Breathing new life into pulmonary research
Powerful beauty  Multiple beams of radiation from the Gamma Knife® converge in three dimensions, allowing physicians to locate and irradiate relatively small targets in the brain with high precision while sparing surrounding tissue. For a closer look at images of surgery from “behind the scenes,” please turn to page 15.
The Farrell Learning and Teaching Center now serves as the School of Medicine's main venue for medical education.

[medicine.wustl.edu/fltc]
Farrell Learning and Teaching Center

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

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

Giving Opportunities

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

Contact the Office of Medical Alumni and Development at (314) 286-0086.
Finding New Ways to Alleviate COPD

Physicians and researchers redouble the attack on chronic obstructive pulmonary disease.

21st Century Syndrome

An old drug is put to a new use as a combatant in the fight against the serious health problems caused by poor nutrition and too little exercise.

In Surgery PHOTO ESSAY

From the unusual to the routine, staff photographer Robert Boston captures images from the behind-the-scenes world of surgery.

The Leg Bone’s Connected to the Arm Bone

Using a new technique, orthopaedic surgeons salvage a toddler’s arm ravaged by cancer and give it, along with the child, a chance to grow.
Oh, babies!
Medical Center welcomes first quintuplets

A team of 100 physicians, nurses, paramedics and other staff delivered an early present to parents Pete and Jenny Ferrill of Danville IL this past holiday season. Led by Michael J. Paul, MD, the group welcomed five babies — two girls and three boys — to the world on December 21, 2006.

The "Ferrill Five" — Irelyn Kadyn, Kieran Skye, Landyn Konner, Layne Mykel and Drayden Karter — are the first quintuplets to be delivered through the Washington University Center for Multiple Births. They also are the first quints born in the 92-year history of Barnes-Jewish Hospital.

Each baby weighed at least 3.25 pounds at birth. After spending two months in the neonatal intensive care unit at St. Louis Children's Hospital, all five of the quints were declared healthy and released to be taken home in late February.

Paul and other physicians started the Center for Multiple Births in 1992 in response to a dramatic increase in the number of multiple births due to in vitro fertilization and other fertility treatments. It is one of only a handful of centers nationwide that focus on this specialty. Physicians at the Washington University center deliver an average of 50 sets of twins, 15 sets of triplets, and one set of quadruplets each year.

"These women need to be monitored more closely because they are at high risk of developing preterm labor," says Paul, associate professor of obstetrics and gynecology and director of the center.

Babies born prematurely often have neurological problems including cerebral palsy, severe vision or hearing impairment, and cognitive, behavioral and social delays.

With Department of Obstetrics and Gynecology colleagues Joseph B. Shumway, MD, MPH, assistant professor, Gilad A. Gross, MD, associate professor, and Ibrahim Bildirici, MD, assistant professor, Paul has gained a greater understanding of the causes of preterm labor. That, in turn, has led to improved neurodevelopment of babies delivered at the center.

The center's staff is keenly aware of other stressors the parents of multiples face, such as an increased risk of postpartum depression and a divorce rate that exceeds 70 percent, and does its best to connect new moms and dads with national and local parenting organizations that offer resources and support.

Despite the challenges, Paul says treating mothers-to-be and delivering multiples is extremely rewarding. In the Ferrills' case, both parents and babies are doing well.

"The real payoff," Paul says, "is getting Christmas cards with photos from these families and seeing that the children are developing normally."

He's sure to receive that card later this year from the Ferrills, who will be celebrating their quints' first birthdays when the 2007 holiday season arrives.
Clinical simulation can lead to better communication

Improved patient safety is the goal

Miscommunication between medical team members during treatment can be a major source of errors. In an effort to reduce mistakes, several medical centers around the country use clinical simulators to learn how to improve patient care.

The Clinical Simulation Center at Washington University School of Medicine and Barnes-Jewish Hospital is one of several new grant recipients involved in a federal initiative — funded by the federal Agency for Healthcare Research and Quality (AHRQ) of the Department of Health and Human Services — that hopes to improve patient safety by using simulators as research tools, rather than only as teaching aids.

Clinical simulators include complex mannequins that seem to breathe on their own, experience increases and decreases in blood pressure, have a variable heartbeat, eyes that dilate and react to medications and medical procedures.

"The fidelity of the technology is so close to reality that we're able to implement a variety of training and assessment strategies for our medical students, residents and even for experienced physicians and specialists," says David J. Murray, MD, professor of anesthesiology and director of the Clinical Simulation Center. "We're looking at ways to use simulation and implement programs on a hospital-wide and medical school-wide basis to improve practice standards for all health care professionals."

Realistic technology supports a variety of training and assessment strategies for both students and practitioners.

Cole assumes new leadership roles

F. Sessions Cole, MD, has been appointed assistant vice chancellor for children's health at the School of Medicine and chief medical officer at St. Louis Children's Hospital.

In these newly created roles, Cole will serve as a member of the dean's office at the medical school and be on the executive team of Children's Hospital.

As assistant vice chancellor for children's health, Cole will collaborate with department chairs and the university's faculty practice to leverage the considerable investigative, educational and clinical expertise of the medical school on behalf of interdepartmental programs that will benefit children.

As the chief medical officer for St. Louis Children's Hospital, Cole will facilitate collaboration between the hospital and medical school in all matters related to children's health priorities, such as clinical activities and operations, clinical information systems and quality assurance programs.

Cole will continue as the Park J. White, MD, Professor and vice chair of Pediatrics, professor of cell biology and physiology and director of newborn medicine.
Medical student is Oxford bound

Leana S. Wen, a fourth-year student at the School of Medicine, has been named a Rhodes Scholar. Wen was among 32 U.S. students chosen from 896 nominees for graduate study at the University of Oxford in England. Winners of the highly acclaimed award are selected based on high academic achievement, personal integrity, leadership potential and physical vigor.

A Rhodes Scholar finalist last year as well, Wen will pursue a master’s degree in global health science when she begins her studies at the University of Oxford next fall.

Wen, a native of Shanghai, China, entered California State University, Los Angeles, when she was just 13 years old. She earned a bachelor’s degree, summa cum laude, in biochemistry in 2001 at the age of 18.

Since the first American scholars were selected by The Rhodes Trust in 1904, 25 Washington University students, including Wen, have won the Rhodes scholarship. It is the world’s oldest international fellowship.

AAAS elects three medical school faculty as fellows

Prestigious society’s highest honor

Three School of Medicine faculty have been named fellows of the American Association for the Advancement of Science (AAAS). The highest honor awarded by AAAS, the rank of fellow is bestowed upon members by their peers in recognition of scientifically or socially distinguished efforts to advance science or its applications.

Eugene M. Johnson, PhD, professor of neurology and of molecular biology and pharmacology, was elected to the Section on Neuroscience for pioneering work in studies of the nature and function of neurotrophic factors and for service to the neuroscience community.

H. Mark Johnston, PhD, professor of genetics, was elected to the Section on Biological Sciences for outstanding contributions to the genetics and genomics of the yeast *Saccharomyces cerevisiae*, in particular the regulation of sugar utilization.

Alan L. Schwartz, PhD, MD, the Harriet B. Spehrer Professor and head of the Department of Pediatrics, professor of molecular biology and pharmacology, and pediatrician-in-chief at St. Louis Children’s Hospital, was elected to the Section on Medical Sciences for distinguished contributions to medical science, the education of physician-scientists and advancing the field of child health.

$156 million for cancer gene research

The Genome Sequencing Center (GSC) at the School of Medicine has been awarded a $156 million, four-year grant to use the powerful tools of DNA sequencing to unlock the secrets of cancer and other human diseases.

The grant, one of only three given to U.S. sequencing centers by the National Human Genome Research Institute (NHGRI) of the National Institutes of Health, underscores the expertise of the center, which has been funded by the NHGRI since 1990 and is a world leader in the innovative high-speed sequencing of genomes, from bacteria to humans.

The cancer gene sequencing effort is part of The Cancer Genome Atlas, a joint pilot project of the NHGRI and the National Cancer Institute that initially will focus on identifying small changes, such as duplications or deletions of genetic material, in three types of cancer: ovarian, lung and glioblastoma, an aggressive brain tumor.
Microbes living in the gut may contribute to obesity

There's a new culprit in the battle of the bulge: the naturally occurring microbial communities that live in our digestive tracts and help digest food. Research at the School of Medicine shows that obese people have a distinctive mix of bacteria in their intestines that is linked to weight gain. The findings suggest that such microbes are biomarkers, mediators and potential therapeutic targets in the fight against obesity.

