Celebrations fit for a King

Washington University School of Medicine and Barnes-Jewish Hospital paused on January 17, 2005, to honor the memory of the Rev. Dr. Martin Luther King Jr. BJC employees at the medical center were greeted by Lee Fetter, president of St. Louis Children's Hospital, above right, and then treated to a performance by the McCluer North Concert Choir during a service honoring Dr. King. At the medical school, Freeman Hrabowski III, PhD (shown here talking with second-year medical student Eugenia Garvin) gave a lecture titled "Reflections on America's Academic Achievement Gap." Hrabowski, co-author of Beating the Odds, is the president of the University of Maryland, Baltimore County.
Outlook

Heading Home

Farrell Learning and Teaching Center construction proceeds apace.

medicine.wustl.edu/ltc
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 will serve as the school's main venue for medical education.

- The first classes are scheduled to be held there in fall 2005.
- The latest technology throughout the building means, for example, that every seat in the lecture halls will be wired for personal network access.
- New spaces emphasize small group learning.

Giving opportunities

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

Contact the Office of Medical Alumni and Development at (314) 286-0086.
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The Alvin J. Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital has been designated a Comprehensive Cancer Center by the National Cancer Institute (NCI). The announcement was made at a January 4, 2005 news conference by Timothy J. Eberlein, MD, the Spencer T. and Ann W. Olin Distinguished Professor and director of the Siteman Cancer Center.

The distinction recognizes Siteman's broad-based research, outreach and educational activities. In addition, the center's new status provides its researchers with $21 million in additional funding.

“This designation acknowledges that the people of the St. Louis region have access to novel cancer therapies and cutting-edge research,” says Eberlein, who also is head of the Department of Surgery. “It also adds to the cancer research grants already held by researchers and clinicians affiliated with Siteman, now totaling more than $130 million.”

To achieve comprehensive status, a cancer center must succeed in a rigorous multistage review process. Siteman was awarded comprehensive status because of its strong basic science and clinical trial research programs; cancer prevention, cancer control and population-based research programs; and a body of interactive research bridging these areas. In addition, the center was recognized for its outreach and education for residents of the St. Louis region and for health care professionals.

In 2004, the more than 300 Washington University physicians affiliated with the Siteman Cancer Center cared for nearly 6,000 new and 30,000 follow-up cancer patients, and they conducted more than 350 clinical trials. The Siteman Cancer Center is the only NCI-designated Comprehensive Cancer Center within a 240-mile radius of the St. Louis metropolitan area. In 2004, the Siteman Cancer Center was ranked 13th among cancer centers by U.S. News & World Report.

Faces of HOPE

Above: John F. DiPersio, MD, PhD, the Lewis T. and Rosalind B. Apple Professor of Medicine, thanks Siteman patient Debra Ochs for recounting her battle with leukemia during the January 4, 2005 news conference. Under DiPersio's care, Ochs underwent a successful bone marrow transplant. During the ceremony, her face was added to the letter "P" in HOPE (left).

Left: Timothy J. Eberlein, MD, director of the Siteman Cancer Center, addresses the crowd.
Abumrad is inaugural Atkins Professor of Medicine and Obesity Research

NADA A. ABUMRAD, PHD, has been named the first Dr. Robert C. Atkins Professor of Medicine and Obesity Research. The professorship has been made possible by a gift from the Dr. Robert C. Atkins Foundation.

"We are extremely grateful for the generosity of Mrs. Veronica Atkins and the Atkins Foundation in establishing the Dr. Robert C. Atkins Professorship in Medicine and Obesity Research," says Washington University chancellor Mark S. Wrighton. "Endowments like this one have a lasting impact on the university's ability to attract and retain outstanding faculty, and this professorship, in particular, helps address a growing problem that is robbing millions of Americans of good health."

Higher fluoride levels are found in instant tea

Instant tea, one of the most popular drinks in America, may be a source of harmful levels of fluoride, according to School of Medicine researchers.

The researchers found that some regular-strength tea preparations contain as much as 6.5 parts per million (ppm) of fluoride, well over the 4 ppm maximum allowed in drinking water by the Environmental Protection Agency and the 2.4 ppm permitted in beverages by the Food and Drug Administration.

The discovery stemmed from the diagnostic investigation of a middle-aged woman suffering from spine pain attributed to hyper-dense bones. Testing for the cause of her symptoms revealed the patient had high levels of fluoride in her urine. She claimed to drink one to two gallons of double-strength instant tea throughout each day, which led the researchers to test for fluoride in several brands of instant tea.

Each of the teas was tested as a regular-strength preparation in fluoride-free water, and each contained fluoride, with amounts ranging from 1.0 to 6.5 parts per million.

The study was reported in January 2005 in the American Journal of Medicine.
Ross receives medical service award

THE DR. MARTIN LUTHER KING JR. State Celebration Commission has bestowed its 2005 Distinguished Community Service in Medicine Award on Will R. Ross, MD, associate dean and director of the School of Medicine's Office of Diversity.

The award recognizes Ross’ continuing efforts to exemplify King’s ideals and commitments through the field of medicine in the state of Missouri and across the globe.

As a health care policy expert and an assistant professor of medicine, Ross focuses on minority health care advocacy and resolving health care disparities.

He has made contributions to both the academic community at Washington University and the greater St. Louis community by coordinating the annual Martin Luther King Jr. Celebration Lecture Series.

For the past three years, Ross has served as president of the Mound City Medical Forum, a leading minority medical organization. He also is the commissioner for the St. Louis Regional Health Commission and a board member of the Missouri Foundation for Health.

Dacey chairs neurosurgery board

RALPH G. DACEY JR., MD, the Henry G. and Edith R. Schwartz Professor and Chairman of Neurological Surgery and neurosurgeon-in-chief at Barnes-Jewish Hospital, is serving as chairman of the American Board of Neurological Surgery.

Established in 1940, the board sets the standards for training neurosurgeons in the United States and administers certification examinations for those seeking to practice neurosurgery in this country.

“Neurosurgery is very complex, and training and certifying neurosurgeons is a terrific responsibility,” Dacey says. “I think this is extremely important for our society. We’re constantly working to make the board’s operations more efficient and more accessible and transparent to the public so people can have confidence in their specialists.”

According to Dacey, this is an exciting time for the organization because it is developing a new process for maintenance of certification. The new approach will be implemented within the next year and will require neurosurgeons to regularly become recertified throughout their careers.

Postdocs have high opinion of WUSTL

SECOND AMONG ALL ACADEMIC INSTITUTIONS is the rank Washington University in St. Louis has been given in a survey of postdocs conducted by The Scientist, a print and online publication covering the latest developments in life sciences research, technology and business.

In the third annual “Best Places to Work for Postdocs,” the University of North Carolina at Chapel Hill, Washington University and the Massachusetts Institute of Technology landed the top three spots for U.S. academic institutions.

The more than 3,500 postdocs who responded to this year’s survey rated a valuable training experience, access to research equipment and library resources, and a good mentoring relationship as the ingredients that make for a great workplace.
Tsunami relief  Medical students gathered earlier this year to discuss the psychological effects of the recent Asian tsunami. Carol S. North, MD, professor of psychiatry, left, led the exchange. In February, the School of Medicine's Asian Pacific American Medical Student Association (APAMSA) sponsored a benefit night at the Wasabi Sushi Bar in St. Louis, earmarking 15 percent of sales for tsunami victims. That fundraiser, together with money from collection boxes, raised donations for the Red Cross Tsunami Relief Fund.

ORTHOPAEDIC SURGERY

Surgeon revives successful, decades-old clubfoot treatment

Almost 60 years after it was conceived, Washington University orthopaedic surgeon Matthew B. Dobbs, MD, has revived a nonsurgical technique to correct talipes equinovarus, or clubfoot, a congenital foot deformity.

The revived procedure employs weekly stretching of an infant's foot followed by the application of long-leg casts that gently reshape the infant's relatively plastic foot.

According to Dobbs, the casting technique is applicable to all clubfeet from birth to the age of 2 years.

Ignacio Ponseti, MD, developed this nonsurgical technique nearly six decades ago because he saw that children treated surgically for clubfoot often went on to develop pain, stiffness, early onset arthritis, and complications that threatened the quality of their lives. Dobbs confirmed, with a 25-year follow-up study on surgically treated clubfeet, that indeed many patients had poor foot function by early adulthood. A 35-year follow-up study performed on patients treated with the Ponseti technique found them to be functioning well, without arthritis. These results called into question the value of traditional clubfoot surgery, a three- to four-hour operation to release all of the muscles, bones and tendons in the foot and create a reconstruction held in place with metal pins.

In Ponseti's casting procedure, the first cast is often applied in the newborn nursery, ideally within days of birth. The first cast stays in place only a week. Then the surgeon examines the progress and applies a second cast designed to reshape the foot slightly more. After four to five weeks and the same number of casts, the foot is completely corrected. "It's a visual process. Parents see improvement every week," Dobbs says.

After casting is complete, young patients must wear orthopaedic shoes and a brace for a number of months, though the procedure usually doesn't interfere with learning to walk. Compliance with the regimen is essential to success, and those few cases that don't respond to casting can always be treated surgically.

Dobbs has successfully treated children as old as 19 months and is gradually advancing the age at which the casting can be initiated.
Knights establish breast health center, program at Siteman Cancer Center

MORE THAN 50,000 WOMEN come to the Breast Health Center at the Siteman Cancer Center annually for screening mammograms, diagnostic workups, breast cancer treatments and follow-up visits.

Charles F. and Joanne Knight have donated $5 million to support these vital programs. The commitment will endow and establish the Joanne Knight Breast Health Center and Breast Cancer Program.

The center is playing an important role in the first multicenter study, led by the National Cancer Institute, comparing digital mammography to conventional mammography in the detection of breast cancer.

