

# Outlook

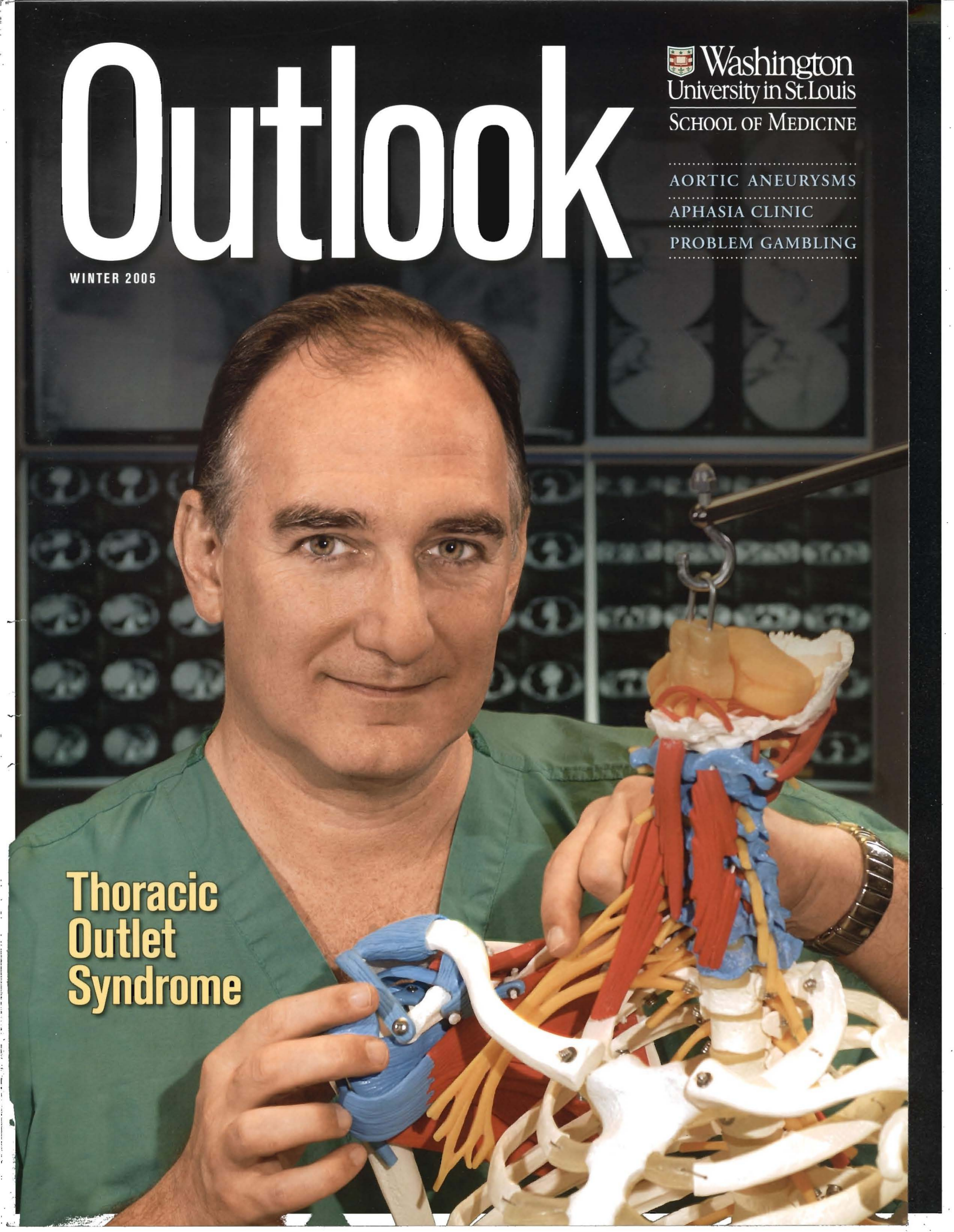
 Washington  
University in St. Louis  
SCHOOL OF MEDICINE

.....  
AORTIC ANEURYSMS

.....  
APHASIA CLINIC

.....  
PROBLEM GAMBLING

WINTER 2005



**Thoracic  
Outlet  
Syndrome**





TIM PARKER

**Ball game buddies** Ruth Doerr and her granddaughter, Victoria Peck, nursing administrator in the Department of Surgery's Urologic Surgery Center, left, and Martha Hayden and her granddaughter, Anita Fernandez, a patient billing service representative in the Pediatric Orthopaedic Surgery Center at St. Louis Children's Hospital, were guests in the BJC Home Plate Suite at a September Cardinals game. Washington University Physicians gave Peck and Fernandez tickets to the game in honor of their being named Star Performers for outstanding commitment to excellent patient care.

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# Outlook

## Front Door

The Farrell Learning and Teaching Center  
now serves as the School of Medicine's  
main venue for medical education.

[medicine.wustl.edu/fltc](http://medicine.wustl.edu/fltc)







## Farrell Learning and Teaching Center

**Located in the heart of the** Washington University Medical Center, at the intersection of Euclid and Scott avenues, the Farrell Learning and Teaching Center serves both medical and graduate students with a variety of modern teaching environments.

- With the latest technology throughout the building, every seat in the lecture halls is wired with power and data connections.
- New spaces emphasize small group learning.
- A clinical skills instruction suite allows interactions with standardized patients.

### Giving Opportunities

- Prominent naming opportunities are available throughout the building, starting at \$25,000.
- Annual Fund gifts, at any level, will support this important addition to medical education.

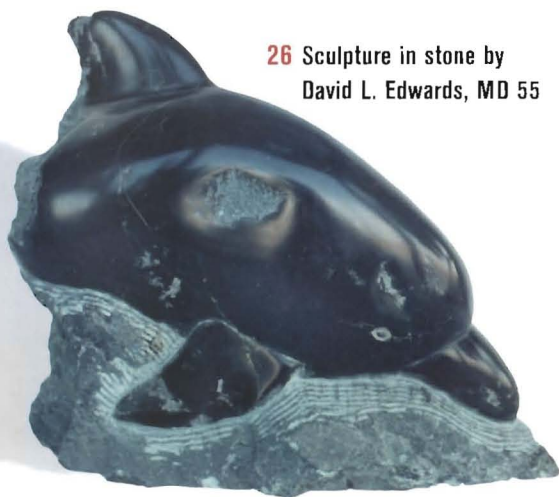
**Contact the Office of Medical Alumni and Development at (314) 286-0086.**



# Outlook

Washington University School of Medicine  
VOLUME XLII • NUMBER 4 • WINTER 2005

**COVER** Thoracic Outlet Syndrome (TOS) is a debilitating condition of the arm or neck that is difficult to diagnose and little understood. Vascular surgeon Robert W. Thompson, MD, is working to build a multi-disciplinary center that will raise awareness and improve treatment of TOS. For more on this story, please turn to page 21. PHOTO BY TIM PARKER



26 Sculpture in stone by  
David L. Edwards, MD 55

## DEPARTMENTS

Pulse

Personal Outlook

Alumni & Development

26 Honorable Continuum

28 Profile

30 News

33 Class Notes



3 Sunny smiles

## FEATURES

### Rethinking Rehab BY MICHAEL PURDY

Using rigorous scientific standards, physicians are improving the effectiveness of treatments for people who have language difficulties as a result of brain injury.

### Element of Risk BY JIM DRYDEN

Gambling in all of its forms is on the rise, and researchers at Washington University are working to determine when it crosses the line from pleasure to problem.

### 16 Battle of the Bulge BY GWEN ERICSON

Vascular surgeons at the School of Medicine are active in the treatment and research of abdominal aortic aneurysms which, when undetected and untreated, can be lethal.

### The Inner Turmoil of TOS BY CANOACE O'CONNOR

Patients with Thoracic Outlet Syndrome have long been misdiagnosed or gone undiagnosed. Now, a combination of surgery and physical therapy allows most a full recovery.

### 8 Language rehabilitation







**Class honors** Karolyn A. Wanat, James C. Hudspeth and Charles G. Rickert were among the honorees at the annual Student Awards luncheon held on October 14, 2005. Second-years Rickert and Wanat received the Class of 2003 Award, which recognizes selflessness, kindness and dedication to the highest standards in medicine, while third-year Hudspeth received the Class of 2001 Award for community service and student group activities during his first two years of medical school.

## Teaching fellowships honor excellence

THE INAUGURAL Carol B. and Jerome T. Loeb Teaching Fellowships were bestowed recently on four School of Medicine faculty. The Loebes established the program to advance clinical education and to honor local physicians committed to clinical excellence.

Augmented by a gift from the Barnes-Jewish Hospital Foundation, the new fellowship program will enable the recipients to dedicate a significant amount of time to teaching clinical medicine to students and residents.

Elliot E. Abbey, MD, clinical professor of medicine, plans to launch a Learning Compassionate Care Program at Siteman Cancer Center, while Martin I. Boyer, MD, chief of the Orthopaedic Hand and Wrist Service, associate professor of orthopaedic surgery and director of the Orthopaedic Surgery Education Program for Medical Students, is designing a musculoskeletal curriculum to enhance the current orthopaedics course.

Mary E. Klingensmith, MD, assistant professor of surgery and director of the Surgical Skills Laboratory, will develop a simulation curriculum, and Jane Loitman, MD, instructor of clinical medicine and medical director of the Palliative Care Service at Barnes-Jewish Hospital, will implement a new curriculum in palliative medicine.

## \$10 million NIH grant enables further research on gene-guided chemotherapy

TAKING INTO ACCOUNT that each of us has unique physical characteristics partly determined by variations in our genes, pharmacogenetics researchers at the School of Medicine are finding ways to personalize cancer treatments.

Their research program has now received a \$10 million, five-year grant from the National Institutes of Health (NIH) to continue its innovative approach, which began in 2001.

At that time, a group of researchers at the university, led by Howard L. McLeod, PharmD, director of the Siteman Cancer Center Pharmacology Core, established a program that is part of the Pharmacogenetics Research Network, a nationwide collaboration of scientists supported by the NIH.



Howard McLeod, PharmD

Pharmacogenetics seeks to make use of genetic information to guide medicinal therapies, and McLeod is a recognized leader in the field. His program, called CREATE (Comprehensive Research on Expressed Alleles in Therapeutic Evaluation), aims at using genetic information to predict how well anticancer therapies will work in different cancer patients. CREATE is an important facet of the university's BioMed 21 initiative.

## Siteman opens St. Peters location

THE ALVIN J. SITEMAN CANCER CENTER, Washington University School of Medicine and Barnes-Jewish St. Peters Hospital (BJSPH) recently celebrated the opening of a Siteman satellite in St. Charles County. The 14,055-square-foot center, located on the BJSPH campus, offers a complete array of cancer care services for patients and their families.

Washington University medical oncologist Timothy J. Pluard, MD, serves as medical director of the new facility. He brings more than 15 years of experience as a medical oncologist to the position, including the last 12 in St. Charles County. He also sees patients and teaches at Siteman Cancer Center's main location in St. Louis.

The new center combines the convenience of a St. Charles location with the expertise of a nationally renowned cancer center and medical school.



## Department of Anesthesiology head Evers elected to Institute of Medicine

ONE OF THE HIGHEST HONORS medical scientists in the United States can receive, election to the prestigious Institute of Medicine of the National Academy of Sciences, has been bestowed on Alex S. Evers, MD, the Henry Eliot Mallinckrodt Professor and head of the Department of Anesthesiology. Evers, who also is professor of medicine and of molecular biology and pharmacology, was honored for his professional achievement in the health sciences, specifically in the area of anesthesiology.

Renowned for his research on the molecular mechanisms through which anesthetics depress the nervous system, Evers studies how anesthetics make patients lose



Alex S. Evers, MD

consciousness, focusing on target molecules with which those anesthetics preferentially interact. Using labeling techniques, Evers has identified various proteins involved in those interactions as well as structures of specific anesthetic binding sites. His laboratory also works to identify specific cellular functions that are affected by anesthetics.

The Institute of Medicine conducts studies addressing a wide range of issues in medical science, health services, public health and health policy.

## PERIODONTOLOGY

### Exposure to sunlight may help prevent periodontal disease

A few minutes of sunshine each day is sufficient for Vitamin D production, says Charles F. Hildebolt, DDS, PhD, associate professor of radiology at Washington University School of Medicine's Mallinckrodt Institute of Radiology.

As the days get shorter and colder, it becomes harder to spend time in the sun, and that's probably bad for your teeth. According to an article published in the September 2005 issue of the *Journal of Periodontology*, our teeth may be light-sensitive, at least indirectly.

"Calcium and vitamin D are important to oral health," says Hildebolt, author of the paper. "The best way to get calcium is through the diet, but we need vitamin D to regulate absorption of calcium in the body, and it's hard to eat enough foods rich in vitamin D to meet that need. The best source of vitamin D is sunshine."

Even if people took in adequate calcium, the body still needs vitamin D to maintain proper calcium levels, both in the bones and in the bloodstream.

"If our systems can't maintain calcium at particular levels, then the calcium in our



ERIC YOUNG

bones can be resorbed to maintain serum calcium levels," Hildebolt says. "That causes problems. We know that 21 percent of Caucasian women over age 50 have osteoporosis, and 38 percent have osteopenia, which is a milder form of bone weakening. Half of all Caucasian women over the age of 50 will suffer an osteoporotic fracture at some point before they die."

These women also will be at risk for periodontal disease, as will men who don't get enough calcium and vitamin D. That's because in addition to regulating calcium, vitamin D also helps regulate inflammation.

In the face of low vitamin D levels, cells produce more cytokines — proteins that contribute to inflammation.

"Periodontal disease is an inflammatory process in which cytokine levels are increased," Hildebolt says. "You can think of the disease as an overreaction to bacteria in the mouth that causes damage to the bone and the soft tissues that support the teeth."

A way to lower that risk, he says, is to boost vitamin D levels. Hildebolt says it takes just a few minutes of sun exposure on the hands, arms, face and neck to boost vitamin D to the necessary levels. In most parts of the country, about 10 to 15 minutes a couple of times a week is sufficient to provide the body with adequate stores of vitamin D.

Maintaining adequate calcium and vitamin D has benefits beyond a beautiful smile, says Hildebolt. Calcium and vitamin D not only lower the risk of periodontal disease, but they help keep bones strong and may lower the risk of rheumatoid arthritis, cardiovascular disease and diabetes. Spending some time in the sun seems to be an important part of lowering those risks.





Tim Brooks, director of information systems and HIPAA security at the Bernard Becker Medical Library, points out the seismic mounts and flexible cable access, two of the features that protect critical resources at the new Medical School Business Continuity Center, located on the North Campus.

## Center protects data, critical functions

AIMING TO PROVIDE enough flexibility to effectively serve customers ranging in size from small business units to the largest departments, the new Medical School Business Continuity Center (BCC) is designed to protect vital electronic data and support the school's computer resources in a secure environment.

At a recent open house, information systems staff members gave tours and explained the BCC's ability to

**Uninterruptible power, surge protection, a backup generator, fire suppression and redundant air-conditioning protect the BCC.**

maintain a simple database, house a business unit's servers or provide leased server space, provide offsite disk storage space or simply store tape backups in the substantial vault, all in a HIPAA-compliant environment that is as secure as possible.

Tim Brooks, the center's main architect and director of information systems at the Bernard Becker Medical Library, says he keeps the

cost to clients low by providing the base on which clients can build a system to suit their needs, paying only their share of the recurring costs incurred by the BCC.

The facility supports both of the university's networks, WUSTL (public) and WUCON (private, WU Clinical Operations Network), with redundant cabling for each one from the School of Medicine to the North Campus.