"The amount of calories you consume and the amount of calories you expend are key determinants of your tendency to be obese or lean," says senior investigator Jeffrey I. Gordon, MD, director of the Center for Genome Sciences and the Dr. Robert J. Glaser Distinguished University Professor. "But our studies imply that differences in our gut microbial ecology may determine how many calories we extract and absorb from our diet and deposit in our fat cells."

In two studies published in the British journal Nature, Gordon's group showed that obese humans have a far lower proportion of one of the two most common types of gut bacteria — the Bacteroidetes — compared with the other, the Firmicutes. As the obese patients lost weight, co-investigator Ruth E. Ley, PhD, found that the proportion of Bacteroidetes increased progressively as the levels of Firmicutes decreased, irrespective of whether the patients consumed a low-carbohydrate or a low-fat, reduced-calorie diet.

In a separate study, graduate student Peter Turnbaugh found that the gut microbes in obese mice were enriched for genes involved in extracting calories from otherwise indigestible complex sugars in the diet. Moreover, when he transferred the gut microbes from obese mice into mice with sterile guts, the animals grew fatter than their siblings who received transplanted gut microbial communities from lean mouse donors. "The ability to harvest and store more energy appears to be transmissible," Gordon explains.

These studies suggest that in the future, one approach to preventing or treating obesity will be to manipulate our gut microbial communities. They also imply that when formulating guidelines for proper nutrition, we need to take our gut microbes into account.
Muslin named Langenberg Professor

Anthony J. Muslin, MD, has been named the Oliver M. Langenberg Distinguished Professor of the Science and Practice of Medicine. The professorship was established by the Edward Mallinckrodt, Jr. Foundation in recognition of Langenberg, who serves as the foundation’s chairman of the board.

Muslin is also professor of cell biology and physiology, director of the Cardiology Research Fellowship Program, co-director of the Medical Scientist Training Program, and a cardiologist at Barnes-Jewish Hospital.

He conducts research into the molecular causes of cardiac hypertrophy (thickening of the heart muscle) and of congestive heart failure. Recently, his investigations revealed the role of signaling molecules in the development of diabetic cardiomyopathy and cardiac hypertrophy in response to hypertension.

Muslin identified a pivotal regulatory switch that differentiates healthy versus unhealthy increases in cardiac muscle.

Multiplying lawsuits can stymie medical science

Subpoenas swamp research programs

Class-action lawsuits can significantly slow or halt science’s ability to establish links between neurological illness and environmental factors produced by industry, a team of scientists and lawyers warns in the journal Neurology.

The authors caution that litigation’s effects could seriously impair efforts to identify compounds that contribute to a wide variety of diseases, including Parkinson’s disease, Alzheimer’s disease and amyotrophic lateral sclerosis (ALS).

The lead author, Brad A. Racette, MD, associate professor of neurology, writes from personal experience: His studies tentatively linking welding to increased risk of Parkinson’s resulted in a torrent of subpoenas for research data. Having to respond to requests interferes with his follow-up research.

In addition to the scheduling challenges, parties involved in lawsuits often demand extensive disclosure of scientific data that disrupts research and threatens the privacy of patients and research volunteers. The two lawyers who are co-authors on the article, Ann Bradley and Carrie A. Wrisberg, worked with Racette to defend his data from unreasonable disclosure requests.

The federal Health Insurance Portability and Accountability Act prohibits release of data that can be used to identify patients. However, in many instances the extensive volume and particularity of data demanded by lawyers may still permit research subjects to be identified. “To protect patient privacy and the value of our research data, we need specific, across-the-board restrictions on information that can be released in the courtroom,” Racette says.

The authors also note that the substantial financial interests at stake in lawsuits often lead to biased research by well-paid expert witnesses. Peer review is part of the regular scientific process, Racette notes, but a knowledgeable expert can design a study with a predetermined goal of discrediting earlier studies that linked a suspected toxin to a disease.

“We hope to get a national dialogue going about how we can create an environment where scientists are as free as possible to do good, unbiased research,” says Racette. His frequent collaborator, Joel S. Perlmutter, MD, professor of neurology, radiology and physical therapy and associate professor of neurobiology, is senior author of the paper.
NEUROBIOLOGY

Sleepiness biomarker found, may aid in treating disorders

Scientists have identified the first biochemical marker linked to sleep loss, an enzyme in saliva known as amylase, which increases in activity when sleep deprivation is prolonged.

Researchers hope to make amylase the first of a panel of biomarkers that will aid diagnosis and treatment of sleep disorders.

Paul J. Shaw, PhD, assistant professor of neurobiology, was lead author of the study, which appeared in the Dec. 26, 2006 edition of Proceedings of the National Academy of Sciences.

Shaw's lab was the first to show that fruit flies enter a state of inactivity comparable to sleep. Like humans, flies deprived of sleep one day will try to make it up by sleeping more the next day, a phenomenon known as increased sleep drive or sleep debt.

Shaw subjected flies to various kinds of sleep deprivation and used microarrays to look for changes in activity in many genes. He found that amylase levels consistently changed after sleep loss.

To verify the connection between amylase and sleep loss, his lab monitored activity levels after sleep deprivation in fruit fly lines that were genetically altered to modify their sleep drive.

One key test involved flies modified in a way that slowed their accumulation of sleep debt. When kept awake for three- or six-hour periods, spans that create sleep debt in normal flies, the modified flies did not have increased sleep drive. Their amylase levels only increased when they were kept awake for longer nine- and 12-hour periods that gave them sleep debt.

"This helped prove that the increases in amylase activity level we were seeing weren't just triggered by wakefulness," Shaw says.

In the study, humans kept awake for 28 hours also had increased amylase levels versus controls allowed to sleep normally.

"We're very pleased with how tightly amylase levels correlate with sleep debt, but for a good diagnostic test, we're likely going to need more than one biomarker," Shaw says. "We'll continue to look for other substances that change in connection with the level of sleep debt."
Finding new ways to alleviate CO
It's a relentless and subtle thief that slowly steals its victims' breath away. It affects about 24 million Americans and is a major cause of disability and death. It's COPD, chronic obstructive pulmonary disease, a lung condition that includes both emphysema and chronic bronchitis.

"COPD is the only leading cause of death that is increasing instead of decreasing," says Michael J. Holtzman, MD, the Selma and Herman Seldin Professor of Medicine and director of the Division of Pulmonary and Critical Care Medicine. "In the next 10 years, it's projected to rise from the fourth to the third leading cause of death in the United States."

In COPD, delicate air sacs in the lungs break down and the lung's air passages become clogged because of inflammatory processes and excess mucus production. Right now no cure exists for the disorder, and no therapy will completely halt its progression.

"COPD is a slowly progressive disease, with occasional flare-ups, and it's often not recognized in the early stages," says Roger D. Yusen, MD, assistant professor of medicine. "Patients may attribute symptoms like shortness of breath and fatigue to being overweight or getting older, so about half of people with COPD remain undiagnosed."

Pioneers in the treatment of COPD, physicians and researchers have launched an all-out effort to uncover new ways to alleviate COPD's symptoms and to find a cure.

A new research center will investigate ways to mitigate this growing cause of death.
Treating COPD

Smoking causes most cases of COPD, and quitting can prolong COPD patients' lives. Doctors prescribe bronchodilators and inhaled steroids to open sufferers' blocked airways and recommend exercise rehabilitation to increase their stamina.

When these measures aren't sufficient, COPD patients may need supplemental oxygen or surgical procedures such as lung-volume reduction or lung transplantation.

Yusen is an investigator in a multicenter study sponsored by the National Heart, Lung and Blood Institute to find out whether giving oxygen therapy earlier in the course of the disease will help patients be more active and live longer.

"Low oxygen levels have harmful effects on neurological and cardiac function," Yusen says. "This study will help confirm if there's a survival benefit to oxygen supplementation and also will analyze health care costs and patients' quality of life during long-term oxygen treatment."

Washington University surgeons at Barnes-Jewish Hospital developed lung-volume reduction surgery (LVR) in 1993 to counteract one of the characteristic manifestations of COPD — a distended chest cavity caused by air trapped in the lungs.

