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The St. Louis Art Museum provided a festive setting to honor Samuel A. Wells Jr., MD, Bixby Professor and Chair of the Department of Surgery, left, who will become director of the American College of Surgeons in Chicago on July 1. Some 300 faculty, friends and former surgical house officers attended the black-tie event on Dec. 5. Here, Wells chats with William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine, right, and Mark S. Wrighton, PhD, chancellor of Washington University.
Bright white spots show the enzyme collagenase-I surrounding an artery in the developing lung of a fetal calf. The enzyme is a member of a family of enzymes, called matrix metalloproteinases, that promote growth and healing but can also cause major diseases. The photo was generated by William C. Parks, PhD, associate professor of medicine and of cell biology and physiology, one of many School of Medicine researchers studying these enzymes. For more on this important family, turn to page 12.

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Creating Partnerships On Behalf Of Technology

P. ANDREW Neighbour, PhD, has assumed the role of associate vice chancellor for technology management at Washington University.

Neighbour previously served as director and chief executive officer of START, a technology transfer consortium in Gulph Mills PA. His career also includes a faculty position at the Albert Einstein College of Medicine in New York and 10 years at E.I. du Pont de Nemours and Co. in Wilmington DE.

At Washington University, Neighbour will further develop the technology transfer program, a strategic, comprehensive effort that encourages companies to convert the University's discoveries into products and processes the public can use.

The technology transfer program evaluates University research for commercial potential, seeks patents, markets new technologies, negotiates and maintains licenses with corporations, and potentially creates new business enterprises.

In fiscal year 1996, the University earned more than $6 million in licensing fees and successfully negotiated more than 50 new agreements for the development of products such as software, computer and communication technology, and pharmaceuticals.

"I intend to build upon this success by coordinating and expanding a strong technology transfer program with the expertise and resources sufficient to meet the needs of the University and all of its research faculty," says Neighbour. "An emphasis on proactive response, communication and expert assistance in all aspects of technology management will become the hallmarks of this initiative."

Neighbour will work closely with faculty members in the School of Medicine, the College of Arts and Sciences, the School of Engineering & Applied Sciences, the John M. Olin School of Business and other schools.

Cooper, Gay and Patterson Receive Named Professorships

THREE surgeons have been awarded named professorships. Joel D. Cooper, MD, is the Evarts A. Graham Professor of Surgery; William A. Gay Jr., MD, is the John M. Shoenberg Professor of Cardiovascular Surgery, and G. Alexander Patterson, MD, is the Joseph C. Bancroft Professor of Cardiotoracic Surgery.

Cooper's innovations include the world's first successful single-lung and double-lung transplants. He also recently was named director of the division of cardiothoracic surgery.

In 1993, Cooper developed lung-volume reduction surgery, an operation that significantly improves the breathing and stamina of emphysema patients. He recently was honored with the Jacobson Innovation Award from the American College of Surgeons for his research in lung transplantation and lung-volume reduction surgery.

Gay, a renowned heart surgeon with 117 scientific papers to his credit, joined the medical school as a professor of surgery in 1995. From 1995 to 1997, he was chairman of the American Board of Thoracic Surgery. He currently is a member of the editorial boards of Surgery and The Annals of Thoracic Surgery.

Gay previously served as professor and chairman of the Department of Cardiothoracic Surgery at Albert Einstein College of Medicine, Montefiore Medical Center in New York City. Prior to that, he was professor and chairman of the Department of Surgery and vice president for health sciences at the University of Utah School of Medicine in Salt Lake City.

Patterson joined the School of Medicine as a professor of surgery in 1991 and has served as the surgical director of the school's adult lung transplant program since 1992. The lung transplant center at the School of Medicine/Barnes-Jewish Hospital is the largest in the nation and boasts a three-year survival rate of more than 70 percent.

Patterson has published 185 scientific papers, mostly in the field of lung transplantation. He is a member of the council of the American Association for Thoracic Surgery and is on the board of directors of the International Society for Heart and Lung Transplantation. He also is an associate editor of the Journal of Thoracic and Cardiovascular Surgery and a member of the editorial board of the Journal of the American College of Surgeons.

Cooper, Gay and Patterson all serve on the medical staff of Barnes-Jewish Hospital, an affiliate institution of Washington University Medical Center.
Alpers Named Kountz Professor

DAVID H. Alpers, MD, has been named the William B. Kountz Professor of Medicine. Alpers was chief of the division of gastroenterology in the Department of Medicine from 1969 to 1996. He is known for his groundbreaking research on the prevalence of psychiatric disorders in patients with gastrointestinal diseases. His work has pointed out the need to recognize and treat mental diseases, such as depression, that often accompany GI disorders, especially in the elderly.

A pioneer in the understanding of the role of intrinsic factor (IF) and the process of vitamin B12 absorption, Alpers has cloned both human and rat IF and currently is attempting to crystallize it to learn more about its structure. Deficiency of IF is a major problem in intestinal diseases such as atrophic gastritis and pernicious anemia, conditions that are particularly prevalent in the elderly.

Murdock Leads Minority Physicians

NATHANIEL H. Murdock, MD, clinical assistant professor of obstetrics and gynecology, has been elected president of the National Medical Association (NMA), the largest group of minority physicians in the United States.

“We’re proud that Dr. Murdock has been chosen for this most important national leadership position,” says William A. Peck, MD, executive vice chancellor for medical affairs and dean. “His commitment to health care of the highest quality will be a major asset.”

Madden Named To AMA Council

JOHN C. Madden, who is in the second year of graduate school at the School of Medicine, has been named to the American Medical Association Council on Ethical and Judicial Affairs (CEJA). He will serve a one-year appointment.

Madden is the only medical student appointed to the nine-member council, which also is composed of seven physicians and one medical resident. All were elected by the AMA House of Delegates. The primary purpose of the CEJA is to rewrite the AMA Code of Medical Ethics, a set of standards for ethical conduct that has existed for 150 years. The Code of Medical Ethics is updated and rewritten about every two years as opinions are written on issues such as genetic testing, organ donation and end-of-life concerns.

Madden is an active member of the Missouri State Medical Association and served as a Missouri Alternate Delegate to the AMA in 1995-1996.
‘Powerful Grace Lies In Herbs and Plants’

The plant mint can be used in the treatment of worms, irregular menstrual periods, vertigo, flatulence and poor eyesight — Johann Wilhelm Weinmann, apothecary, 18th century.

A HISTORICAL look at the healing power of plants is the theme of the exhibit that currently appears in the Drs. Robert J. and Helen H. Glaser History of Medicine Gallery in the Bernard Becker Medical Library.

The exhibit, which runs through April 1998, is a joint venture of Lilla Wechsler, rare book librarian in Archives and Rare Books at the medical library, and Linda Oestry, research librarian at the Missouri Botanical Garden.

Some 45 volumes representing the most precious botanical books contained in the collections of the medical library and the botanical garden are featured in the four display cases. The materials are presented chronologically beginning with the 15th century.

Perhaps the most beautiful is a set of vellum-bound folios compiled by Johann Wilhelm Weinmann, an apothecary, and published in Regensburg, Germany, between 1737 and 1745. The four volumes contain 1,250 hand-colored, exquisitely depicted mezzotint plates of fruit, flowers, trees and shrubs, and are accompanied by bilingual text and complete descriptions in German and Latin of the actual plants and their medicinal powers. The set was donated by Jean Frederick Rogier, MD ’34, and his wife, Verna Dorothée Rogier.

A less likely showpiece, but a famous botanical lexicon, is a tattered example of a Mattioli-Dioscorides, a comprehensive work on botany as it was known and available in the 16th century by Pietro Andrea Mattioli. The ragged book is a rare example of an overused 16th century piece, according to Wechsler, who says it was damaged by fire and water.

Wechsler says the exhibit is timely because people today are increasingly interested in natural remedies.

“What is important about this display is to show people that there is knowledge with plant medicine — old knowledge, fundamental knowledge, maybe primitive knowledge — and it was there hundreds and hundreds of years before any of these volumes was printed,” she says.

The various illustration methods that developed from century to century also are represented. These range from simple woodcut line and space type through the most sophisticated colored lithographs to the fine line graphics of copper engravings.

Others at the medical library who assisted with the display include: Paul Anderson, PhD, archivist, James Curley and Polly Cummings, archives and rare books, and Brian McKinney, technical services. Huber Walsh, of the botanical garden library also assisted with the display.

Distinguished Faculty Awarded

F. Sessions Cole, MD, left, receives one of the University’s Distinguished Faculty Awards from Chancellor Mark S. Wrighton at the Oct. 24 Founders Day banquet. Cole, professor of pediatrics and of cell biology and physiology, was one of four faculty members to receive the award.
Peck Named AAMC Chair-Elect

WILLIAM A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine, was appointed chair-elect of the Association of American Medical Colleges (AAMC) during the association's 108th annual meeting, held Oct. 31-Nov. 4, in Washington DC.

Peck, who has served this past year as chair of the AAMC's Council of Deans, will become chair of the AAMC next year. The association represents the 125 accredited U.S. medical schools, the 16 accredited Canadian medical schools, and some 400 major teaching hospitals.

A leader and faculty member at the School of Medicine for more than 20 years, Peck is the first person to serve in the dual position of dean and vice chancellor for medical affairs. He also is an internist who is internationally recognized for his work on osteoporosis.

He is the founding president of the National Osteoporosis Foundation and has served on and chaired numerous academic society and government committees, medical journal editorial boards and pharmaceutical company advisory boards.

Peck is president of the Washington University Medical Center Redevelopment Corp., which represents the School of Medicine, Barnes-Jewish and St. Louis Children's hospitals, the Barnard Free Skin and Cancer Hospital and Central Institute for the Deaf in important community enhancements.

Executive Faculty Welcomes Slavin

Peter Slavin, MD, MBA, right, recently named president and senior executive officer of Barnes-Jewish Hospital, visits with Gustav Schonfeld, MD, Adolphus Busch Professor and chairman of the Department of Medicine. Slavin and his wife, Lori, were the guests of honor at a reception sponsored by the executive faculty of the School of Medicine in October. Slavin was previously senior vice president and chief medical officer at Massachusetts General Hospital in Boston.

