This group of eminent clinicians represents the 190-plus members of Washington University Physicians listed in *America's Top Doctors* and *Best Doctors in America* (2005) who treat adult patients at the Center for Advanced Medicine. Of all the physicians from the St. Louis region listed in both publications, Washington University faculty members make up 47 percent of the total. To view a list of all Washington University Physicians, please go to wuphysicians.wustl.edu.
In the Neonatal Intensive Care Unit at St. Louis Children’s Hospital, medical staff and families work together to care for the tiniest patients. F. Sessions Cole, MD, is the Park J. White Professor of Pediatrics at Washington University School of Medicine and director of the division of pediatric newborn medicine at Children’s Hospital. For more on this story, please turn to page 16. PHOTO BY TIM PARKER

**Features**

**Unsafe at Any Age** by Gwen Ericson

Researchers are looking at ways to stem the rising tide of melanoma diagnoses using new treatments and educating people about the disease’s causes and symptoms.

**Fascinatin’ Rhythm** by Michael Purdy

A complex system of body “clocks” keeps humans on track and may have implications for the diagnosis and treatment of a variety of physiological conditions.

**Born of Hope** by Holly Edmiston

Washington University physicians in the Neonatal Intensive Care Unit at St. Louis Children’s Hospital are leading the way in a family-centered approach to care.

**Healthy Aging** by Jim Dryden

A new community health outreach program teaches older adults about common medical conditions and encourages them to take a lead role in managing their physical care.

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**Haughey named to Kimbrough Chair**

**The First to Hold** the Dr. Joseph B. Kimbrough Chair in Maxillofacial Surgery and Prosthodontics in the Washington University Department of Otolaryngology for Teaching and Healing is Bruce H. Haughey, MD, director of the division of head and neck surgical oncology and professor of otolaryngology. Haughey is also a researcher with the Siteman Cancer Center and a head and neck surgeon at Barnes-Jewish and St. Louis Children's hospitals.

The position was made possible by a bequest from Dr. Joseph B. Kimbrough, an 1894 graduate of the Washington University College of Dental Medicine. Kimbrough served on the Washington University dental school faculty, and he maintained a successful private practice for 61 years.

Recent investigations by Haughey have focused on the difficult task of reconstructing areas of the pharynx, esophagus, mouth and tongue after surgery to remove cancerous tissue. His work aims to improve treatment protocols and to investigate more effective restoration of function and acceptance of reconstructive grafts.

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**New treatment center results from success of radioactive-implant therapy**

**The rapid growth of brachytherapy services** at the School of Medicine has prompted the Department of Radiation Oncology to create the Brachytherapy and Micro-RT Treatment Center to ensure continued high-quality care and to implement new technologies. Perry W. Grigsby, MD, professor of radiation oncology, will serve as the new center's director.

In 2005, physicians in the department saw more than 1,500 cancer patients in brachytherapy treatment rooms where implanted or injected radiation sources are used to treat cancer. That number was up five-fold from the fairly steady numbers of the late 1970s to the mid 1990s.

As director of the new center, Grigsby will monitor the expansion and update of the brachytherapy facility as well as oversee its staff of technologists, nurses, physicists, dosimetrists and researchers. The center will purchase two new brachytherapy systems and enlarge its physical space.

In addition, the facility will house a newly developed device called Micro-RT® patented by Grigsby and colleague Daniel A. Low, PhD, associate professor of radiation oncology. It enables researchers to irradiate tiny tumors in laboratory animals without exposing the rest of the animal to radiation. With Micro-RT®, scientists can study the effect of radiation treatment on individual tumors in experimental animals to help improve the treatment of human patients.

"Physicians are always finding new ways, new avenues, new applications — better ways to treat patients," says Grigsby, who also is a radiation oncologist with the Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital. "The potential for brachytherapy is exciting."

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For the record The Winter 2005 article "Obstetrics and gynecology receives first training grant in reproductive sciences" omitted mention of the new program's director, Irving Boime, PhD, professor of obstetrics and gynecology.
Ellenberger named as head of biochemistry and molecular biophysics

A $6 MILLION GRANT from the Danforth Foundation will enhance future research in the Department of Biochemistry and Molecular Biophysics, now headed by Thomas E. Ellenberger, DVM, PhD, the Raymond H. Witcoff Professor.

Ellenberger comes to the university from Harvard Medical School. He succeeds Carl Frieden, PhD, professor of biochemistry and molecular biophysics, who had served as head of the department since 1996.

The department has a long and distinguished history, and its achievements include pioneering research by eight Nobel Prize winners. The Danforth Foundation’s gift recognizes the department’s important contributions to medical advancements and, more specifically, in supporting the mission of the BioMed 21 initiative, which calls for converting knowledge of the genetic blueprint into practical applications.

Ellenberger is known for his pioneering research in elucidating the structures of proteins that replicate DNA or repair DNA damage and thereby ensure the faithful transmission of our genetic blueprint from generation to generation.

Neurobiology

Eye structure and muscles help brain manage eye movement

The design of the eye and the muscles and bone that surround it help the brain manage certain complex aspects of eye movement, according to School of Medicine researchers. The finding, published in Neuron, may help push an old debate about how eye movement is controlled toward resolution and help eye surgeons better diagnose and treat disorders that lead to misalignment of the eyes.

The task of orienting the eyes is more complicated than it might seem, notes senior investigator Dora Angelaki, PhD, Alumni Endowed Professor of Neurobiology.

"When we roll our head sideways, our eyes must counter-roll, or move in the opposite direction, to keep the visual world stable on the retina," Angelaki explains. "This is a well-studied reflex called the vestibulo-ocular reflex, or VOR, and it's what lets us see clearly when we walk, drive a car or turn around to see a friend."

Adding to the complexity, rotation of a round, three-dimensional object such as the eye involves a property known as non-commutativity. This means that the result of a series of motions — a quarter-turn left and a half-turn up, for example — is dependent on the order in which those motions are performed. Reverse the order of two steps in the series, and the end result is different.

Scientists began to debate in the late 1980s whether the complexities of these problems were handled solely by signals from the brain or accomplished via contributions from the brain and the eye.

Angelaki and first author Fatema F. Ghasia, a Washington University postdoctoral fellow, conducted two sets of tests in primates. In the first, the primates tracked the target by moving only their eyes; in the second, their bodies or heads were rotated while their eyes remained fixed on the target, invoking VOR. In both tests, scientists electrically measured the activity of oculomotor neurons, the nerves that control eye muscles. They also measured the eyes' vertical, horizontal and torsional (toward the shoulders) movement.

The oculomotor neurons changed their firing activity in the test that included head and body movement, demonstrating the brain's involvement in control of VOR. But in the first test, oculomotor nerves did not significantly change their firing patterns as the primates tracked the target by moving their eyes, suggesting some of the guidance for the eye's movements was coming from the eye itself and its surrounding tissues.

"It appears that the motor plant of the eye is equipped to solve the problem on its own, and then whenever you need to step in and override that process, the brain has a way to take over," Angelaki explains. "Better understanding of how this ability is naturally engineered into the motor plant of the eye is going to be very important for clinical applications, because every time a surgeon manipulates the muscles around the eye it might interfere with these abilities."
Grants to bolster clinical sciences

Three new grants will help the Division of Clinical Sciences take a major step forward in educating and training clinical investigators to work on biomedical research problems in multidisciplinary teams.

Victoria J. Fraser, MD, clinical chief of the Division of Infectious Diseases and professor of medicine, has been awarded a five-year, $11.5 million grant to train diverse groups of clinical investigators from many schools in the metropolitan area so they can collaborate on complicated problems such as diabetes and cancer.

Jay F. Piccirillo, MD, associate professor of otolaryngology, has received a five-year, $2.8 million grant to provide clinical research training among predoctoral students in fields such as medicine, physical therapy, occupational therapy, biomedical engineering, audiology and communication sciences, and social work. The grant will fund 24 training slots per year.

Bradley A. Evanoff, MD, MPH, chief of the Division of General Medical Sciences and the Richard and Elizabeth Henby Sutter Professor of Occupational, Industrial and Environmental Medicine, has received a five-year, $1.5 million grant that will fund the development of a core curriculum providing the basic foundation of knowledge required for clinical research.

Stanley to be vice chancellor for research

Samuel L. Stanley Jr., MD, professor of medicine and of molecular microbiology, has been appointed the university’s new vice chancellor for research.

On July 1, 2006, he will succeed Theodore J. Cicero, PhD, who last year announced his intention to step down after holding the position since 1996. Cicero, professor of psychiatry and of anatomy and neurobiology, will return to his research in the psychiatry department. He is a leading researcher on the hormonal and neurobiological impacts of frequently abused drugs such as opiates.

In his new role, Stanley will be an officer of Washington University and a member of the University Council. As vice chancellor for research, he will be the chief officer responsible for the university’s research missions, overseeing an enterprise that generates more than $500 million for sponsored research from a wide array of funding sources. Stanley becomes the university’s institutional official responsible for all compliance programs that oversee the university community’s adherence to guidelines governing laboratory animal care and use and research involving human volunteers.