## Obstetrics and gynecology receives first training grant in reproductive sciences

A FEDERALLY FUNDED TRAINING PROGRAM to provide support for postdoctoral fellows in reproductive sciences is under way in the Department of Obstetrics and Gynecology. A grant from the National Institutes of Health (NIH) will enable postdoctoral fellows to train in basic and clinical research and focus on subjects such as miscarriage and endometriosis. This grant is part of the NIH's efforts to fund translational research — studies that solve fundamental questions about a disease and that translate into new treatments and better patient care.

Four postdoctoral fellows will train for two years in the laboratory of a mentor, where they will actively participate in ongoing research. Trainees will select from nine faculty members in three subgroups: molecular reproductive endocrinology, biology of maternal-fetal interactions and gynecologic oncology.

In addition, trainees will learn grant and manuscript writing as part of their career development, aided by the School's newly formed Office of Postgraduate Affairs.

Kelle H. Moley, MD, associate professor of obstetrics and gynecology, and Hyunjung J. Lim, PhD, assistant professor of obstetrics and gynecology, are co-principal investigators of the program.

## Medical students win HHMI honors

THREE MEDICAL STUDENTS from Washington University will spend their next academic year learning what it's like to conduct medical research. Mark Murakami, John Paul Shen and Joshua Hanson are among 100 medical and dental students from across the country who have been selected to receive approximately \$3.7 million in new research fellowships and awards from Howard Hughes Medical Institute (HHMI).

HHMI runs two programs designed to interest students in becoming physician-scientists. Murakami and Shen are among 66 medical students to receive research training fellowships to be used at medical research centers nationwide. Hanson has been accepted as an HHMI-NIH research scholar, one of 42 students who will live and work on the campus of the National Institutes of Health (NIH) in Bethesda MD. Both programs enable the students to take a year off from medical school to conduct mentored research.





## The art of surgery

Sir Roy Calne, MD, professor of surgery emeritus at Cambridge University, presents works from his book, *Art, Surgery & Transplantation*, at the Bernard Becker Medical Library's King Center on October 12, 2005. Calne, a transplant pioneer in immunosuppression, was at the School of Medicine to deliver the Department of Surgery's second annual Anderson-Newton Lecture in Transplantation.

## NEUROSCIENCE

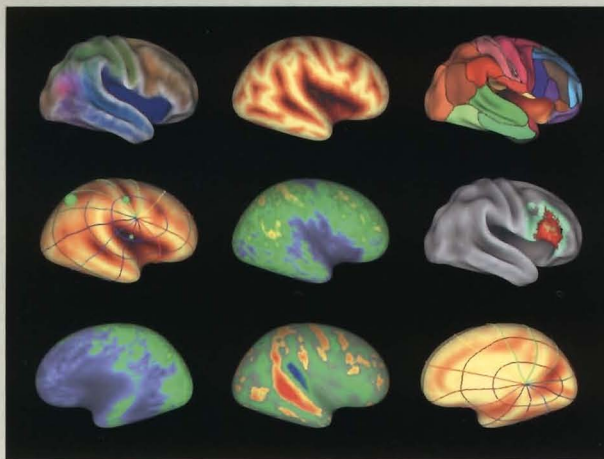
### New online atlas provides collective maps of human brain folds

A first-of-its-kind atlas of the folds of the cerebral cortex, the wrinkled surface layer of the brain credited with many of the higher cognitive functions that make us human, has been assembled by neuroscientists at the School of Medicine. The atlas, known as the Population-Average, Landmark and Surface-based (PALS) Atlas, links brain functions to the various peaks and valleys of the cortex.

PALS is the first brain atlas that accurately portrays these complex cerebral cortex folds from a group of individuals. It is available online at [sumsdb.wustl.edu:8081/sums/](http://sumsdb.wustl.edu:8081/sums/), both to provide a resource for neuroscientists seeking to determine the functions of an interesting brain area and as a repository for adding data that expand and fine-tune the atlas' maps.

Its creators hope the atlas will be useful in a wide variety of research projects. Among other studies, PALS is already helping scientists understand how an inherited disorder changes the brain and how brain function adjusts in response to blindness.

Senior investigator David C. Van Essen, PhD, the Edison Professor of Neurobiology and head of the Department of Anatomy and Neurobiology, has been compiling cortical cartography for two decades. He compares scientists' current knowledge of the details



of human brain structure to 17th-century mapmakers' grasp of the Earth's surface.

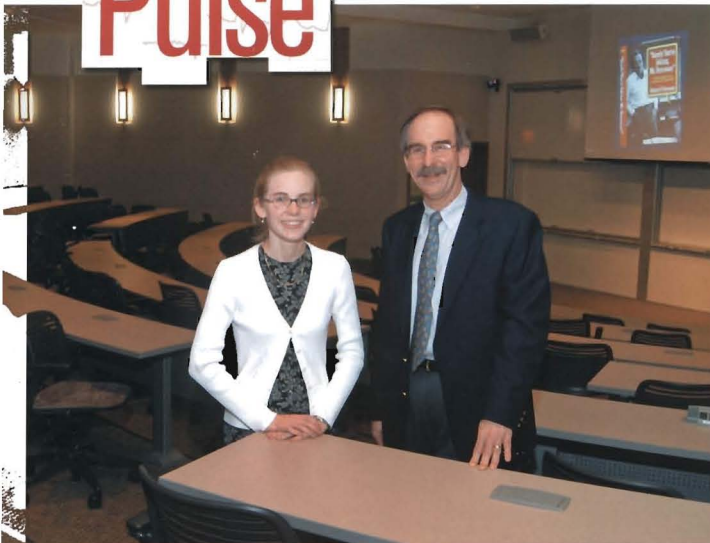
"We know a lot, and we're learning much more all the time, but some features that we would like to be able to definitively pinpoint are actually rife with uncertainty," he says. "And large fractions of the cortex have areas of controversy or outright error."

In all fairness to cortical cartographers, Van Essen notes, mapmakers charting the Earth never had to deal with the tremendous variability that is found in billions of individual human brains. Genetic and environmental differences, reactions to injury, and inherited disorders can all change the topography of the brain in minor and major ways.

To compensate for these variations, neuroscientists have developed a process called registration that lets them mathematically adjust the results of a brain scan to either match it with an atlas or enter it into the atlas. This approach previously has been used to assemble atlases based on study of the volume of different brain areas.

For the new atlas, Van Essen used a modified form of the process, called surface-based registration, that allowed him to bring the different folds of individual brains into alignment. This made it much easier to incorporate data from individual brains into the target atlas, leading to a dramatic improvement in the quality of the results.



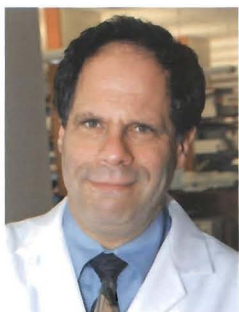


**A place for learning** Robert E. Connor, MD 79, and his eldest daughter, Haley, FA 05, attended the Farrell Learning and Teaching Center dedication in September. Connor, chief executive officer and lab director of Clinical Pathology Laboratory in Austin TX, named the center's Dr. Robert Emmet Connor Auditorium to help students and in gratitude to the School of Medicine for his educational experience and its lasting effects on his career.

## Tarr installed as Carnahan professor

PHILLIP I. TARR, MD, head of pediatric gastroenterology and professor of pediatrics, was recently installed as the first Melvin E. Carnahan Professor in Pediatrics.

The professorship was established by an anonymous donor in honor of the late Missouri Gov. Mel Carnahan, who was killed in a plane crash in October 2000.



Phillip I. Tarr, MD

The donor chose to name the professorship after Carnahan to honor and remember the governor's efforts on behalf of the State of Missouri and especially its children. That, along with the donor's high regard for School of Medicine pediatricians, offered an ideal fit for the Carnahan professorship.

Tarr came to Washington University from the University of Washington and Children's Hospital and Regional Medical Center in Seattle, where he was a professor of pediatrics and of microbiology.

His research focuses on how *E. coli* infects humans and cattle and the underlying mechanisms of gastrointestinal problems that result from *E. coli* infection, as well as treatment approaches for the infection.

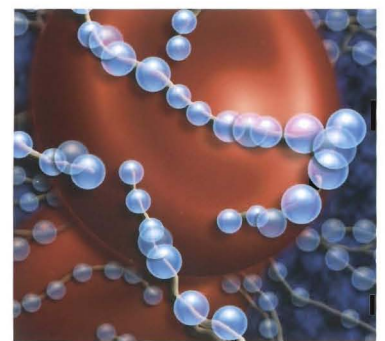
## \$16 million grant advances nanomedicine

NANO-SIZED PARTICLES developed at the School of Medicine offer hope of replacing numerous medical tests, scans or surgeries with a simple injection. The tiny spheres can travel through the bloodstream deep into the body to locate and highlight tumors undetectable by typical methods. While at the tumor site, the nanoparticles can deliver therapeutic agents to destroy the tumor.

To advance this promising technology, the National Cancer Institute (NCI) has awarded \$16 million over five years to the School of Medicine to establish the Siteman Center of Cancer Nanotechnology Excellence (SCCNE). The NCI also awarded funding for six other Centers of Cancer Nanotechnology Excellence around the United States.

Headed by Samuel A. Wickline, MD, professor of medicine, biomedical engineering, physics and cellular biology, the SCCNE

will research and apply nanotechnology to the diagnosis and treatment of cancer. Wickline, who also is a cardiologist at Barnes-Jewish Hospital, along with Gregory M. Lanza, MD, PhD, associate professor of medicine and a cardiologist at Barnes-Jewish Hospital, developed nano-scale particles that can home in on tumor cells to carry imaging agents and drug therapies directly to tumor sites.

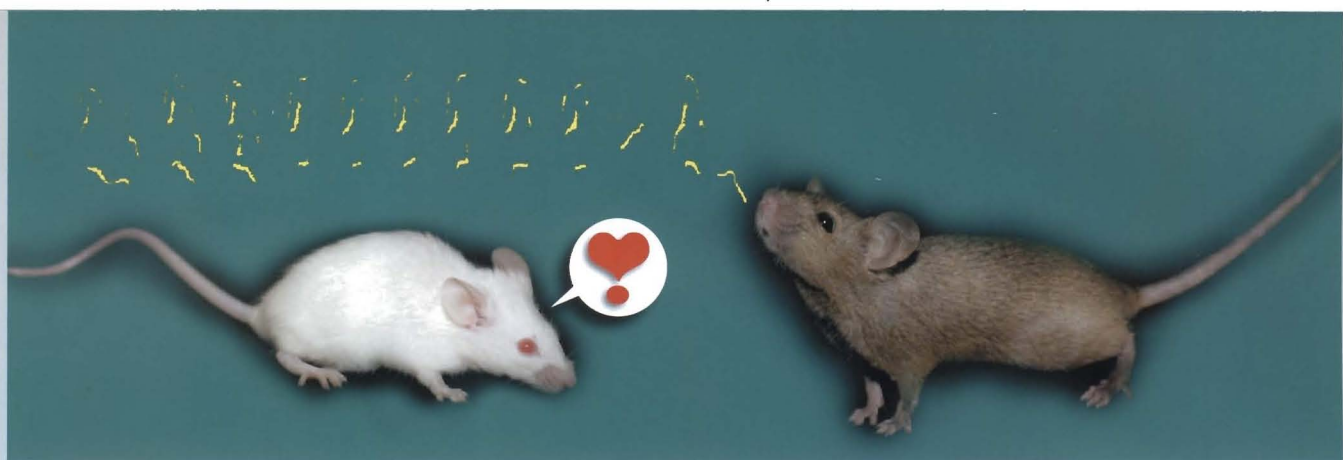


**Nano-scale particles can deliver effective, targeted therapies.**

"We've entered an era of precisely targeted and individualized cancer therapy," Wickline says. "Our nanotechnology will strongly affect the practice of medicine. And the grant from the NCI will allow us to build a highly effective collaborative network to bring the technology rapidly to clinical use in the treatment of cancer."

In addition to developing general oncology applications, the SCCNE will focus its efforts on breast cancer and melanoma detection and treatment. Some projects planned for the SCCNE include targeting of multiple tumors for early detection of cancer, a nanoparticle-based contrast agent for ultrasound imaging and therapy of tumors, statistical tools to model the behavior of nanoparticles in the body and novel nano-scale sensors for rapidly screening potential anticancer drugs in single cells.





## ANATOMY AND NEUROBIOLOGY

### Lab mice sing in the presence of mates, researchers find

**S**cientists have known for decades that female lab mice or their pheromones cause male lab mice to make ultrasonic vocalizations. But a new paper from researchers at the School of Medicine establishes for the first time that the utterances of the male mice are songs.

This finding, published online by the journal *Public Library of Science Biology* in November 2005, adds mice to the roster of creatures that croon in the presence of the opposite sex, including songbirds, whales and some insects.

"In the literature, there's a hierarchy of different definitions for what qualifies as a song, but there are usually two main properties," says lead author Timothy E. Holy, PhD, assistant professor of neurobiology and anatomy. "One is that there should be some syllabic diversity — recognizably

distinct categories of sound, instead of just one sound repeated over and over. And there should be some temporal regularity — motifs and themes that recur from time to time, like the melodic hook in a catchy tune."

The new study shows that mouse song has both qualities, although Holy notes that the ability of lab mice to craft motifs and themes isn't quite on a par with that of master songsmiths such as birds.

"Perhaps the best analogy for mouse song would be the song of juvenile birds, who put forth what you might call proto-motifs and themes," he explains. "It's not yet clear whether singing conveys an advantage to male mice during courtship, as it appears to do in birds."

Holy and study co-author Zhongsheng Guo, a programmer in his lab, came to be interested in mice vocalizations via the Holy

laboratory's studies of the response evoked in the male mouse's brain by female mouse pheromones. Pheromones are chemical signals emitted by

many different species that are frequently linked to mating.

"Studying this kind of response in mice lets us model higher-level tasks such as pattern recognition and learning in a brain where the neuroanatomy is much simpler than it is in humans," he explains. "The idea is to help us lay a foundation on which we can eventually construct a concrete

understanding of how these tasks are accomplished in the human brain."

According to Holy, scientists have not previously recognized mice vocalizations as song because they are unusually difficult to record and analyze. Only with the advent of improved technology for recording and analyzing the sounds and more powerful computers did it become possible to finally subject the vocalizations to careful analysis.

"We started recording the vocalizations to assess the factors that lead to recognition of female pheromones, but the vocalizations turned out to be much more complicated and interesting than we expected," he says. "That led us to decide to study them in their own right."

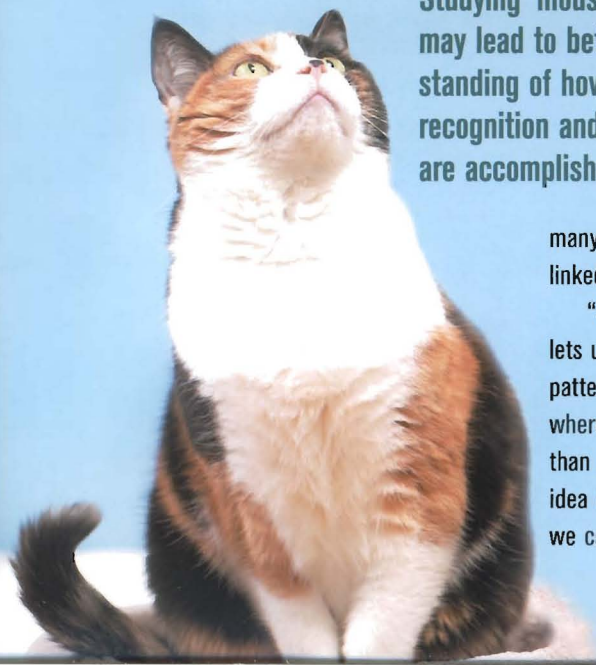
Likely areas for follow-up investigation include the question of whether wild mice vocalize in the same manner as laboratory mice, which have been kept and bred inside laboratories for more than a century.