Next year, Matthew J. Ellis, MD, PhD, head of the center's Breast Cancer Program and section head of medical oncology, is planning to launch a major interdisciplinary initiative focusing on the causes of breast cancer at a molecular level.

“This gift will provide a steady stream of support and will enable the center to undertake new initiatives that will further benefit our patients,” says Siteman Cancer Center director Timothy J. Eberlein, MD.

Kelly named Alumni Endowed Professor

DANIEL P. KELLY, MD, director of the Center for Cardiovascular Research and co-director of the cardiovascular division, has been named the Alumni Endowed Professor of Cardiovascular Diseases. He also is a professor of medicine, of molecular biology and pharmacology, and of pediatrics at the School of Medicine and a cardiologist at Barnes-Jewish Hospital.

Kelly is internationally known for his research on the molecular basis of the heart's metabolism, or how the heart obtains energy to function. As director of the Center for Cardiovascular Research, he has established an interdisciplinary effort in which university researchers combine their expertise to investigate the biologic processes underlying heart disease.

Most recently, Kelly launched an initiative to plan a center for researching the cardiovascular effects of metabolic disorders such as diabetes. Funded by the National Institutes of Health’s Roadmap for Medical Research, the project brings together 13 departments at the university as well as experts from elsewhere in Missouri.

Passion for justice earns recognition

FAITH, FORMAL EDUCATION, LIFE EXPERIENCES — these are what have shaped the character of Katherine Jahngie Mathews, MD, assistant professor of obstetrics and gynecology. But she feels fate played a part in bringing her to St. Louis, where she has found a way to fulfill her passion for pursuing social justice through medicine.

A faculty member at the Siteman Cancer Center and a physician at ConnectCare, part of the St. Louis region's health care safety net, Mathews strives to bring together elements of the St. Louis community to improve health care access for the underprivileged and underinsured.

Her efforts have earned her the Association of American Medical Colleges' Herbert W. Nickens, MD, Faculty Fellowship for 2004. The annual award honors an outstanding junior faculty member involved in addressing inequities in medical education and health care.

As co-director, with colleague Dione M. Farria, MD, of the Program for the Elimination of Cancer Disparities at the Siteman Cancer Center, Mathews has coordinated efforts to promote breast health in the St. Louis area.
No more needle in a haystack: simplifying a genetic search for disease

It is now significantly easier to search long stretches of DNA for genetic changes associated with disease. Researchers at the School of Medicine have developed a method called direct genomic selection that accelerates the transition between family or population-based studies of disease inheritance patterns and identification of genetic variations that may contribute to disease.

With the base sequences from many patients' DNA, scientists can now conduct comparisons that highlight the changes most commonly linked to disease, providing them with needed leads to better understand and treat a wide range of disorders.

The investigators reported in the January 2005 issue of Nature Methods that they've already applied direct genomic selection to a region of DNA linked to psoriasis, a disfiguring and potentially debilitating inherited skin condition.

"We quickly found 100 previously unidentified genetic variations with potential links to psoriasis," says senior author Michael Lovett, PhD, professor of genetics and pediatrics. "It really is a much faster and more affordable way of getting at these types of variations and has potential for applications in other areas."

Lovett is working with colleagues at the School of Medicine's Genome Sequencing Center to make direct genomic selection available to a wider group of researchers.

The approach will further empower the university's BioMed 21 initiative, which is dedicated to harnessing genetic studies and other basic research for improved patient diagnosis and treatment.

Scientists measure DNA by its individual units of code, known as base pairs. Current automated DNA sequencing technology can process pieces of DNA 700 to 1,000 base pairs long, but inheritance studies can leave researchers searching for changes in segments of DNA hundreds of times longer.

Formerly, only two unattractive options for circumventing this disparity and sequencing such large regions existed. One, which reproduces patients' entire genomes, can take up to a year, costs tens of thousands of dollars and discards most of the genetic material produced. The other uses a process that focuses more directly on the region of interest in patients' DNA but leaves the genetic materials in a state that requires considerable time and effort to prepare them for sequencing.

Direct genomic selection zeroes in on the region of interest and produces genetic material in a form that can easily be prepared for automated sequencing systems.

"The challenge now is that we have many disease genes that are not all-or-nothing factors; they can be linked to increased risk of disease, but not to guaranteed development of the disease," Lovett explains. "In some such instances, there's concern that another gene or bit of genetic code sitting somewhere nearby, in the same approximate region, might be able to more completely explain what happens in the disease."
Healthy proteins misfold into potentially deadly prions

BY MICHAEL PURDY

For researchers like David A. Harris, MD, PhD, the long, slow exit from the twilight zone is all but over. Harris has been studying prions, a new kind of infectious agent thought to be at the heart of several rare neurodegenerative disorders that devastate the brains of humans, cows and sheep.

Prions are weird — unlike any other infectious agent ever identified before. Harris, professor of cell biology and physiology, remembers a time when describing his research sometimes gave him the impression other scientists thought he had “gone to outer space” or was working on “black magic.”

Seven years after the Nobel Prize went to a prion researcher, Harris admits that an ironclad proof of prion theory has yet to be produced. But the skeptics are finding it harder and harder to make their case, and Harris now has a colleague in prion research in his own department, Heather L. True-Krob, PhD, assistant professor of cell biology and physiology.

Harris and True-Krob are gathering new insights into how prions form and cause disease, and as they do, tantalizing hints are starting to emerge that prions may be connected to a much wider range of biological phenomena than the rare brain disorders that first led to their discovery.

Prion diseases eat away at the brain. At top, a normal neuron, and below, an infected neuron with an accumulation of the abnormal, scrapie form of the prion protein. Scrapie is a fatal disease affecting sheep.
Until prions came along, infectious agents always contained some type of genetic material. That material carried the linchpin of the infection cycle: instructions for hijacking host cells to produce new copies of the infectious agent and begin the cycle anew.

Not so the prion—it consists entirely of a misfolded protein. The prion perpetuates itself by influencing nearby normal copies of the same protein, somehow increasing the chances they will misfold and become prions. In cows with mad cow disease, sheep with scrapie, and humans with Creutzfeldt-Jakob disease, this causes a chain reaction that leaves the brain a spongy, hole-filled mess.

Humans get prion disorders from inherited mutations, through contamination during a medical procedure or, in very rare instances, from consumption of infected animals. In addition, some "spontaneous" cases of human prion disease currently can't be tracked to any genetic or environmental cause. The disorders have no treatment and are fatal in months to several years.

The first part of prion theory, the idea that a change in folding can radically change a protein's properties, is well-established biological fact. Proteins are long, complex chains, and as those chains fold up, they form specialized structures that can perform various functions. Rearranging the way a protein folds can eliminate those structures, create new structures, or change their accessibility.

The process is roughly comparable to a Swiss Army knife: fold the protein in one configuration, and the can opener sticks out and can be used; fold it into another, and the can opener vanishes, a screwdriver sticks out, and the protein has suddenly become a tool used for a very different purposes.

Much of the resistance among scientists to accepting prions springs from the second part of prion theory:

**Humans get prion disorders from inherited mutations, through contamination during a medical procedure or, in very rare instances, from consumption of infected animals.**

The idea that interaction with a misfolded protein can cause another copy of the same protein to become badly folded. The details of how this unprecedented conversion takes place are still a mystery.

"The problem is that no one knows the exact three-dimensional structure of the prion," Harris explains. "We know the normal structure of the protein that becomes a prion, but not the structure of the prion itself, and that's left the process by which prions spread a kind of black box."

The normal function of the protein that becomes a prion also remains a mystery. Scientists named the protein PrP: The normally folded copy is referred to as PrPc (for cellular PrP), while the prion form is known as PrPSc (for scrapie PrP).

Recent evidence even has scientists questioning one of their most basic assumptions about prions: the idea that PrPSc is the form of the prion protein that kills brain cells. Studies by Harris have shown that transgenic mice with a mutant form of PrP prone to forming prions will get symptoms like those in human prion disorders, but the disease is not infectious to other animals.
Here be dragons

By tracking where the protein goes both in the brain and within individual nerve cells, researchers such as Sami Barmada, an MD/PhD student in Harris' lab, hope to learn more about what the normal protein does and how the prion form kills brain cells.

“In terms of the different forms of PrP, we have early evidence that what’s needed to kill a neuron may be different from what’s needed to pass on an infection,” Harris notes.

Like any genuinely new area of research, prions seem to have a habit of throwing unexpected surprises at scientists. One such surprise has actually boosted acceptance of prions among the research community: the identification of prions in yeast cells.

True-Krob specializes in the study of yeast prions, which don’t affect humans and other mammals but have similar structural elements. Yeast prions spread the same way as mammalian prions, with proximity to misfolded copies of the yeast prion protein, Sup35, somehow increasing the chances that normal copies of the same protein will become prions.

During her postdoctoral studies, True-Krob led a project that uncovered another major prion surprise: a positive role for yeast prions. Sup35 normally helps yeast read protein-building instructions from its DNA, a process called translation. True-Krob showed that the prion form of Sup35 disrupted this process. As a result, new material was added to proteins.

The switch to prion-prone Sup35, which occurs spontaneously about once in every million generations of yeast, often has harmful effects. But in about 20 percent of test cases, the disruptions gave the yeast a survival advantage in an environment in which temperature, the availability of food or other factors had changed.

“This system is advantageous for the yeast because they have a way of turning prions on and off,” True-Krob notes. “And that gives us hope that what we learn from yeast may help us find a way to turn prions off in humans.”

Like any genuinely new area of research, prions seem to have a habit of throwing unexpected surprises at scientists.

Working with prions in yeast lets True-Krob conduct studies that would be prohibitively complex or even impossible in mammalian cells. She can simultaneously expose many different yeast cell lines to a wide range of environmental conditions and genetic variables and see how these factors influence the likelihood that prions will form.

True-Krob is active in the search for additional yeast prions, which has netted a second yeast prion also linked to the translation of information in DNA.