Chole To Head Otolaryngology

RICHARD A. Chole, MD, PhD, has been named Lindberg Professor and head of the Department of Otolaryngology. His appointment becomes effective Feb. 1, 1998.

Chole succeeds John M. Fredrickson, MD, professor of otolaryngology, who has served as the head of otolaryngology since 1982 and is stepping down to focus on his research interests.

Chole was chairman of the Department of Otolaryngology-Head and Neck Surgery at the medical school of the University of California, Davis.

Chole is known for developing the oto-endoscopic camera and a prosthetic device that functions as a replacement for middle ear bones damaged by injury or infection. In addition, he is co-developer of a tympanostomy tube used to ventilate the ear in patients suffering from repeated ear infections.

An author or co-author of more than 100 scientific articles, Chole studies the cell biology of osteoclasts, which are bone cells. In addition, he researches experimental models of middle ear conditions that occur as a result of inappropriate osteoclast activity.
Allergies? Blame It On Your Genes

ALLERGIC diseases are among the major causes of illness and disability in the United States, affecting as many as 40 to 50 million Americans. Researchers have known for some time that allergies have a genetic link, but now scientists at the School of Medicine have identified a genetic mutation that appears to make people more susceptible to allergies.

"We have found that if you have this mutation, you are 10 times more likely to be allergic," says Talal A. Chatila, MD, senior author of the study, which appears in the Dec. 11, 1997, issue of The New England Journal of Medicine.

Chatila and his colleagues studied the receptor for interleukin-4 -- a key protein which induces immune cells to make immunoglobulin E, or IgE, an antibody that triggers the chain of events that leads to allergic symptoms. They searched for variations in the gene for one of the subunits of the interleukin-4 receptor, then determined how common the variant was in patients with severe allergic inflammatory disorders and healthy adults.

One variant occurred at high frequency in patients with allergic inflammatory disease and in adults with various allergies but at a low frequency in adults with no allergies. This genetic alteration occurred at the tail end of the interleukin-4 receptor, Chatila and his colleagues discovered. The consequence, they showed, was that the receptor becomes hyperresponsive when stimulated with interleukin-4.

"This mutation makes the receptor function better, so it signals the cells to make IgE antibodies more effectively than it would have done otherwise," Chatila says. "Therefore, people with this altered receptor gene are more likely to develop allergies."

Identifying the altered receptor gene could greatly aid studies of allergic reactions and also could help researchers develop better medications to treat allergies.

Breast Implants Appear Microbe-Friendly

RESEARCHERS here have demonstrated for the first time that a variety of potentially harmful microbes can live and grow inside saline breast implants. They also discovered that microorganisms frequently live in the tissue surrounding implants, creating conditions that could make human breasts harden and contract.

Although health-threatening infestations inside or outside saline implants are rare, women should be aware that the implants seem to be relatively friendly to microbes, says V. Leroy Young, MD, professor of surgery.

Young and his colleagues inoculated saline implants with 10 common types of bacteria and fungi and placed the implants in rabbits. When they removed the implants one to six months later, they found that seven types of bacteria and fungi had flourished in their saline home.

The researchers also found microbes in the tissue surrounding 17 percent of the saline implants. Microbes living outside the implant can increase the chances for hardening of the breast, a major complication of breast implants.

In another study not yet published, Young found that microbes rarely inhabit tissue around implants filled with soybean oil. The oil, harmless to humans, appears to be deadly to bacteria, and tiny leaks from the implant are apparently enough to kill neighborhood bugs.

Dystonia Linked To Dopamine Defect

THREE separate observations have spawned a new idea about dystonia, a brain disorder that makes muscles contract and go into spasms. In the November issue of Neurology, researchers here suggest that dystonia results from a shortage of cellular receptors for dopamine, one of the brain's chemical messengers.

The researchers gave eight baboons a neurotoxic drug to induce symptoms of Parkinson's disease but noticed that the animals transiently displayed signs of dystonia before developing Parkinson symptoms.

During the dystonic phase, dopamine levels in two regions of the basal ganglia — the putamen and caudate — were nearly 98 percent lower on the treated side than on the untreated side of the brain. They also were much lower than those in untreated baboons.

Lead author Joel S. Perlmutter, MD, and colleagues also measured the amounts of three different dopamine receptors in the treated baboons. They found that levels of the receptor D2 fell by 20 to 40 percent 17 to 18 days after treatment.

"So the timing of D2 receptor depletion coincided closely with the appearance of dystonic symptoms," Perlmutter says.

The third observation came from two PET studies of dystonic patients with hand or forearm cramps. When the researchers touched vibrators to the hands of study participants, blood flow to the brain's primary sensory motor cortex and supplementary motor area was considerably less than in normal subjects. The second PET study revealed a 29 percent reduction in D2 receptor binding in the putamen of patients with hand or forearm dystonia compared with normal patients. "This is the first demonstration of a receptor abnormality in dystonia," Perlmutter says.
New Drug May Boost Nation’s Blood Platelet Supply

A new drug may dramatically increase the nation’s supply of platelets, a chronically scarce blood product needed by many cancer patients, researchers here have reported.

A single injection of the drug, a synthetic human hormone called PEG-rHuMGDF, can triple the number of platelets received from each donor, says Lawrence T. Goodnough, MD, professor of medicine and pathology, and a lead researcher in a multicenter study of the drug.

Platelets are blood cells that strengthen blood vessel walls and help seal cuts. Healthy people have hundreds of thousands of platelets in each cubic millimeter of blood. But chemotherapy and radiation therapy can quickly destroy the cells, leaving many cancer patients in dangerously short supply. When platelets are low, microscopic vessels become weak and rupture easily. Patients can have spontaneous nosebleeds, and merely brushing one’s teeth can lead to significant bleeding.

Today, platelet transfusions go hand-in-hand with chemotherapy. The transfusions are particularly critical for patients undergoing bone marrow transplants, a procedure that usually involves heavy doses of chemotherapy.

The researchers found that, on average, a small dose of the drug given two weeks before donation tripled the number of platelets collected. In some cases, volunteers were able to donate six times the normal level of platelets. None of the donors showed side-effects from the drug, and their platelet levels returned to normal soon after donation.

An increased supply of platelets would give physicians more options for treating chemotherapy patients, Goodnough says.

Old Habits Die Harder For Those With Psychiatric Illness

Giving up smoking is harder for some than for others. Investigators at the School of Medicine have found that psychiatric illnesses may contribute to severe withdrawal symptoms, making it even harder for smokers with a history of mental illness to stop.

The investigators, led by Pamela A. F. Madden, PhD, research instructor of psychiatry, and Nicholas G. Martin, PhD, professor and senior research fellow of epidemiology at the Queensland Institute of Medical Research in Brisbane, Australia, questioned more than 550 Australian women to learn their smoking histories and catalogue their nicotine withdrawal symptoms. The researchers limited the survey to women because of the prevalence of depression in women.

Madden found that most women in the study experienced mild, moderate or severe nicotine withdrawal. About 41 percent of smokers suffered mild withdrawal; 36 percent moderate withdrawal; and 18 percent severe symptoms.

Symptoms that best distinguished smokers with severe withdrawal were characteristic of mood disorder. Of the study subjects who had experienced severe nicotine withdrawal, 84 percent reported a depressed mood after quitting cigarettes, 82 percent suffered nervousness, and 58 percent had insomnia. Only 20 percent of those with moderate withdrawal symptoms felt nervous when they stopped smoking.

Madden also looked for associations between the severity of withdrawal and a lifetime history of psychiatric illness or specific personality traits. The idea was to identify factors that might predispose a patient to nicotine withdrawal symptoms.

Among those reporting severe symptoms, Madden found associations with mood and anxiety disorders.

Madden also found that smokers were more likely to be dependent on alcohol than non-smokers, regardless of the severity of their nicotine withdrawal symptoms. Another key component in the severity of nicotine withdrawal was how many cigarettes a person smoked.

Heavy smoking — defined as 20 or more cigarettes per day — was more strongly associated with moderate to severe withdrawal than with mild nicotine withdrawal.
Echoing the logic of this Chinese proverb is the Wellness Ministry, a Washington University community outreach program designed to help people help themselves by increasing their awareness and understanding of chronic high blood pressure.

Co-funded by the National Institutes of Health (NIH) and the American Heart Association, the Washington University program is unique in its effort to install a peer-supported wellness program into groups that already have an established support base. Washington University staff train group volunteers to take blood pressure readings and educate them about the many issues that surround the disease of hypertension. Once a program is in place, University staff leave the program to exist on its own.

"Our approach is community-based," says Larry E. Fields, MD, assistant professor of medicine, who initiated and is developing the program. "Individuals from the University go into the community, but they don't then leave and leave nothing — they leave something behind. It's an extremely positive and beneficial relationship for both the community and Washington University."

Reaching Out

Hypertension afflicts more than 50 million Americans. It is the most common form of cardiovascular disease and the main contributor to the nation's No. 1 killer, heart attack. Still, only one in four persons classified as hypertensive properly treats and controls his or her blood pressure.

One of the primary goals of the Wellness Ministry is to increase the number of local citizens who receive appropriate therapy for hypertension, says Fields, who also serves as interim director of the St. Louis Department of Health and Hospitals.

"Believe it or not, the numbers of people affected with hypertension today are no better than they were in the 1970s," he says. And while research on hypertensive drugs continues, Fields is not convinced that new drug therapies alone will solve what may largely be a problem of patient compliance.

Larry E. Fields, MD, assistant professor of medicine, discusses a blood pressure reading with church member Magnolia Crayton at the recent hypertension screening held at Antioch Baptist Church. Wellness Ministry volunteer Dorothy Monroe looks on.
"If we grapple with the issue of compliance, that's where we will gain some headway," says Fields. "A 10 to 20 percent improvement would have a profound effect on the incidence of heart attack in this community."

