Now we're gelling  The fluorescent signals from DNA sequencing fragments are processed following DNA fragment separation using a computer algorithm that determines the precise order of DNA bases for each sample. School of Medicine researchers used the process to sequence the SARS virus earlier this year. For more on this story, please turn to page 3.
Create your own
LEGACY
See page 36

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Washington University in St. Louis
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Washington University in St. Louis
SCHOOL OF MEDICINE
Outlook
Washington University School of Medicine
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COVER  Janet D. Luhmann, MD, assistant professor of pediatrics, with 6-year-old Mallory VanDern. Washington University physicians at St. Louis Children's Hospital use creative and technologically advanced methods to ensure that children like Mallory are treated with a minimum of pain and anxiety. For more on this story, please turn to page 20. PHOTO BY TIM PARKER

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Leaving a lasting impression  William H. Danforth, MD, and Mark S. Wrighton, PhD, former and current Washington University in St. Louis chancellors, unveil a portrait of retiring School of Medicine dean and executive vice chancellor for medical affairs William A. Peck, MD, at a gala celebration in April. Nearly 700 friends, family and colleagues attended the event held at the Ritz-Carlton Hotel in Clayton.

Human Genome Project is complete

Members of the International Human Genome Consortium, of which School of Medicine researchers are a part, have announced the successful completion of the Human Genome Project.

Researchers believe completion of the project will launch a new age of discovery that will transform human health. Knowing the order of the genetic building blocks—commonly abbreviated A, T, C and G (adenine, thymine, cytosine and guanine)—should allow scientists to learn more about human development and disorders such as heart disease, psychiatric illness and cancer.

The project, completed 50 years after James Watson and Francis Crick discovered the structure of DNA, succeeded in sequencing all of the DNA in human chromosomes. The sequence of more than 3 billion genetic “letters” carries the instructions for making and operating the human body; errors or variations in the genome contribute to most types of disease.

Many believe that in the future patients will receive prescribed medical treatment based on their genes. In addition, researchers hope that genome-based research will enable medical science to develop highly effective diagnostic tools and a better understanding of how a person’s individual genetic makeup influences health or susceptibility to disease.

Cooper to lead thoracic surgeons

An internationally recognized pioneer in lung surgery, Joel D. Cooper, MD, Evarts A. Graham Professor of Surgery and chief of the division of cardiothoracic surgery, recently was elected the 85th president of the American Association for Thoracic Surgery.

Cooper, who led the team that conducted the first successful human lung transplant in 1983 and pioneered efforts to develop both lung transplant surgery and lung volume reduction surgery, is the fourth School of Medicine faculty member to be elected president of the association. Others who held the position are Evarts Graham (1927), Tom Burford (1970) and Tom Ferguson (1981).

As president, Cooper plans to address the atmosphere of discouragement that he says currently pervades much of surgical practice. In particular, he wants to highlight the need to attract new physicians into surgery and cardiothoracic specialties. He also would like to work with the National Institutes of Health and Medicare to improve the current process by which medical and surgical procedures are approved and covered by insurance.

“It’s a very difficult time for this specialty right now,” he explains. “Surgery is an extremely demanding field, and people are less willing to make the sacrifices required during training and, ultimately, surgical practice, particularly since there is increased interference from third-party payers and both financial remuneration and the esteem of the public continue to decline. As president, I want to acknowledge these problems, but focus on the incredible opportunities we have today and how really exciting and rewarding it is to be a surgeon.”

Cooper joined the School of Medicine faculty in 1988. His research has led to significant advances in the surgical treatment of lung disease, such as lung volume reduction surgery, which allows surgeons to remove sections of lung damaged by emphysema. He also is investigating the use of airway stents to treat emphysema.

The American Association for Thoracic Surgery is the nation’s oldest and foremost cardiothoracic surgery professional organization with more than 1,000 members representing the leadership of academic and clinical thoracic surgery practice worldwide.
Petersen named James S. McDonnell Professor in Cognitive Neuroscience

A PIONEERING BRAIN IMAGING RESEARCHER, Steven E. Petersen, PhD, has been named the School of Medicine's first James S. McDonnell Professor in Cognitive Neuroscience.

Petersen, who directs the division of neuropsychology in the Department of Neurology, is professor of anatomy and neurobiology and of radiology, and associate professor of neurological surgery. He co-directs the medical school's neuroscience program.

Known for his research on how the brain processes information and functions during daily life, Petersen uses several techniques, including positron emission tomography (PET) and functional magnetic resonance imaging (fMRI), to directly observe the human brain during learning, memory and attention tasks. He also investigates the effects of disease and brain damage on these cognitive processes, bridging a range of psychological and neurological fields.

The new professorship was established with a gift from the James S. McDonnell Foundation given to Washington University in 1980 to institute the McDonnell Center for Higher Brain Function.

Genome Sequencing Center studies the SARS virus

While most of the world was working to contain the spread of the virus that causes severe acute respiratory syndrome (SARS), the Genome Sequencing Center (GSC) at the School of Medicine became part of the international effort to understand the microbe.

Researchers at the GSC were called upon early this year to sequence the new virus and poorly understood human pathogen. They completed the task in record time—less than a week.

"As genome sequencing goes, that's very, very fast," says GSC co-director Elaine Mardis, PhD, assistant professor of genetics and of molecular microbiology. Mardis, who led the effort, used a new technique she developed with colleagues that speeds the sequencing process.

"The method enables us to quickly identify the genetic makeup of an unknown virus and that helps determine what can be done to diagnose and prevent the infection," she adds. "The process works whether the virus is a product of bioterrorism or of Mother Nature."

SARS was identified as a disease in late February. Researchers suspected that a new human virus was responsible for the disease and, when they observed the virus under the electron microscope, it appeared to be a coronavirus, a group of microbes most famous for causing colds.

To confirm the virus' identity, the Centers for Disease Control and Prevention sent samples of the microbe to a number of laboratories, including that of Joseph DeRisi, PhD, assistant professor of biochemistry and biophysics at the University of California-San Francisco.

DeRisi isolated the genome of the virus and compared it to the genomes of other viruses known to cause human disease using a "virochip" microarray he developed for identifying unknown viruses. Microarrays enable scientists to compare an experimental genetic sample with thousands of known gene samples simultaneously.

DeRisi's virochip quickly identified the virus as a coronavirus, but one with closer ties to animal coronaviruses than to known human ones. To learn what made the new virus unique, the genome needed to be sequenced. For this, DeRisi called on Mardis and GSC director Richard K. Wilson, PhD, professor of genetics and associate professor of molecular microbiology.

Mardis' new sequencing method allowed the isolation and sequencing of DNA—normally two separate steps—to occur almost simultaneously.

Chromatographic traces for three DNA samples show peaks of different colors that represent the fluorescent signal obtained for each of the four DNA bases.
Hello, goodbye  Graduating members from the Class of 2003 accept congratulations from Larry J. Shapiro, MD, incoming dean of the School of Medicine and executive vice chancellor for medical affairs. An internationally renowned research geneticist and pediatrician, Shapiro joins Washington University from the University of California, San Francisco, School of Medicine, where he was the W.H. and Marie Watts Distinguished Professor and chair of the Department of Pediatrics. Shapiro, who also served as chief of pediatrics at UCSF Children’s Hospital, officially assumed his new responsibilities at the School of Medicine on July 1, 2003.

INTERVENTIONAL CARDIOLOGY

A new type of stent may decrease restenosis rates in cardiac patients

Drug-coated stents — approved in April 2003 by the U.S. Food and Drug Administration (FDA) — offer a less invasive, less expensive treatment option for patients with clogged cardiac arteries.

The stents — metal mesh tubes used as scaffolding to keep blood vessels open and unblocked — are laced with low doses of the drug sirolimus. The School of Medicine was one of the key participants in the research that led to FDA approval of the first drug-coated stents to receive federal sanction.

"Drug-coated stents may be the most important advancement in interventional cardiology this decade," says John M. Lasala, MD, PhD, associate professor of medicine and director of cardiac catheterization at the School of Medicine and Barnes-Jewish Hospital. Lasala was the principal investigator for studies involving sirolimus-coated stents and currently is leading the team in three such trials.

About 11 million Americans suffer from coronary artery disease, inflammation of the blood vessels that deliver oxygen to the heart. The disease can lead to chest pain or heart attack and remains the single leading killer of both men and women in the United States.

To treat the buildup of plaque that causes coronary artery disease, interventional cardiologists first use a balloon to reopen the blood vessel (a procedure known as angioplasty) and then insert an expandable stent, which supports the vessel wall and maintains blood flow. The approach is less invasive and less expensive than the alternative — traditional bypass surgery. Last year, Washington University physicians at Barnes-Jewish Hospital performed 1,320 stent procedures. About 15 to 20 percent of all stented vessels close again, or restenose, after the procedure, requiring patients to undergo a second catheterization. By coating the stent with drugs, researchers hope to block cell growth that causes scar tissue and thereby prevent reclogging. Studies of drug-coated stents in Europe and in the United States indicate that the new devices can more than halve the rate of restenosis.

How is a coronary stent implanted?

A stent is mounted on a balloon catheter.

The balloon is inflated and the stent is expanded.