"It's easy to imagine the wild mouse vocalizations will be different, since 'domestication' has changed many aspects of mouse behavior," Holy says. "So it would be intriguing to find out if their songs are more or less bird-like than the lab mouse songs."

Holy also wonders if mice learn singing from a tutor, as birds do.

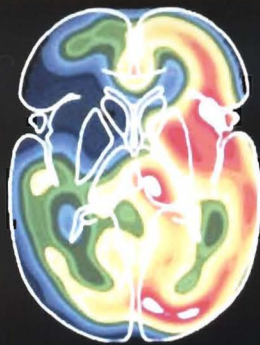
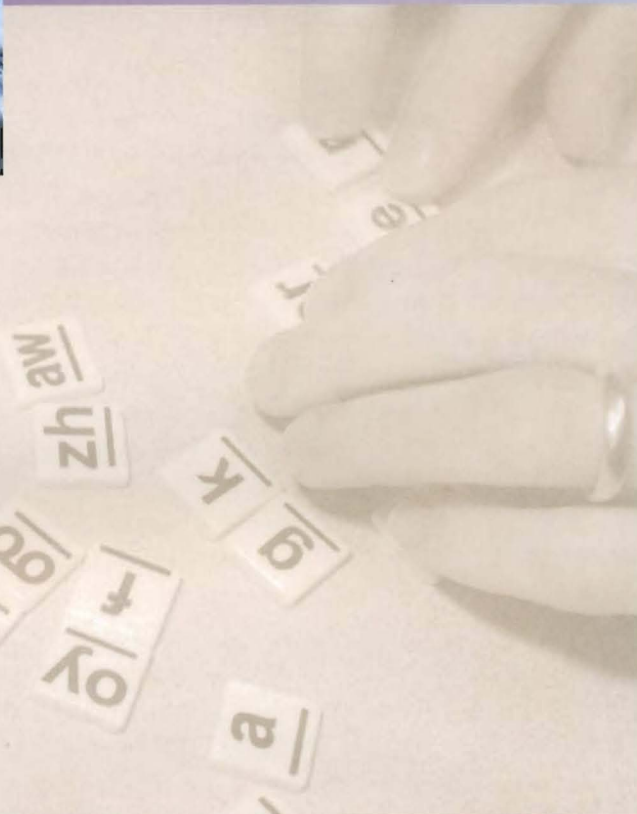
"If these processes occur in mice, it may be a little bit easier to study the genetic factors that underlie song-learning in mice, because we already have a completed mouse genome, and the mouse is well-suited for genetic studies," he says.

**Studying 'mousesong' may lead to better understanding of how pattern recognition and learning are accomplished.**





# rethink rehab



## Brain function scans

In addition to the area damaged by stroke (dark blue), a portrait of blood flow on the left side of the brain shows further functional decreases (green/yellow). The clinical scan (opposite page) shows the worst damage but misses these changes. Measuring alterations in brain function may help physicians and therapists better localize patients' deficits and track their recoveries.





BY MICHAEL PURDY



## Neuroscience can foster better approaches to aphasia treatment

**B**ill Edmunds suffered a stroke in 1998. He is grateful that his body was not paralyzed, but it did have a paralyzing effect on the regions of his brain involved in language.

Edmunds was diagnosed with Wernicke's aphasia, a condition that left him unable to speak intelligibly or understand what others were saying.

"It was awful," he recalls. "The thoughts and ideas were still there, but they were always locked inside my mind."

Edmunds was one of the first patients treated at an innovative new clinic that merges research and clinical care at Washington University Medical Center. This integrated approach helped him relearn how to talk, write, read and understand the spoken word.

**Like any other rehabilitation clinic**, the aphasia clinic's primary goal is improving patient quality of life. But the clinic's founders have another important item on their agenda: to put science firmly in charge.

"Many concepts currently being used in rehab clinics are treatments that have not been evaluated in rigorous evidence-based trials or are not based on current neurobiological understanding," says Maurizio Corbetta, MD, the Norman J. Stupp Professor of Neurology and clinical director of the Rehabilitation Institute's Stroke and Brain Injury Program.

Together with Robert Fucetola, PhD, assistant professor of neurology, Corbetta set out to revamp existing aphasia treatment programs. They devised a number of reforms and new approaches that apply scientific principles to ensure that patients receive the most effective therapies available and to mandate continuing reevaluation of the treatments' effectiveness.

"You might be thinking, 'Well, isn't that what any other medical specialist would do?'" Fucetola says. "But actually, that's not what typically happens in rehab, and we wanted to change that."

Corbetta thinks most rehabilitation clinics have not taken advantage of a series of dramatic advances in neuroscience. Many of those changes center on scientists' sense for how much the mature brain can change and adapt to injury.

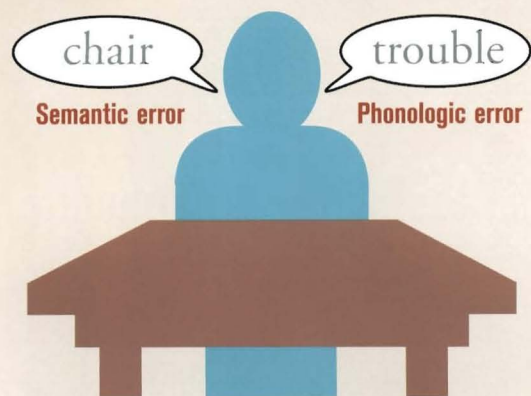
"For many years, we thought that the adult brain had no plasticity, which is the ability to either form new connections or for still-healthy brain regions to adapt themselves to take on the functions of brain regions lost to injury," Corbetta says. "But there has been more and more evidence that the adult brain is actually plastic at many different levels: genes, molecules, neurons and areas."

**Integrated approach** Science meets therapy when treating aphasia patients like Bill Edmunds: Above, with Karen Blank, lead speech pathologist at the Rehabilitation Institute of St. Louis, and below, with Washington University faculty members Robert Fucetola, PhD, left, and Maurizio Corbetta, MD.



## Understanding aphasia

Patient wants to say “table”...



Semantic and phonologic errors plague many aphasia patients. Others struggle to plan the motor movements—jaw, lips and tongue—necessary to say words, or have difficulty reading and writing.

### Something to talk about After Stroke: Back to Living

“Even with the best rehabilitation, considerable disability may remain after stroke,” says Fran Tucker, speech pathologist and a senior scientist in the School of Medicine’s Program in Occupational Therapy. Tucker coordinates the After Stroke: Back to Living program offered by Barnes-Jewish Extended Care and the BJC WellAware Center and funded by the Barnes-Jewish Hospital Foundation.

The After Stroke program offers two options for stroke survivors who have completed formal rehabilitation: a customized group fitness program and the Aphasia Conversation Connection, in which people with aphasia meet regularly to talk and engage in activities led by a trained group facilitator. This interaction allows them to maintain language skills recovered during therapy.

“People with aphasia lose much of their social context,” Tucker explains. “Many are unable to return to work and become isolated from friends, which often leaves them feeling lost and depressed. The After Stroke: Back to Living program helps them to regain their sense of identity, providing a bridge back to the community.”



**G**rowing awareness of the brain’s remarkable ability to recover lost function has been pleasantly surprising, but it also has posed a complex question: How much of the restoration that patients experience in rehab has been due to the treatments they receive, and how much of it stems from the brain’s own natural recuperative abilities? Corbetta and Fucetola hope the design of the new aphasia clinic can help them draw that distinction more clearly.

At the start of their redesign efforts, Corbetta and Fucetola spent nearly two years conducting an extensive review of the last 40 years of published scientific literature on speech therapy treatments.

“It was an ocean of treatment trials, but the quality was variable,” Corbetta says. “We evaluated how scientifically rigorous the evidence presented by each paper was and assigned them to a category based on that evaluation.”

At the same time, they developed a process for detailed testing and categorization of the disabilities aphasia inflicts on a patient’s language skills. Patients may have one or more of many types of language problems linked to aphasia. Each of these problems needs different treatment, Fucetola notes, but in many current rehab clinics the patients’ problems are never given a particularized assessment.

The new Evidence-Based Aphasia (EBA) clinic is different. The disability categorization system (based on an up-to-date model of language function including linguistic, neuropsychological and brain imaging information) and the literature review of speech therapy treatments came together in a series of clinical decision-making flow charts that match components of disability and neuroanatomical information with treatments deemed most likely to be helpful.

For many patients, treatment means long hours spent in simple language exercises, such as repeating a word or rhyming short words — grueling work that sometime lasts five to six hours a day, five days a week. Such intense practice has been shown to be most effective at helping patients regain skills.

For Bill Edmunds, the process has been very beneficial: He has recovered to the point at which he now works as a volunteer at Barnes-Jewish Hospital and has started sending out his resume to potential employers.

“I’m nervous about what could happen, but you have to keep moving,” he says. “You’ve lost if you stop.”

Patients enrolled in the EBA clinic also can participate in research programs on brain recovery funded by the



## Washington University School of Medicine



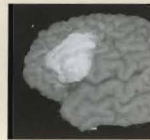
### DIAGNOSIS

The Evidence-Based Aphasia Clinic diagnoses patients with language deficits. They undergo treatment and also may choose to participate in research.



### RESEARCH

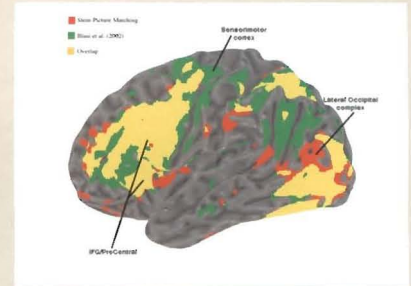
Can the brain adapt to a stroke? Studies at the Attention and Brain Recovery Lab reveal that recovery from language and attention deficits depends on the reactivation and rebalancing of stroke-affected regions and recruitment of regions near the damaged area.



## The Rehabilitation Institute of St. Louis

### TREATMENT

Treatments such as phonemic awareness therapy help patients refocus their language skills.



National Institutes of Health and the J.S. McDonnell Foundation. Corbetta and Lisa T. Connor, PhD, research instructor in radiology, are using functional brain imaging scans to understand the neural mechanisms underlying language recovery in patients with aphasia. They also are trying to develop predictors of good vs. poor outcome.

“We’ve discovered that patients with reactivation on the left side around the areas damaged by stroke tend to recover better than patients in whom the right side of the brain becomes more active after stroke,” Corbetta says. Now Connor is beginning to test the brain changes induced by new speech therapy interventions.

**A**s a patient progresses through treatment in the EBA clinic, he or she is evaluated every six months by a clinician unfamiliar with the patient’s history: how long ago the stroke occurred, location of the lesion, method of treatment, the detailed nature of their disability. All the evaluator knows is that the patient has aphasia. The goal is to keep a separation between clinicians measuring the impairment or disability and those treating the patients. This “double blind” principle, essential in other specialties but less common in rehabilitation, prevents an evaluator who also is providing treatment from delivering a biased assessment of the treatment’s results. The method, says Corbetta, is critical to confidently assess the efficacy and validity of an intervention.

**“This is a clinic; this is not a research study. But we have designed the clinic as though it were an experiment.”**

**ROBERT FUCETOLA, PHD**

“This is a clinic; this is not a research study,” notes Fucetola. “But we have designed the clinic as though it were an experiment.”

Patient progress also is assessed through other sources, including interviews with family members and friends and tests of the patient’s ability to use language in real-life contexts.

If a treatment seems to be having little effect, a record is made and another treatment is tried. Over time, these records help clinicians more effectively match patients to the treatments most likely to be beneficial.

The researchers plan to share what they are learning with other clinics via publications and presentations at scientific meetings. A 2005 paper published in the journal *Aphasiology* reports the first results obtained in the new clinic.

Corbetta and his colleagues have already begun laying the groundwork needed to apply this model of clinic design to other disabilities induced by stroke and traumatic brain injury.

“Stroke is the third-leading cause of death, but it is the number one cause of disability,” Corbetta notes. “And there’s a real need to scientifically prove that our interventions for patients can significantly help them overcome those disabilities. We need that both in terms of justifying the economic costs of treatment to policy makers and in our efforts to actively develop and improve therapy.” □



# ELEMENT OF **RISK**

Problem gambling. What are the chances of addiction?

BY JIM DRYDEN





**L**EGEND HAS IT HE DIED holding two pair: aces and eights. For 129 years, the last hand of James Butler “Wild Bill” Hickock — shot in the back of the head while playing poker — has been known as the “dead man’s hand.”

You might say poker was bad for Hickock’s health. Clearly it, along with other games of chance, is bad for those who lose their houses, cars or families as a result of compulsive gambling. Still, more than 80 percent of the U.S. population gambles without running into trouble.

What determines who will have problems? Why are some compelled to bet, while others never go near a casino, bingo parlor or gaming web site? Does the increased availability of gambling create more pathological gamblers?

Researchers from the Department of Psychiatry and the George Warren Brown School of Social Work are at the forefront of the relatively new field of gambling research. Together, they’re working to understand the parallels between gambling and other forms of addiction.







“Like pathological gamblers, problem gamblers tend to engage in a great variety of gambling behaviors, and possibly increase their risk of crossing the threshold into pathological gambling disorder,” she says.

For that reason, much of her research involves using the GAM to learn whether there are ways to help determine which gamblers might become problem gamblers

and which problem gamblers might progress to pathological gambling. A recent study from the *Journal of Psychiatric Research* points to two activities that might indicate a risk for crossing over: betting on the stock or commodities markets and betting on bingo.



**“Most of the calls to gambling hotlines come from concerned loved ones, so if we could tell them to look for certain risk factors, we might be able to get pathological gamblers treatment before they hit bottom and lose everything.”**

RENEE M. CUNNINGHAM-WILLIAMS, PHD

She says substance abuse is a good model for gambling disorders. In fact, many of the diagnostic criteria for gambling disorders are nearly identical to those used for diagnosing substance abuse disorders.

“The American Psychiatric Association lists 10 criteria linked to pathological gambling, things like preoccupation, needing to gamble more often or make larger bets to obtain the same level of excitement, and lying to conceal gambling involvement,” says Cunningham-Williams. “If a person meets five or more of those criteria, that individual is considered a pathological gambler, but if it’s only four, officially that person doesn’t have a psychiatric condition.”

Cunningham-Williams and colleagues call the latter group “problem gamblers” because many have substantial problems whether or not they add up to an official diagnosis.

It’s unclear why those activities might lead to betting the house on a good poker hand or stealing money from a spouse to go to the casino, but this study does seem to indicate that problem gamblers are at risk.

“That’s important, because it might help health professionals and family members recognize the signs that someone is getting into trouble,” Cunningham-Williams says.

Evidence also suggests that people who gamble tend to smoke and drink more than non-gamblers. However, there’s little corresponding evidence that smokers or heavy drinkers are more likely to gamble.

Cunningham-Williams and her colleagues also have found that the total number of problem gamblers is growing as the availability of legal gambling increases. “Everywhere it’s been looked at, people have seen increases in problem gambling indicating that the greater availability



The Gambling Assessment Module (GAM), a diagnostic tool they developed for detecting pathological gambling disorder, helps the researchers to determine whether a person is a pathological gambler and to learn what type of gambling (e.g., lottery, bingo, poker) causes problems for that individual. The assumption is that different people have problems with different types of gambling, and that researchers probably would do better not to lump football betting, slot machines, bingo and craps under the single umbrella “gambling,” just as they would not consider marijuana, beer, cocaine and heroin simply as “drugs.”