The Wellness Ministry has conducted initial blood pressure screenings at six area churches, with more scheduled. Each participating church must provide volunteers from within its congregation to train in taking manual and automatic blood pressure readings and in counseling peers on issues related to the treatment and control of hypertension. The program strives to include a cross-section of professionals and lay people in its volunteer pool.

Stephanie Loslo, RN, BSN, is a community research coordinator who works closely with Fields and church leaders to provide the basic training.

"Patients' blood pressures tend to run higher when they are seen in traditional health care settings," explains Loslo. "In seeing persons from a volunteer base made up of their peers, people often experience less anxiety during a blood pressure check and consequently get a truer reading of their average blood pressure."

Mary Fauntleroy, a retired nurse anesthetist and a Wellness Ministry volunteer at Antioch Baptist Church in St. Louis, agrees that many people are more comfortable having someone they know and trust check their blood pressure. She is one of 15 volunteers at her church.

"It's a much needed program that has gone over quite well," says Fauntleroy. "Hypertension is a prevalent problem, particularly in the African-American community."

Loslo estimates that nearly 150 blood pressures have been taken to date at screenings held after regular weekly church services. She tabulates the results and then arranges a meeting between herself, Fields, all volunteers, and any patients whose readings exceed normal limits. During the meeting, patients are encouraged to ask questions, make an appointment with Fields for follow-up, or request referrals to an appropriate health care provider.

Follow-up screenings are scheduled on a quarterly basis. The program provides funds for necessary equipment, training and certification, and educational materials related to blood pressure and hypertension that are distributed to and discussed with participants. Once the Wellness Ministry is firmly in place, volunteers will be left to continue the program on their own.

"The whole idea behind the program is to let the individual churches run the screenings," says Loslo. "Eventually we won't be there — we want the volunteers to be self-sufficient and to become a learning resource about hypertension for their fellow church members."

Fields and Loslo keep volunteers up to date on any new information regarding hypertension. And if church volunteers are asked a question they cannot answer, they need only turn to their colleagues at Washington University for assistance.

Persons identified with high blood pressure through the Wellness Ministry are given the option of participating in research Fields is conducting regarding the effectiveness of peer support, or "coaching," on overall patient compliance.

After the patients volunteer to participate in the research portion of the project, they are randomized — some receive support immediately, while support for others is delayed. Patients with support select a fellow church member to serve as their coach. Patients and coaches then meet to develop a support plan. Often this includes reminders about a doctor's appointment, taking their medicines or avoiding table salt if they are salt-sensitive.

At follow-up screenings, participants are reevaluated, and the results are again tabulated. Fields and other researchers want to determine if coaching will affect outcomes on control and treatment of hypertension. The hypothesis is that it will, and he expects to report his findings at the completion of the program's initial two-year cycle.

According to Fields, many people who participate in the program already have a primary health care provider. The study does not
interfere with the recommendations of that provider; it simply attempts to answer the question: Does having someone known and trusted involved in a person's hypertension management increase that person's chance of doing a better job of managing their own blood pressure?

Antioch volunteer Mary Fauntleroy believes peer support will lead to greater awareness and better control of hypertension. "If you have a coach and you see and talk to them regularly at church, you will have less non-compliance," she says.

Most often, people do choose to participate in the research effort, Fields says. He attributes this to the noninvasive nature of the program and to the genuine desire of people to have a positive impact on the health of their fellow church members.

Rosie Lee Jones, a volunteer at San Francisco Temple in north St. Louis County, agrees. "Ministry is very much part of our faith, healthwise and spiritual," she says. "The Wellness Ministry fits our mission."

Jones, who has no professional health care experience but has practiced first aid and CPR as a volunteer, appreciates the training she and other church volunteers have received as part of the program. "We have all learned so much that we should have known," she says, "about health, proper nutrition and taking blood pressures."

Hypertension screenings frequently identify people who were not aware they had high blood pressure, as well as those who do know but refuse to follow therapeutic recommendations, says Fields. Some feel they can't afford to seek care, and these people are referred to sources that provide free medication and other care. Others simply don't like the inconvenience of taking a daily medication. Generally, Fields says, proper treatment and control of hypertension comes down to a matter of personal choice.

Eventually, the program will put all of the individual Wellness Ministries in touch with one another to create a network of providers. The project's overarching plan is to expand from the initial church groups into the larger community, incorporating various clubs and even work sites into the program.

"Regardless of the outcome of the research, the Wellness Ministry as a unit within the church body will always exist," says Fields. "The churches will have the latitude to continue to manage high blood pressure independent of our hypothesis. That's the power of this program — we walk away and leave a Wellness Ministry that's functional."

"It's an ongoing endeavor," says Fields. "Our funding is really addressing the research question, but the Wellness Ministry itself will live beyond the research — that's what I like so much about it."

Obviously, other risk factors such as obesity, high cholesterol and smoking, also contribute to the incidence of heart attack and stroke. Fields doesn't rule out the possibility that the Wellness Ministry may someday take on these issues as well.

"The beauty of the program is that we can work with these groups and let them decide what their priority is going to be. Right now we are making them strong and functional around the issue of hypertension, which is a major threat to health and wellness in all communities."

The Wellness Ministry will become part of the Washington University Clinical Hypertension Network, a burgeoning project directed by Fields that is aimed at strengthening connections between care givers and patients with hypertension. The network establishes working relationships between physicians — including those who work in School of Medicine divisions and departments and private practitioners — and then funnels information gathered back into the community.

"It's a long-term issue that has the potential for tremendous community impact," says Fields. Ultimately, persons involved in the Wellness Ministry will benefit, from easy access to the latest information and care practices and by sharing a bond with more informed peers for continued wellness support and health promotions.
A group of mice at the School of Medicine recently went on a cigarette binge. Two times a day, six days a week, the little addicts ran into smoking chambers and inhaled the smoke from a normal-sized cigarette. It was like the Marlboro Man puffing a cigarette the size of a log. Such a bad habit would quickly give most mice severe symptoms of emphysema. But, amazingly, these mice could breathe easily after six months of heavy smoking.

Why did the mice stay healthy? Through genetic engineering, they were unable to produce an enzyme called macrophage elastase. With this relatively simple experiment, reported in the Sept. 26, 1997, issue of Science, Steven Shapiro, MD, associate professor of medicine and of cell biology and physiology, and colleagues were able to show that the presence of the enzyme causes emphysema in mice.

The discovery highlights a new trend in medicine. Thanks in large part to work at the School of Medicine, a small family of enzymes is generating a big buzz in the world of medical research. The enzymes are linked to a surprising array of diseases, but they also help drive normal growth and healing. Researchers around the world are now trying to understand the complex actions of these enzymes in living systems. Clearly, the smoking mice are only the beginning.

Macrophage elastase belongs to a family of enzymes called matrix metalloproteinases or MMPs. All 14 members of the MMP family can degrade tissues and are associated with inflammation. For instance, collagenase-1, the most-studied MMP, can break down the tough collagen in the skin, and macrophage elastase can dismantle elastin fibers in the lung and arteries. Like a sculptor's chisel, the enzymes are usually employed in useful demolition. MMPs help reshape growing tissues in embryos, and they also help remodel the skin in healing wounds.

But too many MMPs can cause big trouble. Some researchers believe that excess MMPs contribute to rheumatoid arthritis, tooth decay and heart attacks as well as emphysema. In addition, researchers have long linked MMPs to the spread of cancer. The enzymes apparently degrade tissue around the tumor, thus opening doors to other parts of the body.

Thirty years after the discovery of the first MMP, researchers are at the brink of more breakthroughs that will illustrate just how vital — and destructive — these enzymes can be. "We're at a critical point in understanding these enzymes," says William C. Parks, PhD, associate professor of medicine and of cell biology and physiology. "We're just beginning to find out what they do, and that's exciting."

MMPs: Good, Bad and Complicated

Recent discoveries here have sounded a common theme: MMPs do much more than researchers once thought. Before Shapiro gave cigarettes to his genetically engineered mice, most emphysema experts assumed that a completely different enzyme from a different family caused the disease.
In fact, macrophage elastase had been largely forgotten by science until Shapiro began investigating it a few years ago. Now, studies suggest that the same enzyme that causes emphysema also plays a major role in atherosclerosis and cancer.

The study of macrophage elastase gained great momentum two years ago when Shapiro and colleagues produced a strain of "knockout" mice that lacked the gene for the enzyme. By studying mice that lack macrophage elastase, Shapiro and others have gained an unprecedented view of the role of this enzyme in a living body. Shapiro’s lab is the only one in the world that produces macrophage elastase knockout mice, and he gives them free-of-charge to any academic researchers who want them. Companies pay a licensing fee of $25,000 for each pair of mice.

"These knockout mice have been a lot of fun," Shapiro says. "We could speculate for years about the function of an enzyme, but these mice help us pin it down."

Using knockout mice and other research tools, Shapiro and others are working to untangle the role of MMPs in heart disease. Based on previous studies conducted by Parks and Howard Welgus, MD, professor of medicine and head of the division of dermatology, researchers suspect that MMPs both promote and prevent heart trouble. In the early stages of atherosclerosis, small levels of macrophage elastase and other MMPs apparently help nibble away at developing atherosclerotic plaques and keep them from clogging vessels, Shapiro says. But when plaques take root, more and more enzymes get produced. Theoretically, the swarm of enzymes could start chiseling away at the vessel wall, releasing huge chunks of plaque that can cause a heart attack, he says.

Other studies show that macrophage elastase plays a surprising role in controlling cancer. While other MMPs open doors for tumors, macrophage elastase apparently works to slow down the cancer’s spread. When Shapiro injected cancer cells into the lungs of a macrophage elastase knockout mouse, the cancer quickly took over the mouse’s body. In the presence of macrophage elastase, the same cells lie dormant in the lung. Shapiro suspects that macrophage elastase prevents blood vessels from connecting to tumors, thus cutting off the cancer’s supply of nutrients.