His areas of oversight also include development of research policies, management of grants and contracts, the continuing education of faculty and staff regarding research regulations, issues related to conflict-of-interest and research integrity, and intellectual property and technology transfer.

Stanley, who has had long and substantial research support from the federal government’s National Institutes of Health (NIH), is an expert in the biological mechanisms cells employ when responding to infectious agents such as parasites, bacteria and viruses, a process commonly called the inflammatory response. Better defense against infection is a key focus of his research.

Among several research grants that Stanley leads or contributes to is the nearly $37 million grant from the NIH to create the Midwest Regional Center for Excellence in Biodefense and Emerging Infectious Diseases Research, based at Washington University. The multi-institutional center is developing methods to rapidly identify new pathogens and find means to control or neutralize them.
NUTRITIONAL SCIENCE

Tongue sensors seem to taste fat, may increase desire for fatty foods

Mice have a receptor in their tongues that can sense fat, and the presence of that receptor seems to drive them to crave fat in their diets, according to a recent study by French researchers.

The work was based on research by Nada A. Abumrad, PhD, the Dr. Robert C. Atkins Professor of Medicine and Obesity Research. She previously identified a protein receptor for fat and documented its function in recognizing and using fatty food. This led researchers from the Taste Institute in Dijon, France, to wonder whether the protein also may have a role in actually tasting fat.

"Fat sensing has been very controversial," Abumrad says. "It once was thought that we could sense five different tastes: sweet, salty, sour, bitter and what scientists refer to as umami, which is the taste of a protein like monosodium glutamate. There was some indirect evidence that the tongue might be able to identify fat, too, but many scientists thought that involved sensation of texture more than the actual taste of fat."

Abumrad studies the molecular mechanisms regulating utilization of fatty acids, and she was the first to identify a protein called CD36 that facilitates the uptake of fatty acids. The CD36 receptor protein is located on the surface of cells and distributed in many tissues, including fat cells, the digestive tract, heart tissue, skeletal muscle tissue and, as it happens, the tongue.

In the mouse experiments conducted by the researchers at the University of Bourgogne in Dijon, the rodents were fed two solutions: one laced with fat and the other containing a gummy, fat-free substance that mimicked the feel of fat in the mouth. Normal mice preferred the fatty solution, but mice that had been genetically engineered without the CD36 receptor protein didn't have that preference.

Abumrad, who authored an accompanying commentary in the Journal of Clinical Investigation, says it's possible that the amount of the CD36 receptor in our systems might help regulate our cravings for fat.

In her own research, Abumrad studies how CD36 modulates the acute and chronic responses of muscle and fat cells to energy fluctuations and other stresses. The goal is to translate her findings from rodents into humans, where variations in the CD36 gene are common.

Simply shutting off CD36 wouldn't be a good idea for people, says Abumrad, since the protein has a number of vital functions in the body. But, she says, as scientists learn more about how CD36 works, they might be able to design artificial fats tailored to the receptor that would taste much more like the real thing.
Jacquin elected AAAS fellow

Neuroscientist Mark F. Jacquin, PhD, research professor of neurology, has been elected by his peers as a fellow of the American Association for the Advancement of Science (AAAS).

Jacquin was cited for his distinguished contributions to somatosensory research in rodents, including the molecular mechanisms for the development of circuitry in the trigeminal system.

The annual honor, bestowed on those who have made scientifically or socially distinguished efforts to advance science or its applications, was awarded to 376 people this year and was announced in the October 28, 2005 issue of Science.

Jacquin and other honorees were recognized at the Fellows Forum held during the American Association for the Advancement of Science's 2006 annual meeting in St. Louis in February.

More than 30 Washington University faculty, staff and administrators participated in the conference, which attracted thousands of top scientists, science policy experts, educators and journalists.

Institute to focus on childhood diseases

The Children’s Discovery Institute, a unique and bold partnership aimed at curing some of the deadliest diseases that affect children, was launched early this year by St. Louis Children’s Hospital and Washington University School of Medicine. The new collaboration concentrates on accelerating cures for childhood disease in four areas: congenital heart disease, cancer, lung and respiratory disorders, and musculoskeletal diseases.

“We already have the sequence of the human genome, much of which was mapped at Washington University,” says Alan L. Schwartz, PhD, MD, chair of the Department of Pediatrics and pediatrician-in-chief at Children’s Hospital. “The CDI is a unique plan to build a high-speed connection between this fundamental knowledge of our genetic code and the patient’s bedside, so the knowledge can flow and translate directly into cures for disease.”

Adds Lee Fetter, president of St. Louis Children’s Hospital: “We have some of the most talented physicians and scientists in the world, and the CDI is going to enable us to attract even more. Significant financial resources are necessary to fund these intellectual resources, new and robust technologies and facility expansion. Thanks to the tremendous outpouring of interest and support from lead givers, we are well on the way to achieving our goal.”

Joining a group of children to kick off St. Louis Children’s Hospital’s $125 million “Building for Care, Searching for Cures” campaign on January 25, 2006, were (from left) Joe Buck of FOX Sports and a trustee of Children’s Hospital; Jonathan D. Gitlin, MD, the Helene B. Roberson Professor of Pediatrics and professor of genetics and of pathology and immunology; Lee Fetter, president of Children’s Hospital; and Larry J. Shapiro, MD, executive vice chancellor for medical affairs and dean of the School of Medicine.
An effort to sequence the genome of maize, more popularly known to consumers as corn, will be led by researchers at Washington University's Genome Sequencing Center (GSC).

"Maize is a very exciting genome, both in terms of the roles it has played in contemporary and historic plant genetics and because of its role in agriculture," says Richard K. Wilson, PhD, GSC director, professor of genetics and the project's lead investigator. "It's a top food source for humans and animals and a leading U.S. export."

The National Science Foundation, the U.S. Department of Agriculture and the Department of Energy allocated a total of $32 million for sequencing maize. The GSC maize genome project will receive $29.5 million of that funding.

"By sequencing the maize genome, we'll understand more about the evolution of plant genomes and more specifically the evolution of the genomes of cereals," says botanist Ralph Quatrano, PhD, Spencer T. Olin Professor and chair of the Department of Biology at the School of Arts and Sciences.

The maize genome's 2.5 billion base pairs in 10 chromosomes make it nearly as long as the human genome, which has 2.9 billion base pairs in 23 chromosomes. When completed, maize will be the largest plant genome sequenced. Although smaller than the human genome, the maize genome is estimated to contain approximately twice as many genes: 50,000 to 60,000 genes, while the human genome has about 26,000. The maize genome also has large repetitive stretches and regions devoid of genes that will make sequencing challenging.

"It's going to be like trying to put together a jigsaw puzzle with lots of blue sky and very few pieces with landscape," Wilson says. "We'll be working to minimize our data collection on the blue sky and maximize it on the landscape, covering those areas in much greater detail."

Wilson notes that St. Louis has a rich tradition of leadership in agriculture and botanical research, including Monsanto Corporation headquarters, the Missouri Botanical Garden and the Danforth Plant Sciences Center. Washington University's Division of Biological and Biomedical Sciences includes a graduate program in plant biology with connections to the Botanical Garden and the Danforth Center.

The maize genome will allow botanists to more precisely track the intermingling of genes in hybrid species created to combine advantageous traits. Scientists at the GSC are sequencing a maize cultivar (the plant world's equivalent to a breed or a strain) known as B73 that is commonly used in maize genetics research. Actual sequencing began in December 2005, and the first sequencing information was made available to the public online in early 2006. Scientists estimate the project will take three years.

"If we successfully work through maize with state-of-the-art sequencing technology and drive the sequencing costs down," says Wilson, "then it's going to be easy to think about sequencing other important crops like soybean and sorghum."
BACK IN HIGH SCHOOL, Heather Schulte used to tan before special events like homecoming. She didn’t know then that her blond hair, blue eyes and fair skin put her in a high-risk group for skin cancers — and that basking under sunlamps put her at even greater risk through intensive exposure to ultraviolet (UV) rays.

As a freshman in college, she noticed an odd-looking mole on her back. She went to her doctor, not thinking that the mole was anything serious, and was shocked when a biopsy indicated that she had melanoma, the most dangerous type of skin cancer.

“I didn’t even know what melanoma was,” recalls Schulte, now 20 years old. “They called me back for more surgery after they removed the mole, and they told me the diagnosis. It was very scary.”

Melanoma strikes young. Research and education aim to stem the tide.

unsafe at any age

BY GWEN ERICSON
Lynn A. Cornelius, MD, associate professor of medicine and chief of the division of dermatology, is now Schulte's physician.

"Over the past 40 years, our ultraviolet exposure as a population has increased," Cornelius says. "During that same period, the number of melanoma diagnoses also has risen." There is most likely a causal relationship.

During the 1970s, the number of melanomas diagnosed in the United States grew by about 6 percent each year. The number of cases continues to rise, although the rate has slowed to about 3 percent per year. Nearly 60,000 cases of melanoma were diagnosed in 2005.