The balloon is removed and the stent is implanted in the vessel.
Team Doctors: Cardinals again choose Washington University physicians

THE ST. LOUIS CARDINALS recently completed an agreement with Washington University orthopaedic surgeons at Barnes-Jewish Hospital to continue providing medical services for the Cardinals’ organization.

The new agreement runs through 2006. All three major professional sports teams in St. Louis use Washington University physicians as their team doctors.

The sports medicine specialists in the Department of Orthopaedic Surgery will work with other School of Medicine physicians to provide comprehensive medical care for players and their families on a daily basis and in emergency situations.

George A. Palella Jr., MD, associate professor of orthopaedic surgery and director of the department’s Sports Medicine Service, will continue to serve as the Cardinals’ head team physician. Barnes-Jewish Hospital and Barnes-Jewish West County Hospital, both part of BJC HealthCare, will provide hospital-based services.

Washington University physicians also will manage the care of players in the organization’s six-team minor league system.

“In providing care for a professional sports team, our goal is to return injured players to health and their full potential as rapidly as possible,” says Richard H. Gelberman, MD, the Fred C. Reynolds Professor and head of the Department of Orthopaedic Surgery.

Research funding In 2002, the School of Medicine received $328.4 million in support from the National Institutes of Health and achieved third place among all U.S. medical schools in NIH funding.

In addition, Barnes-Jewish Hospital received $16.5 million in NIH support and Central Institute for the Deaf received $2.2 million.

Protecting private medical records

SINCE THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA) went into effect in April, the confidentiality of medical records is protected by federal law rather than varying state regulations. The new law marks the culmination of a decade-long drive to enforce a higher standard of handling confidential patient information.

The sweeping legislation mandates many changes: Sign-in sheets in doctors’ offices will no longer require the reason for the visit. Computers must be password-protected and patient information not easily seen by the public. Health care workers are not allowed to openly discuss details—patient names, type of medical care, appointments, explanations of medical conditions—that may reveal a patient’s identity unless necessary for treatment or business purposes.

In an attempt to prevent the inappropriate disclosure of private medical information and to ensure that patients have the right to know what is in their medical records, HIPAA affects all arenas of health care.

“HIPAA’s commitment to patient privacy is just a more formalized version of what we’ve been doing for years, but now it adds administrative steps to document what’s always been good practice,” says university privacy officer Joan M. Podleski, assistant vice chancellor for medical affairs and executive director of clinical operations for the university’s Faculty Practice Plan.

An eye for history Members of the Cogan Ophthalmic History Society viewing the Rare Book Collection at the Bernard Becker Medical Library during the group’s 16th annual gathering held in April at the School of Medicine. The meeting was hosted by George M. Bohigian, MD, professor of clinical ophthalmology.
Holtzman receives Potamkin Award

The most prestigious prize in Alzheimer's research—the Potamkin Prize for Research in Pies, Alzheimer's Disease and Related Disorders—has been awarded to David M. Holtzman, MD, the Paul and Charlotte Hagemann Professor of Neurology and professor of molecular biology and pharmacology.

The prize honors and rewards researchers for their work in helping to advance the understanding of Alzheimer's disease and related disorders.

Holtzman's laboratory specializes in studying the early, silent stages of Alzheimer's disease. His team played a leading role in showing how dangerous amounts of a protein called amyloid-beta (ABeta) begin to accumulate in the brain many years before symptoms arise.

Most recently, in collaboration with scientists at Eli Lilly and Company, Holtzman's team identified a monoclonal antibody called m266, which, in mice, draws ABeta out of the brain and into the blood. In the March 2002 issue of Science, the team published the successful use of m266 to identify Alzheimer's-type changes in living mice. The test is one of the first proposed blood tests to diagnose the disease before clinical symptoms arise.

"Dave's work already has dramatically improved our understanding of how brain plaques develop in individuals with Alzheimer's disease and has the potential to lead to better diagnostic methods and perhaps even a cure," says John C. Morris, MD, co-director of the Alzheimer's Disease Research Center and the Harvey A. and Dorismae Hacker Friedman Distinguished Professor of Neurology.

Medical school among U.S. top three

Second best in the nation—that's how the School of Medicine rates in this year's U.S. News & World Report rankings of graduate and professional programs. Washington University tied for the second-place honor with Johns Hopkins, while retaining the No. 1 spot for student selectivity.

The School of Medicine ranked after Harvard and tied with Hopkins, followed by Duke, University of California-San Francisco, Columbia, Stanford and Yale. Last year, the School of Medicine was rated third best in the country for research-oriented medical schools. This year's ranking is the highest in the medical school's history, although it has ranked in the top 10 since U.S. News began its annual rankings in 1987.

The magazine publishes the rankings to help students choose graduate schools. The annual rankings are based on national reputation, research activity, faculty resources and student selectivity. The last is a quality measure that reflects the entering class' undergraduate grade point averages and scores on admissions exams.

Specialty areas at the School of Medicine listed among the nation's best include: AIDS, 15th; Drug/Alcohol Abuse, ninth; Geriatrics, 17th; Health Services Administration, 15th (tie); Internal Medicine, fourth; Pediatrics, sixth (tie); and Women's Health, ninth (tie).

Peck assumes Wolff professorship

William A. Peck, MD, has been named the first Alan A. and Edith L. Wolff Distinguished Professor of Medicine.

Peck, who concluded 14 years as dean of the School of Medicine and executive vice chancellor for medical affairs at the end of June, now heads the university's new Center for Health Policy.

The professorship was established by Edith Wolff, president of Wolff Construction Company. A native of St. Louis, Wolff succeeded her husband, Alan, as company president after his death in 1989.

Edith Wolff's gifts to the medical school have supported several areas of research, including Alzheimer's disease and cancer. She is a life member of the Eliot Society and a member of the Danforth Circle. She also endowed the Alan A. and Edith L. Wolff Professor of Medicine in 1999, currently held by cancer research specialist Timothy J. Ley, MD.
Atkins dieters lose more and improve lipids over conventional dieters

In the first multicenter trial to look at the high-fat, low-carbohydrate Atkins diet, researchers have found that at three and six months, the Atkins diet produces significantly greater weight loss than a conventional low-fat, high-carbohydrate diet.

The study was conducted by researchers from the School of Medicine, the University of Pennsylvania School of Medicine in Philadelphia and the University of Colorado Health Sciences Center in Denver. The results appeared in the May 22, 2003 issue of The New England Journal of Medicine.

Researchers wanted to mimic what happens when most people diet, so they did not offer behavior modification or extensive clinical supervision to study subjects. Participants met with a registered dietitian at the start of the study and again at three, six and 12 months. They were randomly selected for either the conventional low-fat, high-carbohydrate diet or the high-fat, low-carbohydrate Atkins diet. The conventional dieters were given instructional materials for a 1,200-1,500 calories per day (women) or 1,500-1,800 calories per day (men) diet based on the Food Guide Pyramid. The other group was instructed to read and follow the diet prescribed in Dr. Atkins' New Diet Revolution.

All study subjects had medically significant obesity, meaning that they weighed at least 20 percent more than their ideal body weight. Atkins dieters lost twice as much weight during the first six months of the study. However, over the next six months, dieters on both plans tended to regain weight, and there was no statistical weight difference between the groups at one year.

The study also found that people on the Atkins diet had greater improvements in blood lipids than those on the conventional diet. High-density lipoprotein (HDL), or "good" cholesterol, increased more in the Atkins group, and their serum triglycerides decreased more than conventional dieters. Low HDL and high triglyceride levels increase the risk of cardiovascular disease.

"This study demonstrates that a low-carbohydrate diet can have beneficial effects in treating obesity," says senior investigator Samuel Klein, MD, the Danforth Professor of Medicine and Nutritional Science and director of the division of geriatrics and nutrition.

"Additional research is needed to understand why subjects assigned to a low-carbohydrate diet lost more weight than those assigned to a conventional diet and to evaluate the long-term efficacy and safety of low-carbohydrate diet therapy."

Because of the high amounts of fat that people consume on the Atkins diet, many have worried that over the long term, it might have serious side effects. The researchers found no differences in side effects during the 12 months of this study and even found benefits in blood lipid profiles, but say they'll look more closely at potential side effects in the next study.

"A calorie is still a calorie, whether the calorie comes from fat, carbohydrates or protein," says Klein, who also directs the Center for Human Nutrition. "But it might be that certain types of calories are more filling than others and result in an overall decrease in total calorie intake."

The same research team will recruit larger numbers of participants in a five-year NIH-funded study of low- and high-carbohydrate diets.
With occupational therapy, disabilities needn't sideline otherwise productive lives. And remedies—sometimes surprisingly simple—don't come from studying rats in a maze...

By David Linzee

Much of the exciting research going on in the Program in Occupational Therapy at the School of Medicine is different from the typical image of scientific research. The three scientists described here aren't peering into microscopes or running rats through mazes. They work with people who have disabilities, and they seek to help these individuals even as they learn from them in the course of research projects that will benefit the larger community. “Our study participants aren't our 'subjects,'” says David B. Gray, PhD, associate professor of neurology and occupational therapy. “They're our partners.”
"I want to help people get back to what's important to them," says Susan L. Stark, PhD, instructor in occupational therapy. Stark studies people coping with the disabilities of old age. From her viewpoint, the true disability is not the stroke or failing eyesight or weakening limb, but the mismatch between the person and his or her environment. And this can be remedied—often surprisingly easily. She recalls an older participant who had a stroke and then became morose because he couldn’t get down the stairs to the woodworking shop where he had hoped to spend his retirement years. A stair lift transformed his life.

