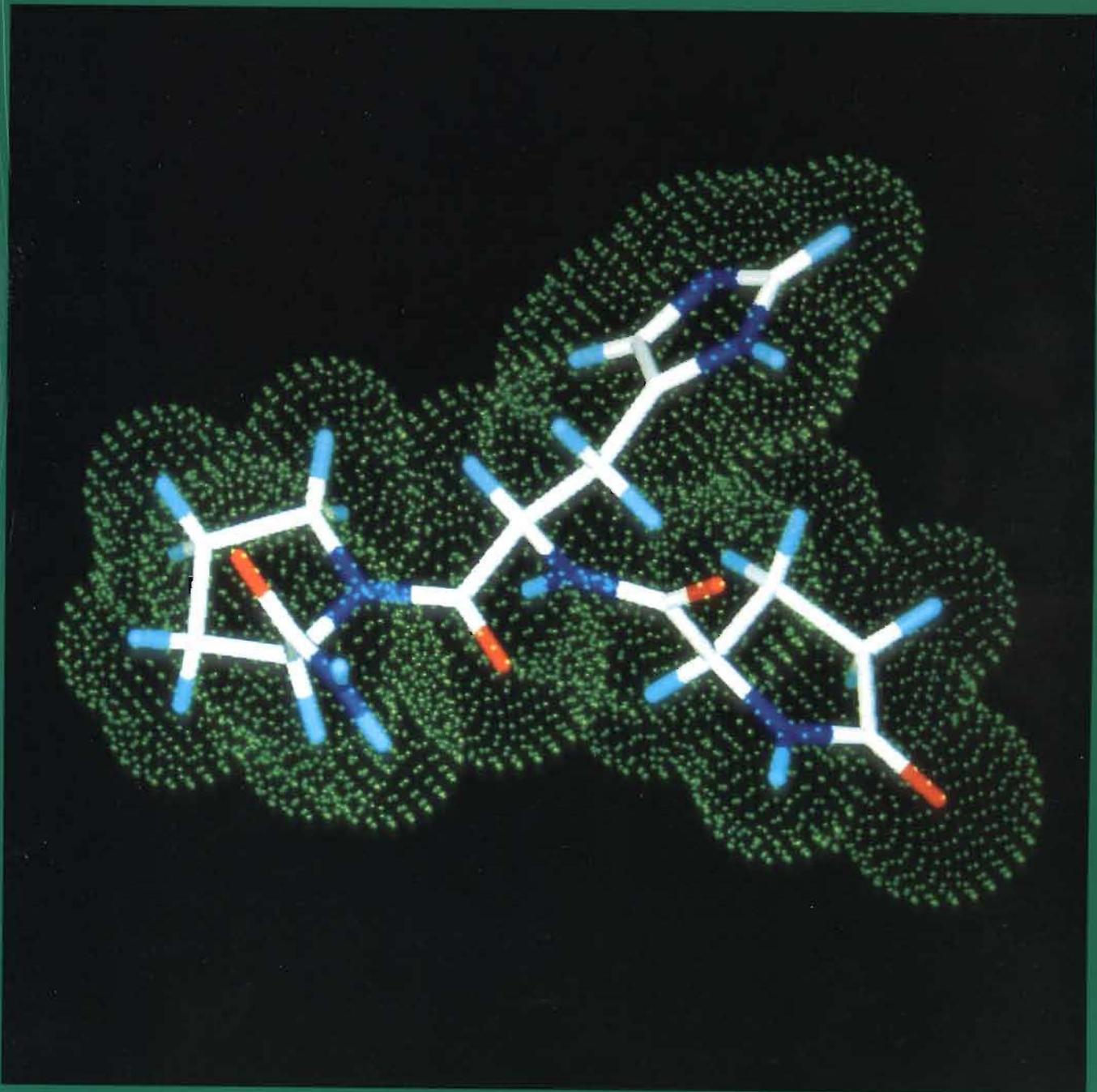


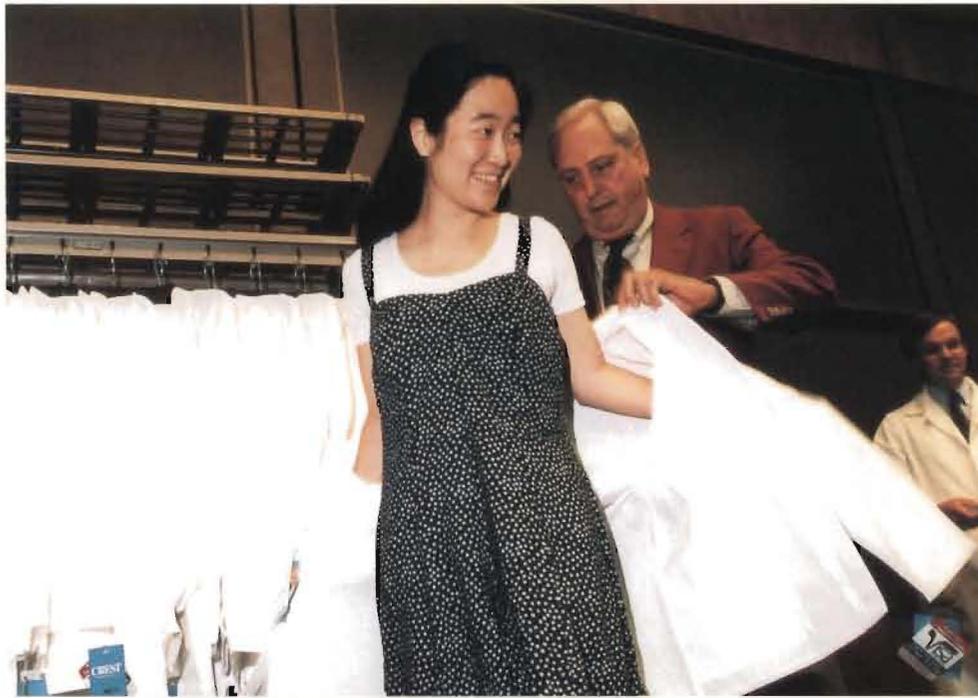
Outlook

Washington University School of Medicine

Fall 1996



Spinal Surgery • Scientists Unite • Readership Survey



First-year medical student Tammy Cheng receives her white coat from John F. Walters, assistant dean for student affairs, at the annual White Coat Ceremony that takes place during orientation in August. Cheng was among 122 first-year medical students presented with a white coat, which has long been a symbol of the medical profession. The wearing of the white coat was initiated here by George Dock, MD, dean of the medical school from 1910-1912, and one of the first full-time professors of medicine in the United States. Dock, who held his professorship at Washington University until 1922, also served as physician-in-chief at Barnes Hospital and was instrumental in building the medical school.



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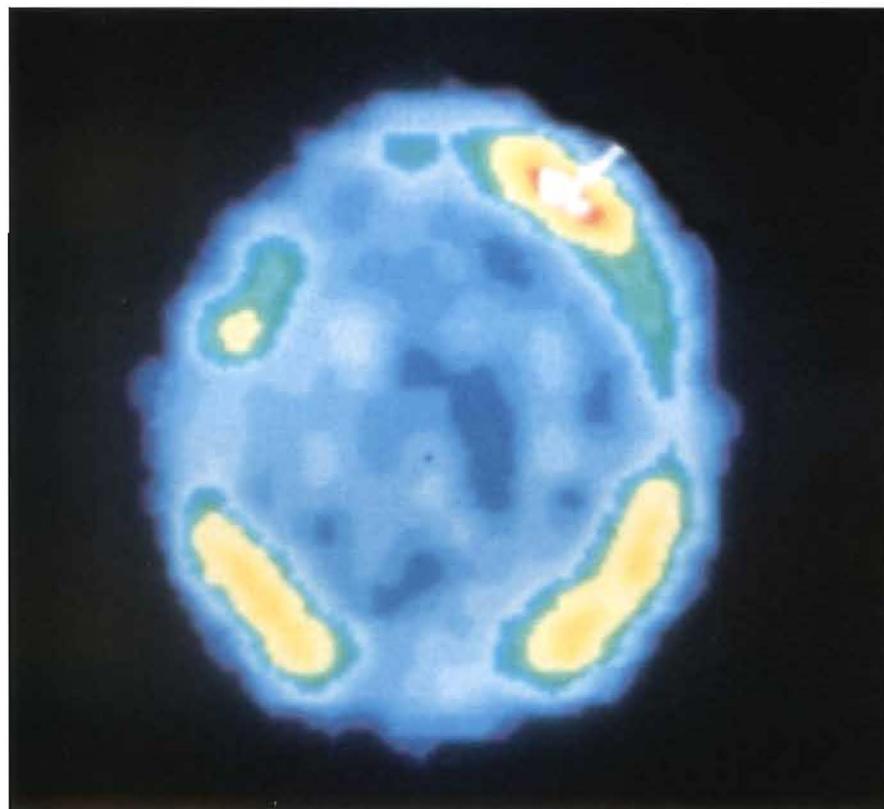
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Outlook

Washington University School of Medicine



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THE COVER

The image depicts a computer model of the receptor-bound conformation for the hypothalamic hormone thyrotropin-releasing hormone, or TRH. Kevin Moeller, PhD, associate professor of chemistry and a member of the Bioorganic Chemistry Program at Washington University, is trying to determine whether the design is accurate and if it portrays the actual biologically active conformation.



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The discovery of an anatomical difference in the brains of depressed women may help explain why depression recurs in some and not in others.

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Orthopaedic surgery is helping to rid patients of neck and back pain caused by degenerative disease or trauma.

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Mackinnon To Lead Division Of Plastic And Reconstructive Surgery

SUSAN E. Mackinnon, MD, has been named chief of the division of plastic and reconstructive surgery at the School of Medicine.

She succeeds Paul M. Weeks, MD, professor and chief of the division for 25 years previously. "Dr. Mackinnon is an accomplished clinician, laboratory investigator and educator. She brings prestige to this position, and we are most fortunate that she has accepted this leadership role," says Samuel A. Wells, MD, Bixby Professor and Head of the Department of Surgery.

Mackinnon is known for her groundbreaking work in the area of peripheral nerve transplantation. The procedure, born out of years of research on regeneration, immunology and preservation, enables patients to accept a nerve graft from a donor without the need for lifelong dependence on immunosuppressive drugs. It can save damaged limbs that previously were



Susan E. Mackinnon, MD

considered irreparable. Until recently, Mackinnon was the only person in the world performing nerve allograft surgery.

She also has done research on cumulative trauma disorder — carpal tunnel syndrome in the wrist, cubital tunnel syndrome in the elbow and thoracic outlet syndrome in the chest and shoulder. Mackinnon advocates conservative management, including physical therapy,

patient education and workplace modification for patients who cannot be helped by surgery.

She has authored numerous articles and the textbook "Surgery of the Peripheral Nerve." She is a member of and has held offices in several national and international societies including the American Association of Hand Surgery, the American Society for Surgery of the Hand, the American Society of Plastic and Reconstructive Surgeons and the American Association of Plastic Surgeons. She is the immediate past president of the American Society for Peripheral Nerve and the Plastic Surgery Research Council.

Mackinnon joined the School of Medicine faculty in 1991 as professor of surgery in plastic and reconstructive surgery. She also has appointments in the Department of Otolaryngology and the Program in Occupational Therapy. ●

Perlmutter Named To Strominger Chair In Pediatrics

DAVID H. Perlmutter, MD, has been named to the newly established Donald Strominger Chair in Pediatrics. The chair honors the memory of Donald B. Strominger, MD, who was a professor of clinical pediatrics when he died in 1983 at age 54.

Strominger, a 1953 graduate of the School of Medicine, gained nationwide prominence for his involvement with cystic fibrosis patients and his activities in the National Cystic Fibrosis Association. He headed the Cystic Fibrosis Center at St. Louis Children's Hospital for more than 20 years. A specialist in the treatment of allergic and pulmonary disorders, Strominger wrote numerous articles on pediatrics, the treatment of allergies and cystic

fibrosis. He joined the Washington University faculty in 1971 as an assistant professor of clinical pediatrics.

Perlmutter, a professor of pediatrics, also is a professor of cell biology and physiology and director of the division of gastroenterology



David H. Perlmutter, MD

and nutrition at Children's Hospital. His laboratory has done seminal work on the cellular and molecular bases of alpha-1-antitrypsin deficiency, the most common genetic cause of liver disease in infants and children and of emphysema in adults. The work has served as a model for identifying specific cell biological mechanisms by which children become vulnerable to liver injury.

During his career, Perlmutter has received numerous awards, including the E. Mead Johnson Award for Pediatric Research from the Society of Pediatric Research, the RJR Nabisco Research Scholars Award, the American Heart Association Established Investigator Award and the Burroughs Wellcome Scholar in Experimental Therapeutics Award. ●

For Research And Clinical Expertise

SAMUEL A. Wells, MD, Bixby Professor of Surgery and chairman of the Department of Surgery, has received the first Joseph H. Burchenal Clinical Research Award from the American Association for Cancer Research (AACR).

The award honors an investigator who has made significant contributions to clinical care in the field of cancer. Sponsored by Bristol-Myers Squibb Oncology, the award was named after Joseph H. Burchenal, MD, a past president of AACR, who made significant contributions to cancer chemotherapy during his career at Memorial Sloan-Kettering Cancer Center in New York.

The AACR honored Wells for his research and clinical expertise in oncology and oncology surgery. For the past 25 years, he has been particularly interested in cancer genetics and its role in multiple endocrine neoplasia, an inherited disease that leads to the development of medullary thyroid cancer.

Wells and his collaborators at the School of Medicine recently developed a genetic test that accurately identifies individuals with inherited multiple endocrine neoplasia type 2A. Patients with the disease now can undergo prophylactic surgery to remove the thyroid gland before the tumor develops or spreads. This pioneering approach to managing patients at risk of medullary thyroid cancer is an important advance in oncology.

