Destined to be doctors
Edwin Chen, left, dons his white coat with an assist from Will Ross, MD, associate dean for diversity and associate professor of medicine, while Leisha Elmore, below, receives her white coat from W. Edwin Dodson, MD, associate vice chancellor and associate dean for admissions and continuing medical education and professor of pediatrics and neurology, at the annual White Coat Ceremony held on August 15. At the event, 124 first-year medical students were presented with a white coat, a longtime symbol of the medical profession. The incoming Class of 2012 also took an oath of professionalism that they wrote during orientation.
Life Lines

By looking more deeply into data generated by electrocardiograms (ECGs), researchers are finding hidden clues to cardiac health.

Less is More

Patients with urologic cancers can choose from a number of minimally invasive treatment options, resulting in less pain and faster recovery.

Minding Tourette’s

An interdisciplinary approach to the study of Tourette Syndrome may provide insights into the roots of this complex and debilitating disorder.

Embodied Dimensions

One woman’s steadfast refusal to conform to society’s expectations made waves — in both the art and medical worlds.
In one ear

Study examines how unilateral hearing affects cochlear implants

Early in her career, cochlear-implant specialist Jill B. Firszt, PhD, met with a 47-year-old patient who had hearing in only one ear since childhood. Tumor surgery had recently destroyed the function of that ear, and the patient was scheduled for a cochlear implant in her long-term deaf ear.

Firszt knew there wasn't enough information to predict how having had hearing in one ear might affect the success of a cochlear implant in the other ear. As it happened, the patient made exceptional progress. Within three months, she recognized sentences spoken both in quiet and noise — much sooner than most adult cochlear implant patients who have long-term deafness in both ears.

The patient's experience inspired Firszt, associate professor of otolaryngology and director of the Cochlear Implant Program and Electrophysiology Laboratory, to propose an in-depth study to find out how hearing in one ear — either natural or because of a cochlear implant — affects the ability to perceive sound in the other ear after it receives a cochlear implant.

The project has received a five-year, $3 million grant from the National Institutes of Health. Collaborators include Rosalie M. Uchanski, PhD, research assistant professor of otolaryngology, and Harold Burton, PhD, professor of anatomy and neurobiology, radiology, and cell biology and physiology.

Participants with unilateral hearing will be evaluated to find out how well they can locate the source of sounds and discern complex sounds like speech mixed with background noise. Brain imaging techniques will reveal how the brain's hearing centers reorganize after unilateral hearing loss. Other patients will be evaluated in real-life listening conditions and followed over time to understand how hearing in one ear affects an implanted ear.

The results should help determine how patients can get the maximum hearing improvement from cochlear implants and whether people with bilateral deafness should receive implants in both ears.

Firszt is also a faculty member of the Program in Audiology and Communication Sciences (PACS) at Washington University. The PACS Program is one of a consortium of programs formerly operated by Central Institute for the Deaf, now known as CID at Washington University School of Medicine.
DeBaun, pediatric researcher, becomes first Ferring Chair
Sickle cell disease remains top focus

Michael R. DeBaun, MD, MPH, has been named the Ferring Family Chair in Pediatric Cancer and Related Disorders at Washington University School of Medicine in St. Louis and St. Louis Children's Hospital. The endowed chair was established by John and Alison Ferring; John Ferring is president and CEO of Plaze Inc., an aerosol packaging manufacturer.

DeBaun is professor of pediatrics, of biostatistics and of neurology at the School of Medicine and a pediatric hematologist/oncologist at St. Louis Children's Hospital.

"Receiving this endowed chair is an honor," DeBaun says. "It represents the body of work our team has completed over the last 18 years and is external validation of the scientific journey that we started in 1990."

DeBaun has established a nationally renowned program for treatment, education and research into the complications of sickle cell disease. Under his leadership, he and a team of investigators have received funding for the first international clinical trial in sickle cell disease sponsored by the National Institutes of Health (NIH), called the Silent Cerebral Infarct Transfusion (SIT) Trial.

The newly endowed chair offers DeBaun more flexibility to pursue his passion of sickle cell disease research. "The most important objective I want to accomplish through this chair position is the pursuit of new knowledge that improves the lives of children with sickle cell disease and their families," he says. "The legacy of the chair will be the opportunity to recruit some of the best minds in the world to focus on this disease."

Other efforts DeBaun has initiated include Camp Crescent, an overnight camp for children with sickle cell disease; the Charles Drew Program, in collaboration with the American Red Cross, to increase the number of African-American blood donors in the St. Louis community; and the Sickle Cell Sabbath, a faith-based effort to educate the African-American community about sickle cell disease and the importance of donated blood for those with the disease. These efforts have doubled the number of units of blood donated by African-Americans in the St. Louis area.

In 2002, DeBaun established the Ferring Scholar Program supported by the Ferrings. Through this program, some of the best high-school students in St. Louis are chosen for a three-year internship at Children's Hospital and the School of Medicine to experience health care and research firsthand.

Infectious disease scientists honored

Three School of Medicine researchers are being recognized by the Burroughs Wellcome Fund (BWF) for their studies of infectious diseases.

Jeffrey P. Henderson, MD, PhD, instructor of medicine, was one of 16 scientists selected nationally to receive the BWF 2008 Career Award for Medical Scientists. Henderson studies how the bacterium *Escherichia coli* differs in harmless strains and strains that cause urinary tract infections. The award is designed to help young physicians establish careers active in both patient care and scientific research.

David Wang, PhD, assistant professor of molecular microbiology and of pathology and immunology, and Dong Yu, PhD, assistant professor of molecular microbiology, each received a BWF 2008 Investigators in Pathogenesis of Infectious Disease award.

Wang uses a technique called high-throughput DNA sequencing to identify previously unrecognized disease-causing microorganisms. Yu studies human cytomegalovirus, more commonly known as a form of herpes virus. The award, given to 14 researchers in the United States and Canada, recognizes scientists for using multidisciplinary approaches to better understand how pathogens cause disease.
Parents shape whether kids learn to eat fruits, vegetables
Setting healthy eating patterns for life

To combat the increasing problem of childhood obesity, researchers are studying how to get preschoolers to eat more fruits and vegetables. According to researchers at Washington University in St. Louis, one way is early home interventions — teaching parents how to create an environment where children reach for a banana instead of potato chips.

“W e know parents have tremendous influence over how many fruits and vegetables their children eat,” says Debra L. Haire-Joshu, PhD, professor of public health at the George Warren Brown School of Social Work and a member of the Prevention and Control research program at the Alvin J. Siteman Cancer Center. “When parents eat more fruits and vegetables, so do their children. When they eat and give their children high-fat snacks or soft drinks, children learn these eating patterns instead.”

Haire-Joshu and researchers at Saint Louis University School of Public Health tested a program that taught parents in their homes how to provide preschool children easy access to more fruits and vegetables and examined whether changes in what the parents ate affected what their children consumed. The study was published in the July 2008 issue of the journal Preventive Medicine.

“This research shows that it’s important to communicate with parents in real-world settings,” Haire-Joshu says. “They control the food environment for their young child. This environment is key to not only what children eat today but how they will eat in the future.”

WU physicians among nation’s best

More than 300 physicians at Washington University School of Medicine in St. Louis have been named to online resource The Best Doctors in America for 2008. The number is twice that of any other physicians group in St. Louis and more than any other physicians group in the Midwest.

Best Doctors in America uses peer-to-peer surveys to identify specialists considered by fellow physicians to be the most skilled in their fields and most qualified for reviewing and treating complex medical conditions.

Washington University School of Medicine’s 2,100 employed and volunteer faculty physicians also are the medical staff of Barnes-Jewish and St. Louis Children’s hospitals.

To see the entire list of Washington University physicians honored this year, please visit medschool.wustl.edu.
Exercise lowers cancer risk for premenopausal women

New evidence suggests that girls and young women who exercise regularly between the ages of 12 and 35 have a substantially lower risk of breast cancer before menopause compared to those who are less active.

In the largest and most detailed analysis to date of the effects of exercise on premenopausal breast cancer, the study of nearly 65,000 women found that those who were physically active had a 23 percent lower risk of breast cancer before menopause. In particular, high levels of physical activity from ages 12 to 22 contributed most strongly to the lower breast cancer risk.

The study by Graham A. Colditz, MD, PhD, the Niess-Gain Professor and associate director of Prevention and Control at the Siteman Cancer Center, and his colleagues at Harvard University was published May 21, 2008, in the Journal of the National Cancer Institute.

"We don't have a lot of prevention strategies for premenopausal breast cancer, but our findings clearly show that physical activity during adolescence and young adulthood can pay off in the long run by reducing a woman's risk of early breast cancer," says Colditz.

One-fourth of all breast cancers are diagnosed in women before menopause. Many studies have shown that physical activity reduces the risk of postmenopausal breast cancer, but the influence of exercise on breast cancer before menopause has been unclear.

