

Fall 1996

Focal Spot, Commemorative Issue, 1996

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COMMEMORATIVE ISSUE, 1996

VOLUME 27, NUMBER 3

FOCAL SPOT

MALLINCKRODT INSTITUTE OF RADIOLOGY

... five years the evens years

1971-
1996

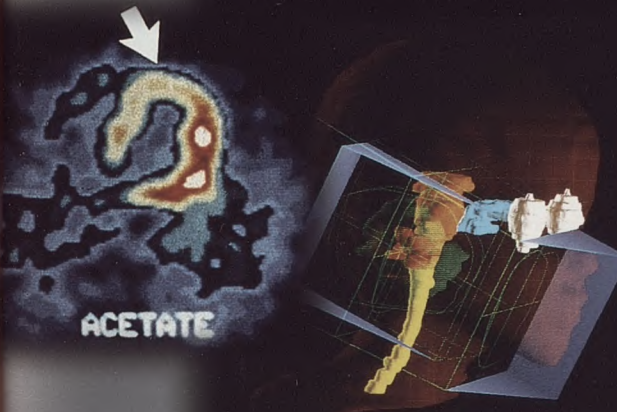
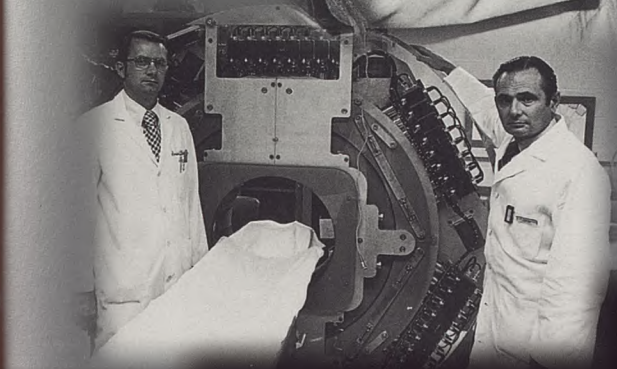
patient care

research

education

... ninety hundred seventy one to nineteen hundred nine

technology



25
THE EVENS YEARS



It's been a stellar quarter of a century for Ronald Evens, MD. To commemorate Dr. Evens' silver anniversary as director of Mallinckrodt Institute, the MIR Nonacademic Employee Recognition Committee commissioned the International Star Registry of Switzerland to officially change the name of the star formerly known as Hercules RA to the Ronald G. Evens.

Sue Day, a senior secretary in the abdominal radiology section, and Norman Hente, supervisor of the photographic laboratory, made the presentation on behalf of the Institute's nonacademic employees at the Milestone Anniversary Luncheon on November 20. Day and Hente each celebrated 30-year service anniversaries in 1996.



twenty-five years the evens years

25
THE EVENS YEARS

FOCAL SPOT

MALLINCKRODT INSTITUTE OF RADIOLOGY



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MIR
MALLINCKRODT
INSTITUTE OF RADIOLOGY
WASHINGTON UNIVERSITY
MEDICAL CENTER

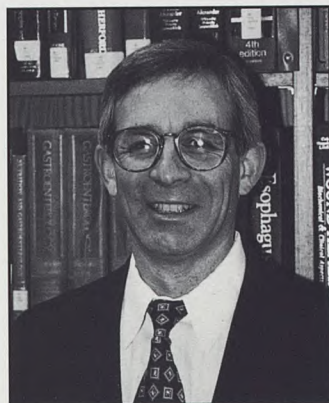
ON THE COVER:

Doctor Ronald Evens has led the Mallinckrodt Institute of Radiology through twenty-five years of phenomenal growth—years that have encompassed a rapid increase in new technology, expanded research programs, and a renewed focus on postgraduate education.

SPOT NEWS

ACR selects fellows

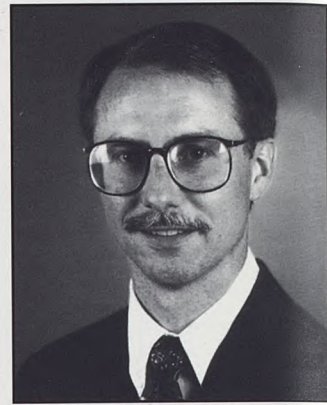
At the 73rd Annual Meeting of the American College of Radiology (ACR), 140 physicians and scientists from across the United States received the ACR's highest honor: appointment as an ACR fellow. Three MIR faculty members were among those recognized for their significant contributions to the field of radiology.



Robert Levitt, MD, holds the academic title of associate professor of radiology and is chief of radiology at Barnes-Jewish West County Hospital. A native of Los Angeles, he came to St. Louis in 1972 for an internship in medicine at Barnes Hospital. Since completing three years of residency at Mallinckrodt Institute of Radiology, Levitt has held positions at Barnes-Jewish Hospital, Alton Memorial Hospital, Saint Louis University Hospital, and Barnes-Jewish St. Peters and Barnes-Jewish West County hospitals. Levitt focuses his research efforts on the clinical use of teleradiology.



Hsiu-san Lin, MD, PhD, is a professor of radiology in the Institute's Radiation Oncology Center and an associate professor of molecular microbiology. Upon completion of a one-year residency in internal medicine at Chicago's Cook County Hospital and two years of residency in radiation oncology at Mallinckrodt Institute, he joined the MIR faculty in 1971 as an assistant professor of cancer biology in radiology. From 1977 to 1978, during a one-year sabbatical, Lin was a visiting scientist at the University of Oxford in England. He returned to the Institute in 1979 and has since been involved in the development of tissue culture identification and classification techniques.



William Middleton, MD, associate professor of radiology and head of ultrasonography, completed a four-year diagnostic radiology residency at Mallinckrodt Institute (chief resident, 1984-1985). In 1985, he received a one-year fellowship in digital imaging from the Medical College of Wisconsin, Milwaukee, and, after completing the fellowship, was appointed assistant professor of radiology. In 1987, Middleton returned to MIR as assistant professor of radiology and was named head of ultrasonography in 1992. His clinical and research work involves sonographic evaluation of structural and vascular abnormalities with particular emphasis on Doppler sonography and ultrasonographic evaluation of scrotal and musculoskeletal abnormalities.

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Internal research support available

The MIR Clinical Research Group was established three years ago to provide principal investigators in the Division of Diagnostic Radiology with clinical support for Phase II, III, and IV studies sponsored by pharmaceutical and medical device companies and for federally-funded studies. Under the direction of Jeffrey Brown, MD, the staff of seven — four radiology technologists, a registered nurse, a licensed practical nurse, and a research assistant — coordinates studies and serves as support staff for budget preparation, protocol assessment, clinical data monitoring and management, and Institutional Regulatory Board approval. Additional services include patient scheduling, phlebotomy, IV catheter placement, performing electrocardiograms, and patient follow-up.

Since 1993, the group has successfully coordinated more than 40 studies involving major pharmaceutical companies, including Mallinckrodt Medical, Nycomed Imaging, Bracco Diagnostics, Berlex, Merck & Co., and Abbott Laboratories. The group has also provided support for four National Institutes of Health-sponsored studies and numerous pilot studies performed by MIR investigators.

For more information, call Roberta Yoffie, RT, clinical research supervisor, at (314) 362-3066.

ARRS scholarship backs independent program

Richard Slone, MD, assistant professor of radiology, received the prestigious Annual Scholarship presented by the American Roentgen Ray Society's (ARRS) Committee on Education and Research. ARRS, the oldest of all radiologic organizations, established the \$120,000 scholarship in 1992 to encourage young radiologists — who are not more than five years post-residency and who possess exceptional leadership potential — to pursue scholarly activities designed to advance their medical careers. The award supports one year of in-depth study of medical specialties outside of the traditional scope of the field of radiology.

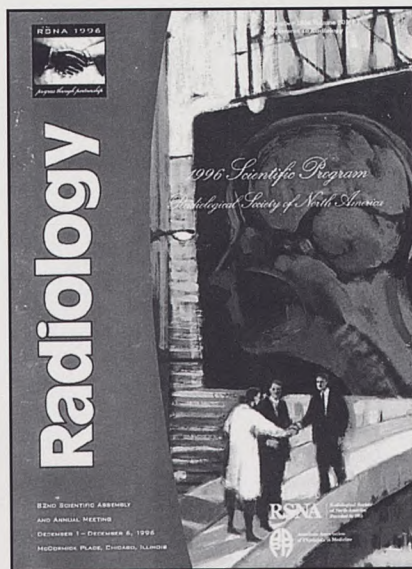
Slone, a member of Mallinckrodt Institute's chest radiology section, developed a comprehensive program focusing on the nonradiologic aspects of chest disease. He will work with Washington University's departments of Pulmonary Medicine, Surgery, and Pathology to broaden his "understanding of the clinical difficulties and management decisions that often hinge on the information provided by imaging studies and on the expertise of thoracic radiologists."

His studies will include a six-week fellowship in the Division of Mediastinal and Pulmonary Pathology at the Armed Forces Institute of Pathology in Washington, DC, and ancillary training in research design, statistics, outcome analysis, and grant preparation leading toward a Master of Arts degree in clinical research. Slone will receive the award in May at the ARRS 1997 meeting in Boston, Massachusetts.

Nine receive journal's top honors

In 1986 the editorial board of *Radiology*, a leading scientific journal, initiated a program to honor those radiologists who consistently produced scholarly, detailed reviews of the hundreds of manuscripts submitted annually to the journal. The program was called the Editor's Recognition Award, and this year nine Mallinckrodt Institute physicians were among those receiving this special honor.

- Dennis Balfe, abdominal radiology
- Harold Bennett, abdominal radiology
- Michael Darcy, vascular and interventional radiology
- Louis Gilula, musculoskeletal radiology
- David Hovsepian, vascular and interventional radiology
- Christopher Moran, neuro-radiology
- William Reinus, musculoskeletal radiology
- Henry Royal, nuclear medicine
- Pamela Woodard, chest radiology.



SPOT NEWS

ASTRO award goes to Tinger

Alfred Tinger, MD, radiology assistant and the 1996-1997 radiation oncology chief resident, was one of two recipients of the 1996 American Society for Therapeutic Radiology and Oncology (ASTRO) Resident Clinical/Basic Research Award. Tinger was chosen from more than 300 applicants for the award, which was presented at the ASTRO meeting in October in Los Angeles, California.

The award was established by ASTRO in 1977 to recognize future leaders in the field of radiation oncology. Todd Wasserman, MD, professor of radiology, was the 1978 recipient. To qualify for the award, a candidate must be a resident in a radiation oncology training program and must submit a manuscript detailing his or her research.

Coinvestigators for Tinger's research on "A critical evaluation of the planning target volume for 3-D conformal radiotherapy of prostate cancer" are Jeff Michalski, MD, assistant professor of radiology; Abel Cheng, MS, instructor in radiology; Daniel Low, PhD, assistant professor of radiology; Xia-Rong Zhu, PhD, physics resident at Barnes-Jewish Hospital; Walter Bosch, DSc, instructor in radiology; James Purdy, PhD, professor of radiology and associate director of the Radiation Oncology Center; and Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center.