"Try taking a deep breath and then another without exhaling the first, and you'll get an idea of how it feels to have emphysema," says Bryan F. Meyers, MD, associate professor of cardiothoracic surgery. "With the expansion of the lungs and chest, patients don't have much ability to move air in and out."

Usually during lung-volume reduction surgery, surgeons remove 20 to 30 percent of lung tissue on each side of the chest. This creates space for the ribs to return to a more normal position and the diaphragm to relax back to its upward curvature so that patients can breathe more freely.

Some COPD patients aren't good candidates for bilateral LVR surgery because of a previous surgery or a heart condition. A recent study that Meyers and Yusen conducted found that one-sided or unilateral lung-volume reduction could help such patients.

As a potential alternative to lung-volume reduction surgery, endoscopic procedures, which Yusen is studying, close off diseased portions of lungs using inserted valves or a compound that collapses airways.

And for COPD patients who have extremely low lung function, transplantation can be considered.

"On average, lung transplantation improves quality of life enough to make its associated risks worthwhile for well-qualified patients, and for some patients, lung transplantation improves survival," Yusen says.

Yusen is also helping investigate a new drug called rофлунист, which has shown some promise in reducing lung inflammation, and other drugs are under review.

"There are a lot of new medications in the pipeline that will allow us to approach COPD from a variety of angles in the future," Yusen says.

Researching the cause

Ultimately, treatments that could halt or even cure COPD may arise only from a better understanding of what causes the deterioration of air sacs and airways. Holtzman and colleagues at the School of Medicine recently obtained nearly
$15 million in funds from the National Institutes of Health to uncover these factors.

“When you look at lung tissue from COPD sufferers under the microscope, you see that the usual lattice-like structure has been destroyed,” Holtzman says. “One of our projects compares normal and diseased lung tissue and correlates the damage we see in microscopic images to gene expression at the same sites.”

Finding that some genes are highly active where lung damage is most severe could implicate those genes in the destructive processes of COPD and lead to new treatment targets. The availability of tissue from the lung transplantation program at the School of Medicine aids this research, as do new MRI and CT imaging techniques developed at the university.

“Outside of our laboratories, very few places in the world have the combination of technology, expertise and clinical material to do the studies we are undertaking,” Holtzman says.

Researchers in Holtzman’s group also are investigating abnormalities in genes that produce elastin, a protein in the lung’s air sacs that gives them their ability to stretch and spring back. Additional projects analyze why certain enzymes in COPD lung tissue chew up structural proteins like elastin and its cousin, collagen, which can lead to scarring of the lungs.

As lung tissue breaks down, chronic inflammation makes things even worse. But the specific inflammatory and immune factors causing COPD are only now being identified.

Holtzman and his colleagues discovered that, in response to inflammation and immune system components, the airways of COPD sufferers accumulate too many mucus-producing cells, which contribute to airway obstruction.

“At this time, no drugs specifically counteract overproduction of mucus,” Holtzman says. “One of our goals is to understand how excess mucus cells develop. Then we can target these precursor stem cells and alleviate some of the symptoms of airway obstruction.”

From work with children who experience severe respiratory infections, Holtzman has found that viruses also may play a role in COPD development, especially if people already have certain genetic predispositions.

Better understanding of COPD can lead to treatments that could halt or even cure the disease. Surgeons Roger D. Yasen, MD, left, medical director of the Lung Volume Reduction Surgery Program, and Bryan F. Meyers, MD, surgical director, meet with patient Howard Wilson to discuss his progress.

“Using mice that develop a condition that mimics COPD, we’ve found that a kind of cellular reprogramming occurs after viral infection that makes the animal more sensitive to inhaled stimuli like cigarette smoke,” Holtzman explains. “We hypothesize that a similar thing happens with people. You start with a genetic susceptibility, get a certain type of viral infection as a child, and then if you smoke you go further down the path toward COPD.”

His research group also is delving into experiments that show lung tissue can regrow under some conditions.

“We’re beginning to appreciate that lung tissue is constantly being destroyed and regenerated in the process of this disease,” Holtzman says. “That finding offers the possibility that in the future we may be able to alter the regeneration process to reverse some of the effects of COPD.”
Little exercise. Unhealthy foods. Poor lifestyle choices propagate a complex metabolic disorder. One drug shows promise to stem the tide of this growing problem.
Driven by high-fat diets and low-exercise lifestyles, metabolic syndrome is spreading rapidly across continents, age groups and ethnic lines, leaving millions at significantly increased risk of potentially life-threatening problems such as diabetes and heart disease.

The multiple risks associated with this 21st century syndrome make treatment complex: Various drugs can alleviate individual symptoms such as high cholesterol or blood pressure. But now researchers see potential for one drug to provide overall control by engaging the beneficial effects of a single protein.

"As a physician who sees many patients with metabolic syndrome and pre-diabetes conditions, modifying diet and lifestyle are going to continue to be the cornerstone of any therapeutic regimen," notes Clay F. Semenkovich, MD, the Herbert S. Gasser Professor and chief of the Division of Endocrinology, Metabolism and Lipid Research at Washington University and Barnes-Jewish Hospital. "But additional medications will certainly help."

The new treatment's discovery began in the laboratory of Michael B. Kastan, MD, PhD, director of the Cancer Center at St. Jude Children's Research Hospital in Memphis TN. Kastan, a medical school classmate of Semenkovich at Washington University, is a specialist in the treatment of the rare genetic disorder ataxia-telangiectasia (A-T).

A-T causes children to have markedly increased risk of tumors, immunological problems and severe progressive deterioration of a part of their brain that controls muscle function and coordination. When researchers linked A-T to a mutated gene, they named the protein made by the gene ataxia-telangiectasia mutated, or ATM.

Kastan has been investigating the function of ATM for years, and he and others have shown that it is activated by and helps repair DNA damage. Kastan began to suspect it might have links to insulin, because A-T causes a highly unusual form of diabetes in some cases.

"There were reports for years of kids with A-T who were small and thin and had diabetes syndromes that resembled those seen in patients who were obese," Semenkovich recalls. "Mike rediscovered this in the old literature, where it had never been explained, and started to do some studies to try to learn what was happening."

To test if the ATM-insulin connection means ATM plays a role in metabolic syndrome, Semenkovich and Kastan studied a mouse model with reduced levels of ATM and a genetic predisposition to heart disease. When they fed the mice a high-fat diet, the animals developed increased insulin resistance, atherosclerosis and higher levels of a signaling molecule linked to inflammatory processes—a close match for many of the symptoms seen in human metabolic syndrome.

From earlier research, Kastan knew that ATM's activities — helping cells survive stress and damage — could be increased by the anti-malarial drug chloroquine. Kastan and Semenkovich wondered if that meant chloroquine could prevent or delay metabolic syndrome in their mouse model. Their hunch paid off. In a paper published in Cell Metabolism last fall, they reported that a small dose of chloroquine, equivalent to about 40 milligrams given once a week for humans, reduced blood pressure, decreased hardening and narrowing of the arteries and improved blood sugar tolerance in mice.
Proteins good and bad
Study of the complex actions of a protein is leading to better understanding of a rare disease as well as indicating potential to treat a common syndrome. The ATM gene encodes ATM proteins which signal proper cell growth and DNA repair, helping to control metabolic and cardiovascular diseases.

Chloroquine has been in use for more than a century as an anti-malarial drug, and physicians already know it is safe and well-tolerated. That allowed Semenkovich to quickly begin the first human trials. With funding from the National Institutes of Health, he has started enrollment for a year of testing to see if small doses of chloroquine reduce damage to the arteries in human adults with metabolic syndrome.

Because this treatment could involve putting patients on regular chloroquine doses for extended periods, Semenkovich is conducting further mouse research to see if an even lower dose still provides beneficial effects.

He also wants to see whether ATM’s connections to metabolic syndrome can be used to better understand the links between obesity, diabetes and autoimmune conditions.

“Investigating the causes of rare diseases...can contribute to understanding the mechanisms of more common diseases.”
Michael B. Kastan, MD, PhD

Chloroquine is a common anti-malarial drug.

“ATM might be involved in multiple important metabolic diseases that we haven’t even thought about yet,” he notes.

Finally, Semenkovich also wants to follow up on prior studies conducted elsewhere that suggested another link between ATM and heart disease. The studies found that as many as one in every 50 to 100 people lacks one copy of the ATM gene. They also suggested that this genetic variation could expose carriers to increased risk of heart attack.