For the current analysis, researchers examined data on a subset of women enrolled in the Nurses' Health Study II, a prospective study of registered nurses ages 24 to 42. The women had filled out detailed annual questionnaires about their levels of physical activity from age 12 on. After six years of follow-up, 550 women had been diagnosed with breast cancer.

The researchers found the incidence rates for invasive breast cancer dropped from 194 cases per 100,000 in the least active women to 136 cases in the most active. The levels of physical activity reported by the most active women were the equivalent of running 3.25 hours or walking 13 hours a week. The benefit of exercise was not linked to a particular sport or intensity but related to total activity.
Humphrey is Ladenson Professor

Peter A. Humphrey, MD, PhD, has been named the Ladenson Professor of Pathology in the Department of Pathology and Immunology at the School of Medicine.

"Peter has a long history of service to the university and is a recognized leader in efforts to refine prostate cancer diagnosis, and this new professorship recognizes both of those endeavors," says Larry J. Shapiro, MD, executive vice chancellor for medical affairs and dean. "The professorship also honors the many groundbreaking contributions of Jack Ladenson, whose research helps clinicians diagnose hundreds of thousands of heart attack patients every year."

Humphrey's new chair is named for Jack H. Ladenson, PhD, the Oree M. Carroll and Lillian B. Ladenson Professor of Clinical Chemistry in Pathology and Immunology and interim director of the Division of Laboratory Medicine.

As the Ladenson professor, Humphrey becomes chief of the newly renamed Division of Anatomic and Molecular Pathology within the department.

One branch of his research focuses on developing better ways to predict which prostate cancers are most likely to act aggressively. In a more basic branch of his research program, Humphrey is characterizing the properties of a growth factor known as scatter factor.

New stroke research center to be part of national network

Improving survival, limiting damage

Investigating new ways to diagnose and treat stroke will be the focus of a five-year, $9 million grant received by Washington University School of Medicine.

The National Institute of Neurological Disorders and Stroke (NINDS) is providing the grant, which will help establish a Specialized Program for Translational Research in Acute Stroke (SPOTRIAS) Center at the School of Medicine and Barnes-Jewish Hospital. Areas of study will include stopping a deadly aftereffect of brain bleeding known as vasospasm and developing new brain imaging techniques to better determine who is likely to benefit from intravenous doses of the clot-busting drug tissue plasminogen activator (tPA).

The other institutions in the SPOTRIAS research center network are the University of Cincinnati, University of Houston, University of California at Los Angeles, University of California at San Francisco, Columbia University, Harvard University and a National Institutes of Health stroke treatment program in Washington, DC.

"The hope is that this network will allow us to accelerate the testing of new approaches and bring those that are successful to the clinic more quickly," says principal investigator Colin P. Derdeyn, MD, professor of radiology, neurology and neurological surgery.

The NINDS requires that SPOTRIAS centers have a proven record for efficient, high-volume acute stroke treatment. For the WUSTL and Barnes-Jewish stroke treatment team, the "door-to-needle" time — the time between a potential stroke patient's arrival at the hospital and administration of intravenous tPA — is 45 minutes.

Derdeyn says Washington University's reputation as a leader in radiology also made it a strong contender for the grant. A new multimillion-dollar imaging center dedicated to research is located at the hospital; researchers plan to use it to develop new ways to assess the brains of stroke patients.

In addition to the research initiatives, the SPOTRIAS grant will fund other projects including educational programs among paramedics and emergency department physicians to increase awareness of the symptoms of strokes and the need for rapid treatment.

To learn more about initial research planned for the SPOTRIAS, please visit medschool.wustl.edu.
Neurobiology and Anatomy

The nose knows: Male detects female's health

A group of steroids found in female mouse urine goes straight to the male mouse's head, according to researchers at the School of Medicine. They found the compounds activate nerve cells in the male mouse's nose with unprecedented effectiveness.

"These particular steroids are involved in energy metabolism, stress and immune function," says senior author Timothy E. Holy, PhD, assistant professor of neurobiology and anatomy. "They control many important aspects of the mouse's physiology and theoretically could give any mouse that sniffs them a detailed insider's view of the health of the animal they came from."

Holy plans further research to see if activating the nerves in the male mouse's nose leads to particular behavioral responses. He probes the male mouse's reaction to chemical signals from female mice to advance understanding of pattern recognition and learning in the much more complex human brain. In 2005, he found that female mice or their odors cause male mice to sing. He doesn't know yet if the steroids' effects on the male mouse nose help to trigger this behavior.

Science has long recognized that urine, sweat and other bodily fluids contain chemical communication signals called pheromones that can influence the biology or behavior of others. In many cases, though, the specific chemical identities of the signals are unknown.

The new study, published in The Journal of Neuroscience and led by graduate student Francesco Nodari, identified compounds that are unusually potent stimulators of the mouse nose. The pheromones activate nerve cells 30 times as often as all the other pheromones previously identified in female mouse urine combined. In addition, several of the new signals activate specific nerve cells. This may mean the male mouse's brain can assess different aspects of female mouse health by selectively analyzing individual pheromones.

"Because these compounds are so good at activating nerves in the nose, they likely have much potential for advancing the general study of pheromones," Holy says.
LIFELINES

The heart may not be the seat of emotion as people once believed, but it is a very sensitive organ. Acutely responsive to cues from the rest of the body, it constantly adjusts its speed, racing when we need more energy and slowing down when energy demands fall.

Phyllis K. Stein, PhD, research associate professor of medicine in the Cardiovascular Division, believes that the ever-changing heart rate holds some largely overlooked clues to cardiac health.

As director of the Heart Rate Variability Laboratory, she is dedicated to decoding the heart’s rhythm. Perched in front of their computer monitors, Stein and other lab members perform sophisticated analyses of ambulatory electrocardiograms (ECGs), recordings of the heart’s beat-to-beat electrical activity taken while a patient goes through ordinary daily activities.

“Typically, a cardiologist will look at an ambulatory ECG to find premature beats, pauses and other big events, but there are more subtle indicators embedded in the data. I’ve found that if you torture them, the ECGs will admit everything,” Stein says with a smile.

BY GWEN ERICSON
Heart Rate Variability

The heart must respond to the body's needs. So its rate varies from moment to moment, relative to respiration, physical activity, the sleep cycle, and other factors. Determining the organ's ongoing functional variability — a key indicator of health — requires long-term measurements, computer-driven calculations and detection of subtle cyclical patterns. Such exacting, complex work yields links to disease, and within the data lie indications of a person's risk for sudden death. This data collection, analysis and correlation with various disease risks is the work of the Heart Rate Variability Lab.

A patient wears a portable heart monitor (above) for up to 24 hours. The device records data that is later downloaded to a computer for detailed analysis (right).

24 hours = 100,000+ heartbeats!

Patterns of normal heart rate variability (left) and abnormal variability (right). The hearts on the right are not responding appropriately. Like an orchestra missing the maestro's cues, these hearts are out of sync with the rest of the body — although here the results could be deadly.

This variation indicates the onset of sleep apnea. Someday, overnight heart monitoring could routinely be used to identify those who need treatment for sleep apnea.
To conduct an ambulatory ECG test, a medical technician attaches electrodes to a patient’s torso to measure the fluctuating electrical field given off by the heart with each beat. These electrical signals are generally stored in a small, portable device called a Holter recorder and downloaded to a computer for analysis.

To the trained observer, the shapes and frequencies of ECG waves can reveal abnormalities in the heart’s anatomy or function, making ECGs convenient, non-invasive tools for monitoring heart health. But Stein has learned that beyond the peaks and valleys of an ECG recording lies a wealth of information about heart rate patterns that can identify patients at high risk of cardiovascular problems.

The length of the space between ECG wave-peaks indicates heart rate — the shorter the space, the faster the rate. Stein and her colleagues in the Heart Rate Variability (HRV) Lab scrutinize how that rate changes over the course of minutes, hours or an entire day.

Variation in the heart’s speed generally means the heart listens well to signals from the body about oxygen and nutritional needs. Healthy young people have a lot of heart rate variability, but with advancing age, variability declines. Findings show that low heart rate variability is associated with increased cardiovascular disease.
LESS is MORE

Jon Pellechia and his wife, Kellie, have two reasons to celebrate: Earlier this year, Jon was successfully treated for testicular cancer by Robert S. Figenschau, MD, at Barnes-Jewish Hospital. Recently, the couple learned they are expecting their first child.
PATIENTS DiAGNOSED WITH A UROLOGIC CANCER often face the prospect of major surgery — along with a lengthy recovery from a large incision — to cure their disease. Not so at the Alvin J. Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital. Whether it’s cancer of the prostate, bladder, testes or kidney, most patients can opt for a minimally invasive treatment approach that translates into a shorter hospital stay, less pain and a faster recovery.

“Eradicating the cancer is always our first priority,” says Gerald L. Andriole, MD, chief of the Division of Urologic Surgery. “But many patients seek out our expertise because they want their cancer treated effectively and they want an easier recovery. In most cases, we can do that for them.”