The correlation between UV exposure and melanoma reflects basic facts about skin. The UV energy of the sun can easily penetrate the thin layer of skin cells that lies over the pigment cells where melanoma originates. The pigment cells, or melanocytes, are sensitive to DNA damage caused by ultraviolet light. So the more sun or sunlamp exposure, the more damage to skin cells. If a person is at increased risk (easily sunburned, freckled, history of excess sun exposure, family history of melanoma, increased number of moles, or atypical moles), the likelihood of melanoma is higher.

Compared to more common forms of skin cancer — basal cell and squamous cell cancers — invasive melanoma can quickly advance to a metastatic disease with a very poor prognosis. The best hope for a good outcome is to catch a melanoma early, as Schulte did, and have the growth and the surrounding skin surgically removed.

For most patients with thin, early melamomas, such surgery leaves them free of the disease for the rest of their lives, but with the continued need for routine skin exams...
to monitor for potential spread and the development of a second melanoma. But about one quarter of patients will develop metastatic melanoma after removal of the original lesion, and this is highly dependent on the depth of penetration of the original tumor into the skin.

In metastatic melanoma, tumor cells may spread from the skin to lymph nodes and, in the most serious cases, through the blood to internal organs. With lymph node involvement, doctors remove the cancerous and surrounding lymph nodes and may administer interferon. Internal tumors may be removed and chemotherapeutic drugs such as dacarbazine given.

“Unfortunately, systemic chemotherapy is effective in only about 10 to 20 percent of advanced melanoma patients,” Cornelius says. “So there’s an urgent need for additional treatment regimens.”

Cornelius has teamed with medical oncologist Gerald P. Linette, MD, PhD, assistant professor of medicine, on clinical trials to test new protocols for advanced melanoma. These patients often are managed in a multidisciplinary approach — the melanoma team also includes dedicated surgical oncologists, dermatologic surgeons, radiologists and radiation oncologists.

One of the current clinical trials tests a relatively new drug called sorafenib in patients with stage IV melanoma, the most advanced form of the disease in which the cancer has spread to the lungs or liver. Sorafenib already has FDA approval as a therapy for advanced renal cancer and has been shown to inhibit two proteins implicated in the progression of melanoma.

In this study, patients receive sorafenib along with traditional chemotherapy. The trial has demonstrated that sorafenib is well-tolerated and elicits few side effects.

“Sorafenib shows a lot of potential; we’ve seen encouraging results in our patients,” Linette says.

Hope for treating metastatic melanoma also lies in the body’s own defenses. Instead of injecting drugs to inhibit or kill metastatic cells, alternate approaches make use of the body’s immune system to ferret them out. Before he came to the School of Medicine, Linette and his colleagues investigated a treatment that isolated specialized immune cells called dendritic cells from each patient and “taught” the cells to recognize melanoma after tissue culture in the lab. These dendritic cells were then returned to the patients to do their work and activate the killer T cells of the immune system.

“This therapy increases the immune response to specific proteins involved in pigment production and enhances the immune system’s ability to attack malignant melanocytes,” Linette explains.
All the patients in the study developed a melanoma-specific immune response. And while the average patient with advanced melanoma survives less than a year, most patients in this trial survived well over two years. Linette has initiated the process to repeat this promising study on a larger scale at the School of Medicine.

At present, he is conducting a trial of a different immunotherapy method. It investigates an antibody (CTLA4) that encourages the immune system’s destroyer cells (T cells) to proliferate and fight melanoma tumors. “The immune system inherently responds to melanoma cells,” Linette says. “So on their own, about 10 percent of melanoma patients will have a modest immune response that can reduce tumors. But giving this antibody generates a significant immune response in about 15 to 20 percent of melanoma patients.”

Further new melanoma treatments are likely to arise from research on the genetic foundations of melanoma. Cornelius and colleagues have embarked on a project investigating a gene that becomes overactive in melanoma tumors and produces a protein that helps increase the growth rate of tumor cells. This gene could provide researchers with a potential new target for therapeutic medications. In addition, because about one-tenth of melanoma patients have a genetic predisposition to the disease, Cornelius has been involved in a project that analyzes DNA from melanoma patients to identify the genetic variations associated with melanoma in the hope of identifying patients at increased risk of disease.

Although advances in research may eventually reduce the mortality rate of metastatic melanoma, prevention remains extremely important. And the best prevention is to decrease exposure to ultraviolet light and to have frequent skin examinations if one is at increased risk.

Cornelius would like people to be more aware of what Heather Schulte learned the hard way — going after that “healthy” tan can increase the chance of developing melanoma. Furthermore, unlike many cancers, which are more prevalent in the older population, melanoma has a significant impact in younger age groups.

“It’s important for everyone to realize that melanoma can develop at any age,” says Cornelius, “and that melanoma in teens and young adults seems to be increasing.”

Cornelius has diagnosed enough melanoma in patients in their 20s and 30s to spur her to start an educational program designed to spread the word about the causes and symptoms of the disease. Young adults such as Schulte help Cornelius drive home her points.

Medical oncologist Gerald P. Linette, MD, PhD, is conducting melanoma research that focuses on immunotherapy methods.

“Most young people that I talk to about it haven’t heard of melanoma,” Schulte says. “They’ve been told that tanning is bad for you, but they really don’t know what that means.”

A recent report stated that 30 million people in the United States use tanning booths. “Tanning is ridiculously popular now,” says Schulte, who caught her melanoma early and is now free of disease. “A lot of people I know will buy a one-month unlimited package and go every single day so they can get their money’s worth.”

For her part, Schulte is adamant that her tanning days are over. “I’ll never tan again,” she says. “Not ever.”
Researchers watch our inner clocks — the body's circadian rhythm.

It's about time.

By Michael Purdy

Fly far enough from home and you become groggiy aware of the clock inside your head. Suddenly, going to bed seems tempting at 2 p.m., or your eyelids may snap open and refuse to shut again at midnight. Then you know — not only does the body have an internal timekeeper, it's out of synch. Welcome to jet lag.

Humans and other organisms don't just have one clock inside their bodies: they have the makings of an entire clock shop. There are central clocks in the brain and multiple peripheral clocks both in the brain and elsewhere in the body. The clocks in this metaphorical shop are a strange lot:

๑ They can coordinate efforts, sometimes deciding time by consensus and sometimes bowing to the opinion of the central clock.

๑ They can keep time with the window shades in the clock shop drawn, free of any input from the outside world, such as sunlight. They can also alter their settings on the basis of clues like sunrise and sunset.

๑ Each clock is made up of "gears" that are themselves clocks: individual cells that contain a specialized group of proteins that react with each other in a cycle that regularly restarts itself over a particular length of time.

Insights into these clocks could fix more than just jet lag: They have implications for the treatment of sleep disorders, for fully understanding time-related factors that control the body's response to pharmaceuticals and increase the chances of heart attack, for dealing with potentially serious metabolic disorders and depression, and for control of fertility.
**Time flies:** The Taghert lab studies timing mechanisms in fly brain cells. Researchers monitor the activity of flies in chambers, right, over the course of several weeks. (See back cover for more on the image above.) The Herzog lab focuses on the “master” circadian pacemaker in mammals — the suprachiasmatic nucleus (SCN), which regulates daily rhythms including sleep-wake, hormone release and body temperature.

**THE STUDY OF THE CYCLES**

of these clocks — big and small, central and peripheral — is known as circadian biology. Washington University has an unusually diverse group of circadian biologists that meets monthly in a discussion group called the Clock Club (see sidebar).

Circadian researcher Paul H. Taghert, PhD, professor of anatomy and neurobiology, notes that he and his colleagues typically divide their field into three areas.

The first area, the clocks, includes both the groups of specialized cells at various parts of the body that track the passage of time and the individual clock cells or gears that compose those groups.

The second part, the inputs, refers to the factors like changes in the timing of sunlight that can lead to adjustments in the time kept by the internal clocks.

The final segment, the outputs, describes signals that go out from the clock cells to various parts of the body to turn a process on or off — for example, to begin warming up the body temperature in preparation for getting up from bed in the morning.

"We divide the system up this way, but you can’t really talk about one part without talking about the other two," says Taghert. "For example, an output of one clock can feed back into another clock, becoming an input."

"We’re thinking of it as a political system with many individuals, each with an opinion about what time it is. And they vote and influence the opinions of others." **ERIK D. HERZOG, PHD**

Given that caveat, Taghert cites outputs as the primary focus of his laboratory, where they work with the fruit fly, a classic model for circadian biologists because of the ease with which scientists can modify or delete genes and assess the effect. The trails Taghert’s group follow begin in the fruit fly’s brain, where they and other scientists have identified 150 of 10,000 brain cells as clock cells.
clocks. One of his primary interests is understanding how different clocks consult each other to determine the time, like people with watches regularly interfacing to decide whose watch is the most accurate.

"We're thinking of it as a political system with many different individuals, each with an opinion about what time it is," he explains. "And they vote and influence the opinions of others."

Herzog modifies genes and removes brain cells, looking for effects on the activity schedules of the mice. Herzog's laboratory contains 100 small chambers where mice can be kept with computer-controlled, customizable exposures to light and dark periods. When a mouse wakes up to begin its day (which begins at the onset of what humans think of as nighttime) with a run on the activity wheel, that run is automatically recorded by a remote monitoring system.

