

Winter 2005

Focal Spot, Winter 2004/2005

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WINTER 2004/2005

VOLUME 35, NUMBER 3

FOCAL SPOT

MALLINCKRODT INSTITUTE OF RADIOLOGY



HOBBIT: A SCANNING SENSATION
USING CT TO EXPLORE HUMAN EVOLUTION

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SPOT NEWS



And the Minnie goes to...

In November, AuntMinnie.com announced the results of the 2004 edition of its annual awards (known as The Minnies) to recognize excellence in radiology. The awards were presented during the Radiological Society of North America annual meeting in Chicago. Barry Siegel, MD, professor of radiology and of medicine and chief of Mallinckrodt Institute's Division of Nuclear Medicine, earned the distinction as "most effective radiology educator."

Mitchell Goldburgh (left), general manager of AuntMinnie.com, presents The Minnie to Barry Siegel, MD.

AuntMinnie.com, the leading online resource for radiology professionals, initiated the Minnies five years ago as a way for the radiology community to acknowledge their peers who have made invaluable contributions to medical imaging. The 2004 award honorees were selected after two rounds of voting by AuntMinnie.com's 134,000 members. There were 14 award categories, including Most Influential Radiology Researcher, Best Radiologic Technologist Training Program, and Scientific Paper of the Year.

Siteman earns new NCI designation

Siteman Cancer Center at Washington University Medical Center has earned the National Cancer Institute's (NCI's) designation as a Comprehensive Cancer Center—the only one of its kind within a 240-mile radius of St. Louis. The comprehensive status recognizes Siteman's broad-based research, outreach, and education activities. The NCI distinction not only places Siteman among the nation's highest ranking cancer research and treatment institutions but also provides \$21 million in federal research funding.

Siteman is in the Center for Advanced Medicine at the corner of Forest Park Boulevard and Euclid Avenue. There, integrated multidisciplinary teams, including surgeons, radiation oncologists, medical oncologists, and specialized nurses, evaluate and treat outpatients. Although the 12 care centers at Siteman each provide a unique approach to particular cancers such as breast, lung, lymphoma, and leukemia, all centers are dedicated to providing the highest level of care for patients through early detection, diagnosis, and treatment.

Journal recognizes reviewers

The Editorial Board of *Radiology*, a leading scientific journal, annually honors certain reviewers for the high quality of their prompt, detailed, and scholarly work. The following MIR faculty were among the recipients of the 2004 Editor's Recognition Awards, which were announced in the journal's January 2005 issue.

With Special Distinction

- Louis Gilula, MD, professor of radiology, of orthopaedic surgery, and of plastic and reconstructive surgery

With Distinction

- Michael Darcy, MD, professor of radiology and of surgery and chief of interventional radiology
- David Rubin, MD, associate professor of radiology and chief of musculoskeletal radiology.

RDRC celebrates 25 years

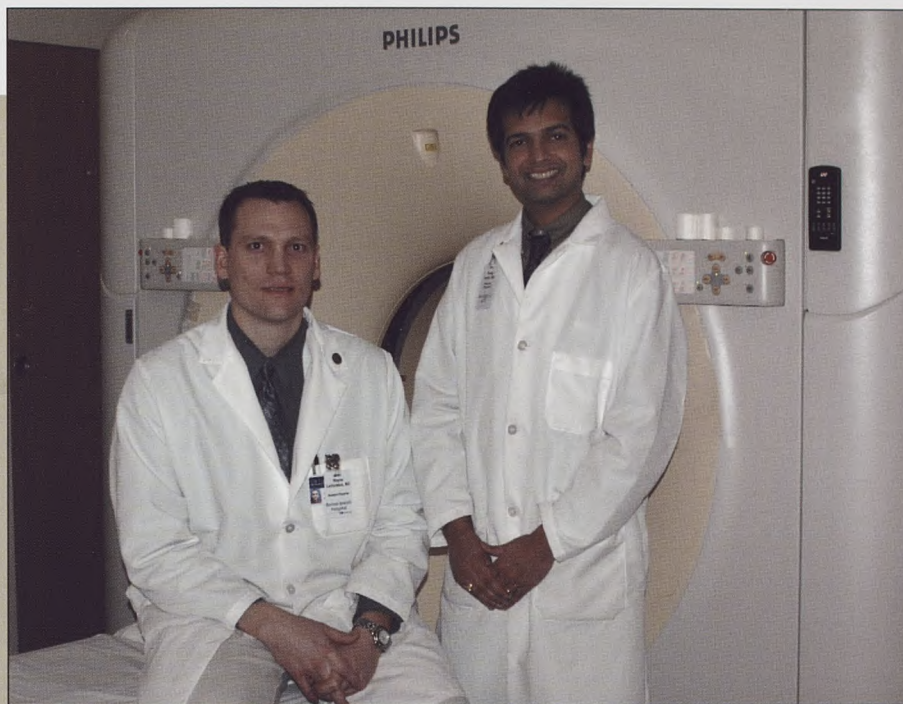
The Washington University in St. Louis School of Medicine Radioactive Drug Research Committee (RDRC) was chartered in December 1979 to ensure that the School of Medicine complied with the Food and Drug Administration's regulations for the use of radioactive drugs used in clinical research. The committee's first meeting was held in February 1980.

Now in its 25th year, the RDRC continues to review, approve, and monitor all research investigations involving the administration of radioactive drugs to research subjects. The committee also ensures that these studies comply with the applicable regulations of the United States Nuclear Regulatory Commission and the Missouri Department of Health and Senior Services.

As specified in the RDRC's charter, the committee's membership must be diverse enough to provide expert review of the technical and scientific aspects of submitted study proposals. The committee also must have at least five members, including a nuclear medicine physician, a researcher qualified to formulate radioactive drugs, and someone with special competence in radiation safety and radia-

tion dosimetry. The 2005 RDRC members are as follows:

- Barry Siegel, MD, chairman (charter member)
- Marcus Raichle, MD, vice chairman (charter member)
- Sally Schwarz, RPh, MS, executive secretary
- Keith Fischer, MD (charter member)
- Edward Geltman, MD (charter member)
- James Littlefield, MD
- Karen McElvany, PhD
- Yuan-chaun Tai, PhD
- Michael Welch, PhD (charter member)
- Susan Langhorst, PhD, ex officio member



Wayne Lamoreaux, MD, 2005 radiation oncology chief resident, and Parag Parikh, MD (standing), 2005 radiation oncology assistant chief resident, are shown with a new 16-slice computed tomography scanner. The Department of Radiation Oncology is one of three radiation oncology centers in the United States to have this CT scanner, which is used to simulate treatment planning and for organ motion research.

RSNA top-funded programs

Twenty years ago, the Radiological Society of North America (RSNA) designated \$1 million for a special fund to support research and education in radiology. To date, the Research and Education Foundation, as that special fund is now called, has awarded in excess of \$20 million in support of approximately 500 projects.

RSNA recently announced the Research and Education Foundation's 10 top-funded programs over the last seven years (1998 to 2004). Washington University in St. Louis led the list with grants totaling more than \$1 million. Other recipients, in order of funding received, are shown below.

- University of Texas M. D. Anderson Cancer Center
- Columbia University
- Thomas Jefferson University
- University of Pennsylvania
- University of Michigan
- Massachusetts General Hospital
- Stanford University
- University of California, San Francisco
- University of Virginia.



The Center for CLINICAL IMAGING Research

A recent visitor to the Washington University Medical Center remarked that the seemingly never-ending "construction was good because it was a sign of progress, and progress at a healthcare center is what we want." The now vacant area on 10 West Pavilion soon will become the scene of more "wanted progress."

In the past, the 9,000 square-foot area has housed a number of clinical areas, including breast imaging. As the site of the Center for Clinical Imaging Research (CCIR), the renovated space will provide advanced imaging resources and support for a large number of clinical investigators from several departments at the Medical School and the University's Hilltop campus. The CCIR will be designed to emphasize clinical translational research projects. To take advantage of exciting developments such as new compounds for molecular imaging, technologies for functional imaging and dramatic improvements in the speed and resolution of anatomic imaging necessitates the availability of a centralized, hospital-based facility in which researchers can pursue a broad research spectrum across diverse patient groups. The CCIR will facilitate improved biomedical research that ultimately leads to better diagnosis and management of disease and improved treatment for patients.

Researchers will have access to advanced imaging equipment in a single location: 64-slice computed tomography (CT), three-dimensional ultrasound, high-resolution positron emission tomography (PET), PET/CT, and 3.0 and 1.5 Tesla magnetic resonance imaging (MRI). CCIR staff also will provide on-site imaging-related services, including storage, transfer, and archiving of image data; protocol design and regulatory approval consultation; and structural, functional, and biological interpretation. And there will be mentoring opportunities in areas such as imaging research design, image analysis and methodology, and research imaging applications.

Mark Mintun, MD, professor of radiology in Mallinckrodt Institute's Division of Nuclear Medicine, has been appointed as director of the CCIR.



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SCHOOL OF MEDICINE
RADIOLOGY

The CCIR will include areas for labs, patient consultation, offices, patient registration, equipment and control rooms, technologists' and nurses' work space, conference rooms, and storage.

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【 The Chairman of the Board 】

MIR's director heads prominent radiology organization



Gilbert Jost, MD

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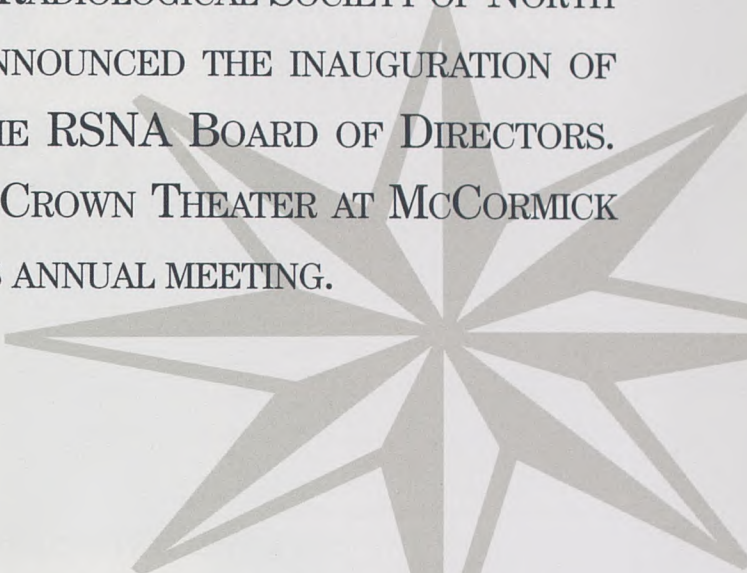
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THE DECEMBER 2, 2004, EDITION OF THE RADIOLOGICAL SOCIETY OF NORTH AMERICA'S [RSNA'S] DAILY BULLETIN ANNOUNCED THE INAUGURATION OF GILBERT JOST, MD, AS CHAIRMAN OF THE RSNA BOARD OF DIRECTORS. THE INAUGURATION TOOK PLACE IN ARIE CROWN THEATER AT MCCORMICK PLACE IN CHICAGO, DURING THE SOCIETY'S ANNUAL MEETING.