In the 1990s, School of Medicine urologic surgeons pioneered the first minimally invasive treatment for urologic cancer: laparoscopic surgery to remove kidney tumors. That advance laid the foundation for today’s innovative procedures. “Our urologists really are at the forefront of minimally invasive treatments,” says Andriole. “We offer treatments here that are hard to find at many academic medical centers. We’re always moving forward.”

A less invasive approach to lymph node removal

Although testicular cancer accounts for just one percent of all cancers in men, it is the most common tumor among those between the ages of 20 and 34. If detected while confined to the testicles, it is almost always curable, says Robert S. Figenshau, MD, professor of surgery.

But when it spreads, the metastasis travels a predictable route: first to the lymph nodes near the kidneys, then to the chest and occasionally to the brain. Once the disease metastasizes, the cure rate falls to 80 percent.

About half of men with testicular cancer have a type of tumor called a non-seminoma, meaning the cancer originates in cells that eventually become sperm. Even when non-seminomas are detected early, there is still a concern that microscopic tumor cells have spread to the lymph nodes.

In such cases, patients often undergo a complex procedure to remove the lymph nodes to confirm the presence or absence of cancer. Typically, the surgery is an open operation with a lengthy incision from the breast bone to the pubic bone. Figenshau, however, is one of the few surgeons in the country with extensive experience performing the procedure laparoscopically via three or four small incisions in the abdomen.
Targeting tumors

Non-surgical options for treating prostate cancer run to two extremes: obliterating the tumor by using the heat of a laser or freezing the prostate to ensure cancer cells are killed. According to Gerald L. Andriole, MD, both procedures effectively destroy the tumor while at the same time minimizing side effects for patients.

“For patients, there’s a big gain in recovery,” Figenshau says. “They go home the day after the surgery and are back to their normal routine in a few weeks. This compares to a typical three- or four-day stay for the open procedure and several months’ recovery time.”

Whether open or laparoscopic, the procedure is highly complex because surgeons must work around the large blood vessels serving the kidneys, bowel and lower extremities, as well as nerves that control ejaculation.

Figenshau has performed about 40 laparoscopic lymph node dissection procedures in the past five years. None of those patients has experienced a cancer recurrence, which suggests that the minimally invasive technique is just as thorough as the open procedure in removing the cancer.

Jon Pellechia, 31, of Creve Coeur, MO, was diagnosed with testicular cancer in March. He didn’t think twice about choosing the laparoscopic procedure over the open surgery. “I did some research,” says Pellechia, a physician assistant at Christian Northeast Hospital. “The guys doing the lymph node procedure were at Washington University, and the minimally invasive approach was really a no-brainer for me.”

Within three weeks, Pellechia was back seeing patients in the hospital ICU where he works. “You don’t think of St. Louis as being a big city, but you can get state-of-the-art treatments right here at Barnes Jewish Hospital.”

Non-surgical options for tumor destruction

While surgery remains the mainstay treatment for prostate cancer, some patients prefer to avoid surgery altogether because of potential complications: namely, urinary incontinence and impotence. For them, Andriole is evaluating focal destruction of only the cancer by two means. Both are in phase III clinical trials:

- **One** uses heat to destroy the blood supply of the tumor; the other kills tumors by freezing them. Both have minimal, if any, side effects.

In the first procedure, a chlorophyll-based photosensitizing agent is injected into the patient’s bloodstream. Once it reaches its target, in this case blood vessels feeding the tumor, the agent is activated by the light of a laser. The activated agent chokes off the blood supply to the tumor, thereby starving the cancer of the nutrients it needs to grow.

“Tumors have a unique blood supply, and this procedure is precisely targeted only to blood vessels that feed the tumor, not the vessels that supply the healthy parts of the prostate,” Andriole says.

The other procedure uses a three-dimensional ultrasound developed in St. Louis to guide the insertion of needles into the prostate that deliver argon gas, essentially freezing the prostate at temperatures lower than -150 degrees F. The prostate is then defrosted and refrozen to ensure that the cancer cells are killed. The entire procedure takes less than two hours.

“The technology has greatly improved since cryotherapy was introduced as a cancer treatment,” Andriole says. “We can now better target the tumor with only minimal side effects.”

A more “efficient and precise” procedure

Instead of standing for hours with his arms raised above the patient, Sam B. Bhayani, MD, sits at a nearby computer console maneuvering joystick-like controls that guide robotic scalpels, scissors and high-resolution cameras to remove kidney tumors.

For small cancers, Bhayani excises only the tumor, thereby preserving the function of the healthy
portion of the kidney. The procedure appears to be superior to partial nephrectomy performed laparoscopically due to the shorter amount of time blood flow to the kidney must be stopped so the tumor can be excised — about 20 minutes for robotic surgery compared with 30 to 40 minutes for laparoscopic surgery. The longer the blood flow is cut off, the greater the risk that the kidney will not function normally after the surgery.

For large tumors that have not spread beyond the organ, Bhayani can remove the entire kidney through one small three-inch incision in the belly button. Other surgeons have used the same procedure to remove kidneys for donation, but never before for cancer.

"Robotic surgery is more efficient and precise than either open or laparoscopic surgery for tumors confined to the kidney," says Bhayani, a pioneer in this robotic surgery who has trained surgeons worldwide in the procedure. "Rather than operate with two hands, I can simultaneously control four robotic instruments with mechanical ‘wrists’ that rotate more than 360 degrees, giving me far greater maneuverability than human hands or laparoscopic instruments."

The computer-controlled system also eliminates surgeons’ hand tremors, however minute. And the robot provides an exceptional view of the surgical field. The surgeon sees the tumor and surrounding structures in high magnification. Dual miniature cameras restore the depth perception of an “open” surgery, which is lost in standard laparoscopy.

Patients who have had the robotic procedure have quicker recoveries than with open surgery — one day in the hospital versus five. Because surgeons remove the entire tumor using robotic surgery, there’s no need for further chemotherapy or radiation treatments, Bhayani says.

Taking robotics to other bodily organs
Robotic surgery also has entered the realm of treatment options for bladder cancer. More than one year ago, Adam S. Kibel, MD, professor of surgery, began using robotics for patients who have cancer that has invaded the deep layers of the bladder wall.

In addition to the bladder, the surrounding lymph nodes are removed as well as the prostate and seminal vesicles in men and the uterus, ovaries and part of the vagina in women. In women, the organs can be removed via the vagina.

"It’s definitely major surgery," says Kibel. "Our early results suggest that the robotic surgery is as good as open surgery for curing the cancer, with the advantage that patients recover substantially faster with less pain compared to the open surgery."

Only a limited number of U.S. surgeons currently perform the procedure robotically. The benefits are substantial: less blood loss, less pain, a shorter hospital stay and fewer post-surgical complications.

About half of all bladder cancer surgeries at Barnes-Jewish Hospital are now performed robotically, and that number is expected to grow substantially in the next several years.

Better than by hand
A computerized system allows surgeons to view a tumor and its surrounding structures in high magnification while maneuvering robotic scalpels, scissors and high-resolution cameras to remove kidney tumors. Surgeon Sam B. Bhayani, MD, pioneered robotic surgery for kidney tumors; he says the procedure is more efficient and precise than either open or laparoscopic surgery for tumors confined to the kidney.
Bradley L. Schlaggar, MD, PhD, and Kevin J. Black, MD, along with postdoctoral research associates Jessica A. Church, PhD, center, and Meghan C. Campbell, PhD, not shown, dedicate their research efforts to improving the lives of patients with Tourette Syndrome. These WUSTL researchers received more than one-sixth of all 2008–09 research grants made by the Tourette Syndrome Association.
Interdisciplinary expertise can counter this debilitating syndrome

Because it often goes undiagnosed, no one knows for sure how many people in the United States have Tourette Syndrome (TS), but the Tourette Syndrome Association estimates the number at around 200,000. People with TS exhibit a spectrum of tic disorders: They make sounds, sniff, blink or jerk their heads involuntarily — able to control the impulse for a moment or two, but ultimately unable to prevent the tics that characterize the disorder.

More is understood now than when the condition was named for French physician Georges Gilles de la Tourette, based on his 1885 description of the disorder, but what causes TS and how best to treat it remain a mystery.

Washington University researchers Kevin J. Black, MD, and Bradley L. Schlaggar, MD, PhD, would like to change that. They’re leading a group of scientists attempting to bring together multiple resources at the School of Medicine to attack the problem. Their new pilot projects represent an early step on the road to making the university a national center of excellence in TS research and treatment.

By Jim Dryden
Thinking through
Understanding the brain’s functional organization offers profound insights into the workings of our cognitive systems. If the brain is a party, who’s talking to whom? Scientists studying cognitive networks in the brain find useful analogies in studies of social networking. But just as party guests mix and mingle, the brain changes over time. As a person matures, brain networks reconfigure, becoming better-suited to life’s demands. Recent studies show Tourette Syndrome brains exhibit atypical networks. This may affect one’s ability to control the unwanted repetitive actions typical of the syndrome.