Purdy earns achievement award

James Purdy, PhD, professor of radiology and associate director of MIR's Radiation Oncology Center, received the 1996 American College of Medical Physics (ACMP) Marvin M. D. Williams Professional Achievement Award. The award recognizes medical physicists who have made outstanding contributions to medical physics in science and education, have enhanced the profession through their visionary leadership, and have been dedicated to the formation and growth of the ACMP. Recipients of the prestigious award are nominated by their ACMP peers. After all nominations are reviewed, the final selection is made by the Awards and Honors Committee and approved by the Board of Chancellors of the ACMP.

Over the last 10 years, Purdy has concentrated his research efforts on developing three-dimensional (3D) treatment planning for radiation therapy. According to one of Purdy's colleagues, "The impact that (Purdy) made as a pioneer of 3-D treatment planning, and continues to make as its advocate, is having a profound influence upon the entire field of radiation oncology. ...His ardent enthusiasm and dedication to his chosen career field has already left an historic impression upon the scientific practice of medical physics."

Purdy is a past chairman of the Board of Chancellors of the ACMP, which was founded by the American Association of Physicists in Medicine in 1982 to represent board-certified senior medical physicists in the United States.

Internet-based teaching file usage on the rise

Jerold Wallis, MD, associate professor of radiology, reports a significant increase in the number of users accessing the World Wide Web-based MIR nuclear medicine teaching file — nearly a twofold increase over the past year. The teaching file currently includes 120 cases that cover a wide variety of nuclear medicine topics, with on-line images and discussion created by residents and faculty. The site has been growing steadily during the past three years, both in size and readership. Users outside of Washington University cover a broad spectrum, with 25 percent of users accessing the site from U.S. educational institutions and 15 percent from international sites.

According to Wallis, who developed and maintains the nuclear medicine teaching file, the service will soon include cine (movie) capability, and additional cases are under development. The teaching file's electronic address: <http://gamma.wustl.edu/home.html>

MIR leaders cited

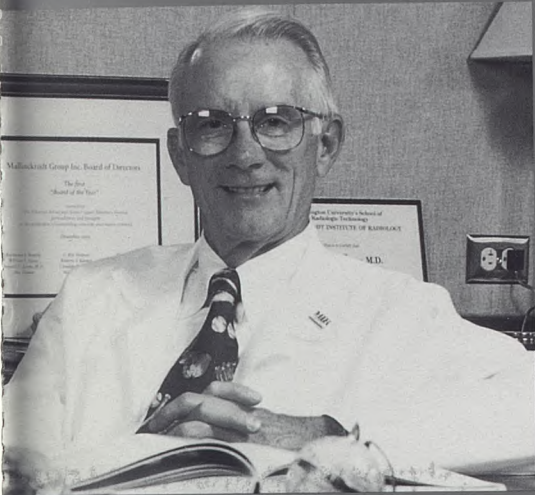
According to Marquis' *Who's Who*, publishers of *Who's Who in America*, the unique biographical reference was established in 1899 "to identify and chronicle the achievements of men and women who have become leaders in our society's political, cultural, and economic affairs." This year, the 51st edition of *Who's Who in America* includes the following MIR faculty:

- Ronald Evens, MD, director of the Institute
- Fidelma Flanagan, MD, fellow, Division of Diagnostic Radiology, breast imaging section
- Robert Myerson, MD, associate professor of radiology, Radiation Oncology Center
- Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center
- Henry Royal, MD, professor of radiology and associate director of the Division of Nuclear Medicine
- Barry Siegel, MD, professor of radiology and director of the Division of Nuclear Medicine
- Michael Welch, PhD, professor of radiology and codirector of the Division of Radiological Sciences.

25

THE EVENS YEARS

THESE PAST 25 YEARS HAVE BEEN A SPECIAL TIME FOR MALLINCKRODT INSTITUTE OF RADIOLOGY (MIR) AND FOR DR. RONALD EVENS. WHEN RON EVENS ASSUMED THE MIR LEADERSHIP IN 1971, HE WAS THE YOUNGEST DEPARTMENT HEAD AT THE WASHINGTON UNIVERSITY MEDICAL CENTER. HIS RADIOLOGIC EXPERTISE AND ACUMEN IN THE BUSINESS ISSUES OF MEDICINE, MIXED WITH A GENEROUS AMOUNT OF YOUTHFUL ENERGY AND VITALITY, PROVIDED THE IMPETUS FOR ESTABLISHING THE INSTITUTE AS ONE OF THE



WORLD'S LARGEST AND MOST SOPHISTICATED MULTIDISCIPLINARY RADIOLOGY FACILITIES. UNDER HIS LEADERSHIP, MIR CLINICIANS AND SCIENTISTS HAVE PIONEERED AN ARRAY OF TECHNIQUES THAT PROFOUNDLY IMPROVED PATIENT CARE, INCLUDING THE DEVELOPMENT OF POSITRON EMISSION TOMOGRAPHY, THE MEDICAL APPLICATION OF COMPUTED TOMOGRAPHY, COMPUTER-BASED IMAGING, AND THREE-DIMENSIONAL TREATMENT PLANNING FOR CANCER.

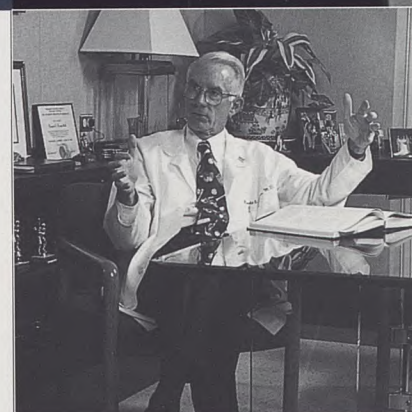
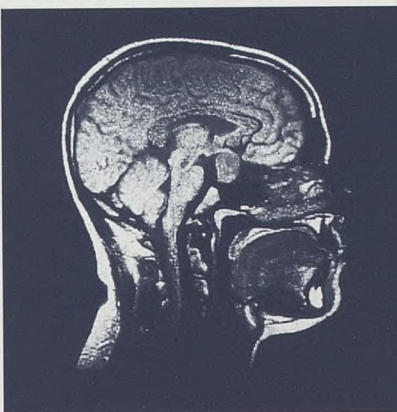
IN HONOR OF DR. EVENS' SILVER ANNIVERSARY, THE FOLLOWING PAGES FOCUS ON HIS AND THE INSTITUTE'S PAST AND PRESENT ACCOMPLISHMENTS AND ALSO OFFER A SAMPLE OF THE LEADING-EDGE TECHNOLOGY THAT WILL GUIDE THE MIR FACULTY IN MEETING THE CHALLENGES OF PRACTICING MEDICINE IN THE TWENTY-FIRST CENTURY.

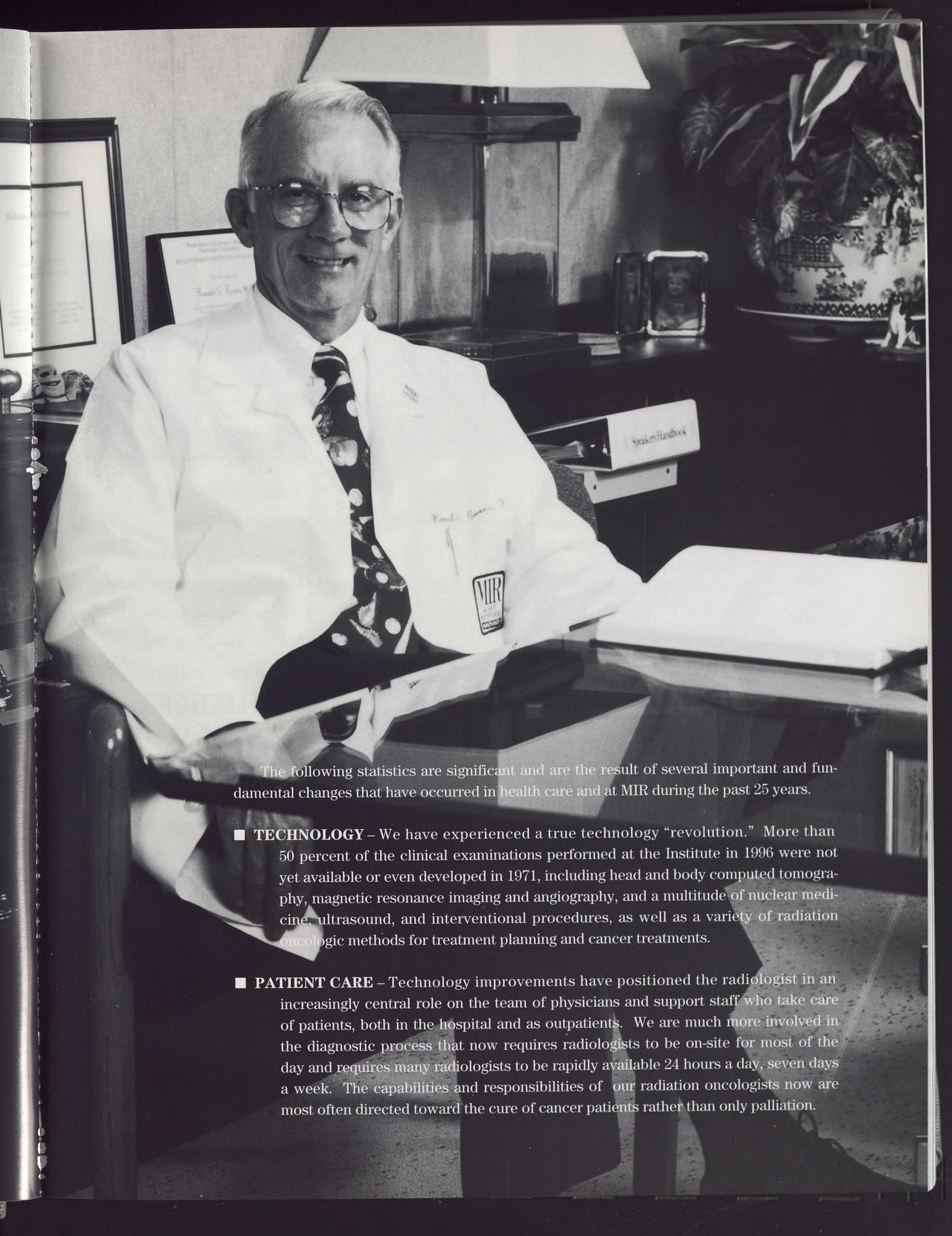
MIR

REFLECTIONS...25 YEARS AS DIRECTOR OF MIR

25
THE EVEN YEARS
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When I was asked to reflect on Mallinckrodt Institute of Radiology (MIR) during the past 25 years, my first reaction was to focus on how much we have grown! We certainly have become bigger by almost every measure. For example, in 1971 we performed 200,000 radiologic (diagnostic and therapeutic) procedures; in 1995, the number of exams was more than 600,000. In 1971, we had a total of 49 faculty (31 radiologists and 18 research scientists); today we have more than 150. From 37 radiology residents and fellows in 1971, we now have more than 100. Twenty-five years ago, all of our activities were centered in the 100,000 square-foot Mallinckrodt Institute building; today we have more than three times as much space in nine locations: Barnes-Jewish Hospital (BJH) north and south, BJH West County, BJH St. Peters, Children's Hospital, Clinical Sciences Research Building, East Building, Forest Park Building, and the Institute itself.