Wells has been an AACR member since 1973. ●

Gold Selected As Senior Merit Scholar

JENNIFER Gold, a fourth-year medical student, has received the Senior Merit Scholarship for academic performance in the first three years of medical school. The scholarship is provided by an anonymous donor and provides full-tuition for the 1996-97 academic year.

Gold, 27, has been commended by faculty members for outstanding work in neurology and has been cited for distinction in immunology, histology, physiology and neuroscience. She received the Robert Carter Medical School Prize for outstanding academic achievement in 1994-95 and a research fellowship in neonatology within the Department of Pediatrics in 1994. She has been a research assistant within the Department of Immunology and was involved in the student research training program of the National Cancer Institute at the National Institutes of Health.

She also has been active in both the student chapter of the American Medical Association and the American Medical Women's Association and served as a histology tutor for first-year medical students.

"I am extremely thankful for the generous contribution made by my scholarship donor," says Gold.

Gold, who plans a career in internal medicine with a specialty in hematology/oncology, graduated with honors from Cornell University, Ithaca NY, with a bachelor of science degree in international agriculture. ●

Waddle Receives Career Award



James A. Waddle, PhD

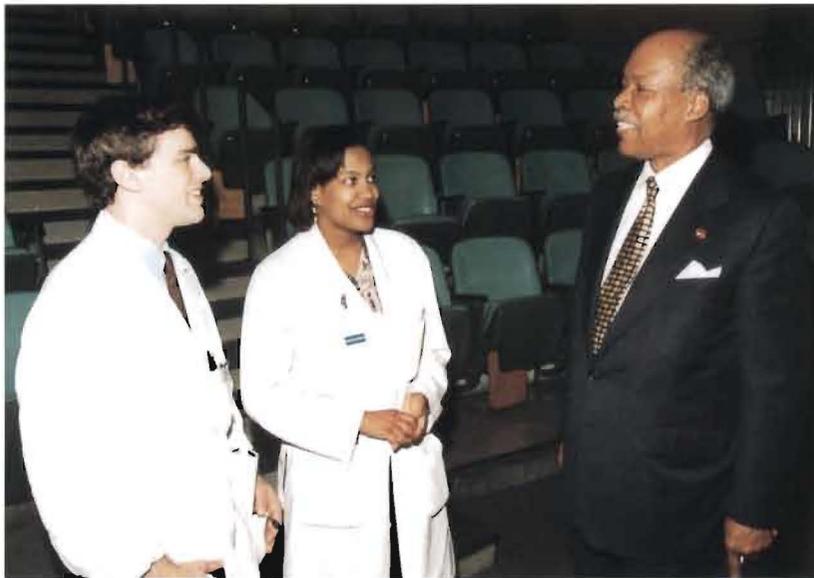
JAMES A. Waddle, PhD, research associate in genetics, has received a Burroughs Wellcome Fund Career Award in the Biomedical Sciences. The \$470,800 award will support his remaining two years of postdoctoral work and the first three years of a subsequent faculty position.

Since Waddle obtained his doctoral degree from the School of Medicine in 1993, he has worked with Robert H. Waterston, MD, PhD, James S. McDonnell Professor and head of genetics. Using the roundworm *Caenorhabditis elegans* as a model organism, he is studying embryonic cell division.

Waddle studies the role of the cell's internal skeleton in asymmetric cell division. Made mainly from a rod-shaped protein called actin, the cytoskeleton marks out the division plane of a cell, separating areas whose contents may differ.

Waddle will develop a microscope system that will enable him to watch the behavior of individual proteins in dividing cells. Using this device and *C. elegans* mutants, he will assess which proteins are essential to asymmetric cell division and determine when and where each protein acts. ●

Sullivan Speaks



Louis Sullivan, MD, who served as secretary of the U.S. Health and Human Services Department during the administration of President George Bush, gave grand rounds titled "Crafting a Culture of Character Through Health-Care Reform" in June. Here, he talks with Pamela Moore, MD, chief resident in medicine, and David Solit, MD, resident in medicine. Sullivan currently is president of the Morehouse School of Medicine in Atlanta.

Hagemanns Endow Chair In Neurology

TWO Washington University alumni, Charlotte and Paul Hagemann, have endowed a new chair at the School of Medicine. The Charlotte and Paul Hagemann Professorship in Neurology will support basic research on Alzheimer's disease.

"If there are going to be significant advances in this area, they will come as a result of new basic knowledge about the central nervous system," says Paul O. Hagemann Jr., MD, professor emeritus of clinical medicine.

Hagemann became interested in the field after both his wife, Charlotte, and one of his brothers developed Alzheimer's disease.

The \$1 million endowment will permanently fund a researcher in the Center for the Study of Nervous System Injury, which Dennis W. Choi, MD, PhD, directs.

Hagemann has been associated with Washington University for 70 years. He received a bachelor's degree in liberal arts in 1930 and a medical degree cum laude in 1934.

His awards from the University include a Distinguished Alumni Citation on Founders Day in 1983 and an Alumni/Faculty Award from the Medical Center Association. He has received the annual William Greenleaf Eliot Society Award and the School of Medicine named a Distinguished Alumni Scholarship in his name. In 1995, Hagemann received a Second Century Award, which recognizes individuals whose long-term commitments have boosted the medical school's economic health.

Hagemann's wife, the former Charlotte M. Flachmann, is a member of the Arts and Sciences class of '38. ●

A \$9.4 Million SCOR Grant For Asthma Study

ASTHMA researchers at the School of Medicine have received a five-year, \$9.4 million grant from the National Heart, Lung, and Blood Institute at the National Institutes of Health. Classified as a Specialized Center of Research (SCOR) grant, the funding identifies the medical school as one of the leading comprehensive asthma research centers in the country.

Asthma affects more than 8 million patients in the United States and remains the leading cause of chronic illness in children. The Washington University researchers are focusing on the inflammatory response that may be responsible for the disease.

The SCOR program is made up of five related research projects, according to Michael J. Holtzman, MD, director of pulmonary and critical care medicine and principal investigator for the grant. Each project concerns a distinct stage in the inflammatory response associated with asthma. The projects are intended to define novel aspects of the cellular and molecular control over airway immunity and inflammation.

A common component of all five projects is the interaction of lung tissue cells, especially epithelial cells, with immune cells. Overactive immune cells are implicated in several theoretical schemes of asthma attacks, says Holtzman.

One goal of the research is to define the role immune cells have in mediating airway damage. Researchers want to know how various inflammatory cells infiltrate the pulmonary airway and trigger a complex cascade of reactions and immune responses that ultimately lead to abnormal airway function. ●

Students And Teachers Explore Biomedical Research

TEAMS of area high school teachers and students spent part of their summer conducting research in laboratories at the School of Medicine. The Student and Teacher Biomedical Research Internship program introduces minority students to biomedical research and to careers in science and medicine. It also enhances the scientific expertise of minority teachers and teachers of minority students.

"Because a science or medical career requires a long training period, the support students receive from programs such as this is instrumental to their eventual success. Teachers in this program have found that working as colleagues with world-class scientists has invigorated their teaching," says Jeffrey Sich, PhD, program director and director

of admissions in the Division of Biology and Biomedical Sciences.

School of Medicine faculty serve as mentors to the participants. During the six-week program, students and teachers work individually on ongoing biomedical research projects in areas such as biochemistry, developmental biology, molecular cell biology and cancer biology. Participants also study human anatomy and attend seminars to discuss research and career issues.

At the end of the program, each team of a teacher and two students developed a service project for the 1996-97 school year to be implemented at their high school or an area middle or elementary school.

In addition to Lincoln Sr. High School, participants were from: Cor Jesu Academy, Lutheran High



Looking at growth curves of bacteria, from left, are: Asha Macon, Lincoln Sr. High School; Lawrence Tourijigian, Lincoln Sr. High School teacher; Perchell McKinney, Lincoln Sr. High School; and Jenny Buzan, PhD, research associate in biochemistry and molecular biophysics, who took part in the Student and Teacher Biomedical Research Internship at the School of Medicine.

School North, Gateway Institute of Technology, O'Fallon Township High School and McCluer High School. ●

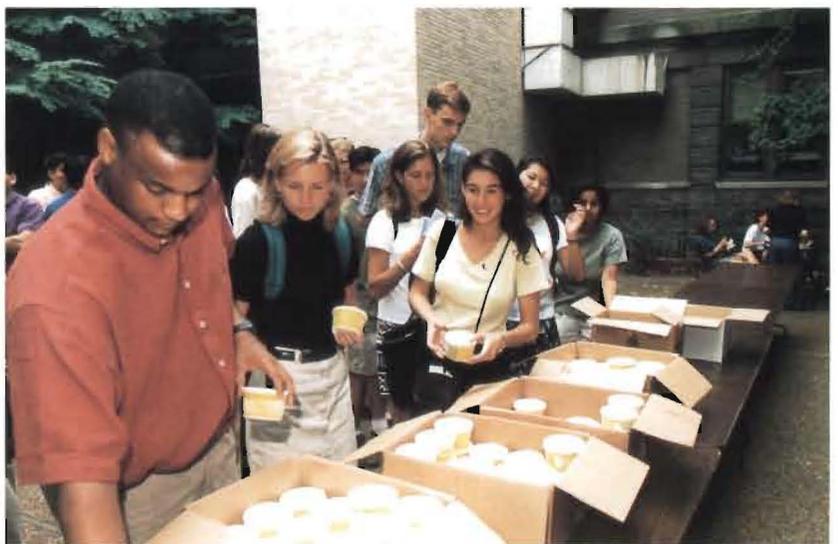
Home Pages Up For Viewing

THE Department of Surgery made public its home page in July. The page, which can be viewed at www.surgery.wustl.edu/, features information for referring physicians, residency training and an intranet page.

The intranet page contains on-call, attending and conference schedules for the division of general surgery. The department plans to expand the intranet page to include more information that can be used by the department electronically.

The Health Administration Program has an informational web site at medinfo.wustl.edu/~hap. The site is accessible from the School of Medicine site and has links to the Hilltop Campus and the St. Louis and Central West End home pages, as well as to sites of interest to health care professionals. ●

Custard In The Courtyard



First- and second-year students get a taste of a St. Louis tradition during a mixer that featured Ted Drewes frozen custard. The mixer, sponsored by the second-year class, took place in the courtyard during orientation for first-year medical students in August. Students, front to back are: second-year Scott Williams; and first-years Emily Diskin, Magdalene Kottmeier, Sarah Jost, Victor Vanberkel, Christina Fong and Vinodhini Subramanian.

All In The Family



Richard D. Todd, MD, PhD

CHILDREN with depression are two to three times more likely than non-depressed children to have parents, siblings or other relatives with alcoholism or depression or both, according to new research from School of Medicine child psychiatrists.

Reporting in the June issue of the *Journal of the American Academy of Child and Adolescent Psychiatry*, the researchers suggest that family members of depressed children should be assessed for possible depression, manic-depressive illness or alcoholism.

Principal investigator Richard D. Todd, MD, PhD, Blanche F. Ittleson Professor of Psychiatry and director of the division of child psychiatry, says the study suggests that depression in children results in part from genetic causes.

Todd and his colleagues studied 79 children with depression and 31 who were not depressed. They gathered information on 1,346 relatives, including parents, grandparents, siblings, cousins, aunts and uncles. The 79 depressed children had major depression when first studied, but at follow-up two to five years later, one-third of them had become manic-depressive.

The study also found alcoholism in 20 percent of the relatives of children who developed manic-depressive illness and in 12 percent

of those with major depression. That compares to a rate of only 6 percent in the relatives of the non-depressed children in the study.

Because diseases with an early onset are more likely to have genetic causes, Todd believes that by studying families with depression, alcoholism and manic-depressive illness, researchers will ultimately uncover the genetic causes of these disorders.

In addition, he points out, the study has important public health implications.

"When you identify a child as having a major depressive disorder, our data suggest that you've also identified a family with a high likelihood of having depression, manic-depressive illness or alcoholism," Todd says. "That risk increases for all of the relatives." ●

Arresting Brain Damage After Heart Attack

ABOUT half of those who survive cardiac arrest leave the hospital with symptoms of brain damage. Now scientists at the School of Medicine have found that zinc is a major culprit. They also have devised a way to prevent this zinc damage in rats.

When the heart stops beating, the supply of blood to the brain dwindles, prompting a cascade of molecular events that harms neurons. But neurologists have been at a loss to explain why cardiac arrest damages some parts of the brain and not others even though the entire brain runs short of blood.

Dennis W. Choi, MD, PhD, professor and head of neurology, suspected the answer might involve zinc, which certain parts of the brain use in cell to cell communication. In 1986, he found that cultured neurons die if they are exposed to too much zinc.

In the current study, researchers briefly interrupted the supply of blood to the brain, using rats as an animal model. They later stained brain slices with a fluorescent dye specific for zinc. Through the microscope, they saw that zinc-containing neurons had released their stores of the ion, exposing neighboring cells to toxic concentrations. Cells that took up the zinc died a few days later, whereas cells whose bodies did not stain for zinc remained healthy.

The dead cells were in regions of the brain that can be damaged by cardiac arrest including the hippocampus, which is involved in learning and memory, and the amygdala, which plays a role in emotion.

The researchers were able to prevent the transfer of zinc and reduce the resulting death of neurons by injecting a zinc-grabbing substance into spaces in the brain before they interrupted blood flow. This chelator could not get into cells, so it would have stopped zinc in its tracks before the ion could cause any damage. ●

ED Gene At The Root Of Hair Growth

AN INTERNATIONAL research team has isolated a gene involved in hair growth. When faulty, the gene causes an inherited disorder called anhidrotic ectodermal dysplasia (ED). Children and adults with ED have little hair and missing teeth. They also cannot perspire.

The findings were reported in the August issue of *Nature Genetics*. An accompanying "News & Views" article notes that the ED gene is "the first cloned gene that is directly associated with human baldness."