2 Coordinated dual networks within the human brain

Not one but two networks within the brain probably work in tandem to control mental and physical activity. One network seems to initiate and adjust control; the other network provides stability and maintains activity throughout the duration of a task. Both networks handle similar information, but for different purposes and using different mechanisms.

Dense local connections within these networks and weaker “long-range” connections between them mirror the Small-world Network model. Having dual systems offers potential work-arounds for impairments due to disease or trauma.
1. Making connections: Effective networking in action

What links will enable the blue, green and yellow groups to communicate most efficiently? Modeling different networks reveals the better options — and suggests ways that brain function may mirror social activity.

The Regular Network, left, links people in series. It may look comprehensive at first glance, but it isn't optimal. The Random Network, right, links more people across the circle, although its chaotic paths aren't much better.

By comparison, a Small-world Network, center, performs most efficiently. Here, group members are linked amongst themselves, and then the groups are interconnected with key cross-linkages (red dotted lines).

2. Developing brain networks

Brain networks develop with age: There are marked differences in the networks within an adult brain as compared to a child (top). Researchers plot and compare these complex relationships as seen here.

The brain of a teenager with Tourette Syndrome resembles the networking within a child's brain. Understanding why a brain fails to develop a well-coordinated dual network system may provide one key to developing effective treatments for Tourette Syndrome.
There’s more to Tourette Syndrome than [*#!!@%!&!]

The “Hollywood” picture of Tourette Syndrome (TS) often involves extreme cases of the disorder, such as coprolalia, a vocal tic that involves cursing or uttering ethnic slurs. In reality, that symptom occurs in less than 15 percent of patients. Much more common tics involve movements such as shoulder shrugging, blinking, grimacing or jerking of the head. Common vocal tics include throat clearing, sniffing and tongue clicking.

Hal Moran calls himself a “master of disguise.” The 51-year-old pharmaceutical executive tries to let his tics loose when others look away. His TS makes him jerk his head, so much so that he has developed degenerative disc disease in his neck. He also frequently tenses his abdominal muscles or exhales loudly. “I can control my tics for a limited amount of time, but when I’m spending my energy managing my Tourette Syndrome, I can’t manage other things as well as I need to,” Moran says.

He gets tired from trying not to tic, as does 15-year-old Jason Greenberg. His tics involve throat clearing and touching others. For Jason, trying not to tic is like trying not to sneeze. “You can hold it back, but only for a certain amount of time,” he says. “And when you’re holding it, it’s all you can think about.”

“Like having an itch.”

TS patient Mark Elliot stays active

“Like having an itch.”

Black says that up to 30 percent of children experience tics, but in TS patients like Elliot, those normally occurring tics persist. The reasons may be genetic or environmental, but tics that go away in most people become a regular, chronic event for a person with TS. To test his theory, Black is going into the community. A new grant from the Tourette Syndrome Association will help him identify kids with tics to figure out why those tics will develop and desist in some but remain in others.

“Almost all Tourette’s research in the past has involved looking at a person who has had tics for five years and comparing that individual to someone the same age who never has had a tic,” Black explains. This is true of his current NIH-funded study with co-investigator Tamara G. Hershey, PhD, associate professor of psychiatry, neurology and radiology, on how dopamine affects brain function in TS. “What we want to do now is find people whose tics have just started and then follow them.”

The differences identified between those whose tics stop and those whose tics continue could allow Black’s team to isolate some of the factors that contribute to TS. He is developing a video that features people who exhibit tics to show parents and teachers. “We should then be able to identify kids in the community at risk for TS who wouldn’t normally be in treatment,” he says.

Meanwhile, Schlaggar, the A. Ernest and Jane G. Stein Professor of Developmental Neurology, and associate professor of neuroscience, radiology, pediatrics, and of anatomy and neurobiology, is learning that the brain seems to function differently in people with TS, particularly when they should be relaxing. Schlaggar’s laboratory uses a technique called resting-state, functional connectivity MRI, a brain imaging method that allows investigators to use spontaneous activity in the resting brain to put together a picture of the basic architecture of networks within that complex organ.

“Networks in the brain involved in attention appear immature or irregular in TS patients,” says Schlaggar. “As we move forward, we’ll use functional brain imaging to look at these networks as patients perform attention-demanding tasks.”

Research like Black’s and Schlaggar’s may lead to better understanding of what causes TS, making it possible to treat its causes rather than its symptoms. Identifying symptoms earlier to begin treatments sooner also could make therapies more effective. “We need medications that address the root of these problems, rather than just the symptoms of the disease,” Schlaggar says. He’s currently treating TS patients with available medicines to see how they affect the immature and irregular networks that his functional brain imaging studies have identified. “One of our main hypotheses is that these medications to treat tics may be normalizing the brain networks that appear atypical or immature in TS patients,” he explains. “We want to test that idea.”

They want to test a lot of other ideas, too. So little is understood about TS that Schlaggar and Black say it’s important to travel down many roads. They hope their current pilot projects will represent the first steps on that journey.
Celebrating the Art of
HARRIET HOSMER 1830-1908

Embodied Dimensions

In anatomy, female students were rare.
Almost as uncommon as female sculptors.
Harriet Hosmer studied the former to become the latter, and reshaped her society's attitudes toward women.

BY CANDACE O'CONNOR

Above: Drawings made by Harriet Hosmer while a student at Missouri Medical College.
Right: Hosmer's sculpture of Senator Thomas Hart Benton, in Lafayette Park, St. Louis.
IT WAS SPRING 1851, and the day had come for the gala commencement ceremony at Missouri Medical College, a precursor institution to Washington University School of Medicine. When the school’s flamboyant founder and director, Joseph Nash McDowell, MD, rose to give his oration, he began in his customary fashion: “Gentlemen...” he intoned grandly.

At least one of the assembled students must have winced. Indeed, given her characteristic candor, it is surprising that she didn’t hiss. Harriet Goodhue Hosmer, a Massachusetts native, had just completed a rigorous five-month term at the college, where she had studied anatomy. Now she was graduating, along side many male classmates and a single female chemist, with bold plans to become a sculptor — one of the first women to enter this traditionally male field.

Over time, she succeeded brilliantly, surmounting obstacles to become the world’s foremost woman sculptor. Among her friends she counted several leading writers and artists: Robert and Elizabeth Barrett Browning, Nathaniel Hawthorne, actress Fanny Kemble. In Rome, where she established her studio, she headed a burgeoning group of neoclassical women sculptors, all working in marble, whom Henry James archly termed: “the white marmorean flock.”

Through the struggle and acclaim, she remained closely allied to St. Louis, which supplied her with a number of coveted commissions, including Oenone (now in the Washington University collection), Beatrice Cenci (at the Mercantile Library) and the magnificent bronze statue of Thomas Hart Benton (Lafayette Park). In 1860, she wrote to the Missouri board that awarded her the Benton assignment:

I have reason to be grateful to you for this distinction, because I am a young artist... But I have also reason to be grateful to you, because I am a woman, and knowing what barriers must in the outset oppose all womanly efforts, I am indebted to the chivalry of the West, which has first overleaped them.

Because 2008 marks the 100th anniversary of the death of Hosmer, her adopted city has staged a series of events to honor her memory. Washington University’s Kemper Art Museum mounted an exhibit displaying four of her sculptures: a small bronze sculpture depicting the clasped hands of the Brownings (1853), Daphne (1854), Oenone (1854–55) and a portrait bust (1866) of Hosmer’s patron, financier, father figure and much-adored hero: St. Louis dry goods magnate and university co-founder Wayman Crow.

Hosmer, known widely as “Hatty,” grew up in Watertown MA as the only child of a well-meaning but befuddled physician who had lost his wife and three other children. Uncertain how to handle Hatty, a tomboy and scapegrace, he sent her to a Lenox boarding school, where director Elizabeth Sedgwick was known for educating difficult children. Sedgwick succeeded in taming Hatty, without destroying her nature or her aspirations.
At school, Hosmer made a lifelong friend: Cornelia Crow, Wayman Crow’s oldest daughter. When Hosmer’s father failed to persuade the Boston Medical Society that a local medical school should enroll Hatty, a budding artist, as an anatomy student, Wayman Crow stepped in to help. In 1850, Hosmer began her studies at the Missouri Medical College, while living with the Crow family.

McDowell, the school’s head, was known to be eccentric. As Hosmer biographer Dolly Sherwood describes him: “... On national holidays like the Fourth of July, he called the students out for maneuvers with firearms, he giving the orders in a three-cornered hat, and wearing a cavalry saber at his side.” A Kentucky native, he became an ardent secessionist; ironically, his medical school, located at 8th and Gratiot, would serve as a Confederate prison during the Civil War.

Yet McDowell admired Hosmer, and spent time gently reviewing each day’s lesson with her. Hosmer, who later created a medallion in his honor, recalled that in accepting her he had “tossed back his iron gray hair as he said... ‘she might study here, and that if anybody attempted to interfere with her, he would have to walk over my dead body first.’”