TIMEKEEPING SYSTEMS have been highly conserved through evolution, notes Taghert. Clock mechanisms developed in early life forms passed down relatively unchanged to later, more complex organisms.

For example, fruit fly studies helped scientists identify Period, the first gene associated with circadian rhythms. Based on study of the fly Period gene, scientists were later able to identify three structurally and functionally similar genes in human DNA, now known as Periods 1 through 3. One of these genes is mutated in patients with advanced phase sleep syndrome, a condition that causes them to be sleepy at dinnertime but alert at 3 or 4 a.m.

"Our field has begun to recognize that clocks are involved in regulating everything from the cell cycle to sleep to metabolism to cognitive behavior," Herzog says. "And so now we recognize that when clocks go bad, the consequences can be dire."

Herzog and Taghert can cite multiple examples. Disruption of the clock system has been linked to fatal metabolic disorders and to depression. Heart attacks occur more frequently in the early morning hours, leading to suspicion that changes induced at that hour by the circadian system are increasing heart attack risk.

Regular timing of ovulation likely plays an important role in fertility.

Better understanding of the circadian system also may help scientists find ways to treat very common conditions like jet lag, age-related sleep disruption and the symptoms experienced by people who work outside regular business hours.

"Medical staff, reporters, law enforcement — many of the symptoms they complain about are similar to what we'd describe as jet lag," Herzog explains. "What we learn now may one day help us seek new treatments for those conditions."

Other Washington University researchers with interests in circadian biology:

Paul A. Gray, PhD, assistant professor of anatomy and neurobiology, studies the neural circuits that underlie basic behaviors. His lab has identified a group of neurons in rats that may be responsible for generating breathing rhythms in mammals.

Louis Muglia, MD, PhD, director of pediatric endocrinology and associate professor of pediatrics, molecular biology and pharmacology, and of obstetrics and gynecology, is a clinician-scientist who specializes in endocrine regulation of behavior — the release of hormones that affect mood, energy and other characteristics. His lab recently found that resistance to circadian glucocorticoid action leads to depression.

Paul J. Shaw, PhD, assistant professor of neurobiology and anatomy, studies sleep patterns in flies, looking for genes linked to the timing of sleep and probing how disruptions in the activity of these genes affect behavior when the subjects are awake. Shaw also uses mice to see if the fly genes he identifies have mammalian counterparts that affect sleep.

Russell N. Van Gelder, MD, PhD, associate professor of ophthalmology and visual sciences and of molecular biology and pharmacology, is a clinician-scientist whose interests in degenerative eye disorders have led him to explore connections between the eye's retina and the master timekeeping cells in the brain's suprachiasmatic nucleus (SCN). Van Gelder's research is helping reveal how daylight detected by cells in the retina can reset or adjust the cycling of clock cells in the SCN.
PARENTAL JOY TURNS TO FEAR when a newborn loved one transfers to a Neonatal Intensive Care Unit (NICU).

What's wrong? How sick is she? What can we do? When can we see her?

That old approach to some of the most delicate, challenging and emotionally wrenching medical care decisions no longer makes sense. A movement to bring families to the forefront honors their role and helps them to cope with the extreme situations in which they find themselves.

In the NICU, where dozens of babies sleep or squirm under round-the-clock care, it's . . . well, what else can be said? It's time for a change.
The concept of family-centered care has been informally practiced in the NICU at St. Louis Children's Hospital for the past decade. Simply put, it is the close, respectful partnership among health care professionals, patients and families.

“When a child is ill, the family wants to know what they can do to help make that child better,” says Karen Crow, who coordinates the family-centered care program at Children's. “The key to family-centered care is to help caregivers make informed decisions and prepare them to eventually take over the patient’s care through education and support.”

Crow knows firsthand the stresses of being a NICU parent. Nine years ago, she and her husband, Chip, spent five months on the unit, watching and waiting as their premature daughter, Kristen, underwent multiple surgeries to correct an internal birth defect.

Today Kristen, who weighed just 3 pounds, 1 ounce at birth, is a healthy third-grader and big sister to 4½-year-old brother, Kyle. Her mom, a former high school teacher, has been employed at Children's for the past three years.

“Families have an important role in guiding the hospital’s work, and they contribute to its mission of doing what’s right for kids,” says Crow. Many moms and dads are initially afraid to hold or even touch their fragile newborns, she says. The consistent encouragement of staff helps parents to bond with their baby and to learn to perform other procedures that prepare them and their families for the day the baby is released and sent home.

The definition of family in the NICU is often quite broad, says Anna Lijowska, MD, assistant professor of pediatrics and a leader in the department's family-centered care initiative. It often extends beyond the birth mother and father to include additional caregivers, such as grandparents, other relatives and friends.

What’s most important, she says, is to find out who the primary caregivers will be and how the newborn’s necessary medical care will fit into the family’s lifestyle and beliefs to have the best outcome for the patient.

“Families appreciate it when you make the effort to get to know them,” says Lijowska. “Doing so establishes a trusting relationship that flows both ways.”

But it is a cultural change, and the challenge is to get all of the players — families, physicians, nursing staff and technicians — to work together.
The array of medical equipment — an intimidating but necessary feature of the NICU environment.

Ciara Adams dotes on her son, Eddie, born four months premature, who underwent several surgeries for intestinal problems.

Anna Lijowska, MD, talks with dad Stephen Spraggs about his son, Nicholas, born with a genetic skin disease, who later went home healthy.

Amid a tangle of tubes and wires, Percy Dale Winston III takes his days one breath, one heartbeat at a time.
The 52-bed NICU is the largest intensive care unit at Washington University Medical Center by any measure: size, number of patient days, admissions and staff.

The NICU admits about 700 babies per year, from within BJC HealthCare hospitals and from across the United States and around the world.

About half of the NICU babies are premature; the others are full-term infants requiring multiple services.

The NICU is staffed by specially trained physicians and nurses whose sole focus is treating sick newborns. In addition, nationally known surgical, heart, brain, spinal cord, immunology, kidney and other specialists are available to consult on any problem that arises.

While the staff cares for medically fragile infants, they also help families make the transition from illness to wellness and help them overcome fear of their baby's condition when they are preparing for discharge.

A support group of NICU parents provides families with advice and support throughout a baby's stay. Full-time social workers also are available to help parents cope.

Treatments to help babies breathe include: surfactant therapy, conventional ventilation, and high-frequency oscillatory ventilation (a rapid breathing machine necessary for some infants to help lungs develop and heal).

"We want parents from Day 1 to bond with their babies, looking at every little wrinkle, every little toe, and really feel like parents, because we know what they're going through."

Joanna Schloemann, RNC, NNP, nurse practitioner and former NICU parent
The goal for every baby in the NICU is to get better and go home," says F. Sessions Cole, MD, the Park J. White, MD Professor of Pediatrics at Washington University School of Medicine and director of the division of pediatric newborn medicine at St. Louis Children's Hospital. "For physicians and nurses, that means having a certain number of medical facts in place. For families, it means organizing all aspects of their lives — jobs, insurance, transportation, child care, support people — to incorporate the routine of caring for their newborns."

The focus of family-centered care is to integrate these priorities, which can be difficult, Cole admits, because the traditional model for medical care and the needs of families are not always complementary. "Physicians have been taught to prioritize medical concerns as the most important considerations in defining the outcome of the patient, whether in the NICU or any other hospital department," says Cole. "But, if physicians aren't able to integrate family concerns, then the impact of outstanding medical care may be diluted."

Cole believes every family has strengths, regardless of circumstances, and that each is capable of participating in their baby's care in a meaningful way. "If providers start with the idea that a family is unable to do anything, then they're never motivated to find any strengths in the family and that family will fail," he says. "In the NICU, we want to find ways to help every family succeed."

Empowering families to make informed choices about their loved one's care does not supplant the duties of health care professionals. Instead, it allows the family to play a complementary role in care and decision-making. "Parents are the biggest advocates for their babies, and they need to be a part of the discussion and care plan," says nurse practitioner Joan Smith, RNC, NNP.

Cole has long been a proponent of open communication with the families of his patients. For many years, they have been welcome to attend rounds, asking questions and making observations alongside residents, medical students and nurses. And while some see drawbacks to this approach, Cole believes just the opposite. "Those who are resistant to including families in this way feel that it takes more time and may impede a faculty member from bringing up all the possibilities for care in order not to scare parents. The truth is, when you talk to the parents, they already know the vast majority of possibilities from talking to other families on the unit. In fact, they are reassured when they know that all options are being considered."

Crow and her husband are often asked to share their NICU experience with medical students, as well as residents, interns, fellows and other groups. Karen also has served on the NICU's Partners in Caring committee and the hospital's Family Advisory Council, groups that provide a forum in which families and staff collaborate to improve unit and hospital policies and procedures.

"Being a meaningful part of the health care team allows patients and families to feel some control in a world that can seem uncontrollable," says Crow. Through family-centered care, the same teams of nurses are assigned to individual babies on each shift, to keep transitions for the baby and family to a minimum. In another example, 24-hour visitation now makes it easier for family caregivers to set their own schedules. Pediatricians may be more open to such an approach because they are accustomed to dealing with families, says Cole. Still, he suggests that physicians in other specialties consider family-centered care concepts.