"People have speculated that there may be up to 100 different prions in yeast," True-Krob says. "What we learn in yeast will help us search for prions in other systems."

Harris, who studies mammalian prions, describes his lab’s interests as the molecular and cellular biology of the prion protein: What do both forms of PrP do in the nerve cell, where do they do it, and what do they interact with?

Harris conducts the bulk of his research in approximately 50 lines of mice genetically modified to produce prions and symptoms similar to human prion diseases. In recent years, they’ve produced important clues about what PrPC and PrPSc may be doing in the brain.

Work in mouse models has shown that PrP scrapie builds up in clumps in the brain similar to those seen in more common neurodegenerative disorders like Alzheimer’s disease, Parkinson’s disease, and Huntington’s disease.

Another similarity to these disorders emerged in a recent study, led by Harris, of a cellular suicide switch known as Bax. Harris had read about experiments from other researchers linking Bax to nerve cell suicide in other neurodegenerative disorders, so he decided to see what would happen in one of his mouse models if the Bax gene was knocked out.

As he had hoped, the alteration saved a class of mouse brain cells normally killed off in dramatic fashion in the mouse model of the prion
disorder. But the mice still developed movement disorders and other symptoms that were characteristic of their condition when they had a functioning Bax gene.

Further investigation revealed extensive damage to the synapses, areas where branches of two brain cells come together to communicate.

“This connects prion diseases to other more common disorders because it shows nerve cell death isn’t the only thing we have to worry about in these conditions,” Harris explains. “We have to be concerned about damage to the synapse too, and there’s increasing evidence that is the case in other disorders like Alzheimer’s disease.”

That may make a big difference for therapeutics currently in development, Harris notes.

“Our results suggest that if we just prevent cell death without doing something to maintain the functionality of the synapse, patients may still get sick,” he says.

Although they work on very different aspects of prion research, True-Krob and Harris collaborate on projects, have a monthly joint lab meeting, and interact frequently.

Harris jokes that he and True-Krob make up “the largest center of prion research within 1,000 miles or so.” True-Krob notes when she was looking for her first faculty position, the possibility of coming to a department with another faculty member studying prions had “definite appeal.”

Their field may soon be getting much less lonely. Connections to more common neurodegenerative disorders are increasing, and other researchers (including True-Krob’s postdoctoral mentor) recently proposed that prions may help store memories in brain cells.

“That theory’s got a long way to go,” True-Krob says, “but it’s indicative of a new willingness to think about the possibility that prions could have a beneficial role in other systems besides yeast. More and more people are becoming aware of the prion and considering it as a possible explanation for puzzling results.”

Lost in translation

Translating DNA in yeast into protein involves the work of Sup35. However, its prion form disrupts the process....
Remembering
The Memory and Aging Project has evaluated more than 2,500 participants and supported over 800 scientific papers detailing key aspects of dementing illness.

MEDICAL AND PUBLIC HEALTH INNOVATIONS in the 20th century have resulted in unprecedented increases in longevity. With increased lifespan, however, the prevalence of age-related diseases also has increased. Chief among these illnesses is Alzheimer's disease, by far the most common cause of dementia in late life. Although Alois Alzheimer first identified the disease that bears his name in 1906, little attention was given the disorder until the past two to three decades.

In the 1970s, clinicians and investigators at Washington University began to seek answers. Led by Leonard Berg, MD, a dementia research team eventually obtained funding from the National Institutes of Health (NIH) in 1979 and inaugurated the Memory and Aging Project (MAP). For 26 years, the MAP has supported seminal studies and projects that have expanded the research understanding of Alzheimer's disease and set worldwide standards for its diagnosis and treatment.

These continuing efforts serve as a model of highly productive, collaborative and interdisciplinary science that aims to change the face of Alzheimer's disease from hopeless to hopeful.

BY HOLLY EDMISTON
The MAP evolved into two major grants that have been continuously funded by the National Institute on Aging of the NIH. The program project, Healthy Aging and Senile Dementia, awarded first in 1984, and then the Alzheimer's Disease Research Center (ADRC), awarded in 1985, each were initiated by Berg. The ADRC is one of 29 federally designated Alzheimer's Disease Centers that foster innovative research on Alzheimer's disease. The volunteer participants in the ADRC's studies, including those who are aging normally as well as those with dementia, have been major contributors to the program. Some dedicated participants first enrolled in 1979 and continue their annual assessments today. Other major factors in the ADRC's success have been the talents and commitment of its investigators and staff.

The year 2005 represents the 20th anniversary of the establishment of the ADRC, which promotes collaborative research at Washington University and beyond. It also provides a productive training environment for students in nursing, social work and medicine, residents in geriatrics, psychiatry and neurology, and postdoctoral fellows. The ADRC supports junior faculty as well as regional, national and international scholars. In the past five years alone, investigators from Canada, Chile, China, Croatia, Japan, Singapore, the Philippines and South Korea have completed visiting fellowships at the ADRC. In that same period, an additional 54 physicians, nurse practitioners and social workers from St. Louis and outstate Missouri have trained at the ADRC.

The ADRC has formed important partnerships within the St. Louis community. For example, the St. Louis Chapter of the National Alzheimer's Association initially was founded in 1981 by Berg and family members of MAP participants. Today, the St. Louis chapter has grown to encompass the entire eastern third of the State of Missouri as well as 14 counties in southwestern Illinois, and it remains as a key partner. The ADRC has teamed with the St. Louis Rams, the St. Louis Black Repertory Company, the Mound City Medical Forum and the Delta Sigma Theta Sorority to increase awareness of Alzheimer's disease in the African-American community. The ADRC also is very engaged in national and international Alzheimer-related groups.

THESE EFFORTS and the impressive body of research produced by the ADRC during the last 20 years stand as tribute to its leadership. Following Berg's retirement in 1998, the ADRC was co-directed by Eugene H. Johnson, PhD, Norman J. Stupp Professor of Neurology, and John C. Morris, MD, Harvey A. and Dorismae Hacker Friedman Distinguished Professor of Neurology, until 2004 when Morris assumed the title of ADRC director. Morris reports that "the ADRC and its approach to studying dementia have been recognized for very careful clinical characterization of individuals, even those at the very earliest symptomatic stages of the illness. A great deal of data has been obtained as well on a remarkable group of healthy elderly people. We thus have learned a tremendous amount about healthy aging and dementing disease and have been able to challenge the commonly held assumption that mental abilities inevitably decline with age."

The ADRC's diagnostic approach is one of the major achievements of the program. The Clinical Dementia Rating (CDR) was developed there as a tool for staging...
Alzheimer’s disease and has become the standard scale worldwide by which clinicians rate dementia severity. The ability to distinguish the early stages of Alzheimer’s disease from healthy aging has been a direct result of the ADRC’s use of collateral source interviews in which information provided by an individual’s spouse, child or friend is incorporated into the assessment.

Despite these advances, however, Alzheimer’s disease remains both underdiagnosed and undertreated, according to Morris. As many as 50 percent of all patients with dementia, particularly those in the milder stages of the diseases, are unrecognized. The ADRC recently has initiated a major study to identify methods that detect Alzheimer brain changes that may begin years or even decades before any clinical symptoms appear. At present, drugs are available that provide modest symptomatic benefit for individuals with Alzheimer’s disease. However, by the time the diagnosis is made, substantial and likely irreversible brain damage has occurred. Newer treatments that may modify or even prevent Alzheimer pathology may have optimal benefit when introduced as early as possible, even before symptoms occur. Thus, the ADRC is pursuing both the evaluation of agents that have the potential to directly modify the disease state as well as methods for presymptomatic detection.

"Although there are no cures for Alzheimer’s disease yet, many promising treatments now are being studied.” DAVID M. HOLTZMAN, MD

“The dual approach may bring the opportunity to actually prevent Alzheimer’s disease,” says Morris. “This is a tremendously exciting initiative with real promise for the field.”

Since the 1980s, the ADRC has been an active study site for treatment trials of anti-dementia drugs. A new clinical trial beginning in 2005 will study antibodies that in animal models help clear some of the Alzheimer brain lesions.

“Although there are no cures for Alzheimer’s disease yet, many promising treatments now are being studied,” says David M. Holtzman, MD, the Andrew B. and Gretchen P. Jones Professor and Head of the Department of Neurology and an ADRC investigator. “If we do not simultaneously develop ways to predict progression of an individual’s disease and his or her response to different types of treatment, we will be way behind when therapies finally arrive.”

According to Morris, the ADRC is committed to facilitating the development of such treatments and looks forward to the day on which eventually there will be a world without Alzheimer’s.

**Awards to ADRC investigators**

Potamkin Prize for Research in Pick’s, Alzheimer’s, and Related Diseases from the American Academy of Neurology: Alison M. Goate, DPhil (1993); David M. Holtzman, MD (2003); John C. Morris, MD (2005)

Metlife Foundation Award for Medical Research: Alison M. Goate, DPhil (1994); David M. Holtzman, MD (2002); John C. Morris, MD (2004)

Lifetime Achievement Award from the National Alzheimer’s Association: Leonard Berg, MD (2000); John C. Morris, MD (2004)

Inaugural M. Powell Lawton Award for Distinguished Contributions to Clinical Geropsychology from the American Psychological Association: Martha Storandt, PhD (2002)

PAIN IS NECESSARY, EVEN GOOD.
It's the warning signal that something is wrong. But when it lingers, pain becomes a problem — a condition rather than a symptom. Chronic pain is difficult to understand, hard to treat and nearly impossible to live with.

That's certainly been Linda Smith's experience. The 48-year-old St. Charles woman suffers from chronic back pain. Spinal fusion surgery didn't do much to alleviate her suffering, and as time went on, she learned she also had arthritis in her spine. Soon, she couldn't work, couldn't clean her house and, often, couldn't get out of bed in the morning. Her doctor recommended the Pain Management Center at Washington University and Barnes-Jewish Hospital.