"In mice, macrophage elastase is a dominant factor in many diseases," Shapiro says. "It’s probably important in humans too, but other matrix metalloproteinases may contribute."

Spurred on in part by Shapiro’s emphysema study, pharmaceutical companies are already developing drugs that inhibit macrophage elastase. In theory, such a drug could prevent emphysema and reduce heart attacks. But would the drugs also help nurture cancer? Shapiro believes this complex, multifaceted enzyme needs to be better understood before physicians start controlling it.

MMP Expertise

The School of Medicine has perhaps the largest collection of MMP experts in the world, and researchers here are tackling the enzymes from every possible angle. MMP researcher Eugene Bauer, MD, dean of Stanford University School of Medicine and a former professor of medicine at the School of Medicine, says researchers here are the "world leaders in matrix metalloproteinase biology."

The team includes Gregory I. Goldberg, PhD, professor of medicine, associate professor of biochemistry and molecular biophysics and research assistant professor of microbiology, who was the first to clone and sequence many of the enzymes. Robert M. Senior, MD, the Dorothy R. and Hubert C. Moog Professor of Pulmonary Diseases in Medicine, studies the cellular biology of MMPs. Robert P. Meddon, PhD, professor of cell biology and physiology and of medicine, concentrates on MMP protein chemistry. Jo L. Seltzer, PhD, research associate professor of medicine, studies the activation of the enzymes. “With so many matrix metalloproteinase experts in one location, we can address any question that pops up,” Shapiro says.
Shapiro and others say there is one major reason why the School of Medicine is a world leader in MMP research. He's Arthur Z. Eisen, MD, the Winifred A. and Emma R. Showman Professor of Dermatology in the Department of Medicine. As a postdoctoral student at Harvard in the mid-1960s, Eisen worked in the laboratory that discovered the first MMP, collagenase-1, in tadpole skin. "When I entered this field 30 years ago, there were one or two papers about these enzymes published every year," he says. "Now there are thousands a year, and we still don't know exactly what they do."

Eisen brought his interest in MMPs to the School of Medicine in 1968, and he quickly became the first to isolate and purify collagenase-1 in human skin. Today, Eisen explores the role of MMPs in developing tissues, particularly blood vessels and hair follicles. He also is studying the complex interactions between MMPs and tumors. Throughout his career here, his work and reputation have been a magnet for other researchers interested in the field.

Take Welgus, for instance. "I was fascinated by the fact that the skin cells that make collagen also make the enzymes that break down collagen," he says. "I joined Eisen's lab in 1973, and my career has been based on matrix metalloproteinases ever since."

Welgus is currently studying the beneficial work of the enzymes. Of the 14 matrix metalloproteinases, he says, at least seven or eight are expressed in normal development and healing. "The initial focus of MMP research was on bad things and disease," Welgus explains. "We are learning that there are a lot of good things these enzymes do."

Welgus is particularly interested in the action of the enzymes in both normal and slow-healing wounds. About five years ago, he and Parks found that skin cells produce collagenase-1 in response to minor cuts. In a study in the June 16, 1997, issue of the Journal of Cell Biology, Parks, Welgus and others describe how collagenase helps skin cells move to fill in the void left by a cut. Welgus suspects that overproduction of the enzyme may prevent normal healing, leading to chronic skin ulcers. To test his theories, Welgus regularly inflicts small puncture wounds on scraps of human skin recovered from breast reduction surgeries. Spread out in a culture dish, the skin will heal and act generally healthy for about seven days.

Welgus gave MMP research here a major boost when he recruited Parks eight years ago. The two researchers have worked closely together on many projects, a collaboration that has borne a few friendly disagreements. For instance, Parks believes it is too soon to say that overproduction of MMPs prevents wounds from healing. "We're still at the infant stage of figuring out what these enzymes do," Parks says. He notes that just about every member of the MMP family can be found in a wound, and they probably have multiple roles in healing. Working with Welgus, Parks plans to study wound healing in mice genetically engineered to lack collagenase in the skin.

Thanks largely to the groundwork set by researchers at the medical school, many other researchers around the world are taking a close look at MMPs in a wide variety of diseases and injuries. "These enzymes seem to be involved in an incredible number of diseases," Parks says. "The key challenge is to find out what they really do, not what they're presumed to do."

"Things are moving along very quickly in this field, and it has become extremely competitive," Eisen says. "After all of these years, we still don't know what these enzymes do precisely. But the answers will come."
The Faculty Practice Plan
New Strategy Designed To Contain Costs And Consolidate Services Of Clinical Enterprise

BY CANDACE O'CONNOR

In recent years, changes in the health care climate have created a dilemma for academic medicine. Medical centers need clinical revenues to help subsidize teaching and research, but the growth of managed care has made for a cost-conscious marketplace, in which precious clinical dollars are steadily decreasing. How does an academic medical center continue to fund all aspects of its mission — and still offer high-quality patient care?

The Washington University Medical Center, located in one of the fastest-growing managed-care markets in the country, is facing these same kinds of challenges. So in 1996, the School of Medicine launched a broad-based initiative to develop a vision for change. A series of teams composed of department heads, administrators and volunteers from the faculty and staff met to analyze all aspects of the school’s mission.

The result was the Faculty Practice Plan, a sweeping new strategy for redesigning the school’s clinical enterprise. One thrust of the plan is to trim unnecessary expenses; this year alone, renegotiated vendor contracts are projected to save some $1.7 million. A second focus is to enhance the quality and convenience of clinical care through streamlined patient registration, state-of-the-art electronic recordkeeping and a major new model for medical care in which closely related services are clustered into multispecialty “centers of excellence.”

Another important effort involves coordinating the Practice Plan with the Campus Integration Plan, announced in fall 1996 by BJC Health System and the School of Medicine. Over the next decade, the Medical Center will change dramatically as outdated buildings come down and state-of-the-art new facilities go up. Ambulatory and cancer services will move to major new centers at the north end of campus, while inpatient medical and surgical care shifts to the south end.

As its name implies, the Faculty Practice Plan focuses much of its attention on the faculty, both the 800 full-time faculty clinicians and the 540 community physicians who compose the part-time staff. The school intends to maintain its strong commitment to the needs of the full-time group, while strengthening its ties with voluntary faculty and other community physicians.

“I see the Practice Plan as supporting the faculty in all facets of their work,” says James P. Crane, MD, associate vice chancellor for clinical affairs, chief executive officer of the Faculty Practice Plan, and director of the programming effort for the Campus Integration Plan. “If our clinical practice continues to attract patients, that will serve not only our clinical mission, but our teaching and research missions as well.”

Faculty members who have served on the Practice Plan teams agree. “The changes going on around us in the health care industry represent a huge potential threat to academic medical centers,” says Ralph G. Dacey, Jr, MD, Henry G. and Edith R. Schwartz Professor and chairman of the Department of Neurosurgery, who was appointed in August to head the 13-member Practice Plan board. “This plan is the means the school is using to respond to those changes — and I think it is going to be an effective one.”

“It’s something we need, and it will position us well for the future. That’s really our goal: to coordinate and integrate our activities and be efficient,” says Marilyn J. Siegel, MD, professor of radiology and of pediatrics, and one of three faculty members elected to the board. “And I think the faculty will support it because everybody realizes that we have to do it for this university to survive and be successful.”

Developing The Plan

In late 1995, Crane and his staff embarked on an analysis of the ways in which the changing health care climate has affected academic medicine. They found an increasingly price-sensitive marketplace, in which the
need for inpatient services is declining, Medicare/Medicaid cuts are on the horizon and research funding from the National Institutes of Health is threatened. A number of centers already have faced serious operating losses or sold their hospitals to for-profit corporations.

With that information as a backdrop, the strategic initiative for the Faculty Practice Plan began in January 1996. Further impetus for the effort came from the Barnes-Jewish Hospital merger that took place that month, presenting the opportunity for campus-wide change.

As a first step in the process, design teams were formed to look at four areas: practice standards, financial management, administrative services and faculty incentives. A Practice Plan steering committee then used the design teams' recommendations, along with data from more than a dozen institutions that already had practice plans in place, to develop a set of clinical practice goals.

In early fall 1996, the steering committee held a series of open meetings to present their findings to faculty and staff. The practice standards design team, for example, had generated service goals related to such areas as patient scheduling, registration, satisfaction, tracking and follow-up. As a result of these meetings, faculty members came forward to serve on new process improvement teams that focused on ambulatory operations, information systems, purchasing, electronic medical (EMR) records and patient flow.

"We had more than 180 faculty volunteers to serve on these teams," says Joan Podleski, assistant vice chancellor for clinical affairs and executive director of clinical operations for the Practice Plan. "They were spectacular: They gave their time, they were dedicated and they took the whole process very seriously."

"We were extremely pleased by the results," says Crane, "but I don't think it would have been successful if we had tried to impose decisions from the top down. Instead, we gave each group a charge: 'Consider all the data and bring us your recommendations.' And that is the way it has worked."

Out of these efforts came an exciting new model for ambulatory care that calls for locating closely related services side by side and clustering services often needed by the same kind of patient. The School of Medicine may be the first academic health center to implement this concept.

Other ideas also emerged. Jeffrey Lowell, MD, assistant vice chancellor for clinical affairs and executive director of medical services for the Practice Plan, co-chaired the 27-member EMR team, which included a cross-section of faculty members, along with information technology specialists from the school and BJC. It was an intense, four-month process with a very tight timeline.

In the end, he says, they came up with a well-considered proposal. "We developed EMR objectives and requirements that will be used by all ambulatory sites, and some high-level implementation recommendations. We even recommended which vendor we should pursue. It was an interesting, worthwhile process."

The Plan's Current Status

With the process improvement initiative underway, the executive faculty formally endorsed the Practice Plan and turned over its direction to a new Practice Plan board, composed of five department heads, a basic scientist, three elected faculty members, the dean for medical affairs, the Practice Plan CEO and two outside board members. One outside board member, Vinod Sahney, already has been selected. He is senior vice president of the Henry Ford Health System in Detroit, and an expert in health system development and strategic planning.