Family-centered care is spreading to other pediatric specialties and even into adult care. Crow is working with other units at Children's to build on existing support programs, and surveys show that along with benefiting patients, family-centered care increases workplace satisfaction among medical staff.

"Being a meaningful part of the health care team allows patients and families to feel some control in a world that can seem uncontrollable," says Crow. Her goal is to make the collaboration she and her husband experienced consistent throughout the hospital. □
Medical teams evaluate and educate older adults, looking for ways to enhance their quality of life.

BY JIM DRYDEN

Volunteer David Yawitz helps research patient coordinator Kimberly Sieve conduct an osteoporosis screening for retirement community resident Pauline Vivater at a recent event.
Physicians gather a variety of health information when assessing the residents. Below: Stanley J. Birge, MD, with a participant.

"I'm an old man, but I try to live a healthy lifestyle," says George Perry, one of more than 400 St. Louisans to take advantage of a new School of Medicine initiative designed to help older adults live healthier, more productive lives. "I have my good and bad days like everybody else. But the health care team told me some things about bone health, exercise and my medicine that might bring me a few more good days down the road."

This new healthy aging initiative, offered by the Community Outreach Program in the School of Medicine's division of geriatrics and nutritional science, identifies and treats factors that may contribute to disability among older adults. The goal of the program, led by Stanley J. Birge, MD, professor of medicine, is to improve quality of life and promote independent living.

For the past year, teams of physicians, medical students, pharmacists, physical therapists and social workers have been presenting information about healthy aging and performing free medical and functional assessments and bone density examinations at senior housing developments and community centers across the St. Louis area.

"By meeting with, evaluating and educating these older adults, we hope to find ways to improve quality of life for each of them," says Kimberly Sieve, the program's administrative director. "We have found that the principal causes of disability among older adults in our community are obesity, osteoporosis and depression," says Sieve. "The outreach evaluates mood, physical function (including measures of strength, balance and ability to perform routine daily activities) and bone density. In addition, a pharmacist looks at each participant's list of medications to identify potentially harmful drug interactions."

Staff also take along a machine that can detect weakened bones. Called peripheral Dual Energy X-ray Absorptiometry (pDEXA), the test involves taking a type of X-ray of the wrist or forearm.

According to Birge, vitamin D deficiency often is the root of osteoporosis and frailty in older adults. Staff work to intervene by providing four-month supplies of calcium and vitamin D supplements for seniors who get low scores on the bone density screening test and who show signs of vitamin D deficiency.

When problems are identified, elderly people also are referred into other interventions run in conjunction with OASIS, a nonprofit educational organization designed to enhance quality of life for older adults. Because many studies have shown that even very frail people can improve their physical function with
physical activity, team members often encourage people to begin exercising regularly.

"In the frail elderly, a physician should be consulted before beginning any exercise program, and osteoporosis should be considered," says Birge.

In addition to screenings, the new initiative allows medical students, residents and fellows to learn new skills related to geriatric medicine.

"When possible, we use student volunteers to help at our events," Sieve says. "Nationally, there is a shortage of medical students who plan to go into geriatric medicine at a time when the population of seniors is exploding. We hope these screening programs make our medical students more aware of and sensitive to the issues facing seniors."

Volunteer David A. Yawitz was instrumental in launching the program and acquiring the pDEXA machine it uses to identify problems, and he’s often on site to educate older adults about osteoporosis.

"I attend all of the screenings because I’m a very ‘hands-on’ person," Yawitz explains. "And I think it’s great that we’ve been able to put this together and take services where they are needed. I think we are making a real difference in the elderly population living in our community."

A native St. Louisan, Yawitz and his wife spent 16 years living in California, where she was diagnosed with osteoporosis and he dedicated himself to learning about the disease.

"My best friend was a rheumatologist, and he used to teach me about osteoporosis on Sunday afternoons sitting by a Koi pond," Yawitz recalls. "The more I learned, the more I could see how devastating the disease could be and how great the need was for screening and intervention."

He became involved in outreach and osteoporosis screening on the West Coast and, when the family moved back to St. Louis, Yawitz went to work to design and organize the effort, joining forces with Samuel Klein, MD, the Danforth Professor of Medicine and Nutritional Science and chief of the division of geriatrics and nutritional science.

He recently created the David A. and Linda S. Yawitz Community Outreach Fund to support the effort. Other support for the program comes from Barnes-Jewish Hospital, BJC Healthcare, the Atkins Foundation and the Kilo Foundation.

"Without the generosity of the Yawitz family, charitable foundations and our medical center, we couldn’t provide these unique services, which we hope will improve the quality of life in older adults," says Klein.

The hope is to identify problems that might have been undiagnosed previously and to help people coordinate and streamline care for problems of which they’re already aware.

It’s probably not surprising that the pDEXA screenings have uncovered osteoporosis in most older adults who have taken part. It’s one of the most common undiagnosed diseases in the elderly population. What’s a bit more surprising is the finding that many of these older adults also are depressed.

"It’s not a scientific sample by any means, but our depression screenings have revealed that about one in four older people is depressed," says Monique M. Williams, MD, instructor of medicine and of psychiatry, who directs the mood component of the outreach effort. "That’s important, because untreated depression is a huge risk factor for disability."

At 82, Perry says he’s lucky: He isn’t overweight or frail, and he doesn’t have serious problems with diabetes, high blood pressure or the other scourges of old age. But he’s an excited participant in the screenings. "At my age, you’ve got to do what you can to help things along," he says. □
Personal Outlook

Junkie Business
What does it really mean to do drugs?

Addiction fosters a hidden culture many would rather not see, much less examine in detail. Yet drug dealing presents a complicated mixture of economic and social exchange, with personal relationships between dealers and customers. Lee D. Hoffer, PhD, research instructor in psychiatry, studied this back-alley lifestyle and wrote *Junkie Business: The Evolution and Operation of a Heroin Dealing Network.*

How did you first become interested in the illicit drug economy? I had been involved in a number of community-based research projects while at the University of Colorado in Denver that were aimed at reducing HIV risk behaviors among out-of-treatment drug users. Then, while studying for my master’s degree in anthropology, I began work as a part-time survey interviewer, which sparked my interest in learning the details of drug users’ lives. Stephen Koester, PhD, an anthropologist and co-investigator on the project, nurtured this curiosity. Through his mentorship, I began to do street-based ethnographic fieldwork, which involves participant observation and in-depth, open-ended interviewing.

Was it easy to find individual drug users and dealers to study? My case study on heroin dealing, which resulted in *Junkie Business,* emerged by taking advantage of a unique opportunity. Two drug users I had previously interviewed many times became

Dr. Lee D. Hoffer, PhD, holds a master’s degree in anthropology and a PhD in health and behavioral sciences from the University of Colorado at Denver and a master’s degree in psychiatric epidemiology from Washington University School of Medicine.

Drug detritus litters an alley.
heroin dealers. I had data about their lives prior to becoming dealers, as well as data about the heroin market their business emerged from. This historic context was indispensable.

What particular behaviors were you observing? My aim was to reflect the human dimension of the business of selling heroin. Because of my training as an anthropologist, the research naturally was directed to social aspects of drug users' interactions and behaviors, such as understanding the process of drug injection. However, all drug users must acquire drugs, and it was always important to consider the influence of the illicit drug economy on these behaviors. Many of the users I worked with financed their addictions by selling drugs or acting as brokers in drug sales activities.

Was it difficult to get the users/dealers to open up to you? In general, people who sell illicit drugs are reluctant to talk openly. However, because these particular dealers were familiar with me in my role as a researcher, they trusted me and considered me more as a friend. Also, the dealers were proud of their business and wanted to share their story.

How did you collect data? The actual process of collecting the data was straightforward and anti-climactic. For nearly two years, I sat in the kitchen of the dealers' apartment with a tape recorder, taking field notes while they went about the business of selling heroin. One thing I discovered was that selling illicit drugs is a mundane and monotonous task.

What was the most difficult aspect of your research? It was critical for me to be mindful of my biases and how my presence influenced findings. To gain and maintain rapport with research subjects, it was necessary for me to keep a low profile and remain non-judgmental. This tolerant demeanor was in part why I was able to do my job; however, becoming immersed in an environment where I repeatedly witnessed people hurt themselves — and others — was not easy to deal with. Based on increased heroin and alcohol use coupled with a fatalistic perspective on his future, I watched my primary key informant's life deteriorate. Powerless to effect change, witnessing his misery caused me to leave the field temporarily. The dealer died while I was on this break.

Why do you feel this is an important area of study? There is very little scientific research on how the illicit drug economy operates and has an impact on participants' lives. Illicit substances are commodities distributed through faceless organizations, groups and, as in the case of Junkie Business, individual entrepreneurs. Millions of transactions occur within this system every day and, to acquire drugs, nearly all users must engage it in some fashion. Considering the numbers of illicit substances and users, as well as the influence of this economic system, the problems posed by the illicit drug economy are monumental and enormously complex.