"Environmental support is not hi-tech, so it doesn’t get much attention," Stark says. Not enough research has been done to demonstrate that people benefit from simple home modifications, so policies don’t support them. For example, Medicare will pay for a person to help a patient get out of the bathtub, but not for a bath bench.

Stark and her colleagues are gathering evidence that can be used to persuade policymakers to make home modification more accessible. The study is particularly needed now, for the elderly are the fastest growing population segment, and the majority of them want to live independently in their homes.

This has led to the development of what the researchers call Naturally Occurring Retirement Communities (NORCs), where a disproportionately large number of residents are elderly. Stark estimates that a much greater percentage of those over age 65 live in NORCs than in nursing homes or designated retirement villages.

One such community, in West St. Louis County, is the subject of Stark’s study, a joint effort between the School of Medicine’s Center for Aging and the Jewish Federation of St. Louis, funded by a $1.3 million grant from the Administration on Aging, Department of Health and Human Services. This university-government agency partnership is unique in the field, and may prove to be a new model for research. Stark and collaborators are studying 80 elders. The researchers interview them to find out what modifications they need in their homes, and then work with a construction firm to make the changes. Follow-up interviews are conducted to find out how subjects’ lives have improved.

When it is easier and less stressful to perform daily tasks, people have more energy to get out of the house and into the community. Other aspects of the study, led by John C. Morris, MD, the Harvey A. and Dorismae Hacker Friedman Professor of Neurology, focus on family communication and education, transportation and life skills. Other occupational therapy researchers seek to connect participants with the community services they need. They also identify trouble spots, like intersections with confusing signage, and valued services, like a smaller supermarket that does not require customers to do too much walking. This data will be presented to government officials and local merchants interested in accommodating the growing elderly population.

Stark jokes that she is noticing benefits already. “When we schedule our initial interview with a participant, it's no problem. But when we go back for the follow-up, it’s often hard to reach them. They’re too busy then.”
As a practicing psychologist, Leonard N. Matheson, PhD, observed that when his clients could do useful work, they felt better. “I came to believe the best thing you can do for a person is get them a good job,” he says.

Matheson, associate professor of occupational therapy and of neurology, directs the School of Medicine’s Occupational Performance Center, where he is developing a new type of program to help people who are recovering from accident or illness return to work. Traditional programs, he believes, take a simplistic approach that does not prepare people for workplace challenges.

His laboratory, housed in the Rehabilitation Institute of St. Louis, is designing and testing sets of activities called Structured Work Activity Groups (SWAGs). Developed in consultation with employers, they provide clients with detailed and realistic preparation for particular types of jobs. One SWAG that uses a library as a “virtual employer” asks the client to perform such tasks as transcribing phone messages from an answering machine, tracking overdue books and calculating fines, working up a spreadsheet of patron information for a federal grant, and scheduling meeting rooms. The activities rise in difficulty, and the last one includes an irresolvable conflict.

“We set up a meaningful challenge — meaning there’s a possibility of failure,” Matheson says. “You don’t give a person self-confidence just by bucking them up.”

Traditionally, therapists believed that what clients needed was endless encouragement. Facing them with failure is a novel idea, but Matheson wants them to encounter it first in a clinical setting, not on the job. He explains that too often, people recovering from brain injuries react to failure by becoming depressed or angry — responses that can get them fired. So, in his lab as in real life, clients are judged on their work.

After the client completes a task, both client and therapist fill out an evaluation. Then they compare notes. “We want to correct inaccurate self-perceptions,” Matheson says. Many clients think they are ready to return to work when they have not yet adjusted to the effects of their injury or illness. An accurate evaluation keeps them from setting themselves up for disappointment.

In another SWAG, called Gepetto’s Workshop after the puppetmaker in Pinocchio, clients take on more physical tasks, like cutting out wooden puzzle pieces with a power saw. Other activities exercise particular parts of the body. People whose injury or illness affected their hands put together a baby-changing table that has many screws and washers. People with shoulder or back problems have to bend and stretch as they build a bunk bed. All can benefit from the fact that these tasks require motor control and focusing of attention.

Matheson and his occupational therapy colleagues plan to develop a total of eight SWAGs. Assisted by other collaborators — physical therapists, speech pathologists, neuropsychologists — they evaluate activities, looking for consistent results in the clinic. The researchers also will follow clients back to the workplace to ensure that activities are relevant.

“We want to help therapists make the link to what’s expected in the real world,” he says.
More and more technology is available to assist people with disabilities, but they often have a hard time finding out what is available, or even how to use products they have bought. The latter point was made obvious to David B. Gray, PhD, associate professor of occupational therapy and neurology, when he got a new accessible van. Gray, a quadriplegic, received no training before he had to take the wheel for a 90-mile drive. “We made it, but my wife was quite pale,” he jokes.

One of the purposes of the new Enabling Mobility Center (EMC), which Gray directs, is to turn people with disabilities into informed consumers. The EMC will sponsor product fairs and educational conferences, but its main thrust is to bring person, technology and therapist together at the center, which is located not in a hospital but in the bustling— and easy-to-reach—University City Loop. There, an occupational therapist can help a person find the wheelchair that suits him best. People also can practice using their chairs in the Mobility Skills Lab, which offers such realistic challenges as uphills, downhill, sideslopes, and sand and gravel pits. The lab also has an exercise machine for developing upper-body muscles.

Assistive technology is more than wheelchairs, canes and walkers. The EMC has computers adapted for users who have trouble seeing the screen or tapping the keys. Occupational therapist Kerri Morgan notes that devices exist to help people communicate or operate household appliances remotely, and that there is a range of sports equipment available for athletes with disabilities.

The EMC staff is collaborating with Paraquad in a five-year study of how assistive technology benefits people, supported by the National Institute on Disability Research and Rehabilitation. “We’re gathering data to influence policy,” Gray says.

At present, insurance covers only equipment that supports activities deemed necessary for existence. Gray notes that in reality, much of the money is wasted on such items as toilet aids that prove useless.

Gray believes that the money would be better spent helping people buy equipment that would make it possible to work, drive, exercise and participate in the community. He also feels that such a change would lead to drops in obesity, type 2 diabetes, and other conditions that affect the disabled. “If you’re active and enjoying what you do,” he says, “you don’t want to lie around in bed.”

In other studies, Enabling Mobility Center researchers seek to establish an objective standard of community accessibility and to show the benefits of giving the disabled more flexibility in choosing the people who aid them.

Collaborative projects include one with the University of Michigan that seeks to put video streams of people with disabilities at work as lawyers, bankers and educators on the Web. Gray hopes that the videos will motivate people with disabilities to seek employment.

“They’ll look at the screen and think, ‘I can do that,’” he says. “And if a skeptical employer asks, ‘How do I know a disabled applicant can do the job?’, you just show him or her the video.”
Countering Crohn's Disease

Counterintuitive thinking helped devise a means to treat this gastrointestinal malady

By Jim Dryden

Joshua Korzenik, MD, right, and Brian Dieckgraefe, MD, PhD, followed an unlikely route in their study of Crohn's disease.
A typical Crohn's patient regularly deals with diarrhea, abdominal pain and intra-abdominal infections. Frequently, the disease closes off sections of the intestine, and patients need surgery to eliminate blockages.

Kelly Perkowski was 20 when she was diagnosed with Crohn's disease, a chronic, lifelong condition that affects about half a million people in the United States.

"I had symptoms for a couple of years before I actually knew what was wrong," says Perkowski, who for a time got symptom relief from taking steroids.

When her medications just weren't working anymore, Perkowski considered surgery. Her doctor suggested that she might want to try one more thing first—speak with a Crohn's disease researcher and gastroenterologist at Washington University School of Medicine.

Joshua Korzenik, MD, had recently arrived at the School of Medicine from Yale. The assistant professor of medicine was kicking around ideas with Brian Dieckgraefe, MD, PhD, also an assistant professor of medicine in the division of gastroenterology and a staff physician at Barnes-Jewish Hospital.

"From the start, it's been a very nice collaboration," Korzenik says. "Brian is primarily in bench science. I'm in clinical science, and our ideas grew out of discussions between us as we thought about how we might be able to help patients with Crohn's disease, because so many don't get relief from current treatments."

Crohn's disease always has been considered the result of an overactive immune system, so most therapies have attempted to suppress the body's immune response. That treatment strategy works to improve symptoms in many Crohn's disease patients, but a large number, like Kelly Perkowski, don't get relief.

Dieckgraefe had been working with gene chips, conducting studies to find genes turned on and off during Crohn's disease. Initially, those studies weren't much help because in patients with Crohn's disease, the immune response is so revved up that many genes are activated.

So working with Korzenik, Dieckgraefe took a step backward, and the research effort began to concentrate on genetic events that might occur earlier in the disease cascade, before most symptoms appear.