Reporting to the board is a nine-member administrative staff, headed by Crane, that includes Lowell; Podleski; Ron Chod, MD, assistant vice chancellor for clinical affairs and executive director of Practice Plan development; Jay Albertina, executive director for managed care; Diana Carmichael, executive director for strategic planning; and three more members still to be named. Lee Petter, associate vice chancellor, associate dean and chief operating officer for the School of Medicine, is now the plan's chief operating officer.

Also reporting to the board are four standing committees — nominating, finance, medical management and strategic planning — that have been meeting since mid-summer to consider the five priorities established by the board. The finance committee has been working to set standards for WUSBCS and to develop approaches for rewarding clinical productivity, while the strategic planning committee has been discussing the ambulatory care questions as part of their charge to develop a schoolwide plan for clinical services.

"We also have been dealing with what the role of the main (Medical Center) campus will be now and for the future," says Diana Gray, MD, associate professor of
Five strategic priorities have been established:

- **MAXIMIZE** the performance of the Washington University Shared Billing and Collection Service (WUSBCS), the consolidated agency responsible for billing and collection of payments for clinical services.
- **DEVELOP** a successful ambulatory care program, overseeing programming for on-campus facilities and developing plans for new, off-campus sites.
- **BUILD** Faculty Practice Plan identity and faculty support.
- **MANAGE** financial risk under a new WUPN managed-care contract that will take effect early in 1998.
- **IMPROVE** and **DOCUMENT** schoolwide administrative expense control — an initiative that has the potential for saving the school some $10 million each year.

obstetrics/gynecology and radiology, who serves on the strategic planning committee and is another of the three faculty members elected to the Practice Plan board. “What will be our patient base? What new and continuing patients do we hope to attract?”

Finally, the medical management committee will help oversee the implementation of a new contract developed by the Washington University Physician Network (WUPN), the independent physician organization that handles managed care contracting for its 1,400 members. WUPN, organized in 1993 with its own board of directors, includes the school's full-time faculty and affiliated community physicians, most of whom are primary care physicians.

“We are probably one of the largest independent physician organizations in the country,” says Ron Chod, MD, who directs WUPN network development. “What makes us unique is that we are a multi-specialty group, with all services from primary care through transplants, and a true partnership between primary care physicians and specialists.”

In its first few years of operation, WUPN has already negotiated 31 managed care contracts with favorable terms for physicians. But now WUPN is moving toward a new kind of contract, designed to improve both financial management and quality of care. It assumes the risks for providing clinical services by paying physicians — primary care and specialists alike — a fixed or capitated amount per patient, which gives them greater latitude in planning patient care and allows them to share in the savings from more cost-effective office practice.

With all the progress that has been made toward developing the Practice Plan, many challenges still remain. An important one is improving communication with faculty members. Newsletters are being published regularly, and an informational Website is now available at

http://medschool.wustl.edu/events/.

“We are already among the top five medical schools in the country,” says Crane. “In 10 years, I would like to see us at the very top of the list. To move to the top, it’s important that we continue our tradition of success in all three aspects — clinical, teaching and research — of our academic mission. The Faculty Practice Plan, with its focus on the clinical enterprise, can help us achieve that goal.”

Editor’s Note: Candace O’Connor is a St. Louis-based freelance writer and a frequent contributor to Outlook.
Charles Diggs took the usual biology courses in college, but he learned little about brain development. So last September, he was amazed to discover that neurons reach out to each other during the early years of life, forming a thicket of interconnections. He also was stunned to learn that children’s experiences can shape this thicket, nurturing or retarding brain development.

Diggs, the stay-at-home father of 7-year-old Chaz and 3-year-old Jazmine, was testifying before the Senate Democratic Strike Force for Kids when he learned this information. He was representing Parents as Teachers (PAT), a St. Louis-based organization that teaches preschool parenting skills in seven countries.

“It was as if a light went on,” he said after a neuroscientist showed images of the underdeveloped brain of a neglected child. “Now I know why reading to my daughter is helping her leapfrog forward.”

“Why” is the keyword to a new component of Parents as Teachers that involves five Washington University faculty. The organization has taught the how of parenting since 1981, but its executive director, Mildred Winter, wants parents to know why they should eat right during pregnancy, talk to their babies and avoid shaking them or tossing them in the air. She has launched a bold experiment to determine whether learning about the brain helps parents nurture intellectual development.

Parents As Influential Teachers

Winter started Parents as Teachers because, as director of early education for the State of Missouri, she believed that federally funded programs for 3- and 4-year-olds were missing the mark. “We decided that if we really were going to make a difference,” she explains, “it made sense to begin at the onset of learning by supporting children’s first and most influential teachers — their parents.”

The program sends educators into homes with new babies, helping parents learn how to stimulate their child’s intellectual growth. “If you drive along an interstate highway,” Diggs told the Senate task force, “there are signs to guide you along the way. But there are no signs for child-rearing — children come with a blank slate.”

PAT educators visit families every six weeks until a child is 3 years old, bringing a plan and supplementary materials for each visit. Their goal is to engage parents and children in stimulating activities that are appropriate for a child’s age. Educators also address parents’ concerns and help them learn how their child fits into the normal pattern of development. Kate McGilly, a PAT employee and PAT parent, was relieved to learn about the “baby honeymoon” she would enjoy when her son, Dylan, reached three months of age. She also learned to move Dylan’s infant seat around the house as she cleaned and washed dishes. “I didn’t think of that before,” she says, “but now I know that having different things to look at stimulates a baby’s development.”

The Diggs and McGillys are just two of the nearly half million...
families around the world enrolled in Parents as Teachers. After the home visits end, PAT provides at least two years of monthly visits to a center. PAT also visits pregnant teens to teach good nutrition and other aspects of prenatal and postnatal care.

The Dana Neuroscience Project

In 1995, the Charles A. Dana Foundation in New York gave Winter an award for her high level of achievement in education. At the ceremony, she met two neuroscientists, and they agreed in informal talks that early education and neuroscience ought to meet.

One of the perks of the award was a chance to submit a proposal to the Dana Foundation. Winter asked Washington University scientists to help her infuse neuroscience into the PAT curriculum. In July 1996, the Dana Foundation Project here received three years of funding.

The scientists' first task was to list 15 neuroscience topics that should be useful to parent educators. "We are building these topics into the PAT curriculum wherever possible," McGilly says. "For example, an educator might be talking to parents about language development. Now we can tell them why talking to their baby matters — because it will have an important impact on language development. Infants take in a lot more of what is going on around them than many people imagine."

The scientists also gave an eight-lecture course to the parent educators, covering topics such as brain development, neurologic diseases and learning. To benefit educators from outside Missouri, they also speak at PAT's national and international symposia.

Michael J. Strube, PhD, professor of psychology at the Hilltop

Campus, will assess the outcomes of the Dana Neuroscience Project. He will first determine whether parents can learn the neuroscience principles. Then he will measure other outcomes, such as parents' sense of competence and their self-reported behaviors toward their children.

Diggs, meanwhile, is acting on his new knowledge of the brain, agitating for foreign language classes in school before the brain's language centers lose interest. He also repeatedly chooses the same videotapes from his large collection for his children to view, having learned that repetition is important to learning. And when he meets a family with a small child, he tells them about Parents as Teachers. "I can't say enough about what the program has done for me," he says. "It has made a real difference in how I see my children and how they see themselves."

- A newborn baby's brain is in an unfinished state.
- Both genes and environment influence a baby's social, emotional and intellectual make-up.
- There are critical periods in a baby's development when the brain is especially sensitive to appropriate input.
- Talking to a baby enhances the development of language centers in the brain.
- Infants and toddlers learn many things incidentally rather than intentionally.
- Infants and toddlers learn through their movements and senses.
John N. Constantino, MD, assistant professor of child psychiatry and instructor in pediatrics, signed on to the Dana Neuroscience Project because he is interested in the effects of parent-child relationships on early social development. "It seems very worthwhile," he says, "to see whether parents who have an appreciation for the biology of early development might stand more chance of investing in caregiving behaviors that promote social, emotional and intellectual development."

His lectures to the PAT educators focus on the interface between nature and nurture. "Intelligence is an imperfectly understood constellation of abilities that is influenced both by genes and a child's environment," he says. "The environment is capable of altering the biology of the brain, particularly during developmentally sensitive periods."

Constantino studies impoverished, single-parent families in St. Louis' high-crime neighborhoods. His research has shown that children who experience secure, long-term relationships with adults are less likely to become antisocial and violent. He now is examining ways to enhance parent-child attachments. With pilot funding from the U.S. Department of Justice, he is developing a family center in south St. Louis for parents and their three- to 12-month-old babies. "The goal is to enhance the quality of infants' earliest relationships with their parents," Constantino says. "By pairing each family with a mentor, we hope parents will learn about the emotional development of their children and gain experience in interacting with them in ways that promote secure relationships between parents and child."

Constantino also is studying genetic connections to violence. In 1997, he analyzed newborns' spinal fluid for several brain chemicals, including serotonin — several groups have suggested a link between abnormally low serotonin levels and aggression. He found that newborns with one or more relatives with antisocial personality disorder had lower levels of a breakdown product of serotonin. He now is charting those infants' behavioral development. "If a chemical test could tell us which babies are at highest risk for aggression," he says, "maybe we could target our preventive efforts toward those who could benefit from them the most."

Jeff Lichtman, MD, PhD, professor of neurobiology, became involved in the Dana Neuroscience Project because his work rarely gives him the chance to directly affect the public.

In his PAT lectures, Lichtman stressed that the brain does not come hard-wired. "Experience plays an important part in determining and maintaining connections between brain cells," he says. He also explains that certain changes in the brain can happen only at specific ages. A child who has a cataract in one eye at the time the brain normally develops stereoscopic vision, for example, may not be able to see out of that eye after the cataract is removed.

Because the developing brain is difficult to study, Lichtman looks at junctions — synapses — between nerve and muscle. In the 1980s, he and his colleagues invented a way to look repeatedly at the same synapses in very young mice. They were able to watch as the long arms, or axons, of neurons that had connected to the same muscle fiber fell away over time, leaving only one nerve cell hooked up.