What are you working on now? I came to Washington University to train in psychiatric epidemiology with Linda B. Cottler, PhD, and the Epidemiology and Prevention Research Group (EPRG). Now I am re-analyzing the data from the research I conducted in Denver using new, agent-based computer simulations that illustrate how that dealing network and market functioned. Using this new approach, I hope to elaborate on how the self-organizing economic and social structures of drug users emerge and operate.
Managing health care data

Like many medical students, Jonathan A. Morris, MD'92, fondly remembers stepping out with fellow classmates in the Central West End, where a good meal often led to discussions of inspirational professors.

For Morris, that list of valuable mentors includes Glenn C. Conroy, PhD, and Jane Phillips Conroy, PhD; Phillip D. Stahl, PhD; and Roy R. Peterson, PhD. "What an amazing collection of individuals, and how fortunate I was to have the chance to learn from all of them," he says.

Morris trained in surgery for five years, including a postdoctoral fellowship, at Stanford University. But he says he always gravitated toward business and policy. While he was training, he started working with Oceania, a small company that built software for electronic medical records. He launched his own enterprise in 2000, a clinical research and health outcomes company called ProSanos Corp.

ProSanos, of which Morris is chairman, president and chief executive officer, provides software and analytic services for the federal government, as well as pharmaceutical and biotech companies. The company has been named one of the fastest growing companies in San Diego by Deloitte & Touche for the past two years and one of the area's best companies at which to work by the San Diego Business Journal.

The secret to ProSanos' success, Morris believes, is its "old-fashioned" concept of delivering value to clients.

In his spare time, Morris serves on the Executive Council of the Washington University Medical Center Alumni Association, which he says is his way of giving back.

"Washington University has a very special place in my heart," he says. "It blended academics, clinical excellence, teaching and a real compassion for students into a program that resonated with me."

Morris and his wife, Suzanne, find great joy in parenting 8-year-old Eliza and 4-year-old Andrew. Morris also plays tennis and now defines success in a new way — not limping at the end of playing a long match.

The Morris family: Jonathan, Suzanne, Andrew and Eliza

Orchid expert

Carlyle A. Luer, MD'46, is fascinated by orchids. Even when he was a busy general surgeon in Sarasota FL, he always found time to photograph the native orchids growing near his home. After practicing surgery for 30 years, he retired in 1975 and traded in his scalpel for an ink pen and sketch pad.

During the past three decades, Luer has co-founded the Marie Selby Botanical Gardens in Sarasota, discovered hundreds of new species of orchids, and been named a senior curator at the Missouri Botanical Garden in St. Louis.

A world expert on pleurothallid orchids, Luer has made dozens of expeditions with his wife, Jane, to Central and South America to study orchids growing in the wild.

After a trip, Luer returns home, submerges the collected flowers in water, and then draws them in pencil using a binocular microscope. If the drawing doesn't match any of his thousands of classified drawings, the orchid might be a new species. He then inks the drawings.

Luer's descriptions of more than 1,500 new species and 12 new
Transforming the culture of medicine

In search of a better life, Leana Wen's family immigrated to the United States from China when she was 8 years old. They hoped to escape the repressive Cultural Revolution, during which her parents, a professor and an engineer, spent time in jail because they were academics.

Wen, now an MA/MD student, says that relocating was difficult for her parents, who were unable to find jobs matching their former status. They lived in impoverished conditions for years; Wen helped to support the family by participating in piano competitions, working at summer camps, and doing other odd jobs.

Those early experiences strongly influenced her current pursuits. "Promoting cultural understanding and helping the underserved have become the driving forces in my life," she says.

Wen is currently on leave from the School of Medicine, serving a one-year term as president of the American Medical Student Association (AMSA) in Washington DC. She is focusing on universal health care, eliminating health disparities, increasing diversity in medicine, and working to lessen the pharmaceutical industry's influence on medical education.

Wen represents 60,000 AMSA members and oversees 125 national leaders and 33 staff. "It's been an exhilarating time," she says. "I get to work with a large number of people, and I also am able to interact with many different sectors of medicine."

When she graduates in 2007, Wen plans to enter residency training in primary care women's health. In addition to practicing medicine, she plans to focus on international health policy. Her dream job would be to work on health policy in a federal or international agency while still seeing patients.

Despite her many responsibilities, Wen still finds time for yoga, Middle Eastern dancing and creative writing.
Solace in education
Family commemorates loved one through commitment to research

GEORGE W. COUCH III began running his own business, Couch Distributing Company Inc., when he was just 26 years old. He had graduated two years before with a master's degree in business administration from the Harvard Graduate School of Business.

His company sells Anheuser-Busch products in Santa Cruz, Monterey and San Benito counties in central California. Couch also is a director of the Triad Broadcasting Company in Monterey, which owns and operates 49 broadcast radio properties in eight markets across the United States.
Despite his professional success, Couch has endured painful personal losses. His father, George W. Couch Jr., a vice president of marketing at Anheuser-Busch in St. Louis, died of a heart attack at the early age of 50. His brother, Gregory Couch, was diagnosed with schizophrenia as a teenager and, despite receiving exceptional care, died suddenly in 1986 at age 31.

The loss was devastating to the entire Couch family. George, his brother Geoffrey, and their mother, Geraldine, decided the best way to work through their grief was to commemorate Greg, who had hoped to become a physician. In 1987, they established the Gregory B. Couch Professorship in the Department of Psychiatry.

“Our effort is not world changing,” says George Couch, “but it’s the only thing we could do to fight back in honor of my brother. The professorship has been a great source of solace for my family.”

John G. Csernansky, MD, holds the Gregory Couch Professorship and stays in close contact with the family, keeping them abreast of current schizophrenia research. Csernansky and his colleagues study the neurobiology of schizophrenia. They are developing and implementing new ways of measuring brain structure to better understand deficits in cognition, brain activation during cognition, and the symptoms suffered by patients with schizophrenia. Csernansky also conducts clinical trials of new psychotherapeutic drugs, with special emphasis on improving the cognitive deficits of schizophrenia.

“George Couch had a vision that good could come from the tragic experiences of his brother,” says Csernansky. “The endowment created in Gregory’s honor gave a jump start to schizophrenia research at the university. Today the program, with 16 faculty, is one of six in the nation to receive funding as a Conte Center for the Neuroscience of Mental Disorders, the flagship research center program of the National Institute of Mental Health.”

In addition to the Gregory Couch Professorship, George Couch and his wife, Debra, have established an endowment to further support schizophrenia research and are donors to the Peck Scholars in Medicine fund.

Couch also is a member of the advisory board for the School of Medicine, its National Council. “Every time I leave a National Council meeting, I feel reinvigorated,” he says. “I have met so many wonderful people, and I feel very good about being involved with an institution like Washington University.”

In California, Couch has served as president of the Community Foundation of Santa Cruz County, a charity dedicated to promoting philanthropy and improving the area’s quality of life. He is a trustee of the Community Hospital Foundation and Community Hospital of the Monterey Peninsula and of the Leon and Sylvia Panetta Institute for Public Policy at California State University, Monterey Bay. He also has served on the boards of the Santa Cruz County Society for the Prevention of Cruelty to Animals and the State Bar of California.

Couch enjoys traveling, playing golf and collecting contemporary art. He and Debra commute between their home in Pebble Beach and a condominium in Los Angeles, where she owns a women’s clothing boutique.

Despite living in California, many of Couch’s loyalties are in St. Louis, where he grew up. “My real passion for higher education is to support the School of Medicine,” Couch says. “I think it’s a crown jewel for the city and the university.”
For the Class of 1956, gearing up for a reunion has always been serious business. And in May the class will celebrate the big one — their 50th reunion.

The members of this class enjoy getting together, and each time a reunion draws near, the phone calls, letters and e-mail traffic steadily increase. Ten years ago, they set a record with the largest reunion attendance of any class in the School of Medicine's history.

This level of cohesion is not accidental. Richard Hudgens, MD 56, has worked over the years to keep classmates in touch with each other by producing a class newsletter — with updates about growing families, changing professional responsibilities and exotic travel experiences.

Hudgens, who has chaired the class's social efforts for every reunion so far, told his classmates recently, "I want to say what an honor it has been to be the class secretary and Reunion chair. It's wonderful to be part of such a special group. Barring impeachment, I'll keep it up 'til death or dementia, whichever hits first."

Another avid volunteer, Reunion Gift Chair Arthur Auer, MD 56, is drumming up support for the Class of 1956 Endowed Scholarship. Auer has encouraged classmates to make gifts and pledges to double the endowment over the next five years. When the class gathers in May, he'll find out if they've taken him up on his challenge.