“We hope to be able to move beyond the question of whether a person is a pathological gambler or not and do what we do in substance abuse research,” says Renee M. Cunningham-Williams, PhD, visiting associate professor at the George Warren Brown School of Social Work. “If a person is dependent upon marijuana, for example, he or she might have a very different profile than a person who is dependent upon cocaine. We’re trying to move gambling research in that direction, but we’re not there yet.”





of casinos increases the number of people who get into trouble with gambling,” says C. Robert Cloninger, MD, the Wallace Renard Professor and director of the Sansone Family Center for Well-Being in the Department of Psychiatry.

**A**lthough the total number of people with problems has increased, it's not clear that the rates of problem and pathological gambling are rising. It's a conundrum for epidemiologists like Linda B. Cottler, PhD, professor of epidemiology in psychiatry and director of the Epidemiology and Prevention Research Group.

“I don't know that the availability of casinos has changed the addictive liability of gambling,” Cottler explains. “More people have access, so there are greater numbers with gambling problems, and that needs to be addressed by policy makers. But the rate of pathological gambling remains at about 1.8 percent.”

Cottler and Cloninger say gambling research lags a bit behind research into other addictions, such as alcohol or drug dependence. But they both emphasize that it's clear the research needs to advance.

That's where Cunningham-Williams and the GAM come in. She hopes the tool will help researchers learn how prevalent gambling problems are in the population and identify risk behaviors linked to gambling problems. They also are attempting to identify genetic, environmental and personality factors related to pathological gambling.

Cloninger says most advertising for gambling, as well as ads for smoking cigarettes or drinking alcohol, tend to make the activity look like a way to have lots of fun and meet beautiful people.

“If someone is impulsive and not very mature, and you make alcohol easily available to them and encourage it as a way to relax and cope with stress, they're very likely to develop alcohol problems,” Cloninger says. “In the same way, if you promote casinos as a good way to have fun and get cheap meals and so on, you minimize potential dangers, and some people get seduced into behavior that isn't good for them.”

Cunningham-Williams worries that the current gambling climate is

**“If you promote casinos as a good way to have fun and get cheap meals and so on, you minimize potential dangers, and some people get seduced into behavior that isn't good for them.”**

**C. ROBERT CLONINGER, MD**

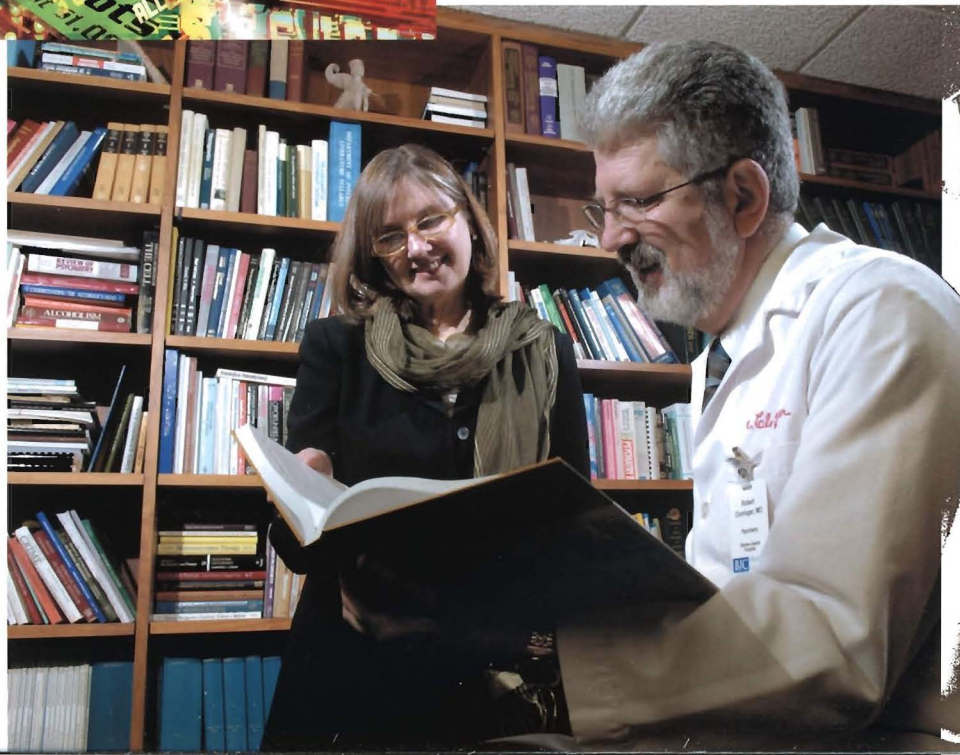
**[PICTURED WITH LINDA B. COTTLER, PHD]**



continually creating new problem gamblers. The proliferation of casinos may be part of the problem, but she predicts a bigger issue may be illegal gambling on the Internet. As televised poker grows in popularity, Internet poker games are becoming more common. It's an especially big concern in regard to high school and college students.

“Individuals who have pathological gambling disorder tend to have an earlier onset of gambling,” she says. “I am concerned about the level of gambling that I hear about on college campuses, and I think we're doing a disservice to teens and to college students by not educating them about the dangers of gambling the same way that we talk about the dangers of drugs or alcohol.”

That, says Cottler, is why more studies on gambling are needed. As the kids who are playing Internet poker become adults, will they spend time in casinos? Or will they outgrow the habit? Learning the answers to those questions will require a study that looks at gambling problems over the course of several years. □







School of Medicine surgeons pioneered minimally invasive treatment of aortic aneurysms. But could drug therapy prevent them entirely?

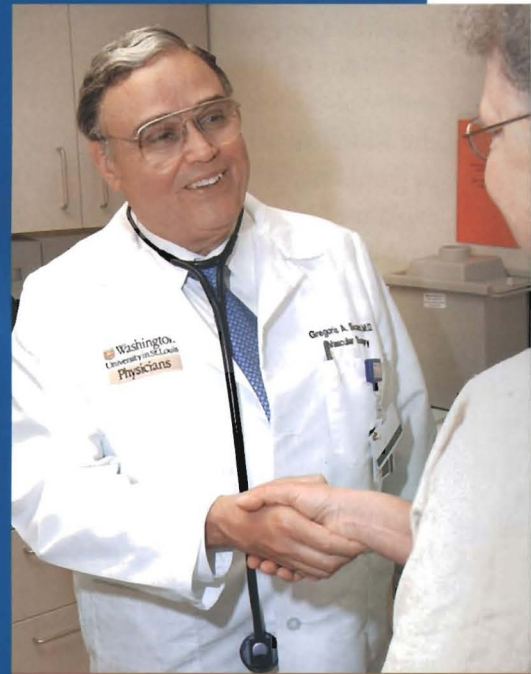


# (battle of the bulge)

BY GWEN ERICSON

**W**HEN THE AORTA, the body's central lifeline, weakens and swells dangerously, this aneurysm can grow life-threatening. If it bursts, the circulatory system will drain within minutes. The patient has only a 20 percent chance of reaching the hospital alive; half of those who receive treatment will survive.

The School of Medicine's section of vascular surgery, directed by Gregorio A. Sicard, MD, head of the division of general surgery, has advanced a technique called endovascular repair for preventing these aortic ruptures. Researchers also are investigating whether drug treatments could one day prevent aortic aneurysms.



VISIONARY: Gregorio A. Sicard, MD

**“Early on, Dr. Sicard recognized and fully embraced the potential of this ‘crazy idea’ of sliding a new lining into the aorta. If it wasn’t for his foresight, we would be caught way behind the curve.”**

**BRIAN G. RUBIN, MD**



Endovascular repair offers a far less invasive alternative to open surgery, and the surgeons of the vascular surgery section are leaders in its use.

“Endovascular treatment of aortic aneurysms is one of the greatest innovations in vascular surgery in the last 30 years,” says Sicard.

The technique uses a collapsible synthetic graft that is threaded into the aorta from the iliac arteries of the legs. Once in place, the graft is deployed, expanding to the width of the healthy aorta and bridging the distended portion. Because the aneurysm is accessed through the iliac arteries, the procedure requires only small incisions near the groin.

“Early on, Dr. Sicard recognized and fully embraced the potential of this ‘crazy idea’ of sliding a new lining into the aorta,” says Brian G. Rubin, MD, associate professor of surgery, who practices in the vascular surgery section. “If it wasn’t for his foresight, we would be caught way behind the curve.”

Before endovascular repair came on the scene, surgeons had to open patients’ abdomens or chests to replace aneurysmal sections of the aorta with sewn-in grafts. But in 1990, Juan C. Parodi, MD, treated the first patient with the new approach in Buenos Aires, Argentina.

Parodi met with great resistance when he first proposed the technique because it was a radical departure from established procedure.

“In 1976, I told my chief I was developing a new system that could eventually be used under local anesthesia to replace the huge, stressful repair operation,” Parodi says. “Initially, the idea wasn’t taken seriously at all, and after my first presentations, I was

verbally attacked. But then I met Greg Sicard who said, ‘Continue with it. I think it is going to have a big future.’”

Parodi, now a vascular surgeon on the Washington University faculty, was vindicated in clinical trials, and endovascular devices were FDA approved in 1999. Parodi’s endovascular system is used to treat 80 percent of patients at the School of Medicine with aneurysms large enough to pose a danger. Instead of open surgery with its risks and long recovery period, patients can go home the day following treatment.



PIONEER: Juan C. Parodi, MD

**“In 1976, I told my chief I was developing a new system that could eventually be used under local anesthesia to replace the huge, stressful repair operation,” Parodi says. “Initially, the idea wasn’t taken seriously at all, and after my first presentations, I was verbally attacked.”**

Ninety percent of aortic aneurysms occur in the lower abdominal section of the aorta. Much of this section lies below the point where smaller arteries branch off to carry blood to the kidneys. So most endovascular repairs use a fairly simple graft having a large “body” section for the aorta and two smaller “legs” that extend down into the iliac arteries.

But recently it has become possible to apply endovascular repair to parts of the aorta higher in the abdomen and even up into the thorax.

“The newest endovascular devices allow us to work further and further up the aorta where it has branches that go to the kidneys, thorax, arms, heart, neck and head,” says Luis A. Sanchez, MD, associate professor of surgery. “It’s important not to cover the branches with the grafts, so these new grafts have complex sets of fenestrations and tubes to accommodate the upper regions.”

Because of the number of branches in this region of the aorta and the structural differences between patients, it takes detailed imaging studies and careful planning to create custom grafts for upper abdominal and thoracic aortic aneurysms. Now the next wave of physicians, including Sanchez, is training to use these grafts to repair aneurysms in the upper aorta.







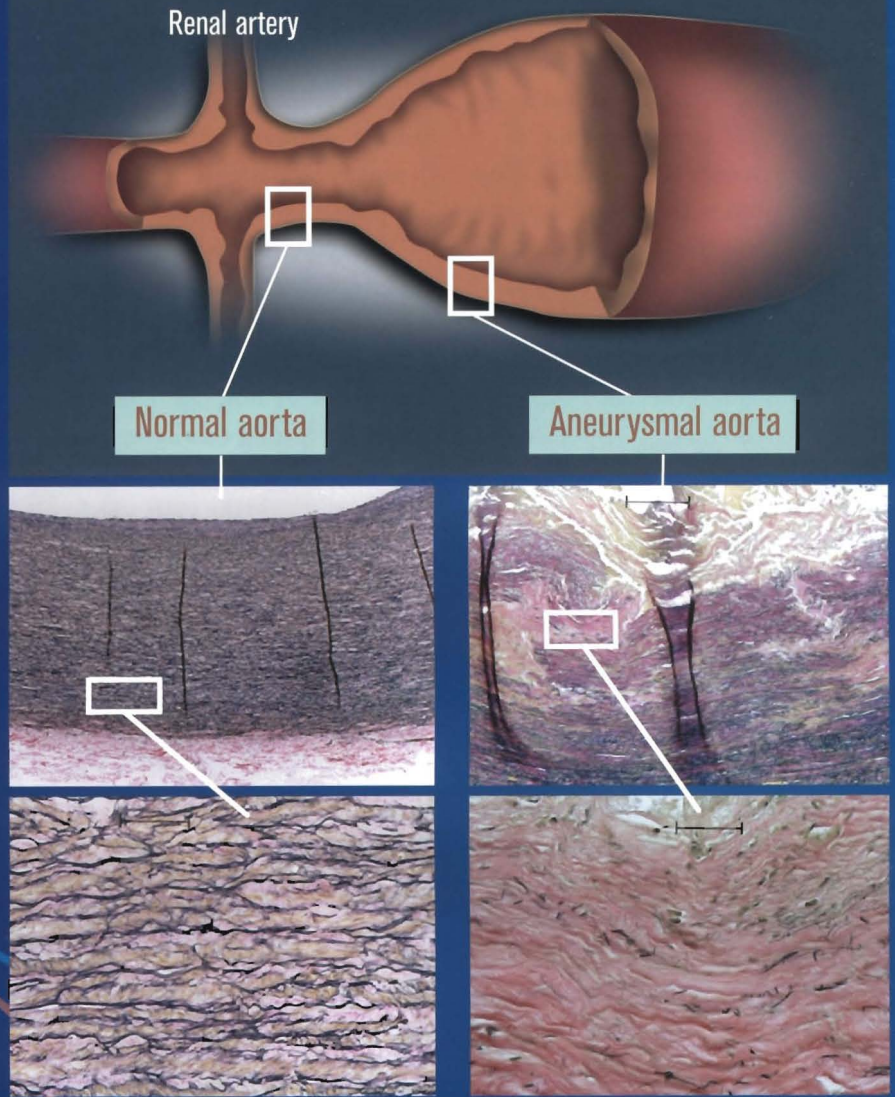
# Abdominal aortic aneurysms

**W**hen the aortic wall expands dangerously, left, a rupture can quickly drain a life. Endovascular repair places a stent to bridge the damaged aorta. Researchers at the School of Medicine are perfecting such surgical techniques, as well as exploring therapies to prevent the occurrence of aortic aneurysms.