"I had become a recluse," Smith says. "I felt like I wasn't 'pulling my weight' in my family. It was just so difficult because no matter what I did, it hurt. It's just impossible for people to understand how bad the pain is until they've experienced it."
The experience of pain is subjective.

A painful stimulus that completely disables one person may be only a minor inconvenience for another, but that’s the nature of chronic pain.

“The nervous system always amplifies and dampens down pain signals simultaneously,” according to Robert A. Swarm, MD, associate professor of anesthesiology, chief of the department’s Division of Pain Management, a component of the Washington University Pain Center. “So how much pain you experience is a balance, and there are a number of things that affect that balance.”

With chronic pain, despite the fact that many treatments exist, usually a person cannot be “cured.” Various strategies might make them feel better, but it’s unusual for a person to return to the kind of pain-free life many people take for granted.

“From a clinical management standpoint, there are often five main treatments for chronic pain,” Swarm says. “We may recommend physical therapy, pain medications, injections, psychological and behavioral therapies or surgical consultation.”

The “injections” category includes treatments ranging from nerve block shots to high-tech spinal infusion pumps that inject medications directly into the spine. Swarm and colleagues also implant electrical spinal cord stimulators that seem to dampen the transmission of pain signals in chronic pain sufferers. But many patients still have pain, even when receiving these high-tech treatments.

“We look for curative treatments,” Swarm says, “but the reason our clinical practice is called the Pain Management Center is that, unfortunately, in most cases we can’t cure or eliminate chronic pain. Instead, we’re limited to trying to manage these problems.”

The state-of-the-art in pain science involves an understanding that some patients must accept their pain and figure out how to work through it. ROBERT A. SWARM, MD

The basis of pain

Just because there’s no pill to eliminate it doesn’t mean the understanding of chronic pain hasn’t advanced, says Swarm. In fact, work at the Washington University Pain Center is clarifying how higher cognitive functions like memory and emotion influence the perception of pain.

The center is a joint effort of the departments of anesthesiology and psychiatry that combines basic research, clinical research, clinical pain management and education. Working together, clinicians and researchers hope to make chronic pain more bearable and to provide effective treatments, if not cures.

Robert W. Gereau, PhD, chief of the Pain Center’s basic research division, studies the balance between a painful stimulus and the perception of pain. “Basically, we try to understand the molecules that change in your spinal cord and brain and to identify the differences that are associated with this change from acute pain — which is an adaptive, good thing — into chronic pain,” says Gereau, who also is associate professor of anesthesiology.

“Morphine and drugs like it reduce pain sensation in general,” Gereau says. “What we’d like to develop would be drugs that reduce pain hypersensitivity — what I call anti-hyperalgesics — that would prevent or reverse the changes that convert normal pain into long-lasting, chronic pain.”

Gereau and colleagues have confirmed that higher brain functions are intimately involved both in perception of and reaction to pain. In mice, Gereau is studying pain response by observing an animal’s behavior following minor injury.

“One hour after an injury to the right paw, the left paw responds as it did before the injury,” Gereau says. “But three hours after the initial injury, the uninjured paw begins to show hypersensitivity to pressure.
or heat — not as much as the injured paw, but still a very significant amount."

Gereau believes a similar process may occur in people with chronic pain. In response to prolonged back pain, a person may become hypersensitive in uninjured parts of the body so that formerly non-painful stimuli will elicit pain. Or, very light touches of injured tissue may cause a larger-than-expected pain response.

Preliminary data from the mice suggests that the amygdala, a brain structure involved in emotional memory, may play a key role in that process, implying that higher brain functions not only influence pain perception, but also help to regulate the body's response.

**Perception is reality**

"There's a lot that goes into a person's experience of pain," says Beverly J. Field, PhD, instructor in anesthesiology and psychiatry, and director of the Pain Center's STEPP (Supportive Training and Education for People with Pain) program, which combines behavioral and physical therapies for people suffering from chronic pain. "Psychological factors, such as emotions or even how a person thinks about their pain, can influence both pain perception and how well one copes."

Other work from Gereau's lab suggests that antidepressant drugs can alter an animal's pain response, again suggesting that higher cognitive functions play a role in

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**Support group STEPPs up to sideline chronic pain**

It's a rainy winter day, the kind on which the cold, raw air goes right through a person. Despite the weather, a group of hearty souls has gathered at the Rehabilitation Institute of St. Louis to talk about pain. Some have been in car accidents. Others have had multiple back surgeries or suffer from arthritis, fibromyalgia or migraines. What all these people have in common is pain—and most have been in pain for a long time.

The group is part of a program called STEPP (Supportive Training and Education for People with Pain). For eight weeks, its participants meet weekly for physical therapy and cognitive behavior therapy.

Through the STEPP program, Linda Smith has learned not to reach for things on high shelves. Instead of bending over to take dishes out of the dishwasher, she now sits or kneels on the floor, lifts the clean dishes up from the dishwasher to the counter and then stands to put them away. Meditation and breathing exercises help her deal with particularly intense bouts of pain.

"There are a number of reasons a person might be referred to the program," says STEPP director Beverly J. Field, PhD. "They might not be able to work or be involved in sports or hobbies, and many will get depressed. A tremendous amount of loss is associated with chronic pain."

Depression is just one of many factors that can influence an individual's perception of pain. Ongoing research at the Pain Center shows that the brain's response to pain is heavily influenced by both experience and emotion.

"During the STEPP physical therapy sessions and discussions, we formed a bond as a group," says Smith. "Part of what helps me is thinking that if the rest of the group can do something, I can do it, too."

The STEPP program is a multidisciplinary effort developed by the Washington University Pain Center, in association with the Pain Management Center at Barnes-Jewish Hospital and the Rehabilitation Institute of St. Louis.
pain sensation. In other words, with pain, perception seems to be reality.

That's a message Field can take back to her STEPP behavioral therapy group to help participants understand their pain and to explain that if their doctors prescribe antidepressants, that doesn't mean the doctors think their pain isn't real. On the contrary, it's because they know antidepressants can help alleviate pain.

Gereau and Field agree that frequent contact between clinicians, researchers and clinical investigators increases their understanding of the issues their colleagues face.

"It makes a huge difference to my research," Gereau says. "Having that 'back and forth' helps me to see that we really can have an impact, and it makes it much more rewarding to know that what we learn in the lab can quickly affect the way that pain is managed."

Swarm says the "state-of-the-art" in pain science involves an understanding that, at least for now, some patients must accept their pain and figure out how to work through it.

"A lot of people have been frustrated in the last 10 or 15 years that the scientific breakthroughs in pain research haven't directly translated into treatments that eliminate pain," Swarm says. "I think some people had that fantasy in the past."

**Chronic pain revealed**
The activation of a signaling molecule called "ERK" is necessary for the development of chronic pain caused by inflammation. These two images show ERK in pain-transmitting neurons of the spinal cord. In the low-magnification image, left, ERK activation is seen as brown. At higher magnification, using a different detection method, it is shown in red.

Linda Smith is no longer one of those people. Her experiences with the Pain Management Center and its STEPP program have helped modify her expectations.

Along with attending Field's behavioral therapy support group, Smith made physical therapy an important part of her personal pain management program.

Jeanne Earley, PT, MHS, a lead physical therapist at the Rehabilitation Institute, says it can be difficult to get people suffering from chronic pain to take the first step toward exercise. "They often think it will hurt worse," she says, "but there is a difference between 'harmful hurt' and the muscle soreness that accompanies physical activity."

The whole idea of exercise, she says, is to enhance the body's physiological processes. "I tell patients that if we don't move our bodies, they don't work as well."

According to Earley, within a week of beginning an exercise program, patients often begin to feel that moving is not necessarily painful — both during and after exercising, and even into the next day.

"My goal is just to get out of bed every day and do something," Smith says. "I still have good days and bad days, but I've learned my limitations and how to cope with the things that make my pain worse. If I hadn't been through the STEPP program, I don't know what would have become of me."
Targeting body fats finds disease markers, moving closer to individualized medicine

By Gwen Ericson

And while most of us weigh fat in pounds on our bathroom scales, researchers in the School of Medicine's Division of Bioorganic Chemistry and Molecular Pharmacology measure amounts millions of times smaller. For this they use a new technology called shotgun lipidomics.

The procedure takes the measure of the body's lipids with the speed and coverage of a shotgun blast. In a matter of minutes, shotgun lipidomics can quantify and identify nearly all of the hundreds of lipids in a complex biological sample, even those present in minute amounts.

Spare tires, double chins, thunder thighs. A common misconception about fat is that it's found only in these fatty masses so many of us would like to be rid of.

But in fact, fats, fatty acids and their derivatives (collectively called lipids) are everywhere in the body, and they are vital to a myriad of bodily processes. Lipids form barriers and scaffolds in cells to facilitate biochemical reactions. Some are burned for energy. Others are used to create signaling molecules that regulate the body's systems.

Richard W. Gross, MD, PhD, and Xianlin Han, PhD, analyze lipid profiles.

Background: a fat cell.
"With shotgun lipidomics we can compare the lipid profile of various tissues during the healthy state to that of the disease state with amazing accuracy," says Richard W. Gross, MD, PhD, the division's director and a professor of medicine, chemistry and of molecular biology and pharmacology. "That's very powerful. It allows us to find key changes in body chemistry and identify lipid profiles associated with specific diseases, so it's very useful for diagnosis and treatment."

**THE ADVANTAGE**

Because of their importance in the scheme of living organisms, researchers and physicians have always needed to measure the lipids in biological samples. Unfortunately, previous technologies had major shortcomings.

Shotgun lipidomics overcomes those problems. It's fast, it's highly sensitive, and it can identify hundreds of lipids missed by other methods — all with a much smaller tissue sample so that specific cells or minute biopsy samples can be examined.