More than 37,000 radiologists, radiation oncologists, and related scientists in 115 countries are members of RSNA. The organization is committed to promoting excellence in radiology through education and by fostering research, with the ultimate goal of improving patient care.

Jost, the Elizabeth Mallinckrodt professor of radiology, is chairman of the Washington University School of Medicine (WUSM) Department of Radiology and director of Mallinckrodt Institute of Radiology (MIR). He has served on numerous RSNA committees and was elected to the Board of Directors in 1999 as the liaison-designate for communications and corporate relations. He will serve as RSNA chairman for one-year, followed by one-year terms as president-elect and then president. Jost will be the first MIR faculty member to serve in these RSNA top positions.

He came to MIR as a resident in 1972 (chief resident, 1974) and

joined the faculty in 1975 as an instructor in radiology. In 1985, Jost was named professor of radiology and affiliate professor of computer science and was appointed chief of MIR's Division of Diagnostic Radiology. In 2001, he became department chairman and MIR director after serving in interim positions for two years.

Jost's medical degree, engineering background, and strong computer knowledge have earned him an international reputation for his efforts to expand and improve the use of information technology in diagnostic radiology clinical and research areas. In the early '70s, MIR was a paper-driven department with no computers in place. Jost and colleague Rex Hill, a self-taught computer expert with an electrical engineering degree, initiated the purchase of MIR's first computer equipment—the beginning of a serpentine network that eventually supported administrative, clinical, and research efforts and was hailed

as one of the medical imaging world's best systems.

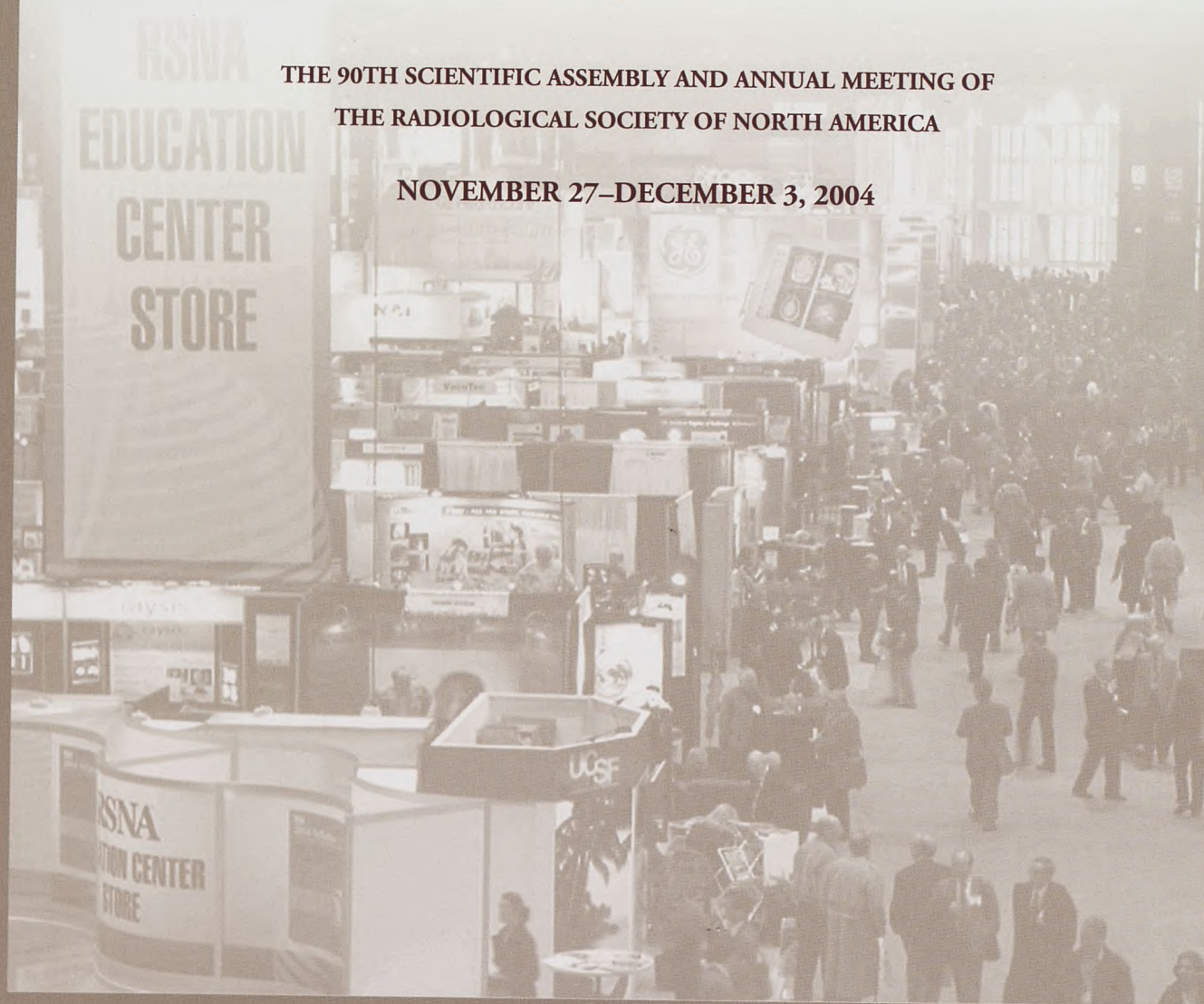
Jost also held a leadership position in a joint initiative between WUSM and BJC Health-CareSM to electronically transfer medical information such as diagnostic images, medical records, and video consultations among physicians and hospitals within the BJC network. The Clinical Desktop Project was among the first of its kind to link an academic medical center with community healthcare facilities.

He earned an undergraduate degree (*magna cum laude*) from Harvard University and a medical degree from Yale University, completed an internship in internal medicine at Cleveland Metropolitan General Hospital, and was a research associate at the National Institutes of Health. Jost is a fellow of the American College of Radiology and an inaugural fellow of the Society for Computer Applications in Radiology.



THE 90TH SCIENTIFIC ASSEMBLY AND ANNUAL MEETING OF
THE RADIOLOGICAL SOCIETY OF NORTH AMERICA

NOVEMBER 27–DECEMBER 3, 2004



CASES OF THE DAY

Sanjeev Bhalla, MD; Chest; Gastrointestinal.

PLENARY SESSION

Pamela Woodard, MD, moderator: Results of the NIH/NHLBI PLOPED II study: Is spiral CT the best and only test for suspected pulmonary embolism?

REFRESHER COURSES

Dennis Balfe, MD; Vamsidhar Narra, MD, instructors: Biliary tract imaging 2004 (An interactive session).

Jeffrey Bradley, MD, instructor: Oncologic PET—role of PET in radiation oncology.

Michael Darcy, MD, instructor: Case-based review of interventional radiology—Vascular interventions II.

Farrokh Dehdashti, MD, instructor: PET in clinical practice minicourse: oncologic PET I—Oncologic PET: tumor diagnosis and staging.

Perry Grigsby, MD, instructor: Molecular and advanced imaging in oncology minicourse: PET and SPECT imaging for radiation treatment—PET imaging in radiation treatment: cervix II—clinical.

Robert Gropler, MD, instructor: PET in clinical practice minicourse: neurologic and cardiologic applications—Cardiac PET; instructor: Imaging myocardial infarcts with MR, SPECT, and PET.

David Hovsepian, MD, instructor: Hysterosalpingography and selective salpingography (How-to workshop).

Mark Mintun, MD, instructor: PET in clinical practice minicourse: neurologic and cardiologic applications—Brain PET: approach to the image and use in dementia.

Barbara Monsees, MD, instructor: Problem-solving breast imaging: supplementary mammographic views, US, and MR.

Vamsidhar Narra, MD, instructor: Prostate cancer—imaging.

Fred Prior, PhD, instructor: Update on PACS technology and infrastructure.



Barry Siegel, MD, director; **Farrokh Dedashti, MD**, moderator: PET in clinical practice minicourse: oncologic PET I.

Barry Siegel, MD, director and moderator: PET in clinical practice minicourse: oncologic PET II; director: PET in clinical practice minicourse: neurologic and cardiologic applications; instructor: Oncologic PET: monitoring and predicting response to treatment; director: PET in clinical practice minicourse: basic principles.

Marilyn Siegel, MD, instructor: Risk factors and incidence: chest posttransplantation lymphoproliferative disorders; director: Multidetector CT in pediatrics—principles and image optimization of pediatric multislice CT.

Pamela Woodard, MD, instructor: Cardiac MR/CT: read cases with the experts (An interactive session).

MIR EXHIBIT AWARD WINNERS

MAGNA CUM LAUDE

Srinivasa Prasad, MD; Vamsidhar Narra, MD, "Common and uncommon histologic subtypes of renal cell carcinoma: imaging spectrum with pathologic correlation."

CUM LAUDE

Gregory Sanders, MD; Sanjeev Bhalla, MD; Fernando Gutierrez, MD; Vamsidhar Narra, MD; Trongtum Tongdee, MD, "Imaging the repaired heart: don't get baffled."

EXCELLENCE IN DESIGN

Jin Mo Goo, MD; Feiyu Xue, MD; Richard Laforest, PhD; Mark Mintun, MD; Barry Siegel, MD; Ty Bae, MD, PhD, "PET/CT imaging: potential pitfalls and artifacts."

Erica Oliveira, MD; Safiye Gurel, MD; Ranista Tongdee, MD; David Hovsepian, MD; Vamsidhar Narra, MD; Jeffrey Brown, MD, "MRI findings of failed uterine fibroid embolization."

CERTIFICATE OF MERIT

Cylen Javidan, MD; Sanjeev Bhalla, MD; Fernando Gutierrez, MD, "A step-by-step approach to multidetector computed tomography of adults with previous surgery for complex congenital heart disease: overcoming the fear."

Safiye Gurel, MD; Vamsidhar Narra, MD; Khaled Elsayes, MD; Madelyn Stazzone, MD; Sanjeev Bhalla, MD; Pamela Woodard, MD; Ty Bae, MD, PhD, "True-FISP technique for body MR imaging: basic principles, applications, limitations."

