, the award was established in 1993 and provides \$100,000 for an investigator to "develop new interests, explore new dimensions of the field, and advance the radiological community's involvement in key socioeconomic, professional, and healthcare concerns." Mirowitz's program, "Development and evaluation of a medical management curriculum for radiology residents," proposes that if radiologists receive formal instruction in medical management during residency, then they will be better prepared to make rational business decisions, to effectively communicate and work with administrators, to be knowledgeable about ongoing healthcare changes, and to assume leadership roles in their organizations. This curriculum will be developed at Mallinckrodt Institute and subsequently may be implemented into RSNA's or other radiology programs.

Faculty participate in advanced course

As many facilities encounter the increased competition for funding brought about by the decreased availability of research dollars, young investigators are turning to special courses that teach the fine points of preparing and submitting grant applications. Four of the 19 radiologists selected for the Radiological Society of North America (RSNA) 1997-1998 Advanced Course in Grant Writing are Mallinckrodt Institute faculty: Clifford Chao, MD, assistant professor of radiology; Marshall Hicks, MD, associate professor of radiology; Douglas Robertson, MD, PhD, assistant professor of radiology and of orthopaedic surgery; and Pamela Woodard, MD, assistant professor of radiology.

The course is held at RSNA headquarters in Oak Brook, Illinois, and consists of four workshops that run two to three days; the first workshop met in September with others scheduled for January, April, and July, 1998. To be considered for the course an applicant can never have been a principal investigator on an NIH/NSF-funded project; holds an MD or PhD degree; is a faculty member of a radiology, radiation oncology, or nuclear medicine program; submits a viable research idea for which a grant proposal will be submitted to the NIH/NSF or equivalent agency at the end of the course; has a mentor who has successfully received NIH/NFS funding; and has the support of his or her department chair.

Wippold elected ACR fellow

The American College of Radiology (ACR) annually honors those U. S. physicians and scientists who have made outstanding contributions to radiology. At the ACR's 74th Annual Meeting in September, Franz Wippold II, MD, associate professor of radiology, was among 143 electees who received the degree of ACR fellowship.

In addition to his responsibilities in the Institute's neuroradiology section, Wippold, who was appointed as a lieutenant colonel in the U. S. Army reserve forces following his discharge from active duty in 1986, is a clinical associate professor of radiology/nuclear medicine at the F. Edward Hébert School of Medicine at the Uniformed Services University of the Health Sciences in Bethesda, Maryland.

Wippold received his medical degree from St. Louis University School of Medicine. He completed an internship in neurology and a radiology residency at Walter Reed Army Medical Center and a one-year neuroradiology fellowship at MIR. Before he joined the Institute faculty in 1986 as an assistant professor of radiology, Wippold was chief of neuroradiology at Walter Reed Army Medical Center and a guest lecturer and consultant for the Armed Forces Institute of Pathology.

An active member of several radiology-related organizations, he is a fellow of the American College of Angiology and a senior member of the American Society of Neuroradiology. A dedicated teacher, Wippold received the 1983 MIR Fellows Teaching Award and the 1991 MIR Annual Senior Residents' Distinguished Teaching Award.

Balfe leads radiological society

Dennis Balfe, MD, professor of radiology, was elected to a one-year term as president of the Society of Computed Body Tomography and Magnetic Resonance (SCBT/MR) at the organization's annual meeting in April. Established in 1977, SCBT/MR promotes the education of practicing radiologists in the use of body computed tomography and magnetic resonance imaging.

Balfe, a member of the Institute's abdominal imaging section, also serves as director of the MIR Diagnostic Radiology Residency Program. He received his medical degree from the Medical College of Wisconsin, Milwaukee, and completed an internship in medicine and a diagnostic radiology residency (chief resident, 1978-1979) at St. Mary's Hospital, San Francisco. After completing a one-year abdominal radiology fellowship at the Institute, he joined the faculty in 1980 as an instructor of radiology. Balfe is a two-time recipient—in 1983 and 1987—of the MIR Annual Senior Residents' Distinguished Teaching Award.

Meetings to be held in St. Louis

Three international radiopharmaceutical symposia will be held at the Washington University Medical Center in the summer of 1999. Michael Welch, PhD, professor of radiology and codirector of the Division of Radiological Sciences, is symposia coordinator.

8th Workshop on Targetry and Target Chemistry
June 24 - June 27

11th International Symposium on Radiopharmacology
June 24 - June 27

13th International Symposium on Radiopharmaceutical Chemistry
June 27 - July 1

For more information, e-mail ISRC13@mirlink.wustl.edu or call 314-362-8436.



THE COMPUTER EYES HAVE IT

Radiologists use artificial intelligence to screen mammograms.

BY CANDACE O'CONNOR

As a radiologist, William Reinus, MD,

knows the importance of mammograms in routine screening for breast cancer, a disease that strikes one in eight adult American women. He also knows that the growing number of mammograms performed each year means an ever-increasing workload for radiologists.

Reinus, associate professor of radiology, has developed an innovative method of training computers to help do some of the screening. Currently, he and two colleagues, Barry Kalman, PhD, and Stan Kwasny, PhD, both research associates in the Department of Computer Science at Washington University's School of Engineering and Applied Science, are further refining this process, which already has an 80 percent sensitivity rate in identifying masses.

"This new methodology could lead to screening programs that require less manpower and are, therefore, more cost-effective," says Reinus. "It should also improve our diagnostic accuracy, both the sensitivity and specificity rates—that is, how often we detect existing tumors and how often we say there is a tumor when there isn't one."

DEVELOPING THE IDEA

In 1991, Reinus was on an airplane, reading a book about parallel distributive processing, the kind of computing that is done by artificial neural networks (ANNs). Ordinary linear computers are based on the "Turing model," in which a central processing unit reads information that is stored as a kind of tickertape, using relocatable memory.

But ANNs are different. They are modeled after the human brain, which works by firing billions of neurons through a complex network of synapses. Memories are not stored in the neurons themselves; rather, they exist in the threshold that it takes for one neuron to trigger another to fire.

Ordinary computers and ANNs also differ in another way. While a typical mainframe is superb at doing computations, it is not very good at discerning patterns. But people are good at it—and, so are parallel distributive processors because they are like the human brain.

"If I showed you a picture, and asked you to identify the leopard lurking in the shadows, you could probably do it pretty quickly, but a linear computer would have a hard time," says Reinus. "Parallel distributive processors are very good for recognizing patterns in many things, whether it might be speech, visual, even hidden information."

So Reinus was sitting on the plane, thinking about parallel distributive processing when he suddenly realized that this system might well apply to radiological processes that depend on pattern recognition. When he got back to St. Louis, he sought out Kwasny and Kalman, both specialists in neural networks, who were also interested in working on medical issues.

They began by using a neural network to diagnose primary bone lesions. Next, they used ANNs to see what variables in a medical emergency would predict the patient's need for an emergency computed tomography (CT) scan of the head. Both attempts went well, but the researchers decided to move to a new area of the body.

"Our first major project was to look at the breast," says Reinus, "mostly because it has no view-specific anatomy. When we look at a bone, for example, the machine has to understand what it looks like from the front or the side, but a breast looks much the same from all sides on a mammogram. That makes it much easier for us to approach the problem."

THE COMPUTER EYES HAVE IT

HOW THE METHOD WORKS

Reinus and his colleagues, aided by Lawrence Kotner, MD, associate professor of radiology, collected a database of 380 past mammograms, along with the biopsy results that emerged from each one. The films that showed masses became the study group, while those without masses were the control group.

"The interesting thing about neural network computing is that you don't program the computer so much as you train it," says Reinus. "Like a brain, it has the ability to learn through training. You show it a piece of information and the appropriate answer, then another piece of information and the answer, and slowly you get the interneuronal connections formed. Finally, after a while, you show it a piece of information but do not show it the answer—and, at that point, it will hopefully come up with the right answer by itself."

This process may sound straightforward, but it is enormously complex. Before the ANN can begin its work, the mammogram must be digitized into millions of tiny pixels. One image alone may consist of 2,000 pixels by 2,000 pixels at one byte depth—a size that requires four megabytes of memory. Since no known network can handle that amount of information, Reinus and his colleagues must use a wavelet transform to help compress the information to the size required for ANN processing.

These wavelets—sophisticated algorithms that can compress features of an image—also perform another function. They transform the pixels into representations of very fine features of the image. Eventually, they also use these features to separate the images into two groups: one, the normal group; the other, the anomalous pile, where disease may be present.

Next, the researchers process the digitized, wavelet-compressed images using linear output sequential recursive auto-associative memory (LOSRAAM). This innovative ANN software, developed by Kalman and Kwasny, detects distinctive features among the pixels in each image. ANN networks then respond to these features, voting "yes" or "no" on each one. Finally, an overarching ANN network gathers these votes and decides whether there is a mass present.

Over the past seven years, Reinus and his colleagues have worked through a dozen iterations of this training process, and at last they have achieved consistent results: 80 percent sensitivity and 60 percent specificity. If they reach their goal of 95 percent accuracy, this method could become a better-than-human means of detecting masses in screening mammograms.

But even with the present accuracy rate, this method could still be useful as a diagnostic aid. When a woman comes in for a screening mammogram, this device could signal right away the need for more thorough imaging—and save her a trip back at a later time. "It could also be a diagnostic aid to a radiologist that says, 'look at this mammogram more closely,'" says Reinus.

In time, he and his colleagues would like to use their technique to find microcalcifications in breasts and masses in other parts of the body. Meanwhile, though, they will concentrate on refining their method of detecting breast masses.

"All of these things can be worked on and improved," says Reinus. "Does that mean we are going to make our goal? We may or we may not. But we know now that we have a system that works, and we also know that it's not just going to work for mammograms. It will also work for identifying anomalies in many types of imaging—such as chest X rays, CT scans, or magnetic resonance imaging—and that is very exciting." **MIR**

...YOU DON'T PROGRAM THE COMPUTER SO MUCH AS YOU TRAIN IT...

SNEAKING UP on a Killer

A new technique may revolutionize treatment of one of the deadliest circulatory problems. Each year in the United States, doctors diagnose about 100,000 cases of abdominal aortic aneurysm disease, informally called "AAA." The estimated cost of treating this disease is \$2.3 billion per year. Ruptured aneurysms are the fifth leading cause of death in men over the age of 70 and are the thirteenth leading cause of death nationwide. ● Until recently, a patient's best hope for survival was through major open surgery, which can be risky. Now patients may have a more tolerable treatment option. Interventional radiologists and vascular surgeons at Mallinckrodt Institute of Radiology (MIR) and Barnes-Jewish Hospital (BJH) are taking part in a clinical trial testing a new, less-invasive way to repair aortic aneurysms using a new device from Endovascular Technologies, Inc.(EVT), a California-based company. ● "In preliminary trials in selected patients, the EVT device has shown excellent potential as a substitute for traditional surgery," says Daniel Picus, MD, head of MIR's vascular and interventional radiology section and one of the trial's coinvestigators.