Scientists used to think that two axons on the same fiber might act like battering rams, competing with each other for growth factors and space. But in 1994, Lichtman's group discovered that the muscle fiber is not just a passive onlooker — it seems to know which axon is going to go away.

Earlier this year, the group showed that the muscle plays a decisive role. They found that a muscle fiber strengthens its relationship with one axon, ignoring the others, which soon depart.

Experience also plays a critical role in synapse development, the study showed. As a newborn animal learns to use its muscles to move around, an individual fiber receives different signals from the axons that reach it. "The muscle may decide it likes one axon better than another because the signals may differ slightly in strength or because one axon fires more often than the others," Lichtman says. "So experience leads to axon elimination."
Images of the Brain

Stephen E. Petersen, PhD, professor of neurology, neurobiology and radiology, joined the Dana Neuroscience Project for the same reason he founded the medical school's Hands-on-Neuroscience program for schoolchildren: to combat the current epidemic of scientific illiteracy and the trend to stretch neuroscience findings way beyond their scientific basis. "There's a lot of solid research on the left brain vs. the right brain," he gives as an example. "But the public has been led to think that there are left-brained or right-brained individuals. That's nonsense, because everyone uses both sides of the brain as our work clearly shows. The other side isn't just there to keep your skull from collapsing."

Petersen lectures the PAT educators about memory systems, stressing that there are many ways to acquire new information. "These ways probably use different parts of the brain," he says. "To me, the upshot is that there should be different ways of teaching different types of information. Memorizing multiplication tables is probably a different kind of learning than remembering what was in a great novel."

Petersen makes images of the brain at work using positron emission tomography (PET). In 1988, he and longtime collaborator Marcus E. Raichle, MD, professor of radiology, neurology and neurobiology, showed that language processing involves many, scattered areas of the brain. Petersen also is interested in attention — how the brain picks out a few words from a printed page or listens to one speaker in a noisy room. Some of his studies point to a master control system that tells other regions of the brain where to pay attention. During the past six years, the group also has studied learning and memory. Their most surprising finding is that the brain uses one pathway to learn a task and switches to a more efficient pathway once the task becomes familiar.

Petersen doesn't believe that information from the cutting edge of neuroscience is useful to parents. But well-established principles may help, he says. "If just one parent refrains from shaking his kid because he has learned that shaking can kill brain cells," he says, "that would make the Dana project worthwhile."

Pediatric Brain Disorders

Steven M. Rothman, MD, the Ernest and Jane G. Stein Professor of Development Neurology and professor of neurobiology and pediatrics, has noticed that many of his patients from disadvantaged environments are not living up to their intellectual potential. He also is concerned about mothers who damage their unborn children's brains by drinking alcohol during pregnancy and about breastfed children who periodically arrive at St. Louis Children's Hospital with seizures because their well-meaning parents have kept them out of the sun, preventing them from making vitamin D.

Rothman heads the medical school's division of pediatric neurology and directs the Department of Neurology at Children's Hospital. He teaches PAT educators the signs of neurological diseases such as mental retardation and cerebral palsy. He also discussed the contributions of illicit drugs or unusual diets to brain disease. "I commend PAT for trying to help parents who might not have many resources provide a better environment for their children," Rothman says.

Rothman is known for his demonstration in the 1980s that glutamate, one of the brain's chemical messengers, can damage the brain if released in unusually large quantities, as after nerve cells are deprived of oxygen. Such damage can occur in newborns with poorly developed lungs or unstable blood pressure. His current work focuses on unusual genetic diseases that damage brain cells by depriving them of energy. He also is part of a group that is trying to develop better drugs to treat epilepsy. He currently is determining how a class of compounds named gamma-butyrolactones dampen the electrical activity of overactive neurons.
Breaking The Cycle Of Violence

By John N. Constantino, MD

VIOLENCE, in large measure, is an intergenerational problem. We know that genetic vulnerabilities, harsh, inconsistent parenting, and socioenvironmental inequity drive the cycle. What many people do not seem to realize is that these factors have their easiest access and cruelst impact on young children. Stable patterns of violent behavior often begin early in childhood, and are very difficult to change once they start. Most people who will become violent criminals have begun to manifest abnormally aggressive behavior well before age 10. In the United States, the steady rise in adult antisocial behavior over recent decades is entirely explainable on the basis of increases in the prevalence of child conduct problems.

Antisocial adult outcome is not just bad for society; it is a miserable outcome for anyone who is afflicted with it.

What are we prepared to do?

Violent behavior has to be prevented before it starts. Early intervention works and is cost effective. Well-designed studies of programs that support parents and infants during the first four years of life have demonstrated up to fourfold reductions in the rate of juvenile delinquency in late adolescence (independent of effects on socioeconomic status), tenfold reductions in rates of child abuse and neglect, significant enhancement of the quality of early parent-child relationships, and marked positive social interactions between parents and their babies, referral to existing resources during times of crisis and human companionship.

St. Louis boasts the headquarters of an internationally recognized home visitation program, called Parents As Teachers, which has resulted in significantly enhanced problem-solving abilities and social development in children who were enrolled from the time of birth. Unfortunately, thus far, the program has not been given adequate funding to implement it widely among socially disadvantaged families who might benefit from it most.

A recent large longitudinal study of European infants followed from birth to adulthood showed that the strongest environmental predictor of violent criminality at age 18 was maternal rejection at one year of age. Why then do we insist on pouring our resources into people after the damage is done? Perhaps such expenditures are easier to justify for individuals whose long unmet needs and resultant problems have become so blatantly obvious.

Perhaps it is because the fruits of an early intervention program cannot be seen until long after the term of office of a politician who legislates one into existence. Perhaps it is because troubled

John N. Constantino, MD '88, is assistant professor of child psychiatry and an instructor in pediatrics.
little kids are not much trouble for anybody except their parents. It's time to start realizing that in the long run, kids with problems are everybody's problem.

I propose three specific steps to try to break the vicious cycle:

1) Study the effects of early intervention more carefully, so that legislators and voters can be convinced to support it substantively. Funding sources, including the Missouri Department of Family Services, United Way and local charitable foundations, should demand that one-third of their funded early intervention programs be designed as randomized, controlled outcome studies. This means that a pool of potential subjects first agrees to participate in the project, knowing that only half (determined by chance) will be selected to receive the intervention. The other half participates as a control group (this is almost always ethical since early intervention programs usually do not have enough money to serve more than a small percentage of the population). Legislators and scientists rightly ignore the results of projects that do not use randomized designs because the intervention group in such projects can turn out differently from comparison groups for all kinds of reasons that have nothing to do with the intervention. Selecting subjects and controls at random from the same pool of people washes out pre-existing differences between the groups.

2) Parents should learn to place a premium on their own children's development; not just how they develop physically or academically, but how they develop emotionally.

3) Barriers to adoption, which serve irresponsible adults and doom desperate children, should be dissolved. Adoption effectively reduces the risk of antisocial outcome in children of abusive or neglectful parents, but its effects diminish the longer a child's adoptive placement is delayed. The legal system, social service community, behavioral science community and ethicists should come together to establish a true working definition of what constitutes child neglect. Providing food and refraining from physical or sexual battery do not constitute good parenting. Parents who are routinely intoxicated, who habitually lie to their children, who fail to show up for scheduled visits or who undermine appropriate support or treatment services should not be given the luxury of time for reform that has typically been afforded them. For the voiceless children awaiting adoptive placement, time is a quiet enemy.

Time is of the essence. Early intervention needs a fair try.

Editor's Note: This article was distributed by the Scripps Howard News Service and appeared previously in the St. Louis Post-Dispatch and the Cleveland Plain- Dealer, among others.

"Stable patterns of violent behavior often begin early in childhood, and are very difficult to change once they start. Most people who will become violent criminals have begun to manifest abnormally aggressive behavior well before age 10."

John N. Constantino, MD, '88
A LUMNAE of the Washington University School of Nursing came from 25 states for a reunion luncheon Sept. 13 at the Doubletree Hotel in St. Louis. Graduates from 1935 through 1969 attended. Highlights of the program included recognition of the earliest graduates and those celebrating their 50th reunion, songs by John Nuetzel, MD '47, and a video presentation titled "The Campus Integration Plan."

From left, Gail Seals Hofmeister, Doris Bauer Schroer, both '48; Pat Pence Armstrong '41 and Norma Jean Smith McFarlane, '46.

From left, Phyllis Kummer Wollenberg, Betty Beru Medlock, both '57; Ann Turbyfill Georgeoff, '53; and Shirley Malone Nienhaus, Charlene Adcox Snow and Jane Ayer Mantini (back to camera), all from the Class of '57.

Classmates from 1946, from left, Wanda Loyd Nicholson, Frances Swimney Patt and Sue Ann Tyler Keck.


Gloria Dieu McCanna, '45, left, and Edna Dell Weinel, '46 study a copy of Finding Themselves, a 1918 book of letters by Julia C. Stimson, Chief Nurse of Base Hospital Unit #12, which was staffed by physicians and nurses from Washington University serving in France during World War I. Stimson once headed the Training School for Nurses at Washington University, the predecessor of the School of Nursing. McCanna presented the book to the Medical Library on behalf of the Class of 1945.

Graduates from 1950, from left, Alice Layman Roam, Lois H. Vahle, Frances Hrbacek Sanner and Pat Wallace Leigh.

Among the earliest nursing school graduates were, standing from left, Ruth Darrow Jensen, '37, Mildred Stanfield Grimmer, '36, and Dorothy Oates Mendonsa, '36. Seated from left, Edna Sanders Elmers, '36, Mildred Weiss Miksicel, '39, and Eleanor MacGregor Green, '35.

Graduates from 1957, standing from left: Nancy Edde Martin, Jane Ayer Mantini, Sandra Zike Dueker and Nancy Newby Farr. Seated from left: Carol Jenny Bell, Charlotte Hoagland Cully, Linda Crawford Wells, Margaret Ringering Kane, Glenna Collet Malinak and Carolyn Steiner Johnson.