“We’re looking into the possibility of screening for the loss of one copy of ATM in humans and are planning studies in animals to see if chloroquine can help reduce this risk,” he says.

According to Kastan, “Our studies show how investigating the causes of rare diseases at a molecular level can contribute to understanding the mechanisms of more common diseases and point the way to new treatment options.”

“It’s an amazing thing,” Semenkovich says.

“We started with the study of a disease that affects one birth in thousands, and that led us to insights into one of the most pervasive health problems of modern industrialized society.”

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Michael B. Kastan, MD, PhD
in surgery

photographs by Robert Boston
diagnosis • planning • preparation
in the OR • focus and precision
Robert Boston is the staff photographer for Washington University's Office of Medical Public Affairs.

Photographed at Barnes-Jewish Hospital and St. Louis Children's Hospital.
When a child has cancer that is slowly destroying his shoulder and arm, how do you make him all better?

the leg bone's connected to the arm bone

BY JIM DRYDEN
Using his reconstructed left arm, Reuven high-fives Sarah Parks, RN, during a recent chemotherapy session at St. Louis Children's Hospital.

The age of the child made him an ideal candidate for a procedure that would transplant one of his own growing bones.

Last summer, Tovi Kirshner's first thought was that her 3-year-old son Reuven had a pulled muscle. He was complaining about pain near his left shoulder and under the armpit when she would lift him. The pain seemed to subside after a while, but when Tovi and her husband, Neil, visited family in Chicago, Reuven awoke in the night screaming in pain.

The family — Neil, Tovi, Elisha (5), Reuven, and Avraham (2) — had recently relocated to St. Louis from Chicago, so she took him to the same pediatrician's office that had cared for the boy before the move. X-rays revealed a lesion on the left humerus, the bone that runs from the shoulder to the elbow. He had a rare bone cancer called Ewing's sarcoma.

"It was the most terrifying moment of my life," Tovi recalls. "When we got back to St. Louis and to Children's Hospital, we learned it was a stage 4 cancer that had spread to his lung."

The lung lesion was removed immediately, and Reuven began a 42-week course of chemotherapy with surgery scheduled for week 12. The operation presented two big problems. One was that Reuven, at three years old, had a small skeleton, and surgery would cost him a lot of bone in his arm and shoulder. A second was that although Douglas J. McDonald, MD, professor and chief of orthopaedic oncology, frequently operates to remove cancerous bone, he doesn't often do it in toddlers.

"When we see this disease in children, usually they're teenagers," McDonald says. "When a child is 13 or 14 and almost finished growing, we can resect the tumor and easily replace the diseased bone with a prosthesis."

But a plastic or metal prosthesis is static. It can't grow as a child grows, and Reuven had lots of growing ahead. Even if McDonald had wanted to implant a rod, he couldn't have found one small enough. To get rid of the tumor, he needed to remove about two-thirds of the humerus. But in Reuven's arm that whole bone was only about the size of a ballpoint pen. Even expandable rods that can be implanted into growing children would have been way too big.

"We worried that amputation might be the only option," Tovi recalls. But, not long after that, she received a phone call from one of McDonald's orthopaedic surgery colleagues, Martin I. Boyer, MD, associate professor, who was planning a trip to Italy to learn a rare surgical procedure called free vascularized growth plate transplant.

Learning the technique would allow Boyer to move the fibula bone from Reuven's leg into his upper arm — transferring not only the bone but the vasculature as well.

"I was shocked at what they were willing to do," Tovi says. "They literally went around the world to get this done and save Reuven's arm. We're new to St. Louis, but we're convinced we're here for a reason."

Boyer traveled to Milan to watch Marco Innocenti do the procedure. "He developed the technique and has done nearly 30 of them," says Boyer. "My resident, John Carlisle, MD, and I left St. Louis on a Sunday, got to Milan on Monday, operated on Tuesday, came home on Wednesday and were back in clinic on Thursday."

Not long after the whirlwind trip, Boyer joined McDonald in an operating room at St. Louis Children's Hospital to perform the first free vascularized growth plate transplant ever done in the Midwest and one of only a handful of such operations ever done in North America. First, McDonald removed the tumor and, with it, about four inches of the boy's humerus bone, along with some of his shoulder. Then, Boyer and his team took over. Boyer, Carlisle and Kevin Lutsky, MD, made an incision in the leg, removed Reuven's fibula, and placed it in his arm.

The fibula and the tibia, or shinbone, run from the knee to the ankle. It turns out that the tibia does most of the work, in terms of supporting the leg, and people can function fairly well without a fibula. Ligaments, tendons and muscle attach to the fibula, but it bears less weight than the tibia and is much less critical to leg function. This is the key in Reuven's case — that the fibula has a reliable blood supply that can be moved along with the bone, allowing it to grow after it is transplanted and revascularized microsurgically.

"If this hadn't been a biological reconstruction, we would have had three problems," Boyer says. "We would have no joint because part of his
Surgeons removed the tumor and upper portion of the diseased humerus, 1, then harvested the fibula along with the needed vascular tissue, 2, and finally implanted it in the arm, replacing the upper humerus and reconnecting the vasculature, 3.

shoulder was removed with the tumor. We would have been short of bone because two-thirds of his humerus was removed. And, if we had implanted a prosthesis, the length of his arm after the operation would have been the length of his arm forever.

That need for a functioning growth center made Reuven an ideal candidate for the surgery. After a girl reaches nine or 10 or a boy reaches 11 or 12, Boyer says there’s really no compelling reason to put a child through an operation like this because they won’t have a lot of growing left to do.

“In that case, you would reconstruct it with a prosthesis,” he says. “You might over-lengthen the arm by however much you expect it to grow, but a surgeon probably wouldn’t want to subject an almost-grown child to a second incision and the additional trauma to the leg.

Reuven’s transplanted growth plate with its built-in blood supply should continue to grow. In addition, Boyer says, some strange things should happen on his X-rays in the coming years.

“A young child has the ability to remodel the graft,” he explains. “If you take a fibula and put it in place of a humerus, it still looks like a fibula on an X-ray. But over time, some children can remodel the bone, so it ends up looking much more like a humerus.”

And McDonald says it’s likely the bone will grow and function well. Reuven may never have normal shoulder function, but fibula grafts have worked for many other patients, and most have recovered very well.

And that means when Reuven is 11, the fibula bone in his arm should be significantly longer and look very different on X-rays than it does now.

“It’s amazing,” his mother says. “He has even been able to start using the arm again. He can give a high five, and he lifts his arm up for me when I take his temperature.”

That’s something she does a lot because although Reuven’s surgery is behind him, his treatment is not over. He’ll be receiving chemotherapy for several more months to make sure the cancer doesn’t spread back to his lungs, the most common site for metastasis of this type of cancer.

“His function is improving steadily,” Boyer says. “Hopefully, he’ll also do well with his chemotherapy and live a long and healthy life.”

Martin I. Boyer, MD, Douglas J. McDonald, MD, and hand fellow Kevin Lutsky, MD, discuss the subtleties of Reuven’s surgery.
Years of stagnant budgets outpaced by inflation threaten the progress of biomedical research and could thwart advances in treatments that are within reach, concludes a report co-authored by Washington University and a consortium of eight of the nation's leading scientific and medical institutions. The report was submitted to the U.S. Senate Labor-HHS Committee Appropriations hearing in March 2007. It explains how perennially flat funding of the National Institutes of Health (NIH) has halted promising research in mid-stream, challenged seasoned researchers, and threatened the future of young investigators pursuing careers in academic research.

According to the report, "Within Our Grasp — Or Slipping Away? Assuring a New Era of Scientific and Medical Progress," the doubling of NIH's budget between 1998 and 2003 enabled advances in basic research that transformed understanding of diseases affecting millions of Americans. But the NIH budget has been virtually frozen since 2003 and has shrunk by at least 8 percent after inflation. The group says that to fulfill the promise of previous investments by Congress, the country needs to provide more consistent and robust funding of NIH. The implications are far-reaching for science, medicine, the economy and U.S. leadership in biomedical science, they add. Other authors are: the University of California, Columbia University, Harvard University, Johns Hopkins University, Partners HealthCare, University of Texas at Austin, the University of Wisconsin Madison and Yale University.
Seemingly esoteric discoveries of basic research lead to the medical breakthroughs we live by.

Researchers have learned how to predict who is at high risk for type 1 diabetes.