SNEAKING UP on a Killer



David Hovsepian, MD

A SILENT PROBLEM

As the walls of the aorta (the main artery from the heart) weaken and stretch, an aneurysm may balloon out and continue to grow over the years if not treated. Around 1.5 million people have aneurysms and may not know it.

“The risk of an aneurysm is in the chance of a rupture occurring,” explains Brent Allen, MD, a vascular surgeon and a coinvestigator. “It’s a silent problem, usually not causing any symptoms until it bursts.”

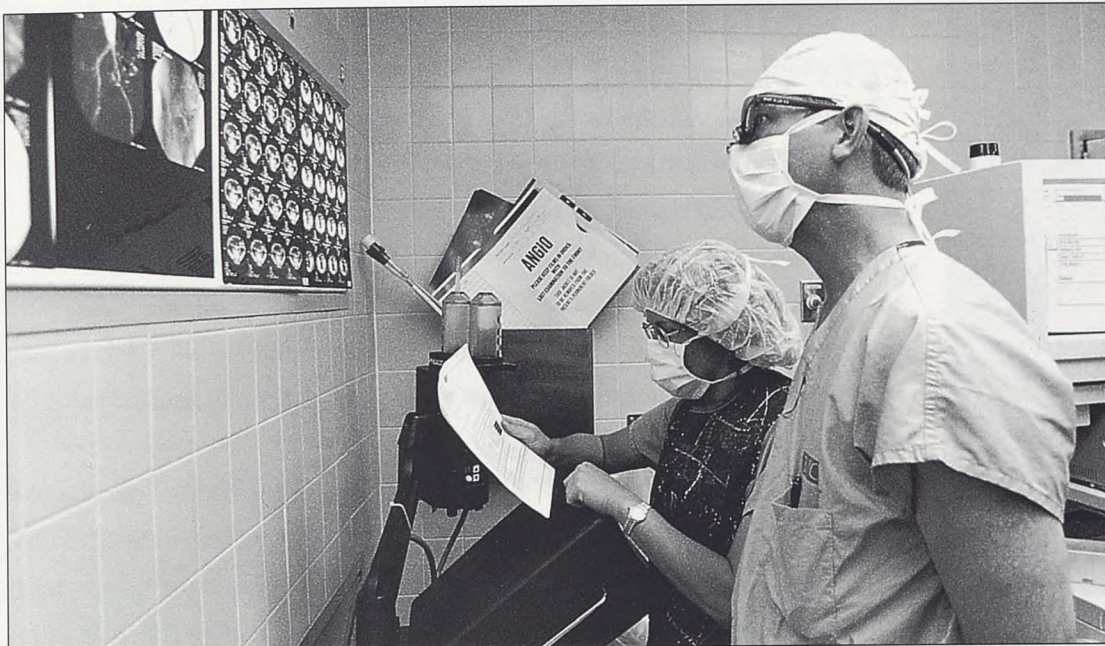
When an aneurysm is five centimeters across, the probability that it will rupture within five years is 20 to 30 percent. But that number goes up rapidly in comparison with the size of the aneurysm: for example, a seven-centimeter aneurysm has a greater than 50 percent chance of bursting within five years.

A ruptured aneurysm that is not operated on immediately is uniformly fatal. Even with surgery after the rupture, there is about a 50 percent survival rate. But elective surgery to repair the aneurysm before it ruptures promises patients a new lease on life.

Corrective surgery is usually considered only for a patient with an aneurysm greater than four centimeters across, about double the normal size of the aorta, and if the patient is in fairly good health. If other medical problems compound the risk of surgery, doctors usually wait until the aneurysm is five centimeters in size.

In the standard AAA operation, developed in the 1950s, a large incision is made through the abdomen and an artificial vessel (called a graft) made of Dacron, a synthetic polyester fiber, is sewn into healthy parts of the aorta above and below the ballooned section. Because the blood then flows through the graft, the aneurysm outside of the graft generally shrinks, eventually becoming incorporated into the graft itself. These grafts are very reliable and the aneurysm is unlikely to recur.





In the operating room, vascular surgeon Brent Allen (in foreground) takes a final look at a patient's abdominal images.

Conventional surgical repair of aneurysms is effective, but it is not easy on patients. It requires a one- or two-day stay in intensive care and a one-week stay in the hospital. It may take up to two months for complete recovery. Many patients with aneurysms greater than four to five centimeters are not candidates for such a major operation because of overall poor health. In these cases, the risk of surgery outweighs the risk of the aneurysm rupturing.

These patients need an alternative to open surgery, and they might get it as a result of the EVT clinical trial. While the new device and technique are currently being tested on patients who are also candidates for traditional surgery, there could be a wider use once the device is fully approved by the FDA.

"About fifteen percent of the patients we now operate on are candidates for this new repair," says Allen. "As the technology develops, it's very reasonable that fifty percent or more of patients will be candidates. The endovascular method might provide treatment to those patients who cannot undergo major surgery and may result in treating aneurysms of smaller and smaller sizes."



SNEAKING UP on a Killer



Pre-operation image of the abdominal aortic aneurysm (ballooned section).

USING THE BACK DOOR

The new technique, called endovascular repair, does not use a large abdominal incision as does the traditional surgery. Instead, by combining the skills of vascular surgeons and interventional radiologists, the graft is slipped into place through a small incision that exposes one of the femoral arteries in the groin.

Each graft is custom-made for the recipient based upon computed tomography (CT) scans of the abdomen. The most basic graft, called a tube graft, is used for patients whose aneurysm is limited to the abdominal aorta itself.

"The number of patients whose aneurysm is the right shape and size for a tube graft is really quite small," says David Hovsepian, MD, interventional radiologist and coinvestigator. "By the time you can detect the aneurysm, it often involves the iliac arteries, too." When the iliac arteries (the main aortic branches to the legs) are involved, a bifurcated graft is used, which has two "pant legs" to extend into each of the iliac arteries. If only one of the iliac arteries is affected, a uni-iliac graft is used (basically a tube with just one extra "pant leg").

EVT, currently the only company testing endovascular devices in the United States, selected 20 test sites—based primarily upon their experience and resources. The Washington University Medical Center is the only test site in the Midwest region, where on average, around 100 AAA surgeries are performed annually. Since entering the EVT trial, the medical center's research team led by Gregorio Sicard, MD, chief of the vascular surgery section and principal investigator, has performed 21 endovascular repairs. The first operation was in March of 1996, and all of the operations have been successfully completed.

"The endoluminal treatment of abdominal aortic aneurysm potentially represents the greatest advance in aortic surgery since the introduction of prosthetic grafts for aortic replacement," says Sicard. "In an era of minimally invasive procedures, this endoluminal approach will become, if the long-term results are comparable to open surgery, the preferred method of treatment of aneurysms by surgeons, interventionalists, and patients alike."



The grafts are packaged in a complex delivery system that allows it to be inserted up through an opening in the femoral artery in the groin. Using fluoroscopy, the operating team can monitor the placement of the graft. Once properly configured, the graft is expanded to its full size.

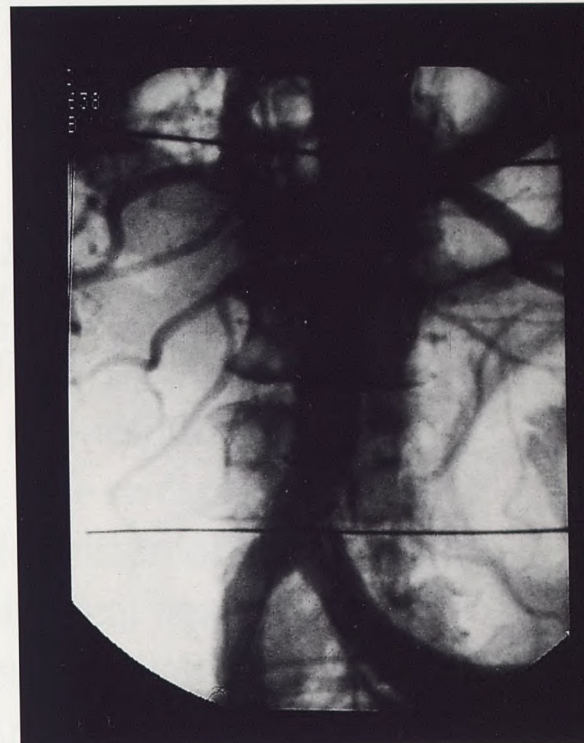
"With endovascular repair, you're basically putting a sleeve inside the balloon in order to bypass it," explains Hovsepian. "The trick is to make sure that the sleeve is completely sealed and doesn't wear out with time."

While open surgery allows grafts to be sewn into the aorta, the endovascular technique does not. Instead, tiny hooks or barbs, embed themselves into the artery, anchoring the graft at both the top and the bottom. Evaluating the long-term effectiveness of stent technology is one of the major purposes of the trial.

"There's a concern that since this new device isn't sewn into the aorta and if the aorta continues to enlarge, it will just enlarge around the device," says Allen. "We're concerned about what's going to happen down the road if the aneurysm begins to enlarge again and whether it will separate from the graft."

But while long-term questions await an answer, some benefits are already apparent. For example, patients who receive endovascular stent grafts spend about two days in the hospital and are back to work within one week. But even though it is easier on patients, it is not a simple procedure.

"The EVT tube graft actually has sixty-nine separate steps necessary to deploy it," says Hovsepian. "Where we save time is in the length of the patient's hospital stay, not in operating time. It is a safer procedure with a much quicker recovery time."



Post-operation image showing EVT tube graft in place.



SNEAKING UP on a Killer



During their hospital stay after the procedure, patients spend much of their time undergoing imaging tests to check the integrity of the stent-graft. Five different imaging scans, including CT, Doppler ultrasound, a nuclear medicine scan, and abdominal X rays, are performed.

"We're selecting the best imaging methods for follow-up," says Hovsepian. "In time, we hope that patients will be able to go home the day following the endovascular repair or the day after."

JOINING FORCES

The collaboration between interventional radiology and vascular surgery goes beyond this clinical trial. The two groups have merged, although each still reports to its parent department: radiology or surgery.

"This merger was an evolution brought about by this and other new hybrid techniques that require both the radiologist and surgeon working together in the operating room," says Hovsepian. "Each physician brings something to the bargain. Each has skills and knowledge that complement the other."