Graduates from 1955, from left, Patricia Simpson, Jo Ann Hediger, Gustine Allen Crawford and Joanna Chaney Cole.

Graduates from 1957 admire the 40th Reunion Memory Book compiled by classmate Gennie Koch Mason.

Graduates from 1953, from left, Barbara Phillips Dye, Georgia Heldstab Stowe and Shirley Pierce Bierer.


From left, Patsy Chandler Walker, Floreine Garvin Marshall and Carol Stubie Meeks represented the three 50th year classes on the program. Ruth Bebermeyer, right, senior director of alumni and constituent relations for the School of Medicine, presided.
THE Second Century Award celebrates the advent of the second one hundred years of excellence in research, teaching and patient care at the School of Medicine. The awards for 1997 were presented at a gala dinner held at St. Louis' Ritz-Carlton Hotel on Oct. 3. Honorees for the year were: Floyd E. Bloom, MD; M. Kenton King, MD, and Edith Waldman Wolff.

“We are fortunate to have the privilege of honoring three individuals of enormous achievement who mean so much to the School of Medicine: Edith Wolff, a successful businesswoman and remarkable philanthropist who believes in the importance of supporting basic science; Dr. Floyd Bloom, one of our most prominent alumni, academic leader, brilliant neuroscientist and editor; and Dr. M. Kenton King, who as dean of the School of Medicine for 25 years, effectively guided the institution during the greatest growth in its history,” says William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine.

Floyd E. Bloom, MD, is chairman of the Department of Neuropharmacology at The Scripps Research Institute, La Jolla CA, and editor-in-chief of Science. He is internationally known for his research, which has focused on the chemical control of neuronal activity. Bloom received his medical degree from the School of Medicine in 1960 and spent two years as an intern and resident at Barnes Hospital, and two years as a research associate of the National Institute of Mental Health (NIMH) in Washington DC. At the NIMH, he was head of the laboratory of neuropsychopharmacology, division of special mental health research programs. In 1975, he became the director of the Arthur V. Davis Center for Behavioral Neurobiology at The Salk Institute in San Diego. He moved to the Scripps Clinic and Research Foundation in La Jolla in 1983. M. Kenton King, MD, is emeritus Danforth Professor of Preventive Medicine and Public Health and former dean of the School of Medicine, a post he held from 1964 to 1989. His 25-year tenure as dean was longer than that of any other individual in the school's history. His success in recruiting eminent physicians and scientists to head each of the 17 departments in existence during his leadership enabled the school to become one of the foremost institutions of medical education in the country.

King received his medical degree from Vanderbilt University School of Medicine in 1951, and completed postgraduate training at Barnes Hospital and Vanderbilt Hospital. He joined the School of Medicine faculty in 1957 as an instructor in medicine and preventive medicine.

Edith Waldman Wolff is a dedicated community volunteer, philanthropist and president of the Wolff Construction Co., which engages in real estate investment and commercial leasing and management. She succeeded her husband, Alan Wolff, as president of the company following his death in 1989. Alan Wolff, who formed the company in the 1940s, was a pioneer builder of shopping centers in Missouri, Illinois and Kansas in the 1950s and 1960s.

Washington University and the School of Medicine have benefited repeatedly from the Wolffs' philanthropy. Mrs. Wolff has supported the School of Medicine with generous gifts through the Alan A. and Edith L. Wolff Charitable Trust, which provides funds for vital research in a number of areas, including Alzheimer's disease, pulmonary and critical care medicine, dermatology, and cell biology and physiology. Mrs. Wolff is a life member of the Eliot Society and a member of the Danforth Circle. At Founders Day 1996 she received the Robert S. Brookings Award.
Peck Speaks At Alumni Gatherings

WILLIAM A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine, was the guest speaker at two recent alumni activities held in Washington DC and Baltimore.

Peck spoke at a dinner at the Harbor Court Hotel in Baltimore on Sept. 4. The event was hosted by Lawrence Pakula, MD '57, Robert E.

Kodners Entertain Chicago Alumni

A GATHERING of Chicago alumni and former house staff was hosted by Ira Kodner, BA '63 MD '67, and his wife, Barbara, BU '63, at Printer's Row Restaurant on Oct. 13.

Kodner, who is professor of surgery at the School of Medicine and chief of the division of colon and rectal surgery at Barnes-Jewish Hospital, was in Chicago to attend the American College of Surgeons annual meeting. At the dinner, he updated guests on new developments in medical education, patient care and facilities at the Medical Center.

Thank You To Alumni Volunteers

THE Alumni and Development Office thanks all of the medical alumni and former house staff from across the country who have volunteered to be resources for current medical students, residents and fellows as they decide specialties, residency programs and where to practice. Assistance provided includes overnight lodging for students on residency interviews, inviting students to visit offices to learn about the various specialties of clinical practice, serving as preceptors for "away electives" and summer internships, sharing evaluations of residency programs, and forwarding information about possible practice opportunities.

Reunion Plans Get Underway

THE 1998 alumni reunion will begin at noon on Thursday, May 7, 1998, and conclude Saturday evening, May 9. The reunion hotel will be the Ritz-Carlton in Clayton. Reunion class chairmen are:

Class of 1938:
Robert D. Brookes, MD, social chair
Class of 1943 (March):
G. Russell AukleerHeide, MD, social chairs
Raymond Charnas, MD
David Feldman, MD
Ernest T. Rouse Jr., MD
Henry A. Uhlemeier Jr., MD
Burte Guerman, MD, gift chair
Class of 1943 (December):
C. Read Bales, MD, and John Eisenhauer, MD, social chairs
Morris Alex, MD, Harry Lichtwardt, MD, Torrence Makley, MD, and Herbert Wiegand, MD, gift chairs
Class of 1948:
Robert Burstein, MD, social chair
Bernard Gartnick, MD, gift chair
Class of 1953:
Mary Parker, MD, social chair
Jesse Ternberg, MD, gift chair
Class of 1958:
George Koocher, MD, social chair
Joseph McKinney, MD, gift chair
Class of 1963:
Thomas F. Richardson, MD, social chair
Ronald Sowa, MD, and Elizabeth Sowa, MD, gift chairs
Class of 1968:
Gary Shackelford, MD, social chair
Emily Smith, MD, gift chair
Class of 1973:
Joseph K.T. Lee, MD, social chair
Robert Karl, MD, Barry Milder, MD, and Steven Nichols, MD, gift chairs
Class of 1978:
Carlton S. Pearse, MD, social chair
Mark Prisbe, MD, gift chair
Class of 1983:
Robert J. Brown, MD, social chair
Class of 1988:
Laura Grady, MD, social chair
Schreiber Named To Elaine And Mitchell Yanow Professorship

MITCHELL Yanow, MD, a St. Louis area obstetrician/gynecologist and a notable entrepreneur, has established the Elaine and Mitchell Yanow Professorship in the Department of Obstetrics and Gynecology.

Over the years, the Yanows have generously given their time and financial support to Washington University. Dr. Yanow is an alumnus of the University and its School of Medicine.

James R. Schreiber, MD, head of the Department of Obstetrics and Gynecology, has been named the first Elaine and Mitchell Yanow Professor.

"This professorship will recognize and honor in perpetuity two individuals who have meant so much to Washington University," says William A. Peck, MD, executive vice chancellor for medical affairs and dean. "It will have a great impact on the Department of Obstetrics and Gynecology, aiding in the attraction and retention of outstanding academic leaders. I can think of no one more qualified as the first Elaine and Mitchell Yanow Professor than Dr. James Schreiber, whose leadership of the department has been outstanding."

In addition to a long and accomplished medical career, Dr. Yanow is well known for his entrepreneurial skills. He is chairman of the board and co-founder of Medicine Shoppe International Inc., the nation's leading operator of community-oriented franchised pharmacies. He also co-founded OB-GYN Inc., one of the area's earliest obstetrics-gynecology group practices. And he is co-founder and director of MICROTEK/Microfilm Techniques, whose information storage products are used in many physician's offices, hospitals and businesses.

The late Mrs. Yanow was well-known for her commitment to civic affairs. During her tenure as a board member and president of the League of Women Voters of St. Louis, she researched and advocated ways to improve government services, including a metropolitan sewer district, a nonpartisan court plan and a mass transit system.

Dr. Yanow is a life benefactor member of the William Greenleaf Eliot Society, as was Mrs. Yanow. Each year, the Yanows have given to the School of Medicine specifically to support loan programs for medical students. In addition, the entryway to the school's Bernard Becker Medical Library is named for the Yanows in recognition of their gift to the library's campaign fund.

Dr. Yanow received his medical degree in 1941. From 1958 to 1990, he was a member of the clinical faculty in obstetrics and gynecology at the School of Medicine. He now is assistant professor emeritus of clinical obstetrics and gynecology.

Schreiber came to Washington University in 1991 to head the Department of Obstetrics and Gynecology. He previously had served as professor and chief of reproductive endocrinology and infertility at the University of Chicago and as an assistant professor of reproductive medicine at the University of California at San Diego.

Schreiber, working with the BJC Health System, is playing an integral role in expanding women's and children's health services throughout the St. Louis region. The initiative will integrate obstetric, gynecological, newborn and pediatric clinical and education services among its seven metropolitan area hospitals to create a new model for addressing local health care needs. Instead of emphasizing acute care, BJC and the School of Medicine will offer a complement of health services designed to prevent illness and to treat health problems as effectively, conveniently and efficiently as possible.

Schreiber's research interests focus on the causes of infertility. He and his co-workers at the School of Medicine are the recipients of a five-year, $2.25 million National Institutes of Health grant to determine whether immunotherapy or psychological support can help women with repeated unexplained miscarriages carry their babies to term.