Trongtum Tongdee, MD; Vamsidhar Narra, MD; Ranista Tongdee, MD; Jeffrey Brown, MD, "RadXtreme: a complete software solution for authoring MIRC documents."

IC EXHIBITS

PhD; Jin Mo Goo, MD; Richard D; Mark Mintun, MD; Barry Siegel, basic principles."

lla, MD; Humberto Rosas, MD; zzone, MD; Marilyn Siegel, MD; utierrez, MD, "Upside down and back- and MR of transposition of the great arteries."

res, MD; Vamsidhar Narra, MD; a, MD; Fadi El-Merhi, MD; Jeffrey "MR imaging of gall bladder: spectrum of

res, MD; Vamsidhar Narra, MD; hen, MD; Markus Laemmle, MD; dee, MD; Jay Heiken, MD, "Pancre- gnostic patterns by 3D gradient echo post ing with pathologic correlation."

MD; Feiyu Xue, MD; Richard Lafor- k Mintun, MD; Barry Siegel, MD; PhD, "PET/CT imaging: potential pitfalls

MD; Vamsidhar Narra, MD; ee, MD; Prensri Barton, MD; sees, MD; Ty Bae, MD, PhD, "3D MR images for the evaluation of breast

MD; Vamsidhar Narra, MD; es, MD; Madelyn Stazzone, MD; a, MD; Pamela Woodard, MD; PhD, "TrueFISP technique for body MR principles, applications, limitations."



MD, (left), and Mark Mintun, MD

RSNA 2004 FACTS AND FIGURES

- Approximately 60,000 people attended—making RSNA one of the world's largest annual medical meetings.
- 285-plus refresher courses were offered.
- A record 6,200 scientific abstracts were submitted for presentation.
- More than 1,000 education exhibits were on display.
- infoRAD featured more than 160 education and commercial exhibits.
- 134 first-time technical exhibitors participated.
- Technical exhibition covered 455,050 square feet—a record for RSNA technical exhibit space.
- 690 leading manufacturers, suppliers, and developers of medical technology exhibited.

Cylen Javidan, MD; Sanjeev Bhalla, MD; Fernando Gutierrez, MD, "A step-by-step approach to multidetector computed tomography of adults with previous surgery for complex congenital heart disease: overcoming the fear."

Cylen Javidan, MD; Shawyon Shadman, MD; Sanjeev Bhalla, MD; William Middleton, MD; Farrokh Dehdashti, MD, "Practical guide to mediasti- nal lymph node sampling: How do I get that node?"



Jeffrey Bradley, MD

Anil Khosla, MD; Khaled Elsayes, MD; Zong-Ming Chen, MD, "Tumors and tumor-like lesions of lacrimal glands."

Jin Seung Kim, MS; Jin-Hwan Kim, MD, PhD; Ty Bae, MD, PhD, "Quantitative computer-aided diagnosis system for ground-glass opacity from MDCT images."

Markus Laemmle, MD; Jie Zheng, PhD; Andrew Bierhals, MD; Tammie Benzinger, MD, PhD; Khaled Elsayes, MD, "Virtual cystoscopy using source data from MR imaging."

Christine Menias, MD; Cynthia Santillan, MD; Srinivasa Prasad, MD; Sanjeev Bhalla, MD; Cary Siegel, MD, "The CT nephrogram."

Erica Oliveira, MD; Safiye Gurel, MD; Ranista Tongdee, MD; David Hovsepian, MD; Vamsidhar Narra, MD; Jeffrey Brown, MD, "MRI findings of failed uterine fibroid embolization."

Erica Oliveira, MD; Ranista Tongdee, MD; Safiye Gurel, MD; Khaled Elsayes, MD; Vamsidhar Narra, MD; Ty Bae, MD, PhD, "Primary sclerosing cholangitis: MRI and MRCP findings."

Christine Peterson, MD; Christine Menias, MD; Sanjeev Bhalla, MD; Vamsidhar Narra, MD, "The central scar."

Srinivasa Prasad, MD; Vamsidhar Narra, MD, "Common and uncommon histologic subtypes of renal cell carcinoma: imaging spectrum with pathologic correlation."

Srinivasa Prasad, MD; Vamsidhar Narra, MD, "Segmental disorders of the nephron: histopathological and imaging perspective."

Gregory Sanders, MD; Sanjeev Bhalla, MD; Fernando Gutierrez, MD; Vamsidhar Narra, MD; Trongtum Tongdee, MD, "Imaging the repaired heart: don't get baffled."

Jason Wagner, MD; William Middleton, MD; Sharlene Teefey, MD; Cary Siegel, MD, "The to-and-fro arterial waveform: its characteristics, causes, and potential mimics."



Robert McKinstry, MD, PhD



Barbara Monsees, MD

SCIENTIFIC SESSIONS

Ty Bae, MD, PhD, presiding officer: Gastrointestinal (abdominal CT: contrast enhancement and scan timing).

Dennis Balfe, MD; Jeffrey Brown, MD, presiding officers: Gastrointestinal (bile ducts: MR and CT cholangiography).

Daniel Brown, MD, presiding officer: Gastrointestinal (liver lesion ablation and chemoembolization).

Colin Derdeyn, MD, presiding officer: Neuroradiology/head and neck (intracranial aneurysms—diagnosis and endovascular treatment).

Louis Gilula, MD, presiding officer: Musculoskeletal (interventional: nonvascular).

Jay Heiken, MD, presiding officer: Gastrointestinal (CT colonography interpretation).

Robert McKinstry, MD, PhD, presiding officer: Neuroradiology/head and neck (stroke treatment).

Christine Menias, MD, presiding officer: Gastrointestinal (emergency radiology: acute appendicitis, abdominal trauma).

Barbara Monsees, MD, presiding officer: Breast (multiple modalities).

Vamsidhar Narra, MD, presiding officer: Gastrointestinal (abdominal MR: general liver).

Alan Williams, MD, presiding officer: Neuroradiology/head and neck (back pain, disk disease, and radiculopathy).

Fang Zhu, MD, PhD; Jeffrey Johnson, MD; Ty Bae, MD, PhD, "MR imaging of plantar fasciitis after extracorporeal shock-wave therapy: one-year follow-up observation."

Ty Bae, MD, PhD; Fang Zhu, MD, PhD, "MR imaging to assess the progression of polycystic kidney disease: two-year follow-up study."

Ty Bae, MD, PhD; Victoria Chen; Pornpim Fuangthamtip, MD; Jie Zheng, PhD; Charles Hildebolt, DDS, PhD; Prem Sri Barton, MD, "Dynamic breast MRI: effect of contrast injection rate on delayed phase of enhancement in breast cancer."

Jin Mo Goo, MD; Ty Bae, MD, PhD; Trongtum Tongdee, MD; Ranista Tongdee, MD; Kwangjae Yeo, MS, "Volumetric measurement of lung nodules with multi-detector row CT: impact of various image reconstruction parameters and segmentation thresholds on measurement accuracy."

Kwang Gi Kim, MS; Ranista Tongdee, MD; Trongtum Tongdee, MD; Jin Mo Goo, MD; Ty Bae, MD, PhD, "Automated segmentation of the liver from chemical-shift MR images."

Markus Laemmle, MD; Cary Siegel, MD; Vamsidhar Narra, MD; Jeffrey Brown, MD; Jie Zheng, PhD, "The value of MR imaging in preoperative staging of cancer of the urinary bladder."

Marilyn Siegel, MD; Jeffrey Bradley, MD, "Radiation dose and image quality in pediatric contrast-enhanced 16-slice CT."

Anand Singh, MD; Louis Gilula, MD, "Comparison of treatment outcomes in single level versus multiple level percutaneous vertebroplasty for osteoporotic vertebral fractures."

Trongtum Tongdee, MD; Vamsidhar Narra, MD; Ranista Tongdee, MD; Jeffrey Brown, MD, "RadXtreme: a complete software solution for authoring MIRC documents."

Ranista Tongdee, MD; Ty Bae, MD, PhD; Trongtum Tongdee, MD; Vamsidhar Narra, MD, "MR assessment of renal cysts: Are signal intensities artifactually increased on contrast-enhanced imaging?"

Ranista Tongdee, MD; Trongtum Tongdee, MD; Jin Mo Goo, MD; Ty Bae, MD, PhD, "Comparison of CT histogram analysis and mean attenuation methods in characterization of adrenal mass: phantom study."

William Totty, MD; Gulshan Sharma; Kirk Smith, "New roles for radiologic imaging in art: application to Egyptian mummy mask."

Matthew Wiggins, MD; Mehrdad Sehzadeh, MD; Louis Gilula, MD; Thomas Pilgram, PhD, "The importance of intravertebral fracture clefts in vertebroplasty outcome."

Fang Zhu, MD, PhD; Ty Bae, MD, PhD, "Hepatic cyst volume measurement in PKD using MRI in CRISP cohort: one-year follow-up study."



(Left to right) Trongtum Tongdee, MD; Ranista Tongdee, MD; and Fang Zhu, MD, PhD



Sasa Mutic, MS

DR. AND MRS. R. GILBERT JOST, ON BEHALF OF
THE EDWARD MALLINCKRODT INSTITUTE OF RADIOLOGY,
CORDIALLY INVITE YOU TO ATTEND

The Annual
RSNA
Reception

MONDAY, THE TWENTY-NINTH OF NOVEMBER



(Left to right) Gilbert Jost, MD, MIR director; Louis Gilula, MD, professor of radiology; Deborah Gilula; and MIR Alumnus Joseph Lee, MD



Above: Laura Friedman; Daniel Picus, MD, chief, Division of Diagnostic Radiology; Klaus Klingenberg, Siemens Medical Solutions.