ZENITH COOK STENT

## HEALTHY AND DISEASED TISSUE COMPARED

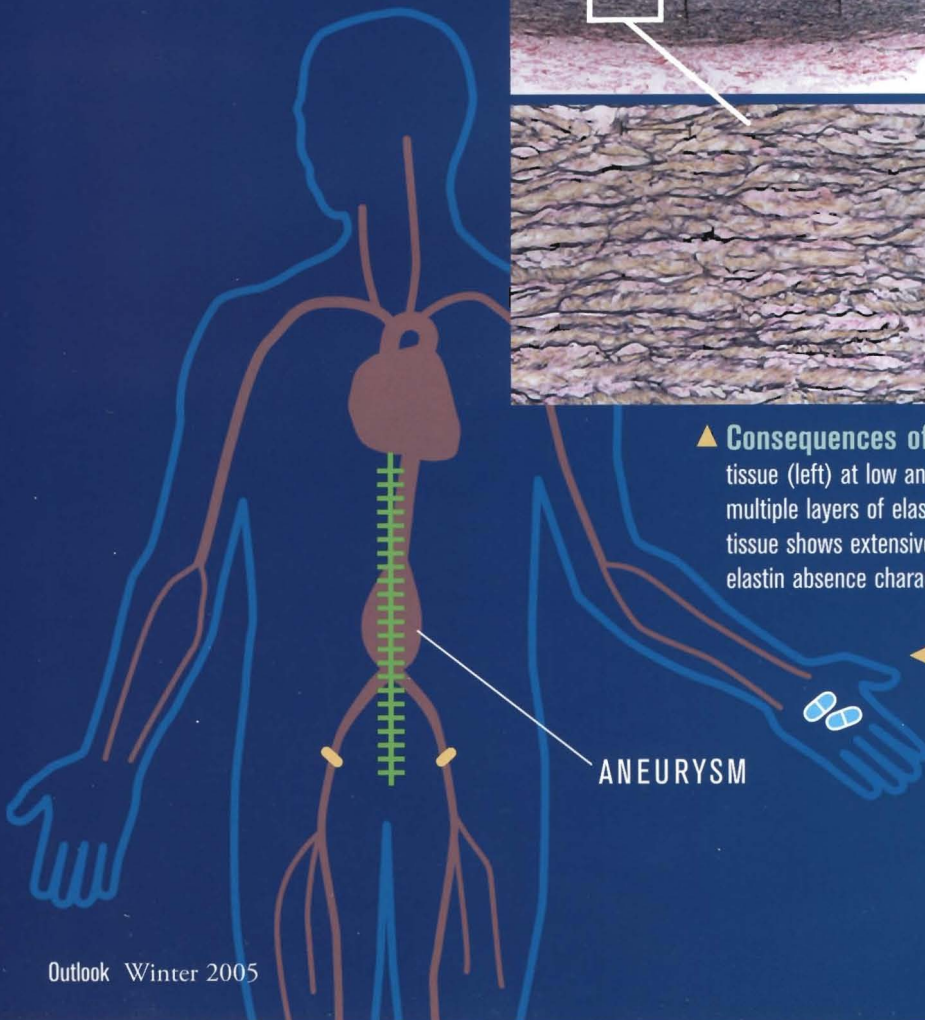


Normal aorta

Aneurysmal aorta

▲ **Consequences of aortic aneurysm** Normal aortic tissue (left) at low and high magnification; stain reveals multiple layers of elastic fibers. On the right, aneurysmal tissue shows extensive elastin fragmentation and areas of elastin absence characteristic of aortic aneurysm disease.

◀ **Dramatically different approaches** The long scar of a traditional surgical repair (green) denotes a hospital stay and a long recovery. An endovascular procedure leaves two small entry marks in the groin (yellow), and the patient soon returns home. Promising drug therapies (light blue) may improve surgical outcomes and could even limit the development of aneurysms.



ANEURYSM

LINDA S. INYE

CURCI LAB



**O**n another front, physicians hope to do away with grafting by preventing aneurysms or halting their expansion while too small to do harm. They are studying the molecular mechanisms involved in destruction of the aortic wall.

One of the most important of these components is elastin, the most abundant protein in the aortic wall. As its name suggests, elastin allows the aorta to stretch and return to its original shape with each heartbeat.

"There's a loss of elastin in normal individuals as they age," says Robert W. Thompson, MD, professor of surgery. "But in aneurysms the loss of elastin becomes more accelerated and more severe."

Enzymes that break down elastin have been found in abnormally high amounts in aneurysms. One in particular, an enzyme called matrix metalloproteinase-9 (MMP-9) has emerged as a major subject of study.

Work by Thompson and John A. Curci, MD, assistant professor of surgery, showed that the antibiotic doxycycline, a member of the tetracycline family of drugs, inhibits the activity of MMP-9 in mice and humans and suppresses the

formation of aneurysms in mice. Preliminary human studies have shown promise in reducing the rate of aneurysm expansion.

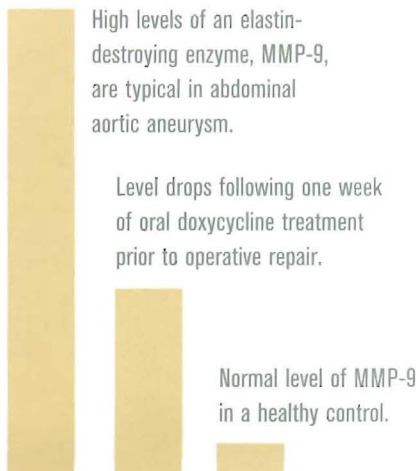
Even at this early point, however, as information about the effect of doxycycline has spread, many doctors are already prescribing the drug to aneurysm patients in hopes of stopping progression of their disease.

Doxycycline also may increase the effectiveness of endovascular repair grafts, which can shift position if the aorta dilates over time. The researchers are now completing the first study testing this hypothesis.

"Expansion of the neck of the aneurysm where the graft touches it may be related to the same process that caused the aneurysm to grow in the first place," Thompson says. "So Dr. Curci and I are studying whether systemic as well as local delivery of doxycycline could stabilize aneurysm growth. That could lead to a doxycycline-eluting graft that would prevent future aortic expansion."

Thompson is also investigating other promising treatments for the prevention of aneurysms including statins, frequently used to treat atherosclerosis and high cholesterol,

## Drug curtails destructive enzyme



and curcumin (turmeric), the anti-inflammatory ingredient in curry.

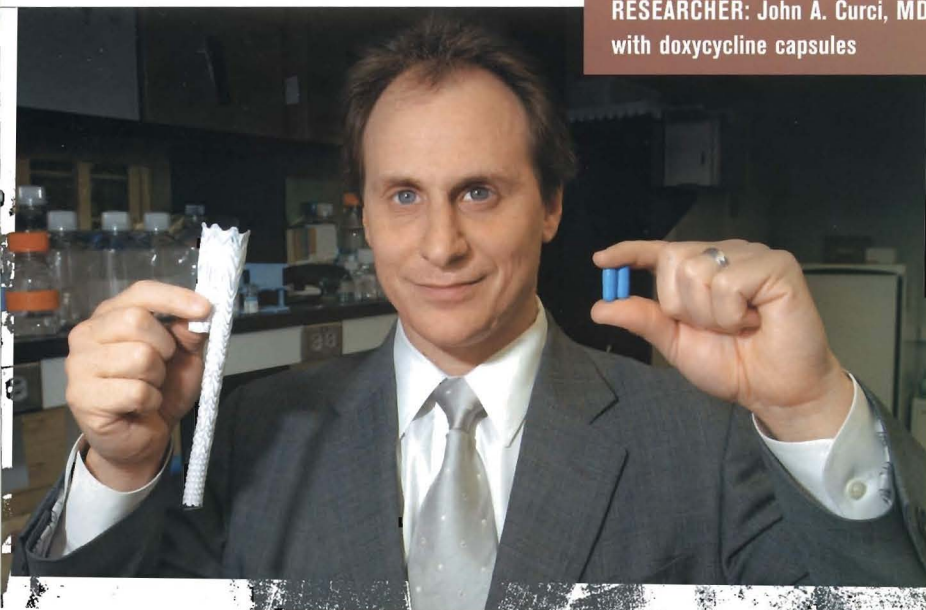
Yet one of the best known ways for people to decrease the risk of developing an aneurysm is to not smoke. Smoking dramatically increases the incidence of aneurysms, and Curci is looking into the cause.

"The puzzle is what's the connection between what's inhaled in the lungs and what's happening in the aorta," Curci says. "In my lab, we are trying to sort out what change occurs as the result of smoking that leads to aneurysmal degeneration."

Curci also leads a research project that investigates why smooth muscle cells decrease in number in aneurysmal tissue. Evidence suggests that aneurysms contain their own unique subtype of smooth muscle cells that contribute to the disease.

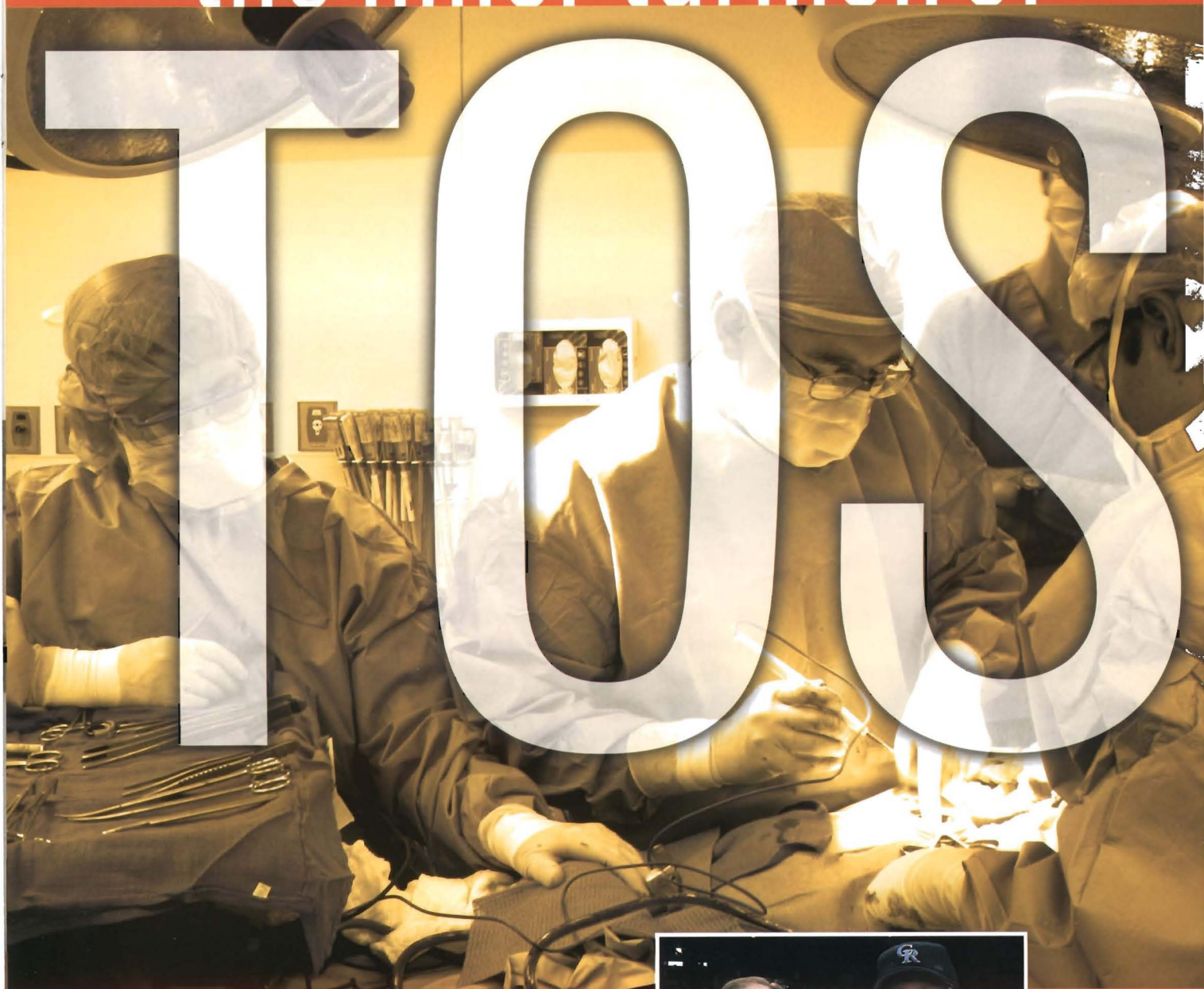
"At the School of Medicine, we are on the front lines of dealing with aortic aneurysms," Curci says. "We can treat them with surgical and endovascular techniques. But because we also conduct research, we can bring clinical practice and research together to create really interesting new ways of considering the disease and its treatment." □

**RESEARCHER:** John A. Curci, MD, with doxycycline capsules



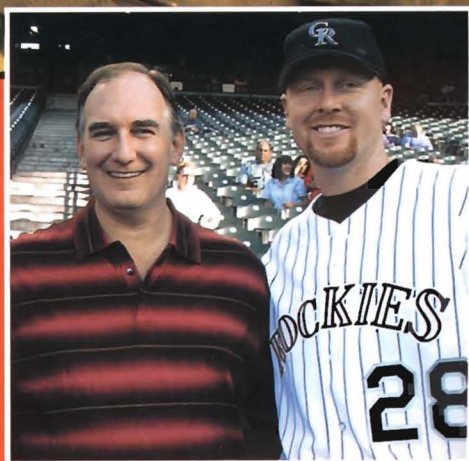


# the inner turmoil of



**Misunderstood  
syndrome responds  
to delicate surgery**

BY CANDACE O'CONNOR



On the rebound  
from Thoracic  
Outlet Syndrome:  
Aaron Cook is back  
in the game following  
surgery by Robert W.  
Thompson, MD.

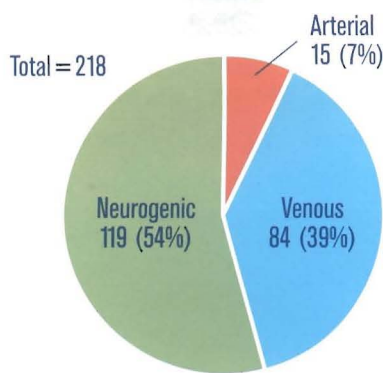


**T**WO YEARS AGO, when Aubrey Turvey first visited vascular surgeon Robert W. Thompson, MD, she was desperately in need of answers. For four hard years, she had bounced from one physician to another, trying to discover the cause of disabling pain above her collarbone and in her right arm. Standard tests came back negative, and finally one specialist suggested the pain was in her head. “That was a real slap in the face,” she says now. “I started wondering, ‘Could I be creating this?’”

**O**n the mound, he was short of breath and dizzy, his pitching speed slacked off and he gave up a series of hits before being pulled from the game. For Colorado Rockies pitcher Aaron Cook, his ordeal began during an August 2004 game against the Cincinnati Reds. Trainers discovered a low blood oxygen level and sent him to a Denver hospital where doctors dissolved dangerous clots in his lungs — but what was causing them? Two weeks later, he came to Thompson for treatment.

**S**uffering from versions of the same condition, both Turvey and Cook were diagnosed with Thoracic Outlet Syndrome (TOS). In its neurogenic form, the kind Turvey had, TOS is difficult to diagnose and little understood. Some doctors even doubt its existence, because overt physical signs may not appear for years; eventually Turvey’s arm turned blue and felt cold to the touch. Venous TOS, the kind Cook had, is more easily recognized because it entails a blood clot that is visible in imaging studies.

**Operations at Barnes-Jewish Hospital for Thoracic Outlet Syndrome 1992-2005**



Competitive athletes = 31  
(14% of total)  
(37% of venous)

Thompson is a national expert on TOS in all its forms — including a third version, arterial TOS — and he is working to build a multidisciplinary TOS center at Washington University. But at one point, he knew little about it, because his surgical training in Boston barely touched on the condition. Only during a vascular surgery fellowship at the University of California-San Francisco, a center with long experience in TOS, did he begin treating several patients a week. All had the same story: a chronic, debilitating arm or neck condition that had baffled their physicians.

“When I saw these patients several months after surgery, I found their lives had changed,” he says. “They might still have some symptoms, but the majority had substantial improvement. It is tremendously satisfying to help return someone to a full and active life, especially from a condition that is so misunderstood.”

**Types of TOS** While doctors once thought that patients with an extra cervical rib were more prone to neurogenic TOS, most now focus on the adjacent thoracic outlet space: a tight anatomic area bounded by the two scalene muscles and the first rib. In neurogenic TOS, an injury probably causes tearing and spasm in the scalene muscles, which become inflamed and scarred, irritating the adjacent nerves. In arterial TOS, the patient has developed an aneurysm of the subclavian artery in the neck; clots may break off and travel to the hand, which turns painful and numb.