The following statistics are significant and are the result of several important and fundamental changes that have occurred in health care and at MIR during the past 25 years.

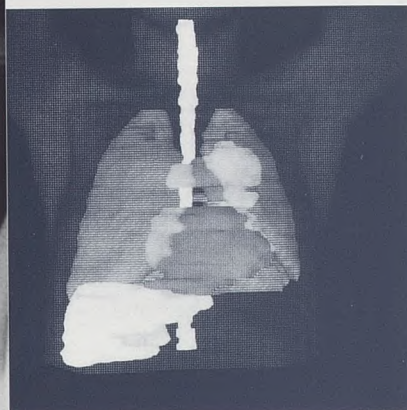
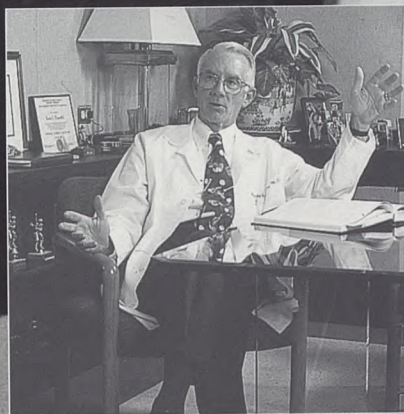
- **TECHNOLOGY** – We have experienced a true technology “revolution.” More than 50 percent of the clinical examinations performed at the Institute in 1996 were not yet available or even developed in 1971, including head and body computed tomography, magnetic resonance imaging and angiography, and a multitude of nuclear medicine, ultrasound, and interventional procedures, as well as a variety of radiation oncologic methods for treatment planning and cancer treatments.
- **PATIENT CARE** – Technology improvements have positioned the radiologist in an increasingly central role on the team of physicians and support staff who take care of patients, both in the hospital and as outpatients. We are much more involved in the diagnostic process that now requires radiologists to be on-site for most of the day and requires many radiologists to be rapidly available 24 hours a day, seven days a week. The capabilities and responsibilities of our radiation oncologists now are most often directed toward the cure of cancer patients rather than only palliation.

Twelfth Annual
H. Stephen Wrens Lecture

■ **RESEARCH MISSION** – In 1971 a small, but dedicated, research faculty focused on a limited number of important scientific projects (e.g., cancer biology and radioisotopes in medicine) and the clinical faculty focused on how best to perform and to interpret clinical studies, with a goal of expanding our knowledge of pathophysiology. Today our research programs are more varied, ranging from fundamental science through technology assessment. Improved strategic research planning has been improved so that basic research discoveries are more likely to be “translated” into clinical trials and to result in improved patient care. In order to perform such broad-based research effectively, we rely on and collaborate with many corporations and with other departments in the Medical School, at the Washington University “hilltop” campus, and at other universities. Increasingly, physicians and scientists from other specialties are an integral part of the Mallinckrodt Institute.

■ **EDUCATION MISSION** – Our mission is much broader and more complex than in 1970 when there was only one radiology board (General Radiology); now there are numerous boards – diagnostic, therapeutic, nuclear, pediatric, interventional, and neuroradiology. In 1971 MIR had eight fellows (individuals undergoing additional training after radiology residency); today we have 25.

We at Mallinckrodt Institute have good reason to be proud. By many measures, the Institute has not only adjusted to the changing times but has prospered, flourished, and often served as a leader for change. The evaluation of the Institute (based on its faculty, staff, and activities) by our patients, referring physicians, peer radiologists, and university and hospital administration is highly favorable. We are able to recruit the highest calibre of students and faculty from the very best institutions throughout the world. During the past 25 years, more than 35 of our faculty have chaired major radiology departments in the United States, Europe, and South America. The Institute is ranked second in the nation among radiology departments that receive funding from the National Institutes of Health. Currently, more than 20 corporate contracts are actively supporting research at the Institute.

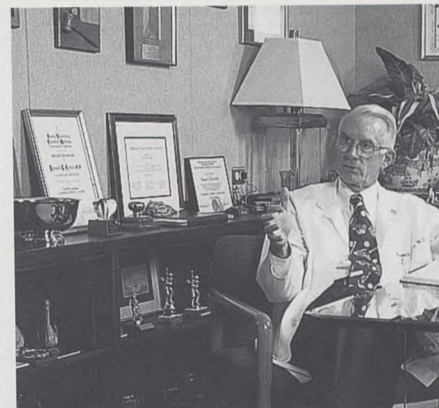


REFLECTIONS... 25 YEARS AS DIRECTOR OF MIR

A pause to reflect on the past is also an opportunity to predict the future. At the Institute's 50th and 60th anniversary celebrations in 1981 and 1991, respectively, then Chancellor Bill Danforth, using his proverbial "crystal ball," predicted that in the future the Institute would continue to be successful and that its current director (this author) would be at the helm. He made a similar prediction at my 25th anniversary celebration in September of this year, even predicting that I would still be here 25 years later, in 2020, and running a "successful show." I support his prediction about the future success of the Institute, but it is highly unlikely that any single man or woman will ever again lead a major academic medical school department for 25 or more years. Times have changed, the challenges are more complex, and academic career paths are very different from those of two decades ago.

It will not be easy for the Institute to maintain and improve on its premier reputation. In order for us to continue to maintain and improve on MIR's position in national radiology, I predict that we will have to pay much more attention to the world around us. The current focus on cost control will not abate soon, and the ability to successfully drive progress and reduce cost at the same time is a formidable challenge that radiology departments have not yet met. We must improve our diagnostic and therapeutic capabilities, research creativity, and educational advancements, which traditionally have required more resources and have carried a higher cost. There are still major diseases and social problems that require new knowledge and technology, and the Institute and its faculty and staff can lead the way to improved medical care. Striving to be as successful in the next 25 years as we have been during the last two and a half decades, at a time of significant cost constraint in medicine, is a challenge worthy of the test of the Mallinckrodt Institute of Radiology. We will, and must, accept the challenge and move forward.

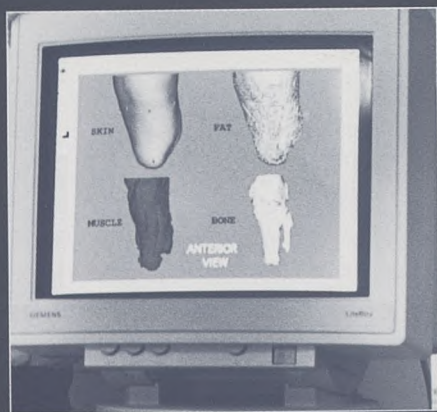
Ron Evans M.D.



t w e n t y - f i v e y e a r s t h e e v e n i s y e a r s

RADIOLOGY: PROSPECTS FOR THE FUTURE

At the afternoon symposium honoring Dr. Ronald Evens, a distinguished faculty of renowned experts from across the country presented their vision for the future of academic and clinical radiology. Symposium topics — ranging from functional imaging to challenges for radiological research, from understanding the brain to the economics — provided important insights as Mallinckrodt Institute and the Washington University Medical Center move into a new era of healthcare management, diagnosis, and treatment.



SYMPOSIUM FACULTY

William Danforth, MD
Chairman, Board of Trustees
Washington University

Gilbert Jost, MD
Director, Diagnostic Radiology
Mallinckrodt Institute

Tom Miller
Group Vice President
Imaging Systems
Siemens Medical Systems

Marcus Raichle, MD
Codirector, Radiological Sciences
Mallinckrodt Institute

Michael Welch, PhD
Codirector, Radiological Sciences
Mallinckrodt Institute

continued



In his talk on "Mallinckrodt Institute of Radiology: Reflections on the past 25 years," William Danforth, MD, lauded "Ron Evens' inspiration to aspire to higher goals" and his "marvelous blend of teaching, research, and patient care." According to Danforth, "Excellence breeds excellence."



As one of the first researchers to apply modern organic chemistry to the preparation of radiopharmaceuticals used in medical imaging, Michael Welch, PhD, provided firsthand insights on "Image enhancement agents in molecular medicine."

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THE EVENS YEARS

...renowned experts from across the country presented their vision...



More than 130 symposium attendees gathered in the handsomely appointed auditorium of the Eric P. Newman Education Center at the Washington University Medical Center campus.



Hywel Madoc-Jones, PhD, MD, was on the MIR radiation oncology faculty from 1967 to 1980. In his presentation on "The recent advances in clinical radiation oncology and prospects for the future," Madoc-Jones pointed out that "increased incidence in carcinoma of the breast often parallels incidence of carcinoma of the cervix."



In his talk on "Functional imaging: Its role in research and diagnosis," Marcus Raichle, MD, thanked Ron Evens "for providing the environment for producing new technology." Raichle pioneered the use of cyclotron-produced, short-lived radionuclides for the measurement of cerebral blood flow and metabolism. In 1996, Raichle was awarded the highest honor accorded a United States scientist: election into the National Academy of Sciences.

t w e n t y - f i v e y e a r s t h e e v e n s y e a r s

RADIOLOGY: PROSPECTS FOR THE FUTURE

continued



SYMPOSIUM FACULTY

Philip Alderson, MD
Chairman, Radiology
Columbia University

Edward Coleman, MD
Professor of Radiology
Duke University

Hywel Madoc-Jones, PhD, MD
Chairman, Radiation Oncology
Tufts University

Barry Siegel, MD
Director, Nuclear Medicine
Mallinckrodt Institute

Robert Stanley, MD
Chairman, Radiology
University of Alabama, Birmingham



"Ron Evens is a most astute businessman in the field of radiology," said Philip Alderson, MD. "Time and time again, he invested in research in radiology." Alderson, who received his radiology training at MIR, discussed the "Challenges for radiological research in the next 25 years."

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THE EVENS YEARS

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...new era of healthcare management, diagnosis, and treatment...



"Twenty-five years in radiology is as tough to predict as it is to survive," said Tom Miller in his presentation on "Radiologic instrumentation and imaging techniques in the next 25 years."



Above: Barry Siegel, MD, and Gilbert Jost, MD, moderated the scientific sessions. As members of the Executive Committee, along with Drs. Carlos Perez and Michael Welch, they coordinated the half-day symposium that represented a *festschrift* in tribute to Ron Evens' many accomplishments and his visionary leadership of the Institute over the last quarter of a century.