Right: Scott Mirowitz, MD, MIR alumnus, and (right) Gary Brink, director of radiology, Barnes-Jewish Hospital



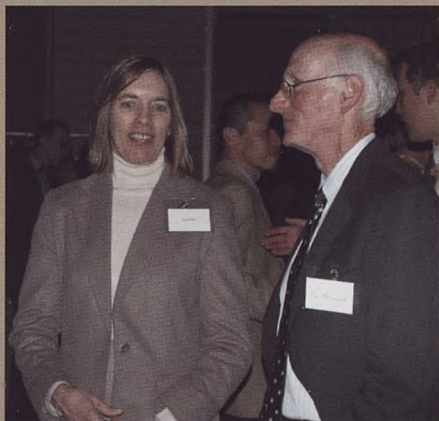
Above: (left to right) Shawyon Shadman, MD, second-year radiology resident; Kristin Shadman; Joseph Erinjeri, MD, second-year radiology resident; Stanley Chan, MD, first-year radiology resident; Tara Anthes, MD, first-year radiology resident



Above: Alumni Scott Beasley, MD; Mary Alderman, MD; and (right) Steven Winn, MD



Above: (left to right) Professor Vsevlod Sedov of Moscow, Russia; Alumnus Eduard Kotlyarov, MD, PhD; and Professor Anatoly Shehter of Moscow, Russia



Left: Peggy Jost and Tom McCausland, Siemens Medical Solutions

HOBBIT: A SCANNING SENSATION



Researchers use new CT technology to understand the mysteries of human evolution

LIKE CHARACTERS IN A MYSTERY STORY, a dozen small skulls of slightly differing shapes—among them a pygmy, a chimpanzee, a contemporary human and a micrencephalic (abnormal smallness of the brain) human—are lined up on a table inside Mallinckrodt Institute's East Building. Not far away is the heroine of this tale: the model of an ancient hominin* skull recently discovered in the Liang Bua cave on the Indonesian island of Flores and known officially as "LB1," or informally as "Hobbit." The question at hand is deceptively simple—which of these skulls, along with the related rubber models or "endocasts" of the brains that once inhabited them, most closely resembles Hobbit? Whatever the answer, it is sure to be fraught with controversy and may even change our understanding of human evolution.

BY CANDACE O'CONNOR

*The term "hominin" is used in this article to refer to all human species that evolved, including extinct tribes but excluding chimps and gorillas.

Mallinckrodt Institute of Radiology (MIR) has helped to solve other such puzzles in the past and is playing an important role in this landmark work through staff scientist Charles Hildebolt and his longtime collaborator Dean Falk, the Hale G. Smith professor and chair of anthropology at Florida State University. Working much like detectives, they are using computed tomography (CT) images taken on a new, state-of-the-art scanner, the Siemens SOMATOM Sensation 64, to test these models, comparing and contrasting them with Hobbit. They hope to publish their findings later this year and also will comment on the project in a documentary film being produced by the National Geographic Society, which has sponsored their work.

For now, Falk and Hildebolt can say little about their conclusions except that they are excited to be a part of this important project, which has attracted worldwide attention and has produced startled reaction within the archeological community. The nearly complete Hobbit skeleton (a female, as identified by the distinctive features of her pelvic bones) was discovered during excavation work in September 2003 by a team of Indonesian archaeologists working with colleagues from Australia, and appears to be that of a new humanlike species—classified as *Homo floresiensis*, only one meter (about three feet) tall with a brain one third the size of humans today.

THE NEARLY COMPLETE SKELETON, appears to be that of a new humanlike species, classified as *Homo floresiensis*, only one meter (about three feet) tall with a brain one third the size of humans today.



"This is the most important discovery since the Taung Baby," says Falk (an expert on brain evolution), referring to scientist Raymond Dart's celebrated 1924 discovery of a child's skull, classified as *Australopithecus africanus*, which now is believed to occupy an intermediate rung on the evolutionary ladder between apes and man. "Nothing like this specimen [Hobbit/LB1] has ever been seen in the fossil record, and it brings new data to the discussion about who is related to whom," Falk adds.

Researchers Dean Falk, Charles Hildebolt, and Kirk Smith used equipment in the Institute's Electronic Radiology Laboratory to record Hobbit data.



HOBBIT: A SCANNING SENSATION

Further, radiocarbon testing has shown that this dwarflike creature lived around 18,000 years ago, alongside Komodo dragons and pygmy elephants (or stegodons), whose skeletons have been discovered in the same cave where LB1 was found. Hobbit's ancestors may date back considerably before that, probably 38,000 years ago, and descendants lived as recently as 12,000 years ago.

"Eighteen-thousand years is like this, from the standpoint of evolution," says Hildebolt, associate professor of radiology and adjunct associate professor of

anthropology, snapping his fingers to illustrate. "To think that LB1 was running around at the same time as Neanderthals, *Homo erectus*, and *Homo sapiens*, is incredible, particularly since LB1 is so much different."

Two articles on the discovery, published in the journal *Nature*, appeared in October 2004 and sparked widespread comment in the archaeological community, where there is considerable dispute over what Hobbit is and what it represents. Some skeptics claimed that this must be a micrencephalic modern human—a position under-

mined by the discovery at the same site of partial skeletons of other individuals from this same species. Others, including the archaeologists who unearthed it, believe LB1 to be the heretofore-unknown descendant of a *Homo erectus* population that somehow traveled to this island and, with long-term isolation, adapted to its harsh new life by becoming smaller and more dwarflike.

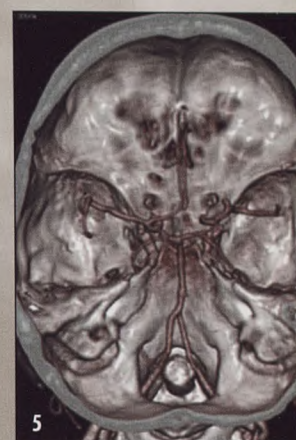
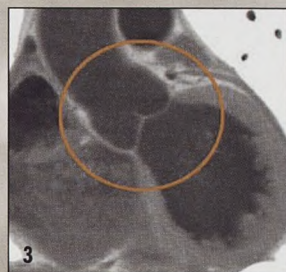
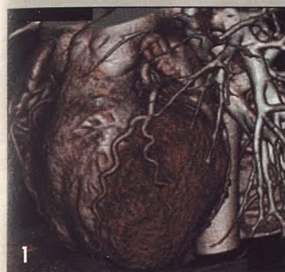
The implications of this find could be exciting. If this is a new branch of humankind, are other such branches still awaiting discovery? Since island lore has long contained references to little people, what could this data mean for legends of leprechauns in Ireland, yowies in Australia, and yeti in the Himalayas?

"NOTHING LIKE THIS SPECIMEN [Hobbit/LB1]

has ever been seen in the fossil record, and it brings new data to the discussion about who is related to whom."

— DEAN FALK





Images from the SOMATOM Sensation 64 CT: 1. heart, showing left main, left anterior descending, and left circumflex arteries. 2. heart vessels. 3. normal (healthy) aortic valve. 4. carotid arteries. 5. cranial arteries.

Hildebolt, because of his own background, is in a good position to study the bone record that lies behind these issues. Trained as a dentist who practiced until 1983, Hildebolt gave up his clinical practice and became a graduate student at Washington University, studying physical anthropology, and received a PhD in 1987. Afterward, he joined the faculty of MIR's Electronic Radiology Laboratory and now works with the lab's codirector Fred Prior, who also has a master's degree in anthropology. Hildebolt has since specialized in such problems as the effects of periodontal disease and osteoporosis on oral bone and also participated in the 2003 study, led by Professor Eric Trinkhaus of Washington University's Department of Anthropology, of the 35,000-year-old human bones discovered in a Romanian cave and brought to MIR for scanning.

MIR has joined in other important efforts that have advanced anthropological research. Radiologist Michael Vannier, now at the University of Iowa, collaborated with Washington University anthropologist Glenn Conroy in 1988 to discover through CT scanning what place the Taung child occupies on the evolutionary spectrum. In 1993, William Murphy, a prominent forensic radiologist who is now at M. D. Anderson Cancer Center, also used CT scan data from the so-called Iceman, the well-preserved corpse of a Stone Age man discovered in the Tyrolean Alps, to study the specimen's tissue morphology. Then in 1999, an MIR team collaborated with the Saint Louis Art Museum to study an ancient Egyptian mummy mask and to provide data for its reconstruction.

Interestingly, the Institute also played a key role in the medical adaptation of CT, which was developed in 1968 as a new imaging method for taking cross-sectional images of the body. CT is especially sensitive to reconstructions of dense tissues, including bone. In 1971, Sir Godfrey Hounsfield, CT's inventor, provided the Institute with a prototype CT head scanner; then three years later, MIR received its first whole-body CT unit. MIR also was the first medical facility to install CT scanners used for diagnosing brain abnormalities.

The latest step forward in MIR's amazing history of leading-edge research and technology was the arrival in November 2004 of the new SOMATOM Sensation 64 CT scanner, one of only 20 in the United States. Although it is useful for research applications, the Sensation 64 primarily is a clinical unit. Three weeks after its installation, 370 patients had already undergone

Left: Falk and Hildebolt with some of the fossils they used when analyzing the endocast of Hobbit's skull.



HOBBIT: A SCANNING SENSATION

scans of the chest, abdomen and cochlear areas. The scanner's fine resolution and sharp images make it popular among the technologists and radiologists, and its speed is a plus for the patients, who are surprised at how quickly their examinations are completed.

"Most patients are in and out of the room in about five minutes," says Todd Gebke, a radiology technologist and CT coordinator for Barnes-Jewish Hospital. "They are amazed when we say 'OK, you're done' in just a few minutes after we've begun the scanning. Most patients ask 'What do you mean? That's it?'"

Radiology Technologist Todd Gebke (left) prepares to scan the endocast of Hobbit's skull during the filming of the National Geographic documentary.

"THIS IS EXCITING WORK," says Hildebolt. Small though it is, adds Falk, Hobbit really is quite "a stunner."

Eventually, the new scanner, which is still awaiting the addition of a cardiac software package, will be particularly useful in two procedures: CT angiography and perfusion studies that measure the blood flow in the brain. These tests will benefit patients with carotid stenosis (a narrowing of the carotid arteries that may lead to a stroke) as well as those patients with sub-arachnoid bleeding, possibly from an aneurysm, says neuroradiologist Joshua Shimony.

"The Sensation sixty-four probably is four times faster than previous units, so it is better suited for patients who have disabilities that make it difficult for them to lie

still for very long or to hold their breath for a sustained period," adds Shimony, assistant professor of radiology. "A head scan takes ten to fifteen seconds with this equipment, much less time than on an older scanner."

What brought Dean Falk to St. Louis in December 2004, however, was a research application for the unit. She had been contacted by National Geographic producers, who were planning their documentary film on Hobbit's discovery and asked whether Falk would create and analyze an endocast of its skull. She asked them whether she could shift part of this project to Mallinckrodt Institute, the research home of her collaborator Charles Hildebolt and the site of scanning facilities that are "among the best in the world."

Meanwhile, Hildebolt had read the articles in *Nature* and was excited by the Indonesian discovery—and thrilled to be part of this project. While the actual Hobbit skull is locked in the safe of an Indonesian archaeologist, National Geographic managed to obtain CT scans from Michael Morwood, one of the Australian archaeologists involved in the Flores dig, and provided them to Falk and Hildebolt for their work.