There are about 150 ectodermal dysplasia syndromes. "Because this is

the first one for which a gene has been isolated, we hope it will provide an entree into the entire field," says David Schlessinger, PhD, head of one of the research groups and director of the Center for Genetics in Medicine at the School of Medicine. The center has completed a detailed map of the X chromosome.

About 125,000 Americans have ectodermal dysplasia, involving abnormalities in the structure and appearance of the skin and related structures.

The lead authors of the paper are Juha Kere, MD, PhD, now acting professor of medical genetics at the University of Helsinki, Finland, and Anand K. Srivastava, PhD, now a scientist at the J.C. Self Research Institute of Human Genetics, Greenwood Genetic Center in South Carolina. Kere and Srivastava performed much of the research while they were in Schlessinger's lab at Washington University.

ED first was reported in 1848. In 1875, Charles Darwin described 10 members of a family in India who had missing teeth, very little hair and dry skin in hot weather. He noted that the tendency to develop the disorder was transmitted from mothers to sons and that women in that family were not affected.

Such an inheritance pattern suggests the gene lies on the X chromosome, of which men have only one copy. In 1986, genetic studies by several research groups confirmed the gene's position on the long arm of X.

The researchers have no clues about the function of the gene, which bears little resemblance to any that has been isolated from any organism. But its structure suggests that it codes for a membrane protein. ●

Sigh Sequence Leads To Startling Discovery

INFANTS who die from Sudden Infant Death Syndrome (SIDS) may not be equipped to arouse themselves from sleep the way healthy infants can, School of Medicine researchers reported at the Fourth SIDS International Conference in June.

Anna Lijowska, MD, fellow in newborn medicine, and Bradley T. Thach, MD, professor of pediatrics, say they have identified a specific sequence of reflexes that leads to arousal in infants. A problem with that sequence could contribute to accidental death while an infant sleeps.

SIDS is the sudden, unexplained death of infants under the age of 1. In the United States, SIDS claims 5,000 to 6,000 infant lives each year. Recent studies estimate that up to 30 percent of those infants die from rebreathing exhaled air, causing a form of accidental suffocation. Sleeping face down, infants can rebreath exhaled air, low in oxygen and high in carbon dioxide, that becomes trapped within the bedding around the baby's face.

But most infants can startle themselves awake if they are exposed to high levels of carbon dioxide. Studying infants from 2 to 7 months of age, Lijowska and Thach have identified a specific sequence of arousal in sleeping infants. By gradually introducing a 10 percent carbon

dioxide, 90 percent oxygen mix into a hood over the heads of healthy infants in their studies, they found all of the infants aroused themselves the same way. When carbon dioxide levels rose, the infants began to sigh and startle.

The sequence begins with a sigh in which the infant breathes in two or three times before exhaling. The sigh is followed by a startle reflex. Then the baby thrashes its head and body. Finally, there is full arousal. The entire sequence takes three to five seconds. Because it always occurs in exactly the same order, the investigators believe the sequence may point to a reflex pathway in the brainstem.

The investigators believe an abnormal arousal pattern may contribute to the risk of SIDS. If infants do not have normal reflex arousal responses, carbon dioxide levels could continue to rise while oxygen levels fall, and the baby could suffocate. ●

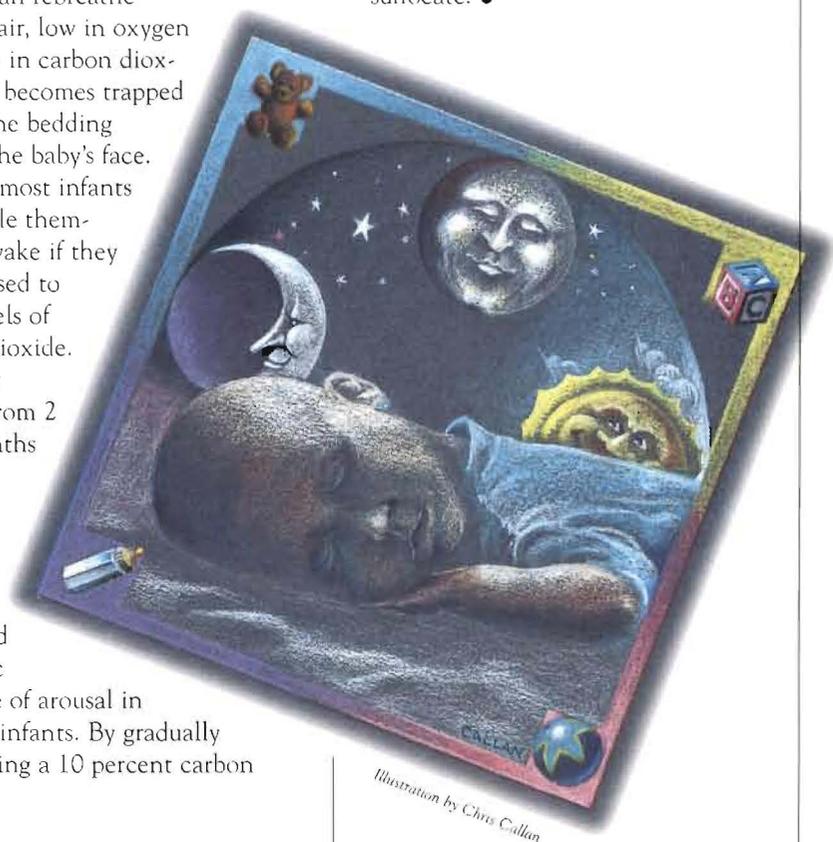
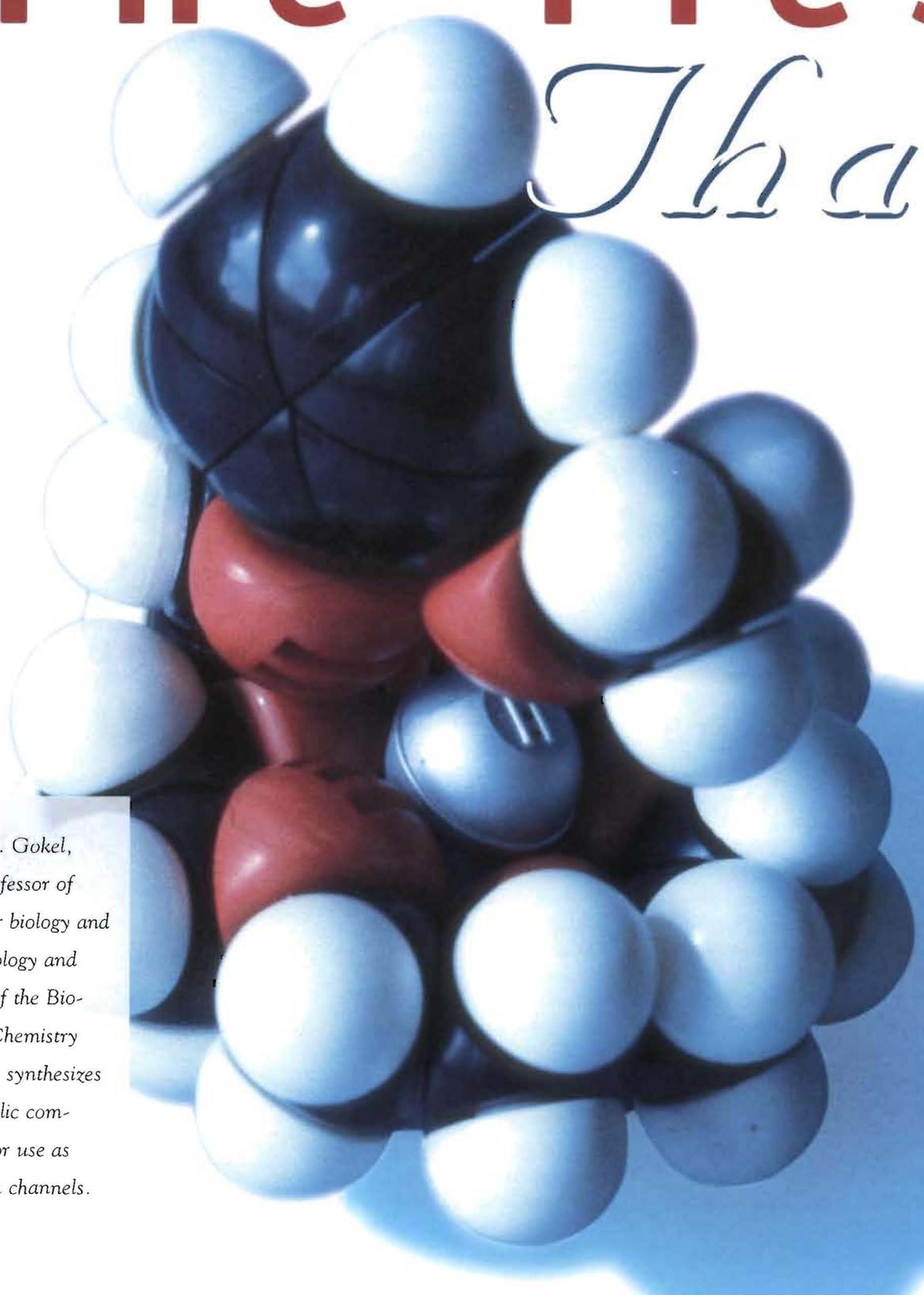


Illustration by Chris Callan

Bioorganic Chemistry Program Unites Biologist And

The Ties

That



George W. Gokel, PhD, professor of molecular biology and pharmacology and director of the Bioorganic Chemistry Program, synthesizes macrocyclic compounds for use as model ion channels.

At Bind

Growing up among industrial plants

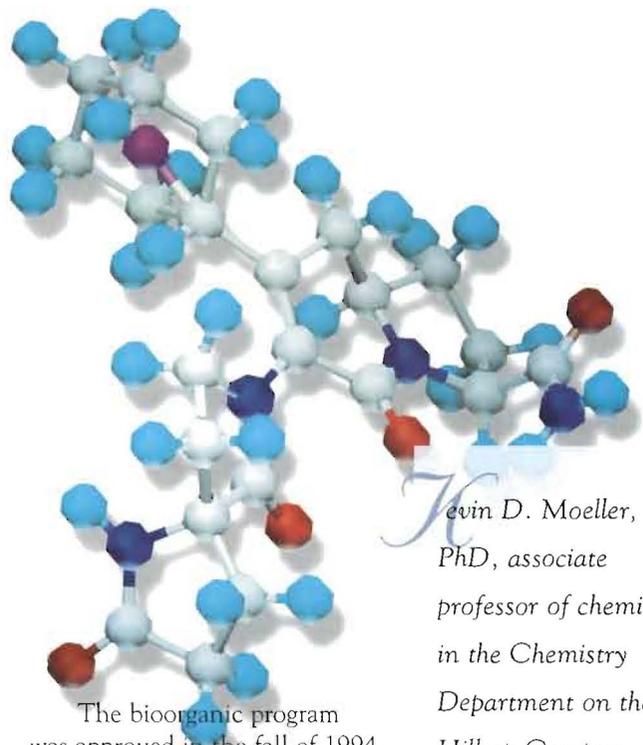
in West Virginia's Kanawha Valley inspired Eric Meadows to become a chemist. Having a physician for a grandfather and a nurse for a mother sparked an interest in medicine. So when Meadows heard about a program that melds chemistry and biomedicine, he applied to Washington University School of Medicine.

At most medical schools, a graduate student with a quantitative background would sign up with a biochemistry or biophysics lab. But the Bioorganic Chemistry Program trains students to tackle biological problems without transmuting them into biologists.

"Biologists tend to think about molecular interactions from a much larger perspective than chemists," says program director George W. Gokel, PhD, professor of molecular biology and pharmacology. "They think about strings of molecules; we think about atoms."

Without a formal program, students also tend to immerse themselves in one topic. But with a critical mass of faculty, the Bioorganic Chemistry Program can rotate students through several labs. After completing the rotation, Meadows decided to focus his research on synthetic models of biological systems rather than on nuclear medicine.

The Bioorganic Chemistry Program is one of 11 programs in the Division of Biology and Biological Sciences, the academic umbrella that provides all predoctoral education at the School of Medicine. Recognizing that course work and research often straddle departmental boundaries, the division promotes interdisciplinary interactions among faculty and students.



The bioorganic program was approved in the fall of 1994, a year after Gokel moved to the School of Medicine from the University of Miami. Its 10 students are taught by 17 School of Medicine and Hilltop faculty with appointments in biochemistry and molecular biophysics, chemistry, medicine, molecular biology and pharmacology or radiology.

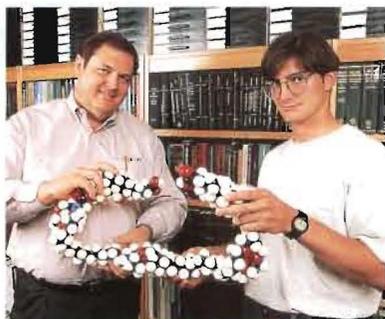
The program enables students with a chemistry background to expand their studies of synthetic organic chemistry and to become knowledgeable in the conceptual and experimental approaches of the cell and molecular biologist.

Bioorganic chemists prepare molecules that serve as models of living systems or interact with cellular components such as proteins and DNA. Their skills are in demand, Gokel believes, because chemistry and biology have drawn closer. "As chemists look higher and higher up the structural ladder," he says, "we suddenly find ourselves eyeball to eyeball with biologists who are straining to see molecular details."

The School of Medicine has one of the few — perhaps the only — formal bioorganic chemistry programs in the country. "Other universities have courses titled Bioorganic Chemistry," says Douglas F. Covey, PhD, professor of molecular biology and pharmacology. "But we have a community of scientists who want to teach students how to use their chemistry backgrounds to solve biological problems."

Kevin D. Moeller, PhD, associate professor of chemistry in the Chemistry Department on the Hilltop Campus, synthesizes analogs of natural molecules to determine how shape affects biological activity.

by LINDA SAGE



George W. Gokel, PhD, with Eric Meadows, PhD student

Covey and several other chemists were at the School of Medicine long before the program started, and they have trained and inspired many students. "But times have changed," Covey says. "Problems have gotten much broader, and you need to apply state-of-the-art techniques to every part of a project."