A new vaccine protects women from human papillomavirus, the major cause of cervical cancer.

Between 1998 and 2005, U.S. research institutions brought 3,114 new technologies to market, often in partnership with private industry.

The average American lives six years longer than in the 1970s.

HIV is no longer an automatic death sentence.

Heart disease deaths are down 63 percent and deaths from stroke are down 70 percent from the 1970s.

New childhood vaccines for rotavirus and pneumococcus save lives worldwide.

"The stagnating NIH budget threatens to stall the progress made by our researchers — and others throughout the country — investigating the basis of life-threatening medical conditions, from cancer and diabetes to Alzheimer's disease and spinal cord damage," says Larry J. Shapiro, MD, executive vice chancellor for medical affairs and dean of Washington University School of Medicine in St. Louis. "Basic research is the foundation for future medical breakthroughs. The net effect of the flattening budget means that medical treatments, which typically take decades to develop, will be delayed, and patients will suffer because some of the most promising research projects will go unfunded."

The report describes recent revolutionary advances in basic research and features the work of Washington University scientists Samuel L. Stanley Jr., MD, and Richard K. Wilson, PhD. Stanley, who heads the Midwest Regional Center of Excellence in Biodefense and Emerging Infectious Diseases Research, is targeting toll receptors in cells to stimulate the body's immune response to dangerous bacteria and viruses, including E. coli and the plague. Wilson, director of the Genome Sequencing Center, is comparing the genomes of tumor cells and normal cells taken from the same person to identify the precise genetic malfunctions involved in individual cancers. Wilson's work is part of the NIH-supported Cancer Genome Atlas, which initially aims to identify all the genetic abnormalities in tumors of the ovary, lung and brain.

The funding slowdown already has put many projects at risk. Eight of 10 research grant applications are unfunded, according to the report. Certain NIH institutes, such as the National Cancer Institute, report they can only fund 11 percent of grant applications, rejecting many of exceptional quality.

"The funding crisis has touched not only our junior investigators but some of our more experienced scientists, who have lost funding despite proven track records in their fields," says Stanley, who also is vice chancellor for research. "While some grants are eventually funded, funding gaps have forced researchers to scale back their efforts and have a tremendous impact on productivity. In some cases, scientists may abandon some of their most innovative research in favor of conservative projects that are more likely to be funded. We really run the risk of losing momentum in key research areas."

Frustrated by funding lags, U.S. scientists are following research dollars to European and Asian countries that are making investment in biomedical sciences a high priority.

"The United States has led the world in biomedical sciences — primarily due to NIH support," Stanley says. "We've created an infrastructure that draws the best people in the world. We've spawned a biotech industry second to none and a pipeline of products. Curtailing NIH support is shortsighted and will have economic impacts, both locally and nationally."

Outlook 25

ON THE WEB, VISIT: medicine.wustl.edu to download the NIH report.

NIH 101 How the System Works

The National Institutes of Health (NIH) is responsible for funding most U.S. biomedical research. Its budget is established through congressional appropriations. Some 85 percent of the NIH budget is used to support research carried out by thousands of scientists at 3,000 universities and research centers around the country.

These pioneers of science perform critical research and train the next generation of young investigators. The majority of NIH extramural funding goes to investigator-initiated (R01) research grants for which scientists compete through a world-class peer review process. A national pool of scientific experts helps the NIH select the applications to be funded.

Funding decisions are meant to be based on scientific and technical merit and the likelihood of advancing the NIH mission — the pursuit of knowledge to extend healthy life and reduce the burdens of illness and disability.

This publicly funded basic research lays the foundation for nearly every new treatment, prevention and diagnostic tool. NIH-funded "translational" research and clinical trials often take basic research the next step toward clinical application. NIH discoveries fuel the biotechnology and pharmaceutical industries' pipeline of new health products.
Alumni experience fossil finds, Hurricane Ivan and space research

Robert E. Schmidt’s life has come full circle. Schmidt, MD 76, PhD 76, was born at St. Louis Maternity Hospital (now Barnes-Jewish Hospital), located a mere 200 feet from his current office at the School of Medicine. He also earned his undergraduate and MD/PhD degrees at Washington University.

“My mother, a Washington University graduate and a teacher at Central Institute for the Deaf, always spoke of Washington University with such reverence that it seemed like the only place to attend college," Schmidt says. "And when I considered medical schools, I was interested in an MD/PhD program and Washington University — one of the few places to offer what was then a new degree."

Schmidt also completed a pathology residency and neuropathology fellowship at the School of Medicine before joining its faculty in 1980. Today he directs the Division of Neuropathology while researching how diabetes and normal aging damage the peripheral nervous system.

During his clerkship year, Schmidt was unsure which area of specialization to pursue. Two classmates who were completing pathology residencies suggested he might enjoy the specialty. He told his wife, before beginning the autopsy service, that he'd give it two weeks.

"It turns out to have been the perfect place for me," Schmidt notes. "Perhaps because I had the right mixture of inquisitiveness, compulsiveness, a collector's temperament and enjoyed the intellectual aspects of diagnostic challenges."

The discipline of neuropathology allowed him to focus on clinical problems, such as diabetic neuropathy, while his PhD training and collaborations with the School of Medicine neuroscience community provided a background in neuroscience research techniques.

Schmidt's other passion is collecting fossils.

"My collection is now so large that our house resembles a museum," he says, noting that fossils ranging from Cambrian deposits to Ice Age material can be found within a 100-mile radius of St. Louis.

Schmidt and his wife, Pam, a preschool director, have been married for 32 years. The couple has two children: David, 27, and Andrea, 23, both of whom were born at Barnes Hospital — of course.

For Susan Gudeman Laenger, MD 92, some of her fondest medical school memories happened outside of the classroom when she traded her scrubs for scripts and performed in class shows.

"The medical students were tremendously funny writers and actors, and no faculty member was spared embarrassment," she recalls. "Even the noble Gerald Fischbach, then head of the Department of Anatomy and Neurobiology, was turned into a Batman-type villain and put behind bars."

Today Laenger is a part-time internist with Sacred Heart Medical Group, a non-profit Catholic health organization in Gulf Breeze FL. She shares an office with three family practice doctors and admits to mothering her patients, who range in age from 16 to 94.

"I love what I do," says Laenger, who emphasizes exercise, nutrition and preventive health to her patients. "Plus, we have a very warm and caring staff, so they make it a very enjoyable place to work."

After completing an internal medicine residency at the University of Pittsburgh Medical Center, she joined the school's clinical faculty and taught for three years before becoming a member of her current practice in Florida.

Her love of working and living in Florida was tested in October 2004, when Hurricane Ivan destroyed Laenger's home, washing away walls and furniture and tossing the refrigerator to the deck of the swimming pool. She and her family decided to rebuild and, after living in rental houses for 20 months, were able to move back home.

The experience taught Laenger some important lessons. "Losing all your possessions is quite freeing. Even if you're
not using something that you’ve kept, you must take care of it,” she says. “Also, I learned not to take for granted that life will continue as it currently is.”

Laenger says she was inspired by the resiliency of her husband, Dietmar, and that of her children: Jessica, now 8, and Bickston, now 5.

“My husband calmly came up with a plan to clean up our property, build a new home, and navigate the tangled insurance web,” she says, “never exhibiting any self-pity. My daughter followed his example, and my son processed what had happened by asking me often if the hurricane ‘broke our house.’”

In addition to spending time with her family, Laenger is active in her church and regularly volunteers in her daughter’s school classroom.

By the time David Winter, MD 59, graduated from the School of Medicine, he had already published three papers in the field of neurophysiology. But he was just getting started.

In the years since, Winter has enjoyed a diverse career. He trained under Michael DeBakey, MD, the famous surgeon at Baylor University School of Medicine; developed cyclosporin, the immunosuppressive drug for transplantation; and served as director of life sciences at the National Aeronautics and Space Administration (NASA).

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David Winter, MD 59, was instrumental in bringing about U.S. participation in the Cosmos biosatellite program, the Soviet/Russian flight series that used unmanned, Earth-orbiting satellites (see schematic above). He has been a tireless advocate of collaboration between academic research and industry.

Winter also coordinated research and development for Sandoz Pharmaceuticals Corp. (now Novartis) before entering the biotech industry in the early 1990s.