The instrument that makes this possible is a state-of-the-art mass spectrometer, which transforms a biological sample into a cloud of ions, flings the ions through an electric field and measures them when they reach the other side. An integrated computer processor produces a serious of narrow peaks on a screen to represent the amount and identity of each lipid, making the sample's lipid profile visible within seconds in graphic form.

But the heart of shotgun lipidomics is a set of chemical techniques that ensure each lipid will appear on the instrument's screen in a unique and predictable location, and this is where innovative thinking was needed. Gross developed the techniques alongside Xianlin Han, PhD, assistant professor of medicine, formerly Gross' graduate student and now an independent researcher in the division.

"Han is an artist with lipid analysis," Gross says. "He did wonderful things with the instruments, which made it possible for us to bring this technology to its current level."

When medical diagnosis catches up to the abilities of shotgun lipidomics, the technology could vastly expand the information available from a simple blood test.

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The technology will yield clues to enzymes that are malfunctioning, help identify new targets for drugs, and allow doctors to evaluate the effectiveness of treatments.

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"Consider a car," Gross says. "If a car usually gets 32 mpg and then suddenly starts getting 20 mpg and smoke comes out of the exhaust pipe, you know there's a problem. By looking at the smoke, a good mechanic could deduce what part of the car is broken."

"The same is true of the body," Gross continues. "If we can find the right indicator, or biomarker, we can identify what is malfunctioning and fix it. We're giving doctors and scientists a way of finding biomarkers they've never been able to see before."

As the technology is used to analyze more kinds of samples, a whole panoply of biomarkers will emerge to provide an accurate predictor of a person's health and health outlook, according to Gross. The technology will yield clues to enzymes that are malfunctioning, help identify new targets for drugs, and allow doctors to evaluate the effectiveness of treatments.

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According to Han, the technology is very precise.

"I can immediately tell the difference between the lipid profiles of two samples, even when there is only a single change," he says, lining up the peaks on two printouts from the mass spectrometer. "This is so new that we've only scratched the surface of what can be accomplished with it."

While today doctors routinely test blood for levels of high- and low-density lipoproteins (HDL and LDL), shotgun lipidomics can identify dozens of constituents within these categories. When medical diagnosis catches up to the abilities of shotgun lipidomics, the technology could vastly expand the medical information available from a simple blood test.

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Profiling fats

Using shotgun lipidomics, researchers can pinpoint a cell's chemical content (color bars). Trace amounts of fats are revealed in the pre-fat cell, top, while the fat cell contains high readings of lipids. Associating these changes with specific diseases can improve diagnosis and treatment.

A GATEWAY

With the backing of David M. Kipnis, MD, Distinguished University Professor of medicine and of molecular biology and pharmacology, Gross founded the division in 1987 after completing a PhD in chemistry on the Hilltop campus. Before that, he was an MD specializing in cardiology. "I studied chemistry so I could understand medical processes at the molecular level," Gross says.

Gross' career exemplifies the blending of disciplines that so often leads to original discoveries. "Richard is broadly trained," Kipnis says, "and he's creative. I knew that when I was chief of medicine and he was an intern. He's done remarkable research since then and draws a lot of graduate students to his division — graduate students can sense where the action is."

Along with collaborators in the Department of Medicine, Gross altered the predominant view of the cause of heart disease in diabetics using shotgun lipidomics. They found that diabetics' heart muscles underwent changes in fatty constituents, some of which could not be corrected by insulin treatments. This led to new insights into the diabetic state and the importance of saturated and non-saturated fats. Moreover, it showed that changes in heart cell metabolism were at the root of diabetic heart disease.

Han and collaborators in the Department of Neurology showed that patients in the early stages of Alzheimer's disease lacked a specific lipid in their brains. The decrease could be detected in cerebrospinal fluid as well. The discovery may allow development of new diagnostics for early-stage Alzheimer's and suggest new research avenues for researchers seeking the cause of the disease.

Daniel P. Kelly, MD, professor of medicine and of molecular biology and pharmacology, who has worked with Gross on several research projects, says, "The only way to determine the effect on lipids during disease is to profile the lipids. So the advanced technology developed by the division will figure prominently in several large research efforts at Washington University that aim to translate research in animal models to humans."

Right now, the division has only one instrument devoted to shotgun lipidomics, but Gross would like to gear up to do thousands of samples at a time. He envisions a room full of mass spectrometers fed samples by robotic equipment and linked to computers using advanced analysis programs. "If we could automate, it would become routine for doctors to make use of the sophisticated information about lipid chemistry that we can provide," Gross says.

Shotgun lipidomics can supply clues to each patient's unique metabolism and can play a significant role as medicine moves further toward truly individualized treatments. Pairing the capabilities of the division with Washington University's extensive research programs in human genetics would facilitate matching patients' body chemistries to their genetic profiles, adding to the strength of the medical school's BioMed 21 initiative to utilize genetic information for patient treatment.
Nothing deterred one second-year medical student and former soldier from meeting his goals

BY KRISTOFF REID

Kristoff Reid, WUMS 07, graduated from the United States Military Academy at West Point in 1998. Following the Infantry Officer Basic Course and Ranger School, Reid was attached to the 505th PIR, Third Brigade, 82nd Airborne Division. With this unit, Reid was deployed to Kosovo, Sinai and Afghanistan, where his service was acknowledged with a Combat Infantryman Badge and a Bronze Star.

My work schedule in Afghanistan was very demanding — I was working essentially any time I wasn’t sleeping — so MCAT study sessions were a welcome break from my routine. The only hitch was that I shared a tent with a group of officers who worked varying shifts in our tactical operations center. To avoid disturbing them, I had to do all of my studying by headlamp.

I took the MCAT in the chapel — the only structure at Kandahar Airfield not in continuous use — and I was glad to have the chaplain as my proctor, since it made arranging the test space much easier. Although the test went well, throughout one of its sections I heard rifle fire in the distance — nothing close enough to cancel the test, but certainly enough for me to decide to run back to the operations center during the break just to make sure that we weren’t under attack. Luckily, it was just a unit doing unusually vigorous small arms training prior to a mission.

Since I was not a traditional pre-med student (I majored in physics at West Point), I had no idea how the medical school application process worked. Not knowing anything about medical schools, I essentially drew names out of a hat, looking at cities where my wife, Sarah, and I had either lived already, or thought she could easily find employment upon moving. In mid-October, however, I found myself fairly unhappy with the schools I had applied to — we didn’t really see ourselves being very happy in either the Northeast or California.

It was then that Sarah mentioned a brochure from Washington University that had arrived. Suddenly, the idea of moving to St. Louis seemed like a wonderful idea.

I recently had met a Washington University graduate at Kandahar Airfield: James Wu, PhD, MD 86, now a colon and rectal surgeon at the Cleveland Clinic, who had volunteered as a reserve military physician to lead a forward surgical team.
in Kandahar. So I knew the high caliber of graduate Washington University produced, and we were excited about applying to the School of Medicine. I also was very glad that there was a web-based application process in place; otherwise, I'm not sure I would have been able to meet the application deadline, even with Sarah helping me out stateside.

Once the interview process started, I was immediately impressed by the attitudes of the students and faculty at Washington University. Despite the reputation of the school, and their obvious accomplishments, everyone I met seemed down-to-earth and even humble, qualities I found notably lacking at other medical schools. The moment I finished my St. Louis visit, I knew it would be my first choice.

My experience at the School of Medicine so far has been very positive. I believe that the curriculum here is in a format that suits my learning needs, and the pass/fail first year was a critical component in allowing me to adapt to medical school from my job, which, though demanding, did not require the same level of intellectual effort.

Like any medical student, I find it difficult to predict where my interests will finally lead me, but I have found my current instructional block on diseases of the nervous system and psychiatry to be so interesting that I find it easy to see myself in any of the fields covered during the block.

I believe that my military experience complements my medical experience very well. There are very few people in the world who get anything done alone, and even the independent private physician has a staff to manage.

I know that the organizational and leadership skills I learned in the Army will certainly be useful in medicine. Without the efforts of the entire health care team, the patient won't be well-served.

Taking time out to celebrate: Kristoff Reid, standing, gathers with fellow officers in Afghanistan just before a promotion ceremony and barbecue held for the regiment's operations officer. As the commander's representative at such observances, Reid (now a second-year medical student at Washington University School of Medicine) read the promotion orders at the event.
Health issues on film

Physician-filmmaker Gretchen Berland, MD, HS 99, uses film as a research tool, employing the unusual approach of giving her subjects cameras and having them film their own experiences. The resulting documentaries have focused on issues critical to the improvement of health care and have contributed to Berland's selection as the recipient of a 2004 MacArthur Foundation Fellows $500,000 genius award, given to individuals who demonstrate extraordinary "originality and dedication in their creative pursuits and a marked capacity for self-direction."

Berland, now assistant professor of internal medicine at Yale University School of Medicine and core faculty member of the clinical scholars program, also treats patients and advises residents there. She began her career in public television, producing programs for the science series "NOVA" and the "MacNeil/Lehrer News Hour" that won two Emmys. At age 28, she decided to follow her father (an internist in Portland OR) into medicine and enrolled at Oregon Health Sciences University, earning her MD in 1996. Unexpectedly, working with incarcerated teenagers during a psychiatry rotation revived her work with film, when she gave cameras to teens outside the jail to record the violence and deprivation in which they lived.

Berland came to Washington University/Barnes Hospital for internship and internal medicine residency. This time she gave the cameras to fellow residents, who filmed a video diary of what happened on call. That film, "Cross-Cover," shows the changes in their aspirations and attitudes toward patients as residents cover overnight for another doctor. Cited as a valuable training tool, the film has been distributed to 150 residency programs nationwide.