Students now are exposed to a spectrum of research ranging from molecular modeling through the effects of sunlight on DNA to the chemical events that may trigger atherosclerosis. Gokel, for example, uses synthetic molecules as models of membrane channels.

Making Model Channels

Gokel went to Montecatini Terme, Italy, in June to accept the 1996 International Izatt-Christensen Award in Macrocyclic Chemistry. Launched by three chemists who shared a Nobel Prize in 1987, macrocyclic chemistry concerns itself with organic molecules made of rings of nine or more atoms.



Douglas F. Covey, PhD

Gokel put handles on such rings, creating a class of lariat-shaped compounds. He invented these lariat ethers in the late 1970s at the University of Maryland. "I wanted to develop compounds that could bind ions for use as catalysts," he recalls. "Lariat ethers loop and snag cations — positively charged ions such as potassium, sodium and calcium."

Before long, Gokel became more interested in the new molecules themselves than in their catalytic powers. He began to think about how structural changes might affect their interactions with cations. What features would make a molecule select one type of ion and reject others? How would the interactions of a flexible molecule differ from those of one that was rigid? How could a molecule bind and then release a cargo of ions?

"A volleyball might fit perfectly into a rigid wastebasket," Gokel explains, "so the wastebasket would be selective for the volleyball and reject a beach ball. But how would the volleyball get out? A flexible system such as a partly inflated rubber inner tube could hold a volleyball and stretch to accommodate a beach ball. But how could it be selective?"

Biologists also are interested in how cations interact with larger molecules because cations are ubiquitous in cells, which they enter and leave through protein channels in membranes.

"Biologists have characterized a large number of ion channels, but the chemical details have proved elusive," Gokel says. "Essentially nothing is known about the chemistry that enables channels to selectively transport ions."

Lariat ethers offer convenient models because they can insert themselves into membrane, providing a conduit for cations. "We're trying to develop a system that is shorn of biological complexity but functions well enough to throw some light on the chemical interactions that must occur," Gokel says.

Gokel also discovered that lariat ethers can be modified chemically so they form membrane upon receiving an appropriate electrochemical signal. Moreover, the membrane collapses when it receives a different signal. "We hope that such a chemical control will prove useful in drug delivery," Gokel says.

Testing Shape Predictions

Kevin D. Moeller, PhD, associate professor of chemistry, is one of the five Chemistry Department faculty members who participate in the program on the Hilltop Campus. "Disease happens at the molecular level," Moeller says. "So chemistry has a large role to play in understanding and treating disease states."

Moeller synthesizes analogs of natural molecules to determine how shape affects biological activity. Most biological molecules can assume a great variety of shapes, just as a long balloon can be twisted into a variety of toy animals. But only one of the shapes will be important for biological activity. Understanding which shape is active can be crucial for developing new pharmaceuticals.

One of Moeller's targets for study is a hypothalamic hormone called thyrotropin releasing hormone, or TRH. This hormone is made of three amino acids. In 1986, another bioorganic chemistry program member, Garland R. Marshall, PhD, director of the Center for Molecular Design and professor of molecular biology and pharmacology and of biochemistry and molecular biophysics, predicted the active conformation of TRH, using molecular modeling software he had pioneered. Testing this prediction is essential for determining the validity of the modeling program and for translating the information into potentially useful TRH analogs.

In 1987, Moeller set out to synthesize a TRH analog that was locked into the predicted conformation. He needed to modify the hormone to restrict the movement

of its parts. No one at that time knew how to clamp chemical bridges onto amino acids, however. So it took Moeller's group seven years to make the first TRH analog and another year to achieve the conformation Marshall had predicted. This shape proved to be active.

Making new molecules is a current bottleneck in drug design, Moeller explains. He compares the challenge to building the St. Louis Arch. "Engineers had to come up with new tools," he says, "because no one had made such a structure before. Synthetic organic chemists view the world the same way — they design new tools or adapt old ones in order to construct new molecules."

Regulating Brain Cells

Covey came to the medical school in 1977 after working with a medicinal chemist at The Johns Hopkins University. "I saw how much excitement there was in a medical environment," he says, "so I decided to apply my skills to biomedicine."

His early work — on enzyme inhibitors — produced some of the first compounds that block estrogen production. "There are many breast tumors that stimulate their own growth by making estrogens," Covey says. "So we designed new compounds to inhibit their growth. That allowed the pharmaceutical industry to develop a whole group of related products."

He since has turned his attention to small molecules that bind to ion channels on neurons, determining how subtle structural changes affect recognition. These small molecules often have big names, like 4,7,7-trimethyl-6,8-dioxabicyclo[3.2.1]octan-2-one.

In the early 1980s, Covey discovered that molecules called gamma-butyrolactones bind to neuronal receptors for an inhibitory neurotransmitter called GABA. Once bound, they enhance GABA's action, further damping a neuron's electrical activity. Covey then showed that gamma-butyrolactones act as anticonvulsants in animals, calming the storm of an epileptic

seizure. He and several other faculty now are involved in a lactone research program.

Another collaboration focuses on receptors that contribute to the brain damage that can follow stroke, head injury and cardiac arrest. Covey makes molecules that alter the activity of these receptors.

He also is exploring structure-activity relationships of anesthetics that act by boosting GABA activity.

Making Short-Lived Labels

Michael J. Welch, PhD, professor of radiology, chemistry and molecular biology and pharmacology, is another example of why medical schools need chemists. "I came here in 1967," he recalls, "because Michel Ter-Pogossian convinced me that the medical application of radiochemistry was an exciting area of the future."

Ter-Pogossian, who died in June, was developing imaging methods to reveal the metabolic status of tissues. He needed a chemist to label biologically relevant compounds with radioisotopes that would persist only briefly in the body. Such labels lose their radioactivity in a matter of minutes, so they had to be made on site.

Welch's talents proved vital when Ter-Pogossian led a team that developed the first usable PET (positron emission tomography) scanner in the early 1970s. "The challenge was to develop synthetic procedures that would work with minute amounts of material and were very rapid," Welch explains. "You can't use methods that take several hours when you're working with isotopes with half-lives of only minutes."

Welch has since synthesized radiolabeled compounds that target dopamine receptors in the brain and others that mark enzymes in the lung. Still others are used to assess cardiac function. He and a collaborator at the University of Illinois, Urbana, also have found a way to tag the cellular receptor for estrogen. Because some breast tumor



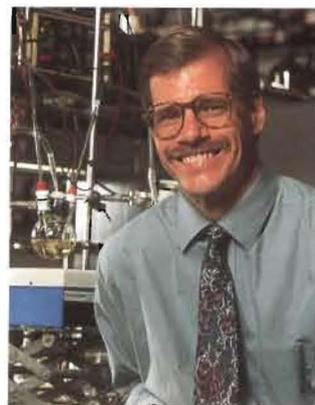
Michael J. Welch, PhD

cells are replete with such receptors, they light up in PET scans when a patient receives an estrogen-like compound with a radioactive label. This allows even secondary tumors to be detected.

Welch would like to expand the research to include treatment as well as detection. "Using the principles we have applied to imaging," he says, "we may be able to target receptors on cancer cells with agents that kill."

Over the past 30 years, Welch has trained many students in nuclear medicine, providing experts to medical schools around the world. "But our applications are becoming more targeted toward receptors and enzymes," he says, "so a training program that bridges chemistry and molecular biology is ideal."

The students also are enthusiastic. "I had high expectations coming here, and most of them have been fulfilled," says Meadows. "I thought this would be the place I was looking for, and now I know I've found my niche." ●



Kevin D. Moeller, PhD

Telltale

Recurrent Depression Leaves Its Mark On The Brain

By the time Sylvia Carr Hiles was 26 years old, she had been married for seven years and had nine pregnancies and eight miscarriages. Although she gave birth to one healthy child, a son, Hiles was grief-stricken over those she had lost.

"I desperately wanted children," she says. "After the last miscarriage, I couldn't take any more. And that's when my problems began."

What she had accepted as grief slowly turned into anxiety, fatigue and an inability to concentrate — red flags that Hiles immediately recognizes today as incapacitating indicators that a

bout with depression is coming her way.

"I know I'm in trouble when I start to lose the ability to focus," says Hiles, who has battled clinical depression for 35 years. "I begin to have trouble organizing and sorting things. I can't sort socks or mail; balancing the checkbook is impossible. Activities that you normally do automatically take me forever.

Everything you do — even opening a door — takes effort and becomes a conscious act."

Hiles, 60, estimates that her depressive episodes occur about every 10 years, and they can last for years at a time. She recalls one event lasting four years.

Experts say it is fairly typical for depressive episodes to recur, and that many people suffer from depression several times during the course of their lives.

Hiles, who is a retired grade school teacher, says that at one point her depression was so severe that she attempted suicide by taking an overdose of tranquilizers.

"I was sick of trying to cope," she recalls. "I don't think I really wanted to die. I just wanted the pain and confusion to be over. I had so much trouble organizing my life and making decisions — I couldn't live that way anymore."

Minutes after taking the potentially deadly pills, Hiles says her thoughts turned to her 10-year-old son and she picked up the

An arrow points to the hippocampus (red-orange), a seahorse-shaped brain structure involved in learning and memory.



Yvette I. Sheline, MD, has found that recurrent depression in patients causes atrophy of the hippocampus, which is part of the brain's limbic system, a group of structures important to emotion and motivation.

By Jim Dryden

Signs



“I know I’m
in trouble
when I start
to lose the
ability to
focus”

*Sylvia Carr Hiles, who
has battled clinical
depression for 35 years.*



hippocampus
shaped brain
learning
memory.

telephone and called her minister. Since that time, she has received psychiatric therapy and she now takes the anti-depressant drug Prozac when she feels an episode coming on. Although she has been free of depression for two years, Hiles knows that her disease can return.

What causes depression to recur is a question with which researchers at the School of Medicine have been wrestling. Recently, they identified an anatomical difference in the brains of depressed women that may help explain why some get depressed many times during the course of their lives.

Footprints In The Brain

In the April 30 issue of the *Proceedings of the National Academy of Sciences*, principal investigator Yvette I. Sheline, MD,

assistant professor of psychiatry, reported that the size of the brain's hippocampus is smaller in women who have been clinically depressed than in women who have never suffered a depressive episode.

The hippocampus is a seahorse-shaped brain structure involved in learning and memory. It is part of the brain's limbic system, a group of structures important to emotion and motivation. Using high resolution magnetic resonance imaging (MRI), Sheline's team also found that the more times a woman had been depressed, the smaller her brain's hippocampus was likely to be.

"We looked exclusively at women because statistically they are twice as likely as men to suffer from clinical depression," Sheline says. "We also excluded women with other medical illnesses to lessen the chance that something other than depression accounted for the changes."

A condition called hypercortisolemia may contribute to the atrophy in the hippocampus. Research has shown that the stress hormone cortisol is released in large amounts in the brain during depressive episodes. Sheline believes the excess cortisol may damage or even kill neurons and cause the volume reductions she observed in MRI scans.

Recent animal studies lend support to this view. Re-search has shown that rats injected with high levels of cortisol develop neuronal loss in the hippocampus. Rats exposed to stress and to low levels of the same hormone also suffer atrophy in the hippocampus.

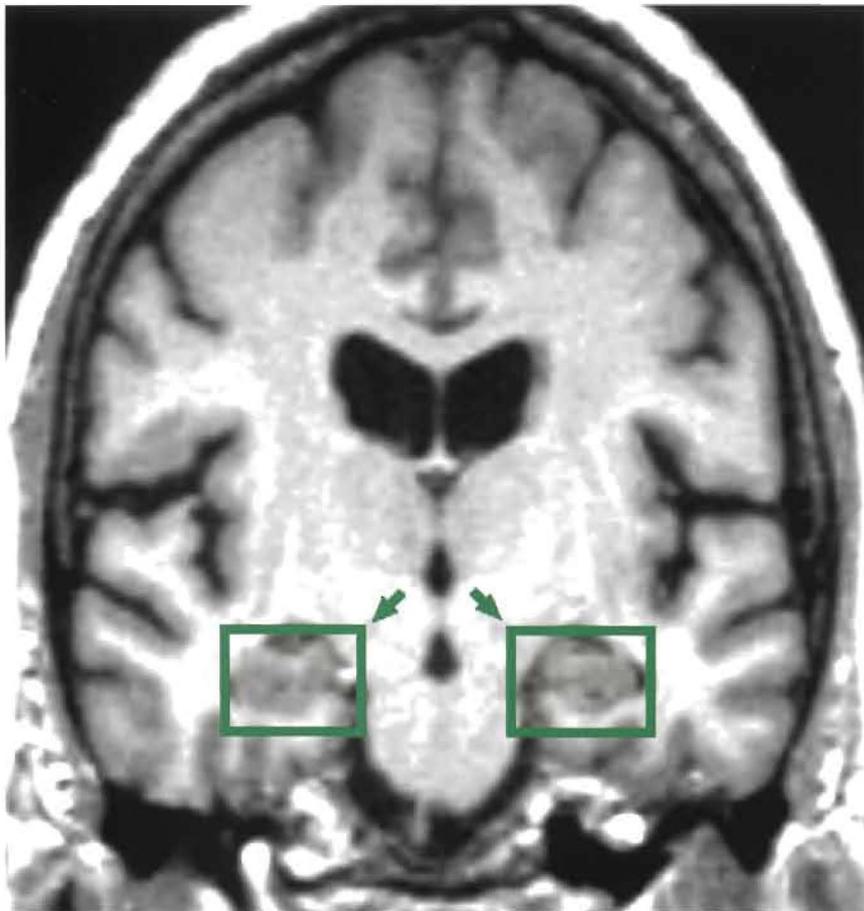
"If the same mechanism is at work in humans, that could at least partly explain what we've seen in the MRI scans," Sheline says.