Top: According to Edward Coleman, MD, "FDG will be more widely used in the future for biochemical imaging in oncology." Coleman, a former MIR faculty member, presented "Novel approaches for biochemical and physiological imaging in oncology."



Robert Stanley, MD, lauded the technological advances made in imaging the human body during the past 25 years, citing the development of positron emission tomography at Washington University. Stanley, who was with the Institute from 1969 to 1982, spoke on "Where is diagnostic radiology headed in the next 25 years?"

THE TWENTY-FIFTH ANNUAL

WENDELL G. SCOTT MEMORIAL LECTURE

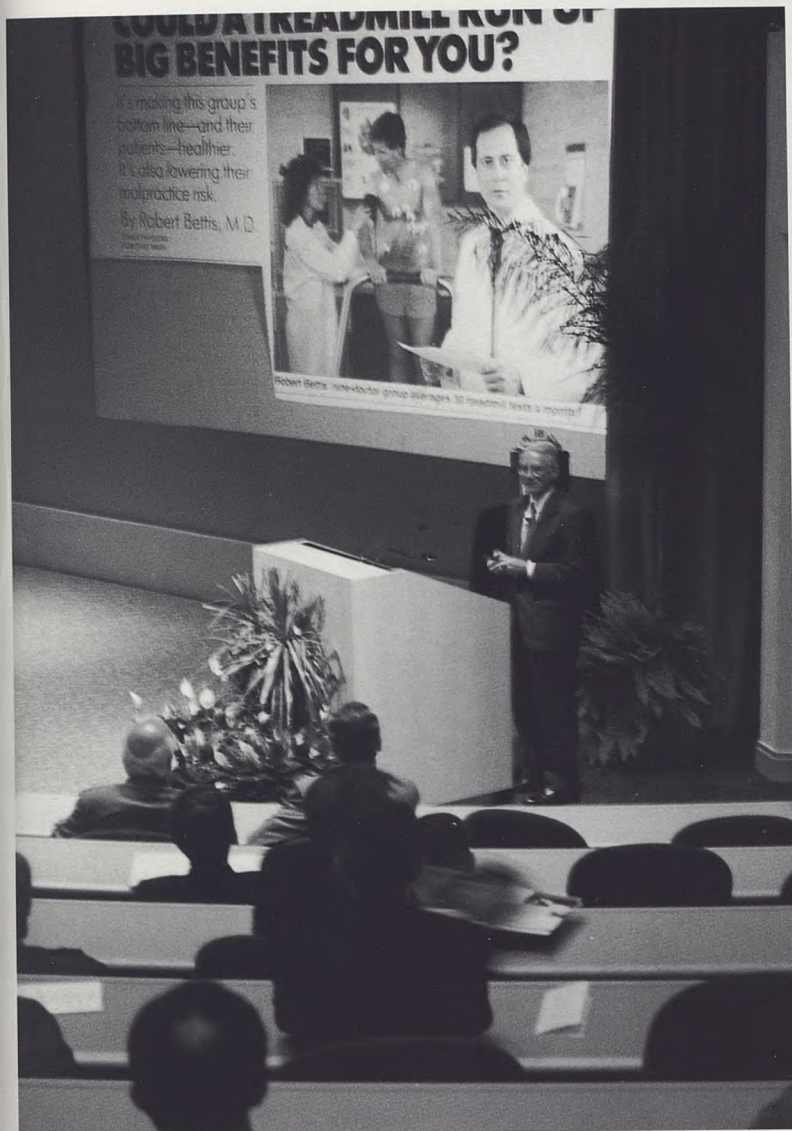
In the late 1940s, Wendell Scott, MD, envisioned capturing a series of images in rapid sequence as contrast media circulated through organs or vessels. By adapting a World War II Fairchild A-5 aerial camera, Scott developed a piece of equipment — called the rapidograph — that greatly improved angiographic techniques. Since the Wendell G. Scott Memorial Lecture was established in 1972, leaders in the areas of science, medicine, and government have discussed a broad array of topics concerning healthcare in the United States. In honor of his twenty-fifth anniversary as head of Mallinckrodt Institute, Ronald Evens delivered the twenty-fifth Wendell Scott Lecture: “Who will determine the changes in medical practice — physicians, patients, or the ‘market’?”



25
THE EVENS YEARS

twenty-five years the evens

...leaders in the areas of science, medicine, and government discussed a broad array of topics.



Above: William Peck, MD, executive vice chancellor for medical affairs and dean of Washington University School of Medicine, gave the closing remarks following the Scott Lecture. According to Peck "Under Ron Evens' leadership, Mallinckrodt Institute has maintained its position at the forefront of scientific endeavors."

Top: On behalf of the MIR faculty and staff, Carlos Perez, MD, professor of radiology and director of the MIR Radiation Oncology Center, presented Dr. Evens with a commemorative Steuben crystal vase.

A QUARTER OF A CENTURY OF ACHIEVEMENTS

In the 25 years since Ronald Evens was named director of Mallinckrodt Institute, a long list of achievements (both the Institute's and Dr. Evens') attest to the international reputation of excellence that Mallinckrodt Institute and its faculty have earned. Here are some of the highlights:



Elizabeth Elliot Mallinckrodt, who endowed a chair at Washington University, and Ronald Evens at his official installation as the Elizabeth Mallinckrodt Professor in Radiology.

EARLY '70S

A team of scientists led by the Institute's Michel Ter-Pogossian, PhD, developed the concept of positron emission tomography.

1971

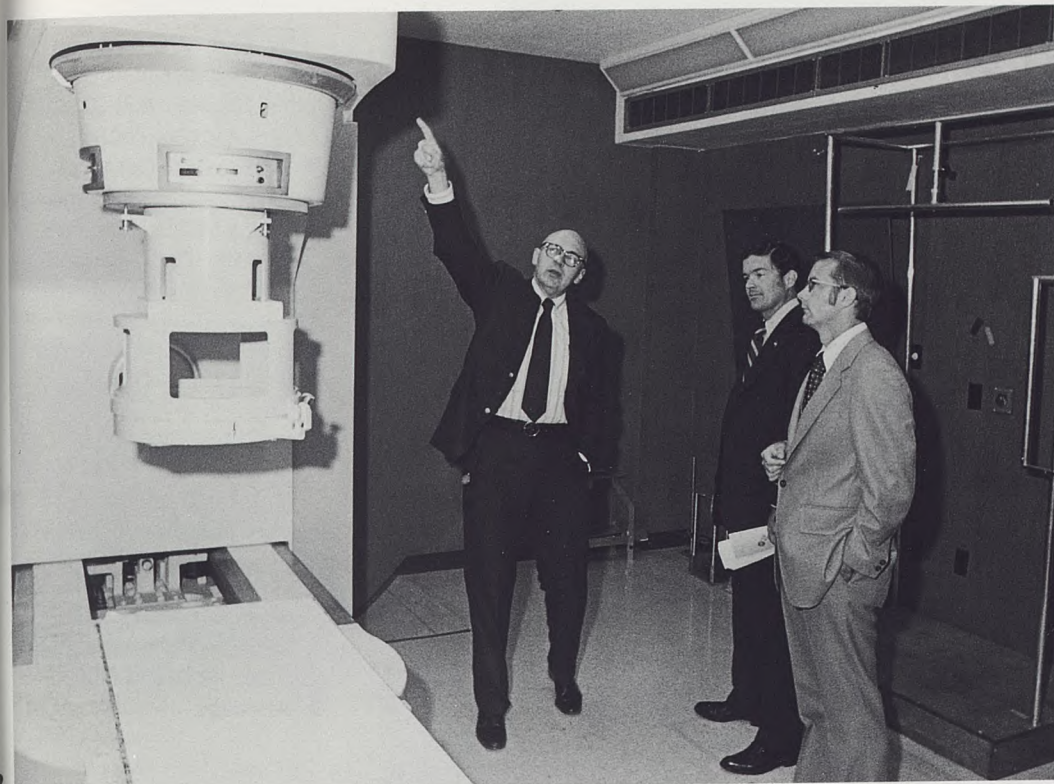
Evens was appointed head of the Department of Radiology and director of the Mallinckrodt Institute; he launched the programs necessary to sustain and to enhance a world-class radiological facility. The era of high-technology, noninvasive imaging arrived at MIR as Sir Godfrey Hounsfield provided a prototype computed axial tomography head scanner.

1972

The Institute received a prototype Clinac 35 linear accelerator, a high-energy, megavoltage radiation therapy machine manufactured by Varian Associates and based on specifications developed by MIR scientists. Evens was named the first Elizabeth E. Mallinckrodt Professor of Radiology. (1) The Institute's chest radiology section was established.

25
THE EVENS YEARS

...a long list of achievements...

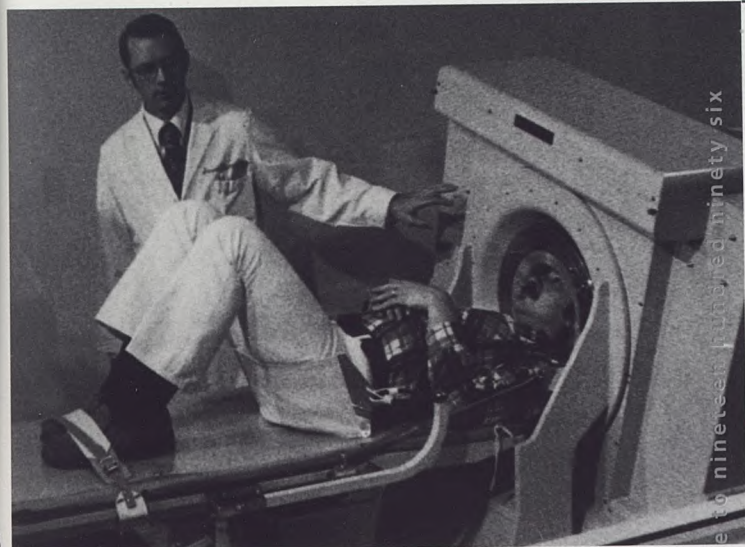


1973

Evens assumed the presidency of the American Roentgen Ray Society. MIR established a diagnostic ultrasound laboratory.

1974

MIR's Radiation Oncology Center formed the Oncology Data Center, which provided data processing support to the entire Division.