From 1999-2001, Berland was a fellow of the Robert Wood Johnson Clinical Scholars Program at the University of California, Los Angeles, training in health services research. Her nontraditional project gave cameras to three wheelchair-bound people; from their recording of events impacting their lives, Berland produced "Rolling," an award-winning film showing how affliction causes indignities and difficulties and creates physical and social barriers often overlooked and unimagined by walking people. Named best documentary by the Independent Film Project in 2003, "Rolling" won the grand prize at the Lake Placid Film Festival.

Berland views herself as physician first, filmmaker second. Contemplating several new film projects, she has little time for the fly-fishing and kayaking she does for fun.

Doctoring female athletes

When Aurelia Nattiv, MD 85, held a fellowship in sports medicine at the University of California, Los Angeles, in 1988-89, she was one of the first women in the field. Now she is recognized as an expert on the health risks and care of female athletes and has made hundreds of presentations on the subject for national organizations as well as on CBS, NBC, ABC, PBS, CNN and other media. She was elected a Fellow of the American College of Sports Medicine in 1999 and named to its Board of Trustees in 2001.

Nattiv is associate professor in the UCLA Department of Family Medicine, division of sports medicine, and in the Department of Orthopaedic Surgery. Since 1994, she has directed UCLA's Osteoporosis Center and co-directs the Sports Medicine Fellowship Program there. She also serves as a team physician for the UCLA Department of Intercollegiate Athletics, USA Track and Field, USA Gymnastics, and the U.S. Olympic Committee.
A long-time recreational exerciser, Nattiv sought training in sports medicine because, as a proponent of preventive medicine, she wanted to help her patients incorporate exercise and good nutrition into their lives. As she saw patients, Nattiv realized that female athletes have unique medical concerns. She has extensively researched and published on the diagnosis and treatment of what she terms the “female athlete triad” of interrelated problems: disordered eating, amenorrhea and osteoporosis.


She says, “I continue to emphasize the importance of exercise and diet to my patients of all ages and athletic backgrounds ... although I have enjoyed working with many elite and Olympic athletes, I also take satisfaction in helping motivate sedentary patients to start and maintain an exercise program.”

Nattiv’s own exercise program consists of running along the beach three to four times a week with her two-year old daughter in the stroller. Her free time is devoted to her family — her husband is a criminal defense attorney — and their home a few blocks from the ocean in Manhattan Beach.

Of international interest

William D. “Bill” Sawyer, MD 54, and his wife, Jane Ann Stewart Sawyer, NU 50, have lived in seven states, Thailand and England, and have visited 46 states, 57 nations and territories and all of the continents. Now retired, their focus has shifted from international service to that of their community, Georgetown TX, where they are active in educational, church and civic organizations.

Prior to retirement, Sawyer was president and trustee of the China Medical Board of New York, a foundation supporting education and research efforts in medicine, nursing and public health in universities of East and Southeast Asia. During his presidency, the board funded many activities, among them: development of collaborative programs for improving clinical skills training in Chinese medical schools and continuing medical education for physicians; the Program of Higher Nursing Education Development, a collaboration among nursing schools in China, Thailand and the United States that established bachelor and master’s degree programs; a modernized curriculum at the School of Public Health at Chulalongkorn in Bangkok; and the establishment of the Tibet Medical College, that country’s only modern medical school.

Earlier, Sawyer was visiting professor and chairman of microbiology at Mahidol University in Bangkok under the auspices of the Rockefeller Foundation. Other positions included professor and chairman of microbiology and immunology at Indiana University, visiting professor of microbiology at Oxford University, and dean and professor of medicine and of microbiology and immunology at Wright State University in Dayton.

Among his many honors are doctoral degrees from three Thai universities and numerous honorary professorships. Both the Chinese government and the Shanghai Municipality gave him their highest awards to foreigners for contributions to the health of their people. He also received the Gold Medal for Distinguished Achievement from Airlangga University in Indonesia and the Medal for Contributions to the Advancement of Public Health from the Asia-Pacific Academic Consortium for Public Health.

Jane Ann, who was a head nurse at Barnes Hospital when she and Bill were married in 1951, has been much a part of his accomplishments. They have two children: Dale Sawyer, PhD, professor of geophysics at Rice University, and Carole Bolin, DVM, PhD, professor and chief of the Section of Bacteriology and Mycology at the College of Veterinary Medicine at Michigan State.
Easing the burden
Washington University couple helps others with scholarships

As millions of TV viewers watch shows like “CSI: Crime Scene Investigation,” they are discovering what Paul W. Herrmann, MD 61, has known for decades—forensic pathology is a fascinating science. According to Herrmann, the quest to recreate pivotal moments of time based on clues within the human body is a never-ending challenge.

As a School of Medicine student, pathology was not his favorite subject. But while at Hennepin County General Hospital in Minneapolis during an internal medicine residency, he experienced a change of heart—rediscovering what would become his lifelong passion.

“Forensic pathology is so diverse—there is something new to be learned every day of one’s career,” Herrmann says.

Over the past 35 years, Herrmann has become a nationally known forensic pathologist. Before retiring, he was managing partner of Western Laboratories Medical Group, which conducted autopsies for the Alameda County coroner’s office, provided pathology services for several Bay-area hospitals, and ran its own clinical laboratories. Herrmann also taught in the Department of Pathology at Stanford University Medical School, where he is now clinical professor emeritus.
Herrmann has performed about 13,000 autopsies over the course of three decades, investigating causes of death ranging from the natural to the bizarre. Sometimes the work results from catastrophic events, such as the earthquake that struck California in 1989 or the 1991 wildfires in the Oakland and Berkeley hills. More frequently, however, Herrmann’s work simply helps to solve a mystery and lead to the adjudication of a wrongful death, or it might uncover an unsuspected genetic illness that may be of importance to the relatives of the deceased. In other words, there is truth to the saying, common in pathology, that an autopsy can save your life.

WITH THEIR GENEROSITY, the Herrmanns hope to ensure that the School of Medicine will continue to offer outstanding opportunities to future generations of physicians.

Herrmann retired in July 2004, to what he thought would be a life of playing his French horn and spending more time on the tennis court. Instead, his expertise remains in great demand as a consultant on medical legal cases.

Paul Herrmann’s fulfilling career has motivated him and his wife, Susan, who worked as a social worker in the School of Medicine’s Department of Psychiatry in the late 1960s, to bequeath full scholarships to the School of Medicine, the George Warren Brown School of Social Work and the College of Arts & Sciences. They also will provide a lectureship in Germanic studies.

“Washington University opened up a whole new life for me,” says Paul Herrmann. “I wouldn’t have the career I have today if I hadn’t attended its medical school.” Susan Herrmann adds that the years she spent at Washington University were the most rewarding of her professional life.

Their School of Medicine scholarship will enable someone who could not otherwise afford to attend medical school to do so without the distractions of tuition worries and burdensome debt.

Paul Herrmann grew up in St. Louis and earned his bachelor’s degree in German from Washington University before attending its School of Medicine. After graduating from medical school, he completed a rotating internship and then was drafted, spending two years in the Army Medical Corps — one in Korea and the other in New York City. He returned to Washington University School of Medicine in 1965 for a pathology residency, then spent a year as a fellow in the Office of the Chief Medical Examiner in New York City before coming back to St. Louis and the School of Medicine yet again to complete a surgical pathology fellowship in 1968.

Susan Herrmann grew up on the East Coast, spending World War II with an uncle who was a colonel in the Army Air Corps. He was a unique individual whose idea of early childhood education included such subjects as military strategy and history. Today, she still enjoys both subjects, along with French, which she also began studying as a child.

She earned an undergraduate degree in history and political science from Bennington College and a master’s degree in social work from the University of Minnesota, with a third year spent at Washington University’s George Warren Brown School of Social Work.

In their spare time, the Herrmanns enjoy travel, love to dine out and are quite knowledgeable about the wine of kings and the king of wines — champagne. They especially enjoy exploring the Champagne region of France, and this area has remained an often-visited favorite.

Married in the Danforth Chapel in Olin Residence Hall in 1965, the Herrmanns feel that they’ve benefited enormously, in many ways, from their association with Washington University. With their generosity, they hope to ensure that the School of Medicine will continue to offer outstanding opportunities to future generations of physicians.
Wings Over the Nile

School of Medicine alumni traveled throughout Egypt and Jordan on a recent educational tour organized by the Washington University Alumni Travel Program.

Distinguished Alumni Scholars honored

First-year medical students met recently with the alumni after whom their Distinguished Alumni Scholarships are named. Since its launch in 1989 by the Washington University Medical Center Alumni Association, the program has bestowed four-year, full-tuition scholarships on 64 students. Each scholarship is named by the alumni association's executive council to honor an alumnus or alumna who has served on the School of Medicine faculty.

The tradition continues!

Class of 1980 halfway to goal

During his 25th reunion celebration last May, Brent T. Allen, MD 79, issued an invitation. At the time, the Class of 1979 was wrapping up a successful effort to establish an endowed scholarship in its name, and Allen, one of the reunion gift chairs, challenged the Class of 1980 to continue the 25th-reunion scholarship tradition the following year.

That challenge was accepted by gift chairs James W. Fleshman Jr., MD 80, and David G. Mutch, MD 80. This past October, Fleshman and Mutch contacted classmates and encouraged them to support establishing the Class of 1980 Endowed Scholarship. In response, class members have already made more than $36,000 in gifts and pledges toward the fund's $50,000 goal.

Their effort marks the 12th consecutive year that the class celebrating its 25th reunion has worked to establish a class scholarship. Including earlier classes that have joined the effort, 17 School of Medicine MD classes are either working on, or have completed, funding endowed scholarships in their names.

This commitment has borne fruit: Students during the 2004–05 year were awarded more than $68,000 from endowed class scholarships, and that amount will grow through the years as both the number of scholarships and their endowments increase.
On May 12–14, Reunion 2005 will bring MD alumni together to celebrate 10 years to 65 years post-graduation. Classes will chat, laugh and learn throughout three days of activities.