The School of Medicine has recognized several members of the class with honors over the years: Hudgens received an Alumni/Faculty Award and Thomas Hornbein, MD, and Robert Filler, MD, received Alumni Achievement Awards at previous reunions. Hudgens and Robert Packman, MD, both have had Distinguished Alumni Scholarships named in their honor.
On May 11–13, Reunion 2006 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 13:

**Alumni Achievement Awards**
- Marshall E. Bloom, MD 71
- Willard B. Walker, MD 46

**Alumni/Faculty Awards**
- Clay F. Semenovich, MD 81, HS 87
- Gregory A. Storch, MD, HS 81

**Distinguished Service Awards**
- William H. McAlister, MD
- Alan L. Schwartz, PhD, MD
- Samuel L. Stanley Jr., MD, HS 88

**And more...**
Campus tours, class dinners, 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.

**Medical Update 2006**
- Avian Influenza and Emerging Infectious Diseases
  - Samuel L. Stanley Jr., MD, HS 88
- The Promise of Stem Cell Research
  - Steven L. Teitelbaum, MD 64

**A Human Genetic Approach to Understanding Immune Disorders**
- Michael J. Lenardo, MD 81

**Lessons from Non-responders:**
- Unmasking New Mechanisms for Newborn Respiratory Distress
  - Aaron Hamvas, MD 81

**The History and Biodefense Research Programs of the Rocky Mountain Laboratories**
- Marshall E. Bloom, MD 71

**DNA Damage Response Pathways and Human Disease**
- Michael B. Kastan, MD 84, PhD 84

**Distinguished Alumni Scholarship Program**
Bradley T. Thach, MD, Adewale Adeniran, Jonathan Power and Marc R. Hammerman, MD, enjoyed the recent Distinguished Alumni Scholarship Program luncheon. Adeniran was awarded the Bradley T. Thach, MD 68 Scholarship, and the Marc R. Hammerman, MD 72 Scholarship is held by Power. The School of Medicine welcomed four medical students into this year’s entering class with four-year Distinguished Alumni Scholarships. Not pictured are Anna Graseck, the Timothy J. Ley, MD 78 scholar, and Saroj Fleming, the David G. Mutch, MD 80 scholar.
Edna R. Roberts, NU 39, was inducted into the Mississippi Nurses Association’s Hall of Fame in January. She served as director of public health nursing for the state of Mississippi until her retirement in 1984.

Marian Hopkins Bruno, OT 43, has three puppets she uses on a volunteer basis. She says, “The last 12 years I’ve been clowning.”

Martin Bergmann, LA 42, MD 45, is a retired cardiothoracic surgeon who is serving the underprivileged as the medical director of Volunteers in Medicine, a free clinic in St. Charles MO.

Robert H. Ruby, MD 45, was featured on the cover of the Bulletin of the American College of Surgeons in November 2005. The article describes his second career as a chronicler of Native American history, one he has had for more than 50 years. Through research and first-hand accounts, he has compiled numerous books and won acclaim as an authority on the subject.

Helen Rice Harris, NU 46, is still working part time in hospice and is developing continuing education offerings for nurses at the local community college. For recreation, she enjoys swimming, lifting weights and has recently taken up skydiving.

Johnnie Farmer Geisl, NU 51, is enjoying 21 grandchildren. She travels to visit her six children, two of whom live in St. Louis County.

Max A. Heeb, MO 53, has recently published a book titled Max the Knife: The Life and Times of a Country Surgeon. Included are his preparations to become a surgeon at Washington University School of Medicine and Jewish Hospital and his experiences over 40 years of practice in rural Sikeston MO. The book is available at amazon.com, barnesandnoble.com and heliographicapress.com.

E. Rowena Isgriggs Allen, NU 54, is semi-retired. She splits her time between consultant work for a small group home for the mentally challenged, volunteer work, church activities and time with her grandchildren.

Edward C. Lynch, LA 53, MD 58, received the Herbert S. Waxman Award for Outstanding Medical Educator from the American College of Physicians in April 2005. He is a full-time faculty member at Baylor College of Medicine and spends much of his time supervising internal medicine residents in the care of indigent inpatients at a public hospital.

Jerry Ann Wheatley Pientkowski, NU 57, works part time as a travel counselor for Indiana Tourism and Harrison County Indiana Convention and Visitors Bureau. She enjoyed attending two Washington University events in Kentucky this past year.

Margaret Wesner, GN 61, completed her doctoral work in addictions studies last year. She offers assistance to people interested in tobacco cessation and is currently enlisting interested members in the medical arena to complement her existing behavioral program in order to reach more people in the community.

Stephen Banko, MD, HS 64, has retired and is enjoying learning “without boundaries” as he continues his education in science and literature.

William Sasser, MD, HS 68, has been elected second vice president of the American College of Surgeons. He took office in October 2005.

Marc Schuckit, MD 68, was featured in Psychiatric Times, October 2005, in an article titled “Through the Times With Marc Schuckit, M.D.” He is currently a distinguished professor of psychiatry at the School of Medicine at the University of California, San Diego, and the San Diego Veterans Affairs Hospital. He has centered much of his career on understanding the genetics of alcoholism susceptibility and protection, identifying relevant environmental factors, and training clinicians to recognize and treat substance use disorders.

George M. Bohigian, MD, LA 61, HS 69, attended the American Academy of Ophthalmology annual meeting in Chicago and gave a presentation on “Healing the Healer — Dealing with the Impaired and Disruptive Physician.”

John H. Uhleman, MD 71, is an assistant professor of clinical medicine in dermatology at Washington University School of Medicine. He does a two-hour radio show devoted to European folk music and teaches folk dancing on weekends.

Frank E. Lucente, MD, HS 74, professor and chair of otolaryngology at SUNY Downstate, was recently appointed as vice dean for graduate medical education. The announcement was made by Eugene B. Feigelson, MD 56, SUNY Downstate’s senior vice president for biomedical education and research and dean of the College of Medicine.

Michael A. Pfaller, MD 76, HS 83, and wife Beverly J. Ringenberg, MO 76, retired after building a home in Florida, where they now spend eight months a year. Pfaller still participates in a variety of research, editing and speaking activities.

Kurt Kroenke, MD 77, presented his research to the senior clinical management of Magellan Health Services, Inc. His findings, which highlight best practices in the identification and treatment of psychiatric conditions, particularly those that co-occur with medical conditions such as cardiovascular disease, diabetes and chronic pain, have been incorporated into Magellan’s behavioral care management programs.
80s Ralph Glasser, MD 81, is a professor of anesthesiology and department chair at Southern Illinois University and a member of the board of directors for the Illinois Society of Anesthesiologists, serving as speaker of the house. He spends his spare time as an aerobatic pilot on the Trojan Horseman Airshow Team (flying a T-28 Trojan).

Edmund J. Messina, MD, HS 81, is medical director of the Michigan Headache Treatment Network. He recently released a documentary for public television called "Life and Migraine" (www.lifeandmigraine.com).

Edmond Ritter, MD 84, has been recognized in the Congressional Record of the 109th U.S. Congress for his contributions to academic medicine — expertise in reconstructive microsurgery, particularly treatment of patients with cancer of the head, neck and breast; his role in training more than 30 plastic and reconstructive surgeons, and his research to better understand tumor biology.

Jack Turman Jr., PT 84, has a joint appointment in cell and neurobiology at the Keck School of Medicine of the University of Southern California. He recently founded the Keck School’s Center for Premature Infant Health and Development, which strives to create new strategies to help medically fragile infants and their families develop and grow. The center is interdisciplinary, involving faculty in genetics, cell and neurobiology, pediatrics, biokinesiology, and physical therapy, among others.

90s Ginger S. Dusek, HA 95, was promoted in September 2005 to a partner in the Health and Life Science Consulting practice at Accenture.

Jennifer Rajtora, PT 96, was married to Chad Resner on Aug. 20, 2005. Jennifer is a contract physical therapist in Arlington VA.

Valerie Halpin, MD 97, is in her second year on the faculty at Washington University School of Medicine doing laparoscopic and bariatric surgery. She has recently been made the third-year surgery clerkship director. Though busy, she finds time to ski on the Mississippi River behind her new boat.

Alumni Journey to the Emerald Isle

Washington University School of Medicine alumni recently toured Ireland. The educational tour, organized by the Washington University Alumni Travel Program, included the Cliffs of Moher on the Burren Coast.

For more information about alumni travel, visit travel.wustl.edu.
Kirsten A. Kienstra, MD 97, completed her neonatology fellowship in 2003 and stayed on as faculty at Baylor College of Medicine in Houston. Her time is divided between caring for infants in the NICU at Texas Children’s Hospital and laboratory research. She and her husband, Andy, are now the proud parents of a little Texan named Will.

Diana Molavi, MD 99, after taking a few years off to start a family, is now a fourth-year resident in pathology at Johns Hopkins University and will be starting a breast cancer fellowship in July 2006. Her husband, Rameen, is in an internal medicine practice in Baltimore. They have two children, Claire and Annelise.

Laura Peregoy, OT 99, and husband, Matthew, along with big brothers, Ethan (7) and Isaac (4), announce the birth of Adam Rodrick on July 9, 2005. Laura continues to operate Meramec Valley Therapy in Sullivan MO.

Erik A. Wallace, MD 00, has been on the internal medicine faculty at Oklahoma University-Tulsa for two years and recently became associate program director, completed a month of faculty development at the Stanford Faculty Development Center and was elected to the Council of Young Physicians for the American College of Physicians. He and his wife, Nichole, have a two-year-old daughter named Jordan.

Lisa Waschler Koss, PT 00, and her husband, Aharon, had a baby boy, Zachary Joseph, on May 20, 2005. She previously worked in outpatient orthopaedics and is now trying her hand at home health part time. She welcomes classmates to contact her at lisakoss76@msn.com.