When Indonesian members of the discovery team uncovered the skeleton, they had a difficult time retrieving it, since the bones were not fossilized but had the consistency of "wet cardboard," according to Hildebolt. In the process of unearthing LB1, they damaged the right zygomatic arch (the bony arch on the lateral part of the cheek). The discovery team had to reconstruct the skull, using a primary view to make the exterior appear acceptable. When Falk and Hildebolt studied the CT scans, they had another interest: making the endocast as accurate as possible so they could compare it to other fossil hominin brains.

"It appears on our CT reconstruction that there are some problems with the existing endocast," says Hildebolt. "We are trying to identify each piece of the skull and then manipulate them together to get a better model than what we have now. We don't believe this will result in major changes in our assessment, but it may change the cranial volume a bit and could influence some of our findings."

With the state-of-the-art imaging technology available at MIR, Hildebolt says that three-dimensional images of various fossil endocasts, including Hobbit's, can be made and placed on the CT computer screen side-by-side for comparison. The research team also can scale these images so they are the same size, making possible an easier comparison.

"So, we can collect large data sets that are at least as high or even higher than what we have been able to work with in the past—and do it quickly," he says. With this information the team also asked two St. Charles-based companies (Realadi and QTE) to help make stereolithographic models for comparison purposes; first, a virtual model of the Hobbit endocast was sent to Realadi for preparation, then on to QTE for production.

While Falk and Hildebolt cannot disclose their findings for now, they will say that Hobbit appears to be unique. "It was completely obvious that LB1 was not like some of the other skulls, but it was remarkably similar to others. LB1 also had distinctive features of its own," says Hildebolt.

In the future, with additional funding, Falk and Hildebolt hope to continue their comparison research, extending their inquiry to more fossil finds, particularly from the former Soviet state of Georgia. "This is exciting work," says Hildebolt. Small though it is, adds Falk, Hobbit really is quite "a stunner."

*Editor's Note: Explorer on the National Geographic Channel will dedicate an entire hour to the discovery of Hobbit, including the research on the Hobbit brain, on Sunday, March 13, at 8:00 p.m. (ET/PT). Check your local listings. **MIR***

HOBBIT RESEARCH TEAM

- DEAN FALK, PHD
- TODD GEBKE, RT(R)
- CHARLES HILDEBOLT, DDS, PHD
- FRED PRIOR, PHD
- KIRK SMITH



THE PURDY SYMPOSIUM



James Purdy, PhD, and Marilyn Purdy

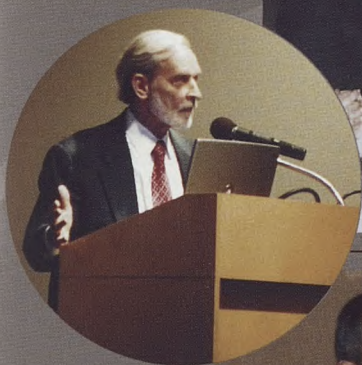
On November 5, 2004, the Department of Radiation Oncology sponsored "Radiation Oncology: Future Visions," a symposium in honor of James Purdy, PhD, professor of radiation oncology, for his invaluable clinical, academic, and research contributions to the field of radiation oncology and medical physics. The symposium, held in the Eric P. Newman Education Center on the Washington University Medical Center campus, featured talks by national cancer experts.

- ~ James Cox, MD, The University of Texas, M.D. Anderson Cancer Center, Houston, Texas
- ~ Joseph Deasy, PhD, Washington University in St. Louis, Missouri
- ~ Walter Grant, PhD, Baylor College of Medicine, Houston, Texas
- ~ Eric Klein, MS, Washington University in St. Louis, Missouri
- ~ Clifton Ling, PhD, Memorial Sloan-Kettering Cancer Center, New York City, New York
- ~ Bhudatt Paliwal, PhD, University of Wisconsin, Madison
- ~ Carlos Perez, MD, Washington University in St. Louis, Missouri
- ~ Srinivasan Vijayakumar, MD, University of California Cancer Center, Davis
- ~ Jeffrey Williamson, PhD, Virginia Commonwealth University, Richmond
- ~ John Wong, PhD, Johns Hopkins University, Baltimore, Maryland

THE PURDY SYMPOSIUM

Right: A dinner was held at The Westin St. Louis the night preceding the symposium.

Below: James Cox, MD, presented "Advanced radiation oncology: opening the therapeutic window."



Right: At the symposium, John Wong, PhD, spoke on "Image guided small animal radiation research: the convergence of biology and physics."

Left: Clifton Ling, PhD, discussed radiation treatment devices in his talk "From Clinac 35 to D3, now what?"

Below: During a break at the symposium, Purdy visited with (left) Bhudatt Paliwal, PhD, symposium invited speaker, and Ted Thorson, PhD, from Elekta Oncology Systems, Inc.



Above: Jeffrey Williamson, PhD, shared his views on "Opportunities for integrated IMRT-brachytherapy."



An alternate route

MEDICAL CENTER STREET CLOSING

Many patients use Parkview Place to reach the Center for Advanced Medicine and the North Parking Garage. In January of this year, a section of Parkview Place between Barnes-Jewish Hospital north campus and St. Louis Children's Hospital (SLCH) was closed to through traffic. Access to Parkview Place will be closed from Kingshighway Boulevard to the Center for Advanced Medicine for approximately one year while Children's Hospital undergoes facility improvements and expansion.

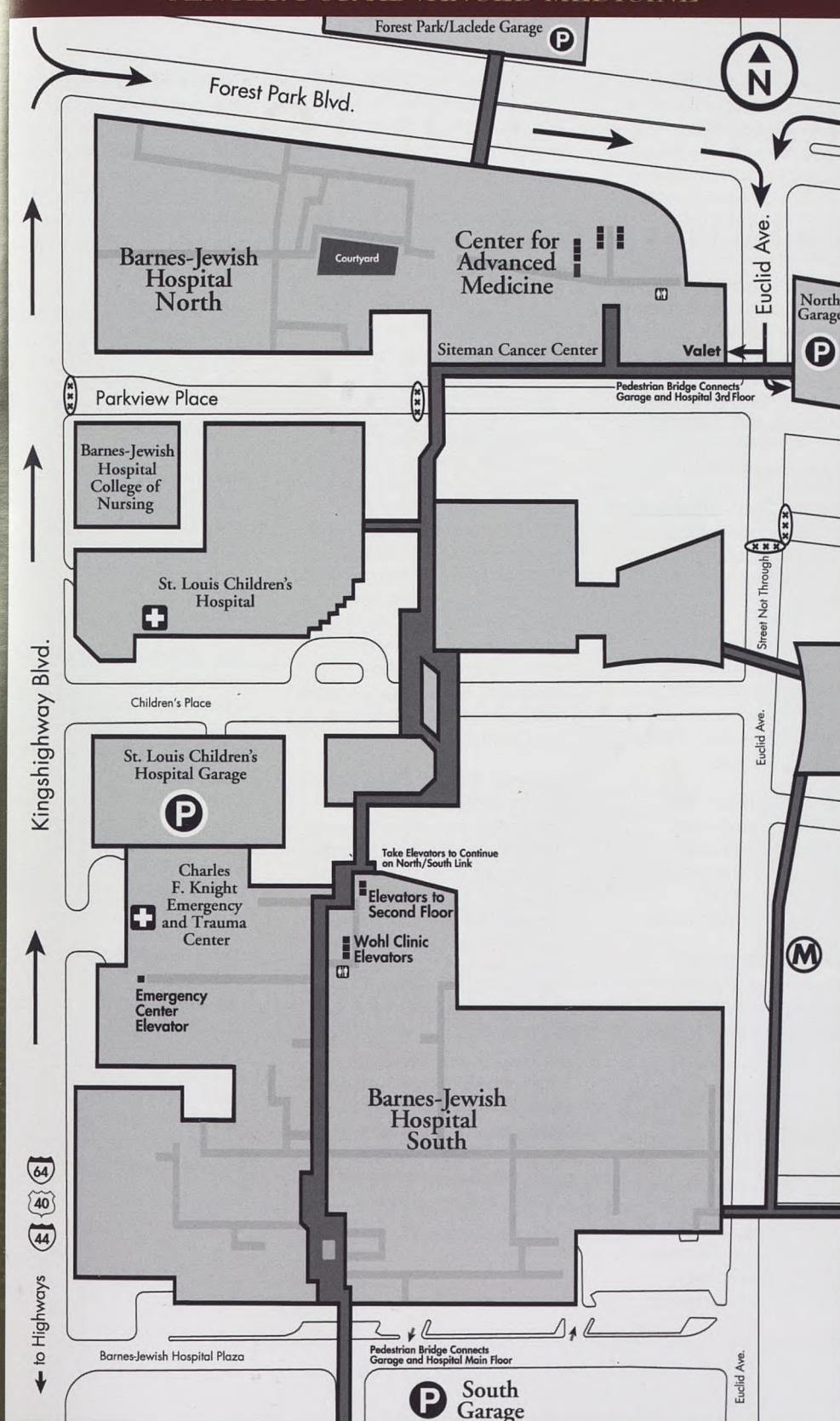
Although advance notice about the street closing was provided to patients and referring physicians, Mallinckrodt Institute is taking this opportunity to reiterate this important information and to provide a map showing new routes. Signs also have been placed along Kingshighway Boulevard.

The North Garage and the valet and patient/visitor drop-off areas for the Center for Advanced Medicine entrance are not affected by the construction but must be accessed from the Forest Park Parkway and Euclid Avenue intersection. Drivers leaving the drop-off area must travel east on Parkview toward Euclid.

Security personnel are stationed at the intersection of Parkview Place and Kingshighway and will allow physicians accessing the SLCH underground garage, medical transport vehicles, and delivery trucks to use Parkview Place to reach their destinations.



CENTER FOR ADVANCED MEDICINE



DIRECTIONS

From I 64/US40

- Take Kingshighway north to Forest Park Blvd.
- Turn right on Forest Park to Euclid Ave.
- Turn right on Euclid to North Garage parking (on your left) or valet parking (to the right).

From the north

- Take Kingshighway south to Forest Park Blvd.
- Turn left on Forest Park to Euclid Ave.
- Turn right on Euclid to North Garage parking (on your left) or valet parking (to the right).

From the east

- Take Forest Park Blvd. west to Euclid Ave.
- Turn left on Euclid to North Garage parking (on your left) or valet parking (to the right).

LEGEND

- (XX) Street Not Through
- (M) MetroLink Station
- (+) Emergency
- (P) Patient/Visitor Parking

In this section, the names of employees who are full-time faculty or staff or who have an appointment in the Department of Radiology or Department of Radiation Oncology are highlighted in boldface type.

PROMOTIONS

Michael Gelbart, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology, Department of Radiology.