"Our clinical trial and the idea of an interventional radiologist and vascular surgeon working together is a trailblazer in developing this new technology," emphasizes Allen. "The potential for this technique is great, and we're optimistic that it will play a major role in the way we treat patients. Patients will benefit from the newest technology and from physicians who know how to use it. We want to make sure everyone is kept up-to-date, so the other members of interventional radiology and vascular surgery at Washington University are being trained in the EVT techniques. I think our experience with this technique has demonstrated that many skills are needed to perform the technique effectively and safely. When that happens, then the results are very good." **MIR**

THE TWENTY-SIXTH ANNUAL WENDELL G. SCOTT MEMORIAL LECTURE

OCTOBER 6, 1997



Fred Brown, FACHE, president and chief executive officer of BJC Health System, is guiding one of the nation's largest and most highly acclaimed healthcare systems toward its goal of becoming an integrated healthcare delivery and financing system. As the 1997 Wendell Scott Lecturer, Mr. Brown, who was recently named as chairman-elect of the American Hospital Association, shared his views on the future of healthcare in the United States. The following text is excerpted from his talk on "American healthcare in the new millennium."

We all know that healthcare today is "living" in the fast lane. The only sure thing is change. Even the definition of health itself is changing. We're rapidly moving to a much broader definition of health that includes not only physical health, but also psychological and social well-being, an individual's ability to participate fully in daily living, spiritual fulfillment, and a strong sense of community.

FORCES OF CHANGE

The forces of change that cause intense concern and anxiety among our care givers are deeply rooted in the complexity of American life. Not surprisingly, the ongoing transformation of our nation impacts our healthcare environment. Social, political, and technological issues have mounted geometrically over time.

When Ben Franklin founded the first hospital in 1751, he could never have imagined that today there would be more than 6,000 hospitals nationwide, all facing the same healthcare issues. Yet, America's heritage of individualism and strong sense of community will enable us to find local solutions to meet local healthcare needs.

Already, at BJC and at Washington University, we are working to better coordinate the healthcare services for the greater St. Louis region. In the past five years, we have reshaped nearly every aspect of the St. Louis healthcare

market. These changes have been met with applause and resistance and, sometimes, with plain, all-out anger. But we must protect the advances made in American healthcare this past century, and despite the rough spots, I strongly believe the right steps were taken for the right reasons.

HEALTHCARE 2000

Today, let's fast forward a bit to see what the future holds. Certainly, in the new millennium, health-conscious consumers will demand information, provider accountability, and alternatives to traditional medical-care systems as they assume greater responsibility for their own health and well-being. This new consumer-driven attitude will drastically change how providers deliver healthcare, as demonstrated by these predictions:

■ Today's emphasis on managed care will give way to a focus on "care management." Physicians, nurses, and other healthcare professionals will be expected to better coordinate a



THE TWENTY-SIXTH ANNUAL WENDELL G. SCOTT MEMORIAL LECTURE

patient's care across the full continuum of services available. We will work to keep people well and when they do need care, we'll place them in the most appropriate setting.

- Physicians will continue to make the majority of healthcare decisions. Yet, due to dramatic changes in healthcare, they will be partners in new types of relationships with other healthcare providers.

- Hospitals will be reserved for highly advanced, invasive therapies. Yet, medical centers, like the Washington University Medical Center, will continue to thrive and to offer vital research and education services. Specialists will continue to staff these new high-tech sites.

- New low-tech sites, encompassing urgent care, rehab, and dialysis centers, will flourish as they complement the high-tech facilities. This is a reality today and is a practical solution to unnecessary high-cost, inpatient-focused treatments.

- In addition to utilizing ambulatory care centers, people will access medicine and products directly over the counter. Alternative medicine is already a booming business, and this multi-million dollar (out-of-pocket) industry will continue to grow rapidly.

- There will be even more home health-based programs. In 1996, BJC home-health nurses called on more than 370,000 patients.

- Finally, BJC and Washington University will proactively reach out to surrounding communities. This will involve working with schools, places of worship, and employers. We are beginning to do this today, preparing for the future and bridging the gap until personal health accountability is more mainstream.

CORNERSTONES

I believe that even as things change, certain fundamentals remain. And that's what I'd like to focus on

now—the fundamentals or cornerstones upon which healthcare in America will be built in the the new millennium:

- social responsibility,
- access to care,
- collaboration, and
- service.

SOCIAL RESPONSIBILITY

Priority number one is to recognize that health issues play out in a larger social context—larger than a hospital, a research center, or any integrated healthcare system. Health is a crucial factor in the quality of life, but for many people health runs a distant second to other more basic needs, such as food, shelter, and spiritual support.

If I asked members in this audience why he or she went into healthcare, most of the responses would concern making a difference, helping people, or improving the quality of life for patients. So, I don't have to tell healthcare providers about social responsibility. They feel it, they live it every day.

But it is tempting to become narrowly focused on an episode of care, a single disease, a new treatment protocol, or a new technology. As we try to provide the best care, we can lose sight of the world beyond our offices, clinics, labs, and operating rooms. Simply providing excellent care is no longer enough and to view healthcare as a stand-alone issue is to take a too-narrow view. It's easy to talk about improving health—and that's what most U.S. health systems state as their goal—but until we look at health in a much wider framework, our efforts will be ultimately futile.

We must switch from telescopic lenses to wide-angle lenses. We must look at the neighborhoods that surround our facilities, the economics of our regions, the social pressures, the financial problems, and the environ-

mental issues that are barriers to improved health.

We piloted a program at BJC called "Health Coach," in which we matched healthy women with trained, lay, health coaches. We wanted to see if coaching would influence healthy people to initiate and maintain healthier behaviors, such as weight loss, smoking cessation, mammography, or visits to a primary-care physician.

After a year many of the participants benefited significantly from the support of the health coach, but others couldn't think about healthier behaviors because they first needed help with more basic issues, such as getting a steady job, finding a permanent home, and arranging child care and transportation. That is the real social context in which healthcare takes place, a context that is too often invisible to healthcare providers.

We see and treat the results of social and economic influences on health, but we need to do more. BJC and Washington University must proactively identify and work to remedy the causes of poor health. We must be good citizens and good neighbors, using our resources and expertise to benefit the community. For example, when BJC obtained the former Stix-Michael schools property at Forest Park Boulevard and Euclid Avenue we built a \$10 million school nearby for the community, and we made a commitment of \$225,000 to the new school to help with mentoring and health-and-wellness programs. We believe this is the kind of creative community involvement that nurtures a healthier environment for everyone.

ACCESS

America's track record in access to healthcare can only be described as dismal. We've all seen the numbers: Nearly 42 million people were without health insurance for all of 1996—up more than one million from 1995, according to a U. S. Census Bureau

report. And most of the increase occurred among uninsured children under the age of 18. That increase, from 9.8 million in 1995 to 10.6 million in 1996, is greater than at any time during the past 30 years.

Nearly 25 percent of the American work force is employed by companies that don't offer group health insurance to their families. At least every seventh person in a community is likely to have been without health insurance during the past 12 months. And, based on current trends, healthcare coverage provided by employers could drop to as low as 50 percent by the year 2002.

We urgently need action in support of access. In fact, a recent Gallup poll commissioned by the American Hospital Association (AHA) found that Americans believe that reducing the number of uninsured is more important than curbing drunk driving, reducing unemployment, or balancing the federal budget.

Access to healthcare is an issue that continues to demand attention, at the national level and in state legislatures. Through a program called "Campaign for Coverage," AHA hopes to expand coverage to an additional four million Americans by the end of 1998. Many state legislatures have already mandated Medicaid healthcare coverage for a wider range of low-income people. Some states have approved higher taxes on tobacco products and are using the added tax money to fund expanded healthcare coverage for children. On a local note, BJC, other health systems, and medical schools in the area are taking a leadership role in the community effort called "St. Louis 2004." As chairman of the group's executive committee on healthcare access, I am pleased that we are guiding the design and implementation of a new insurance product to make health insurance available for the currently uninsured in the St. Louis region.

COLLABORATION

Who will take on the task of making healthcare work for Americans? I believe all of us together, community by community, must take responsibility for bringing about the solution. And each stakeholder must find the places where agendas intersect, not where they are different. We'll have to shed the "we-versus-them" mentality that too often divides us and hinders progress. The emergence of integrated health systems is a good example. Although some people regard the merger mania in healthcare as a negative, the economies of scale and the efficiencies brought about by integrated health systems are well-documented. An integrated system blends and balances the strengths of three essential components: the provider, whose staff members and facilities deliver healthcare; the physicians, whose expertise guides healthcare decisions; and the insurer, who assumes financial responsibility to cover healthcare costs for large groups of people. Even though these components are the building blocks of healthcare today, they are seldom integrated into a single organization with the goal of improving the health of a given population.

But that is precisely what BJC is working toward—integrating health care and financing. Why financing? Because providers must have more administrative control at the bedside than today, where decisions are made in managed-care offices miles away. At BJC we are developing two key components of integration: a comprehensive continuum of care, and an excellent medical staff. Bringing in insurance—the third component—is the next step. But remember, for BJC, integrating healthcare delivery and financing is not a goal but a tactic for reaching a goal. BJC's goal and guiding principle, as demonstrated by our mission statement, is a promise to improve the health of the people and the communities we serve.



SERVICE

What does service mean? To me, service means making sure that the care we provide is offered with dignity, with humanity. Service means sharing information, empowering patients to participate in their own healthcare, and being publicly accountable for the outcomes we as healthcare providers achieve. Despite our best intentions, customer service is often the Achilles heel of healthcare. Organizations such as BJC and Washington University must provide excellent service because (1) excellent service is a competitive necessity. Put plainly, people make choices on how they are treated. (2) Excellent service builds shared values in our organizations. A commitment to excellent service can drive employee morale, and strong shared values can increase our capabilities. (3) Excellent service shows we care about people and about quality. No matter how advanced treatments become, no matter how efficiently healthcare operates, the only way people know we care about them and the quality of care they receive is through the service we provide. Last year, BJC facilities had more than 2.5 million patient encounters, 2.5 million opportunities to deliver excellent caring service. As healthcare continues to move out of hospitals and into communities and into people's homes, and as health systems continue to grow, excellent service will become more important than ever.

I'm not pretending that anything I've said here today is brand-new thinking. As we head into the new millennium, American healthcare must renew its sacred covenant with patients. BJC and Washington University will not abandon our historic roles of service to the indigent and the poor nor our commitment to excellent patient service. In the new millennium, the healthcare world we know today will be drastically reshaped but our mission to improve health by improving healthcare will not change. ■■■

FYI

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

THE DIRECTOR'S OFFICE REPORT

PROMOTION

Pamela Woodard, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology.

CHANGE IN STATUS

Fiorenza Ianzini, PhD, research instructor in radiology, was appointed as

research assistant professor of radiology, Radiation Oncology Center.

OFF STAFF

Nathan Nelson, MS, instructor in radiology, Division of Nuclear Medicine.

APPOINTMENTS/ELECTIONS

Thomas Conturo, MD, PhD, assistant professor of radiology and adjunct assistant professor of physics, was appointed as the MIR project leader for the Siemens 3T System.