If that is the case, Sheline says the atrophy of the hippocampus in depressed women could mean that depressive episodes relate to one another. A depressive episode could leave "footprints" in the form of damaged neurons. Such damage may make a patient vulnerable to future depression, which would explain why the illness recurs in some people months or years after they are treated.

"For many years, depression has been thought of as a functional illness caused by a temporary chemical imbalance," Sheline explains. "When the depression remits, that's the end of it, unless another chemical imbalance causes a future episode. Our study indicates we might need to look a step further."

Researchers compared high-resolution MRI scans from 10 women who never had been depressed with scans from 10 others who had suffered multiple depressive episodes. None of the patients, who averaged 60 years of age, were depressed at the time of the study.

Hiles, who was among the women Sheline studied, sees Sheline's research as further confirmation that depression is a disease rather than a weakness or a character flaw. She says her mother



Left and right hippocampal volumes (boxed) were measured in depressed and normal subjects.

thought her depression was some kind of punishment. "My mother was ashamed that I was depressed, and I always thought I was crazy, and I would really hurt when I was depressed.

"I remember it was such a relief when I finally learned that depression had physical causes, just like any other illness," she says. "Like a broken leg or a fever, depression may incapacitate you for a time, but I want other depressed people to know that it's something you can recover from."

"Many people still don't understand that this is a very serious illness that makes people very sick," Sheline explains. "When you compare the functional outcome, depression has morbidity and mortality rates comparable to heart attacks and other diseases better understood by the public."

Depression is the most common psychiatric illness, affecting about 15 percent of all people at some point in their lives. It has enormous economic consequences — treatment, hospitalization and lost work time cost the U.S. economy about \$20 billion annually.

The Next Step

Past research has shown that chemical and hormonal imbalances in the brain contribute to depression, but Sheline's is the first study to suggest that those irregularities cause permanent damage in patients screened to exclude physical illness and risk factors for brain damage. Recently, the journal *Science* cited Sheline's report as one of a handful of groundbreaking papers to demonstrate how stress can harm the brain.

In a parallel study, similar changes were found in the hippocampus of posttraumatic stress disorder patients. That study from researchers at Yale University found that combat veterans had volume decreases in the hippocampus on the right side of the brain. Post-traumatic stress and depression involve the release of large amounts

of the hormone cortisol.

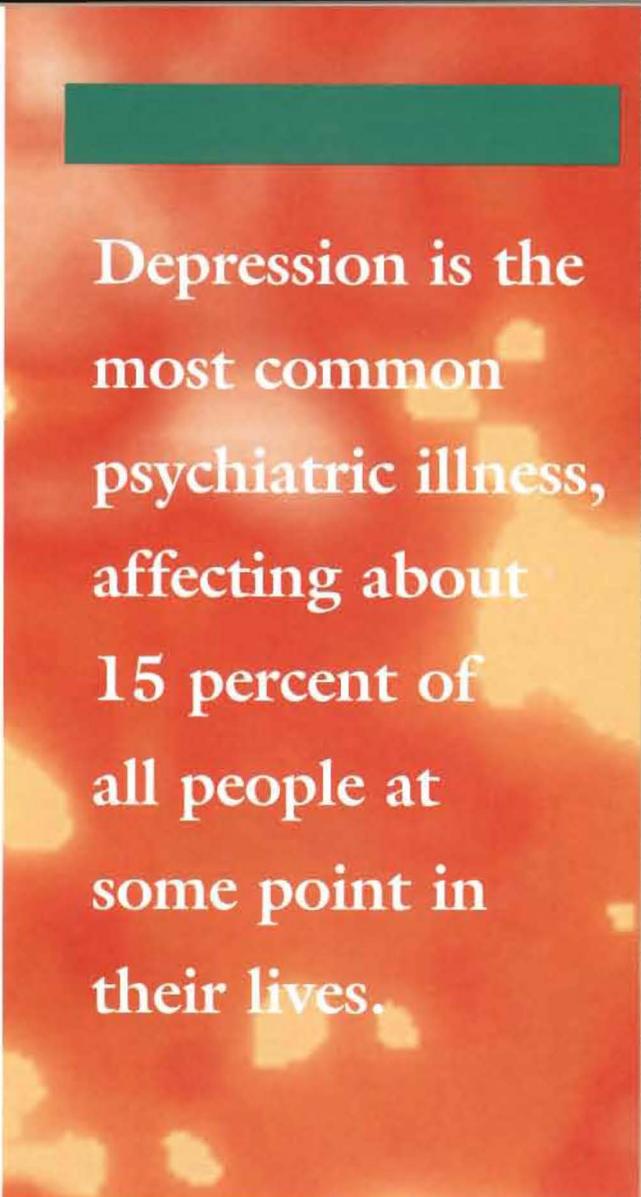
When Sheline's team examined MRI scans from the depression study, they noted that while total brain volume was comparable in the two groups of patients, the hippocampus was about 12 percent smaller in patients who had been depressed than in control subjects.

Sheline says the subtle nature of the atrophy could explain why the changes have not been found in the past. "Although we favor the notion that depression causes hippocampal changes, we cannot exclude the possibility that some people are born with a smaller hippocampal region which, in turn, makes them more vulnerable to bouts of depression," she explains.

In a larger study, Sheline will look at that "chicken and egg" question as she studies greater numbers of depressed women ages 30 to 80. She also plans to follow subjects over time.

If a small hippocampus puts patients at risk for depression, Sheline says she would expect to see volume differences in study subjects at a very early age and observe little change over time. If, however, depression causes the hippocampus to shrink, she would expect to see only minor differences in young subjects with large differences in older ones.

To answer these questions, Sheline has begun a five-year study of depressed women. She thinks that she will ultimately find that hormones released during major depression cause the hippocampus to shrink. The researchers will also conduct neuropsychological studies to test brain function in patients



Depression is the most common psychiatric illness, affecting about 15 percent of all people at some point in their lives.

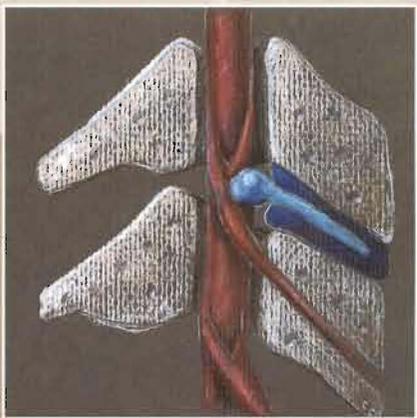
who have experienced depression.

If researchers find that depression is damaging the hippocampus, Sheline says a small loss in volume probably will not cause major impairment. New drugs and therapy can help relieve the symptoms of depression in a short time.

"What would be exciting is to find a treatment which could alleviate some of the potential for ongoing damage," Sheline says. "Anti-depressants alleviate the symptoms, but they are not sufficient to prevent the actual brain damage that occurs."

If researchers can show that stress hormones selectively kill neurons in the hippocampus during depression, Sheline says it may be possible to develop a therapy that protects those neurons. ●

decline in **declin**



Lateral view of a herniated nucleus.

in th

in the spine

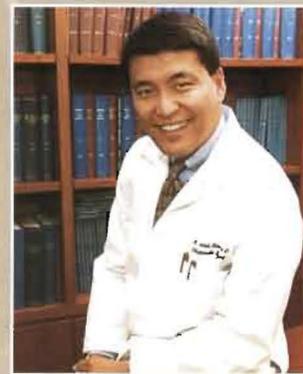
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Vertebral Surgery Eases Painful Effects Of Aging

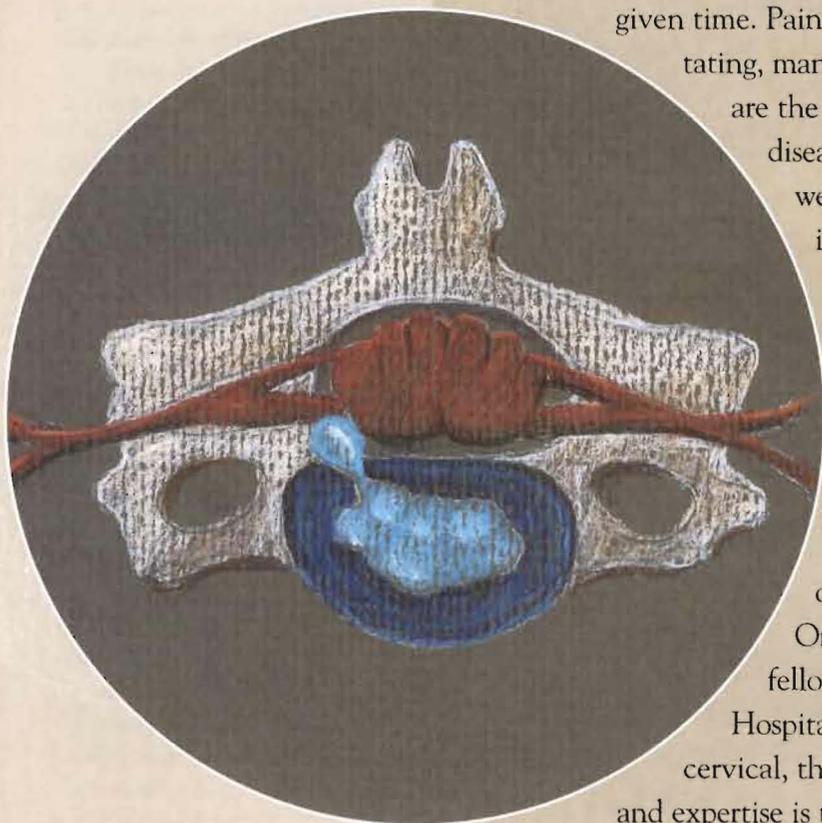
MORE THAN 75 PERCENT OF AMERICANS WILL experience back pain at some point in their lives, with some 10 percent suffering at any given time. Painful and often debilitating, many of these conditions are the result of degenerative

disease, which can occur with everyday wear and tear or result from chronic illness. Degeneration of vertebral discs is often the cause.

K. Daniel Riew, MD, assistant professor of orthopaedic surgery, is helping to rid patients of their pain using a variety of treatments and, when necessary, surgery. He joined the medical school faculty just over a year ago as part of the newly reorganized Department of Orthopaedic Surgery. Riew, who completed a fellowship in spine surgery at the University Hospitals of Cleveland, treats the entire spine — cervical, thoracic and lumbar. But his area of interest and expertise is the cervical spine, or neck.



K. Daniel Riew, MD



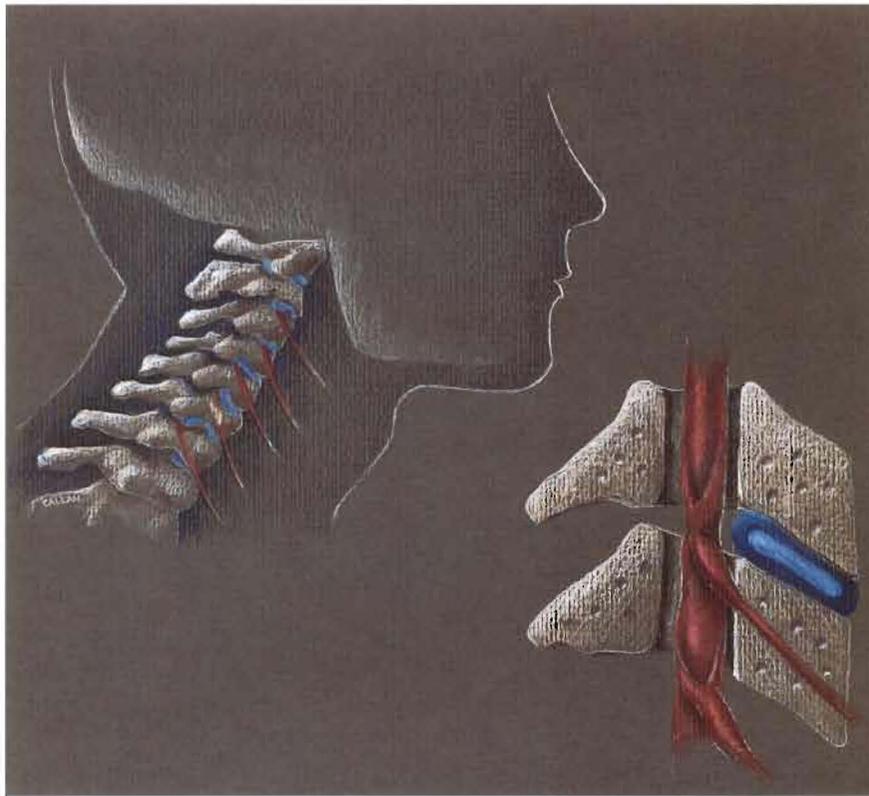
Axial view of a herniated nucleus.

in the spine

spine

by Holly Edmiston

Illustrations by Chris Callan



Side view of a healthy cervical spine.

The average age of his patients is 50, though he sees individuals who range in age from their teens to those in their 90s. Most suffer from degenerative conditions attributable to normal aging. The aging process, Riew notes wryly, starts at about age 17 and "it's all downhill from there."

Obscure Origins

Degenerative conditions originate in a variety of ways. "Sometimes it's an injury and sometimes people just wake up with the pain," says Riew. "They may have ruptured a disc while lifting something heavy, or they wake up one day in pain because something small — such as working out a little too much — was the straw that broke the camel's back." Sometimes, he says, there is no obvious aggravating cause.

Such was the case for Madelyn Curry, 33, of St. Louis, who woke up one morning with a stiff neck that she at first attributed to sleeping on an uncomfortable pillow. The pain intensified over time and gradually began to interfere with her responsibilities as a mother of three and in

her job as a surgical nurse. Loss of dexterity in her right hand made fine motor skills — such as scrubbing for surgery or gripping a pencil — increasingly difficult.

"The pain was incredible," says Curry, noting that what began in her neck and shoulder soon radiated down the length of her right arm. After several months of taking muscle relaxants and undergoing physical therapy, she turned to Riew for an assessment of her condition. He determined that she had two herniated cervical discs. On his recommendation, Curry underwent surgery in which Riew fused the discs using an iliac (hip) bone graft and a metal plate.