Jennifer Gould, MD, instructor in radiology, was promoted to assistant professor of radiology, Division of Diagnostic Radiology, Department of Radiology.

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

Pamela Woodard, MD, assistant professor of radiology, was promoted to associate professor of radiology, Division of Diagnostic Radiology, Department of Radiology.

Eduardo Moros, PhD, associate professor of radiation oncology, was promoted to professor of radiation oncology, Division of Radiation Physics, Department of Radiation Oncology.

Tej Pandita, PhD, assistant professor of radiation oncology, was promoted to associate professor of radiation oncology, Division of Radiation and Cancer Biology, Department of Radiation Oncology.

NEW FACULTY

Craig Glaiberman, instructor in radiology, Division of Diagnostic Radiology, Department of Radiology.

Brett Gratz, MD, instructor in radiology, Division of Diagnostic Radiology, Department of Radiology.

Cylen Javidan-Nejad, MD, instructor in radiology, Division of Diagnostic Radiology, Department of Radiology.

Keith Kastelic, MD, instructor in radiology, Division of Diagnostic Radiology (at Barnes-Jewish St. Peters Hospital), Department of Radiology.

Keith Mullenger, MD, instructor in radiology, Division of Diagnostic Radiology (at Barnes-Jewish St. Peters Hospital), Department of Radiology.

Jason Oliphant, MD, instructor in radiology, Division of Diagnostic Radiology, Department of Radiology.

Lawrence Tarbox, PhD, research assistant professor of radiology, Division of Diagnostic Radiology, Department of Radiology.

Lihuan Wang, MD, instructor in radiology, Division of Diagnostic Radiology, Department of Radiology.

JOINT APPOINTMENT

Igor Efimov, PhD, associate professor of biomedical engineering, was appointed associate professor of radiology, Division of Radiological Sciences, Department of Radiology.

GRANTS

Samuel Achilefu, PhD, associate professor of radiology, as principal investigator, received a three-year grant from the National Institutes of Health/National Cancer Institute for research on "Tissue-specific optical imaging agents." Coinvestigator for the \$1.2 million grant is Gregory Nikiforovich, PhD, DSc, research professor of biochemistry and molecular biophysics.

Joseph Deasy, PhD, associate professor of radiation oncology, as principal investigator, received a \$1.3 million grant from the National Institutes of Health for his project on "Normal tissue complication modeling for radiotherapy." Collaborators for the five-year grant are **Jeffrey Bradley, MD**, assistant professor of radiation oncology, and **Wade Thorstad, MD**, instructor in radiation oncology. Deasy also received a one-year grant of \$113,333 from Sun Nuclear for his research on "IMRT software tools."

Colin Derdeyn, MD, associate professor of radiology and of neurology and neurological surgery, as principal investigator, received a four-year grant of \$300,000 from the National Institute of Neurological Disorders (NINDS) for "Familial intracranial aneurysm study." As principal investigator for Washington University, Derdeyn received a \$240,000 grant from NINDS for research on "Randomized evaluation of carotid occlusion and neurocognition (RECON)." Coinvestigators for the five-year grant are Jennifer Goldstein, PhD, assistant professor of neurology, and **Tom Videen, PhD**, research associate professor of neurology and of radiology.

Jason Lewis, PhD, assistant professor of radiology, as principal investigator, received a three-year grant of \$344,250 from the Department of Defense, 2004 Prostate Cancer Research Program, for his research on "Delineating the effects of tumor therapies on prostate cancer using small animal imaging technologies."

Buck Rogers, PhD, assistant professor of radiation oncology and of radiology, as principal investigator, received a two-year grant of \$120,000 from the National Institutes of Health to evaluate a gene therapy approach for treating and imaging head and neck cancer.

Jeffrey Zacks, PhD, assistant professor of psychology and of radiology, received a four-year grant of \$683,730 from the National Institutes of Health for his research on "Neural architecture of event comprehension."

APPOINTMENTS/ ELECTIONS

Colin Derdeyn, MD, associate professor of radiology and of neurology and neurological surgery, was appointed to the American Heart Association Stroke Council as liaison to the Diagnostic and Interventional Cardiovascular Catheterization Committee of the Council on Clinical Cardiology. He was elected as a member of the Leadership Committee and as chair of the Membership and Communications Committee of the American Heart Association Stroke Council.

Louis Gilula, MD, professor of radiology and of surgery, was appointed to the faculty of the Wrist Investigator's Workshop, held in September in New York City, New York.

Tom Miller, MD, PhD, professor of radiology and of biomedical engineering, was elected to a two-year term as chair of the Residency Review Committee for Nuclear Medicine of the Accreditation Council for Graduate Medical Education.

Joel Perlmutter, MD, professor of neurology, of neurological surgery, of radiology, and of physical therapy, was appointed to the Practice Parameters Committee for Parkinson Disease of the American Academy of Neurology.

Fred Prior, PhD, research associate professor of radiology, was appointed to the Steering Committee for Digital Transformation: a Symposium for Radiology and the Healthcare Enterprise held in October in San Diego, California.

Douglas Rowland, PhD, research instructor in radiology, was elected to a two-year term on the Executive Board of the National Postdoctoral Association.

He was appointed as an ex-officio member of the Science Policy and Legislative Affairs Committee of the American Association for Cancer Research.

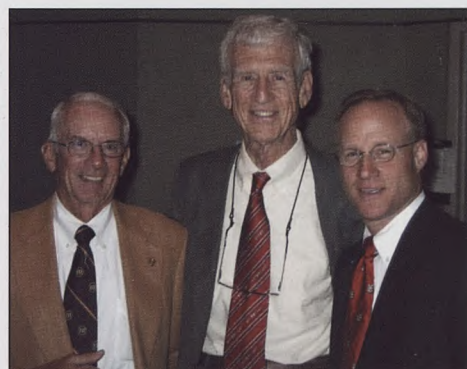
Dmitriy Yablonskiy, PhD, professor of radiology and of physics, was appointed to a two-year term on the Editorial Board of *Magnetic Resonance in Medicine*, the journal of the International Society for Magnetic Resonance in Medicine.

Scott Lecture

Steven Lipstein, president and CEO, BJC HealthCareSM, was guest speaker for the Thirty-third Annual Wendell G. Scott Memorial Lecture on October 11. He spoke on "The politics of American health care: the role of government and a free-market economy."

Above right: Lipstein (right) received a commemorative plaque from Gilbert Jost, MD, chairman of the Department of Radiology and director of Mallinckrodt Institute.

Right: (left to right) Ronald Evens, MD, president of Barnes-Jewish Hospital and former director of Mallinckrodt Institute; William Danforth, MD, chancellor emeritus of Washington University in St. Louis and emeritus member of the Barnes-Jewish Hospital Board of Directors; and Lipstein.



APPOINTMENTS/ ELECTIONS

Continued from page 25

Jeffrey Zacks, PhD, assistant professor of psychology and of radiology, was appointed to the Editorial Board of *Memory & Cognition*, the journal of The Psychonomic Society.

HONORS/ AWARDS

Dione Farria, MD, MPH, assistant professor of radiology, was accepted to the Cancer, Culture, and Literacy Institute 2005, a research training program for cancer control/population science professionals that is sponsored by the H. Lee Moffitt Cancer Center and Research Institute, University of South Florida, Tampa.

LECTURES

Samuel Achilefu, PhD, associate professor of radiology, presented "Recent advances in optical molecular probes" at the Optical Imaging Workshop 2004: Fourth Inter-Institute Workshop on Optical Diagnostic Imaging from Bench to Bedside, sponsored by the National Institutes of Health, Bethesda, Maryland, September 20-22. He spoke on

"Molecular designs for targeting and imaging human diseases in small animal models by optical methods" at the University of Wisconsin Biomedical Engineering Seminar Series, Madison, Wisconsin, October 4. Achilefu presented "Highly specific optical molecular probes for imaging tumors and monitoring tumor therapy" at the Frontiers in Optics 2004 meeting, sponsored by the Optical Society of America, Rochester, New York, October 10-14.

Jeffrey Bradley, MD, assistant professor of radiation oncology, as visiting professor, spoke on "Radiation dose response for non-small cell lung cancer" at Kyoto University, Kyoto, Japan, December 8. He presented "The rationale for PET defined tumor volumes" at the 4th S. Takahashi Memorial International Workshop on 3DCRT, Nagoya, Japan, December 11.

Maurizio Corbetta, MD, associate professor of neurology and of radiology, presented the keynote lecture, "History of functional neuroimaging: past, present, future," at the Italian Neuroradiological Association meeting, Milan, Italy, September 24. He spoke on "fMRI studies of stroke recovery" at the Neurological Institute Besta, Milan, Italy, September 28. Corbetta presented "Space, bodies, and attention in the human brain" at the Frontiers in Neuroscience Colloquium, Emory University, Atlanta, Georgia, October 28.

DeWitte Cross, MD, associate professor of radiology and of neurological surgery, presented "Introduction to interventional neuroradiology and examples of procedural complications" at the Tenth Annual Defense Counsel seminar, sponsored by Washington University School of Medicine and BJC HealthCareSM, St. Louis, Missouri, November 23.

Joseph Deasy, PhD, associate professor of radiation oncology, spoke on "Radiobiologically-based treatment planning" at the European Society for Therapeutic Radiology and Oncology meeting, Amsterdam, The Netherlands, October 26. He presented "Predicting radiation therapy treatment complications" at Memorial Sloan-Kettering Cancer Center, New York City, New York, November 9.

Colin Derdeyn, MD, associate professor of radiology and of neurology and neurological surgery, presented "Endovascular treatment for acute ischemic stroke" at Parkland Memorial Hospital Grand Rounds, Farmington, Missouri, November 18.

Louis Gilula, MD, professor of radiology and of surgery, presented "Vertebroplasty, pitfalls, problems, and potential complications" at the International Skeletal Society 31st Annual Refresher Course, St. Julians, Malta, October 6-9.