Louis Gilula, MD, professor of radiology and of surgery and chief of musculoskeletal radiology, was appointed as chairman of convention planning for the International Skeletal Society and as a member of the Refresher Course Committee for the Society's 1999 meeting in Dublin, Ireland. He also was appointed as secretary-director of the International Wrist Investigator's Workshop.

Lawrence Kotner, MD, associate professor of radiology, was reappointed to a one-year term as medical staff representative to the Medical Executive Committee of Barnes-Jewish Hospital.

Debiao Li, PhD, assistant professor of radiology and of electrical engineering, was appointed as a member of the Communications Committee of the Society of Cardiac Magnetic Resonance. He was appointed as a member of the Steering Committee for the IX International Workshop on Magnetic Resonance Angiography.

Daniel Low, PhD, assistant professor of radiology, was elected to a one-year term as a member of the Radiation Oncology Center Steering Committee.

Tom Miller, MD, PhD, professor of radiology and of electrical engineering, was elected to the rank of Senior Member of the Institute of Electrical and Electronic Engineers.

Scott Mirowitz, MD, associate professor of radiology, radiologist-in-chief of Barnes-Jewish Hospital north, and codirector of body magnetic resonance imaging, was appointed as a member of the Radiological Society of North America's Committee on Health Policy and Practice.

Stephen Moerlein, PhD, associate professor of radiology and of biochemistry and molecular biophysics, was appointed to a five-year term as a member of the Mental Health Small Business Research Review Committee of the National Institute of Mental Health.

Roberto Pacifici, MD, associate professor of medicine and of radiology, was elected as a member of the American Society for Clinical Investigation.

Joel Perlmutter, MD, associate professor of neurology and neurological surgery and of radiology, was appointed to a four-year term as a member of the Board of Scientific Counselors for the National Institute for Neurological Disease and Stroke. He was appointed as a member of the Scientific Advisory Board of the Dystonia Medical Research Foundation.

Marilyn Siegel, MD, professor of radiology and of pediatrics, was appointed to a three-year term as chair of the Radiological Society of North America's Pediatric Subcommittee of the Refresher Course Committee.

Sharlene Teehey, MD, associate professor of radiology, was appointed to a three-year term as a member of the Radiological Society of North America's Radiographics Committee.

Jeffrey Williamson, PhD, professor of radiology, was appointed to a one-year term as chairman of the American Brachytherapy Society's Physics Committee and to a one-year term as chairman of the Society's Subcommittee on Regulatory Reform and NRC Part 35 Revisions. He was elected as a member-at-large to the Board of Directors of the American Association of Physicists in Medicine.

Pamela Woodard, MD, assistant professor of radiology, was elected as a fellow of the Council on Cardiovascular Radiology of the American Heart Association.

FELLOWSHIPS/ GRANTS

David Diamond, MD, assistant in radiology and 1997-1998 radiation oncology cochief resident, received a four-year National Institutes of Health Research Career Award in the amount of \$320,000.

Jeff Michalski, MD, assistant professor of radiology, received a \$50,000 seed grant from the Barnes-Jewish Hospital north Auxiliary Board to initiate a brachytherapy program for the treatment of prostate cancer.

Yvette Sheline, MD, assistant professor of psychiatry, of radiology, and of neurology, received a five-year, \$349,989 grant from the National Institute of Mental Health for research on "5HT2A binding differences in late life depressions."

Celette Sugg Skinner, PhD, assistant professor of radiology, as principal investigator, received a two-year grant from the Walther Cancer Research Institute for research on "Genetic risk assessment counseling for colorectal cancer." Alison Whelan, MD, of Washington University's Department of Medicine, is coinvestigator for the \$115,000 grant.

Jeffrey Williamson, PhD, professor of radiology, as principal investigator, received a three-year grant from the National Institutes of Health for research on "Heterogeneity corrections in brachytherapy dosimetry." Coinvestigators for the

\$540,806 grant are **Assen Kirov, PhD**, instructor in radiology; **Clifford Chao, MD**, assistant professor of radiology; **John Matthews, DSc**, instructor in radiology; and Georgi Daskalov, PhD, and David Rogers of the National Research Council of Canada. As principal investigator, Williamson received a one-year research contract in the amount of \$94,774 from Oncocath, Inc., for the project "Dosimetric characterization of a balloon catheter system."

Pamela Woodard, MD, assistant professor of radiology, and James Brink, MD, Yale Medical Center's Department of Radiology, are coprincipal investigators for a one-year, multi-institutional industrial grant from Mallinckrodt, Inc. for research on "Contrast-enhanced helical CT versus ventilation/perfusion scintigraphy in patients suspected of acute pulmonary embolism: a comparative cost-benefit and outcomes pilot study." Coinvestigators for the \$68,500 grant are **Jay Heiken, MD**, professor of radiology; **Barry Siegel, MD**, professor of radiology and of medicine; and Roger Yusen, MD, and Benjamin Littenberg, MD, of Washington University's Department of Medicine.

HONORS/AWARDS

Kelly Botteron, MD, assistant professor of psychiatry and of radiology, as principal investigator, received a two-year \$60,000 Young Investigator Award from the National Alliance for Schizophrenia and Affective Disorders for research on "MRI differences in frontal-limbic structures in monozygotic twins discordant for childhood major depression."

Maurizio Corbetta, MD, assistant professor of neurology and of radiology, received the Eye Institute's Career Development Award for his research on "fMRI studies of visuospatial attention."

Debiao Li, PhD, assistant professor of radiology, received a \$30,000 award from Schering AG, Berlin,

Germany, to conduct research on the development of new techniques for imaging coronary arteries using magnetic resonance contrast agents.

Richard Slone, MD, assistant professor of radiology, served as a consultant to the National Institutes of Health (NIH) and as a member of the National Steering Committee of the Radiology Subcommittee on patient evaluation for the NIH-HFC National Emphysema Treatment Trial, which compared medical management and various forms of lung volume reduction surgery. Washington University will play a key role in the multicenter (18) trial that will enroll approximately 9,000 patients over a five-year period.

LECTURES/ PRESENTATIONS

Jeffrey Brown, MD, associate professor of radiology, director of clinical research, and codirector of magnetic resonance imaging, presented "Contrast-enhanced MRI of the liver," "Advances in body MR," "CT and MR of the adrenals," and "Breast MR" at the MRI Symposium, Vaals, The Netherlands, September 12 and 13. He spoke on "Hepatic MR contrast agents" at Radiology Grand Rounds, Northwestern University Medical Center, Chicago, Illinois, October 9. Brown presented "Advances in body MR," "Breast MRI,"

"Genitourinary MRI," and "MR contrast use in the abdomen excluding the liver" at the 43rd Argentine Congress of Radiology, Buenos Aires, Argentina, October 27 - 30.

Clifford Chao, MD, assistant professor of radiology, presented "Radiation therapy for cervical cancer—3D planning and image fusion" and "Clinical application and future perspective of IMRT" at the The First Annual Terry Fox-Chang Gung Memorial Hospital International Cancer Symposium, Taipei, Taiwan, October 16 - 18.

LECTURES/ PRESENTATIONS

Continued from page 17

Maurizio Corbetta, MD, assistant professor of neurology and of radiology, spoke on "Brain mechanism of selective perception and action" at the Royal Society, London, England, November 19 and 20.

Duffy Cutler, PhD, assistant professor of radiology, spoke on "Lesion detectability using segmented attenuation correction and OS-EM reconstruction in whole-body FDG-PET" at the IEEE Medical Imaging Conference, Albuquerque, New Mexico, November 15.

Robert Feiwell, MD, instructor in radiology, presented the poster "Diminished regional cerebral blood flow response in patients with benign essential blepharospasm during vibratory stimulation" at the Society for Neuroscience meeting, New Orleans, Louisiana, October 25 - 30.

Andrew Fisher, MD, instructor in radiology, spoke on "Spiral CT in the emergency department" at Emergency Medicine Grand Rounds, Barnes-Jewish Hospital, St. Louis, Missouri, October 14. He presented "CT of abdominal trauma" at Radiology Grand Rounds, Northwestern University Medical Center, Chicago, Illinois, October 9. Fisher presented "Imaging of thoracic devices" and "Imaging of thoracic trauma" at Case Western University Hospitals, Cleveland, Ohio, December 29.

Louis Gilula, MD, professor of radiology and of surgery and chief of musculoskeletal radiology, presented "Miscellaneous wrist entities that should be recognized by the imager, Part II" at the International Skeletal Society, Santa Fe, New Mexico, September 11. He spoke on "Imaging approach to wrist pain" at the Missouri Chapter of the American Society of Hand Therapists, St. Louis, Missouri, October 17. Gilula, as visiting professor, presented "Radiography and trauma of the hand and wrist" and "Radiographic features of hand and wrist surgery" at the Floyd Medical Center, Rome, Georgia, October 22.

Mary Graham, MD, assistant professor of radiology and chief of thoracic service, as visiting professor, presented "CT simulation versus 3D treatment for non-small cell lung cancer: the issues, the results" at the European Cancer Center, Amsterdam, The Netherlands, May 13. As visiting professor, she spoke on "Radiation therapy for lung cancer" at the Netherlands Cancer Institute, Amsterdam, The Netherlands, May 14. Graham spoke on "Clinical results of three-dimensional radiation therapy for non-small cell lung cancer" at the 8th World Conference on Lung Cancer, Dublin, Ireland, August 8 - 17. As invited lecturer, she presented "Conformal therapy for lung cancer" to the Radiation Oncology Department, Hospital of the University of Pennsylvania, Philadelphia, November 5. As invited speaker, Graham spoke on "Radiation therapy innovations in non-small cell lung cancer" at Lung Cancer in the Next Millennium: Considerations for the General Practitioner and the Specialist, Boca Raton, Florida, November 8.

Perry Grigsby, MD, MBA, professor of radiology, as invited lecturer, presented "The history of radiation treatment of cervical cancer" and "Should cervical cancer be treated surgically?" at The International Society for Gynecologic Endoscopy: The First Inter-

national Conference on the Role of Laparoscopy in Gynecologic Oncology, Tenafly, New Jersey, November 17 - 19.

Jay Heiken, MD, professor of radiology, chief of abdominal radiology, and codirector of body computed tomography, presented a workshop, "Spiral CT of the abdomen: applications and practical considerations," and lectures, "CT of the aorta: rupture, dissection and the postoperative patient" and "CT and MRI of evaluation of renal masses," at the Seventh Summer Practicum of the Society of Body Computed Tomography and Magnetic Resonance, Napa, California, August 17 - 21. As guest lecturer, he spoke on "The role of MRI in evaluation of the kidney" and "Characterization of hepatic masses with CT and MRI" at the New York Roentgen Society Scientific Session, New York City, October 20. As visiting professor, Heiken presented "CT of the aorta: rupture, dissection and the postoperative patient" at New York University Medical Center, New York City, October 20, and at Mt. Sinai Medical Center, New York City, October 21, where he also spoke on "Characterization of hepatic masses with CT and MRI." As guest lecturer, Heiken spoke on "Spiral CT of the abdomen: a practical approach" at the Cleveland Radiological Society, Cleveland, Ohio, November 10.