Venous TOS — sometimes called “effort thrombosis” — begins when the subclavian vein is pinched between the rib and collarbone, which leads to a vein injury. With repeated injuries, a cuff of scar tissue forms, narrowing the vein; pressure builds up behind it, and the body forms collateral vessels to handle the



blood flow. But the obstructed vein still has some stagnant blood flow, prone to forming a clot; if this clot propagates, blocking the collaterals, the arm suddenly swells.

Athletes like Cook may be especially vulnerable to such injury, but others who repeatedly use their arms overhead are also susceptible.

In general, TOS occurs in young people: under age 45 in the neurogenic form and under age 25 in the venous and arterial kinds. In neurogenic TOS, perhaps three-quarters of all patients are women. Overall, the TOS population consists of 80 percent neurogenic cases, 15 percent venous and 5 percent arterial.



Former TOS patient Aubrey Turvey now works for Thompson; here she explains TOS to a new patient.

**Surgical Solution** Caught early, mild neurogenic TOS may respond to appropriate physical therapy. Aubrey Turvey, injured when she was thrown from a horse, initially received incorrect therapy that only exacerbated her condition. Later, she had the right kind of therapy, but it still did not help. She went to see Thompson.

Both Turvey and Aaron Cook decided to undergo the delicate TOS surgery (see sidebar), which can range from three hours for neurogenic TOS and up to 12 hours in some cases of venous TOS. Some patients have dramatic results.

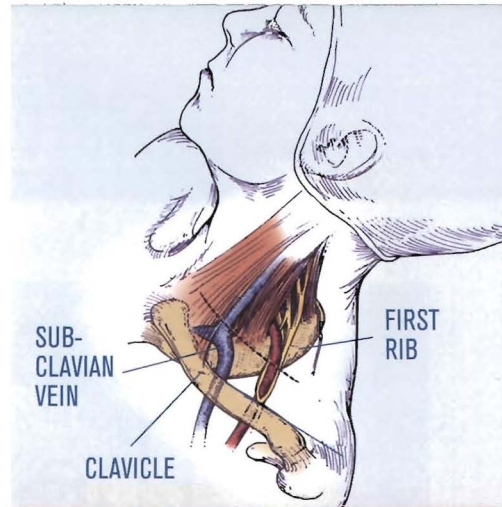
“Those are the patients you dream about, who tell you in the recovery room that all their symptoms are gone,” says Thompson. “More often, we see a gradual improvement over four to six weeks, while patients undergo significant physical therapy.”

To athletes, Thompson gives a chilling warning at the outset. “We say, ‘This is potentially a career-ending problem; now let’s see what we can do for you.’” Cook’s outcome was good. After September surgery, he could throw a little in spring training; by mid-season, he was in the starting rotation, and by late in the season he had a 7-2 record, with his manager proudly calling him their “man.”

During that first visit to Thompson’s office, Aubrey Turvey learned that she had a physical condition — one that was treatable. “At that point,” she says, “I had been put on nearly every possible medication. I just started crying and said, ‘Thank God, somebody finally believes me.’”

Two months following surgery, she and her mother came back to Thompson’s office for a follow-up visit. “We both cried again, because we were so thankful that he had given me my life back.” Now Turvey works as a research assistant, videographer and photographer in Thompson’s office and tells new patients about her experience.

“So many of these people have gone through exactly what I did,” she says. “There is an important need for education about Thoracic Outlet Syndrome, not just for patients but also for physicians. Medical professionals need to be able to recognize this condition and get patients to the right place at the right time.” □



## TOS surgery

In all three forms of Thoracic Outlet Syndrome (TOS), surgery begins with an incision above the collarbone. The surgical team removes the anterior scalene muscle, revealing the underlying nerve roots; they expose each one, meticulously clearing away scar tissue. Behind the nerves is the middle scalene muscle, which they take out next. The first rib is exposed in the process; they take as much of that as they can.

“For **neurogenic TOS**, that is the extent of what we do,” says Thompson. “We close the wound, wrapping the nerves with a gel to reduce adhesions and scarring.”

If the patient has **arterial TOS**, the team continues, removing the damaged piece of subclavian artery and replacing it with a graft. After repairing the artery, they clear small clots from blood vessels in the patient’s hand, using thrombolytic drugs.

In **venous TOS**, an important first step is dissolving the initial clot, which helps the team to identify the underlying problem. The subsequent surgical repair — the most complicated TOS procedure — involves the same steps as neurogenic TOS, as well as a second incision below the collarbone to remove the entire first rib, subclavian vein and scar tissue. In some patients, that’s enough; in others, a short segment of vein must be replaced using a vein from the leg to create a bypass graft in the neck.



## We must do the science

*Making the case for federal funding of stem cell research*

Steven L. Teitelbaum, MD, the Wilma and Roswell Messing professor of pathology and immunology, was one of several experts invited to testify before a Senate Appropriations subcommittee, chaired by Senator Arlen Specter, regarding the benefits of stem cell research. Following are excerpts from Teitelbaum's testimony.

WE ARE FACING A unique opportunity in the form of embryonic stem cell research, to potentially alleviate the misery of our fellow Americans with a number of presently incurable diseases. But to get there, we must do the science.

Opponents of human embryonic stem cell research often articulate their position as a contest between adult and embryonic stem cells. This is not a contest between various types of stem cells. It is a contest between us as a society and disease. We should be moving forward on all fronts — adult, embryonic and umbilical cord stem cells, to win the battle. The tool is not important. What counts is curing our neighbors.

That said, because of their flexibility, embryonic stem cells hold more promise to ameliorate presently incurable diseases than any other approach. I stress the word promise because we are not there yet, and it is my belief that it will be some time before we are positioned to safely use these cells for therapy. But if scientists are prevented from exploring the biology of human embryonic stem cells, we will never get there.

Human embryonic stem cells can presently be obtained from two sources, namely the spare products of *in vitro* fertilization, which ultimately would be destroyed, and by somatic cell nuclear transfer, also known as SCNT or therapeutic cloning. Although both approaches hold enormous therapeutic potential, I'm particularly taken with the promise of SCNT because it may alleviate the major complication of tissue and cell transplantation, namely rejection and its attendant life-threatening consequences.





I'm a bone biologist and physician and as such I see many patients who have received organ and cell transplants. These patients typically develop severe osteoporosis and often have many fractures because of the harsh medications they must take to prevent rejection of their transplant. It is my hope that embryonic stem cells, generated by SCNT, which contain the transplant recipients' own DNA, will reduce the necessity for these devastating anti-rejection drugs.

My hopes for SCNT are more personal and harken back 20 years ago when I was a young assistant professor. At that time I became interested in a genetic disease of the skeleton known as osteopetrosis, or marble bone disease, and I want to tell a story about an afflicted child who profoundly impacted my life.

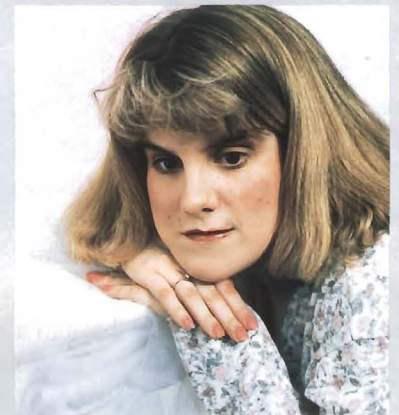
Osteopetrosis is a disease in which kids make too much bone. As a result, their skulls become very thick and compress their brains and nerves. Bone also overgrows the bone marrow, preventing formation of blood cells. Until the story I'm about to tell, all kids with the malignant form of osteopetrosis developed fatal neurological complications, including blindness and infections due to bone marrow suppression. These children invariably died in their first decade, most before the age of five.

In the early 1980s, our team thought we had identified the abnormal cell causing osteopetrosis and concluded it resided in the bone marrow. We reasoned, therefore, that if we gave an osteopetrotic infant a



## Stem cell success

Osteopetrosis, a rare genetic disease characterized by abnormally dense bone, is fatal for more than 90 percent of children diagnosed with the condition. A bone marrow transplant containing adult stem cells cured this child, allowing her to grow into adulthood.



This is not a contest between various types of stem cells. It is a contest between us as a society and disease. We should be moving forward on all fronts — adult, embryonic and umbilical cord stem cells, to win the battle.

bone marrow transplant, which contains adult stem cells, we might cure the disease. We realized the enormous risk of rejection, so we waited until we had a perfect immunological match between donor and recipient, in this case a 3-month-old girl. We gave this baby a bone marrow transplant and achieved the first cure of this disease. Being part of a team that is first to cure a fatal disease, particularly of children, is a doctor's dream.

Why am I, an advocate of embryonic stem cell research, recounting this victory with adult stem cells? I am telling this story to underscore the importance of doing research on

all types of stem cells because, regrettably, there is a downside to my tale. This transplant represented a perfect immunological match and therefore there was little chance of rejection. Such matches are rare, however, and thus presently cure fewer than 10 percent of

children with osteopetrosis. The use of SCNT, in which embryonic stem cells contain the patient's own DNA, if successful, might markedly increase the cure rate of this disease.

I have to tell parents with afflicted children that the chances of curing their child is no more than 10 percent. I want to tell them it's greater than 90 percent. SCNT, if we pursue it, may get us there. □

The Missouri Coalition for Lifesaving Cures has proposed a ballot initiative to ensure that any stem cell research, therapies or cures permitted by federal law will be allowed in Missouri.



# The Honorable Continuum

## Mapping the journey of a lifetime

**D**avid L. Edwards, MD 55, has seen life through a physician's microscope and a mariner's telescope.

His journey began at the School of Medicine, where professors Robert A. Moore, MD, and Lauren V. Ackerman, MD, helped steer him to a career in pathology. After serving as a captain in the U.S. Army and completing his pathology residency under Ackerman, he moved to Los Angeles in 1961 to engage in the private practice of hospital pathology with the Clinical Laboratory Medical Group.

Proximity to the Pacific Ocean revealed a second passion — deep water sailing. While going through a divorce and mistakenly being diagnosed with cancer, Edwards resolved to fulfill his dream to sail to distant parts of the world. He bought a 31-foot ketch in 1974 and cast off for adventure on the high seas five years later.

He spent six years sailing his boat, *Azulao*, more than halfway around the world — as far west as Hawaii,

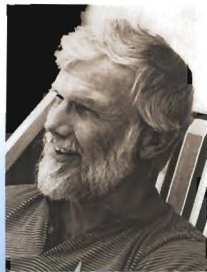
**Forty crew members helped Edwards sail the *Azulao* at various stages of his voyage.**

through the Panama Canal, and across the Atlantic Ocean to the Mediterranean Sea.

“Those years were the most exciting, exhilarating and at times the scariest of my life,” says Edwards, who once capsized and dismantled in a gale in the mouth of the Sea of Cortez. He also retraced the voyage of *The Odyssey's* Ulysses during three years in the Mediterranean.

Edwards spent his first full winter in the Mediterranean on the island of Ischia, off of Naples, and vowed to return there. A year and a half later, after finishing his voyage with visits to Greece and Turkey, he settled on the island. He spent the next seven years there where he

met his second wife, Elsa “Peggy” Bruton. He also developed his talents as a sculptor, initially working with olive wood. He now works in both wood and stone, depicting human and animal forms and semi-abstract sail designs.



**David L. Edwards, MD 55**

“I now realize that my three-dimensional sense and aesthetic leanings propelled me in the direction of pathology which, after all, deals with the tangible 3-D manifestations of disease,” Edwards says.

In 1991, he and his wife returned to the United States, settling in Olympia WA.

Edwards still sculpts, enjoys watching his three grandchildren flourish, lobbies for the use of medicinal marijuana, and protests against the war in Iraq.



## Music and medicine

**A** former member of the School of Medicine's now-defunct Hot Docs jazz ensemble, Paul A. Miller, MD 90, has often been torn between medicine and music. While in college at the University of Pennsylvania, he asked a radio executive after a campus lecture whether he, a pre-med major and communications minor, should become a DJ. The executive asked Miller if he could get into medical school, to which Miller replied “yes.”

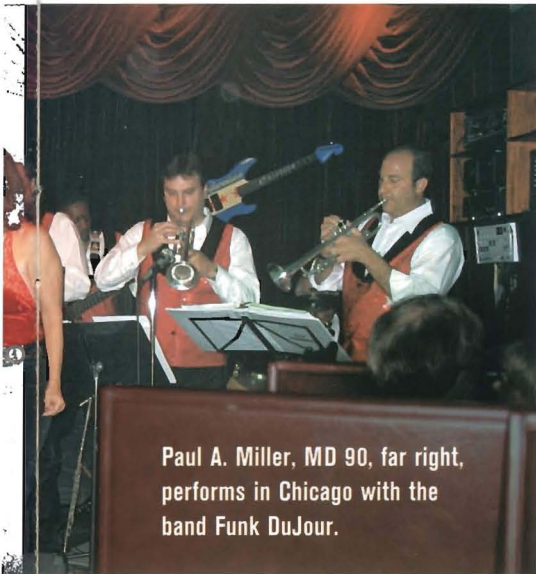
**“I believe everyone needs a way to express themselves outside of work.”**

**Paul A. Miller, MD 90**

Without a moment's hesitation, the executive said: “Then what's your problem? Go to medical school!” recalls Miller.

Now a pediatrician for Advocate Health Care in the low-income Bronzeville area of Chicago and an instructor of clinical pediatrics at Northwestern University, Miller feels he made a good career choice.





Paul A. Miller, MD 90, far right, performs in Chicago with the band Funk DuJour.

## e heal body and soul

He receives great satisfaction from treating children who have serious, chronic health issues such as asthma and obesity. “I think I can help these children more because they have larger problems,” he says.

But Miller, who has played the trumpet since fourth grade, still makes time for his music, playing in three bands — Funk DuJour, Call It Karma and Who Needs Dave? — around the Chicago area. “I believe everyone needs a way to express themselves outside of work,” he says.

While in medical school, Miller played trumpet in the first-, second- and fourth-year class shows. His favorite Hot Docs memory was performing at Casa Loma Ballroom the night that three busloads of participants from the Senior Olympics arrived. “They danced the entire time, and we had to play some songs twice by request!”

Miller also enjoys traveling. He has visited the Amazon and Patagonia and hopes to see New Zealand someday.

## A holistic approach to health care

**S**heri L. Bortz, MD 77, believes that stress reduction and lifestyle adjustments can improve many primary care health problems. A few times a week, she teaches some of her patients and others in the community her philosophy — from the front of a yoga class.

“Most of my students are in their 50s and older. They have arthritis, Parkinson’s or other physical problems and like having a yoga teacher who understands their medical concerns,” says Bortz, who has practiced yoga for 18 years and been an instructor for three. “My students become aware of where their bodies are in space and are able to develop strength, balance and quiet minds.”

Bortz treats patients in a small private outpatient family practice and urgent care clinic in Saratoga CA. The practice cares for patients of all ages for urgent problems and adults for primary care. Many of its patients have no medical insurance. “In many ways, it’s an old-fashioned, community-oriented doctor’s office,” she says.

Bortz, who never felt Western medicine offered all the answers, struggled with *how* to practice

after graduating from the School of Medicine. After two years of an anatomic pathology residency at Stanford University, she realized she didn’t want to be a research physician.




Sheri L. Bortz, MD 77

She then worked at primary care clinics for low-income populations in the San Francisco Bay area for eight years. Later she moved to a private practice setting in the San Jose suburbs of Cupertino and Saratoga.

The part of medicine that Bortz enjoys most is her patients.

“I like finding out who my patients are and how they make health and medical decisions,” Bortz says. “As a physician, I have always focused on the role of doctor as educator, helping people to make good choices concerning lifestyle and health care.”