"My symptoms were completely gone immediately following the surgery," says Curry, who returned to work just one week later.

Riew says it is not uncommon for patients with cervical spine injury to experience pain in the upper extremities. While neck pain is often the first symptom of spinal degeneration, many people do not seek relief until they have other,

more serious symptoms. Many are surprised to learn that the pain they feel in their arm is actually the result of spinal compression.

The first seven vertebrae compose the cervical spine, and injuries to this region can be critical, says Riew. While a mild compression of a disc or discs may cause pain, a severe compression can result in the loss of balance or bowel and bladder control. If the problems are addressed early enough, however, patients can make a full recovery. "The vast majority of people return to 100 percent," he says.

Cervical spine injury also can occur by doing nothing more than working at a computer for too long, he says. Continuously holding the neck in one position can hasten degeneration of the cervical spine.

"If you continue at this in a repetitive manner day after day, eventually things wear out," Riew says. "And as they wear out, a disc may finally rupture and push back into the spinal cord or the nerves. Then, not only does one experience neck pain, but he or she may start having arm pain, weakness or numbness. That's generally the time when patients are referred."

Risk Factors

Heredity, posture and job-related injury are risk factors that may predispose individuals to spinal degeneration. People who operate heavy machinery, for instance, are subject to constant vibration on their vertebrae, and over time the physical abuse takes its toll. Cigarette smokers also are known to have a higher incidence of disc degeneration, possibly because nicotine inhibits the healing process by decreasing new blood vessel formation. Not all degenerative cases, however, fit these patterns.

The Rev. Jesse Battle, 72, began having lower back pain just over a year ago. He underwent five months of treatment to no avail. By the time he saw Riew, he was in pain 24 hours a day. Upon examination, Riew discovered a tubercular abscess in Battle's spine and advised surgery

to remove it. Tuberculosis is a chronic, recurrent infection that can affect any organ. Once the infection is established, clinical TB may develop in months, or it may be delayed for years or even decades. Battle, of St. Louis, believes he may have contracted the disease more than 30 years ago, when he drove a taxi cab and often transported tubercular patients to and from the hospital.

Although Battle had reservations about having major surgery at his age, he agreed to the procedure after it became a struggle to walk and get in and out of a car. With surgery now behind him, he must wear a back brace for the next six months to a year. Though still recuperating, he notes the severe pain was gone immediately after surgery.

"Fortunately," says Riew, citing the body's extraordinary ability to heal itself, "90 percent of the people who suffer from a degenerative disc condition will get better, even if they don't see a doctor. Still, most people benefit from simple treatment such as modification of activity, physical therapy, anti-inflammatory medications or an occasional injection of cortisone." If those modalities fail, surgery may be recommended.

"The majority of people don't require surgery. For every 10 patients I see, I might operate on one person," says Riew, who generally performs two to four surgeries per week.

Hope For The Future

In addition to his clinical practice, Riew conducts orthopaedic research. Technological advances are steady in the kinds of instrumentation, or metal hardware, that is used in cervical spine surgery and in how surgeons perform fusion. Strides also are being made in the prevention of cervical spine injuries, Riew adds, and in reversing nerve damage once thought to be permanent. Research of this type allows someone like actor Christopher Reeve, who suffered a traumatic cervical spine

Renewed Commitment To **Care**

injury last year, the hope of someday being able to walk again.

Riew's research focuses on different ways to promote fusion without having to perform autologous bone transplant. "We're trying to look at various types of growth factors that the body already produces that can help bone to heal without having to resort to using one's own bone," he explains. In addition, he is investigating minimally invasive surgical techniques for spinal surgery.

Riew, who received his undergraduate degree at Harvard University and his MD degree at Case Western Reserve University in Cleveland, was a practicing internist when he made the decision to pursue a career in orthopaedics.

"Once I got into orthopaedics, the spine interested me more than anything else," says Riew. "In this field, we often have the opportunity to help people who have the potential to become paralyzed and occasionally even restore strength in partially paralyzed patients." ●

THE SCHOOL OF MEDICINE AT Washington University is meeting the need for spinal care as part of its overall commitment to orthopaedics, as evidenced by the creation of the Department of Orthopaedic Surgery in 1995.

The department plans to serve as a regional center in the Midwest for orthopaedic surgery, with the long-term objective of establishing Washington University as a national center for the care of patients with musculoskeletal problems.

The department, headed by Richard Gelberman, MD, Fred C. Reynolds Professor, has recruited clinical faculty who specialize in the surgical areas of pediatrics, shoulder and elbow, joint reconstruction, oncology and bone transplantation, sports medicine, trauma, spine, general orthopaedics, foot and ankle, and hand, wrist and elbow.

Another key element of the restructured department is the development of its research laboratory.

Recruitment efforts aimed at bringing additional top physician-scientists to the School of Medicine are underway.

Patient appointments may be made by calling (314) 747-2500. ●



Orthopaedic surgeon K. Daniel Riew, MD, performs an anterior cervical fusion using a Contraves microscope.

"Hippocrene": Relating Medical Practice To Literary Narrative

by Petros C. Karakousis, WUMS III
Kathleen Page, WUMS III

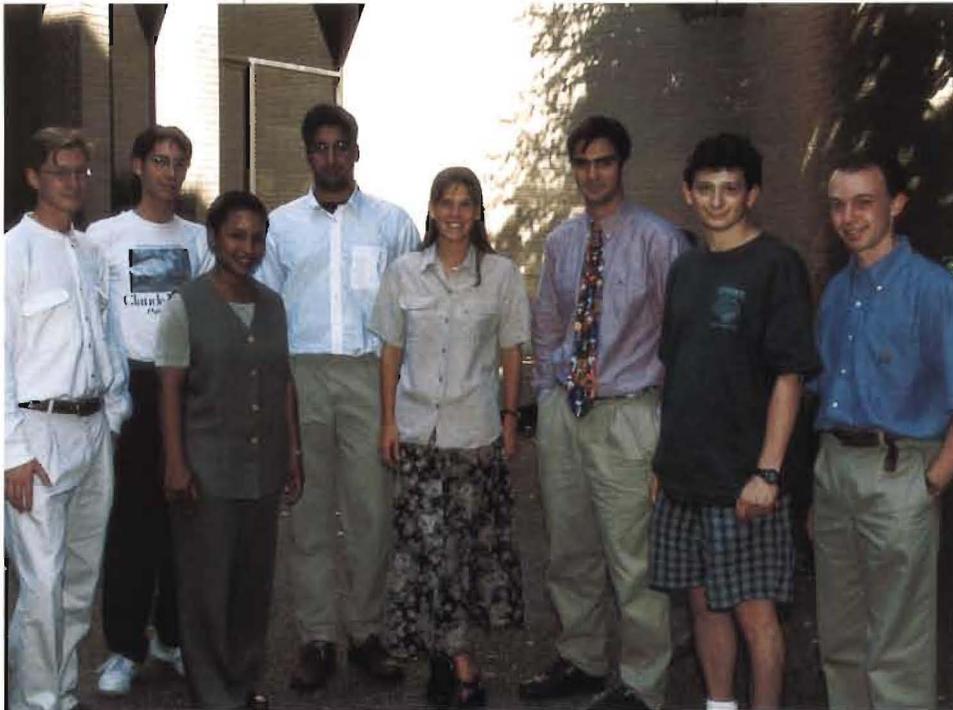
WITH minimal experience in editing and design, but full of energy and determination, a group of WUMS '98s started a literary magazine in the fall of 1995 at the Medical Center. Our intention was to create a forum for the exchange of artistic ideas in order to promote dialogue between students and faculty in a non-medical setting. We requested submissions of fiction, poetry, photography, and artwork from all members of the medical school, including faculty and students of all associated programs.

Upon first hearing our idea, some people joked that physicians could not break away from medical jargon and abbreviations to actually write anything comprehensible to the rest of the world. But believe it or not, we were overwhelmed with the enthusiastic response from both students and faculty. We received so many excellent contributions that we were forced to set up an editorial board. Our most difficult

obstacle then was to select an appropriate name for the semi-annual publication. It was suggested that we stage a "Name the WUMS Literary Magazine" contest and offer a dinner for two at a fashionable St. Louis restaurant. This generated

organized informal receptions after the release of each issue to allow readers the opportunity to meet the writers and artists who contributed to the magazine. Several students expressed an interest to improve their writing, so the "Hippocrene"

staff organized poetry and creative fiction workshops led by graduate students from the Creative Writing Program in Arts and Sciences at Washington University. Students seem to enjoy the opportunity to informally discuss their work and, fueled by brownies and apple juice, the meetings often last



The "Hippocrene" staff, from left: Marc Clements, Dan Fisher, Katrina Lee, Vijay Shankaran, Kathleen Page, Petros Karakousis, Charlie Harris and Geoff Kerchner.

a flurry of suggestions. After some deliberation, we decided that the most appropriate title for the publication was "Hippocrene," which is the name of a spring atop Mt. Helicon where, according to Greek mythology, the muses danced to find poetic inspiration.

The first issue met with widespread enthusiasm which encouraged us to broaden the range of activities sponsored by the "Hippocrene." We

several hours and involve heated debates about writing style, character development and artistic imagery. In April, the "Hippocrene" also sponsored a poetry reading by Francis Quinn, which was attended by members of the Medical Center, as well as students and faculty from other departments of the university.

The "Hippocrene" has received high praise regarding its presentation, and for this we are indebted

to Karen Corley and Holly Edmiston from the Office of Medical Public Affairs who did the formal editing and design of the publication. The success of the "Hippocrene" is also due to the generous financial support of Drs. Stephen Lefrak, Leslie Kahl and Edwin Dodson, who were receptive to the idea of starting a literary magazine as a means for promoting an appreciation of the humanities at the medical school.

In fact, there are many reasons why a medical school should sponsor a literary magazine. We believe the practice of medicine is closely related to the literary narrative. The physician's initial role is to listen to and interpret the patient's story so that he or she can present it in the form of a narrative that is coherent to other physicians. In abstracting the important findings from the history and physical exam, the physician sacrifices the unique for the universal, and, according to Dr. Lefrak, the patient's presentation "... must be reduced to a level where it has universal meaning to any physician who encounters it, so that a diagnosis may be reached, or at least a list of possibilities generated." In the same way, the artist takes a particular situation or experience and transforms it into something that is comprehensible to all. As Dr. Lefrak reminds us, however, we must always keep in mind the individual story in order to optimally address the patient's medical condition.

The humanities also provide us the opportunity to live the struggles and emotions of a multitude of others, allowing us to empathize with our fellow human beings. Empathy is essential in a profession such as medicine, in which the physician is in constant contact with patients of diverse backgrounds. For example, sometimes physicians may feel discouraged or irritated by patients who do not follow their professional advice, but exploring the underlying reasons for non-compliance may reveal alternative strategies for the practical

history to promote scientific investigation in the search for new answers to the treatment of disease.

Perhaps more than anything, the "Hippocrene" staff hopes that the magazine will serve as a source of entertainment for all readers, and, if nothing else, as a refreshing distraction from the busy and often focused world of science and medicine. We would like to thank the contributors, whose creativity and interest in the arts have made this endeavor possible.

The "Hippocrene" staff are:
 Marc Clements, Thalia Farazi,
 Dan Fisher, Angela Freehill, Rebecca Gelber, Charlie Harris, Petros Karakousis, Geoffrey Kerchner, Han Kim, Katrina Lee, Mari Nakamura, Kathleen Page, Vijay Shankaran, Edward Song and Arielle Stanford.

"...cannot literature, by exposing us to individuals, situations, stories and emotions that we have not or would not experience, help us to understand in some way the experiences of our patients, who are otherwise strangers to us?"

Stephen S. Lefrak, MD, "Hippocrene," Fall 1995

management of medical issues.

A deeper understanding of people can help us better address the fears and concerns of our patients, and allow us to sincerely care about our patients so that we are motivated to do our best for them. Unfortunately, we often are faced with situations in which there is little to be done for a patient. In those circumstances of terminal illness, empathy plays a major role in comforting the patient and the family and improving their quality of life. It is this great concern for people and their suffering that has led many physicians throughout

Submissions for the Spring 1997 issue of "Hippocrene" are welcome and should be directed by e-mail to: hippocrene@medstudents.wustl.edu Please mail hard copies to: Washington University School of Medicine, 660 S. Euclid, Campus Box 8077, St. Louis MO 63110. ●

Editor's note: The "Hippocrene" is published semiannually. The fall 1996 issue is scheduled to appear in October.

A "Bread-And-Butter Surgeon"

by Deborah Parker

THE patient was pale and barely breathing. Twenty-four years old and drunk, he and his friends had decided to climb a busy oil well pump. His attempt to ride the churning beam failed, and when he fell off, the pump came smashing down on his groin.

Now he lay in a West Frankfort IL, hospital. His friends, now sober, waited outside. The patient's right groin was massively swollen — holding much of his blood — for he had fractured his pelvis and shards of bone from it had torn his femoral artery. The scrotum was ripped open and one testis lay dangling upon his thigh.

The doctor could feel no pulse, but the patient still was alive and could open his eyes and speak. He uttered his blood type — B positive — the same as the doctor's.

The doctor wasted no time. He rolled up his sleeve and gave his own, warm blood to the patient, hoping the donation wouldn't make him feel faint.

After all, there were no other surgeons for miles, and Richard O. Fox, MD, on that night like so many others, was the patient's only hope.

Split-second decisions, extreme resourcefulness and self-confidence marked Fox's 35-year career as the only surgeon in a downstate Illinois town.

Upon his retirement in 1995, Fox had 30,000 patient files. He took two vacations in those 35 years, worked seven days a week and never used an answering machine or turned down a phone call. "I'm in the book," he explains. People

and gave 15 pints of blood.