Ryuji Higashikubo, PhD, assistant professor of radiology, as invited speaker, spoke on "Cell proliferation following recovery from delayed cell cycle transit" at the 1st Joint Meeting of Japan Cytometry Society and the International Society for Analytical Cytology, Hachimantai National Park, Iwate, Japan, October 3.

Eric Klein, MS, assistant professor of radiology, presented "MLC and dynamic wedge" at the American Association of Physicists in Medicine, Penn-Ohio Chapter, Pittsburgh, Pennsylvania, September 12.

Debiao Li, PhD, assistant professor of radiology and of electrical engineering, spoke on "Coronary artery imaging using contrast agents" at the IXth International Workshop on Magnetic Resonance Angiography, Valencia, Spain, October 7 - 11.

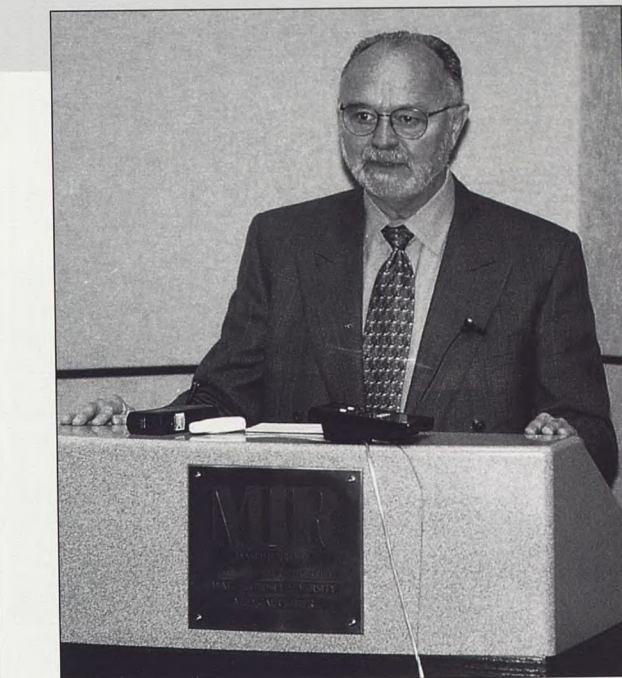
Jeff Michalski, MD, assistant professor of radiology, as invited speaker and program faculty, spoke on "Radiation therapy," "Neoadjuvant androgen deprivation therapy prior to radiation therapy," "Novel forms of radiation therapy," and "The role of radiation therapy for locally advanced or metastatic disease" and participated in panel discussions on "Critical issues in diagnosis and staging of prostate cancer," "Novel hormone treatments for prostate cancer," and "Treatment for advanced/metasta-

tic prostate cancer" at the American Urological Association's sessions on The Urologist's Guide to Medicare Managed Care and The Prostate, San Francisco, California, July 24 - 27.

Tom Miller, MD, PhD, professor of radiology and of electrical engineering, presented "PET software for measurement of left ventricular myocardial viability, enlargement and geometric distortion" at Computers in Cardiology, Lund, Sweden, September 10.

Scott Mirowitz, MD, associate professor of radiology, radiologist-in-chief at Barnes-Jewish Hospital north, and codirector of body magnetic resonance imaging, presented "MR artifacts: challenges and solutions," "Pitfalls in knee MRI," and "Pitfalls in shoulder MRI" at the Seventh Summer Practicum of the Society of Body Computed Tomography and Magnetic Resonance, Napa, California, August 17 - 21.

John Ollinger, DSc, research assistant professor of biomedical computing and of radiology, spoke on "Analytic scatter correction for fully 3D PET: statistical issues" at the IEEE Nuclear Science Symposium and Medical Imaging Conference, Albuquerque, New Mexico, November 15.



Probstein Lecture

On September 19, Dr. Gerald Hanks, chairman of the Department of Radiation Oncology, Fox Chase Cancer Center, Philadelphia, Pennsylvania, presented the Eleventh Annual Norman K. Probstein Oncology Lecture in recognition of meritorious contributions to oncology. Dr. Hanks spoke on "Experience with 3-D conformal treatment of 1000 patients with prostate cancer."

Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center, spoke on "Low dose rate brachytherapy in carcinoma of the cervix: USA and French experience" at the 9th International Brachytherapy Conference, Palm Springs, California, September 6. He presented "Radiotherapy in breast conservation of early cases" and "Relevance of margins in local control of tumor" at the Third Annual Puerto Rico Breast Cancer Conference,

San Juan, October 25 and 26. Perez spoke on "Treatment planning and the role of local tumor control in oncology," "Altered fractionation schedules and local control," "Local tumor control and outcome in breast cancer," and "Conformal radiation therapy in carcinoma of the prostate and local tumor control" at the Università Cattolica del Sacro Cuore Annual Teaching Course, Rome, Italy, November 10 - 12.

LECTURES/ PRESENTATIONS

Continued from page 19

Joel Perlmutter, MD, associate professor of neurology and of radiology, spoke on "PET investigations of blepharospasm" at the 15th Annual Conference and Scientific Symposium of Benign Essential Blepharospasm Society, Columbus, Ohio, August 23. He presented "PET investigations of essential tremor and thalamic stimulation," "Enlarged putamen in idiopathic focal dystonia," "A new technique for combined PET neuroimaging and electrophysiologic investigation of the primate basal ganglia," "Diminished regional cerebral blood flow response in patients with benign essential blepharospasm during vibratory stimulation," "Regional blood flow changes induced by 1-DOPA methyl ester in normal monkeys," "Essential tremor: kinematics and EMG during electrical stimulation of thalamus," and "Association studies of cytochrome P450IID6 polymorphisms with familial and sporadic Parkinson's disease" at the Society of Neuroscience Annual Meeting, New Orleans, Louisiana, October 24 - 30.

James Purdy, PhD, professor of radiology, associate director of the Radiation Oncology Center, and chief of radiation oncology physics, presented "Intensity modulated radiation therapy" at the 48th Meeting of the Royal Australasian College of Radiologists and, as invited lecturer, spoke on "3D treatment planning" at the Royal Adelaide Hospital, Adelaide, South Australia, September 10 - 16. As invited speaker, he spoke on "Medical physics certification" at the University of Texas M. D. Anderson Cancer Center's Special Medical Physics Seminar Series: Introduction to Professional Aspects of Medical Physics, Houston, Texas, September 29 and 30.

Marcus Raichle, MD, professor of radiology and of neurology and neurobiology, and codirector of the Division of Radiological Sciences, presented "Intelligence: the origin and substrate of thinking" at the Dartmouth Medical School Bicentennial, Hanover, New Hampshire, September 5 - 7. He spoke on "Background to functional imaging and PET basics" at the Society

of Neuroscience Annual Meeting, New Orleans, Louisiana, October 24 - 30. As invited speaker, he presented "Images of the mind" at the Parents As Teachers Workshop, sponsored by the Department of Education, the Danforth Foundation, and the Charles A. Dana Foundation, St. Louis, Missouri, November 7 and 8. Raichle spoke at Bio and Biomed Imaging: An Overview, sponsored by Washington University, St. Louis, Missouri, November 10. He presented "Neuroimaging" at the Imaging Science and Engineering Program (IS&E) Seminar, sponsored by Washington University, St. Louis, Missouri, November 14.

Tracy Roberts, MD, assistant professor of radiology, as visiting professor, spoke on "Breast imaging" at Allegheny University of Health Sciences, Pittsburgh, Pennsylvania, November 6 and 7.

Joseph Roti Roti, PhD, professor of radiology, associate director of the Radiation Oncology Center, and chief of cancer biology, spoke on "Nuclear matrix-mediated DNA organization and radiosensitivity" at the Department of Human Oncology and the Comprehensive Cancer Center, University of Wisconsin, Madison, September 24 and 25. As invited speaker, he presented "The nuclear matrix as a target for hyperthermic killing of cancer cells and a determinant for resistance" at the Stress Proteins and Apoptosis in Prenatal Development, Cancer, and Medicine Conference, Sydney, Australia, November 16 - 20.

Stuart Sagel, MD, professor of radiology, chief of chest radiology, and codirector of body computed tomography, presented "CT of mediastinal lesions," "CT of the pleura," "CT of the pericardium," and "Normal variants and common pitfalls in chest CT" at the Seventh Summer Practicum of the Society of Body Computed Tomography and Magnetic Resonance, Napa, California, August 17 - 21. He spoke on "Case presentations on tumors of the chest" at the Penrose Cancer Conference, Colorado Springs, Colorado, September 12 and 13. Sagel presented "Digital chest radiography," "HRCT of the pulmonary parenchyma," "CT of the thorax: anatomic variants and pitfalls," "CT of focal lung lesions," and "CT and MRI of bronchogenic carcinoma" at the Radiology International Meeting, Bolton Landing, Lake George, and Cooperstown, New York, October 5 - 10. He presented "CT of the mediastinum," "Role of CT in the evaluation of bronchogenic carcinoma," "Digital chest radiography," and "CT of the thorax: anatomic variants and pitfalls" at the Colorado Radiological Society meeting and at the University of Colorado Health Science Center, Denver, November 13 and 14.

Barry Siegel, MD, professor of radiology and of medicine, and director of the Division of Nuclear Medicine, spoke on "Applications of nuclear medicine in oncology for the radiologist" at the Hungarian National Radiological Society meeting, Sopron, Hungary, October 10. As the Atis K. Freimanis Radiology Visiting Professor, he presented "Applications of PET in oncology" and "Somatostatin-receptor imaging" at Michigan State University, East Lansing, November 17 and 18.

Marilyn Siegel, MD, professor of radiology and of pediatrics, spoke on "Pediatric Spiral CT," "Adolescent pelvic imaging: CT/MR" and "CT/MRI of pediatric renal masses" at the Seventh Summer Practicum of the Society of Body Computed Tomography and Magnetic Resonance, Napa, California, August 17 - 21. She presented "Pediatric gynecologic ultrasonography," "Ultrasonography of the pediatric hepatobiliary system," "Intracranial sonography," and "Sonography of pediatric renal diseases" at the Johns Hopkins Diagnostic Ultrasound Annual Conference, Baltimore, Maryland, September 5 - 7. She spoke on "Pediatric Spiral CT and techniques," "Musculoskeletal CT in children," "Spiral CT of the pediatric abdomen," and "Spiral CT of the pediatric chest" at Spiral/Helical CT 1997: National Symposium, New

York City, New York, September 20 and 21. As visiting guest lecturer, Siegel presented "Pediatric Spiral CT" and "CT/MR imaging of the pediatric pelvis" at the Hungarian National Radiological Society meeting, Sopron, Hungary, October 9 - 11. As visiting professor, she spoke on "Ultrasonography of the acute pediatric abdomen" and "Pediatric pelvic imaging" at Cornell Medical Center, Ithaca, New York, November 6 and 7.