Bortz, who recently adopted an adult dog, a poodle-cocker spaniel mix named Toby, says she also enjoys making jewelry and reading mystery novels.



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MD REUNION 2006

Class taught by Sheri L. Bortz, MD



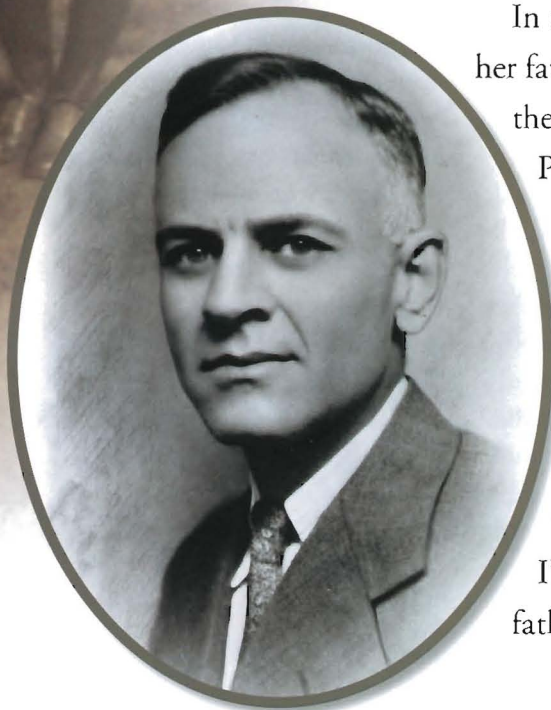
## A sense of commitment



**O**N THEIR ANNUAL TWO-WEEK summer vacations in the mid-1930s and 1940s, the Smith family of Bonne Terre MO, visited the Ringling Museum in Florida, fished in the lake area of Wisconsin, rode horses in the Rocky Mountains of Colorado, and marveled at the recently completed Golden Gate Bridge in San Francisco.

David English Smith, MD 14, worked long hours as a surgeon and chief of staff at the St. Joseph Lead Company Hospital in Bonne Terre, so vacations were a special time for him and his family. “I have many happy memories of those trips,” recalls his daughter, Mary Ann Smith.

In memory and in honor of her father, Smith has bequeathed the David English Smith Professorship to the School of Medicine. “I thought this was a good, lasting legacy for his name,” says Smith. “I have been hearing about the medical school since I was old enough to hear. I’m glad I could honor my father and his alma mater.”



David English Smith, MD 14, who joined the U.S. Army Medical Corps in 1917, was both soldier and scholar.





After graduating from the School of Medicine, the elder Smith took an internship in pediatrics and obstetrics and gynecology. In the first semester, he accompanied pediatric patients as they were transferred from midtown facilities to the new St. Louis Children's Hospital. In the second semester, he entered the program in obstetrics and gynecology at the new buildings of Barnes Hospital and stayed with that specialty the following year when he was appointed as the second chief resident on that service.

Smith joined the U.S. Army Medical Corps in 1917. Attached as regimental surgeon to the 328th Infantry of the 82nd Division, he was in the thick of the action at the Argonne and St. Mihiel and was working in the dressing station when Sgt. York brought in his German prisoners.

He continued to serve with the Army for four years after World War I, returning to his native Missouri in 1923. After a few months in Charleston, he moved with his family to Bonne Terre in late 1924, remaining there until his death in 1944. "He was a very conscientious person — a little old-fashioned," says his daughter. "He believed one had a job to do and a duty to do it."

Mary Ann Smith's two brothers, David E. Smith Jr., MD 44, and Albert G. Smith, MD 47, also are graduates

of the School of Medicine. "My father would be very proud of his two sons graduating from Washington University and having successful careers," she says.

Smith herself took a different path. After graduating with an English degree from a college in the St. Louis area, she taught horseback riding and prep school English for a year at a school in Godfrey IL. She soon realized that teaching was not her passion.

**"My father believed one had a job to do and a duty to do it."**

Mary Ann Smith, shown here with beloved dog Charlie

She and her mother moved to Charleston MO, in 1955 where Smith, always a horse lover, raised American Saddlebred horses for eight years. She discovered rearing horses was a hard way to make a living and decided to become an accountant. Friends drew her to Nashville, where she earned a bachelor's degree in accounting.

While there, she bought a homestead about 15 miles from downtown Nashville that included a house, 40 acres of land and a barn to stable some of her beloved horses.

After working as an accountant at Vanderbilt Hospital and the Hospital Corp. of America in Nashville, Smith returned to Missouri in 1977. Her mother was by then 88 years old, and Smith felt she was needed there.

Smith has given up her horses but often adopts dogs that need a home. "I call them Mississippi County Highway Specials," she says. "I can't stand to see them out on the highway starving to death."

An avid cyclist, Smith has taken several bicycle trips in the United States and Europe. She still enjoys cycling, and most days she rides either around Charleston or out in the country. "Unlike a horse, a bicycle doesn't eat in the wintertime and doesn't have to be fed when there's two feet of snow on the ground," she says.

Smith, who enjoys reading, favors histories and mysteries. She also has taken on the job of organizing and reproducing the large collection of genealogical material and photographs that her mother accumulated over a long lifetime of interest in family history.

And while family members will cherish this historical legacy, Smith feels good about the legacy she's establishing for her father. "The medical school's record speaks for itself," she says. "I'm happy my father had an association with such a high-quality institution."



## Second Century awardees honored

**T**he 2005 Second Century Awards were presented at a dinner at the Sheraton St. Louis City Center on Sept. 30, 2005. The awards, bestowed annually since 1991, mark the School of Medicine's entry into its second hundred years of leadership in patient care, teaching and research.

Second Century Award recipients Jeffrey I. Gordon, MD, Ira C. Gall, MD, Judith Gall, Betty Viehmann, Daniel C. Viehmann and Philip R. Dodge, MD, celebrate at the 2005 awards ceremony.

**Philip R. Dodge, MD**, is professor emeritus of pediatrics and neurology and a lecturer in pediatrics at the School of Medicine.

A native New Englander, he received his undergraduate education at the University of New Hampshire and Yale University and his medical degree at the University of Rochester. He interned in medicine at Strong Memorial Hospital in Rochester NY. After completing a residency in neurology at Boston City Hospital, he undertook teaching fellowships in neurology and neuropathology at Massachusetts General Hospital.

After serving as a major in the U.S. Army as chief of the neurology services in Tokyo, Hawaii and Kentucky, Dodge joined the faculty of Harvard Medical School and the neurology and pediatrics staff of the Massachusetts General Hospital. He came to St. Louis and Washington

University in 1967 as professor and head of the Edward Mallinckrodt Department of Pediatrics and as medical director of St. Louis Children's Hospital.

Dodge has served on many national scientific committees, including the national Advisory Council for Child Health and Human Development and as chairman of the Mental Health Commission of Missouri. He has contributed 150 publications to the medical literature, and his book on nutrition and the developing nervous system, co-authored by A.L. Prenskey and R.D. Feigin, is considered a landmark publication.

The Washington University Medical Center Alumni Association honored Dodge with a Distinguished Service Award in 2000. The School's annual Philip R. Dodge Lecture is still going strong after 20 years.





**Judith and Ira C. Gall, MD**, are an integral part of the St. Louis community — Ira as a physician and founder of Medicine Shoppe International, and Judith as a dedicated volunteer.

After earning his medical degree from the University of Cincinnati, Ira accepted a residency in obstetrics and gynecology at the School of Medicine and Barnes Hospital. Following residency, he began a fellowship at the medical school in the field of infertility. He remained on the School of Medicine faculty, where he served as a professor of clinical obstetrics and gynecology. He retired from practice in 2002.

In 1957, he entered private practice with the late Mitchell Yanow, MD 41; together they founded, in 1970, Medicine Shoppe International, Inc., a chain of community-oriented franchise pharmacies.

Ira Gall has served on the School of Medicine's National Council for more than a decade and is a member of the campaign committee for the Farrell Learning and Teaching Center. Judith Gall is the program chair for the university's William Greenleaf Eliot Society and a lifetime member of the Jewish Hospital Auxiliary. She is one of the founders of the St. Louis Holocaust Museum and Learning Center.

Lifetime patrons of the Eliot Society, the Galls have dedicated themselves to helping others do great things. In 1998, they endowed the Ira C. and Judith Gall Professorship in Obstetrics and Gynecology at the School of Medicine, held by David G. Mutch, MD.

**Jeffrey I. Gordon, MD**, is the Dr. Robert J. Glaser Distinguished University Professor of Molecular Biology and Pharmacology and director of the Center for Genome Sciences at the School of Medicine.

After graduating with honors in biology from Oberlin College, Gordon received his medical degree from the University of Chicago. He completed clinical training in

so that Washington University can remain at the forefront of a new era of genome-based diagnosis and genome-guided therapies.

Gordon has published more than 350 scientific papers and is named as inventor or co-inventor on 23 U.S. patents. He has received many honors in recognition of his scientific contributions, including election to the National Academy of Sciences and the American Academy of Arts & Sciences.

**Betty and Daniel C. Viehmann** are philanthropists who share an enthusiasm for living and giving. The couple, who have made traveling the world their occupation since the early 1990s, have long supported local charitable causes.

Both Dan and Betty lost spouses to cancer, and those experiences, in part, are what have drawn them to support



internal medicine and gastroenterology and spent three years as a research associate in the Laboratory of Biochemistry at the National Cancer Institute before joining the faculty of Washington University.

The Center for Genome Sciences, the university's first BioMed 21 initiative, is an interdisciplinary "intentional community" of faculty, postdoctoral fellows and students. The center focuses on comparative genomics, biodiversity and systems biology, an emerging area that examines normal and adaptive functions of complex networks of interacting genes, proteins and metabolites.

The center will co-evolve with the Genome Sequencing Center

School of Medicine programs in cancer research and orthopaedic surgery. Blessed with longevity in their genes (Dan's mother lived to be 96 and Betty's to 93), the couple feels they have been fortunate to pursue so many of the things they enjoy.

At the top of that list is travel. Dan and Betty have been nearly everywhere on the globe.

The couple, who have no children, have bequeathed their entire estate to the School of Medicine. They credit neighbors Alvin and Ladora Extein, both of whom are Washington University alumni, with introducing them to the university. The Viehmanns are Life Eliot Society patrons.



## Eliot Society launches membership effort

Enthusiasm was on special display at this year's annual kickoff meeting for the Eliot Society membership committee. Twenty-five committee members, including alumni, former house staff and faculty, spent a September evening discussing membership goals for the 2005–06 year. Led by chair Dolores Tucker, MD '74, committee members are working hard this year to make the case for Eliot-level support of \$1,000 or more.

M. Carolyn Baum, PhD, the Elias Michael Director of the Program in Occupational Therapy, with Jack Pierce, MD, and Timothy Holekamp, MD.



Looking ahead to a great year: Chair Dolores Tucker, MD, with vice chair Jack Pierce, MD.

Tucker introduced the committee's new vice chair, Jack Pierce, MD, professor emeritus of medicine and longtime member of the Eliot Society. She also spoke warmly of the education and support she received as a medical student with a young family and how she now appreciates the opportunity to support the School of Medicine in return through the Eliot Society.

Among those present was alumnus and Eliot Society member Larry J. Shapiro, MD '71, executive vice chancellor for medical affairs and dean of the medical school. Shapiro offered committee members an update on news at the School and included a special thank-you to the Eliot Society for the support its members provide.

Last year, the society's 798 members accounted for more than half of the total individual giving to the School of Medicine's Annual Fund. Moreover, their expertise and enthusiasm are invaluable resources for the School and its students. Tucker announced a goal of 820 members for 2005–06, including the recruitment of 180 new members, and committee members accepted the challenge — enthusiastically!



## MD Reunion 2006

Whether preparing for a 10th reunion or gearing up for the 65th, School of Medicine alumni are looking ahead to Reunion 2006 to be held May 11–13.

**1941** Vergil N. Slee, MD, social chair

**1946** Lawrence W. O'Neal, MD, James C. Sisk, MD, and Willard B. Walker, MD, social chairs  
Jack Barrow, MD, gift chair

**1951** Marvin E. Levin, MD, social and gift chair

**1956** Richard W. Hudgens, MD, social chair  
Arthur I. Auer, MD, gift chair

**1961** Alan L. Pearlman, MD, social chair  
Elliot M. Finkelstein, MD, gift chair

**1966** David L. Polage, MD, social chair  
Capt. Stephen B. Lewis, MD, gift chair

**1971** David L. Thorne, MD, social chair  
Edward P. Rose, MD, gift chair

**1976** John A. Milton, MD, social chair  
Thomas R. Pohlman, MD, HS, gift chair

**1981** Mark H. Camel, MD, social chair  
Michele E. Kemp, MD, gift chair

**1986** Michael S. Korenfeld, MD, social chair  
Nancy L. Bartlett, MD, gift chair

**1991** Maral K. Skelsey, MD, social chair  
Andrew N. Blatt, MD, MA, gift chair

**1996** Scott D. Sagel, MD, social chair  
Pamela H. Beahm, MD, and Scott J. Gilbert, MD, gift chairs



# Class Notes

**40s** **Vergil Slee, MD 41**, published an article in the *North Carolina Medical Journal's* Sept./Oct. 2005 issue titled "The Tyranny of the Diagnosis Code." A retired preventive medicine specialist, Slee and his wife, Beth Stoke Slee, live in Brevard NC.

**Howard S.J. Walker Jr., MD 41**, is a retired surgeon in Mobile AL. He formerly served as a clinical professor at the University of South Alabama. His hobbies include reading, traveling and "fooling with small boats."

**Elliot D. Luby, MD 49**, was recently recognized for years of distinguished leadership in psychiatry with an endowed professorship in psychiatry at Wayne State University School of Medicine in Detroit MI.

**50s** **Eugene B. Feigelson, MD 56**, announced that he will retire as dean of the College of Medicine at State University of New York Downstate Medical Center in July 2006.

**Alice A. Hess, NU 57**, started a second career in healing and is now a certified practitioner/instructor in quantum touch and is doing reconnectionive healing and vogel work. Lately, people with horses have deluged her with healing work for horses.

**David L. Winter, MD 59**, has been named president of Human BioSystems in Palo Alto CA. With more than 20 years of experience in the pharmaceutical industry, Winter has been president and chief operating officer for GenPharm International of SangStat Medical Corp., president and CEO of Human Organ Sciences and CEO of TriMed Research, Inc. He also was the NASA Director of Life Sciences. He had served on the advisory board for Human BioSystems before this appointment.

**60s** **Floyd E. Bloom, MD 60**, chairman, chief executive officer and chief

scientific officer of Neurome Inc., won the 2005 Rhoda and Bernard Sarnat International Prize in Mental Health from the Institute of Medicine of the National Academies in recognition of the international scope and significance of his contributions to the biological sciences, especially neuroscience.

**Robert G. Ause, MD 61**, retired from radiation oncology practice at St. Joseph Mercy Hospital in Ann Arbor MI and now serves as medical director for St. Joseph Mercy Hospice.

**John T. Crosson, MD 61**, is associate pathologist for Hennepin County Medical Center in Minneapolis MN. He is semi-retired, having served as residency director for the pathology residency at the University of Minnesota. He spends time volunteering with Habitat for Humanity as well as running, playing tennis and traveling.

**Dale H. Heisinger, MD 66**, is semi-retired from primary care pediatrics but still serves as clinical assistant professor of pediatrics at the University of Washington in Seattle WA. He is a founder of the Madrona Medical Group, a 60-physician multispecialty clinic.