Today, he is involved in the management of two biotech companies, Human Biosystems and Tri-Med Research Inc. Although still engaged in research and development, his primary focus is as a consultant and facilitator, helping to match venture capitalists with product developers.

Winter says his interest in research and development is a direct result of his experiences at Washington University. A graduate of Columbia University, Winter applied to the School of Medicine at the suggestion of an undergraduate biology professor.

He soon developed an interest in neurosurgery and, following graduation, spent a year training under Professor Carl Moyer, MD. He then was recruited to Baylor University School of Medicine, where he continued his residency under the tutelage of DeBakey.

As a scientist, Winter says he has seen too much research not being utilized over the years. “One thing just led to another in my career,” he says. “But the underlying theme has been the application of basic research to solving practical problems.”

And, he adds: “I seem to change jobs every 10 years or so, which is good. Things don’t get old or stale, and I gain the opportunity to learn something new.”

He and his wife, Lorraine Sims Winter, MD, live in Gilroy CA, a suburb of San Jose. They have five children and 10 grandchildren.
Mary B. and Russell D. Shelden, MD 49, both grew up in Missouri families that emphasized community involvement and education.

"I saw firsthand the fulfillment and the pleasure that my parents received from community service, especially my mother," recalls Russell Shelden.

As a young woman, his mother traveled the state of Missouri as a suffragette and, after she married, was involved in Kansas City government in the 1920s. His father was the first orthodontist in Kansas City MO in 1907.

In the days when few women received a college education, Mary Shelden's grandmother attended the University of Kansas. Mary's father was an attorney; her mother had degrees in English, botany and nursing.

"My parents valued education, and it was assumed that my brother and I would graduate from college," says Mary, who earned a bachelor's degree in history from the University of New Mexico.

Today, the Sheldens are active volunteers and philanthropists, helping to advance medical causes throughout Missouri.
Following their families' examples of service inspired the Sheldens to become generous supporters of medical education. They have established two professorships in the Department of Anesthesiology at Washington University School of Medicine and an additional two anesthesiology professorships at the University of Missouri-Columbia, where Russell received a bachelor of arts degree in 1942 and a bachelor of science degree in 1947.

As an undergraduate, Russell Shelden knew that he wanted to attend medical school. He completed two years at the University of Missouri-Columbia School of Medicine before World War II interrupted his training. He served in the U.S. Army as a medical laboratory technician in a hospital near combat zones in Belgium and France, earning three Battle Stars.

When he returned home in 1946, Russell transferred to Washington University School of Medicine.

"I felt very fortunate to be accepted at Washington University and am proud every day to be a graduate of one of the finest medical schools in the United States," says Russell, who believes his School of Medicine professors, both in the classroom and in the clinics, provided him with a wonderful education.

Not long after he came home from the war, Russell and Mary became acquainted. "We grew up not too far from each other, and our parents were friends," Shelden says. The couple married in 1948.

Russell Shelden decided to specialize in anesthesiology during an internship at Kansas City General Hospital.

"Anesthesiology appealed to me as an expanding field of medicine that was very progressive," he recalls. "I also liked the variability. You might administer anesthesia to an 80-year-old adult in the morning and to a 3-year-old child in the afternoon."

Russell spent his career at Research Medical Center and Menorah Medical Center, both in Kansas City. Highlights include serving as chief of anesthesiology and as president of the medical staff at Research Medical Center.

He also was a member of the clinical faculty of the University of Missouri-Columbia School of Medicine for 25 years. When his private practice allowed, he taught anesthesia in the operating room and, as he neared retirement, he was able to spend more time teaching.

Russell Shelden has received many honors, including the 2005 Distinguished Service Award from the Missouri Society of Anesthesiologists and the 2003 Distinguished Service Award from the medical alumni organization of the University of Missouri-Columbia School of Medicine. A U.S. Army reservist for 65 years, Shelden attained the rank of colonel.

Mary Shelden also believes in giving back. Her philanthropy includes a Native American Scholarship fund at her alma mater and a scholarship at the University of Kansas School of Medicine. She has been active in the Kansas City community, including involvement with the Junior League and the United Way and also as a member of the board of directors of the Women's Division of the Kansas City Philharmonic.

Together the Sheldens received the 2006 Robert S. Brookings Award from Washington University in recognition of their service to the university and for building a bridge between the university and the region. They also are Life Patrons of the William Greenleaf Eliot Society.

The Sheldens, who enjoy golf and the outdoors, now divide their time between Kansas City and a home in Borrego Springs CA, which is located in the middle of Anza-Borrego Desert State Park. They have four children, five grandchildren and five step-grandchildren.

"We feel very fortunate to be able to support education and research in the state of Missouri," says Russell. "It is very important to us."
Some memories last forever

Class of 1982 continues scholarship tradition as it prepares to celebrate 25th reunion

The Class of 1982's 25th reunion in May should be quite an event, according to reunion class gift chair R.J. Tesi, MD. He remembers a class "filled with this incredible number of people with talent outside of just being plain smart."

Those talents were obvious during the annual class talent shows, a longstanding School of Medicine tradition that continues to this day. While the shows, says Tesi, "provided a delightful release to the end of the year," they also showcased the wide range of gifts his classmates brought with them to medical school.

The Class of '82 is now participating in another longstanding tradition — creating an endowed scholarship to honor its 25th reunion. In 1994, the Class of '69 established the first 25th Reunion Scholarship as its class gift, and then challenged the Class of '70 to do the same the following year. Tesi and his classmates are now the 14th class to accept this challenge, and they are responding enthusiastically — class members already have raised more than $75,000 in gifts and pledges toward the effort, more than enough to endow the scholarship permanently.

Lofty goals

Tesi, however, is aiming even higher: He would like to raise $1 million for the Class of 1982 Scholarship. This would set a new record for a 25th reunion effort and ensure the scholarship's impact for generations of medical students to come.

Tesi is looking forward to the May reunion and to revisiting his memories, some of which, he jokes, are unclear due to being hit by a car while riding his bike in Forest Park as a student.

The accident didn't damage his long-term prospects. As executive vice president of medical affairs and clinical development at Cellerant Therapeutics, Tesi says his experiences in the biotech industry are a big part of his inspiration for chairing the class scholarship effort.

"Why do I want to raise money for the medical school?" asks Tesi. "It all started because of my immersion in the world of business. I am surrounded by people with advanced degrees who are experts in their fields."

Tesi has noticed that his colleagues' appreciation of the professional educations they received and their generosity to their alma maters go hand in hand.

That, he says, was the impetus behind the Class of 1982's scholarship effort.

"I decided it was time for us to give back," Tesi says. "Much of our success is based on the fact that we are graduates of one of the finest medical institutions in the world."
Friends! Food! Fun! Honors! Learning!

The following School of Medicine alumni and faculty members will be honored during the awards banquet at MD Reunion 2007 for outstanding professional and personal accomplishments:

**Alumni Achievement Awards**
- Michael Adams, MD 67
- David D. Chaplin, MD 80, PhD 80
- Guido Guidotti, MD 57, PhD
- John H. Stone III, MD 62

**Alumni/Faculty Awards**
- Laura J. Bierut, MD 87, HS 91
- Mark J. Manary, MD 82

**Distinguished Service Award**
- Steven L. Teitelbaum, MD 64, HS 68

**Gift Chairs**
For the 10th through 50th Reunions, volunteers are working with their classmates to make the most of their reunion-year giving to the School of Medicine:
- 1957 Lawrence C. Pakula, MD
- 1962 William H. Gondring III, MD
- 1967 Sharon H. Van Meter, MD, and Stephen W. Van Meter, MD
- 1972 Timothy Holekamp, MD
- 1977 Keith H. Bridwell, MD
- 1982 R.J. Tesi, MD
- 1987 John B. Baird, MD
- 1992 Gregory K. Finn, MD, and Jonathan A. Morris, MD
- 1997 Jennifer Thomure Gould, MD, Valerie J. Halpin, MD, and Louis Kuchin, MD

**New Location**
Some festivities will take place at the downtown Renaissance St. Louis Grand & Suites Hotel. Explore this historic landmark during Reunion events.

**Kaiser challenge will go the distance for scholarships, Annual Fund**

The history of the School of Medicine is one of momentum. Jay Kaiser, MD 72, who will celebrate his 35th reunion in May, feels lucky to have been part of that momentum as a student. Now, he and his wife, Ronnie, are adding some momentum of their own and challenging fellow MD alumni to do the same.