Next Hosmer was off to Rome, where she won an apprenticeship with noted sculptor John Gibson. Commissions were scarce, but Wayman Crow came to the rescue with a commission for a statue of Oenone, rejected wife of the Trojan prince Paris, and a joint commission for a sculpture of the doomed Roman maiden Beatrice Cenci. Later, Crow served on the board that chose Hosmer to create the Benton statue. Behind every fresh assignment, Hosmer saw Crow’s generous hand. If she received an order “from the poles,” she said to him mischievously, “I should be persuaded that somehow or other you had a hand in it.” As she wrote in 1857, thanking him for the Cenci commission: “I rejoice sincerely, that it is destined for St. Louis — a city I love, not only because it is there I first began my studies, but, because among many generous and indulgent friends who dwell therein, I number you most generous and indulgent of all.”

In May 1868, Crow reported to her excitedly on a momentous occasion: the inauguration of the Benton statue, the first public monument in Missouri. At the ceremony, attended by some 40,000 people, Benton’s daughter Jessie Benton Fremont was moved to tears by the statue. “Hip! Hip! Hurrah!” wrote Crow. “…yesterday was a proud day for St. Louis, a proud day for you, and I need hardly say it was a proud day for me.” “Hip! Hip! Hurrah!!” replied Hosmer. “Indeed it is a long time since I have been so happy.”

Of course, Crow was not her only customer. Her playful versions of Puck sold to a duke, an earl and even the Prince of Wales, Queen Victoria’s oldest son. Another statue, The Sleeping Faun, made its way to Dublin and the front hallway of Sir Benjamin Guinness.

Toward the end of her life, Hosmer returned to the United States and gave up sculpture to develop a perpetual motion machine. By the time of her death, she was slipping into debt — and it was Cornelia Crow Carr who rescued her friend’s personal papers, which were later donated to the Radcliffe College library.

What a fertile imagination she had, marveled Cornelia. “The work dreamed of by her would easily have filled another lifetime.”

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Oenone
1854–55
Collection of the Mildred Lane Kemper Art Museum
Gift of Wayman Crow Sr., 1855

Daphne
1854
Collection of the Mildred Lane Kemper Art Museum
Gift of Wayman Crow Sr., 1850

How dare I.
With Father’s support.
Hours of play with his office skeleton,
Nothing macabre or impure
In such fine engineering.
No pretty cameo ornaments
Do I wish to carve, but the whole
Human form, complete with its stories... ...How dare I in defiance of Harvard Medical School and The Boston Medical Society with their concerted Nays!
For men owned knowledge like bodies: slaves, wives, the ill.
I dare

With Dr. Joseph McDowell, surgeon, director of Missouri Medical College. When he admits me to anatomy class I go west
to gaze on bodies Harvard only shows men.
I sit on the hard bench in the amphitheater
Five months and not one other student
Causes me grief. If he did
Dr. McDowell would disembowel him.

— From Walking Stone, Inventions on the Life of Harriet Hosmer, by Carole Simmons Oles
View from Afar

In a country facing a health crisis, children often must fend for themselves. Two students went to teach; while there, they found beauty amidst the everyday.

We stood in front of 50 Tanzanian students, eagerly hanging on our every word. Of course, part of our appeal was novelty — the school did not frequently see foreigners (particularly not two women training to be doctors). The other, arguably larger, appeal was that we were leading an uncensored conversation about sex and HIV. They were rapt with attention. In Tanzanian villages, sex is infrequently discussed, particularly in formal settings. We managed much of our lesson bilingually in English and Swahili. "HIV can live in four body fluids. Can you name those fluids?" we asked our students. They promptly replied: "damu (blood), shahawa (semen), majimai ukeni (vaginal secretions), maziwa ya mama (breast milk)."
As fourth-year medical students at Washington University, we had the opportunity to apply for a grant from the Forum on International Health and Tropical Medicine (FIHTM) to participate in international health care and education. From February to March, 2008, we traveled in Tanzania. The largest country in East Africa, Tanzania, is one of the poorest countries in the world, with an estimated 36 percent of the country living below the poverty line in 2002. Of the adult population, 8.8 percent (1.4 million people) are infected with HIV, making Tanzania the country with the fifth-highest number of people living with HIV. The death rate due to AIDS ranks fifth globally at 160,000 per year. The country is home to more than 1.1 million orphans due to AIDS.

Straining under such a devastating burden of HIV, Tanzania is clamoring for targeted HIV interventions to arrest the burgeoning epidemic.

During our six-week stay in Tanzania, we focused on delivering information about HIV prevention and treatment to a population at rapidly increasing risk of HIV: teenagers. We secured permission to teach in multiple secondary schools in the Kilimanjaro region. In the classroom, we demonstrated the appropriate use of condoms and led Q&A sessions about HIV, reproductive health, gender issues and sexuality. We worked with more than 700 teens — both female and male — and also had the opportunity to talk with medical professionals about the HIV epidemic and barriers to targeted prevention methods. Based on the information we obtained in these interviews, we are currently writing articles for publication in medical journals.

Additionally, we compiled more than 3,000 photographs of Tanzanians, focusing on capturing the quintessential moments of village life. Many of our images depict children caring for even younger children, school kids running the family vegetable stand, and even toddlers helping to prepare a meal. Our favorite images were compiled in the photo documentary "Old Enough to Stand: Reflections on Growing Up in Tanzania," which was exhibited in the Farrell Learning and Teaching Center Atrium at the School of Medicine earlier this year.

Finally, since we both intend to be involved in global health care throughout our medical careers, we studied the process of political, ethical and administrative approval necessary to conduct international research. In doing so, we gained valuable insights that will inform any future research projects we conduct abroad.

One physician whom we met during this trip is designing a project to make antiretroviral therapies more widely available to the average Tanzanian, particularly those who live in rural areas. We intend to stay connected to this project during residency and beyond.

We feel very lucky to have attended a medical school that values firsthand student exposure to international health issues. We are indebted to the FIHTM for funding our trip, and to all the generous, hospitable Tanzanians who made it a memorable, life-changing experience.

Dana L. Sacco, MD, and Michelle H. Moniz, MD, graduated from Washington University School of Medicine in May 2008. Sacco is an emergency medicine resident at Columbia/Cornell in New York; Moniz is training in obstetrics and gynecology at Magee-Womens Hospital of the University of Pittsburgh Medical Center.
Hope is essential
The Brooks family takes it as their mission to make a difference

When David Christopher Brooks was 4 months old, his mother noticed that he wasn't moving his arms and legs and kept his hands balled up into fists.

His pediatrician was concerned about his muscle tone and ordered a number of tests, which were inconclusive. But the more his mother, Lisa Brooks, read about cerebral palsy (CP), the more she was convinced that David had the condition. He was finally diagnosed with CP at age 1.

Today, David is an outgoing 5-year-old who plays outfield in Miracle League Baseball, an organization that allows disabled children to participate in America's favorite pastime. When he's not motoring around in his power wheelchair or riding his customized bike, David delves into his fascination with trains.

But David has many challenges. He isn't able to sit up on his own or speak audibly. He has spasticity — tight muscles that limit movement — and severe dystonia, which causes his body to posture in abnormal positions. Additionally, he suffers from seizures. Some children with CP have cognitive deficits, but Lisa says David was spelling his name before he was 2 years old. He uses a communication device to pick out letters, words and phrases.

"There's so much that can't be treated in David," says his mother. "He's very spastic — with crossed legs and upside-down arms. He gets occupational, physical and speech therapies and takes six medications, but his CP is very difficult to manage."

After Lisa and her husband, Chris, heard Janice E. Brunstrom, MD, speak at a national conference on CP, Lisa knew they had to meet Brunstrom, associate professor of pediatrics, neurology and cell biology and physiology, and director of the Pediatric Neurology Cerebral Palsy Center at St. Louis Children's Hospital and the School of Medicine.

"I could see her passion for the children she was taking care of," Lisa says. "It was so strong."
"We wanted to feel like we could make a difference and that David can contribute to the world in a larger way."
Lisa Brooks

CP, the most common physical disability of childhood in the United States, currently affects one in 278 children. A study published this year by the Centers for Disease Control and Prevention determined that the rates of CP are rising and appear to have doubled since the 1970s.

When the Brooks met with Brunstrom, who now treats David, they asked her about contributing to pilot research projects to benefit patients with CP. With a $50,000 donation, Lisa and Chris and Lisa's extended family established the David Christopher Brooks Cerebral Palsy Research Fund at Washington University in 2006.

"There wasn't an organization researching what we were interested in," Lisa says. "Also, when you give to a really big organization, you don't know where your money is going. Being able to have a bit of control or input into projects is amazing."

Brunstrom says the Brooks Cerebral Palsy Research Fund is a wonderful example of the impact one family can make. "People like the Brooks family inspire me and other researchers to continue to do our best every day to improve the lives of children with cerebral palsy."