Schreiber also is obstetrician and gynecologist-in-chief at Barnes-Jewish Hospital and serves on numerous committees at the School of Medicine.
'40s
William A. Seidler, MD '43, was recognized as one of the 30-plus remaining founders of the American Academy of Family Physicians at its 50th anniversary meeting in September in Chicago.
Gordon M. Todd, MD '43, retired from the private practice of internal medicine and cardiovascular diseases on July 31, 1997. He lives in Toledo OH.

'50s
Galen Cook, MD '55, HS '59-'63, was included in the first edition of Who's Who in the Media and Communications 1985-1986. Cook is the author of more than 50 clinical software applications in use worldwide.
Patricia Melechen, OT '56, has been learning to do home dialysis (CAPD and CCPD) this past summer and says that being part of her husband's treatment team is very rewarding. She says that her OT training has been incredibly useful.
John R. Calvert, MD '58, will retire from his anesthesiology practice at the end of 1997 and plans to move to Natchez MS.

'60s
Patsy Newton McLaughlin, PT '60, is a consultant for seven nursing homes in West Tennessee with Vencor, Inc.
Ira J. Kodner, MD '67, was installed as president of the American Society of Colon and Rectal Surgeons (ASCRS) for 1997-98 at its annual business meeting in Philadelphia in August. Kodner is director of colon and rectal surgery at Barnes-Jewish Hospital in St. Louis and is professor of surgery at Washington University School of Medicine. He is also a past president of the American Board of Colon and Rectal Surgery and a past director of the American Board of Surgery, and continues to serve as senior examiner for both boards.
Kodner was recently honored as Physician of the Year by the St. Louis Crohn's and Colitis Foundation. The Washington University Medical Center Alumni Association presented him with an Alumni/Faculty award at the annual reunion in May 1997.
Michael R. Treister, MD '67, is chairman-elect of the Performance Health Care Committee of the National Flute Association and chaired a panel presentation at the association's meeting in Chicago in August 1997. He also performed at the annual meeting's opening ceremony as a member of the "Jubilation '97 Flute Orchestra," which played works by Schubert, Mendelssohn, Brahms and others. Among the compositions presented were six world premiere arrangements prepared in honor of the organization's 25th anniversary.

'70s
Kathleen A. Patterson, PT '70, is working in the rehabilitation department of Columbia Plaza Medical Center in Ft. Worth TX.
Richard M. Wachman, MD '72, is medical director of a free-standing psychiatric hospital in Lajolla CA. He has been practicing for 22 years.
Linda Loney, MD '76, has been named clinical chief of pediatrics and adolescent medicine at Massachusetts Hospital School, a residential facility for children and adolescents with physical disabilities.
Norman L. Foster, MD '77, was featured in an article in the August 31, 1997, Jacksonville IL Journal-Connect, which describes his work at the Michigan Alzheimer's Disease Research Center at the university in Ann Arbor. A native of Jacksonville, Foster is an associate professor of neurology at the University of Michigan. He and his wife, Carolyn, also a physician at the University of Michigan, have two children: Daniel, 15, and Sarah, 11.

'80s
Jeffrey B. Kramer, MD '80, and Polly Kramer have a new addition to their family, Samuel dePenaloz Kramer, born March 4, 1997. Samuel joins sister, Isabel, 2. The Kramers live in Kansas City.
Aron Lukacher, MD, PhD '87, received a presidential citation for his research in December 1996. He is a pathologist at Emory University.
Michael Steinberg, MD '89 and Felice Heller, MD '89, currently live in West Hartford CT. Mike is an intern with the University of Connecticut and Felice is in the private practice of pediatric cardiology. They have a daughter, Sarah, 3.

'90s
Grace Davis, MD '92, is director of pediatrics at Baptist Hospital of Worth County, a member of the Georgia Baptist Health Care System. Davis received a Master's of Public Health degree from the University of South Florida in 1995.
Mary Vest-Mason, MD '94, was honored by the American Medical Association during its Resident Physician Section Annual Meeting in Chicago as part of the AMA/Glaxo Wellcome Leadership Award Program. The award recognizes resident physicians who display leadership and commitment to community service.

IN MEMORY
Susan S. Barnes, OT '28, died Aug. 28, 1997, at the age of 92. She was an occupational therapist in the armed forces during World War II; after the war, she worked at St. Luke's Hospital and at Jefferson Barracks Rehabilitation Center. Her twin sister, Sarah M. Barnes, and another sister, the late Harriet Barnes Berg, also were occupational therapists in St. Louis. The Missouri Occupational Therapy Association has established the Susan Sheckley...
Barnes Scholarship, to be awarded annually to a select entry level student in the Washington University Program in Occupational Therapy.

Homer A. Sweetman, MD '42, of Capitola CA, died June 30, 1997. Prior to his retirement, he practiced industrial and occupational medicine.

Theodore J. Repp Jr., MD '53, a family physician in North St. Louis County for more than 30 years, died at his home July 27, 1996, from complications of pneumonia. He is survived by his wife, Vera, and a son.

Dennis P. Cantwell, MD '65, a child psychiatrist known for his work with developmental disorders and the classification of diseases, died April 14, 1997, at his home in Woodland Hills CA, from complications of heart disease. He was 58. He was the Joseph Campbell Professor of Child Psychiatry at the UCLA Neuropsychiatric Institute. The Washington University Medical Center Alumni Association presented him with an Alumni Achievement Award in 1995.

FACULTY

Richard Paul Bunge, MD, a professor of anatomy and neurobiology for 19 years at the School of Medicine, died Sept. 10, 1996, of cancer at his home in Coral Gables FL. He was 64. Since 1989, he had been professor of neurological surgery and cell biology and anatomy at the University of Miami School of Medicine, and scientific director of the Miami Project to Cure Paralysis, a research center designed to find more effective treatments and ultimately a cure for paralysis resulting from spinal cord injury. Bunge earned his medical degree in 1960 from the University of Wisconsin School of Medicine. Survivors include his wife, Mary Bartlett Bunge; two sons, Jonathan, Brooklyn NY, and Peter, Seattle.

Owen S. Kantor, MD, HS '72, an associate professor of medicine at the School of Medicine, died July 27, 1997, of cancer. He was 54. He had been in private rheumatology practice in St. Louis for 23 years and had been an associate professor at Washington University since 1981. He directed the Arthritis Clinic at St. Louis Shriners Hospital for Crippled Children from 1973 to 1995. He is survived by his wife, Ann; daughters, Nicole and Jacqueline; parents, Solomon and Cecile; and a sister, Michelle.

Justin E. Krane, MD, an assistant clinical professor emeritus in the Department of Obstetrics and Gynecology, died on Oct. 13, 1997, after complications from surgery. He was 75. During his 43-year career in St. Louis, he delivered more than 5,000 babies. He is survived by his wife, Betty; sons, Gregory and Richard; a daughter, Janet, and nine grandchildren.

Mary Gumble Levy, a member of the health care services faculty at Washington University, died Jan. 12, 1997, of cancer at her home in Webster Groves. She was 41. Survivors include her husband, Ronald; parents, Jane and R. Dean Gumble, Springfield IL; four brothers and five sisters, all of Springfield.

David F. Silbert, MD, professor of biochemistry and molecular biophysics at the School of Medicine, died of cancer on April 27, 1997, at Barnes-Jewish Hospital. He was 61. Silbert came to Washington University in 1966 as an American Cancer Society postdoctoral fellow and joined the faculty in 1968. Devoted to teaching both medical students and graduate students, Silbert played a leading role in organizing and presenting the biochemistry curriculum. His recent research had focused on the function of lipids, especially sterols, in animal cell membranes and on applying genetic methods to study lipids and lipid-processing enzymes involved in transmitting mitogenic signals. A graduate of Harvard College and Harvard Medical School, he completed an internship and residency in ward medicine at Barnes Hospital. He is survived by his wife, Shirley Wang, MD; sons, Seth Silbert, an MD/PhD student at the School of Medicine, Jonathan Silbert, MD, an ophthalmology resident at Barnes-Jewish Hospital; daughter, Judy Silbert, a cytologist at American Pathology Resources in Maryland Heights MO; mother, Annette, and brother, Bailey, both of Boston.

Elizabeth Mary Smith Stout, PhD, associate professor of psychiatry at the School of Medicine and adjunct associate professor at the George Warren Brown School of Social Work, died of cancer on March 7, 1997, at Barnes-Jewish Hospital. She was 58. Stout was known professionally by her maiden name. She was internationally recognized for her work with disaster survivors. She studied survivors of plane crashes, floods, earthquakes and other disasters and learned about the impact of these events on their mental health. Her work helped identify those who had developed psychiatric problems so that they could receive treatment. She had been working with survivors of the Oklahoma City bombing at the time of her illness. Born in McCook NE, she earned a bachelor's degree in journalism and a master's degree in social work from the University of Nebraska. She was the chief social worker at the Barnes Hospital Psychiatry Clinic from 1963-1967 and joined the Washington University faculty as an instructor in psychiatry in 1967. Stout earned her doctorate in 1978, but she never left clinical work entirely. From 1971 until her death, she ran the mental health clinic at the Grace Hill Neighborhood Health Center. Survivors include her husband, Richard Stout, and a brother, Robert Smith, Canon City CO.
Teachers **Extraordinaire** were honored Nov. 12 at the Eric P. Newman Education Center with the presentation of the annual teaching awards. First- and second-year medical school classes each year select a Professor of the Year and a Lecturer of the Year, and designate a number of Distinguished Teaching Awards. This year's winners, from left, were David N. Menton, PhD, and Scot G. Hickman, MD, who were named Professors of the Year; and Jean P. Molleston, MD, Stanley Lang Lecturer of the Year; and Steven L. Carroll, MD, PhD, Lecturer of the Year. In addition, 20 professors received distinguished teaching awards.
The medicinal poppy is not only beautiful, it is among the many botanicals featured in an exhibit currently appearing at The Bernard Becker Medical Library that examines the healing powers of herbs and plants. This exquisitely depicted, hand-colored image appears in a four-volume set of folios published in the mid-1700s. The exhibit, in the Glaser Gallery of Archives and Rare Books, runs through April 1998.