Celette Sugg Skinner, PhD, assistant professor of radiology, spoke on "Results from the Learn, Share, and Live program: breast cancer education for older, low-income women" and "Predictors of mammography stage in noncompliant women" at the American Public Health Association meeting, Indianapolis, Indiana, November 10 - 12.

Richard Slone, MD, assistant professor of radiology, as invited lecturer, presented "History of chest imaging" and "Role of thoracic imaging in modern medicine" at Philips Medical Systems of North America, Shelton, Connecticut. He spoke on "The role of radiologic imaging in lung volume reduction surgery" at the American College of Surgeons Clinical Congress, Chicago, Illinois, October 16.



Melson Lecture

As part of the City-Wide Radiology Conferences, Faye Laing, MD, presented the Fifth Annual G. Leland Melson Visiting Professorship and Lecture on October 13. Dr. Laing, professor of radiology at Harvard University and a faculty member of the Department of Diagnostic Radiology at Brigham and Women's Hospital, Boston, Massachusetts, spoke on "Evaluation of ectopic pregnancy: 1997."

Jeffrey Williamson, PhD, professor of radiology, as invited speaker, presented "Brachytherapy source strength specification and calibration" at the Radiation Therapy Physics Review Course, Milwaukee, Wisconsin, July 20. As invited speaker, he presented "Quality assurance and commissioning of high dose rate brachytherapy, treatment delivery, and treatment planning systems," "Dose specification in interstitial and intracavitary brachytherapy," "Three dimensional imaging in brachytherapy planning and treatment delivery," and "Advances in

quantitative brachytherapy dosimetry" at the XXVI Brazilian Congress of Radiology, Sao Paulo, Brazil, November 13 - 16.

Pamela Woodard, MD, assistant professor of radiology, spoke on "Intravascular contrast agents for 3D MRA: potential clinical uses" at the 25th Annual Meeting of the North American Society for Cardiac Imaging (NASCI), Orlando, Florida, November 8.

SYMPOSIA

THE AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE

*The 39th Annual Meeting
Milwaukee, Wisconsin
July 27 - 31, 1997*

REFRESHER COURSES

William Harms, BS, "3-D treatment planning systems."

SCIENTIFIC SESSIONS

Georgi Daskalov, PhD*; **Assen Kirov, PhD**; **Jeffrey Williamson, PhD**, "Analytical approach to heterogeneity correction factor calculation for brachytherapy." *National Research Council of Canada, Ottawa.

Assen Kirov, PhD; **Jennifer Totty, student***; **Walter Binns, PhD***; **Paul Dowkontt, PhD***; **John Epstein, PhD***; **Charles Hurlbut, PhD***; **Jeffrey Williamson, PhD**, "Two dimensional dosimeter using plastic scintillator localization of the scintillation process." *Washington University, St. Louis, Missouri. **Ludlum Measurements, Sweetwater, Texas.

Eric Klein, MS, cochair, "Treatment delivery."

Eric Klein, MS; **Frederick Oehmke**, dosimetrist; **James Purdy, PhD**, "Non optimal MLC orientation with single plane wedge systems."

Daniel Low, PhD; **Sasa Mutic, MS***; **Russell Gerber, MS**; **Walter Bosch, DSc**; **James Purdy, PhD**, "The quantitative dosimetry verification of a commercial IMRT planning and delivery system." *Barnes-Jewish Hospital, St. Louis, Missouri.

Jeffrey Williamson, PhD, "Dosimetric modeling of ¹³⁷Cs intracavitary sources: the Amersham CDCS J-type source."

James Dempsey, PhD*; **Jeffrey Williams, PhD***; **James Stubbs, PhD***; **Jeffrey Williamson, PhD**, "Dosimetric characteristics of a novel brachytherapy applicator using a liquid radionuclide source." *Johns Hopkins University, Baltimore, Maryland. **Oncocath Inc., Roswell, Georgia.

POSTER PRESENTATIONS

Eric Klein, MS; **Russell Gerber, MS**; **Steen Madsen, PhD***; **James Purdy, PhD**, "Common implementation of enhanced dynamic wedge on multiple machines." *Barnes-Jewish Hospital, St. Louis, Missouri.

Daniel Low, PhD; **William Harms, BS**; **Sasa Mutic, MS***; **James Purdy, PhD**, "Dose distribution comparisons for conventional and IMRT 3D treatment planning systems." *Barnes-Jewish Hospital, St. Louis, Missouri.

WORKS IN PROGRESS

Sasa Mutic, MS*; **Daniel Low, PhD**, "Whole body dose from arc-based IMRT treatments." *Barnes-Jewish Hospital, St. Louis, Missouri.

PRACTICAL ISSUES IN LEADING-EDGE RADIOLOGY II

*Clayton, Missouri
October 17 - 19, 1997*

William Reinus, MD, symposium course director.

SCIENTIFIC SESSIONS

Dennis Balfe, MD, "Retroperitoneal and peritoneal spaces," "Modern evaluation of biliary obstruction," "Liver physiology illustrated by contrast enhanced imaging using CT and MR."

DeWitte Cross, MD, "Guglielmi detachable coil (GDC) treatment of cerebral aneurysms."

Andrew Fisher, MD, "CT of abdominal trauma."

Mokhtar Gado, MD, "Imaging stroke."

Louis Gilula, MD, "Cervical spine trauma," "Twenty-eight wrist trauma cases."

Robert Gropler, MD, "Myocardial imaging strategies."

Jay Heiken, MD, "Characterization of hepatic lesions with CT and MR," "CT and MR of the aorta: rupture, dissection, and the postoperative patient."

Elizabeth McFarland, MD, "MR/CT of the kidneys."

William Middleton, MD, "Ultrasound of the shoulder," "Musculoskeletal ultrasound," "Doppler evaluation of portal hypertension."

Scott Mirowitz, MD, "Optimizing MR imaging," "MR artifacts," "Pitfalls in abdominal MR imaging."

William Reinus, MD, "MRI of the knee, part 1 and 2," "An assessment of outcomes research."

Douglas Robertson, MD, PhD, "Total joint replacement: what the surgeon sees."

Henry Royal, MD, "Diagnosis of PE - challenges for the 21st century."

Stuart Sagel, MD, "Spiral CT of the thorax," "CT of the mediastinum."

Cary Siegel, MD, "Imaging patients with transitional cell carcinoma."

Richard Slone, MD, "Imaging patients for volume reduction surgery."

Sharlene Teefey, MD, "Color Doppler of the kidney."

William Totty, MD, "MRI of the shoulder," "MRI arthrography."

Franz Wippold, MD, "Imaging the larynx," "Imaging the temporal bone."

Pamela Woodard, MD, "Spiral CT for the detection of PE," "Coronary MR angiography."

THE AMERICAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

*The 39th Annual Meeting
Orlando, Florida
October 19 - 23, 1997*

Clifford Chao, MD, 1997
Astro Travel Award

SCIENTIFIC SESSIONS

Perry Grigsby, MD,
comoderator, "GYN."

James Purdy, PhD, moderator, "Physics: IMRT/physics."

Clifford Chao, MD, "Clinical and technical considerations for head and neck cancers treated by IMRT."

David Gius, MD; Adita Vocero-Akbani*; Michael Wei*; Steven Dowdy*, "TAT mediated protein transduction into cells: examination of the phosphorylation status of the retinoblastoma protein in vivo." *Washington University, St. Louis, Missouri.

Perry Grigsby, MD, MBA; J.D. Lu, MD*; David Mutch, MD*; Robert Kim, MD***; Patricia Eifel, MD****, "Twice-daily fractionation of external irradiation with brachytherapy and chemotherapy in carcinoma of the cervix with positive para-aortic lymph nodes: Phase II study of the Radiation Therapy Oncology Group 92-10." *Radiation Therapy Oncology Group, Philadelphia, Pennsylvania. **Washington University, St. Louis, Missouri. ***University of Alabama, Birmingham. ****M. D. Anderson Cancer Center, Houston, Texas.

Perry Grigsby, MD, MBA, "NIH Consensus Development Conference Statement: cervical cancer."

Daniel Low, PhD; Clifford Chao, MD; Russell Gerber, MS; Sasa Mutic, MS*; Carlos Perez, MD; James Purdy, PhD, "Quality assurance of arc-based IMRT patient treatments: preliminary results." *Barnes-Jewish Hospital, St. Louis, Missouri.

Carlos Perez, MD; Perry Grigsby, MD, MBA; Clifford Chao, MD; David Mutch, MD*; **Mary Ann Lockett, MBA**, "Tumor size/extent and irradiation doses in outcome of carcinoma of uterine cervix." *Washington University, St. Louis, Missouri.

REFRESHER COURSE

Jeffrey Williamson, PhD, "Physics and quality assurance for brachytherapy—Part II: low dose rate and pulsed dose rate."

POSTER SESSIONS

Clifford Chao, MD; Daniel Low, PhD; Russell Gerber, MS; Carlos Perez, MD; James Purdy, PhD, "Clinical and technical considerations for head and neck cancers treated by IMRT: initial experience."

David Diamond, MD; Jeff Michalski, MD; Elbert Trulock, MD*; John Lynch, MD*, "Efficacy of total lymphoid irradiation for chronic allograft rejection following double lung transplantation." *Washington University, St. Louis, Missouri.

Robert Drzymala, PhD; Chuanfan Guo, DSc*; **Joseph Simpson, MD, PhD**; Keith Rich, MD*; Janet Yu, medical student*, "Methodology to assess response to stereotactic irradiation in lesions of the brain stem." *Washington University, St. Louis, Missouri.

Jeff Michalski, MD; Russell Gerber, MS; Eric Klein, MS, "Novel method to plan, administer, and verify craniospinal axis irradiation."

MIR-ROC RADIATION AND BIOLOGICAL SCIENCES

*The 13th Annual Meeting
St. Louis, Missouri
November 7 - 9, 1997*

Andrei Laszlo, PhD; Douglas Spitz, PhD; Joseph Roti Roti, PhD, program committee.

Kathy Bles, Peggy Lentz, Carla Thurman, local arrangements committee.

SYMPOSIUM I: BIOLOGICAL EFFECTS OF MICROWAVE RADIATION RELEVANT TO MOBILE COMMUNICATIONS
Robert Malyapa, PhD, chairperson.