1975

A large, dedicated computer system was installed at the Institute. MIR's radiological computer facilities became the world's largest and most advanced system of its kind. (2) One of the first two body CT scanners in the United States arrived at Mallinckrodt Institute. (3)

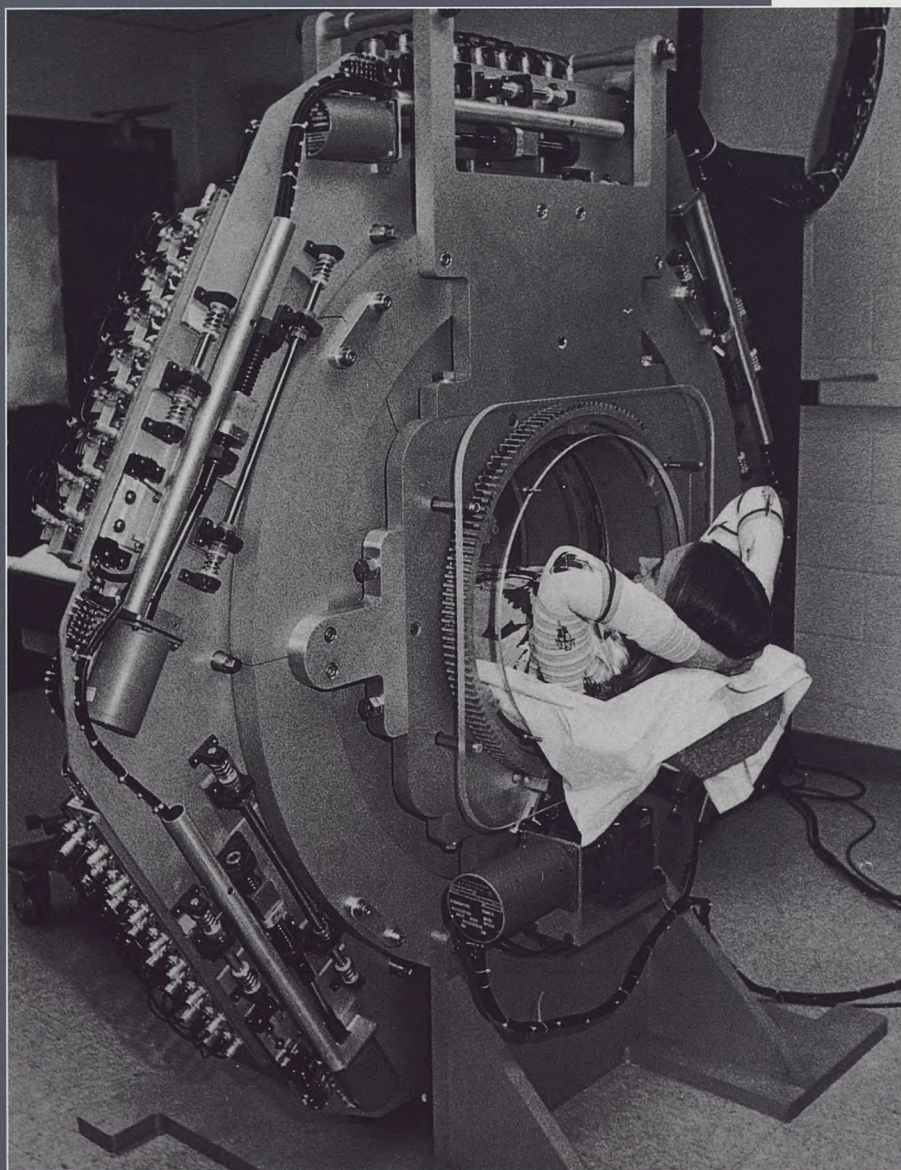
above: On a tour of the Institute, Ronald Evens (right) and William Powers, MD, director of the Radiation Oncology Center, showed the Center's newer linear accelerator to Missouri Governor Christopher Bond (center), who was the 1975 Wendell Scott lecturer.

left: Ronald Evens demonstrates the first CT head scanner.

nineteen hundred seventy one to nineteen hundred ninety six

A QUARTER OF A CENTURY OF ACHIEVEMENTS

continued



4

1977

Evens was elected president of the Missouri Radiological Society and named a fellow of the American College of Radiology. MIR's Radiation Oncology Center established the Cancer Information Center, one of the first such centers to provide information and services to patients with cancer, their family and friends, and physicians.

1979

Evens was elected president of the Society of Chairmen of Academic Radiology Departments.

1982

MIR researchers developed three-dimensional image processing of CT slices, a breakthrough technology that made more effective diagnosis and treatment planning possible. (4)

left: The earliest PET machines — from PET II to Super PET II-B (for body) and II-H (for head) were designed and constructed on-site by MIR scientists.

...international reputation of excellence that Mallinckrodt Institute and its faculty have earned



1983

The first magnetic resonance imaging (MRI) scanner in Missouri was installed at the Institute. The National Council of Boy Scouts of America presented Evens with the Distinguished Eagle Scout Award. (5)

1985

Evens was named president and chief executive officer of Children's Hospital of St. Louis.

1988

Evens was named vice chancellor for financial affairs of Washington University and was elected president of the Washington University Alumni Association, president of the Association of University Radiologists, and president of the American Roentgen Ray Society.

twenty-five years the evens years

1986

The MIR mammography mobile was the first in the Midwest area to provide affordable, convenient screening mammography. (6)

left: The MIR Mammography Mobile provided low-dose screening sensitive enough to detect the first stages of breast cancer.

top: On behalf of the National Council of the Boy Scouts of America, Washington University Chancellor William Danforth and Missouri Congressman Tom Curtis (right) present Ronald Evens with the Distinguished Eagle Scout Award.

1987

The Institute's vascular and interventional radiology section was established.



1991

MIR opened the area's first three-dimensional treatment planning center for cancer; 3-D treatment planning enables the radiation oncologist and physicist to tailor radiation dosage for each individual type of tumor. The Washington University Alumni Association honored Evens with the Alumni Merit Award.

A QUARTER OF A CENTURY OF ACHIEVEMENTS

continued



7

At the October second meeting of the American College of Radiology's Board of Chancellors, Dr. Emmett (Neal) Templeton officially passed the Board's chairmanship to Ronald Evens.

1993

The Institute's breast imaging section was established. With the installation of a Tandem Cascade Accelerator (TCA) prototype, the Institute became the only medical institution equipped with two dedicated cyclotrons and a TCA for the production of radiopharmaceuticals used in PET studies.

1994


MIR opened a comprehensive imaging research center, one of the best equipped centers worldwide with research focused on the development and application of advanced imaging systems. As a result of the merger of the diagnostic residency programs at Barnes and Jewish hospitals, the Institute's four-year training program is the largest of its kind in the United States, with 17 applicants accepted annually.

1996

Evens received the prestigious Gold Medal Award presented by the Association of University Radiologists. Washington University School of Medicine established the Ronald G. Evens Four-year Medical Student Scholarship in recognition of distinguished teaching. Evens was named chairman of the Board of Chancellors of the American College of Radiology. (7)

...nineteen hundred ninety six and beyond...

25
THE EVENS YEARS



The millions of Americans who suffer from emphysema usually have years of heavy smoking behind them. Ahead, they face years of increasing disability, until their breathing becomes so labored that they are fighting for every breath. They are also at greater risk of dying from other pulmonary diseases, especially pneumonia. Emphysema, in fact, is the fourth leading cause of death in this country.

by Candace O'Connor

"A big problem in these patients is quality of life," says Richard Slone, MD, assistant professor of radiology at Washington University's Mallinckrodt Institute of Radiology. "Many of the patients are oxygen-depend-

ent. They can't go on long car rides or out to dinner; it's hard for them

even to get dressed. Many are completely homebound. By the time people come to us, they are desperate for help."

fighting for every breath

Surgeons and radiologists at Washington University Medical Center are giving patients with emphysema a chance to

breathe easier. *[breathe]*

fighting for every breath

Since 1993, some 8,000 inquiries have flooded into the Washington University Medical Center about a new form of surgery to help advanced emphysema patients. To date, some 200



(left to right) Doctors Ty Bae, Thelma Lopes, and David Gierada.

patients in St. Louis and 1,000 worldwide have undergone lung volume reduction surgery (LVRS), in which surgeons resect the most severely diseased portion of one or both lungs. Removing this tissue allows the patient's hyperinflated thorax and flattened diaphragm to return to a more normal configuration. Within the lung, gas exchange improves and breathing becomes easier.

Using a whole range of radiologic tools, physicians at Mallinckrodt Institute play a critical role in evaluating and selecting patients for LVRS, then managing them postoperatively.

In addition, Mallinckrodt Institute researchers are currently engaged in over a dozen LVRS-related studies; most of the studies are designed to refine the criteria for choosing candidates and to determine which patients benefit most from this surgery.

"Radiology plays an essential role in the selection of patients for LVRS and provides information not obtainable by any other means," says Joel Cooper, MD, who pioneered LVRS. Cooper is the Joseph C. Bancroft professor of surgery at Washington University School of Medicine. "To be a candidate for the operation, a patient must have significant areas of lung that are overexpanded and nonfunctional, along with other regions judged to be more normal."

Patients who come to the Washington University Medical Center for help are poor operative candidates — their average age is 65; they are debilitated; and they have emphysema that is severe enough to disqualify them from other kinds of surgery. "Part of the success of LVRS is that it has been piggybacked onto a very successful lung transplant program in which the respiratory therapists, nursing staff, and anesthesiologists are used to working with patients who are disabled by pulmonary disease," says Slone.

to date, some 200 patients in St. Louis and 1,000 worldwide have un

The first part of the patient's screening involves a two-day clinical assessment, including medical history, physical examination, blood gas analysis, and pulmonary function testing. This screening also has a strong radiologic component, including extensive chest radiographs, computed tomography (CT) examinations, and a nuclear medicine lung scan. The tests are aimed at assessing the anatomy and structure of the lungs to determine the degree of thorax hyperinflation and diaphragm displacement, the existence of unsuspected conditions such as cancer, and the distribution of blood flow in the diseased lungs.

The examinations also evaluate the distribution of the disease itself — a significant factor since patients whose disease is concentrated, particularly in the lung's upper lobes, make better surgical candidates than those whose disease is spread more uniformly throughout the lungs. In an upper-lobe pattern, surgeons can resect the severely diseased emphysematous tissue, leaving the healthier tissue in place.

As indicated by these tests, some patients are clearly good candidates for surgery; others are not. Questionable cases are often reviewed at a weekly, multidisciplinary conference attended by pulmonologists, surgeons, and radiologists. Only patients who have stopped smoking are considered for LVRS; those patients who are selected for the procedure must undergo a six-week period of pulmonary rehabilitation before surgery.



Doctors Richard Slone (background) and Joel Cooper.

Following surgery, patients spend an average of nine days in the hospital. "Radiology plays an important role in the postoperative period, too," says Slone, "since patients have a tenuous respiratory status that must be monitored carefully. On a daily basis, until they are discharged from the hospital, patients have chest radiographs — sometimes two and three times a day. CT is also used in some cases."

undergone lung volume reduction surgery]

fighting for every breath

Some of these studies are repeated when patients — nearly 100 percent at this medical center — come back for follow-up at three, six, and 12 months after surgery. “This follow-up is crucial to allow us to evaluate the relationship between imaging features and clinical outcome and, thereby, to refine our selection criteria, which will greatly benefit future patients,” says Slone. “It also allows us to study the structural changes that have occurred as a result of surgery and to better understand the mechanisms of success.”