When an MD alum whose last gift was made before 2005 rejoins the Annual Fund, the Jay and Ronnie Kaiser Challenge matches the gift with $200.

The Kaisers will match up to 500 donors with their $100,000 commitment. Because the long-term success of the Annual Fund depends on participation rather than on the size of any one gift, the Kaisers' goal is to encourage MD alumni who have overlooked their support to rejoin the effort.

If you have questions about the Jay and Ronnie Kaiser Challenge, please contact the Annual Giving Program at (314) 286-0005.

**For more details on MD Reunion 2007, visit: medicalalumni.wustl.edu**

1) strength or force gained by motion or through the development of events 2) The result of the Jay and Ronnie Kaiser Challenge on the School of Medicine's Annual Fund
1930s

Irving L. Berger, MD 39
Berger is busy developing a continuing education program with guest lecturers at his life care residence. He also exhibited some watercolor paintings at an art show in November 2006. In general, he says: “I do as much as a 93-year-old guy can do” and enjoys being in touch with classmates.

Robert M. Hardaway III, MD 39
Hardaway was featured in an article in the July 2006 issue of Army magazine. He also has recently published a treatment for acute respiratory distress syndrome.

1940s

Morton R. Lazar, MD, HS 42
Lazar was honored at the 50th reunion for the class of 1956 at the University of Michigan as he celebrated his 70th anniversary — the only graduate from his class to attend the event.

Jules Lewis Glashow, MD 42
Glashow enjoys boating, fishing and catching up on reading the classics. He also is involved with courses in history and world events at Florida Atlantic University.

Charles G. Fullenwider, MD 43 (March)
Fullenwider is a master gardener and enjoys yard work. He also teaches reading to illiterate adults and travels twice a year, most recently to Libya and Timbuktu in West Africa.

1950s

Malcolm Lewis, MD 52
Lewis lives in Nashville TN with his wife, Virginia, and enjoys bonsai. He also counsels homeless men in a drug and alcohol rehabilitation program.

William C. Barrette, MD 55
Barrette is still working in orthopaedic surgery at Stanford University, assisting with total joint replacements and hand surgery. He reports that his daughter continues to practice foot and ankle orthopaedic surgery in Massachusetts.

Lawrence C. Pakula, MD 57
Pakula was reappointed to the Board of Trustees of the Mount Washington Pediatric Hospital of Baltimore MD.

1960s

Elliot Finkelstein, MD 61
Finkelstein celebrated his 70th birthday by joining with his wife, Bette Finkelstein, to commission a new piece for The Concord Band, a community concert band. The work, entitled “Israeli Folk Suite,” by composer Elliot Del Borgo, premiered in October 2006. Finkelstein, who plays bass clarinet with the band, is an ophthalmologist in Brookline MA.

Gordon W. Philpott, MD 61
Philpott received the Distinguished Alumni Award from Washington University during the Founders Day celebration in November 2006. He is professor emeritus of surgery at the School of Medicine and past president of the university’s Alumni Board of Governors.

C. Craig Tisher, MD 61
Tisher is scheduled to retire as dean of the University of Florida College of Medicine in early 2007, a position he has held since 2002. As his own reminder of the patients, medical students and other constituencies relying upon him, Tisher wore his white coat each day in the office.

Devora Wolfson, MD 62
Wolfson, a retired allergy and asthma specialist, enjoys spending time with her grandchildren and adult children. She hikes, travels and paints watercolors, even exhibiting some of her pieces in juried shows. When she thinks of medical school, she fondly remembers “the birth of my first child and bringing her to class.”

Joshua B. Grossman, MD 65
Grossman taught “Acute Coronary Syndrome” and “Rhythm Recognition: Tachycardia/Bradycardia/Block(s)” in October 2006. He also received a speaker’s award from the Junior Reserve Officer’s Training Corps Cadets of Tennessee High School in Bristol TN.

Long-standing tradition
Four first-year medical students were honored with Distinguished Alumni Scholarships, each named to honor an alumnus or alumna who has served on the School of Medicine faculty. The Executive Council of the Washington University Medical Center Alumni Association funds a portion of each scholarship; administrative funding brings each award to full-tuition amount. Back row, from left: Honorees Lewis C. Fischbein, MD 74, Richard W. Hudgens, MD 56, and Bernard L. Shore, MD 77. Front row, from left: Student scholarship recipients Hilary Glazer, Margaret Lin, Emiliano Valles and Jake Chanin, accompanied by John Walters, center, former assistant dean of student affairs. Not pictured is honoree Elmer B. Brown Jr., MD 50.
1970s

Bruce H. Becker, LA 67, MD 70
Becker, an intellectual property attorney, was named a Georgia Super Lawyer — Rising Star in Law & Politics. The honor, announced in the October 2006 issue of Atlanta magazine, is given to Georgia attorneys who have been practicing for less than 10 years. Becker, a former vitreoretinal surgeon, is a patent attorney at the law firm Needle & Rosenberg, PC.

Stephen C. Reynolds, HA 72
Reynolds is president and CEO of Baptist Memorial Health Care in Memphis TN.

David J. Cohen, MD 72
Cohen, a cardiothoracic surgeon, served two tours of duty in Iraq, in Operation Desert Storm/Desert Shield and in Operation Iraqi Freedom. He retired from the U.S. Army in June 2006 and has started a new cardiothoracic surgery private practice group in San Antonio TX called Alamo Cardiothoracic Surgical Associates, PA.

Loren A. Crown, MD 72
Crown practices family medicine, emergency medicine and sports medicine in Covington TN. He is medical director of the Emergency Department at Baptist Memorial Hospital-Tipton and a clinical professor at the University of Tennessee Health Science Center. Of medical school he recalls: “I pedaled a bicycle from our University City apartment across Forest Park to Barnes every day for four years. Sure wish we’d had two cars!”

Dennis A. Bertram, MD 74
Bertram directs the Master of Public Health Program at the University of Buffalo. He holds master of public health and doctor of science degrees from Johns Hopkins University. In his spare time he does art, which can be viewed at bertramart.com.

Bernard L. Shore, MD 77
Shore is a professor of clinical medicine at Washington University School of Medicine. He has worked in hospice and palliative care for 20 years, even traveling to Riga, Latvia, to help establish palliative care centers. He still enjoys long-distance running, although now, he notes: “I’m a lot slower.”

Robert Fuhlbriggde, MD 89, PhD 89
Fuhlbriggde, a pediatric rheumatologist, is associate director of research for the Department of Dermatology at Brigham and Women’s Hospital in Boston MA. He enjoys building furniture as well as hiking and skiing with his wife and two children.

Kim Schonhoff-Reiter, PT 91
Schonhoff-Reiter opened her own physical therapy clinic in September 2006 called Body Basics Physical Therapy in Waterloo IA. She has practiced in and around Waterloo for the last 15 years. She lives with her husband, Nick, and daughters, Olivia, 4, and Emma, 18 months.

Russell Holman, MD 92
Holman has been named chief operating officer of Cogent Healthcare, a leading provider of hospitalist programs located in Irvine CA. Holman is also president-elect of the board of directors for the Society of Hospital Medicine.

Craig J. Kohlbrecher, OT 95, and Roxanne Kohlbrecher, OT 00
The Kohlbrechers announce the birth of son Reese Jarrett on Oct. 26, 2006. Their daughter Madeline is 2 years old. Craig continues to work at Greenville Regional Hospital in Greenville IL, and Roxanne continues to work in home health.
Karen Dahl, MD 97
Dahl is medical director of pediatric infectious diseases at DeVos Children's Hospital in Grand Rapids MI.

Kathryn Copes, OT 98
Copes and her husband, Jason, report that their second child, Tyler Alexander, was born on Oct. 6, 2006. Their son Aidan is 2 years old. Copes continues to work as a Level II occupational therapist at Baylor Medical Center in Dallas TX.

2000s

Danielle Hawrysio, OT 05
Hawrysio sends word of her engagement to Joseph Czajkoski on July 1, 2006. Their wedding is planned for Sept. 29, 2007, in Oak Lawn IL.

Nicole Mercer Bolton, MD 06
Bolton, her husband, Aaron Bolton, and their son, Matthew, have added twin daughters to their family. Amanda Sophia and Sarah Christine were born on Nov. 2, 2006. The family lives in St. Louis MO.