Because Crohn's disease is thought to result from an impaired immune response, they looked at other genetic diseases that also impair immunity.

"There are probably 100 different mutations that lead to impaired immunity," Dieckgraefe explains. "They affect a part of the immune system called innate immunity, first-line cells that launch initial attacks on bacteria and other microbes."

The researchers looked at two disorders in particular: glycogen storage disease 1B and a disorder called chronic granulomatous disease. Dieckgraefe reasoned that by learning how these genetic disorders shut down innate immunity, they might be able to mimic some of those genetic mutations and changes.

In theory, that might make it possible to use gene therapy to impair immune response, thereby helping Crohn's disease patients.
At least that's how the project started. But the studies of patients with impaired immunity revealed some startling things.

"Much to our surprise, we found that in some of these immune disorders, patients develop a clinical illness that is indistinguishable from Crohn's disease," Dieckgraefe says. "These people had impaired immune systems, and they had Crohn's disease, too."

Was it possible, they wondered, that the conventional thinking on Crohn's disease was incorrect? Maybe the immune system only became overactive as a way to compensate for a weak response earlier in the disease cascade. What would happen to their Crohn's disease symptoms if these patients with genetic immune diseases were treated with drugs that actually enhanced their innate immune response?

The answer to that question was already out there. Back in 1991, two drugs became routinely available in the United States to help correct impaired immunity in these patients. Called G-CSF (granulocyte colony stimulating factor) and GM-CSF (granulocyte macrophage colony stimulating factor), the drugs used natural proteins to jump-start innate immunity and help patients live with their immune system disorders.

Dieckgraefe and Korzenik also learned that when those patients with rare immune system disorders took the drugs, their Crohn's disease symptoms went away.

They decided it might be worthwhile to look at treating Crohn's disease by stoking up the body's innate immunity, rather than impairing it.

"At first blush, the idea of priming the immune system in patients with Crohn's disease sounds sort of like throwing oil on a fire," says Korzenik. "You might compare it to proposing a high cholesterol diet to treat heart disease."

Oddly enough, it appears to work. A preliminary study published last fall in The Lancet reports that enhancing the body's innate immunity can improve symptoms of Crohn's disease in 80 percent of patients with moderate to severe forms of the debilitating, inflammatory gastrointestinal disorder. Kelly Perkowski was one of them.

"In less than two weeks, my symptoms vanished," she says.

Patients in the study took daily injections of GM-CSF, also known by the trade name Leukine® (sargamostim). Maintenance trials showed that Crohn's disease symptoms returned when patients stopped taking the drug.

Based on those preliminary results, Berlex Laboratories Inc. — the pharmaceutical firm that owns Leukine — initiated a large-scale, multicenter study to see if the findings can be replicated. At present, patients at more than 30 centers in the United States are receiving injections each day to test the idea that for some patients with Crohn's disease, enhancing immunity might work as well, or even better, than impairing it.

The idea is so promising and different that it's been patented. On the basis of Dieckgraefe's and Korzenik's preliminary findings, Washington University applied for a patent covering the use of colony-stimulating factors for the treatment of Crohn's disease. Subsequently, the new technology was licensed by Washington University to Berlex Laboratories Inc.

"This work represents a wonderful example of technology transfer," says Theodore J. Cicero, PhD, vice chancellor for research. "The financial benefit related to this technology might help to support future research, both studies involving these investigators and work done by others at Washington University."

If a daily injection of GM-CSF can relieve their symptoms, or even put them into remission, many people with Crohn's disease will line up for the treatment.

"I look forward to my shot each day," Perkowski says. "It's hard to put into words how wonderful I feel. I feel like a normal person."
Setting an example for compassionate patient care: Carl V. Moore

His father was a St. Louis police officer, his mother a northside confectionery owner, and Carl V. Moore, AB 28, MD 32, took a series of menial jobs to pay for his education. Throughout his life, he held strong, basic values: hard work, frugality, honesty, kindness. He always made time to talk to students, and “he never forgot that a patient was a human being and not just an interesting case,” said molecular biologist Oliver H. Lowry after Moore’s death in 1972, days before his 64th birthday.

Moore joined the medical school faculty in 1938 and stayed for his entire career, serving as dean, 1953 to 1955; vice chancellor for medical affairs, 1964 to 1965; and head of his beloved Department of Medicine, 1955 to 1972. A pioneer in the young field of hematology, conducting classic studies of iron metabolism, he was elected to the National Academy of Sciences in 1970.

Yet teaching was his greatest pleasure. In class, he stressed the importance of observation, recalls Virgil Loeb, MD 44. “I’ll never forget it. He would insist on his students looking at the patient’s blood and urine in the laboratory microscope. It wasn’t enough to get a report that told you what the problem was; you had to see for yourself.”

Carl Moore always made time to talk to students, and “he never forgot that a patient was a human being and not just an interesting case.”

Oliver H. Lowry

His Saturday noon clinics were models of clarity and compassion. He would emerge from the wings, pushing the wheelchair of the patient whose case he planned to discuss that day. Unlike other faculty, who relied on a house officer to describe the history and physical findings, Moore did it all himself—never ignoring the patient in the process. “He would stand behind the chair, holding the handles, and present the case, flawlessly,” says M. Kenton King, MD, dean of the medical school from 1964 to 1989.

No setting was off limits for learning. As a young house officer, King was admitted to the hospital with a terrible sore throat. Moore stopped by, shone a flashlight down his throat and couldn’t resist another lesson. Excusing himself, “he went into the bathroom, literally tore the mirror off the wall, and put it down in front of me so I could see it too,” King recalled.

Day in and day out, he taught by example. Once Moore came to the hospital in the middle of the night to tell a terrified medical student that he did not, after all, have a fatal form of leukemia. Another time Loeb and a lab mate were eager to test whether a blood transfusion from a patient with low platelets would reduce the recipient’s count, too. Moore insisted upon being the subject
In the University's sesquicentennial year, we remember three noted faculty members who inspired students with unforgettable lessons about medicine—and humanity.

By Candace O'Connor

Carl Moore—teaching was his greatest pleasure—preferred the personal approach.

—and wound up seriously ill for a day, though the research was a success.

One morning, Moore visited City Hospital, where a difficult case was being presented by a house officer who confessed he did not know what was wrong with the patient, though she had a blood disease. During his talk, Moore's mind wandered, and by the time the young man finished, Moore realized with a start that he had heard little. Now it was his turn to speak, so he gently approached the patient, asking her questions no one had thought to ask before over the many years she had been ill. Eagerly she described previous bouts, then Moore turned to the crowd and announced quietly, “She has pernicious anemia.”

Perhaps Moore did not have the star quality of his predecessor in internal medicine, W. Barry Wood Jr., another superlative teacher. “Barry Wood dazzled people, he was so good at everything he did,” says King. “Carl Moore didn't dazzle people—he just made you realize he was a good doctor.”
Endowing students with a love of science: Mildred Trotter

"A NEW MEDICAL STUDENT," says Loeb, "is a frightened animal. They have seen the movie version of the dissection of bodies and are expecting all kinds of macabre things. But there, in the gross anatomy lab, we found Mildred Trotter. Here finally was a teacher you could become closer to than some of the tough, steely guys on the faculty; here was a breath of loveliness in an environment of dead bodies."

To generations of students, Mildred Trotter ("Trot" or "Millie," to grateful alumni) was a mother figure, warmly interested in their welfare. Not that she was a pushover in class: She was tough, meticulous, exacting. Hands on her hips, she barked at students when she thought they needed a dressing down.

On one never-to-be-forgotten quiz, she asked for the names of nerves supplying the muscles of the leg. In his answer, Mildred Trotter, MD, working with her much-beloved bones.

William Landau, MD 47, exuberantly included the nerves that supply the thigh muscles—and got a "zero" for his effort. The leg, Trotter wanted to make clear, only covered the distance between the knee and the ankle.

Trot came to the University in 1920, a Mount Holyoke graduate who earned a 1924 PhD in anatomy, then joined that department as instructor. Named assistant professor in 1926 and associate in 1930, she finally became a full professor in 1946—the first medical school woman to achieve the rank—after demanding to receive the promotion or know in what way she was deficient. Twelve years later, she won another hard-fought battle when her title was changed from professor of "gross anatomy" to the broader, more accurate professor of "anatomy."

Her lifelong interest was bones—her office was littered with ribs, femurs and tibia that she had studied and measured. Through her research, she built a national reputation in physical anthropology. After World War II, she was called to Hawaii to identify the remains of those killed in action; her formulas for estimating human height from bone evidence are still used by the FBI today.

In class, her enthusiasm kindled students' interest in this often-dry material that required pure rote memorization. "I read Morris' Anatomy and if it wasn't quite clear...I read Gray's Anatomy, and I knew all the nerves and muscles and God knows what all," said Daniel Nathans, MD 54, in a 1979 reminiscence. "But that is the kind of atmosphere there was in that course."