Fox, 66, tells this story in his recent book, *Working Without a Net: Memoirs of a Small Town Surgeon*. He wrote the 344-page book in three months by sitting

down and writing a story or two every night. In it, he introduces countless patients and tells the true stories of their lives.

The book first was sold at the *Daily American* newspaper office in West Frankfort, and area residents came in droves to buy it. "He has endeared himself to the people of this town," explains Bob Ellis, the newspaper's managing editor and Fox's close friend for 30 years. The newspaper dedicated an eight-page section to Fox's retirement filled with letters of gratitude from patients and friends.

"You either loved him or you hated him, but everybody knew Doc Fox," one wrote. A meeting with Fox is hard to forget. He laughs and becomes indignant in

equal measure. In between off-color jokes, he quotes 17th-century poets or recites lines from a favorite musical. The conservative, outspoken Fox is clear in his disdain for liberal Democrats, the welfare system and anyone he perceives as irresponsible.

Something of an expert in the human condition, Fox has treated



Richard O. Fox, MD, '56

think physicians are so highly paid, he says, "but anybody with a nickel could get me out of bed in the middle of the night."

The 24-year-old survived his grim struggle. The hospital laboratory, by CB radio, put out a call for more blood. A dozen truckers pulled off the interstate, parked their rigs

Tim Parker Photography

his share of crack mothers, child abuse victims and convicted felons — even in the small hamlet of West Frankfort — and he writes about it candidly.

“Doc Fox was a firebrand, the main protagonist at the hospital,” says Ellis. “He was tough with patients. If a shirker came in with a hangnail, he’d throw them out, but then you’d see him sit up for 36 hours with a patient and weep.”

In a newspaper testimonial, one woman writes how her mother became pregnant with her fourth child at age 44. It was a difficult labor. The daughter tells how Fox stayed up all night with her mother, willing her to live, wiping her brow and speaking soothing words to her. “She wasn’t even his patient,” the daughter writes. Fox just happened to be wandering the hospital halls as he was apt to do.

In the book, Fox also recalls his boyhood in Carbondale IL. The son of a physician, Fox saw his first surgery at age 5 — a tonsillectomy on his childhood best friend. By 14, he had followed his father on rounds and to the operating room, where he saw mastectomies, Cesarean sections, hysterectomies, appendectomies and the repair of fractures.

He was no stranger to manual labor, and it was a combination of this and his great respect for his father, Ben Fox, a Mayo-trained surgeon, that led him to medicine. “It never really occurred to me not to (go into medicine). After I unloaded a few boxcars and used a pitchfork on the manure in a barn in the spring, my career choice was clear.”

After completing undergraduate

work at Southern Illinois University-Carbondale and the University of Illinois, Urbana-Champaign, Fox attended Washington University School of Medicine, like his father before him, and graduated in 1956. He married his high school sweetheart, Elizabeth, and she taught at Brentwood High School while he completed medical school. Together, they had four sons.

After medical school and a residency in Cleveland, Fox returned to Illinois to practice with his father.

“He was tough with patients. If a shirker came in with a hangnail, he’d throw them out, but then you’d see him sit up for 36 hours with a patient and weep.”

“I knew I wouldn’t be as free a spirit somewhere else.” Eventually he took a post offered to him in West Frankfort — a coal mining town of 9,000, where money raised by local coal mining unions built two area hospitals and paid to hire a surgeon to care for any miner or his family. Fox was the last surgeon so hired in West Frankfort.

Over the years, some have tried recruiting Fox away from the area, to no avail. With contentment in his voice, he says simply, “In time, you realize who you are — a good bread-and-butter surgeon in a small town.”

In his practice, Fox performed everything from plastic surgery to orthopaedics to gynecology. Fox and his father witnessed tremendous progress in medicine. “In our lifetimes came good anesthesia, blood transfusions, dialysis,” he says. “The first dialysis done in this part of the state was done by me when I got

here. The treatment of heart disease, organ transplant, fetal monitoring, genetics, fertility ... God, the list is endless. It all happened in the span of time that my father and I practiced.

“And so I just had a great time in medicine because, hell, I could do everything and I could do it in good conscience because nobody else had done those things. Most of the things I ended up doing I hadn’t done in training because they didn’t exist.”

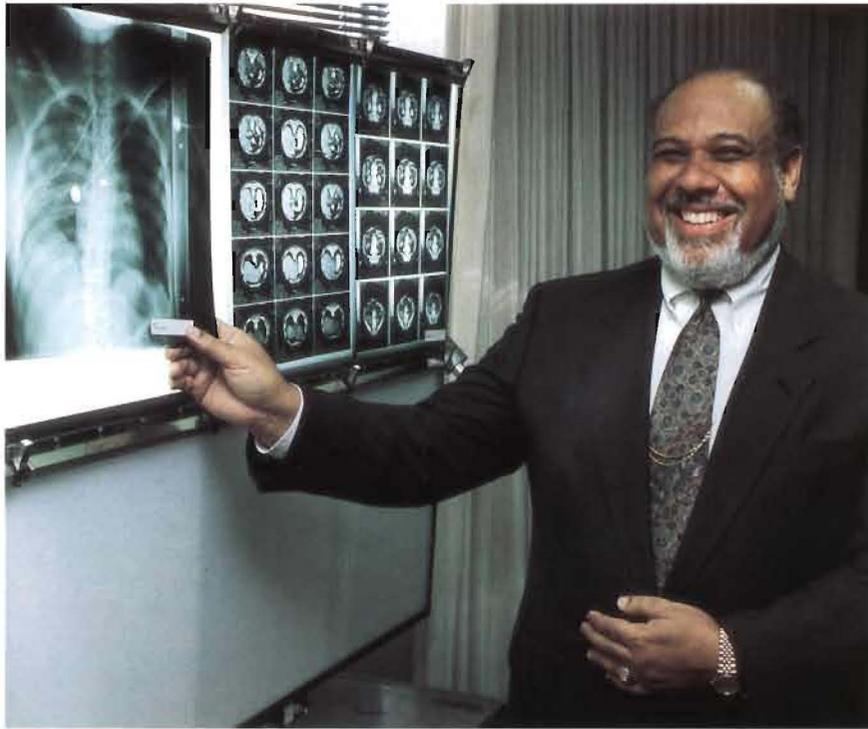
Fox taught himself to do surgical procedures by reading two or three hours every night and attending meetings when he could. His life absent of surgical peers, save an occasional telephone call to a buddy, Fox was fueled by his patients, many of whom he

followed for generations. For 18 years he treated area coal miners. “I saw all of the trauma for five large coal mines here — from a smashed finger to death. I got to know thousands of men who worked at hard, dangerous, dirty jobs. They’re my friends,” he says.

Not one for luxury cars, Fox tools about town in a 1990 gray Ford pickup. On most days he wears jeans and suspenders. “I wear suits to funerals and to court,” he explains.

Through the years Fox kept his rates low, knowing full well that the elderly women who baked him apple pies and knitted him socks couldn’t afford much more. And his patients repaid his compassion and generosity in kind. “If someone noticed my tire was low, he’d change it. In the summer, I never went home without fresh, garden vegetables,” he says. “I couldn’t have picked a better place.” ●

Mosley Named WUMCAA President



Julian C. Mosley, Jr., MD '72

JULIAN C. Mosley, Jr., MD '72, accepted the president's gavel and assumed the helm of the Washington University Medical Center Alumni Association (WUMCAA) on July 1, 1996.

Mosley, a general surgeon, has been in private practice in St. Louis for 20 years. He is a clinical instructor in the division of general surgery and has been a faculty member since 1977. He is on the medical staffs of Barnes-Jewish Hospital, Christian Hospital Northeast and Northwest, DePaul Health Center, Deaconess Medical Center and Bethesda General Hospital.

The first African American to complete the full course of study and graduate from Washington University School of Medicine, Mosley has been active in helping to establish programs that attract minority students. He was instrumental in launching the minority medical students program — now known as the Office of Diversity —

more than two decades ago, and the minority medical student scholarship program. He has been a member of the medical school's admissions committee for 10 years and makes a point of seeking qualified minority men and women to attend the medical school.

Mosley says one of his goals for the coming year is to stir his classmates from 1972, many of whom live in the St. Louis area, into becoming more involved in the association and attending the 25th reunion in May 1997.

In addition, Mosley says he will encourage WUMCAA to continue support for student scholarships. "This is particularly important because costs continue to go up, and many students who previously qualified for federally funded loans can no longer do so," he says. "The alumni association also has a tradition of providing funds for student community service projects, and we want to support this kind of

commitment in our students."

Mosley, who attended the United States Air Force Academy for two years, received his undergraduate degree in chemistry from St. Louis University. After graduation, he was recruited by Anheuser-Busch as a research chemist — a position he left after two years to attend the School of Medicine. He completed his internship and residency at Jewish Hospital.

He is a member of the St. Louis Metropolitan Medical Society, St. Louis Surgical Society, American College of Surgeons, American Medical Association, National Medical Association and is a medical adviser to the American Cancer Society. ●

Editor's note: *James L. Sweatt III, MD '62, was the first African American to graduate from the School of Medicine, however he did not complete the full four years of study at Washington University.*

Nurses Gather For 50th Reunions

ALL three of the School of Nursing classes from 1946 celebrated their 50th reunions in St. Louis last spring.

Ten members of the February 1946 class met in May at the Cheshire Inn. Catherine Williamson Hanford received a plaque for faithfully keeping the group in contact through the years. They plan to meet again next year in San Diego.

The Class of November 1946 met in June at the Cheshire Inn, with 19 alumnae in attendance. Peggy Gruppe Dale and Carolyn Jurgens organized the celebration.

The Class of July 1946, with the help of Lois Long Jacobs and others, also got together in June. Among other activities, 15 of them enjoyed lunch at the Junior League in St. Louis. ●

WUMCAA Elects New Officers

THE annual meeting of the Washington University Medical Center Alumni Association was held on Friday, May 10, 1996, with Richard A. Blath, MD, presiding. Blath reported on the association's activities and fund allocations of the past year, following which new officers and executive council members were elected.

Dolores R. Tucker, MD '74, is the new vice-president; Gordon Philpott, MD '61 will serve another year as secretary-treasurer.

Executive council members elected to three-year terms are: Lisa Ring, MD '80, Jo-Ellyn Ryall, MD '75, Steven L. Teitelbaum, MD '64, Wanda Terrell, MD '79, and Harry Knopf Jr., MD, former house staff.

Out-of-town members who served the past year and were elected to another one-year term are: C. Garrison Fathman, MD '69, Robert Kolodny, MD '69, John Eisenberg, MD '72, Robert Fry, MD '72, and Robert Telfer, MD '65.

Senior class president Todd Vedder will be a new ex-officio member. ●

Volunteer Appreciation

THANKS to the more than 1,200 MD and former house staff alumni from around the country who responded to our Alumni Resources Survey. We appreciate your willingness to share experiences and advice with prospective and current students and residents, to allow students to visit your offices, and to provide overnight lodging for those who have residency interviews in your city.

Students and residents may request to be put in contact with

one or more volunteers, who may provide general information and moral support, specific information about the pros and cons of a specialty or a residency program, or information about the employment picture in their area. The alumni office will coordinate the requests and inform volunteers when their name has been given to a student or resident. ●

Record-Breaking Participation

AS OF June 30, \$1,285,000 had been raised for fiscal year 1996 from medical, health care administration, occupational therapy, physical therapy, nursing alumni and former house staff. According to annual fund chair Emily Smith, MD '68, medical alumni participation in the Annual Fund jumped to an all-time high of 42.6 percent this year. Former house staff participation set a record at 22.6 percent. Together, nearly \$881,600 was raised from alumni and former house staff, representing an increase of more than 22 percent in giving among these two groups.

Eliot Society memberships also increased this year — 154 new members — to the highest ever recorded for the medical school. The society now boasts 547 members. Inspiration from the Philpott Family Challenge helped boost society memberships, as well as increases in alumni and former house staff participation. The Philpott Challenge also encouraged 754 new donors to contribute to the Annual Fund.

Without Annual Fund support at all levels, from the Century Club to the Eliot Society, the school would not be able to recruit and retain talented faculty such as the five Alumni Endowed Professors, or to attract high-caliber medical

students such as the 16 current Distinguished Alumni Scholarship awardees. Student-run community service projects such as Students Teaching AIDS to Students (STATS), the Perinatal Project and the Drug Education Program also benefit from the school's alumni and friends.

The Reunion Classes of 1936, 1941, 1946, 1951, 1956, 1961, 1966, 1971, 1976, 1981 and 1986 generously supported the Annual Fund through their respective gift drive activities. The Class of 1956 raised nearly \$100,000 in five-year pledges for an endowed scholarship in the name of the class. The 40th reunion gift effort was lead by St. Louisan Arthur I. Auer, MD, '56.

"The leadership and support from our Eliot Society volunteers and reunion gift chairs have made this a special year for the School of Medicine," says Sue A. Ghidina, director of annual giving. "The Medical Alumni and Development Office appreciates all of the alumni, former residents, faculty, friends and volunteers whose gifts and service make such an important difference." ●

Financial Planning Seminar Held

MORE than 100 residents and fellows attended a seminar on "Taking the Right Steps for a Successful Financial Future" held May 9. The seminar was presented by Winston Tustison, MD '60, and sponsored by the Office of Medical Alumni and Development. Tustison, who became a certified financial planner after retiring from his internal medicine practice, discussed major steps and strategies to help young investors make sound financial decisions. ●

'20s

Sol Londe, MD '27, at age 92 is in good health and still works two mornings a week at a juvenile hall in Northridge CA. He is very involved in a senior advocacy organization, Physicians for Social Responsibility, fighting to save the environment and advocating the single payer plan.

'40s

William D. Seybold, HS '40-'41, would enjoy hearing from any of his group of surgical interns at Barnes. (Those interested in responding should contact the Medical Alumni Office)

Norma J. McFarlane, NU '46, recently moved to the San Diego CA area. She retired in 1981.