One project funded by the Brooks' efforts is led by Bradley L. Schlaggar, MD, PhD, the A. Ernest and Jane G. Stein Professor of Developmental Neurology. He is studying cognitive function in children with CP, including using functional MRI to look at the spontaneous activity of the resting brain in those children who cannot perform tasks in the scanner. Steven E. Petersen, PhD, the James S. McDonnell Professor of Cognitive Neuroscience, also is involved in the research to understand the organization of brain networks.

"This is a very important study," Schlaggar says. "The intellectual abilities of these children are often woefully underestimated because their motor problems make it hard for them to communicate. We want to figure out ways to gain access to that intellect."

David's parents continue to raise money for the research fund through triathlons. In 2007, David's former caregiver, Jocelyn Watkins, and Lisa raised $125,000 by participating in a local triathlon in Columbus OH, where the Brooks family lives. This year, Lisa and Chris and two of their neighbors entered another area triathlon. They're still tallying the donations.

Lisa and Chris, who had never participated in triathlons before, say the training has been a healthy diversion. "We started this fund in David's name and continue to raise money for it because we felt pretty helpless," she says. "We wanted to feel like we could make a difference and that David can contribute to the world in a larger way."

Having hope, Lisa says, is essential when you have a child with CP.

"My dream is to find a better treatment or cure for CP," she says. "I want David to be more comfortable and be able to talk more, and I hope this research can also benefit the many others who struggle with this debilitating condition."

outlook.wustl.edu
One good Tern...

"There are no women in this program," surgical pioneer was told

ON MAY 15, 2008, JESSIE L. TERNBERG, MD, PhD, nationally renowned professor emerita of pediatric surgery, received an honorary Doctor of Science degree from Washington University. It was a great thrill, she says, "beyond my belief." But that was not all that had happened for her that week.

Monday afternoon, Timothy J. Eberlein, MD, chairman of the Department of Surgery, invited Ternberg to his home for a "small celebration." She grabbed a couple of bottles of wine for her host and hostess and headed over. But when she arrived, she discovered a large crowd, gathered to announce yet another honor: a new endowed professorship in pediatric surgery. Named for Ternberg, the professorship had been established by friends and colleagues. "The whole thing had been kept quiet; I didn't have a clue," she says, happily.

Commencement Day held still another pleasure. "At Commencement, I was pleased to see how many of the women graduates were receiving degrees in engineering, medicine and other disciplines previously considered male-dominated fields." She mused, however, that it would be naive to think they will not encounter gender problems, for Ternberg knows very well what it meant to be a pioneer.

Yet, bare facts don't begin to describe the barriers she had to surmount, especially during her surgical residency. When she returned to St. Louis from an internship at Boston City Hospital, no one had known a woman was coming. "Dr. Carl Moyer, head of surgery, had accepted me and knew who I was, but he made the mistake of telling someone in the department he was taking me, and that guy erupted like Vesuvius! So it soon became obvious he never told anyone else."

Her first name also confounded hospital staff. "Jessie" was her grandmother's name, but it was perilously close to the male form of "Jesse." As she was checking in, one man told her: "You have made a terrible mistake; there are no women in this program." She replied: "Would you see whether there is a Jessie Ternberg on your list?" He looked at it, and then at me, and his eyes rolled. "That's you?" he asked. "That's me," I said.

At last they found a place for her to live — in the nurses' residence hall. There, nursing students were checked in and out, but one night each week when the woman in charge of such checking had the night off, no one was allowed to enter after hours. On those evenings, if on call, Ternberg frequently was "locked out" and then wandered the Barnes Hospital halls looking for a couch or a chair, in a place with a nearby phone, to catch a little sleep. She did not even have a locker in the operating room suite area, because the head operating room nurse didn't approve of women in surgery.

As time went by, Ternberg gained respect as a general surgeon and found herself gravitating toward a specialty in children's surgical procedures. New surgery chairman Walter F. Ballinger, MD, allowed her priority use of a small operating room twice a week. Soon she had a dedicated house staff and a child-centered recovery room, with rocking chairs and blanket warmers. Working with children was a joy, says Ternberg, who still has a bulletin board filled with photos of her young patients. "Of course, it can be sad, and you just tear your heart out at times because of that. On the other hand, if you are successful, it's fantastic."

Ternberg climbed the academic faculty ladder from instructor in 1959 to professor of surgery and chief of pediatric surgery in 1972, achieving eminence in her field. Although she initially considered becoming a hematologist, she found the right career. "It has been very satisfying for me," says Ternberg, who is hard at work on a memoir relating to her experiences, "to be able to do what I wanted and enjoy what I was doing. I was happy going to work every day."
AT HOME IN "A MAN'S WORLD"

Jessie L. Ternberg, MD, PhD, right, taught hundreds of surgical trainees, urging them to have "the eye of an eagle, the heart of a lion, and the hand of a lady." At St. Louis Children's Hospital, she herself performed more than 500 operations a year. Along the way, she continued to conduct research, studying the levels of free radicals in normal and cancerous tissues, and she developed surgical techniques to aid patients with short bowel problems and childhood cancer issues.
This alum goes the distance

Even though Jennifer Wray Cole, MD 84, had always liked science, no one in her Baton Rouge high school ever suggested she should go to medical school. "We didn't even have career counseling," she says. But while working in a lab at Louisiana State University, some of her mentors encouraged her to pursue medicine.

Cole followed her husband-to-be to St. Louis, where he had grown up, and finished her biology degree at Washington University. After graduation, she applied and was accepted at the School of Medicine.

"And I have loved every minute of it," says Cole, now associate professor of anesthesiology and director of pediatric sedation services at St. Louis Children's Hospital.

Cole decided to specialize in anesthesia during her fourth year of medical school, soon after having her second child. She completed a residency in anesthesiology at Barnes-Jewish Hospital in 1988 and a fellowship in pediatric anesthesia at Washington University in 1993.

"I realized I liked taking care of the patient from start to finish," she says. "You put them to sleep and wake them up, and it's satisfying to know that they're getting the procedure that they need."

Cole now serves as president of the WUMC Alumni Association, viewing her efforts as a way of connecting with current medical students.

"I'm excited to be part of this active medical community," she says. "Our medical students have fabulous talents, and I look forward to learning more about their extracurricular activities and community service projects."

Cole also will be involved in the planning of the alumni awards ceremony at her 25th medical school reunion in 2009.

She says medical students today face many of the same challenges she and her classmates faced. Each generation struggles with finding a balance between work and time off while starting relationships and families.

Cole and her husband, a local attorney, have four children who are almost grown. In her spare time, Cole participates in triathlons, which she often trains for with her children. They bike and hike on trails throughout the St. Louis metropolitan area.

One year ago, Cole completed an Ironman triathlon in Louisville KY.

"It's an accomplishment I'm very proud of," she says. "It took so much planning and hard work that completing the event was one of the highlights of my life."

Cole also feels fulfilled by her choice of career.

"There are many satisfying moments in pediatric anesthesia," she says. "It's rewarding to allay parents' fears prior to their children's surgeries, and it's the greatest thing when the children wake up from their procedures comfortable."
Scholarships, student groups are focus

Robert A. Swarm, MD 84, HS 89, associate professor of anesthesiology and president of the Washington University Medical Center Alumni Association’s Executive Council for 2007-08, elaborated on the council’s funding decisions during the School of Medicine alumni reunion this past May.

Thirteen student groups and community service projects benefited from WUMC Alumni Association funding during the past academic year, including:

WUMC Alumni Association Fund Allocation 2007-08
Total: $334,060

- Forum for International Health and Tropical Medicine
- Smoking Cessation
- Student National Medical Association
- The Young Scientist Program
- Arts Commission
- Thespians (School Musical)
- Geriatric Outreach Program
- American Medical Association
- American Medical Women’s Association
- Missouri Medical and Osteopathic Networking Event
- Philosophers in Medical Ethics Selective
- Public Health Interest Group
- Saturday Neighborhood Health Center

The Alumni Association also designated $160,000 for four new Distinguished Alumni Scholarships. The scholarships are given to four first-year medical students and, when combined with School of Medicine funds, provide full tuition for four years. This year’s alumni honorees are:

Ellen F. Binder, MD 81
Associate Professor of Occupational Therapy
Keith H. Bridwell, MD 77
Asa C. and Dorothy W. Jones Distinguished Professor of Orthopaedic Surgery
Emily L. Smith, MD 68
Assistant Professor of Surgery
Alison J. Whelan, MD 86
Professor of Medicine and Pediatrics
Associate Dean for Medical Student Education

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Common purpose, common goal
Several groups made an outstanding difference to last year’s Annual Fund

The School of Medicine’s Annual Fund is a labor of loyalty by the school’s alumni, faculty, friends and students. Its impact is not measured by any single gift, but by the final result: When this past year’s effort ended on June 30, nearly $2.5 million in gifts had been made by 5,133 donors. Among these:

- About one-third of MD alumni, ranking the medical school alumni association among the nation’s most loyal.
- Hundreds of former residents from a wide cross-section of the School of Medicine’s departments and divisions.
- Alumni of the Health Professions Programs such as Occupational Therapy, whose alumni set a new record for generosity to their program.
- Nearly 1,400 non-alumni faculty, grateful patients, family and friends who believe in both the School of Medicine’s mission and in its ability to carry it out.