Lee Albee, medical research technician; **Azemat Parsian, BS; Clayton Hunt, PhD; Prabhat Goswami, PhD**, "Expression of proto-oncogene and activities of multiple transcription factors in C3H hoT 1/2 mouse embryo fibroblast cells exposed to 835.62 and 847.74 MHz cellular phone communication frequency radiation."

Ryuji Higashikubo, PhD; Michael Ragouzis, medical research technician, "Effects of NIEMR exposure on cell proliferation."

Andrei Laszlo, PhD; Teri Davidson, medical research technician; **Matt Bradbury**, undergraduate student*; **William Straube, MS**; William Pickard, PhD*; **Eduardo Moros, PhD**, "The effect of NIEMR on cytoskeletal organization." *Washington University, St. Louis, Missouri.

SYMPOSIA

Continued from page 23

Eduardo Moros, PhD; William Pickard, PhD*; **William Straube, MS**, "In vivo and in vitro electromagnetic irradiation facilities at Washington University: an overview of irradiators and SAR dosimetry." *Washington University, St. Louis, Missouri.

Joseph Roti Roti, PhD; William Wright, BS, "Acute NIEMR exposure does not result in altered nuclear matrix protein composition."

WORKSHOP I: BIOLOGICAL EFFECTS OF MICROWAVES—FUTURE WORK?

Prabhat Goswami, PhD, chairperson.

Andrei Laszlo, PhD; Ming-Shun Chen, PhD; **Teri Davidson**, medical research technician, "Is the heat-shock response activated by exposure to RF fields?"

Robert Malyapa, MD, PhD; Eric Ahern, medical research technician; **Chen Bi**, medical research technician; **William Straube, MS;** Marie LaRegina, DVM*; **William Pickard, PhD***; **Joseph Roti Roti, PhD**, "Detection of DNA damage by the alkaline comet assay in rat brain cells after in vivo exposure to 2450 MHz electromagnetic radiation and various methods of euthanasia." *Washington University, St. Louis, Missouri.

SYMPOSIUM II: NEW METHODS FOR UNDERSTANDING NORMAL TISSUE EFFECTS
Michael Mackey, PhD, chairperson.

SYMPOSIUM III: THEORY AND PHYSIOLOGY OF STRESS EFFECTS

Clayton Hunt, PhD, chairperson.

Ming-Shun Chen, PhD; **Teri Davidson**, medical research technician; **Andrei Laszlo, PhD**, "U14 snoRNA, HSC70 protein and thermotolerance."

Michael Mackey, PhD, "Dynamics of biological steady-state phenomena as revealed through nonlinear reaction-diffusion computational systems."

Robert vanderWaal, PhD; **Joseph Roti Roti, PhD**, "Effects of hyperthermia on the nuclear pattern of DNA replication."

WORKSHOP II: COMBINED MODALITIES WITH HYPERTHERMIA

Judy Lee, BS*; **Mai Xu, MD, PhD;** William Straube, MS; William Wright, BS; **Robert Myerson, PhD, MD;** **Joseph Roti Roti, PhD**, "Comparison of simultaneous and sequential hyperthermic radiation therapy." *Washington University, St. Louis, Missouri.

Eduardo Moros, PhD; William Straube, MS; **Robert Myerson, PhD, MD;** **Xiaobing Fan**, research associate, "Simultaneous hyperthermia and radiotherapy at Washington University."

Mai Xu, MD, PhD; William Wright, BS; **Ryuji Higashikubo, PhD;** LiLi Wang, MD*; Peng Zhang, research associate*; **Chen Bi**, medical research technician; Judy Lee, BS*; **Joseph Roti Roti, PhD**, "Thermal radiosensitization of NSY42129 cells which develop chronic thermotolerance with proliferation at 41.1°C." *Washington University, St. Louis, Missouri.

WORKSHOP III: DNA DAMAGE AND RADIATION RESPONSE

Lee Albee, medical research technician; **Clayton Hunt, PhD;** **Prabhat Goswami, PhD**, "Sequencing of the human topoisomerase II α 3' untranslated region (UTR): possible role in cell cycle coupled mRNA stability."

Andrei Laszlo, PhD; **Robert Malyapa, MD, PhD**, "Heat-induced radiosensitization is altered in permanently heat-resistant cells."

Robert Malyapa, MD, PhD; **Chen Bi**, medical research technician; **Eric Ahern**, medical research technician; **Joseph Roti Roti, PhD**, "Detection of DNA damage by the alkaline comet assay following low doses of ionizing radiation."

SYMPOSIUM IV: MECHANISMS AND CONSEQUENCES OF CELL-CYCLE DELAYS

Fiorenza Ianzini, PhD; **Michael Mackey, PhD**, "Spontaneous premature chromosome condensation: checkpoints gone awry."

SYMPOSIUM V: GENETICS OF THE HEAT-SHOCK RESPONSE

Andrei Laszlo, PhD, chairperson.

Ming-Shun Chen, PhD; **Andrei Laszlo, PhD**, "The U14 snoRNA encoding transposon keeps jumping: unusual gene organization of the ribosomal protein S13 gene in Chinese hamster HA-1 cells."

Azemat Parsian, BS; **Prabhat Goswami, PhD;** **Clayton Hunt, PhD**, "Cell cycle coupled expression of the heat-shock cognate (HSC70) member of the HSP70 gene family."

William Wright, BS; **Clayton Hunt, PhD;** **Joseph Roti Roti, PhD**, "Mapping of a heat shock-responsive MAR in the murine HSP70 gene cluster."

SYMPOSIUM VI: CELLULAR RESISTANCE TO OXIDATIVE DAMAGE

Fiorenza Ianzini, PhD, chairperson.

Hsiu-san Lin, MD, PhD; **Susan Adams**, medical research technician; **Theodore D'Rosario**, research lab technician*, "Effects of adaptation to different physiologic oxygen tensions on the radiosensitivity of tumor cells." *Washington University, St. Louis, Missouri.

Lisa Ridnour, PhD; **Prabhat Goswami, PhD**; **Lee Albee**, medical research technician; **Clayton Hunt, PhD**; **Azemat Parsian, BS**; **Julia Sim**, medical research technician; **Douglas Spitz, PhD**, "Mechanisms of resistance to oxidative stress induced by exposure to nitric oxide."

Julia Sim, medical research technician; **Mai Xu, MD, PhD**; **Joseph Roti Roti, PhD**; **Douglas Spitz, PhD**, "Alterations in cellular antioxidants in 41.1°C resistant human colon adenocarcinoma cells."

Douglas Spitz, PhD; **Ryuji Higashikubo, PhD**; **Michael Mackey, PhD**; **Julia Sim**, medical research technician; **Lisa Ridnour, PhD**; **Xiafang Zhang, PhD**. Increased prooxidant production induced by exposure to 41.5°C hyperthermia."

RADIOLOGICAL SOCIETY OF NORTH AMERICA

*The 83rd Scientific Assembly and Annual Meeting
Chicago, Illinois
November 30 - December 5, 1997*

Dennis Balfe, MD, refresher courses codirector: "Categorical course in diagnostic radiology—gastrointestinal;" scientific sessions program committee: gastrointestinal; scientific session moderator: gastrointestinal (CT/MR imaging: gastrointestinal).

Michael Darcy, MD, scientific session moderator: cardiovascular (TIPS).

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

David Hovsepian, MD, scientific session moderator: cardiovascular (peripheral vascular stents).

Gilbert Jost, MD, electronic communications committee member.

Jeff Michalski, MD, scientific sessions program committee member: radiation oncology and radiobiology; scientific session moderator: radiation oncology (genitourinary).

William Middleton, MD, scientific session moderator: ultrasound (musculoskeletal).



Tolmach Lecture

At the Sixth Annual Leonard J. Tolmach Memorial Lecture, William Dewey, PhD, director of the Radiation Oncology Research Laboratory and vice-chairman of the Department of Radiation Oncology at the University of California, San Francisco, spoke on "Comparisons of the frequencies and molecular spectra of HPRT mutants when human cancer cells were X-irradiated during G1 or S phase." The Tolmach Lecture was established in 1991 in honor of Leonard J. Tolmach, PhD, professor of radiobiology in radiology, who made numerous fundamental contributions to the fields of cell biology and cellular radiobiology. Dr. Dewey (right) is shown with Joseph Roti Roti, PhD, associate director of the Radiation Oncology Center.

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.

INTRODUCTION TO RESEARCH PROGRAM FOR DIAGNOSTIC RADIOLOGY RESIDENTS

Stuart Sagel, MD, "Oral presentation of research."

REFRESHER COURSES

Dennis Balfe, MD, "Categorical course in diagnostic radiology: gastrointestinal. Acute bowel ischemia: role of imaging studies."

Michael Darcy, MD, "Uroradiology: nonvascular interventional"; "Embolization techniques: a 'how-not-to' workshop ('how-to' workshop)."

SYMPOSIA

Continued from page 25

Louis Gilula, MD, "Imaging of ligaments, capsules, and tendons of wrist and hand."

Jay Heiken, MD, "Categorical course in diagnostic radiology: gastrointestinal. Liver: CT contrast-enhancement techniques."

David Hovsepian, MD, "Hysterosalpingography and selective salpingography ('how-to' workshop)"; "Pediatric interventional radiology: vascular and nonvascular."

Elizabeth McFarland, MD, "Advances and controversies in CT and MR of the genitourinary tract."

William Middleton, MD, "Update course in diagnostic ultrasound: clinical questions—practical answers, Right upper quadrant pain"; "Evaluation of neoplasms of the male reproductive system: imaging evaluation of testicular cancer"; "Practical abdominal color flow sonography ('hands-on' workshop)"; "Musculoskeletal US ('hands-on' workshop)."

Scott Mirowitz, MD, "Shoulder MR imaging: advanced techniques and interpretation."

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

Sharlene Teefey, MD, "Update course in diagnostic ultrasound: clinical questions—practical answers. Flank pain."

Jeffrey Williamson, PhD, "Categorical course in brachytherapy physics: quality assurance. Quality assurance of brachytherapy treatment delivery and planning devices."

SCIENTIFIC SESSIONS

Erbil Akbudak, PhD; Thomas Conturo, MD, PhD, "Absolute contrast agent concentrations from MR phase enhancement imaging: an input function phantom study."

Harold Bennett, MD, PhD; James Brink, MD*; Cary Siegel, MD; Thomas Pilgram, PhD; Jay Heiken, MD, "Dual phase spiral CT of renal masses: comparison of cortical and nephrographic enhancement phases." *Yale University, New Haven, Connecticut.

Farrokh Dehdashti, MD; Fidelma Flanagan, MD*; Barry Siegel, MD, "PET assessment of metabolic flare in advanced breast cancer." *Institute of Radiological Sciences, University Hospital, Dublin, Ireland.