Jay Heiken, MD, professor of radiology, spoke on "MDCT contrast medium administration and scan timing" and "CT colonography" at MDCT: A Practical Approach, sponsored by the Society of Body Computed Tomography and Magnetic Resonance, Philadelphia, Pennsylvania, September 18 and 19. He presented "CT of the abdominal aorta: aneurysm rupture and post-operative complications" at the Annual Yokohama Radiology Seminar, Yokohama City University Medical Center, Japan, September 30. He presented "Optimal use of contrast media for detection of liver metastases" at the 4th International Symposium on Multidetector-row CT, Tokyo, Japan, October 2. Heiken spoke on "Overview of MDCT technology" and "Contrast optimization with MDCT" at the Workshop on Multislice CT, Instituto di Radiologia dell'Universita, Turin, Italy, October 7. He spoke on "CT colonography" and "Imaging of peritoneal tumors" at the Fourth

Annual Teaching Course of the International Cancer Imaging Society, Sestri Levante, Italy, October 10-13. He presented the Earl Miller Memorial Lecture, "CT of the abdominal aorta: aneurysm rupture and postoperative complications," at the University of California, San Francisco, October 20. Heiken presented "Hepatic masses: characterization with CT/MRI"; "CT evaluation of small bowel obstruction"; "Contrast administration and scan timing for multidetector CT"; and "Aortic stent grafts: pre/post-operative evaluation with MDCT" at Advance in Clinical MR/CT Imaging, sponsored by the University of California, San Francisco, October 18-22. He presented "Contrast enhancement and scan timing for MDCT" at MDCT: A Practical Approach, sponsored by the Society of Body Computed Tomography and Magnetic Resonance, Los Angeles, California, November 6.

Tamara Hershey, PhD, assistant professor of psychiatry and of radiology, presented "Career development in clinical neuroscience: a neuropsychologist's view" at the American Neurological Association/National Institute of Neurological Disorders Career Development

Symposium, Toronto, Ontario, October 2-6. She spoke on "Clinical neuroscience of diabetes in childhood" at the Psychology Research Seminar, University of South Carolina, Columbia, December 6.

Martin Janecek, PhD, research associate, presented "High resolution insert for clinical whole-body PET scanners: design and optimization" at the IEEE Medical Imaging Conference, Rome, Italy, October 22.

Eric Klein, MS, associate professor of radiation oncology, spoke on "IMRT quality assurance" at The Royal Marsden Hospital NHS Foundation Trust, London, England, September 21. He spoke on "Transition to heterogeneity corrections" at The Princess Royal Hospital, Royal Hull Hospitals NHS Trust, Telford, England, September 22, and at Baylor University, Houston, Texas, December 14. Klein presented "Electron IMRT" at The Christie Hospital NHS Trust, Manchester England, on September 23. He presented "Prospects for electron IMRT" at the Rosalind Franklin University of Medicine and Science, The Chicago Medical School, North Chicago, Illinois, December 7.

Linda Larson-Prior, PhD, research associate professor of radiology, spoke on "Maximizing your effectiveness as a mentor" at the Health Sciences Professional Development Series, University of Pittsburgh, Pennsylvania, December 8 and 9.

Robert McKinstry, MD, PhD, assistant professor of radiology, spoke on "Neuroimaging of strokes and mimics of strokes" at the Epidemiology & Treatment of Strokes in Children with and without Sickle Cell Disease meeting, St. Louis, Missouri, November 6. He presented "State-of-the-art 3D imaging of the head and neck" at the ENT Grand Rounds, Barnes-Jewish Hospital, St. Louis, Missouri, December 8. He presented "MR imaging of brain development and its response to injury" to the Panel on Neonatal Imaging, American College of Neuropsychopharmacology meeting, San Juan, Puerto Rico, December 15.

Tom Miller, MD, PhD, professor of radiology and of biomedical engineering, presented "Beyond FDG: PET imaging using novel tracers" at the Indian Society of Nuclear Medicine Annual Meeting, Mysore, India, December 17.

Joel Perlmutter, MD, professor of neurology, of neurological surgery, of radiology, and of physical therapy, spoke on "Parkinson disease research" at the Gerontological Nursing Association 16th Annual Meeting, Columbia, Missouri, December 2.

Fred Prior, PhD, research associate professor of radiology, presented "Surviving outages: PACS disaster recovery strategies"; "Pros & cons of PACS architectures—pearls & pitfalls;"

and "Emerging PACS technologies" at Digital Transformation: a Symposium for Radiology and the Healthcare Enterprise, San Diego, California, October 23.

Barry Siegel, MD, professor of radiology and of medicine, spoke on "Current status of PET in clinical practice," PET in diagnosis and staging of cancer," and "PET for predicting and monitoring response to cancer therapy" at the 21st National Congress of Radiology, sponsored by the Mexican Federation of Radiology and Imaging, Merida, Yucatan, October 14-17. He presented "Clinical applications of PET and PET/CT in oncology" at Long Beach Memorial Hospital, Long Beach, California, October 21. He presented "Current status of PET in clinical practice," PET in diagnosis and staging of cancer," "PET for predicting and monitoring response to cancer therapy," "PET in breast and gynecologic cancers," and "Oncologic PET: artifacts, variants, and benign conditions simulating disease" at the 33rd Brazilian Congress of Radiology, Rio de Janeiro, November 12-14. Siegel spoke on "Demonstrating the effectiveness of PET via multicenter clinical trials: the challenges" at The 3rd International Workshop on Biomedical Imaging, sponsored by the Biomedical Imaging Research Center, University of Fukui, Japan, December 13 and 14.

LECTURES

Continued from page 27

Marilyn Siegel, MD, professor of radiology and of pediatrics, spoke on "Sonography of intracranial hemorrhage and ischemia"; "Mediastinal masses: CT/MR"; "CT/MR of pediatric renal and adrenal masses"; and "Pediatric multidetector CT: techniques, applications, and risks" at the 21st National Congress of Radiology, sponsored by the Mexican Federation of Radiology and Imaging, Merida, Yucatan, October 14-17. She presented "Ultrasound of congenital brain anomalies"; "Hepatic masses in children: multimodality imaging"; "Mediastinal vascular anomalies: CT angiography"; and "CT/MR of pediatric retroperitoneal masses" at the 33rd Brazilian Congress of Radiology, Rio de Janeiro, November 12-14.

Michael Welch, PhD, professor of radiology and of chemistry, spoke on "Collaborative research in the Division of Radiological Sciences" at The 3rd International Workshop on Biomed-

ical Imaging, sponsored by the Biomedical Imaging Research Center, University of Fukui, Japan, December 13 and 14.

Yuan-Chuan Tai, PhD, assistant professor of radiology, presented "A novel approach to PET system design" at the Department of Energy Workshop on New Frontiers of Science in Nuclear Medicine Instrumentation, Cambridge, Massachusetts, October 28.

Dmitriy Yablonskiy, PhD, professor of radiology and of physics, presented "On the way to understanding the bio-physical mechanisms underlying the diffusion attenuated MR signal in biological tissues" to the Department of Diagnostic Radiology, University Hospital, Freiburg, Germany, October 7. He presented "Brain temperature regulation in anesthetized rats" at the First Integrated Symposium

on Physiology and Pharmacology of Thermal Biology and Temperature Regulation (PPTR 2004), Rhodes, Greece, October 15 and 16.

Jeffrey Zacks, PhD, assistant professor of psychology and of radiology, presented "Event perception: a mind-brain perspective" at the Event Representations in Mind and Language Symposium, University of Oregon, Eugene, September 17-19.



Tolmach Lecture

Michael Welch, PhD, professor of radiology, of chemistry, and of molecular biology and pharmacology, was the invited speaker for the Thirteenth Annual Leonard J. Tolmach Memorial Lecture on October 29.

(Left to right) Buck Rogers, PhD, assistant professor of radiation oncology and of radiology; Welch; and Joseph Roti, PhD, professor of radiation oncology and chief of the Division of Radiation and Cancer Biology.

SYMPOSIA

In this section of FYI, only those faculty and staff who have Department of Radiology or Department of Radiation Oncology appointments are listed.

SOCIETY FOR MOLECULAR IMAGING

*3rd Annual Meeting
St. Louis, Missouri
September 9-12, 2004*

Samuel Achilefu, PhD, member, scientific program committee; cochair, Symposium XV: Chemistry of Multifunctional Probes.

Joseph Ackerman, PhD, meeting cochair; member, scientific program committee; cochair, Plenary Session II: Biophysical Limits and Challenges in Molecular Imaging.

Carolyn Anderson, PhD, member, scientific program committee; chair, Seminar: Molecular Imaging Funding Sources.

David Piwnica-Worms, MD, PhD, meeting chair; cochair, Plenary Session I: Advancing Molecular Imaging Approaches in Biology and Medicine.

Vijay Sharma, PhD, cochair, Symposium XV: Chemistry of Multifunctional Probes.

Michael Welch, PhD, meeting cochair; member, scientific program committee; cochair, Plenary Session VI: Imaging in Aging and Neurological Disease.

SCIENTIFIC SESSIONS

Joseph Ackerman, PhD, "Academic-industrial interactions and their impact on industrial decision making processes: a case study."

Larry Bretthorst, PhD, "Isotopomer analysis combined with Bayesian probability theory allows estimation of metabolic activity at low MR signal to noise levels."

Kristin Bullok; Julie Prior; David Piwnica-Worms, MD, PhD, "A novel small, cell-permeable, activatable fluorescence probe for imaging caspase 3 and 7 activity."

Kristin Bullok; David Piwnica-Worms, MD, PhD, "Selective uptake of modified HIV-1 Tat permeation peptides in the rat retina following intraocular injection."

Joseph Culver, PhD; Sharon Bloch, PhD; Samuel Achilefu, PhD; Sachin Patwardhan, PhD, "A fast scanning fluorescence optical tomography system for small animal whole body biodistribution assays."

Seth Gammon; David Piwnica-Worms, MD, PhD, "Constitutive association of STAT1-STAT1 homodimers revealed with firefly luciferase complementation imaging."

Joel Garbow, PhD, "MRI monitoring of T-cell trafficking in mice."

Joel Garbow, PhD; Erin Jackson; Julie Prior; David Piwnica-Worms, MD, PhD, "CXCR4 regulates growth of both primary and metastatic breast cancer."

James Goodman; Christopher Kroenke, PhD; Joseph Ackerman, PhD; Jeffrey Neil, MD, PhD, "²³Na⁺ as a molecular NMR marker of diffusion in the extracellular space."

Shimon Gross; David Piwnica-Worms, MD, PhD, "Real-time imaging of ligand-induced IKBa degradation in intact cells and living mice."

Shimon Gross; David Piwnica-Worms, MD, PhD, "Bioluminescent imaging of IKB activity and screening for potent inhibitory activity by dietary compounds."

Christopher Kroenke, PhD; Joseph Ackerman, PhD; Dmitriy Yablonskiy, PhD, "Use of the endogenous intraneuronal marker N-acetylaspartate to determine the microviscosity of neuronal cytoplasm."

Richard Laforest, PhD; Caryn Waterson; Steve Broski; Jason Lewis, PhD, "Radiation dose considerations in tumor growth monitoring with CT."

Richard Laforest, PhD; Caryn Waterson; Steve Broski; Jason Lewis, PhD, "Accuracy in microPET data quantitation for biological studies."