At alumni reunions, Trot—who died in 1991 at age 92—received standing ovations. "It was an honor to have her come sit at your table," says Loeb. Adds King: "If you took 1,000 School of Medicine alumni and asked them to name the teachers they remember, I think 999 would mention Mildred Trotter."
1. Know your subject thoroughly.
2. Be enthusiastic about teaching.
3. Be sincerely interested in students.
4. Link your subject matter with the everyday experience of your students.
5. Use illustrations and illustrative material whenever possible.
6. Make the student take an active part in every exercise.
7. Use his response as a guide for the next question.
8. Be adept in the art of questioning.
9. In exposition, be simple, logical, lucid.
10. In description, make the student see what you see.
11. In narration, arouse his curiosity.
12. Dramatize whenever possible, making use of suspense and surprise.

[Reprinted from the Yale Journal of Biology and Medicine, November 1952.]

Training young doctors by insisting on excellence: Ernest Sachs

In 1954, neurosurgeon Ernest Sachs published a small book, *Prerequisites of Good Teaching & Other Essays*, which offered hints on how to teach. "Be enthusiastic," he wrote, "be sincerely interested in your students." All but the last—"dramatize whenever possible, making use of suspense and surprise"—made him sound like a gentle academic, in the mode of Carl Moore.

In fact, Sachs was gruff, domineering—"a tyrant in the classroom. He held Thursday noon clinics on the third floor of Barnes Hospital in the now-defunct surgical amphitheater widely known as "the pit." That nickname inspired a few for the combative Sachs, who became the "bulldog" or "lion" in the pit. A short, stocky man, he had a large belly that he used as a tool, butting students to underline his displeasure.

In the pit, he taught physical diagnosis, summoning a nervous student to detect the problem of that day's patient. "You would sit there in abject fear that this was your day," recalls Loeb. One patient had a metal ring taped to his navel—a device to help target X-ray images—but the hapless student guessed it held in a hernia, and Sachs roundly berated him for missing key clues. "When it was over you could sit down and take a deep breath," adds Loeb, "since you only had to do it once a semester."

Later, students realized they had actually learned a great deal. "He taught them basic principles never to be forgotten," said Edmund A. Smolik, MD, in a 1958 obituary for Sachs, who had died at 79. "Generations of students ... continue to hail him as their greatest and most inspiring teacher—the fear replaced by affection, the tension by myriad delights and anecdotes."

Sachs, who earned a 1904 medical degree from Johns Hopkins, served on Washington University's faculty from 1910 to 1949, becoming the nation's first professor of neurosurgery in 1919. A founder of the Society of Neurological Surgeons, he helped shape the field, training 30 fellows who went on to major positions.

Behind his fierce exterior was kindness, intensified by personal sorrow. He had a young daughter who contracted meningococcal meningitis; in that pre-antibiotic era, the only hope seemed an unproven surgical procedure, performed for Sachs by a younger colleague. The child died anyway, and afterwards Sachs was more protective than ever of his patients and of families who suffered loss. Secretly, he also paid the tuition of several medical students—perhaps some of those he had so sharply berated.
IT'S A BUSY WEDNESDAY evening in the emergency department at St. Louis Children's Hospital. The attending physician has juggled it all on this shift—a 10-year-old gunshot victim, arm and face traumas, and a vomiting, pregnant teenager.

And yet, as the night unfolds, the pace quickens.
Better drugs and greater awareness reduce pain and distress in pediatric emergencies

BY KIMBERLY LEYDIG

The flashing light that signals patients arriving by ambulance swirls at a steady beat. In the midst of the traumas—and the distress and anxiety that accompany pediatric emergencies for patients and their parents—Janet D. Luhmann, MD, assistant professor of pediatrics, is struck by her next patient’s calm composure.

Michael Williams stoically sits with his arm in splint, hand-crafted by his dad out of Home Depot paint stirrers and duct tape. The 9-year-old explains that he broke his fall with his wrist while playing soccer: “I screamed really loud because my arm was shaking with pain.”

Janet D. Luhmann, MD, and Robert M. Kennedy, MD, attend to patient Michael Williams.

Judging by the swan neck-like shape of his forearm, Luhmann suspects both of its bones are broken. “We might have to twist and move your arm around during X-rays, so we’re going to give you some pain medicine that’ll make you better, but you may feel a little silly,” she tells her young patient. Michael is given oxycodone to make the X-ray manipulations more comfortable, a preemptive pain treatment that isn’t standard in most emergency departments.

Luhmann was right—both Michael’s radius and ulna are broken. She explains that the fracture needs to be set or “reduced”—one of the most painful pediatric emergencies.

To make realignment as painless as possible, Luhmann’s team intravenously sedates Michael with ketamine, a potent sedative and analgesic. Thirty minutes later, after a dramatic reduction, Michael awakens and asks the staff who wants to sign his cast first. “I had the best dream,” he says. “A robot put on my cast. It was cool, and it didn’t hurt.”

BY KIMBERLY LEYDIG

PAIN MANAGEMENT

Imagine—even as an adult—having a broken arm set without pain medicine. National studies of more than 250 U.S. emergency departments (EDs) reveal that 75 percent of adults receive anesthesia for fracture reductions like Michael’s, while less than 40 percent of children receive pain medicine for the same procedure. “I can’t understand how hospitals can ethically justify withholding analgesia when a patient is clearly in pain,” says Robert M. Kennedy, MD, associate professor of pediatrics. “There is a lot of confusion about the difference between pain and distress. People expect kids to cry and often choose to interpret crying as a sign of anxiety and not pain. But if it’s an injury that would logically be painful, we should assume there’s pain.”

Recent studies by Luhmann and Kennedy that have appeared in the journals Academic Emergency Medicine, Annals of Emergency Medicine, Pediatric Clinics of North America, Pediatric Emergency Care and Pediatrics report on methods they have developed to safely and effectively sedate pediatric patients during the most painful emergencies: fracture reductions, significant burns and abscess incision and drainage.

Far too many emergency rooms still opt to restrain children and treat them with no sedation, says Kennedy.
"We can't just tune it out as normal and accept that kids are going to cry," says Luhmann. "By implementing the most creative and technologically advanced ways to address the issues children have with pain and anxiety, we can change the current culture by showing the field there's a better way."

The team's most profound advances have been with the sedation methods of potent medications such as ketamine and nitrous oxide, which effectively reduce pain and stress with little cardio-respiratory depression—the biggest danger of sedation—or other lingering adverse effects.

David M. Jaffe, MD, the Dana Brown/St. Louis Children's Hospital Professor of Pediatrics and head of the pediatric emergency department, explains that one of the advances that places the School of Medicine at the forefront of the field is the use of nitrous oxide.

Earlier studies of the drug done at other universities revealed that when pediatric patients used adult-oriented nitrous oxide machines, the outcomes were disappointing.

But Luhmann and Kennedy, with the help of John D. McAllister, MD, associate professor of pediatrics and of anesthesiology, developed a delivery method designed especially for kids. Now, nitrous oxide dispensers sit alongside the oxygen machines in seven of the ED's treatment rooms.

What makes nitrous oxide, or laughing gas, so attractive is that it offers very effective pain and stress reduction. And, once the mask is removed, the patient returns to normal within a few minutes.

The researchers have found that nitrous oxide is highly effective in a number of clinical procedures, such as suturing, IV insertion, pelvic exams and foreign body removal, which often cause more anxiety than pain. And kids love the fact that there are no needles.

Just ask 11-year-old Columbus McKinney. After eating a fish sandwich, he started choking. A gristly bone was lodged deep in his throat. Initial attempts to remove the bone caused considerable gagging; nitrous oxide sedation makes the procedure more comfortable.

The nurse offers Columbus an array of flavored balms (cotton candy, bubble gum, key lime) to rub inside the mask. "You're going to feel like you're flying," Kennedy explains. "And we'll know when it's working because you'll start laughing."

Minutes later, Columbus, with smiling eyes, giggles between breaths. His previously stressed mom is now laughing at his response to the nitrous oxide.

"I had really good dreams," he says as Kennedy puts the two-inch bone in a jar for a souvenir. "Can I take some home with me?"

**BIG PAIN, SMALL PATIENTS**

It's nearing midnight on Sunday when 6-year-old Mallory VanDorn arrives in the emergency department with a broken arm after falling off a swing at her home in Rosebud IL.

Before sedating her with ketamine and midazolam, the preferred method of sedation for painful procedures, the nurse uses the popular "Ouchless IV Technique" developed by Kennedy (see sidebar).

Mallory's parents cringe as the orthopaedic physicians realign their daughter's arm. Luhmann strokes
Mallory’s tawny blonde hair, telling her to think about her favorite cartoon. “Please don’t do that,” Mallory whispers during the most painful part of the treatment.

Thanks to the analgesic and amnestic effects of ketamine and midazolam, Mallory doesn’t even remember the procedure just two hours later. As she sucks on a cherry Popsicle, she thanks the nurses and doctors.

“Everyone is really nice, and I just felt a little dot touching me,” Mallory says, excited to color her new cast pink.

“Every hospital should do this,” mom Donna VanDorn adds. “I can’t believe she’s sitting here smiling, worried about missing school and softball practice.”

Although ketamine may cause adverse affects in adults, such as psychosis, paranoia and hallucinations, children appear to be relatively resistant to these effects.

The researchers’ studies reveal that only 6 percent of pediatric patients experience the adverse side effects of ketamine when they wake up. The team is now investigating ways to further reduce the drug’s after effects using other medications.