Mallinckrodt Institute physicians have undertaken a range of studies designed to identify three things, says Slone. “First, which patients will benefit the most from this surgery? Second, which ones should be excluded because they are at high risk of death or have very little chance of improvement? And third, why does this procedure work and how does it work? These are questions that also relate to patient selection.”

Along with Slone, who has been involved in each of these research projects, the Institute’s team includes David Gierada, MD, instructor in radiology; Ty Bae, MD, PhD, a research fellow in diagnostic radiology; Keith Fischer, MD, associate professor of radiology; Thelma Lopes, MD, visiting research assistant; and Stuart Sagel, MD, professor of radiology and chief of chest radiology, who has served as adviser/consultant in many of the studies.

In their first study, Slone and several colleagues looked at the chest radiographs and CT scans of the first 50 LVRS patients, scored them in various categories, and then compared those findings with how well the patients were doing at six months following surgery. Although 85 percent of the patients showed clear, sometimes dramatic, improvement, there was also a five percent in-hospital mortality rate, primarily among older patients with more diffuse, severe emphysema. In general, patients with the best outcome had upper-lobe distribution with relatively large focal areas of severely emphysematous lung and a larger percentage of mildly diseased lung, as seen on their diagnostic tests.

Another study, recently completed by Fischer, involves the nuclear medicine lung scans administered before surgery to LVRS patients. These scans quantify the amount of blood flow and ventilation getting to the patient’s diseased lungs. Surgeons routinely use these results to determine which areas of lung are healthiest, which have the best perfusion, and which have the least perfusion and are good target areas for resection.

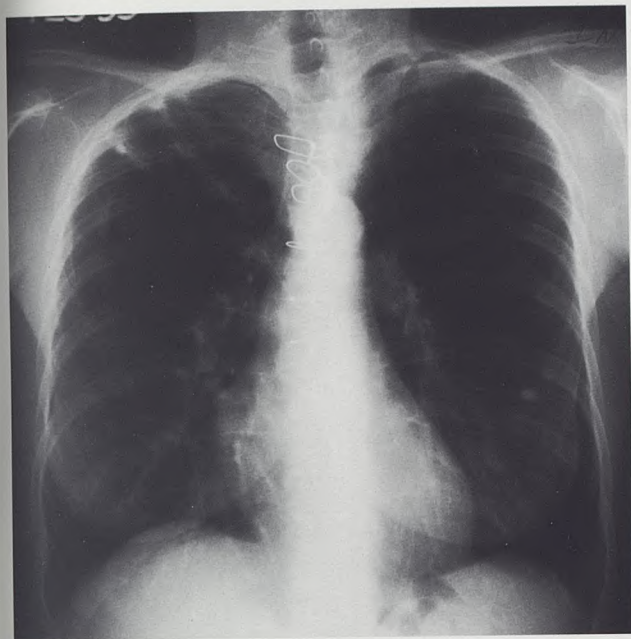


On the left, a preoperative chest radiograph shows advanced pulmonary emphysema with thoracic distention and flattening of the diaphragm. The postoperative examination (right) shows reduced thoracic distention and increased diaphragm curvature. Postoperative testing demonstrates improved oxygenation and markedly improved pulmonary function.

In this study, a team of six readers (two pulmonologists, two nuclear medicine physicians, and two radiologists) looked at the lung scans in a series of 110 patients. Using a scoring system that rated the pattern and extent of perfusion, the team compared the scores with clinical outcome following surgery in terms of the amount of oxygen in the blood and the lung’s ability to move air.

The results showed that patients whose disease was most severe in the lung’s upper lobe had the best outcome. Patients with perfusion levels under 20 percent and who were older than age 65 were most likely not to survive surgery. “We’re hoping that we can be more selective in choosing patients who can benefit the most from this surgery and also to identify those who are at greatest risk,” says Fischer.

[*air to breathe*]



In Bae's study, CT scans were taken of 10 patients during inspiration and expiration, both before and after surgery. Using a sophisticated new computerized technique called "quantitative CT analysis," Bae analyzed those images to determine the anatomical changes in lung density and volume that were produced by the surgery. With this method, he was able to derive graphical and numeric depictions of the severity and distribution of emphysema. This data will be useful in understanding how LVRS works and, ultimately, in selecting patients.

Next, Bae will use computerized analysis to evaluate lung scans taken on patients both before and after surgery. If it proves successful, this method will eliminate the need for teams of readers, such as

those used by Fischer in his study. "We are hoping this method will replace the subjective one," says Bae. "Radiology used to be a qualitative science. Now we have new techniques and computers, so we can have more quantitative, objective analysis."

Gierada's research has focused on the breathing mechanics in patients before and after surgery. His technique is called "dynamic MRI," in which a rapid sequence of magnetic resonance images is obtained during breathing and then can be played back as a

kind of movie. "We are using dynamic MRI to study how breathing mechanics are altered in emphysema and to obtain insight into the physiologic changes that occur following LVRS," says Gierada.

Currently, Washington University is part of a seven-year, multi-center study launched by the National Institutes of Health to identify the best surgical candidates and to determine the long-term efficacy of the procedure. The study also may help settle the recent controversy over whether or not the new procedure should be considered experimental or of proven value. Medicare has stopped reimbursing for LVRS, pending resolution of this question.

As researchers grapple with these issues, other questions remain to be answered: Can non-surgical methods be used to achieve lung-volume reduction? Can the surgery be performed a second time on the same patient? Afterwards, will the patient become a candidate for lung transplantation? Radiology will play a part in all of these decisions, Slone says. And as the LVRS procedure — now performed at some 50 centers around the world — spreads still further, Slone and his colleagues would like to have an impact on patient care.

"Radiologists from other centers often call us with questions about patient screening and selection, particularly when they are just starting a program at their center or when their early results have been unfavorable," says Slone. "This surgery has the potential for widespread application and could improve the quality of life for thousands of people, but there is also the potential for misuse. I have a sincere interest in developing straightforward selection criteria, so that unnecessary morbidity and mortality can be avoided and that patients who can benefit the most from this surgery can be identified." ■

Editor's note: Papers written by Drs. Slone and Bae have been accepted for publication in the journal Radiology.



This surgery has
the potential for
widespread
application and
could improve
the quality of life
for thousands
of people.

fighting and winning

[breathe]

THE DIRECTOR'S OFFICE REPORT

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

PROMOTIONS

Colin Derdeyn, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology.

David Gierada, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology.

Sharlene Teefey, MD, assistant professor of radiology, was promoted to associate professor of radiology, Division of Diagnostic Radiology.

Jerold Wallis, MD, assistant professor of radiology, was promoted to associate professor of radiology, Division of Nuclear Medicine.

JOINT APPOINTMENT

Carolyn Anderson, PhD, assistant professor of radiology, received a joint appointment as assistant professor of molecular biology and pharmacology.

Kevin Black, MD, assistant professor of psychiatry, received a joint appointment as assistant professor of radiology.

Daniel Picus, MD, professor of radiology and chief of vascular and interventional radiology, received a joint appointment as professor of surgery.

NEW STAFF

Jeffrey Yu, MD, assistant in radiology, transferred into MIR's Diagnostic Radiology Residency Program as a second-year resident. He was a radiology resident at the Health Science Center of the State University of New York at Syracuse. Yu received an undergraduate degree from the University of California at Berkeley and a medical degree from Bowman Gray School of Medicine, Winston-Salem, North Carolina.

OFF STAFF

Abel Cheng, MS, instructor in radiology, Radiation Oncology Center, has accepted a position as a medical physicist at the Corpus Christi Cancer Center, Corpus Christi, Texas.

Ge Wang, PhD, assistant professor of radiology, has accepted a position at the University of Iowa, Iowa City.

APPOINTMENTS/ELECTIONS

Thomas Conturo, MD, PhD, assistant professor of radiology and adjunct assistant professor of physics, was one of 10 scientists nationwide who were appointed by the National Cancer Institute to a study section group for program-project grant site visits.

Louis Gilula, MD, professor of radiology and chief of musculoskeletal radiology, was appointed as organizer of the 12th International Wrist Investigators' Workshop, held September 29 in Nashville, Tennessee.

Daniel Kido, MD, professor of radiology and chief of neuroradiology, was appointed to the Board of Review for the GE-AUR Radiology Research Academic Fellowships, a joint venture between General Electric and the Association of University Radiologists.

James Purdy, PhD, professor of radiology and associate director of the Radiation Oncology Center, was appointed senior editor of the physics section of the *International Journal of Radiation Oncology, Biology, and Physics*.

Sally Schwarz, MS, RPh, research instructor in radiology, was elected to a three-year term as councilor for the Missouri Valley Chapter of the Society of Nuclear Medicine.

Marilyn Siegel, MD, professor of radiology, was appointed to a three-year term as a member of the Publications Committee of the Society of Pediatric Radiology.

Celette Sugg-Skinner, PhD, assistant professor of radiology, was appointed cochair of the Washington University Cancer Center Prevention and Control Breast Cancer Focus Group.

FYI

FELLOWSHIPS/ GRANTS

Prabhat Goswami, PhD, assistant professor of radiology, as principal investigator, received a \$546,000 grant from the National Institutes of Health for research on "X-ray, heat shock and cell cycle coupled gene expression."

Debiao Li, PhD, assistant professor of radiology, as principal investigator, received a one-year grant-in-aid in the amount of \$27,500 from the Missouri Chapter of the American Heart Association for research on "Myocardial blood oxygenation assessment using magnetic resonance imaging in a canine model." Collaborators are **Robert Gropler, MD**, assistant professor of radiology and of medicine; **Mark Haacke, PhD**, professor of radiology; and Steven Bergmann, MD, professor of medicine. Li, as principal investigator, and Haacke, as coinvestigator, received a \$46,000 research grant from the Massachusetts-based Metasyn, Inc., for the project "Coronary artery imaging using a new intravascular contrast agent."

Probstein Oncology Lecture

At the tenth annual Norman K. Probstein Oncology Lecture, Dr. Paul Schellhammer, chairman of the Department of Urology at the Eastern Virginia Medical School, spoke on "Expectant radiation and surgical therapy for localized prostate cancer: a urologist's viewpoint." The Probstein Lecture was established in 1985 in honor of Carlos Perez, MD, director of the Institute's Radiation Oncology Center, and William Fair, MD, former head of the Division of Urology.



Perez (left) and William Catalona, MD, chief of the Division of Urologic Surgery, are shown with Schellhammer (center).

Robert Myerson, MD, PhD, associate professor of radiology, received a three-year grant from the National Institutes of Health. The \$357,521 grant will support research on "Clinical implementation of simultaneous thermoradiotherapy." Coinvestigators for the project are **Eduardo Moros, PhD**, assistant professor of radiology, and **William Straube, MS**, instructor in radiology.