**H. Michael Jones, MD 66**, is adjunct professor of pathology at University of North Carolina School of Medicine in Chapel Hill NC. He has retired as director of laboratories for Ameripath. He is active with the American Osler Society and the Henderson Community Concert Association, and he has taken up screenwriting.

**70s** **David L. Thorne, MD 71**, is an emergency physician in Colleyville TX. He and his wife owned and operated a select baseball complex for youth baseball, including four fields and an indoor facility. They sold the complex to the city of Southlake TX in 2001.

**Peter Lars Jacobson, MD 77**, spoke at the Weymouth Center for the Arts and Humanities on Oct. 17, 2005,

in Southern Pines NC. He is a clinical professor of the department of neurology at the University of North Carolina at Chapel Hill and director of the UNC Neurology Palliative Care program. He also has experience in bioethics at Chapel Hill, the Kennedy Institute of Ethics, Georgetown University in Washington DC, and an end-of-life project at the Medical College of Wisconsin, Milwaukee.

**Scott P. Serota, HA 79**, has been named a member of the American Health Information Community, a federally chartered commission named by U.S. Health and Human Services (HHS) Secretary Mike Leavitt. The 17-member group will advise HHS on how to make health records digital and interoperable and ensure that the privacy and security of those records are protected. Serota is president and CEO of the Blue Cross Blue Shield Association and lives in Chicago.

**80s** **Michael J. Lenardo, MD 81**, is section chief of the Laboratory of Immunology at the National Institute of Allergy and Infectious Diseases at the National Institutes of Health. He and his spouse, **Lesley-Anne Furlong, MD 81**, an obstetrician/gynecologist, have two children and live in Potomac MD.

**Patty Lee, MD 89**, was named one of the Top Docs in Washington DC. She practices at Otolaryngology Associates in Fairfax VA. She and her spouse, **John A. Butman, MD 93, PhD 93**, live in Bethesda MD.

**Jeffrey H. Teckman, MD 89**, is the newly appointed director of pediatric gastroenterology and hepatology at Cardinal Glennon Children's Hospital and associate professor of pediatrics at Saint Louis University.

**90s** **Robert Bahadori, MD, HS 91**, was named one of the Top Docs in Washington DC. He practices at Otolaryngology Associates in Fairfax VA.



# Class Notes

**Ellis M. Arjmand, MD, PhD, HS 93**, an otolaryngologist, is director of the Center for Hearing and Deafness Research at Cincinnati Children's Hospital and the University of Cincinnati College of Medicine.

**Gregory R. Saboeiro, MD, LA 83, HS 94**, is now assistant attending radiologist at the Hospital for Special Surgery (HSS) Department of Radiology and Imaging in New York. He recently completed a fellowship in musculoskeletal radiology at HSS and also has subspecialty training in vascular and interventional radiology. Previously, he was in private practice in St. Louis.

**Laura Stone Ellis, MD 97**, is working in the Emergency Department at Union Hospital in Elkton MD.

**Paul M. Lamberti, MD 97**, practices orthopaedic surgery in Elgin IL, northwest of Chicago. He recently became board certified by the American Board of Orthopaedic Surgeons and primarily focuses on hand and upper extremity surgery. He writes: "I hope everyone is doing well and succeeding in the areas of their lives they strive to master. It is a tough and tiring world, but I like to think that our education at Wash. U. shines in us even now and makes us

better physicians. I think that it does in my practice." He and his wife have two daughters, Elise, 4, and Emma, 2.

**Sharon Meltzer Sagel, MD 97**, is a pediatrician at Southeast Denver Pediatrics. She is married to **Scott D. Sagel, MD 96**, a pediatric pulmonologist at The Children's Hospital in Denver. They have two sons.

**Gordon J. Strauss, MD 97**, recently passed the psychosomatic medicine boards and is practicing consultation-liaison psychiatry at Lenox Hill Hospital in Manhattan.

**Dawn R. Ebach, MD 98, HS 05**, finished her pediatric GI fellowship at Washington University in June and headed north. She is now a clinical assistant professor of pediatrics at the University of Iowa in Iowa City.

**Kyrsten Fairbanks, LA 94, MD 98**, finished her gastroenterology fellowship at Johns Hopkins in 2004 and joined the staff at The Cleveland Clinic, where she works part time as a transplant hepatologist. She and her husband, Jon Vogel, have twin girls, Hannah and Kathryn, born on June 1, 2005.

**Kaye Nembhard Reid, MD 98**, may be reached at kayereid@gmail.com. Her e-mail address was incorrect in the Fall 2005 issue; *Outlook* regrets the error.

**00s** **Jennifer A. Langsdorf, MD 01**, recently married Geoffrey K. Dube, MD, a nephrology fellow at Columbia-Presbyterian Hospital. The couple met during their internship year at Beth Israel Deaconess Medical Center in Boston. Langsdorf is currently a neurophysiology fellow specializing in neuromuscular disease at Beth Israel Deaconess.

**Melissa S. Stortzum, OT 01**, is living in Columbia MO, and has accepted a full-time pediatric job at Jefferson City Public Schools. She also works part time for Rehab Choice, Inc.

**Emily R. Spitler, OT 02**, married Nathan Hawkins, a physician assistant, on Jan. 29, 2005, in Centralia IL. The couple now lives in Wheaton IL, where Spitler works at The Pediatric Place, an outpatient pediatric clinic.

## IN MEMORY

**Carl T. Buehler Jr., MD 40**, died June 23, 2005. He lived in Warrensburg MO.

**Frank Wilson Stevens, MD, HS 43**, of Nashville TN, died Oct. 4, 2005, at age 87. A graduate of Vanderbilt University School of Medicine, he completed an internship at Barnes Hospital before serving as a medical officer for the Army during World War II. He settled in Nashville, where he directed the Old City View Sanitarium and maintained a private psychiatry practice. He is survived by his wife, Theo Cornelius Stevens, as well as two sons and four grandchildren.

**Guy D. Callaway Jr., MD 44**, of Springfield MO, died Aug. 22, 2005, at age 85. He was an internist who, after serving in the Navy during World War II and the Korean War, returned to Springfield to join the Smith Glynn Callaway Clinic, founded by his father, **Guy D. Callaway Sr., MD 17**. He served as president of the Greene County Medical Society and the Missouri Heart Association, as well as the Springfield Symphony Board and the Kiwanis



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Club. He is survived by his wife, Betty, his daughter and five grandchildren. He was preceded in death by his son.

**Truett V. Bennett, MD 45**, died Aug. 19, 2005, at age 83. He practiced as an ear, nose and throat surgeon in Atlanta GA and in Honolulu and Kona HI. In 1990, he retrained in family medicine and practiced general medicine in Oriental NC for the next eight years. An accomplished oboe player, he founded and led the music program at Pamlico Presbyterian Church. He is survived by his wife, Fran Deaton Bennett, two sons, five grandchildren, six step-children, 12 step-grandchildren and one step-great-grandchild.

**Anne Lewczyk Furlong, PT 48**, died Sept. 14, 2005, of breast cancer. She was 84. She is survived by two daughters and two granddaughters. Memorial gifts may be made to the Anne Furlong Endowed Scholarship Fund at Washington University, Campus Box 1082, One Brookings Dr., St. Louis MO 63130.

**David D. Thomasson, MD 49**, of Springfield MO, died Sept. 5, 2005, after a short illness. A longtime pediatrician in Springfield, he served at Children's Clinic at City Hospital and on the Children's Home Board. He is survived by his wife, **Joanne Thomasson, NU 47**, two daughters, two sons and four grandchildren. Other relatives include his brother, **Robert E. Thomasson, MD 50**, who died in 1994, sister-in-law **Mary Lou Thomasson, LA 46, MD 51**, and nephew **Jeffrey L. Thomasson, MD 82**.

**Paul W. Yost, MD 49**, of Belmont MA, died July 6, 2005, at age 84. He was a psychiatrist.

**Diane B. Miller, OT 50**, of South Jordan UT, died June 24, 2005. She was fluent in German and Spanish and had moved with her family across the country before settling in the Salt Lake City area.

**Charles E. Hendrix, MD 51**, died Feb. 24, 2002, in Vincennes IN. He was 77.

**Philip L. Wachtel, MD 51**, died May 22, 2005, in Freeport IL, at the age of 79. He was a pediatrician in Freeport for 20 years before working as an emergency medicine physician. While living in Sun City AZ, he was in a local barber shop quarter. Survivors include his wife, Jean Wachtel, two daughters, one son, nine grandchildren and a brother.

**Charles E. Nichols, MD 52**, died Sept. 28, 2005, at the age of 81. He was a resident of Palestine TX.

**Robert S. Shapiro, LA 48, MD 52**, of New Rochelle NY, died July 5, 2005. He is survived by his wife, Melba F. Shapiro, SW 48.

**Robert H. Vanderpearl, LA 51, MD 54**, died Aug. 22, 2005. He was a psychiatrist in St. Louis.

**Harold J. Joseph, MD, HS 55**, of Ladue MO, died Aug. 18, 2005, at the age of 78. He completed his residency in internal medicine and fellowship in gastroenterology at what is now Barnes-Jewish Hospital. He received the Distinguished Service Award from Washington University School of Medicine's Department of Medicine in 2004. Survivors include his wife, Sharon "Shonny" Lasky Joseph; a son; two daughters, including **Amy Joseph, MD, HS 92**; and three grandchildren. Memorial contributions may be made to the Harold and Shonny Joseph Endowment Fund, Washington University School of Medicine, Campus Box 8509, 4444 Forest Park Blvd., St. Louis MO 63108, or 90.7 KWMU, One University Blvd., St. Louis MO 63121.

**Doris Y. Mosley, NU 55**, died Sept. 11, 2005, in Washington DC. She had taught nurses at Homer G. Phillips Hospital and also had held teaching positions at Medgar Evers College and Columbia University in New York. In Washington, she worked for the U.S. government and was involved in the war on AIDS in Africa. She was buried in the St. Louis area.

**Louis C. Wislocki, MD 58**, died Aug. 10, 2005, at age 73. An internist, he had lived in Dedham MA and Little Compton RI and was a longtime member of Dedham Medical Associates. He is survived by his wife, Joan Wislocki, his son and daughter, as well as his brother and two sisters.

**Robert L. Fulton, MD 64**, of Louisville KY, died Mar. 10, 2005. He was 66. A thoracic surgeon, he was professor of surgery at the University of Louisville School of Medicine and was recognized for outstanding teaching throughout his career. He was a member of the National Hot Rod Association and drove for Claymore Racing, which he also owned. He is survived by two daughters, a son and a grandson.

**Terrance A. Brown, MD 66**, died July 11, 2005, after an automobile accident. He was 65 and a resident of Chicago. A psychiatrist, he was former president of the Jean Piaget Society. He is survived by his wife and classmate, **Wendy Recant Brown, MD 66**.

**Janice Cobb Fraher, PhD, GN 67**, died Sept. 15, 2005, at her home in Chugiak AK. She was 72. As a nursing educator, she served on the faculty of Hartwich College in Oneonta NY for 16 years before joining the Medical College of Ohio in Toledo, where she retired as associate dean for nursing in 1983. After retirement, she and her husband moved to Alaska, where they traveled in their 40-foot motor home and volunteered at campgrounds in Alaska State Parks. She is survived by her husband, Tom Fraher, two daughters, two sons and eight grandchildren.

**Roberta R. Miller, MD 75**, died Feb. 11, 1995.

**Joseph P. Holt Jr., MD, HS 81**, of Depauw IN, died June 11, 2005. He was 63.

**Nancy L. Svenstrup, PT 87**, died on July 1, 2005. She was a resident of Elmhurst IL.





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Jerry Flance, MD 35, right, with Michael J. Holtzman, MD, the Selma and Herman Seldin Professor of Medicine. Flance supports Holtzman's pulmonary research and has decided to leave a legacy by including the School of Medicine in his estate plans.

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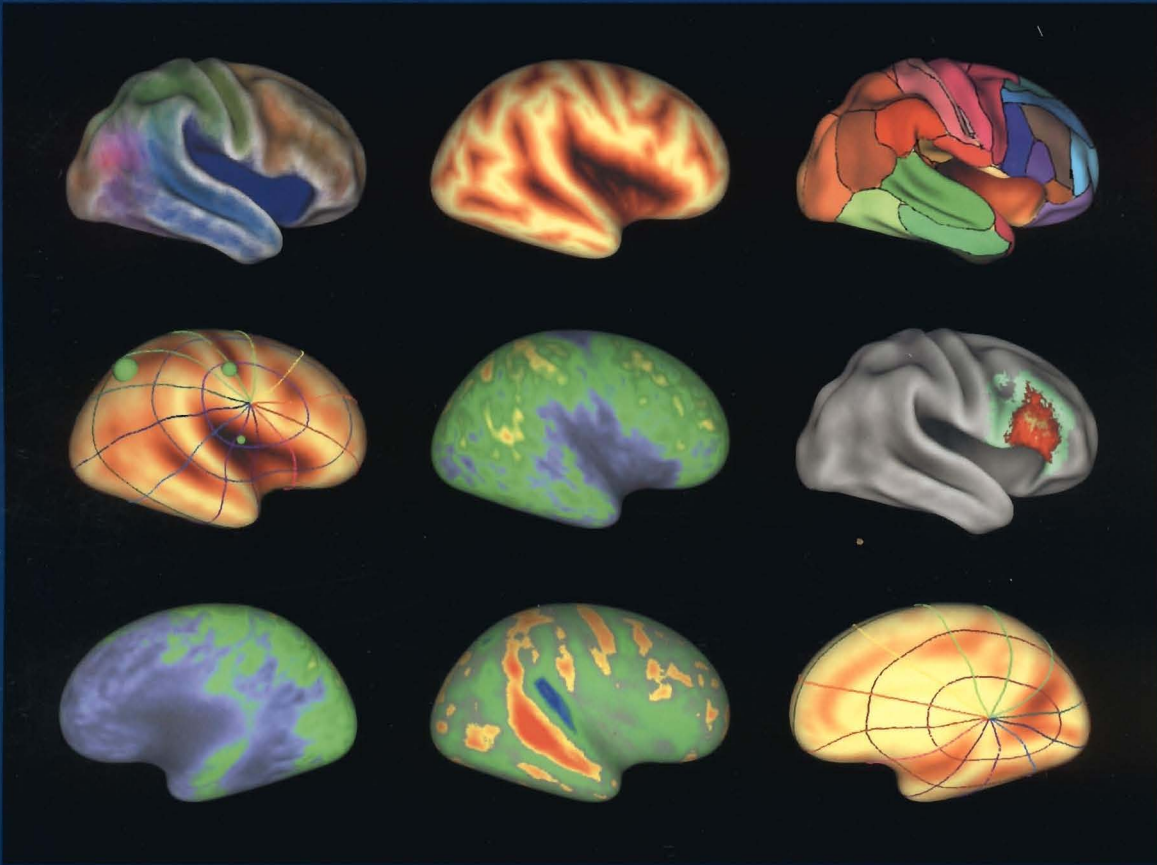


MIR PHOTOGRAPHY LABORATORY

## Magic portal

Sometimes a window is also a door. Removable skylights on the School of Medicine's East Building allow for the installation of heavy-duty radiology equipment (left). The building is home to the Mallinckrodt Institute of Radiology's Imaging Research Facility, which houses six major magnetic resonance imaging units.





**Cortical cartography** A first-of-its-kind atlas — the Population-Average, Landmark and Surface-based (PALS) Atlas — accurately portrays the complex folds of the cerebral cortex, linking brain functions to its various peaks and valleys. The atlas is a resource for neuroscientists to determine the functions of brain areas as well as a repository for adding new data that expand and fine-tune the atlas' maps. For more on this story, please turn to page 5.



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