The Annual Fund reaches every part of the medical school community: the students, through the scholarship support it provides; the faculty and residents, through support for their departments and divisions; and ultimately, the patients, present and future, who benefit from the care and research done at the School of Medicine and by its alumni worldwide. This decades-long synergy between the School and its supporters bears witness to both the impact of that support and the school’s ongoing ability to respond with results.

Even as last year’s Annual Fund is being put to work at the School of Medicine, the 2008–09 Annual Fund effort is well under way. Alumni and friends are already responding with their support to letters, phone calls from Washington University undergraduates, and appeals from reunion committees. Since the fiscal year began on July 1, the enthusiasm and generosity of more than 1,500 people have put the annual fund on a record pace.

Making an impact on the Annual Fund
Dedicated efforts set memorable milestones for advancement in 2007–08

The William Greenleaf Eliot Society has a record year
Those who support the Annual Fund with gifts of $1,000 or more are recognized as members of the William Greenleaf Eliot Society. In 2007–08, the School of Medicine’s Eliot Society numbered a record-setting 837 members. An impressive 197 of these were new members, suggesting that the efforts of the membership committee, and of committee chair Patricia A. Penkoske, MD ’74, instructor in anesthesiology, had an important effect. The goal for 2008–09 is an ambitious 900 members.

MD Reunion 2008 celebrates continue tradition of giving
MD alumni marking reunions from the 10th to the 65th made Annual Fund support an important part of their celebration. Nearly half (46 percent) of all reunion-year MD alumni participated in their class giving efforts, making $212,633 in Annual Fund gifts. Some alumni marked the occasion with special gift commitments or estate planning, bringing the total of all gifts and commitments by the reunion classes above $750,000.

Setting the bar for reunion-year giving was an enthusiastic 77 percent of the Class of 1958, encouraged by class gift chairs Drs. Donald and Mary Harkness. The 25th, 40th and 55th reunion classes also participated at well above the 50 percent mark. The Class of 1983, under gift chair David Pfeffer, MD ’83, became the 15th consecutive class to establish an endowed scholarship as a 25th Reunion gift, making nearly $100,000 in gifts and pledges to the fund.

Newest alumni join the effort with meaningful support
Even before officially becoming alumni, both the MD and Physical Therapy Classes of 2008 were committed to becoming a part of the Annual Fund.

One-third of the MD Class of 2008 participated in their class gift, which will support the Farrell Learning and Teaching Center. The Program in Physical Therapy Class of 2008 made a particularly strong statement when 59 percent of its members supported the PT Young Alumni Gift, which provides scholarship funds for a third-year PT student annually.
classnotes

1940s

William J. Miller, MD 43
Miller is retired from pediatrics and enjoys a quieter lifestyle with minimal travel. He resides in Medford OR with his wife, Carol. He enjoys playing golf and billiards.

Saul D. Silvermintz, MD 43
Silvermintz is retired but continues to work as a medical volunteer in St. Charles MO. He enjoys spending time with his grandchildren and exercising.

Robert Burstein, MD 48
Burstein has retired, but remembers fondly his years as head of the Department of Obstetrics and Gynecology at Jewish Hospital in St. Louis. He is a member of the Society of Professors Emeriti. He enjoys attending Eliot Society activities and traveling with his children and grandchildren.

Elfred H. Lampe, MD 48
Lampe resides in Fort Wayne IN with his wife, Mary. He has retired from medicine and enjoys spending time with his grandchildren, gardening, reading and golf.

1950s

Richard V. Bradley, MD 52
Bradley received the Peter Sweetland Award of Excellence from the Physician Insurers Association of America in honor of his dedication and commitment to the medical professional liability insurance industry. He is a consultant for Galen Insurance Management Co. in St. Louis MO.

Wilford C. Doss Jr., MD 53
Doss worked as a physician until he was 86 years old. He is now retired and lives in Florence AL. He enjoys spending time with his family and working in his vegetable garden.

Mary Parker, MD 53
Parker is retired from medicine and resides in Webster Groves MO. In her spare time, she plays golf, volunteers and reads. She also enjoys working with wood in her basement.

Paul H. Rother, MD 53
Rother resides in St. Charles MO and is retired from medicine. He spends a large amount of time at his vacation home on Kentucky Lake. He has 12 grandchildren and enjoys gardening, boating and travel.

Albert P. Scheiner, MD 53
Scheiner is a Pediatric Professor Emeritus. He lives with his wife, Barbara, in Providence RI. His hobbies include watercolor painting, sailing and fishing. He spends two days per week practicing developmental pediatrics.

Thomas C. Apostle, MD 58
Apostle is retired from medicine. He and his wife, Edwina, have moved into Westminster Canterbury, a retirement community in Winchester VA. In his spare time, Apostle likes to garden and spend time with his six grandchildren.

Matthew K. Becker, MD 58
Becker is retired from practice, but volunteers his time running the Clay County Health Department Outpatient Surgical Clinic in Jacksonville FL. He enjoys the company of his children and grandchildren, and also spending time caring for his horses.

Edwin K. Burford Jr., MD 58
Burford is retired and resides in Cape Girardeau MO with his wife of 50 years, Sue. He has just written a book on skiing titled Skiing Made Simple which is available online. In addition to writing, he enjoys walking, playing the piano, bridge and crossword puzzles.

1960s

Bill (John W.) Conklin, MD 63
Conklin is retired and has moved to Las Vegas NV with his wife, Joan, to be near his daughter and her family. He enjoys cooking, playing poker, spending time with his grandchildren, and working crossword puzzles.

Glenn D. Pittman, MD 63
Pittman is retired from medicine. He is presently a consultant to Social Security and Disability Determination Services. In his spare time, he tends to his garden and his grandchildren. He resides in Springfield IL with his wife, Jeanne.

Taylor Prewitt, MD 63
Prewitt is retired and was recently elected Master of the American College of Physicians. He enjoys photography and participating in the Rotary Club. He resides in Fort Smith AR with his wife, Mary.

Richard Sweet, MD 63
Sweet is a partner of the Neurology Group of Westchester and an attending in neurology at White Plains Hospital Center.

Mark your calendars now for the celebration!

Reunion

Plan to meet your classmates in St. Louis
May 7–9, 2009

Find information on the web: medicalalumni.wustl.edu
Registration materials will be mailed in February 2009.
He recently helped start a New York state-certified stroke service at White Plains Hospital. He enjoys spending time on the beach and also studying history. He lives in Scarsdale NY with his wife, Sheila.

Lawrence E. Holder, MD 68
Holder is a clinical professor of radiology at the University of Florida. He has stopped working full time and enjoys his hobbies of fly fishing, photography and golf. He resides in Point Vedra Beach FL.

1970s

Ace Lipson, MD 73
Lipson is in private practice and is also a clinical professor of medicine at George Washington University. He has been president of George Washington University Medical Center’s Attending Physician’s Association, and has served on the Medical Center Faculty Senate and chaired one of its committees, Best Doctors-Washingtonian magazine. He enjoys reading, traveling and basketball. He resides in Bethesda MD with his wife, Linda.

Barbara C. Mandell, MD 73
Mandell is in private practice in Hewlett NY. She is an associate clinical attending at Albert Einstein School of Medicine. Mandell enjoys tennis, skiing, yoga, travel and gardening.

Nicholas B. Couper, MD 78
Couper is an attending anesthesiologist at Boone Hospital Center in Columbia MO. He enjoys spending time biking, traveling and gardening.

Laura J. David, MD 78
David is currently an assistant clinical professor at Case Western Reserve University School of Medicine. She also has a private practice in general obstetrics and gynecology, and continues to work on tort reform, health care accessibility and government relations for the Ohio Section of ACOB. She enjoys gardening and Cleveland Indians baseball.

Chuck Ettelson, MD 78
Ettelson is chief of plastic surgery at St. Luke’s Hospital in Chesterfield MO. He enjoys playing bridge, skiing and fly fishing. He resides in St. Louis MO with his wife of 30 years, Jane.

Marcy Gibb Hipskind, MD 78
Hipskind is president of the Family Care Network in the state of Washington. She was named a "Physician of Excellence" in 2008 by St. Joseph Hospital. She enjoys boating, hiking, biking and skiing. She resides in Bellingham WA.

1980s

Megan Taylor, MD 83
Taylor is co-owner of the Allergy and Asthma Care Clinic in Bala Cynwyd PA. She recently completed initial training at Pennsylvania Hospital and a fellowship in allergy and immunology at the University of Pennsylvania. She is on staff at Holy Redeemer Hospital and an associate staff member at the University of Pennsylvania. She enjoys making Sapphirecut music, yoga, hiking and walking her dog.