In Memory

Alexander J. Steiner, EN 27, GR 28, MD 35
Steiner died on Nov. 12, 2006, at the age of 102. He lived in St. Louis MO.

Bernice Schulz, NU 36
Schulz died on Oct. 5, 2006. She was 91 and a resident of Seattle WA. Survivors include her husband, Harry Schulz.

Paul J. Catinella, MD, HS 40
Catinella died on Aug. 8, 2006. He was 94 and lived in Wellesley MA. He practiced dermatology for 57 years and served as physician-in-chief of the dermatology service and president of the medical staff at St. Elizabeth's Hospital. He is survived by five daughters and one son.

Emma Jostes Keller, LA 39, OT 41
Keller, of St. Louis MO, died on Dec. 4, 2006. She is survived by her son, three grandchildren and a brother.

Helmuth E. Hoff, MD 45
Hoff died Oct. 1, 2006, at age 86. He had lived in Lodi CA. A family physician in Lodi for nearly 40 years, Hoff was joined in his practice by sons Mark L. Hoff, MD 74, and Jim Hoff, MD. Hoff was a charter member of the Academy of Family Physicians. He served as medical staff president for three hospitals in the area. Additional survivors include his wife, another son, a daughter, a stepdaughter and seven grandchildren.

Patricia F. Lanier, LA 40, MD 46
Lanier, of Rancho Cucamonga CA, died at age 87 on Sept. 24, 2006, at Pomona Valley Hospital Medical Center, where she had served as director of the oncology department. She later served as medical director for Mt. San Antonio Gardens retirement community, where she was an advocate for elderly patients in an era before many physicians recognized the special needs of this population. She is survived by a daughter, a son and four grandchildren.

James C. Sisk, LA 43, MD 46
Sisk died Sept. 29, 2006, at the age of 83. He practiced dermatology in Clayton MO for nearly 40 years and was an associate professor at Washington University School of Medicine. He was a past president of the Washington University Medical Center Alumni Association. He is survived by three sons including Clark Sisk, MD 78, and four grandchildren.

Louis G. Bush, MD, HS 48
Bush, of Twin Falls ID, died on Oct. 3, 2006. He is survived by his wife, Maryrose Bush, NU 48.

Thomas N. Stern, MD 48
Stern, of Memphis TN, died on Sept. 9, 2006. A cardiologist, Stern established the Stern Cardiovascular Center. He served on the Memphis City School Board for 12 years and chaired the boards of the Brooks Museum and the Community Foundation of Greater Memphis. Survivors include his wife, Harriet Stern, two daughters, a son and nine grandchildren.

Kenneth Bruns, MD 49
Bruns died on Oct. 18, 2006. He served patients for many years as an anesthesiologist and is survived by his wife, Janet Holl Bruns, one son and three grandchildren.

Jacqueline Olshy Jacoby, NU 50
Jacoby died Sept. 25, 2006, at her home in Alton IL. She was 79. She worked as a registered nurse for several years before her retirement. She is survived by her husband of 56 years, Donald A. Jacoby, and a son.

David A. Gee, HA 51
Gee, longtime president of the former Jewish Hospital, died Dec. 5, 2006, of complications from pneumonia at Missouri Baptist Medical Center. He was 78. He served in various administrative positions at Jewish Hospital from 1951 to 1964, when he became executive director. He was president of the hospital from 1968 to 1995. He was also professor of health administration at the School of Medicine for 25 years and continued his association with the university through the Life Long Learning Institute, an affiliate of the Elderhostel Institute Network. Gee is survived by his wife, Mary E. “Betsy” Gee; three sons, Thomas H. Gee, John D. Gee and William M. Gee, MD 81, an instructor of clinical medicine at the School of Medicine; a daughter, Kimberley Gibson; and 10 grandchildren.

Herbert B. Zimmerman, MD 51
Zimmerman died on Nov. 2, 2006. He was 81 and practiced internal medicine and cardiology in St. Louis until he was 80, serving as director of a cardiac intensive care unit at Jewish Hospital, now Barnes-Jewish Hospital. Survivors include three daughters and eight grandchildren.

Jennings M. Grissamore, MD 52
Grissamore, of Macon GA, died on Nov. 3, 2006, after a short illness. He served in the U.S. Navy during World War II and Vietnam and in both the Gemini and Apollo space programs. After his Navy service, he was a surgeon in Atlanta for more than 20 years. He is survived by his wife, five children and 12 grandchildren.

Mary Kathryn Farris, NU 52, GN 57
Farris, of Conway AR, died July 11, 2006. She was 77 and had worked as a registered nursing instructor at several medical institutions. Survivors include her husband, four sons and seven grandchildren.

Kenneth C. Price, MD, HS 56
Price, of Chesterfield MO, died Dec. 21, 2006. He was a cardiologist at Barnes, St. Luke's and Missouri Baptist hospitals for 35 years. He is survived by two sons, a daughter and five grandchildren.
Leonard Berg  LA 45, MD 49
Esteemed clinician and Alzheimer's researcher

Leonard Berg, MD, founder and former director of the Alzheimer's Disease Research Center at the School of Medicine, died on Jan. 15, 2007, following a stroke. He was 79.

Berg, professor emeritus of neurology, received many awards and honors for his contributions to Alzheimer's research, including the Lifetime Achievement Award and the Public Service Award from the Alzheimer's Association, the Peter H. Raven Lifetime Award from the St. Louis Academy of Science, and the School of Medicine Second Century Award.

Berg had two separate and distinguished careers in medicine — one for several decades as a clinician in private practice and a second one in research. In the 1970s, motivated by his work with patients, Berg started a discussion group in the Department of Neurology on dementia. With his colleagues in the department, he was able to develop a system for distinguishing healthy aging from the onset of very mild dementia. Based on that research, the National Institutes of Health in 1979 awarded Berg, who was in private practice, and colleagues at the school a four-year grant to study both groups over time, conducting regular, detailed assessments of their mental and physical status as the subjects grew older. The early work formed the foundation for the systematized assessment of dementia and detection of early onset of Alzheimer’s disease now in common use. That study, known as the Memory and Aging Project, continues to this day, having analyzed more than 3,000 volunteers over nearly 30 years. In 1985, Berg was awarded a grant from the National Institute on Aging (NIA) to establish the Alzheimer’s Disease Research Center (ADRC) at Washington University School of Medicine and Barnes Hospital. The center continues to be funded by the NIA and other agencies, supporting the work of several Alzheimer’s researchers recognized in recent years with the field’s highest awards. Berg stepped down as director of the center in 1997.

Since 1997, the ADRC, with support from industry, has hosted a biennial Alzheimer’s research symposium in Berg’s honor.

Berg is survived by his wife, Gerry Berg; two daughters, Kathy and Nancy; son John, his wife Christine and their daughter Katie; John Berg is currently an associate vice chancellor at Washington University and Christine Berg is a member of the faculty of the School of Medicine’s Program in Occupational Therapy.

Staff

Joseph T. Strong
Joseph T. Strong, a research engineer in the Genome Sequencing Center (GSC) at the School of Medicine, died on Dec. 23, 2006, in a bicycle accident in south St. Louis County. He was 36. Strong, a university employee for nearly 10 years, was a mechanical engineer in the GSC’s technology development group, where he designed, built and maintained robotic instrumentation. Strong had recently moved into a management role at the center. He enjoyed refurbishing old cars, including Volkswagen Beetles and an Austin Healey “Bugeye” Sprite, and had won competitions for his work on them. Strong is survived by his wife, Cindy; research lab manager in the GSC, 2-year-old son Benjamin and 4-month-old son Steven; his parents; and seven sisters.
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Almost real  An ailing patient, complicated equipment, powerful medications. Even in a make-believe scenario, this near-reality training setting can be intimidating. A new effort at the School of Medicine puts this educational technology to a new use: researching communication between all members of the medical care team during simulated acute-care events. To learn more about the Clinical Simulation Center, please turn to page 3.
**View from the top**  The roof of the new Northwest Tower (left) on Children's Place provides a panoramic view of Washington University Medical Center (above) and downtown St. Louis. The tower adds eight floors and 195,000 square feet of office space to bring together faculty in the departments of Pediatrics, Surgery, Anesthesiology and Internal Medicine. Bridges connect the tower to St. Louis Children's Hospital and the Clinical Sciences Research Building and also link the medical center's north campus and south campus. The building was officially opened at a ribbon-cutting ceremony on February 1.