Weng Peng Li, PhD; Laura Meyer; Christopher Sherman; Carolyn Anderson, PhD, "Evaluation of a monoclonal antibody radiolabeled with ⁶⁴Cu and ¹²⁴I as potential EGFR-positive tumor imaging agents."

Mark Mintun, MD, "Imaging in aging and neurological disease."

SYMPOSIA

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Laura Neff; Terry Sharp; Pilar Herrero, MS; John Engelbach; Nicole Fettig; Robert Gropler, MD; Michael Welch, PhD, "Variability and reproducibility of insulin and substrate plasma levels in rats necessary to assess cardiac metabolism during microPET imaging."

Andrea Pichler, PhD; Julie Prior; David Piwnica-Worms, MD, PhD, "In vivo bioluminescence imaging enables visualization of RNAi-mediated downregulation of MDR1 Pgp."

David Piwnica-Worms, MD, PhD, "Neutrophil function in disseminated herpes simplex virus 1 infection."

Data Ponde, PhD; Terry Sharp; Jerrel Rutlin; Michael Welch, PhD, "microPET imaging and biodistribution reveals reduction of intestinal tumorigenesis in an in-vivo murine model of adenomatous colorectal cancer."

Julie Prior; David Piwnica-Worms, MD, PhD, "Demonstration of a graft-versus-leukemia effect after suicide gene therapy of graft-versus-host disease using in vivo bioluminescence imaging."

Julie Prior; David Piwnica-Worms, MD, PhD, "Circadian rhythms during fetal rat development."

Buck Rogers, PhD; Jesse Parry; Rebecca Andrews; Laura Meyer, Carolyn Anderson, PhD, "Analysis of somatostatin receptor subtype 2 expression in stably transfected A-427 human cancer cells."

Daniel Schuster, MD, "Prospects for monitoring gene therapy of lung diseases with molecular imaging."

Sheng-Kwei Song, PhD; Shu-Wei Sun, PhD, "Increased radial diffusivity: MRI demyelination marker."

Lori Strong; Michael Welch, PhD; Richard Laforest, PhD, "Tumor and vascular delineation using contrast enhanced computed tomography."

AMERICAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

*46th Annual Meeting
Atlanta, Georgia
October 2-7, 2004*

Jeffrey Bradley, MD, discussant, Scientific Session: Lung I: PET Scanning and Fractionation.

Joseph Deasy, PhD, comoderator, Volume Definitions and Evaluation.

EDUCATION SESSIONS

Eric Klein, MS, "Lung: improving therapeutic ratio by increasing efficacy cancer cell kill and reducing surround normal tissue toxicity."

Sasa Mutic, MS, "501 CT simulation process and techniques."

Simon Powell, MD, PhD, "Molecular mechanisms of DNA damage repair."

James Purdy, PhD, "The advanced technology QA consortium (ATC)."

SCIENTIFIC SESSIONS

Angel Blanco, MD, "Dose-volume modeling of salivary function in patients with head and neck cancer receiving radiation therapy."

Perry Grigsby, MD, "Cervix carcinoma, concurrent chemoradiation, and salvage of isolated para-aortic lymph node recurrences."

Andrew Hope, MD, "Radiation pneumonitis/fibrosis risk based on dosimetric, clinical, and location-related factors."

Lilie Lin, MD, "Brachytherapy treatment planning using positron emission tomography for cervical cancer."

Daniel Low, PhD, "Quantitation of the four-dimensional computed tomography process."

Jeff Michalski, MD, "Clinical outcomes of patients treated with 3-D conformal radiation therapy: prostate cancer on RTOG 9406."

Robert Myerson, MD, PhD, "Preoperative radiotherapy for rectal cancer: Does the addition of concurrent 5FU chemotherapy improve response and outcome?"

Parag Parikh, MD, "Conformal treatment planning using 4DCT can decrease ipsilateral lung dose and improve tumor coverage: a prospective 4DCT treatment planning study."

Sasha Wahab, MD, "Comparison of LDR and HDR brachytherapy doses for patients with cancer of the cervix."

POSTER SESSIONS

Gregg Franklin, MD, "Magnetic resonance imaging to evaluate the functional behavior of parotid salivary glands in normal subjects and radiotherapy patients."

Sreekrishna Goddu, PhD, "Breathing motion induced dose errors in serial tomotherapy."

Robert Malyapa, MD, PhD, "FDG-PET in anal cancer: impact on staging and radiotherapeutic management."

Simon Powell, MD, PhD, "Set-up uncertainty in accelerated partial-breast irradiation using 3D-conformal external beam radiotherapy: a companion study to a prospective phase I ongoing trial."

Konstantin Zakaryan, PhD, "Fast IMRT treatment planning based on Monte Carlo pre-computed beamlets."

Imran Zoberi, MD, "Ipsilateral breast tumor recurrence rate in women eligible for accelerated partial breast irradiation—setting high standards."

SOCIETY FOR NEUROSCIENCE

*34th Annual Meeting
San Diego, California
October 23-27, 2004*

SYMPOSIA

Joel Perlmutter, MD, "Basic science and research in molecular and functional imaging of Parkinson disease."

Perez Lecture

On January 14, Luther Brady, MD, the Hylda Cohn/American Cancer Society professor of radiation oncology, MCP Hahnemann University, presented "Illusions and facts in oncology" at the Fourth Annual Carlos A. Perez Endowed Lectureship in Oncology.

(Left to right) Carlos Perez, MD professor emeritus of radiation oncology; Brady; and Simon Powell, MD, PhD, chairman of the Department of Radiation Oncology.



Marcus Raichle, MD, "Neuroethics: emerging ethical issues in neurosciences."

SCIENTIFIC SESSIONS

Todd Braver, PhD, "Integration versus segregation of information within working memory: functional dissociations within prefrontal cor-

tex"; "Dissociable effects of working memory load on transient vs. sustained brain activity"; "A computational neural model of learned conflict in the anterior cingulate and pre-SMA"; "Emotional modulation of PFC activity during a working memory task is constrained by individual differences."

Randy Buckner, PhD, "Evidence from episodic memory tasks that challenges traditional models of posterior parietal cortex."

Wenhua Chu, PhD; Zhude Tu, PhD; Robert Mach, PhD, "Design and synthesis of potent and selective dopamine D3 receptor ligands."

SYMPOSIA

Continued from page 31

Stephen Moerlein, PhD; Joel Perlmutter, MD, "Transient dystonia is observed in MPTP-induced striatal dopamine deficiency in several primate species."

Stephen Moerlein, PhD; Yuan-Chuan Tai, PhD; Michael Welch, PhD; Joel Perlmutter, MD, "Imaging mouse brain DAT activity using the microPET focus and R4 scanners."

Gaurav Patel; Serguei Astafiev; Abraham Snyder, MD, PhD; Mark McAvoy, PhD; Gordon Shulman, PhD; Maurizio Corbetta, MD, "Retinotopic specificity in human parietal, temporal and frontal cortices."

Lisa Wang, MD; Mokhtar Gado, MD, "Volume area and thickness abnormalities of the anterior cingulate in schizophrenia subjects."

MingMing Zhu; Joseph Ackerman, PhD; Dmitriy Yablonskiy, PhD, "Hypercapnia-induced changes in brain temperature of rats: effects of anesthesia."

POSTER PRESENTATIONS

Kevin Black, MD, "Clinical effects of an intravenous apomorphine protocol in Parkinson disease."

Kelly Botteron, MD, "The NIH MRI study of normal brain development: objective—1-behavioral analyses."

Randy Buckner, PhD, "Image-based associative encoding strongly activates the parahippocampal gyrus"; "Age-associated increases in frontal activity observed during controlled retrieval"; "XNAT: a software framework for managing neuroimaging laboratory data."

Nico Dosenbach; Francis Miezin; Eliza Burgund, PhD; Bradley Schlaggar, MD, PhD; Steven Petersen, PhD, "Dissociable networks active during rhythm learning revealed by mixed-blocked/event-related fMRI."

Adrian Epstein; Joshua Shimony, MD, PhD; Abraham Snyder, MD, PhD; Harold Burton, PhD, "Diffusion tensor tractography reveals white matter reorganization in early blind humans."

Michael Fox; Abraham Snyder, MD, PhD; Deanna Barch, PhD; Marcus Raichle, MD, "The bold onset transient: identification of functional differences depending on task and diagnosis of schizophrenia."

Deborah Kerr; Russell Hornbeck; Debra Gusnard, PhD; Randy Buckner, PhD; Marcus Raichle, MD, "Neural correlates of extended practice on the word-association task of verb generation."

Robert McKinstry, MD, PhD, "The NIH MRI study of normal brain development: objective—2-brain analyses."

Erica Palmer; Nico Dosenbach; Steven Petersen, PhD, "Potential control processes common to a range of tasks: sustained, task-related fMRI signals examined across 10 tasks."

Joel Perlmutter, MD, "Unilateral STN stimulation reduces rigidity bilaterally and brachykinesia contralaterally in Parkinson disease."

Yvette Sheline, MD; Mokhtar Gado, MD, "Hippocampal volumes in major depression: preliminary five-year follow-up results."

Gordon Shulman, PhD; Randy Buckner, PhD; Francis Miezin, "Examining attention cueing effects during memory retrieval using fMRI."

Abraham Snyder, MD, PhD; Marcus Raichle, MD, "Differences in cortical shape in Williams Syndrome subjects compared to normal humans revealed by surface-based analysis."

Abraham Snyder, MD, PhD; Lisa Connor, PhD; Maurizio Corbetta, MD, "A comparison of the BOLD response in areas with and without diaschisis."

Zhude Tu, PhD; Junqian Xu; Carmen Dence, MS; Michael Welch, PhD; Robert Mach, PhD, "76Br-labeled VACHT receptor ligand for study of cholinergic function in AD."



WAYCO Parking Garage, a Washington University Medical Center landmark at the corner of Euclid Avenue and Children's Place, is being razed as part of the University's and School of Medicine's strategic plan known as BioMed 21. The initiative to develop a multidisciplinary approach to basic and clinical research includes the construction on the garage site of a building to house research laboratories.

WAYCO TRIVIA (courtesy of WUSM Design & Construction): the north half of the garage was built in 1959; the south portion, in 1970. The garage covered 377,500 square feet and held approximately 1,100 vehicles. And the garage's name is believed to have come from the WAYCO Company that owned and operated garages and surface parking lots in the St. Louis area—but no records are available to substantiate this bit of trivia.

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510 South Kingshighway Blvd.
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Design
Purviance & Company
Marketing Communications

Printing
Swift Print Communications
LLC

Focal Spot magazine is distrib-
uted three times annually.

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