Colin Derdeyn, MD; Christopher Moran, MD; DeWitte Cross, MD; Eric Sherburn, MD*; Ralph Dacey, MD*, "Anatomic factors predicting the usefulness of intraoperative angiography in aneurysm surgery." *Washington University, St. Louis, Missouri.

David Gierada, MD; Richard Slone, MD; Ty Bae, MD, PhD; Roger Yusem, MD*; Stephen Lefrak, MD*; Joel Cooper, MD*, "Comparison of preoperative quantitative CT and physiological indices of emphysema with clinical outcome following lung volume reduction surgery." *Washington University, St. Louis, Missouri.

Brigid Gordon, ME*; Farrokh Dehdashti, MD, "PET assessment of outcome in childhood epilepsy." *Jersey Shore Medical Center, Neptune, New Jersey.

Stephanie Hiskes, MD*; William Middleton, MD; Sharlene Teefey, MD, "Results of sonography as a guidance mechanism for biopsy of small (<1.5 cm) liver metastases." *Barnes-Jewish Hospital, St. Louis, Missouri.

David Hovsepian, MD; Eric Malden, MD; Michael Darcy, MD; Daniel Picus, MD, "The transrectal and transvaginal routes for aspiration and drainage of deep pelvic collections: results in 42 patients."

Annette Johnson, MD; Benjamin Lee, MD; Weili Lin, PhD; Philip Dodge, MD*, "Echo-planar diffusion-weighted imaging in infants with suspected hypoxic-ischemic injury." *Washington University, St. Louis, Missouri.

Karthikeyan Kuppusamy, MS; Michael Thompson, PhD; Weili Lin, PhD; Mark Haacke, PhD; Benjamin Lee, MD; Daniel Kido, MD, "Improvement of white matter contrast-to-noise ratio using high-resolution diffusion-weighted inversion-recovery SE-EPI."

Eric Malden, MD; Marshall Hicks, MD; Henry Royal, MD; Giuseppe Aliperti, MD*; Brent Allen, MD*, "Thrombolysis in the diagnosis of recurrent gastrointestinal bleeding." *Washington University, St. Louis, Missouri.

Robert McKinstry, MD; Joshua Shimony, MD, PhD*; Joseph Aronovitz, MD, PhD*; Erbil Akbudak, PhD; Avi Snyder, MD, PhD*, "Anatomical findings in diffusion tensor imaging of the normal brain." *Barnes-Jewish Hospital, St. Louis, Missouri. **Washington University, St. Louis, Missouri.

Erik Paulson, MD*; **Andrew Fisher, MD**; Leslie Dodd, MD*; Rendon Nelson, MD*; "The inconclusive image-guided abdominal biopsy: Should additional intervention be pursued?" *Duke University, Durham, North Carolina.

Perry Pickhardt, MD*; Neda Yagan, MD*; **Marilyn Siegel, MD**; **Dennis Balfe, MD**, "CT manifestations of colon disease in cystic fibrosis." *Barnes-Jewish Hospital, St. Louis, Missouri. **University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania.

William Reinus, MD; Glenn Strome, MD*; Frank Zwemer, MD**, "Utilization of lumbosacral spine radiographs in an emergency department." *Erlanger Memorial Medical Center, Chattanooga, Tennessee. **Washington University, St. Louis, Missouri.

Douglas Robertson, MD, PhD; William Maloney, MD*; Gary Miller, MD*; **Jie Yuan, PhD**, "Radiographic evaluation of cement and the bone-cement interface in total hip replacement." *Washington University, St. Louis, Missouri.

Douglas Robertson, MD, PhD; William Bargar, MD*, "Radiographic results of total hip replacement—robot versus surgeon." *Sutter General Hospital, Sacramento, California.

Rory Satterfield, MD*; **William Middleton, MD**; **Sharlene Teefey, MD**, "Analysis of false positive sonograms in the diagnosis of testicular malignancy." *Valley Memorial Hospital, Livermore, California.

Peter Salazar, MD*; **Marilyn Siegel, MD**, "Doppler US of the hepatic vasculature in neonates with jaundice." *Barnes-Jewish Hospital, St. Louis, Missouri.

Richard Slone, MD; Warren Geffer, MD*; Charles White, MD*; Ella Kazerooni, MD*; **David Gierada, MD**, "Comparison of CT section thickness, section spacing, and phase of respiration for evaluating patients with emphysema for lung volume reduction surgery." *University of Pennsylvania, Philadelphia. **University of Maryland, College Park. ***University of Michigan, Ann Arbor.

Richard Slone, MD; Shiy-ing Zhao, PhD*; **Ty Bae, MD, PhD**; Ge Wang, PhD*, "Characterization of pulmonary nodules at low radiation dose using wavelet local spiral CT." *University of Missouri, St. Louis. **University of Iowa, Iowa City.

Richard Slone, MD; **Pamela Woodard, MD**; Matthew Fleishman, MD*; **Gilbert Jost, MD**; **Stuart Sagel, MD**, "Image quality and dose in digital chest radiography: comparison of standard and 150kvp techniques with and without antiscatter grid." *Radiology Imaging Associates, Englewood, Colorado.

Sharlene Teefey, MD; **William Middleton, MD**; Kenneth Yamaguchi, MD*; Oren Blam, MD*; Marc Tetro, MD*, "Natural history of asymptomatic rotator cuff tears detected sonographically." *Washington University, St. Louis, Missouri.

Pamela Woodard, MD; **Richard Slone, MD**; **Stuart Sagel, MD**; Matthew Fleishman, MD*; **Fernando Gutierrez, MD**; **Gregory Reiker, MS**; **Thomas Pilegram, PhD**; **Gilbert Jost, MD**, "Comparison of selenium-based digital and conventional screen-film chest radiographs for the detection of pulmonary nodules." *Radiology Imaging Associates, Englewood, Colorado.

SCIENTIFIC EXHIBITS CUM LAUDE AWARD WINNER

Matthew Fleishman, MD*; **Richard Slone, MD**; **David Gierada, MD**, "The diaphragm: anatomy, normal variant and pathological conditions on computed tomography and magnetic resonance imaging." *Radiology Imaging Associates, Englewood, Colorado.

INFORAD EXHIBITS

For the fifth 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.

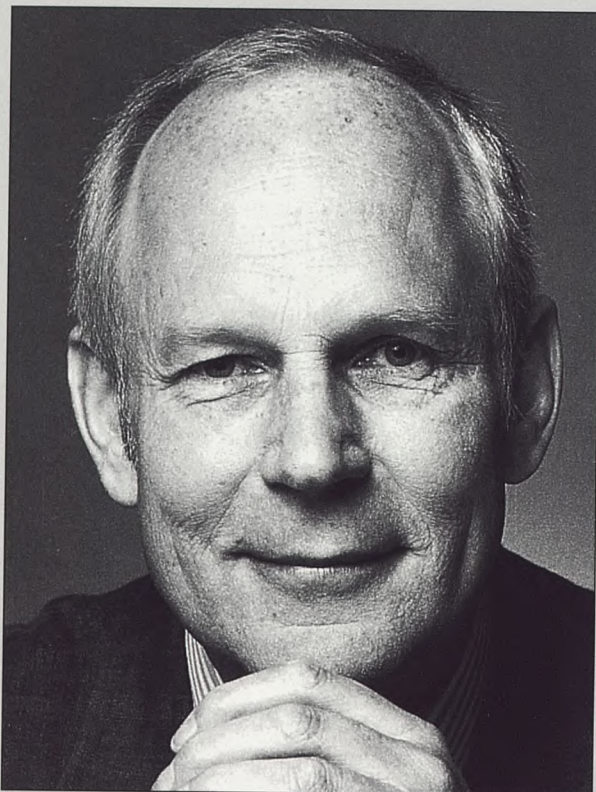
Stephen Moore, MS, software architect.

The ERL team: **David Beecher, MS**; **James Blaine, DSc**; **Gilbert Jost, MD**; **Ronald Walkup, BS**.

FOR THE RECORD

The photo on page 11 of the Summer 1997 issue of *Focal Spot* magazine incorrectly identified Dr. K. S. Clifford Chao as Henry Chao.

ALUMNI NEWS



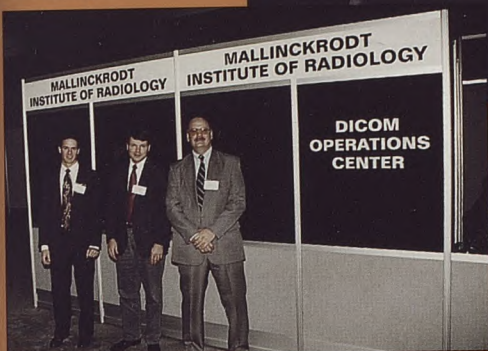
Peter-Edzard Peters, MD, professor and chairman of the Department of Radiology, University of Muenster, Germany, died on February 17, 1997, after a long battle against cancer. He received his medical degree from the University of Freiburg, Germany, and trained in radiology at the University of Zurich, Switzerland, and at the University of Freiburg. From 1970 to 1971, Dr. Peters was a Mallinckrodt Institute research fellow in abdominal imaging and radiation physics. Later in his career, he was considered as one of radiology's great teachers, a man who

inspired researchers to pursue their studies and to realize their potential. He served on the editorial boards of several medical journals, including *Diagnostic Imaging International* and *Academic Radiology*, and was diagnostic imaging editor for the *Journal of the German Medical Association*. Dr. Peters was a past president of the Centennial Congress Wiesbaden of the German Roentgen Society and a past member of the RSNA's Committee of International Radiology Education. He is survived by his wife, Dr. Almut Peters, and three adult children.



Dr. Ronald Evens, director of the Institute, and three MIR alumni enjoyed the putting green at the Country Club of Little Rock: (left to right) Doctors Evens; Benjamin Bartnicke, diagnostic radiology resident 1989-1993 and abdominal radiology fellow 1994; Dale Johnston, diagnostic radiology resident 1979-1983; and James McDonald, diagnostic radiology resident 1979-1982 (cochief resident 1981-1982). Doctors Bartnicke, Johnston, and McDonald are with Radiology Associates, PA, in Little Rock, Arkansas.

(left to right) Ronald Walkup, Stephen Moore, and David Beecher of the MIR Electronic Radiology Laboratory



Critical Pathways to Tomorrow's Radiology

■ The 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America

■ November 30 - December 5, 1997



Top: (left to right) Andrew Fisher, MD; William Middleton, MD; and Stephanie Hiskes, MD

Middle: William Reinus, MD

Bottom: David Hovsepian, MD

FOCAL SPOT

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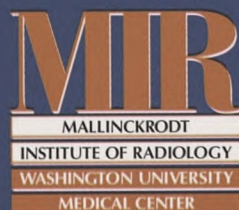
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