Celette Sugg-Skinner, PhD, assistant professor of radiology, and Victoria Champion, RN, DSN, Indiana University Medical Center, Indianapolis, received a four-year grant in the amount of \$1,183,974 from the National Institutes of Health/National Institute of Nursing Research for research on "A comparison of tailored intervention for mammography." Coinvestigator for the study's St. Louis site is Jeffrey Wong, MD, Department of Internal Medicine, Division of General Medical Sci-

ences. As principal investigator, Sugg-Skinner also received a \$50,000 grant from the National Institutes of Health/National Cancer Institute for "Genetic risk assessment counseling for breast cancer." Coinvestigators for the two-year project are Alison Whelan, MD, Department of Internal Medicine, Division of General Medical Sciences, and Michael Strube, PhD, Department of Psychology.

LECTURES/ PRESENTATIONS

Carolyn Anderson, PhD, assistant professor of radiology, presented "Gallium-68 and copper-64 radiopharmaceuticals for imaging and therapy" at the University of Padua, National Institute of Nuclear Physics, Padua, Italy, September 30. She spoke on "The development of bifunctional-chelate-biomolecule conjugates labeled with gallium and copper radioisotopes for imaging and therapy" at the University of Padua, Department of Pharmaceutical Sciences, Padua, Italy, October 1. Anderson spoke on "Copper-64-labeled proteins and peptides for PET imaging and therapy" at the The Rossendorf Research Center, Dresden, Germany, October 8.

Jeffrey Brown, MD, associate professor of radiology, presented "Techniques for optimizing body MR" and "MR approach to focal liver masses" at New York University Medical School, New York City, October 9.

Clifford Chao, MD, instructor in radiology, spoke on "Progress in the management of locally advanced cervical cancer" at the Symposium on Cancer Diagnosis and Treatment, sponsored by the Cancer Society of the Republic of China, Taipei, Taiwan, September 22. He presented "Management of locally advanced head and neck cancer" at the Sun Yat-Sen Cancer Center, Taipei, Taiwan, September 23.

Thomas Conturo, MD, PhD, assistant professor of radiology and adjunct assistant professor of physics, spoke on "Sensitivity optimization and experimental design in fMRI" (coauthored with **Robert McKinstry, MD, PhD**, assistant in radiology; **Erbil Akbudak, PhD**, research associate in radiology; **Avi Snyder, PhD, MD**, Department of Neurology; **Tongzeng Yang, PhD**, instructor in radiology; and **Marcus Raichle, MD**, professor of radiology, of neurology, and of anatomy and codirector of the Division of Radiological Sciences) at the Society for Neuroscience meeting, Washington, DC, November 17 - 19.

David Diamond, MD, assistant in radiology, spoke on "Use of endocoronary irradiation for the prevention of restenosis after coronary angioplasty" at the Rambam Medical Center, Haifa, Israel, August 22.

Louis Gilula, MD, professor of radiology and chief of musculoskeletal radiology, presented "Less common conditions of the wrist the radiologist should know" at the International Skeletal Society, Paris, France, August 19 - 24. He debated Arthroscopist Lee Osterman (and won!) on "Arthroscopy should replace expensive imaging tests" at the American Society for Surgery of the Hand, Nashville, Tennessee, September 30 - October 3. Gilula presented "Imaging approach to the

painful wrist" and "Radiographic unknowns for wrist trauma" and, as a panelist, participated in three panel discussions at the Western Division of the Oregon Orthopedic Society Annual Meeting, Gleneden Beach, Oregon, November 8 - 10.

Jay Heiken, MD, professor of radiology and chief of abdominal radiology, presented "Hepatic neoplasms," "Adrenal neoplasms," "Neoplasms of the male pelvis," and "Neoplasms of the female pelvis" at the Venetian Seminars of Diagnostic Radiology: Oncologic Imaging with Conventional CT, Spiral CT and MRI, Venice, Italy, October 4. As visiting professor, he spoke on "Characterization of hepatic masses with CT and MRI," "Spiral CT of the abdomen," and "CT (and MRI) of the aorta" at the University of Toronto, Toronto, Ontario, Canada, November 4 and 5.

Eric Klein, MS, assistant professor of radiology, presented "Multileaf collimation," "Stereotactic radiotherapy," and "Monoisocentric breast irradiation" at the Asian Conference on Radiation Technology, Kuala Lumpur, Malaysia, August 27 and 28. As a panel member, he spoke on "Physics implementation of the Varis record and verify system" at the Varian Varis Users Meeting, Santa Monica, California, October 25.

Beverly Kobeissi, MA, MBA, business manager, Radiation Oncology Center, presented a workshop on "Economics of 3D treatment planning and conformal radiotherapy" at the Society for Radiation Oncology Administrators, Los Angeles, California, October 27-30.

Robert McKinstry, MD, PhD, assistant in radiology, spoke on "Functional neuroimaging with magnetic resonance" at the Laboratory of Neurosciences, National Institute on Aging of the National Institutes of Health, Bethesda, Maryland, October 21. He presented a poster on "Negative functional MRI signals and models of blood flow and oxygen metabolism" (coauthored with Jeffrey Ojemann, MD, assistant in neurosurgery; **Avi Snyder, PhD, MD**, Department of Neurology; **Erbil Akbudak, PhD**, research associate; **Randy Buckner, PhD**, research associate; **Robert Grubb, MD**, Department of Neurosurgery; and **Marcus Raichle, MD**, professor of radiology, of neurology, and of anatomy and codirector of the Division of Radiological Sciences) at the Society for Neuroscience meeting, Washington, DC, November 17 - 19. As workshop leader, he presented "Physicians accessing the Internet project" at the American Medical Association (AMA) House of Delegates meeting, sponsored by the AMA and Loma Linda University School of Medicine, Atlanta, Georgia, December 9 and 10.

LECTURES/ PRESENTATIONS

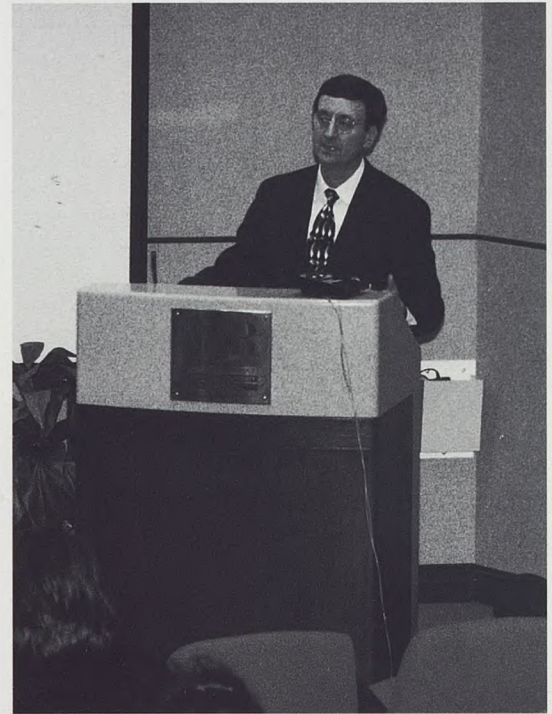
Continued from page 29

Eduardo Moros, PhD, assistant professor and chief of the hyperthermia physics service, presented "An ultrasound array system for simultaneous hyperthermia and external beam radiation of superficial neoplasms," a poster summary of results from a three-year grant from The Whitaker Foundation, (coauthored with **William Straube, MS**, instructor in radiology; **Eric Klein, MS**, assistant professor of radiology; and **Robert Myerson, MD, PhD**, associate professor of radiology) at The Whitaker Foundation Biomedical Engineering Research Conference, Snowbird, Utah, August 9 - 11. He spoke on "Simultaneous thermoradiotherapy at Washington University" at Duke University Medical Center, Department of Radiation Oncology, Durham, North Carolina, October 3. Moros presented "Penetration depth control with dual frequency ultrasound" (coauthored with **Xiaobing Fan, PhD**, research associate; Straube; and Myerson) at the Annual Winter Meeting of the American Society of Mechanical Engineers, Atlanta, Georgia, November 17 - 22.

Robert Myerson, MD, PhD, associate professor of radiology, presented "Organ preservation: rectum and anal canal" and "Organ preservation: breast" at the Integrated Radiotherapy, Organ Preservation and Quality of Life Course, Catholic University of the Sacred Heart, Rome, Italy, November 11 - 15.

Melson Lecture

As part of the City-Wide Radiology Conferences, William Charboneau, MD, presented the Fourth Annual G. Leland Melson Visiting Professorship and Lecture on October 14 in the Institute's Scarpellino Auditorium. Charboneau, a professor of radiology at the Mayo Medical Center in Rochester, Minnesota, spoke on "Current trends in sonography of the thyroid and parathyroid glands."



Carlos Perez, MD, professor of radiology and director of the Radiation Oncology Center, spoke on "Chemoradiotherapy for GYN cancer" at the First Annual Symposium on Concomitant Chemoradiotherapy, Nashville, Tennessee, August 16 and 17. He presented "Radiation oncology and cancer: state of the art - 1996," "Current management of lung cancer," and "Current management of breast cancer" at the 2nd International Congress on Nuclear Oncology, Naples, Italy, September 23 - 25. Perez presented "Developments in radiation oncology: three-dimensional treatment planning and conformal radiation therapy" at the Joint Congress of I Congress of the French, Italian,

Mexican Society of Radiotherapy and VI Congresso Nazionale Associazione Italiana di Radioterapia Oncologia, Naples, Italy, October 2 - 4. He spoke on "Radiation therapy in carcinoma of the prostate" at the 11th Annual Fall Cancer Symposium, Cape Girardeau, Missouri, November 2. Perez spoke on "Advances in management of locally advanced breast cancer," "Recent advances in radiation therapy and role of adjuvant chemotherapy in locally advanced cervical cancer," "Conformation radiotherapy," and "Advances in radiation therapy in lung cancer" at the 13th Asia Pacific Cancer Conference, Penang, Malaysia, November 17 - 20.

Henry Royal, MD, professor of radiology and associate director of the Division of Nuclear Medicine, presented "Chernobyl: perceptions and realities," "Effects of low level radiation: scientific and public views," and "Risk communication" at the Bethesda Naval Medical Center, Bethesda, Maryland, October 22. He spoke on "Understanding Chernobyl" at the University of Western Ontario, London, Ontario, Canada, October 23.

Stuart Sagel, MD, professor of radiology and chief of chest radiology, spoke on "CT and MRI in bronchogenic carcinoma," "High resolution CT of the pulmonary parenchyma," "CT of asbestos related thoracic disease," and "CT of vascular mediastinal masses" at the 6th Summer Practicum of the Society of Computed Body Tomography and Magnetic Resonance, Aspen, Colorado, August 19 - 23. He presented "The role of CT and MRI in bronchogenic carcinoma" at the MIR Symposium on Practical Issues in Leading-edge Radiology, St. Louis, Missouri, October 11 - 13.