These distinguished alumni will be honored with special recognition at the reunion’s awards banquet on Saturday, May 14:

**Alumni Achievement Awards**
- James E. Darnell Jr., MD 55
- Eric D. Green, MD 87, PhD 87, HS 91

**Alumni/Faculty Awards**
- M. Gilbert Grand, MD, HS 76
- M. Alan Permutt, MD 65

**Distinguished Service Award**
- Robert L. Grubb Jr., MD 73

And more...
Campus tours, the Dean’s Luncheon and other events will provide time for catching up in settings from casual to elegant. Continuing medical education sessions will feature alumni speakers and School of Medicine faculty members discussing the latest in research and clinical practice.

**Speakers**
- DORA ANGELAKI, PhD
  Alumni Endowed Professor of Neurobiology and Professor of Biomedical Engineering, WUSM
- JOHN F. DIPERSIO, MD, PhD
  Lewis T. and Rosalind B. Apple Professor of Medicine, WUSM
- ERIC D. GREEN, MD 87, PhD 87, HS 91
  Scientific Director, National Human Genome Research Institute, NIH, Bethesda MD
- IRA J. KODNER, MD 67
  Solon and Bettie Gershman Professor of Surgery, WUSM
- JAMES A. SHAYMAN, MD 80
  Professor of Internal Medicine and Pharmacology and Associate Chair for Research Programs, University of Michigan
- GREGORIO A. SICARD, MD, HS 78
  Professor of Surgery, WUSM

Reunion-year alumni can return registration materials by mail or register online at medicine.wustl.edu/alumni.

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Smiles to spare: Dean’s Eliot Society holiday reception

Local alumni, faculty members and longtime friends of the School of Medicine took some time out to welcome the holidays with Dean Larry Shapiro at the Eliot Society Holiday Reception in December. It was standing room only as classmates and colleagues, and sometimes teachers and former students, caught up with one another and talked about past, present and future.

Medical school Dean Larry J. Shapiro, MD 71, chats with Li Jen Chen at the Campaign Gala in December.

Hundreds gathered at the Renaissance Grand Hotel in downtown St. Louis for a gala celebration marking the close of the Campaign for Washington University. A phenomenal success, the Campaign raised $1.55 billion in gifts and commitments.

Thank You!
William F. Sasser, MD, MS 68, writes that he joined the surgical faculty at Saint Louis University in the division of cardiothoracic surgery in June 2003. In October 2004, he was made second vice-president-elect of the American College of Surgeons.

Donald C. Anderson, MD 70, HS, has been named vice president of discovery at Advancis Pharmaceutical Corporation in Germantown MD. In this position, he plans and directs all basic research programs and provides input regarding development activities, clinical programs and registration strategies for the company's clinical trial programs. Anderson was formerly global head of pharmacogenomics and clinical affairs and senior distinguished scientist in the clinical discovery and human pharmacology division of Aventis Pharmaceuticals Corporation.

Edward P. Syron, MHA 77, writes that he was elected to become the American College of Healthcare Executives (ACHE) regent for the 22 counties in Northeastern Pennsylvania (NEPA) for the 2005-08 term. As regent, he becomes part of the ACHE's national governance structure. He has been very active with the local ACHE affiliated chapter, the Healthcare Management Forum (HCMF) of NEPA, having been on its board since 1999, serving as vice president from 2002-04 and then as president for 2004. In 2002, Syron was awarded recognition as the ACHE Regent's Senior Level Healthcare Executive of the Year. He also has been enrolled in Marywood University's doctoral program since fall 2002 and has completed all the academic requirements and passed the qualifying exam process for his PhD in human development with concentration in health promotion. He hopes to complete his dissertation this year and receive his PhD in January 2006.

Mark Frisse, MD 78, MBA 97, MSc, has been appointed Accenture Endowed Chair at the Vanderbilt Center for Better Health, part of the Vanderbilt University Medical Center in Nashville TN. Vanderbilt and Accenture, a global management consulting, technology services and outsourcing company, established the chair as part of a collaborative research-based effort to identify best methods for sharing clinical information to benefit both patients and health care organizations. The Center for Better Health, launched in 2002, focuses on how information technology and biomedical informatics can support innovation to improve quality of care and lower health care costs. Frisse is director of regional informatics programs and a professor in the Department of Biomedical Informatics at Vanderbilt. On behalf of the State of Tennessee, he directs the Volunteer Health Initiative Regional Health Demonstration Project funded by the Agency for Health Care Research and Quality (AHRQ). He also leads elements of AHRQ's Health Information Technology Resource Center, managed by the National Opinion Research Center of the University of Chicago. In addition, he is a member of the Foundation for eHealth Initiative's Leadership Council and co-chairs a group overseeing regional health initiatives funded through the foundation's Connecting Communities for Better Health Program.

Allen Sedman, MD 78, PhD, has been named to the scientific advisory board of Alba Therapeutics Corporation, a Baltimore-based company launched in April 2004 to develop drugs to treat autoimmune and inflammatory
Nancy Shalowitz, HA 80, JD, has been appointed General Counsel of the Illinois Department of Public Aid. She was previously the director of the Health Law Institute and Graduate Programs at DePaul University College of Law.

Linda Struckmeyer, DT 82, received her MA in occupational therapy from Texas Women's University in December 2004. Her thesis was titled "The effectiveness of word processing and word prediction for children with handwriting difficulties." She specializes in school-based therapy and is an assistive technology practitioner in Temple TX.

Jason D. Morrow, MD 83, HS 86, F. Tremaine Billings Professor of Medicine and Pharmacology at Vanderbilt University School of Medicine in Nashville TN, was recently appointed chief of the division of clinical pharmacology there. He writes that the division is the largest of its kind in the world, with more than 30 faculty. Morrow went to Vanderbilt after completing an infectious disease fellowship at Washington University and Barnes Hospital. At Vanderbilt, he was a research fellow in pharmacology, studying fatty acid oxidation, before joining the faculty in 1994.

Michael Kastan, MD, PhD 84, has been appointed director of the Cancer Center at St. Jude Children's Research Hospital in Memphis TN. Kastan, who has been at the hospital since 1998, will also continue to serve as chair of hematology-oncology. He will coordinate the activities of the Cancer Center programs and chair the Cancer Center Advisory Committee. The Center comprises seven programs and has been supported by consecutive grants from the National Cancer Institute since 1977.

Gary Collin, MD 85, is one of only 57 individuals internationally to be awarded a Fellowship in the American College of Critical Care Medicine this year. He was inducted in January. Fellowship is granted to "those individuals who have shown dedication to education and research in critical care and have achieved significant accomplishments in critical care medicine at an international level." In October 2004, Collin was an invited speaker at the 23rd Annual Meeting of the Japan Society of Clinical Anesthesia in Osaka, Japan, discussing an aspect of health care-acquired infections in the intensive care unit. Collin lives in South Glastonbury CT.

Doug Vanacker, PT 90, has started a new practice in real estate sales with Keller Williams Realty in Tampa FL. He plans to stay active in physical therapy as he builds his real estate business. He can be reached at dougvanacker@kw.com.

Donald S. Levy, MD 91 and Edward S. Levy, MD 91, both of St. Louis MO, are mourning the death of their father, Monroe D. Levy, on Nov. 20, 2004. Levy's survivors also include his brother, Jerome F. Levy, MD 58, HS 63, also of St. Louis.

Colin T. McDonald, MD 93, director of neuro-critical care at South Shore Hospital in Weymouth MA, is president, chief executive officer, and one of the founders of Brain Saving Technologies (BST), launched in December 2004 in Newton MA. A health services management company in the process of establishing its first “Neuro-TeleMD Consortium,” BST will use a real-time telemedicine system to connect community hospital emergency rooms to physician teams at specialized neuro centers. The system will provide bi-directional, round-the-clock videoconferencing capability to help physicians evaluate and diagnose neurological problems and administer timely treatment. Recent legislation in Massachusetts, effective this spring, requires state emergency services personnel to transport suspected stroke victims directly to neurocenters rather than community hospitals, because many such hospitals are currently unable to maintain continual neurological physician staffing. However, the hospitals could still receive those patients if they have access to resources such as those provided by the BST consortia.

David Whellan, MD 94, has joined the Advanced Heart Failure and Cardiac Transplant Center at the Jefferson Heart Institute in Philadelphia and the faculty of the Medical College at Thomas Jefferson University. He had been an assistant professor of medicine in the division of cardiology at Duke University, where he was on the staff of the Heart Failure Program. Prior to joining the faculty at Duke, Whellan did advanced training in heart failure there and completed dual fellowships, one in clinical cardiology in the Department of Medicine and one in clinical research at the Duke Clinical Research Institute. He received a Master of Health Science degree in clinical research from Duke in 2002.

Pablo Adler, MD 98, MA 99, and his wife have a new daughter, Catalina Adler, born on Dec. 27, 2004, joining her older sister, Isabella. He reports, "Both mother and a slightly yellow baby are doing fine. I am still an anesthesiologist at ASPA, which covers the Christiana Hospital in Delaware. Hope all is well with my classmates!"

David Dorr, MD 99, has finished internal medicine residency in Oregon and a medical informatics fellowship in Utah. In January, he took an academic position at Oregon Health and Science University as a member of the Internal Medicine/Medical Informatics faculty.

Brian Lidiak, HA 99, recently assumed the position of chief operating officer of Baptist-Lutheran Medical Center in Kansas City MO. He writes, "Having worked for HCA for the past five years, I was eager to accept this role in one of the facilities HCA acquired from Health Midwest. My wife, Joni, and I live in the Brookside area of Kansas City."

Amy McKeen, PT 99, is working as an outpatient physical therapist at Abbott Northwestern Hospital in Minneapolis MN. She is involved with the aquatic and chronic pain programs there and writes that she is "always wanting to hear from classmates."