Kennedy, a strong proponent of treating children’s pain, believes all emergency departments should follow suit. “In the past, we haven’t had alternatives to help kids through painful procedures, but now we have the means to reduce pain,” he says.

Lack of proper training on safe and effective sedation methods, insufficient time and a shortage of resources are largely responsible for the undertreatment of painful pediatric emergencies.

Fear of addiction and a misconception that young children don’t remember painful episodes also pose barriers. Jaffe, who has published many studies on pediatric emergency medicine over the past two decades, reports that even short duration of painful experiences in infancy or childhood may significantly affect a child’s subsequent behavior.

One study found that infants with diabetic mothers, pricked nine times at birth, had much more agitated responses during routine blood draws than infants who had not been repeatedly pricked. A similar study found that compared to infants who had received pain medication for circumcision, those who underwent the procedure without being sedated had higher rates of agitation when receiving immunization shots three to six months later.

“We’ve come a long way since I first started working at the School of Medicine two decades ago,” Jaffe says. “Back then, I knew how busy it was when I walked into my shift by the decibel level of screaming children in the background.

“In many ways, people still think of the ED as the old characterization of ‘the pit,’ a noisy place where things are out of control and patients are miserable. It’s very exciting for us to take the national lead for some of the advances in the management of procedural pain for children.”

Now, even when all 28 rooms of the emergency department are occupied, there’s still a quiet sense of order in the midst of the turmoil and trauma.

Most importantly, there’s a lot less crying — because there’s a lot less pain.

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**NOT EVEN A PINPRICK: THE OUCHLESS IV**

Nobody — especially a child — likes to get pricked by a needle. The 10,000 pediatric patients who receive intravenous injections (IVs) in the emergency department at St. Louis Children’s Hospital each year are lucky to experience the popular “Ouchless IV Technique” developed by Robert M. Kennedy, MD.

The procedure entails applying a numbing gel to the IV injection site. About 20 minutes later, a tiny needle of buffered lidocaine, which is barely felt, further numbs the area. When the site is completely numb, the much larger IV needle is inserted.

“We’re trying to export this technique throughout the entire medical center,” says Kennedy, who’s led several studies in which third-year medical students experimented by starting IVs on one another. The results: The ouchless technique rated a 1.7 out of 10 on a pain scale; the standard IV start scored much higher: 6.1.

“I’ve started ouchless IVs on sleeping infants without waking them,” he says. “That’s how painless it can be.”
Ohhhh baby!

Match Day gives birth to medical careers

LIGHTS, CAMERA, MATCH DAY!
The annual Match Day ceremony was held on March 20, 2003, and 100 of the 109 graduating medical students took part in the National Resident Matching Program (NRMP).

Each year on Match Day, senior medical students in the United States learn which residency programs they will enter.

School of Medicine graduates are highly successful in obtaining competitive residency training programs. In 2003, 39 percent of the graduating class selected a primary care field (pediatrics, internal medicine, family practice), and 11 percent successfully matched into highly competitive surgical subspecialty training positions (orthopaedic surgery, otolaryngology, plastic surgery, neurosurgery).

Shhhhh... Ryan, 2-month-old son of Alan Ho, MD '03, and his wife, Sharon, shows his Match Day excitement in a quiet way.
Casey Swenson, MD 03, celebrates with wife, Nancy, and 2-month-old son, Noah.
MONTHS BEFORE PEARL HARBOR, Seymour Brown, MD 40, recognized the necessity of fighting fascism and joined the Naval Reserve in June, 1941. "I said to myself, 'I can't stand doing nothing—I've got to get into this,'" he recalls. He was called to active duty in the Navy in December, 1941.

After the war, he was again ahead of his time, recognizing how a new specialty, anesthesiology, could benefit patients. He became a pioneer in establishing the specialty in St. Louis. Such foresight and resolve are inborn characteristics, but Brown gives much of the credit for his accomplishments to Washington University, where he earned his undergraduate and medical degrees, and where his wife, Rose, earned her bachelor's degree. "They were dedicated people who taught us," he says, "and they instilled a belief in the value of public service."

The Browns were parted just a few weeks after their marriage in late 1941. He had just completed a surgical residency at the University of Illinois-Chicago when the Navy sent him to sea as ship's medical officer aboard the destroyer U.S.S. Benham. The duty gave Brown the opportunity to practice novel surgical techniques:

He once performed an appendectomy on the wardroom table, using forks as retractors. His ship sailed in the convoy that carried the Doolittle Raiders on their mission to Tokyo and took part in the battles of the Coral Sea and Midway. Brown cared for the wounded among the rescued crew of the aircraft carrier Yorktown and the destroyer U.S.S. Hamman, later receiving a citation for devotion to duty from Adm. Chester Nimitz, commander-in-chief of the Pacific Fleet and Pacific Ocean Areas.

Seymour Brown, MD 40, and Rose Brown
In November 1942, in an action off Guadalcanal, the Benham was hit by a Japanese torpedo that tore 40 feet off the bow. The impact also opened a crack in the hull amidships. Amazingly, the ship stayed afloat, but Brown was worried when he heard an air raid siren. "There was nothing we could do," he recalls. "If we'd fired a gun, the ship would have broken in half." Fortunately, Japanese planes did not appear, and an American ship arrived to take aboard the survivors.

The Navy next stationed him in Boston, where he trained in the new specialty of anesthesiology at the Lahey Clinic, a center noted for advances in surgery. He went on to become chief of anesthesiology at Great Lakes Naval Hospital and, later, at Mare Island Naval Hospital in California.

"And then I came back and tried to start the specialty of anesthesiology in St. Louis," Brown says. He had to prove to skeptical surgeons that it was desirable to have a physician do a job that was then routinely performed by a nurse-anesthetist. He traveled from hospital to hospital, often performing his services pro bono. In 1946, he became the first chairman of the Department of Anesthesiology at St. John's Mercy Medical Center, a position he held for 35 years. He established the first local residencies in the specialty there and had the first approved anesthesiology residency in a community hospital setting.

During four decades of practice, Brown oversaw many innovations in equipment, drugs and hospital procedures, which led to improved monitoring of patients during surgeries and speedier recoveries afterward. In 1953, he established the first organized post-anesthesia recovery room in St. Louis. By 1972, recovery periods had shortened so much that Brown was able to open a "one-day stay" unit at St. John's, the first in the area.

Brown also was chief of anesthesia at St. Louis County Hospital. He was on the clinical faculty at Saint Louis University and delivered lectures at its medical school. Later he became a full clinical professor at the University of South Florida in Tampa. Brown is the only living survivor of the founding group of the St. Louis Society of Anesthesiology.

Rose Brown studied education and biology as an undergraduate. "I would have liked to do medical research," she recalls, "but funds and opportunities for women to pursue a medical degree were few in those days." Determined to find another way to use her talents, Mrs. Brown became a medical editor and indexer who worked on both journals and books. As a volunteer, she spent many years working with deaf children in the St. Louis Special School District. Later, she had a career in real estate.

"IT'S NOT JUST THE CONTENT of the education you receive... but the instilling of a desire to continue to learn." SEYMOUR BROWN, MO

Brown says, "I've always contributed as much as I could to the School of Medicine." The Department of Anesthesiology is, naturally, a particular interest. The Browns also have given generously to the division of gastroenterology, in memory of their son, the late Alvin R. Brown, MD, who trained in the program. (The couple has another son, Donald, the father of their grandchild, Natalya.) Scholarships have been another area of support, because the Browns believe that financial need should not interfere with education.

Brown recalls how his own college education was interrupted during the Depression. "My family was about to lose their house," he says, "so I worked in a grocery store for two years." He still remembers his eagerness to get back to school. "I've always felt fortunate to be part of the educational process at Washington University," he says. "It's not just the content of the education you receive at the time, but the instilling of a desire to continue to learn—which I have done all my life."
THE ALUMNI ARE COMING—ARE WE READY?

Food is ordered. Shuttle buses are lined up. Name tags are sorted. PowerPoint is tested. We know they're on their way—from LaJolla and Lexington and Ladue—back to the School of Medicine with hopes and expectations, maybe some trepidation. Perhaps it’s been a while since they’ve been together. Or things look a little too different. But each can look back across a medical career to this place where it all began—glancing around an auditorium or down a hall and seeing the faces of those who shared in the labs and lectures and laughs. They’ll be here, too: the lab partners, the roommates, the friends. The classmates will be here—that’s all we need. Here they come. Scanning the crowd for the faces from 10, 35, 60 years ago. Aha! Welcome back.
Classmates from 1993 Matthew Deedy, MD, Colin McDonald, MD, and Leo Chough, MD, marvel at the medical center's changes in just a decade.

Terry Yeager, MD 88, Stephanie Yeager, and Laura Grady, MD 88, watch for friends at the welcoming reception.

Inspiring the next generation: Nobel laureate Edwin Krebs, MD 43 December, chats with medical students Paula Newton and Steve-Felix Bellinga during the student poster session.

Mary McQueen and Charles McQueen, MD 78, pop in to the medical center to see what's happening next.