Art Castelbaum, MD 88
Castelbaum is a partner of the Northern Fertility and Reproductive Associates and also co-director of the Division of Reproductive Endocrinology and Infertility at Temple University School of Medicine in Philadelphia. He resides in Rosemont PA with his wife, Debra, and their three girls.

Rosalie Hagge, MD 88
Hagge is an associate clinical professor in the Department of Radiology at the University of California-Davis Medical Center. She is the vice-chair for the Oncology/Hematology Scientific Program Committee and also enjoys attending the Society of Nuclear Medicine annual meetings. She resides in El Dorado Hills CA with her husband, John Zimmerman, PhD, formerly of Washington University School of Engineering.

1990s

Howard Epstein, MD 91
Epstein recently joined Blue Cross and Blue Shield of Minnesota as medical director for commercial operations and clinical design. He is responsible for supporting case review and clinician consultation for integrated health management. He also provides consultation for the clinical design area, serves as a liaison to Blue Cross accounts, and provides leadership to advance Blue Cross’ Whole Person Health Support strategy.

Robert MacDonald, MD 93
MacDonald is chief of staff at Barnes-Jewish St. Peters Hospital. He is on the Board of Directors for the Boys and Girls Clubs of St. Charles County and lives in Weldon Springs MO with his wife, Karen, and their four children.

Jonathan Pellet, MD 93
Pellet is a medical staff surgeon at Shriners Hospital for Children in Honolulu HI. He enjoys spending time with his three sons windsurfing and building paddleboards. Pellet and his wife, Pon, live in Honolulu.

Heidi Joist, MD 98
In addition to being in private practice, Joist is the medical director of Frontenac Home Dialysis and Premier Dialysis Christian Care Center in St. Louis MO. She enjoys spending time playing tennis and going on family hikes with her two young sons. Joist lives in Clayton MO with her husband, James Simeri.

2000s

Michelle Burack, MD 02
Burack just completed a one-year fellowship in movement disorders. Her husband, Richard, is the head of hematology at the University of Rochester. Burack will continue to do research as a fellow. She lives with her family in Rochester NY.

Jack Carlisle, MD 04
Carlisle is currently interviewing for a fellowship in sports medicine. He lives in St. Louis MO with his wife, Jennifer, and their two children.

Karen Zink, MD 04
Zink is doing a year of research between her third and fourth years of general surgery. She enjoys spending time kayaking, windsurfing and bicycling. She was married in April 2008 and lives in Portland OR.
In Memory

William E. Lawrence, MD 44
Lawrence died on Sept. 21, 2007, at age 90. He served in the U.S. Army as a medical officer during the occupation of Japan. In 1951, he completed his residency at the Jefferson-Hillman Hospital in Birmingham AL. As a resident, he diagnosed the first reported case of psittacosis in the state of Alabama. He went on to practice internal medicine in Birmingham and was a member of the staff of St. Vincent's Hospital.

Charles R. Burnside, MD 51
Burnside died at his home on April 11, 2008, at age 80. He had a family practice in the Argonne Building in Kirkwood MO. He was a much-loved and well-known member of the Kirkwood community, where he resided for 55 years.

Robert S. Goell, MD 60
Goell died on May 8, 2008 in Wilmington NC. He practiced medicine in St. Louis MO for 30 years prior to his retirement in 1989. He embraced life to its fullest and was known among friends and family for his humor and humility.

Edward F. Berg, MD 64
Berg died on May 30, 2008. He served as director of ophthalmology at Jewish Hospital and was an assistant clinical professor of medicine at Washington University School of Medicine. He served as a captain in the U.S. Air Force and was Air Force Chief of Ophthalmology for the Pacific region. He was a special consultant in ophthalmology until pancreatic cancer forced his retirement. He also worked with the Department of Admissions at Washington University School of Medicine. He felt privileged to explore remote areas of the world and perform surgery in Nigeria, Bolivia, Mexico and Guatemala as a volunteer.

David Z. Kitay, HS 64
Kitay died on Feb. 19, 2008. After earning his MD degree at New York University School of Medicine, he completed an internship in internal medicine at Barnes Hospital in St. Louis MO and residency training in obstetrics and gynecology at Case Western Reserve University. He was an associate professor in the Department of Obstetrics and Gynecology at the University of South Alabama College of Medicine and a staff obstetrician-gynecologist at the University of South Alabama Medical Center in Mobile AL. He also directed the Obsetrics Hematology Clinic. Kitay served as a private consultant for the Office of Disability Determination in Orlando FL until his retirement in 2006.

Ronald K. Grady, MD 66
Grady, a longtime internist-cardiologist associated with St. Luke's Hospital in Chesterfield MO, died on June 13, 2008, of complications from Alzheimer's disease. He had been a resident of Webster Groves MO for many years. After earning a degree in civil engineering and an MBA, he worked for Standard Oil for five years. He then received his medical degree and completed residencies in internal medicine and cardiology. He was a fellow of the American College of Cardiology. During the Vietnam War, he served in the U.S. Navy. After his tour of duty, he returned to St. Louis, where he practiced medicine for more than 30 years.

Margaret Elizabeth (Borth) Houts, PT 48
Houts died on May 28, 2008. A graduate of William Jewell College in Liberty MO, she completed her training in physical therapy after receiving a scholarship to attend Washington University. She worked as a physical therapist for more than 35 years.

Edward L. Kuff, HS 48, PhD 52
Kuff, a researcher for more than four decades at the National Cancer Institute, died on April 2, 2008, of respiratory failure at Suburban Hospital in Washington DC. Kuff, who became deputy chief of the Institute's biochemistry laboratory in 1981, focused his early research on structures within cancer cells. His expertise with such innovative techniques as electron microscopy attracted other investigators and led to productive collaborations that expanded his research into immunology and enzymology. He received his undergraduate and medical degrees from Johns Hopkins University and completed his residency at Washington University, where he received a doctorate in 1952. Later that year, he joined the research staff at the National Cancer Institute as a commissioned officer in the U.S. Public Health Service. He retired in 1992.

Jason D. Morrow, MD 83
Morrow died suddenly on July 8, 2008. He was chief of clinical pharmacology at Vanderbilt University School of Medicine. He received his undergraduate degree at Vanderbilt, but returned to his hometown and Washington University School of Medicine to earn his medical degree. He returned to Vanderbilt to do a fellowship in clinical pharmacology, then joined the faculty there in 1994.

Faculty

Richard D. Todd, PhD, MD
Todd, the Blanche F. Ittleson Professor of Psychiatry and director of the Division of Child and Adolescent Psychiatry at the School of Medicine, died of leukemia on Aug. 22, 2008. He was 56. He was an internationally known expert on the influences of genetics and environment on psychiatric illness in children, addressing such disorders as attention deficit hyperactivity disorder, autism spectrum disorder and affective disorders in childhood. He did his undergraduate training at Vanderbilt University, earned a doctorate in biology at the University of Texas at Dallas and then a medical degree at the University of Texas at San Antonio. He completed his residency in psychiatry at Stanford University Medical School and a child psychiatry fellowship at Washington University School of Medicine and St. Louis Children's Hospital in 1986. He is survived by his wife of 28 years, Karen L. O'Malley, PhD, professor of anatomy and neurobiology; his son, Lucas F. Todd; his daughter, Anne M. O'Malley; his parents; and a brother and sister. Memorial contributions may be directed to the Division of Child and Adolescent Psychiatry, Washington University School of Medicine, 7425 Forsyth Ave., Campus Box 1247, St. Louis MO 63105-2161, or the CHADS (Communities Healing Adolescent Depression & Suicide) Coalition, P.O. Box 510528, St. Louis, MO 63151.
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Annual Scholarship sponsors Jack Pierce, MD, emeritus professor of medicine, and his wife, Susan, meet scholarship awardee Ian Donward, MD, who graduated with the Class of 2005 and is now a neurosurgery resident at WUSM.
A study in form
Renowned sculptor Harriet Hosmer knew anatomy was more than skin deep. Disallowed from viewing live models in art school, she instead enrolled at Missouri Medical College, the precursor to Washington University School of Medicine. Hosmer was one of the School's first female anatomy students, and her studies—as seen in this meticulous drawing from 1850—laid the foundation for her noted career. For more on this story, see page 21.
Beware of road bears  Although wild bears are rare and elusive within the state of Missouri, a domestic and highly spirited bipedal strain are common on both the Danforth Campus and at Washington University Medical Center. The Bear Bikers, a team of bicycling enthusiasts, raised more than $14,000 for multiple sclerosis by securing pledges and riding in the Express Scripts MS 150 Bike Tour through mid-Missouri in September. The team is made up of faculty, staff and students who ride for fun and the health benefits but also to support worthy causes. The funds raised will support research, therapeutic programs and other services for individuals living with MS. Representatives of the team are pictured below.