Gretchen Champion, MD 00, writes that she and Paul Staveteig, MD 00, are delighted to announce the birth of their first child, Lauren Alyse Staveteig, on Oct. 19, 2004. Both Paul and Gretchen are completing their last year in residency at Barnes-Jewish Hospital in St. Louis in diagnostic radiology and otolaryngology, respectively.

In Memory

Ralph R. Jones, MD 34, died Aug. 13, 2004, at the age of 96 in Boise ID. He had been a general surgeon in Boise from 1938 to 1980. Jones had served as president of the medical staff at Saint Alphonsus Regional Medical Center and at St. Luke's Regional Medical Center. Among his survivors are two daughters, who noted that his appreciation for his professors at Washington University motivated him to anonymously support a number of pre-med students at Boise State University, where he also endowed the Mountain State Tumor and Medical Research Institute Fellowship and the Pre-med Summer Research Fellowship Programs.

Sara Dowson Prestwood, NU 41, of Santa Fe NM, died Oct. 15, 2004.

Melvin I. Gibbel, MD 42, died Aug. 6, 2004. A retired general surgeon, he had lived in Salem SC.

Margaret L. Cariss Kirchoff, NU 42, MD 50, died in San Francisco CA on Jan. 8, 2005, at the age of 84. She was a retired pediatrician. Her husband preceded her in death.

C. Read Boles, MD 43 (December), died on Nov. 3, 2004, after a long illness. He was 84. A pediatrician, he maintained a private practice in St. Louis from 1949 to 1995 and was on the faculty at Washington University School of Medicine. For 40 years he also served as physician for the Community School in Ladue. Following graduation from the medical school, he joined the U.S. Army and, because of his training in infectious jungle diseases, was assigned to South America, where he served as a base surgeon until 1946. Boles was a member of the American Academy of Pediatrics and the American Medical Association. Among his survivors are his wife, Marlene, a daughter, two sons, a stepdaughter and a stepson. Memorial gifts may be made to St. Louis Children's Hospital Foundation, One Children's Place, St. Louis MO 63110.

Joseph L. Berg, MD, HS 44, a retired ophthalmologist, died Nov. 4, 2004. He had practiced in Albany GA.

Marion Slee Clark, NU 45, died Nov. 16, 2004. She lived in Cedar Falls IA.

Margaret Helen Clare Griffin, PT 45, GR 51, of Vanduser MO, died on Jan. 5, 2005, at age 85. After completing her physical therapy degree, she joined the staff at Washington University School of Medicine in physical medicine in 1945, earned a master's degree in physiology and, from 1975 until retiring in 1992, was a professor of neurology. She did research on Parkinson's disease and, in 1955, helped establish and direct Missouri's first clinical laboratory of electromyography (EMG) for testing muscle and nerve disorders. She was in charge of training neurology residents in EMG techniques and interpretation. In 1991, she married Norman Griffin, who preceded her in death in 1995. Survivors include a stepson and two stepdaughters.

Richard Musser, MD 45, died in April 2004 at the age of 86. He had practiced family medicine in southeastern Montana for 25 years. After graduation, he practiced for a few years in St. Louis, then trained in anesthesiology for a year in Salt Lake City before moving to Montana. Musser learned to fly as a teenager in Tacoma WA, and his piloting skills proved invaluable in the remote area where he practiced. When patients needed treatment not available at the small hospital there, he stabilized them and flew them in his plane to a hospital in Billings or occasionally to the Mayo Clinic for treatment. Among his survivors are his wife, who often accompanied him on long drives to see patients too ill to travel, and a daughter, Suzy, who is a registered nurse.
Eugene P. Johnson, MD 46, died of pneumonia April 2, 2004, in Terre Haute IN. After serving in the U.S. Navy, he practiced family medicine in Casey IL until his death. Among his survivors are his wife, Dorothy S. Johnson, and two daughters.

Claire Conely Ramsey, MD 46, of Harrisesburg MS, died Oct. 2, 2004. She had practiced family medicine in Alabama, where she was a strong advocate for improving health care in rural areas. In the 1970s, she and her husband, Robert Ramsey, MD, set up clinics for disabled persons who were not receiving adequate care, and she pioneered the development of the first daycare program for developmentally disabled adults. She was known for her work with local and state officials to obtain funding and services for those with disabilities and, in 2000, was named to the Alabama Healthcare Hall of Fame.

Robert Counts, MD 47, died Nov. 3, 2004, in New York at age 80. A native of Kansas, he practiced psychiatry in Massachusetts and the greater New York area for 50 years. During World War II and the Korean War, he served tours of duty in the U.S. Army. He was the first director of the Children's Psychiatric Center of Monmouth County NJ and founded the Center for Marital and Family Therapy in New York City. Counts was also a member of the volunteer faculty at the New York University School of Medicine.

Bruce Robert Johnson, MD 79, of Edina MN, died suddenly at age 56 on Nov. 13, 2004, while trekking in Patagonia with his wife. He was a cardiologist. His wife, Peggy, survives, along with three daughters and other relatives.

Sara Southworth Nuttall, NU 52, died Sept. 28, 2004, in Indianapolis IN.

Laverne S. Erickson, MD 53, professor emeritus of neurosurgery at the University of Utah Health Sciences Center, died Nov. 15, 2004, from complications of a head injury sustained two weeks earlier while in residence at a nursing home where he had lived for four months while battling cancer. After graduation from medical school, he served for three years in the U.S. Air Force before returning to Washington University School of Medicine to complete his surgery and neurosurgery training. Before joining the faculty at Utah in 1982, Erickson was a practicing neurosurgeon in Salt Lake City from 1962 to 1981, and a faculty member at Loyola University Stritch School of Medicine in Chicago during 1981-82. He retired in 1999. His wife, Verna, preceded him in death. Survivors include a son, David.

Sidney Goldring, MD 47, professor emeritus and former head of neurological surgery at Washington University School of Medicine and Barnes-Jewish Hospital, died in St. Louis on Nov. 3, 2004, of complications of Alzheimer's disease. He was 81. After earning his bachelor's and medical degrees from Washington University and completing his clinical training at Jewish and Barnes hospitals, Goldring spent two years as professor and head of neurological surgery at the University of Pittsburgh. He returned to St. Louis in 1966 to join the School of Medicine faculty, where he became known for helping to revolutionize the treatment of epilepsy and define the important role of surgery in epilepsy management. In 1974, Goldring became head of neurological surgery, co-chair of the Department of Neurology and Neurosurgical Surgery, and neurosurgeon-in-chief at Barnes and St. Louis Children's hospitals. In 1980, he also was named director of the McDonnell Center for Studies in Higher Brain Function. A leader in national and international organizations, Goldring served as president of the American Academy of Neurological Surgery, the American Association of Neurological Surgeons, the Society of Neurological Surgeons and the St. Louis Society for Neurological Science. His many honors included the Milken Distinguished Neuroscientist Award for Epilepsy Research, the Cushing Medal, the Distinguished Services Award from the Society of Neurological Surgeons, and honorary membership from the Congress of Neurological Surgeons. Survivors include his wife, Lois Goldring, a son, James Goldring, MD 86, a daughter, Kathryn Coryell, and four grandchildren. Memorial contributions may be made to the Memory and Aging Project, 4488 Forest Park Blvd., Suite 101, St. Louis MO 63108.
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- Ways to stabilize your income.
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<table>
<thead>
<tr>
<th>Benefit</th>
<th>Amount</th>
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<tr>
<td>Rate of return</td>
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<tr>
<td>Fixed annual income for life</td>
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<tr>
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<td>$256</td>
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<tr>
<td>Tax-free portion</td>
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<tr>
<td>Taxed at capital gain rates</td>
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</tr>
</tbody>
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(The entire amount becomes taxable income after the first 14.5 years.)

**Immediate federal income tax deduction** $4,001

(Your charitable deduction will vary.)

You may also fund a gift annuity with cash.

**Sample Rates of Return**

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<th>Double life</th>
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<tbody>
<tr>
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<td>rate</td>
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<tr>
<td>90</td>
<td>11.3%</td>
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For further information or to request a personalized example if you are 60 or older, please call 1-314-935-5848 or 1-800-835-3503, complete the attached reply card, or e-mail us at plannedgiving@wustl.edu.

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Minimum value $ ____________ (MINIMUM $5,000) In the form of:
☐ Cash  ☐ Securities ($ ____________ )

☐ Cost Basis ____________  ☐ Acquisition Date ____________

First Beneficiary Second Beneficiary
Birthdate ____________ Birthdate ____________
Relationship ____________ Relationship ____________

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☐ Please send me information on giving real estate.

☐ Please send me information on making a bequest to Washington University.

☐ Please have Lynette Sodha, Steven Rosenblum, or Mark Weinrich from the Washington University Planned Giving Office contact me.

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Address ____________________________
City/State/Zip ____________________________
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The University reserves the right to contact contributors to verify entries.
Skull scanning

Charles F. Hildebolt, DDS, PhD, associate professor of radiology at Washington University School of Medicine, right, and Dean Falk, PhD, the Hale G. Smith Professor and chair of anthropology at Florida State University, display a cast of the "Hobbit" skull, a new species of prehistoric humans discovered on an Indonesian island last year. The scientific name for the species is *Homo floresiensis*, but its tiny size (just a little over 3 feet tall when fully grown) led scientists to nickname it after a species of tiny humans in *The Lord of the Rings*. Using digital analysis, Falk and Hildebolt are learning more about the structure of the Hobbit's brain.
We are what we eat  The stuff of love handles revealed: Globules of lipids, or body fats, cluster in a fibrous, pre-fat cell (shown in orange, left) and appear greatly expanded in a bulging mature fat cell on the right. Understanding lipid chemistry makes inroads to individualized medicine. For more on this story, please turn to page 21.