Marilyn Siegel, MD, professor of radiology and of pediatrics, spoke on "Pediatric musculoskeletal MRI," "Bone marrow imaging," "MR/CT of the pediatric mediastinum," and "CT of pediatric lung diseases" at the 6th Summer Practicum of the Society of Computed Body Tomography and Magnetic Resonance, Aspen, Colorado, August 19 - 23. As invited lecturer, she presented "Ultrasonography of the acute pediatric abdomen," "Pediatric retroperitoneal CT/MR," "CT/MR of the pediatric thymus," and "Pediatric musculoskeletal imaging" at Tripler Army Medical Center, Honolulu, Hawaii, September 23 - 26.

Celette Sugg-Skinner, PhD, assistant professor of radiology, presented "Some new breast cancer research projects" at the Washington University School of Medicine General Medical Sciences Clinical Research Seminar, St. Louis, Missouri, October 4. She presented "The Learn, Share, and Live program: breast cancer education for older, low-income women" (coauthored with Rosalyn Sykes, PhD; Cherie Hill; and Cynthia Arfken, PhD, from the Department of Medicine's Center for Health Behavior Research) at the American Association for Cancer Education Annual Meeting, Chicago, Illinois, October 17 - 20. Skinner presented "Perceived risk and beliefs about risk modification among first-degree relatives of breast cancer patients" (an exhibit coauthored with Elizabeth Ryan, a doctoral candidate in the Department of Psychology) at the American Public Health Association Annual Meeting, New York City, New York, November 17 - 20.

Jerold Wallis, MD, associate professor of radiology, with coauthor **Tom Miller, MD, PhD**, professor of radiology, presented "An optimized rotator for use in iterative reconstruction" at the IEEE 1996 Medical Imaging Conference, Anaheim, California, November 9.

Todd Wasserman, MD, professor of radiology, presented "Radiation therapy in non-Hodgkin's lymphomas" at Update in Non-Hodgkin's Lymphomas, sponsored by the European School of Oncology, Izmir, Turkey, October 5, and at the Turkish National Congress of Radiation Oncology, Ankara, Turkey, October 8. He spoke on "Radiation Therapy Oncology Group and the late effects program" and "RVIPG" at the European Organization for Research and Treatment of Cancer Annual Meeting, Valencia, Spain, October 10 and 11. Wasserman spoke on "Stereotactic radiosurgery" at Ospedale San Pietro, Rome, Italy, November 23. He presented "Quality of life in Radiation Therapy Oncology Group studies," "Radiotherapy and amifostine," and "3-D radiation therapy treatment of the prostate" at the 5th Iberoamerican Congress of Oncology, Montevideo, Uruguay, December 9 - 11.

SYMPOSIA

THE AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE

The 38th Annual Meeting and Technical Exhibits Philadelphia, Pennsylvania July 21 - 25, 1996

SYMPOSIUM IN ABMP CERTIFICATION

James Purdy, PhD, "Examination content."

SCIENTIFIC SESSIONS

Daniel Low, PhD, cochair, "Photon calculations."

James Purdy, PhD, moderator, "3-D or not 3-D, that is the question."

Jeffrey Williamson, PhD, cochair, "Brachytherapy treatment planning and intravascular brachytherapy."

Walter Bosch, DSc, "Data management for 3D CRT."

Robert Drzymala, PhD, "A methodology for estimating biological effects to normal tissues from 3-D radiotherapy treatment plans."

William Harms, BS; James Purdy, PhD, "Comparison of commercial 3D RTP systems."

Assen Kirov, PhD; David Rogers, PhD*; **Georgi Daskalov, PhD; Jeffrey Williamson, PhD**, "Secondary electron transport in brachytherapy dosimetry: evaluation of the dose-to-kerma ratio for localized gamma sources." *NRC, Ottawa, Ontario, Canada.

Assen Kirov, PhD; Jeffrey Williamson, PhD, "Two-dimensional scatter integration method for brachytherapy dose calculations in 3D geometry."

FYI

SYMPOSIA

Continued from page 31

Eric Klein, MS; Steen Madsen, PhD*; **Daniel Low, PhD;** **Robert Drzymala, PhD,** "Modulated electron beams generated by multi-segmented MLC portals." *Barnes-Jewish Hospital, St. Louis, Missouri.

Daniel Low, PhD; Xia-Rong Zhu, PhD*; **William Harms, BS;** **James Purdy, PhD,** "Beam-intensity modulation using physical filters." *Barnes-Jewish Hospital, St. Louis, Missouri.

James Purdy, PhD, "CT-simulation/3D treatment planning process: a physicist's perspective."

Jeffrey Williamson, PhD, "Quality assurance of high dose-rate brachytherapy treatment delivery and planning system."

Xia-Rong Zhu, PhD*; **Eric Klein, MS,** "Dose distribution in buildup regions in high-energy photon beams." *Barnes-Jewish Hospital, St. Louis, Missouri.

POSTER PRESENTATIONS

Eric Klein, MS; Bruce Gerbi, PhD*; Jerome Meli, PhD*; David Marsden, PhD***, "1995 survey of physics teaching efforts in radiation oncology residency programs." *University of Minnesota, Minneapolis. **St. Vincent's Medical Center, Bridgeport, Connecticut. ***St. Luke's Roosevelt Hospital, New York City, New York.

Daniel Low, PhD, "A phantom for the quality assurance of physical beam intensity modulator fabrication."

Daniel Low, PhD; Xia-Rong Zhu, PhD*; **William Harms, BS;** **Eric Klein, MS;** **James Purdy, PhD,** "Replacement of an existing clinical compensating filter system with CNC-milled filters." *Barnes-Jewish Hospital, St. Louis, Missouri.

Xia-Rong Zhu, PhD*; **Eric Klein, MS;** **Daniel Low, PhD,** "Geometric and dosimetric analysis of multileaf collimation conformity." *Barnes-Jewish Hospital, St. Louis, Missouri.

THE AMERICAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

*The 38th Annual Meeting
Los Angeles, California
October 27 - 30, 1996*

PRESIDENT'S CATEGORICAL COURSE ON PROSTATE CANCER

Carlos Perez, MD, moderator, "Session 4: Management II."

REFRESHER COURSES

Bahman Emami, MD, "3-D conformal radiation therapy - Part III: clinical aspects."

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

SCIENTIFIC SESSIONS

Clifford Chao, MD, "Uterosacral space involvement in IIb cervical cancer - dosimetric pitfalls and clinical implication."

Bahman Emami, MD, "The value of regional nodal radiotherapy (Dos/Volume) in the treatment of unresectable non small cell lung cancer: an RTOG analysis."

Eric Klein, MS; Xia-Rong Zhu, PhD*; **Daniel Low, PhD;** **Robert Drzymala, PhD;** **William Harms, BS;** **James Purdy, PhD,** "Clinical implementation of enhanced dynamic wedge." *Barnes-Jewish Hospital, St. Louis, Missouri.

Daniel Low, PhD; Xia-Rong Zhu, PhD*; **William Harms, BS;** **Eric Klein, MS;** **James Purdy, PhD,** "Intensity modulated radiation therapy with fixed portals using physical modulators." *Barnes-Jewish Hospital, St. Louis, Missouri.

Jeff Michalski, MD; **James Purdy, PhD;** **William Harms, BS;** **Walter Bosch, DSc;** James Cox, MD*, "Quality assurance of 3-D conformal radiation therapy for a cooperative group trial - RTOG 3D QA Center initial experience." M.D. Anderson Cancer Center, Houston, Texas.

Xia-Rong Zhu, PhD*; **Daniel Low, PhD;** **James Purdy, PhD,** "Geometric Misalignments in fixed-portal intensity modulated radiation therapy." *Barnes-Jewish Hospital, St. Louis, Missouri.

Alfred Tinger, MD, "A critical evaluation of the planning target volume for 3D conformal radiotherapy of prostate cancer."

POSTER SESSIONS

Clifford Chao, MD, "Extracellular matrix and integrin receptors in predicting invasiveness of cervical cancer."

Marie Taylor, MD; **Carlos Perez, MD;** Karen Halverson, MD*; Delia Garcia, MD*; **Robert Myerson, MD, PhD;** **Barbara Monsees, MD;** **Nancy Kucik, clinical research assistant,** "Mammographic presentation and local failure analysis in patients with stage I and II breast cancer treated with conservation therapy." *St. Luke's Hospital, St. Louis, Missouri. **Missouri Baptist Hospital, St. Louis, Missouri.

CALENDER

LECTURES

*Hyman R. Senturia Lecture
City-Wide Radiology
Conferences*

MIR's Scarpellino Auditorium
St. Louis, Missouri
February 10, 1997

*Daniel R. Biello Lecture
City-Wide Radiology
Conferences*

MIR's Scarpellino Auditorium
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March 10, 1997

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THE EVENS YEARS

FOLLOWING THE WENDELL SCOTT LECTURE, A RECEPTION IN THE ERIC P. NEWMAN CENTER'S GREAT ROOMS PROVIDED A FESTIVE SETTING WHERE COLLEAGUES AND FRIENDS COULD CONGRATULATE DR. RONALD EVENS ON 25 YEARS OF ACHIEVEMENTS.



1 From Mallinckrodt Medical, Inc.: (left to right) Raymond Bentele, Pitty Bentele, Michael Rocca, Ashok Chawla, Bruce Crockett, Mack Nichols, and Robert Miller.

2 The Evens Family — (seated) Dr. Evens' mother and father, Dorothy and Robert Evens; (standing, left to right) son-in-law Christopher Speidel, MD; daughter Christine Speidel; son Ronald Evens, Jr.; wife Hannah Evens; daughter Amanda Yahng; and son-in-law Chuck Yahng.

3 Fred Hodges, MD, (left) and Sumner Holtz, MD.

4 Peter Grassman of Carl Zeiss, a German optical technology company; Ronald Evens, Jr., (center); and Gilbert Jost, MD.

5 The 25th Anniversary Planning Committee: (left to right) Carlos Perez, MD; Gilbert Jost, MD; Virginia Trent; Michael Welch, PhD; and Barry Siegel, MD.

6 Jeffrey Brown, MD, (left) and Adeoye Olukotun, MD, Mallinckrodt Group, Inc.

7 Michael Welch, PhD, (right) and Ray Holman, Mallinckrodt Medical, Inc.

8 (left to right) Michael Miller, PhD; James Blaine, DSc; Scott Nadel, MD; and Jerome Cox, DSc.

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Contributing Writers

Ronald Evens, MD
Kimberly Goulet
Candace O'Connor

Photographers

Tim Parker
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Focal Spot Editor
Mallinckrodt Institute
of Radiology
510 South Kingshighway Blvd.
Campus Box 8131
St. Louis, MO 63110
(314) 362-2866

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