Anne Laurence Glowinski, MD, GM 01, received an honorable mention relating to the 2005 Klerman Award for Outstanding Research in Clinical Psychiatric Science from the National Alliance for Research on Schizophrenia and Depression (NARSAD). She was praised for her study of mothers of depressed adolescent female twins, which looked at the likelihood of inheritance and interplay of genetic and environmental factors in the early onset of depression. Glowinski received a NARSAD Young Investigator grant in 2001 for this work.

Shefali Gandhi-List, MD 01, completed her residency in obstetrics/gynecology and moved with her husband across the country to San Mateo CA, just outside San Francisco. They had their first baby, Priya Sophie List, in April 2005.

Benjamin D. Unger, MD 02, has been named chair of the American Society of Anesthesiologists Resident Component.

Varun Kumar, MD 02, recently finished his pediatrics residency at Brown University and accepted a position at Angkor Hospital for Children in Siem Reap, Cambodia. He hopes to stay there for two years to help "modernize" their inpatient department and ICU as well as help train the junior doctors (pediatric residents).

In Memory

Herman Franklin Easom, MD 27, died on Dec. 16, 2005, at the age of 103. He worked in the North Carolina public health system for more than 70 years, making him the longest continuously serving health employee in the state’s history. Many of his research papers eventually became the basis of national health policies administered by the Centers for Disease Control and Prevention and the National Institutes of Health.

Dorothea Pulliam Frankl, NU 35, passed away on Nov. 17, 2005, at home in Corvallis OR. She was 91. Following graduation from Washington University School of Nursing, she worked at the St. Louis Maternity Hospital until World War II broke out, at which point she and two nurse friends enlisted in the Army Nurse Corps.

R. Hart Donnell, MD 36, died Sept. 27, 2005. He practiced medicine for more than 50 years and was a 50-year member of the Missouri State Medical Association. He retired as a Lt. Col. from the WWII Army Medical Corps and was the last surviving original staff member of Jefferson Memorial Hospital in Festus MO. He is survived by his wife, Evelyn, and five sons.

Henry C. Huntley, LA 33, MD 37, died on July 12, 2005. He is survived by three daughters.

Georgia Bartosch, OT 38, died on March 26, 2005.

John E. Helm, MD 39, died on Oct. 15, 2005, at the age of 82.

Georgia A. Tomlinson, NU 39, died on Nov. 21, 2004.

Alfred S. Schwartz, MD, HS 40, died of prostate cancer on Nov. 10, 2005. He was a retired pediatrician and leader in the famous baby tooth study that searched for evidence of the spread of nuclear bomb fallout. He was associated with Barnes-Jewish Hospital and served as a clinical professor at Washington University School of Medicine.

Walton B. Wall, MD 40, died on Oct. 21, 2005, at the age of 90.

Marjorie McCarthy Robins, OT 40, died Nov. 2, 2005, in St. Louis MO.

Kenneth A. Koerner, LA 35, MD 41, a longtime pediatrician, died on Nov. 25, 2005. He served in the Army Air Forces during WWII, after which he returned to complete his pediatrics training at St. Louis Children's Hospital. He helped form one of the first pediatrics groups in St. Louis.
Carol J. Lindley, NU 41, passed away on Feb. 20, 2005, at the age of 85 in Wichita KS.

Katherine A. Spross, NU 41, NU 42, passed away on Dec. 31, 2005, in St. Louis MO. She was 97 years old.

Bernard Bressler, LA 38, MD 42, died on Nov. 26, 2005, in Richmond VA. He was a founding member and associate director of the Psychoanalytic Training Program at Duke University Medical Center. After 25 years of service to Duke University, he retired from teaching and moved to Richmond with his wife, Joy, to start a private practice, from which he retired in 2003.

Felecie Radian Blinn, NU 43, died on Sept. 17, 2005, at the age of 83. She is survived by her three children, six grandchildren and a great-grandson.

Rosemary Yardley King, NU 45, died on Oct. 2, 2005, at age 82. She was one of the founders of Mobile Meals of Tucson and served on the Board of Directors for more than 30 years.

James C. Folsom, MD 46, died on Feb. 4, 2004. A psychiatrist, he was instrumental in developing innovative approaches to treating senility and mental illness.

Wanda L. Nicholson, NU 46, passed away on Aug. 30, 2005, from cancer. She accompanied her husband, Major General William L. Nicholson, throughout their 36 years of service in the U.S. Air Force. She was buried at Arlington National Cemetery in September.

Shirley M. Gordon, OT 47, died on Dec. 15, 2005, at the age of 81. She worked part time at Manor Grove for 24 years and at the Blind Girls Home in Kirkwood MO for 15 years. She is survived by two daughters.

Julia E. Decker, NU 48, died on Nov. 18, 2005, at the age of 83.

Forest D. Harris, MD 51, died on Sept. 26, 2005, at the age of 82.

Jack N. Morgan, MD 51, died on Nov. 14, 2005, at the age of 82. After finishing his residencies, he joined partners James H. Dunlevy, MD 51, and Chris L. Patchett, LA 47, MD 51, in founding the Fairfield Clinic in Fairfield IA, where he practiced for 32 years. He is survived by his wife, two daughters, one son and six grandchildren.

Chonnie Brown, NU 52, passed away on July 28, 2005, at her home in Hartland WI. Washington University and her classmates were always fond memories for her, according to her daughter.

Frances Millard Sykes, NU 52, died on Dec. 16, 2005, at home in Clemson SC. She was 74 years old. She is survived by three children and seven grandchildren.

Betty Lou (Nelson) Sorrell, NU 53, died on Oct. 18, 2005, in St. Charles MO. She was 72.

Ross B. Sommer, MD, HS 55, passed away on Sept. 30, 2005. He was preceded in death by his wife, Jane Washburn Sommer, NU 46, and is survived by his son, Rand W. Sommer, MD 80, HS 85, and three daughters.

James C. Peden, Jr., MD 55, died on Dec. 16, 2005, in Atlanta GA. He is survived by his three children and four grandchildren.

Jack Kayes, MD 57, a longtime ophthalmologist and an associate clinical professor at Washington University School of Medicine, died on Oct. 27, 2005, of complications from leukemia. He was 76.

Virginia E. Harrington, OT 57, passed away on Dec. 8, 2005. She served as a second lieutenant in the U.S. Air Force and spent much of her life volunteering and working for numerous charitable organizations. She is survived by her husband, four children and four grandchildren.

Aryeh Hurwitz, MD 61, passed away suddenly on Oct. 22, 2005, at home. He had been a professor in the departments of internal medicine and pharmacology at the University of Kansas Medical Center since 1968. He is survived by his wife, three sons and two granddaughters.

James M. Goforth, MD 68, died on Oct. 6, 2005, at the age of 62. He served the U.S. Army as a major during the Vietnam War and was a practicing pathologist in Amarillo TX since 1974.

Judith Gass Shearer, PT 74, died on Dec. 12, 2005, at her home in Asheville NC. She was born in St. Louis while her missionary parents were on furlough and grew up in India. Before retirement, she worked as a physiotherapist for the Buncombe County Home Health Department. She is survived by her husband, three stepchildren and six grandchildren.

Joyce Yvonne Truitt, PT 87, died on Sept. 21, 2005, in Little Rock AR, after a five-year battle with cancer.

Tiffany E. Perkins, LA 00, OT 02, died on Oct. 6, 2005, in Washington DC.

Raquel S. Marrack, GM 05, died on Aug. 18, 2005, after developing aggressive leukemia in March 2005. She is survived by her husband, Jeff, and a 3-year-old daughter, Sydney.

Ruth Marie Moenster passed away on Feb. 6, 2006. She worked for many years in Washington University's Medical Alumni and Development Programs and still receives credit from many alumni for their feeling of connectedness to the school. She is survived by her children, Joann McLaughlin, Jean Will, James M. Moenster, Judy Dante and Jill McDonald; grandchildren Donald, Katie, Donovan, Xavier, Danielle, Melina, Tim, Mike, Rob and Maggie; and sister Mary Wolff.
A gift through your estate or life income plan can have a big impact. Robert J. Glaser, MD, HS 47, and his late wife, Helen Hofsommer Glaser, MD 47, have supported faculty, residents, scholarships for women medical students, and the medical library.

Jeffrey I. Gordon, MD, is the Dr. Robert J. Glaser Distinguished University Professor and director of the Center for Genome Sciences.

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Orchidaceous

*Masdevallia rhodeameliiana*, native to Peru, is just one of many orchids discovered by alumnus Carlyle Luer, MD 46, and depicted in *A Treasury of Masdevallia*, published by the Missouri Botanical Garden. For more on Luer, a world-expert on pleurothallid orchids, please turn to page 26.
**Timekeepers** The biological clocks that help track the passage of time in humans and other organisms have cells and molecules as their gears and wheels. To better understand circadian rhythms, scientists examine the fruit fly brain. Fly brain cells highlighted in magenta are releasing a molecule known as PDF that helps the cells in green keep accurate time. For more on circadian neurobiology, please turn to page 12.