Carol Warden and Duane Warden, MD 48, enjoy the buffet.
Spring breezes didn’t stop Ansel Marks, MD 53, Nancy Salzman, Ed Salzman, MD 53, and Frances Marks, NU 53, from taking in the view atop the Chase Park Plaza’s Starlight Roof.

Continuing Medical Education staffer Tim Young shows G. Russell AufderHeide, MD 43 March, the ins and outs of CME Online.

Alumni fanned out across the medical center for walking tours of favorite places, historical sites and research labs.

The Genome Sequencing Center and post-traumatic stress disorder were on the scientific program agenda as were other thought-provoking presentations by alumni and School of Medicine faculty.

Stan Lamberg, MD 63, and Lynn Brislawn Rosenstock, MD 63, look for familiar faces.

The wit of William A. Peck, MD, dean and gracious speaker, resuscitated some “dead air” time due to a malfunctioning microphone at the reunion awards banquet.
The School of Medicine recognized five people this year for outstanding professional achievements. At the reunion awards banquet, classmates, faculty colleagues and other alumni thanked the award recipients for laudable service to the medical center.

**Alumni Achievement Awards**
Barry M. Farr, MD 78, is the William S. Jordan Jr. Professor of Medicine and Epidemiology at the University of Virginia School of Medicine.

W. Allan Walker, MD 63, is the Conrad Taft Professor of Nutrition and director of the Division of Nutrition and Pediatrics at Harvard Medical School and a professor in the Department of Nutrition at the Harvard School of Public Health.

**Alumni/Faculty Awards**
Bradley T. Thach, MD 68, is a professor of pediatrics at Washington University School of Medicine.

Gregorio A. Sicard, MD, HS 78, is professor and vice chairman of the Department of Surgery at Washington University School of Medicine. He also is a professor of radiology and heads the section of vascular surgery and the division of general surgery.

**Distinguished Service Award**
Jack H. Ladenson, PhD, is the Oree M. Carroll and Lilian B. Ladenson Professor of Clinical Chemistry and professor of pathology and immunology and of clinical chemistry in medicine at Washington University School of Medicine.

From left: Barry M. Farr, MD 78, MSc, W. Allan Walker, MD 63, Bradley T. Thach, MD 68, Jack H. Ladenson, PhD, and Gregorio A. Sicard, MD, HS 78.

At the helm: Carlton S. Pearse, MD 78, president of the Washington University Medical Center Alumni Association, chaired the scientific program and other reunion events.

Buses shuttled Sarah Arpe Malin, MD 48 (left foreground), and other alumni between afternoon educational sessions and the evening's wining and dining.
Jason Keune serenaded the awards banquet.

Thomas Wright, MD '53, and Wayne Garrett, MD '53, marveled at the many classmates attending their 50th reunion.

A grand tradition continues: Mary Parker, MD '53 (center), celebrates her 50th reunion while daughters Kathy Parker Ponder, MD '83 (left), and Chris Parker, MD '83, are all smiles about their 20th reunion.

ALL IN THEIR FAMILIES

Mary Parker, MD '53
Kathy Parker Ponder, MD '83
Chris Parker, MD '83

A grand tradition continues: Mary Parker, MD '53 (center), celebrates her 50th reunion while daughters Kathy Parker Ponder, MD '83 (left), and Chris Parker, MD '83, are all smiles about their 20th reunion.

Class of 1973 social chair Steve Nichols, MD, and Beth Nichols enjoy the class dinner.

Gary and Penny Shackelford, both MD '68, share a laugh with George Sato, MD '47.

Tamara Esselman and Gregory Esselman, both MD '93, traveled from the West Coast to catch up with classmates.

Tamara Esselman and Gregory Esselman, both MD '93, traveled from the West Coast to catch up with classmates.

SEE YOU NEXT YEAR!

MD Reunion May 6–8, 2004

Kweil J. Amusa, Philip Zazove and Barbara Reed, all MD '78, relax at the Dean's Luncheon.
50s Philip S. Norman, MD 51, of Baldwin MD, is still active in research and teaching as professor of medicine at Johns Hopkins University, where he founded the division of clinical immunology in 1970. From 1993 to 1998 Norman edited the Journal of Clinical Immunology. He is active in the Immune Tolerance Network in the awarding of contracts for clinical trials. The Network is an international consortium sponsored by the National Institute of Allergy and Infectious Diseases, the National Institute of Diabetes and Digestive and Kidney Disease and the Juvenile Diabetes Research Foundation for the purpose of developing immune tolerance therapies. Norman writes that he and his wife enjoy their five grandchildren.

James E. Darnell Jr., MD 55, received several prestigious awards in 2002. He was the 2002 recipient of the New York Academy of Medicine Medal for Distinguished Contributions in Biomedical Science. In September, he was given the Lasker Award for Special Achievement in Medical Science for "an exceptional career in biomedical science during which he opened two fields in biology-RNA processing and cytokine signaling—and fostered the development of many creative scientists." Darnell is Vincent Astor Professor and head of Rockefeller University's Laboratory of Molecular Cell Biology. A pioneering researcher in the field of gene regulation, Darnell's many scientific achievements include the discovery of a pathway by which "molecular cues" on the surface of a cell signal the genes in that cell's nucleus to take specific actions. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Royal Society of London.

60s Harvey S. Kantor, MD 62, writes, "After 40 years of practicing clinical medicine, 10 years as director of the division of infectious diseases and two years as acting chairman of the Department of Internal Medicine at Texas Tech University Health Science Center in Odessa TX, I have retired. At my retirement dinner, I received a plaque for my founding services in helping establish the Department of Internal Medicine." Kantor now lives in Lake Forest IL.

George F. Reinhardt, MD 64, was recognized as a Life Member of the Fellows Leadership Society of the American College of Surgeons during the 88th ACS Clinical Congress held in October, 2002, in San Francisco. The Fellows Leadership Society is the College's distinguished donor recognition organization. Since 1988, it has raised more than $17 million in contributions to support resident research scholarships and faculty fellowships. Reinhardt, who was one of 23 Fellows honored, has been a Fellow since 1974. He lives in Naples FL, and is on the staff at the VA Medical Center in Bay Pines.

Richard S. Myers, MD 65, has been made chairman of the board of trustees of Rex Hospital in Raleigh NC. Rex is a 384-bed hospital and a division of the University of North Carolina Healthcare System.

70s Marshall E. Bloom, MD 71, was named associate director of Rocky Mountain Laboratories (RML) in Hamilton MT, in October, 2002. RML is part of the National Institute of Allergy and Infectious Diseases (NIAID) at the National Institutes of Health. Bloom has been affiliated with RML since 1972 and has received a number of Special Service Awards from NIAID. He is recognized as an international authority on Aleutian mink disease, persistent infections and parvoviruses. He has served RML in a number of areas and has coordinated the Summer Internship Program through which he trained many doctoral fellows and students. An avid trout fisherman, Bloom is also an authority on whirling disease, a complex parasitic disease of trout and salmon.

Linda Russell Moran, PT 71, writes that since 1986 she has been working in the field of therapeutic riding/hippotherapy. Currently, she is director and therapist for a small program in Greenville NC. She and her husband, Jon, have two sons: one a college sophomore; the other a freshman in high school.

Karen K. Fischer-Northrop, PT 72, is in private practice in the San Francisco Bay Area, specializing in geriatric care.

David Benson, OT 75, is now retired from the Air Force and works part-time doing ADA transit evaluations for the city of Colorado Springs CO. He also does some contract work. He writes, "All the kids are gone except for the last one who is one year away. Have three grandchildren now."

Denise Johnson, MD 78, was appointed advising dean for medical students and promoted to associate professor of surgery in the division of surgical oncology at Stanford Medical School in Palo Alto CA, in 2002.

80s Jeffrey L. Thomasson, MD 82, is the 2003 president of the St. Louis Metropolitan Medical Society. Thomasson practices diagnostic radiology with the West County Radiology Group at St. John's Mercy Medical Center and is also a clinical associate professor of diagnostic radiology at Saint Louis University School of Medicine. He also has been president of the Missouri Radiologic Society. He is the son of the late Robert Thomasson, MD 50, a surgeon, and Mary Lou Thomasson, MD 51, a retired diagnostic radiologist.
Glenn A. Tung, MD 82, was inducted as a Fellow in the American College of Radiology at its annual meeting in 2002. Only about 10 percent of the more than 32,000 radiologists who are members of the ACR are selected for fellowship. Tung is affiliated with Massachusetts General Hospital in Boston and with Rhode Island Hospital and Brown University, both in Providence RI.

Robyn S. Porter, PT 87, writes, "I remarried 12/20/02 in Sun Valley ID to David A. Porter. David relocated to Idaho from Texas in June. I am currently working for Southern Idaho Therapy Services doing outpatient, inpatient, long-term care and home health care. My four girls—Alex, 10; Becca, 8; Christa, 7; and Andie, 5—are anxiously awaiting their new baby brother's arrival September 2003!"

Janice Klein, PT 88, the sole owner of Spine Care, Inc., in West St. Louis County since 1995, writes that she is expecting her third child in July.

Kristi Rambis, OT 89, is the occupational therapy manager at Reid Hospital and Health Care Services in Richmond IN, and is training to be a Certified Lymphedema Therapist to highlight her skills as a Certified Hand Therapist. She would like to hear from alumni at rambisk@reidhosp.com.