John T. Gentry, MD '48, who specialized in preventive medicine, writes that he has retired and can no longer follow "an intriguing mystery" that he had been tracking for a number of years: The apparent association between cardiac arrest and exposure to ionizing radiation. He hopes someone will continue his investigation. He can be reached at Gentry Associates, 258 Atlantic Road, Gloucester MA 01930-4256, (508) 281-5449.

Dolores M. Moore, PT '48, reports that her husband, Dean, had brain surgery. The couple also spent 21 fantastic days in Australia and New Zealand and their youngest daughter recently gave birth to their sixth grandchild.

Frank B. Norbury, MD '48, who retired from his practice in internal medicine in 1989, recently completed his AB in biology at the alma mater of his father and grandfather, Illinois College in Jacksonville. Norbury was a 17-year-old freshman at IC in 1943 when he was called into the U.S. Army. At age 70, he enrolled in summer school to brush up on his study skills. He completed 30 hours of course work to receive his degree.

Bela Hatfalvi, MD, HS, now retired from the Department of Anesthesiology at WU, recently had an article published in *Regional Anesthesia* describing his clinical experiences with spinal anesthesia. The article is titled, "Postulated Mechanisms for Postdural Puncture Headache and Review of Laboratory Models."

'50s

Bertram J. Oppenheimer, MD '50, was recently honored by Yonkers General Hospital in Yonkers NY at its Centennial Celebration Ball. He was cited as exemplifying the "spirit, dedication and commitment synonymous with Yonkers General and its caregivers."

Charles E. Brodine, MD '53, has appeared in Who's Who in America from 1978 to the present, Who's Who in the World from 1991 to the present and Who's Who in Medicine in 1996.

William D. Sawyer, MD '54, received the 1996 China Health Medal, China's highest award to honor citizens of other nations for outstanding contributions toward better health for China's people at a ceremony in Beijing on May 10. Of six recipients, Dr. Sawyer is only the second American. The citation recognized Dr. Sawyer's high dedication and extensive efforts to advance health-professions education and medical research in China. Under his leadership, the China Medical Board tripled its financial assistance and expanded the distribution of its support, now to 11 leading Chinese medical universities and colleges. He also helped to establish a modern medical college in Tibet, the only one in that region.

Eugene B. Feigelson, MD '56, has been named dean of the College of Medicine and senior vice president for biomedical education and research at the State University of New York (SUNY) Health Science

Center at Brooklyn. He will continue to hold the position of professor and chairman of psychiatry.

Jerry Ann Piontkowski, NU '57, is the travel counselor for Indiana tourism at the I-64 Welcome Center eight miles west of Louisville KY. Her husband, Don, recently retired after 40 years with American Airlines.

Dan F. Keller, MD '58, retired from full-time practice in pathology at the Medical Arts Laboratory, Oklahoma City, on October 1, 1995.

'60s

Gordon R. Miller, MD '60, has been appointed chairman of the Department of Ophthalmology at Mount Sinai Medical Center in Miami FL. Miller will oversee the clinical and administrative operations of the department as well as monitor and evaluate physician practices ensuring high quality patient care.

John B. Crane, MD '64, was named a fellow of the American Psychiatric Association in May 1996.

James P. McCulley, MD '68, is chairman of ophthalmology and holds the David Bruton Jr. Chair in Ophthalmology at the University of Texas Southwestern Medical Center in Dallas. He specializes in treating corneal diseases and cornea-transplantation and recently received a \$100,000 grant from Research to Prevent Blindness.

'70s

Bruce R. Ransom, MD, PhD '72, writes that after eight years at Yale as a professor of neurology and cellular and molecular physiology, he has moved to the University of Washington in Seattle as founding chair of the Department of Neurology. He holds the Warren and Jermaine Magnuson Chair for Neurosciences and is professor of neurology and physiology and biophysics. His wife, Joann Elmore, MD, works in clinical epidemiology

and is an assistant professor of internal medicine at the University of Washington.

'80s

Alice Ann Gricoski, MD '81, traveled with a group of U.S. women surgeons to St. Petersburg, Moscow, and Bucharest, Romania, in September 1995 to visit medical facilities in these cities.

Mark F. Weber, HA '81, and his family returned to St. Louis in July 1995. He is now president/CEO of St. John's Mercy Medical Center.

Wilfred J.G. Ellis, MD '82, has been reappointed to the Board of Health-Combined Allen County Health District, State of Ohio. His new term extends until Jan. 1, 2000.

Gary Chun, MD '84, recently had his first original musical play performed by Christian Youth Theater of San Diego.

Sari R. Levine, MD '85, writes from Los Altos: "I'm living in a new house, renting with a wonderful newspaper reporter! All's well in sunny California. Come visit!"

Aurelia Nattiv, MD '85, is an assistant professor at UCLA in the division of family medicine and Department of Orthopaedic Surgery. She is a team physician and co-director of the UCLA Osteoporosis Program.

Charles F. Chandler, MD '88, says "Rebecca and I are thrilled by our son, Michael, born in August 1995. Big sisters Rachel and Natalie are thrilled as well. Charles also joined the UCLA Department of Surgery faculty as an assistant professor."

'90s

Janet Beard, PT '91, is director of physical therapy at Physical Therapy and Rehab Center in St. Joseph MO, and a mother of three.

Margaret Kunes, MD '92, is living (temporarily) "Northern Exposure" in Alaska. She is about to start her chief year in Phoenix

and says, "Hey to all."

Li Kuo Kong, MD '94, plans to pursue a classical infectious diseases fellowship in the near future.

IN MEMORY

Louis F. Aitken, MD, '27, clinical assistant professor emeritus of medicine, died on January 25, 1996, at his home in Ladue. He was 93. Aitken joined the School of Medicine in 1930 as a clinical instructor of medicine and retired in 1988.

John W. Eschenbrenner, MD '29, died in Louisiana August 5, 1995.

George N. Barry, MD '30, died October 16, 1995, following a CVA and subdural hematoma. A World War II Navy veteran, he practiced cardiology in Oklahoma City until he retired in 1980 at the age of 80.

Marvin Ford Westfall, MD '33, died of cancer on Aug. 9, 1995, at age 87. He is survived by his widow, Mary L. Westfall and two daughters, Lorna Westfall Dunklee and Linda Westfall Talent. The Becker Medical School Library contains the Westfall Collection, a series of photoplates Dr. Westfall took during his time as a WUSM student.

Raymond C. Conrad, MD '35, died at the age of 86 on Jan. 20, 1996, in Springfield MO, where he practiced obstetrics and gynecology until his retirement in 1980. Among the survivors are his wife, Willie "Doll"; a son, Ray; daughter, Kay; six grandchildren and a great-grandson.

Henry W. Edmonds, MD '36, died Dec. 15, 1995, in Bethesda MD. He leaves his widow, Dorothy Gill, MD '38 and three children.

Harold R. Lyddon, Jr., MD '37, died November 29, 1995, in Kansas City MO. A private practitioner and retired staff member of Baptist and Research hospitals, he was a Selective Service Physician for Harrison County, MO during

World War II. He is survived by his wife, Marion A. Lyddon; a son, Stephen; a daughter, Leslie J. Bishop; a sister, Berneice R. Merry, and one granddaughter.

John G. Graham, MD '39, an internist, died Feb. 25, 1995, and is survived by his wife, Edna.

Lois M. Herbert Jahsmann, NU '42, died October 19, 1995, in Norristown PA of complications of scleroderma. She had retired in 1989 as executive director of Hedwig House Services, an organization she founded in 1975 to provide psychosocial rehabilitation programs for the mentally ill in Montgomery County, PA. She is survived by her husband, the Rev. Allan Jahsmann, and three daughters.

Grace Bergner Abrams, MD '43, died at her home on October 2, 1995, after suffering from Lou Gehrig's disease. She was 78. She retired in 1987 after a 44-year career as a physician.

George E. Beckmann, MD '45, a retired urologist, died September 10, 1995, at the age of 74. He had practiced in Chattanooga TN for 25 years and at the Veterans Administration clinic in Riviera Beach FL for 10 years. He is survived by his wife, Barbara, three daughters and four sons.

Seymour Advocate, MD '50, died in New York of a brain tumor on Oct. 15, 1995. He is survived by his wife, Muriel, and a daughter.

Millard F. Jones, HS '47-'50, an otolaryngologist, died on Feb. 24, 1995.

Edward S. Evenson, MD '51, died on Dec. 2, 1995. Among his survivors is his wife Helen.

J. William Ballew, MD '52, HS '52-'57, died December 18, 1995, in Lincoln NE. During high school, he and his friend and classmate, Johnny Carson, were known for the magic act they did together. He served as a pilot in the U.S. Army before going to college and medical school. Dr. Ballew had practiced obstetrics and gynecology

in Lincoln for 26 years, founding the Women's Clinic there in 1961. He had delivered 12,000 babies during his career. Survivors include his wife, Delores; a son, John Jr.; a daughter, Beth; and a stepdaughter, Teresa.

Jewell R. Wilson, HS, a pediatrician, died on April 3, 1996, in Denham Springs LA.

Clyde M. Witt, MD '43, died May 17, 1996, at Grandview Healthcare Center in Washington MO, of injuries sustained in a fall. Dr. Witt was a radiologist and founder of Radiological Associates in St. Louis. He is survived by a son and a daughter.

FACULTY

Michel M. Ter-Pogossian, PhD, an internationally known pioneer in the development of positron emission tomography (PET) for biomedical research, died June 19, 1996, as the result of a heart attack in Paris. He was 71. Dr. Ter-Pogossian was emeritus professor of radiology at Mallinckrodt Institute of Radiology, part of Washington University.

Dr. Ter-Pogossian, a physicist by training, played a major role in developing the concept of short-lived isotopes, the first PET scanner and the first multislice PET scanner.

During a career that spanned more than four decades, Dr. Ter-Pogossian earned numerous accolades for his achievements in nuclear science, including France's Gold Medal Award of the Societe Francaise de Medicine Nucleaire et de Biophysique, Canada's prestigious Gairdner Award and the Georg Charles de Hevesy Nuclear Medicine Pioneer Award of the Society of Nuclear Medicine. He was elected to the Institute of Medicine, National Academy of Sciences, in 1987.

Dr. Ter-Pogossian received an undergraduate and graduate degree from the University of Paris, France, and received his master's

and doctorate degrees from Washington University. He joined the faculty of Washington University School of Medicine in 1950. He is survived by his wife, Ann; sons, Scott and Rowland; daughter, Ella Dodson; and five grandchildren.

Oliver Howe Lowry, MD, PhD, Distinguished Professor Emeritus of Molecular Biology and Pharmacology, died on June 29, 1996, in St. Louis from Alzheimer's disease. He was 85.

Dr. Lowry came to Washington University in 1947 and chaired the Department of Pharmacology for the next 29 years. He also was dean of the School of Medicine from 1955-58. He became an emeritus professor in 1979 but served as acting department chair from 1989-90.

He received a bachelor's degree in chemistry from Northwestern University in 1932 and, in 1937, received both a doctorate in physiological chemistry and a medical degree from the University of Chicago.

Dr. Lowry was elected to the American Academy of Arts and Sciences in 1957, the National Academy of Sciences in 1964, and the Royal Danish Academy of Sciences in 1968.

Washington University established the annual Oliver H. Lowry Lectureship in 1978 and the Oliver H. Lowry Prize for Excellence in Pharmacology by a Washington University Medical Student in 1980.

Dr. Lowry is survived by his wife, Adrienne, of Ladue MO, five children, three grandchildren, three step-children and six step-grandchildren.

Frederick K. Sargent, MD, a former St. Louis pediatrician and consultant to the Washington University School of Medicine, died February 2, 1996, of infirmities at a hospital in Tiburon CA. He was 79. Sargent, who was a private

practitioner, was on the staffs of St. Louis Children's Hospital, Deaconess and St. Luke's hospitals.

Adolph I. Cohen, PhD, professor emeritus of ophthalmology and visual sciences and of anatomy and neurobiology, died from leukemia on February 17, 1996, at Barnes-Jewish Hospital. He was 71. Cohen came to Washington University in 1954 as a National Institutes of Health fellow in the laboratory of Oliver H. Lowry, MD, PhD. A pioneer in electron microscopy, Cohen investigated the structure and function of the retina. He is survived by his wife of 40 years, Elizabeth C. Cohen; a son, Ethan Cohen; a daughter, Ann Cohen-Glasenapp, and a grandson.

Alex H. Kaplan, MD, professor of clinical psychiatry, died February 19, 1996, of cancer at his home in St. Louis. He was 83. Kaplan joined the faculty in 1946 as an instructor of clinical psychiatry. In 1955, he was promoted to professor of clinical psychiatry. For 26 years, he also was a lecturer in social psychiatry at the George Warren Brown School of Social Work. Among the survivors are a daughter, Dale; sons, Lawrence and Robert; brothers, Louis and Hiram; seven grandchildren and three great-grandchildren.

Virginia Minnich died April 26, 1996, in Pensacola FL. Although she never earned a medical degree or a doctoral degree (she held an honorary Sc.D.), Mrs. Minnich taught at WUSM from 1938-74 and eventually became a full professor in hematology. She is credited with some pioneering research on hemoglobins. Survivors include her husband, Jerry Hajek, three sisters, one brother and numerous nieces and nephews.

Alvin Frank, MD, HS, died December 3, 1995, in St. Louis following a heart attack. He taught psychiatry at Washington University School of Medicine from 1960 to 1968. ●



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The third edition of the catalog of the Bernard Becker Collection in Ophthalmology made its debut earlier this year. The revised edition includes approximately 100 new titles reflecting the rich growth of the collection between 1983 and the 1990s, and is the first hardcover version. The volume contains annotated descriptions of the books and numerous illustrations. The catalog of the Becker Collection was first published in 1979, and the second edition appeared in 1983 with 160 new entries. Bernard Becker, MD, is emeritus chairman of the Department of Ophthalmology and is an internationally recognized collector of rare ophthalmological books and prints. Copies are available through the Bernard Becker Medical Library.