Mark Velleca, MD, PhD 95, was promoted in January, 2003, to the newly created position of vice president of research and preclinical development at Cellular Genomics Inc. (CGI) in Branford CT. One of the company's founding scientists, Velleca has expertise in the laboratory diagnosis of autoimmune and inflammatory diseases, hematological disorders and cancer. Before joining CGI, he was on the faculty of Yale Medical School, where he conducted postdoctoral research in cell biology and immunobiology. He holds an adjunct appointment at Yale as a clinical assistant professor of laboratory medicine.

Pablo Adler, MD 98, writes that he is now employed by Anesthesia Services P.A., which provides anesthesia services for the Christiana Health System in northern Delaware. He lives in Wilmington.

Dawn Brown, OT 00, is the director of occupational therapy at Wickliffe Country Place, a skilled nursing and continuing care facility. She lives in Kent OH.

Amanda Mrugala Rafferty, PT 01, was married to James Rafferty on September 20, 2002.

Cindy Garlitz Dean, OT 91, is living in Montana where she is the coordinator of therapy services at a regional medical center. In 1999, she earned her MPT degree in addition to her MS in occupational therapy.

Donna Cirasole, MD, HS 94, and her husband, Steve Rudich, MD, HS 94, recently moved to Cincinnati OH, where he is director of Liver Transplant Services at the University of Cincinnati. She is in private practice at Mt. Auburn Ob/Gyn Associates, affiliated with The Christ Hospital. Their daughter, Jackie, is 7; their son, Alex, is 3.

Russell J. Blattner, MD 34, died December 5, 2002, in a Baltimore retirement home at the age of 94. He was on the Washington University pediatrics faculty for a time and was credited with establishing, with an associate, that mosquitoes carry St. Louis encephalitis from birds to people. In 1947, he moved to Houston to become the first pediatrics department chair at Baylor College of Medicine, a position he held until 1977. He played a primary role in establishing Texas Children's Hospital in Houston and served as its physician-in-chief. Survivors include two sons, Frederick Blattner and William Blattner, MD 70, who is professor of medicine at the University of Maryland in Baltimore. Blattner was buried in Halstead KS, near his wife, Marian Koeneke Blattner, who preceded him in death in 1966.

Norman M. Johnson, MD 35, a retired general surgeon, died December 31, 2002, in Branson MO, at the age of 93.

Sydney B. Maughs, MD 35, died May 4, 2003, at the age of 92. He had practiced psychiatry for more than 50 years and was a senior member of the staff of the 4500 West Pine Clinics in St. Louis. He was also an associate professor of clinical psychiatry at Washington University. Maughs was the author of numerous articles on psychiatric subjects and had written frequently on criminal psychopathology. His survivors include his wife, Evelyne Jarratt Maughs; a son, Ned Maughs; and several grandchildren.

Gilbert S. Goldman, MD 37, died December 24, 2002, at his home in Pompano Beach FL, apparently of a stroke. He was 92. After graduation from the School of Medicine, he interned at Montefiore Hospital in Pittsburgh PA, and practiced with his brother, Milton Goldman, MD. During World War II he served in the U.S. Army in Africa and Europe. Afterwards, he completed a surgical residency at Mount Sinai Hospital in New York City and, in 1948, began practicing as a general surgeon in Pittsburgh. In the early 70s, back problems forced him to retire as a surgeon and relocate to Florida, where he became an emergency room physician in Fort Lauderdale. He retired at age 80 and then volunteered in a mobile indigent clinic operated by the Salvation Army. Survivors include his wife, Elise, and two daughters.
Dorsa Arlene Gates Sieber, NU 37, died December 5, 2002, in Carlinville IL, three days before her 89th birthday. She was the widow of Edward Henry Sieber, MD 37, who died 11 years earlier, also on December 5. Survivors include two daughters, Jane Sieber and Mary Ann Pollitt.

John Gentry, MD 48, died August 11, 2000, in Gloucester MA, after suffering a subdural hematoma at the age of 79. His survivors include his wife, Jane, and five children.

Robert Tindall, MD, HS 48, died December 6, 2002, of a stroke in Punta Gorda FL, at the age of 88. He earned his medical degree from the University of Iowa, served in the Army Medical Corps during World War II, then came to Washington University for his residency in otolaryngology. He joined the faculty of Saint Louis University School of Medicine, where he taught for 28 years. He retired in 1978. Survivors include his wife, Virginia Brown Tindall, and two sisters. Memorial contributions may be made to Cardinal Glennon Children's Hospital in St. Louis MO, one of the hospitals where he practiced.

Leonard L. Davis Jr., MD 53, died April 5, 2003, in Mexico MO, where he had practiced orthopaedic surgery. He was a World War II veteran and a past-president of the Missouri State Orthopaedic Association. Among his survivors are his wife, Priscilla Maddox Davis, four daughters and nine grandchildren. Davis had served on the Mexico Board of Education, and memorials are suggested to the Dr. Leonard Davis Scholarship Fund, c/o First National Bank in Mexico.

Thomas A. Heckel, MD 57 died of pancreatic cancer November 29, 2002, in Fresno CA, where he had practiced internal medicine.

Charles Kuhn III, MD 59, died December 29, 2002, in Providence RI, of complications from a bone marrow disorder. He was 69. He was an internationally recognized lung pathologist, professor emeritus of pathology at Brown University and retired chief of pathology at Memorial Hospital of Rhode Island, Pawtucket. During the Vietnam War, he served as a captain in the Army Medical Corps. Discharged in 1966, he returned to Washington University where he was a professor of pathology from 1967 to 1987. He then joined the faculty at Brown, retiring in 1998. In addition to his wife, Nobuko Obayashi Kuhn, MD 59, he is survived by two daughters.

Irene Mary Garrison Brown, NU 61, died in St. Louis MO, on February 12, 2003, at the age of 77. She held both a bachelor's degree in nursing (1961) and a master's degree in psychiatric nursing (1963) from Washington University. Her professional career as a nurse and nursing instructor spanned more than 40 years. She is survived by a son and other relatives. In keeping with Brown's belief that "flowers are for the living," the family requests that those wishing to honor her memory should "give any flowers to someone you love or, if desired, contribute to the American Cancer Society."

Joel M. Karlin, MD 68, died February 2, 2003, at his home in Denver CO, following a long illness. He was 58. A native New Yorker, he held an undergraduate degree from New York University. Following postgraduate work in pediatric allergy and immunology at National Jewish Medical and Research Center and the University of Colorado Hospital in Denver, he practiced in Lakewood and was president of Denver Allergy and Asthma Associates. Karlin had been associate professor of medicine in pediatrics at the University of Colorado School of Medicine and was a past-president of the Colorado Medical Society, known for his advocacy for patient rights. A lover of art and music, Karlin was also co-owner of a downtown Denver nightclub that featured jazz. He is survived by his wife, Caroline McNerny Karlin, two daughters and two sons.

Gerald A. Burger Jr., MD 79, died January 30, 2003, in the crash of a single-engine plane he was piloting from his home, Casper WY, to San Diego CA. He had reported icing problems to controllers and difficulty seeing the Rock Springs airport where he had been instructed to land, and then lost altitude and reported trying to avoid a peak before radar contact was lost. He was 49. Prior to attending the School of Medicine, Burger graduated from the Naval Academy in Annapolis MD. He did his anesthesia residency at Bethesda Naval Hospital, following which he served in the Navy Medical Corps in Okinawa, Japan and San Diego, where he headed the anesthesia department for five years. He learned to fly during his Navy service and was an instrument-rated pilot. After his discharge as a captain, he started the obstetric anesthesia program at the Cleveland Clinic Foundation in Ohio. While there, he earned an MBA from Cleveland State University. The family moved to Casper in 1999, where he joined the staff at Wyoming Medical Center. Burger is survived by his wife, Vicki, and three sons.

Laurel J. Harkness, MD 86, died on April 7, 2003, at her home in Denver CO, after a four-year battle with breast cancer. She had practiced obstetrics and gynecology at the Kaiser Permanente Group there since 1990, following her postgraduate training in Toledo OH. She was 43. In 1997, she married Daniel A. Sawyer, and they adopted two children from Kazakhstan: Arai, age 5, and Ruslan, age 3, in 2001. In addition to her husband and children, she is survived by her parents, Don Harkness, MD 58, and Mary Harkness, MD 58, two sisters and a brother.
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Say it with a billboard  Prostate cancer patient Bob Klaus, left in photo below, expressed his gratitude to Jaime Landman, MD, assistant professor of urologic surgery, in a big way. Klaus, who traveled to Washington University Medical Center from Iowa for a laparoscopic radical prostatectomy, put up a billboard at Kingshighway Boulevard and McRee Avenue near the medical center to show his appreciation for Landman’s “fantastic bedside manner and exceptional surgical skills.”
Photo op  Members of the Class of 2003 share a farewell hug at this year’s Commencement Recognition Ceremony. On May 16, the School of Medicine conferred 109 medical degrees: 83 students received the MD degree, 23 received the MD/PhD degree, and three received the MD/MA degree.