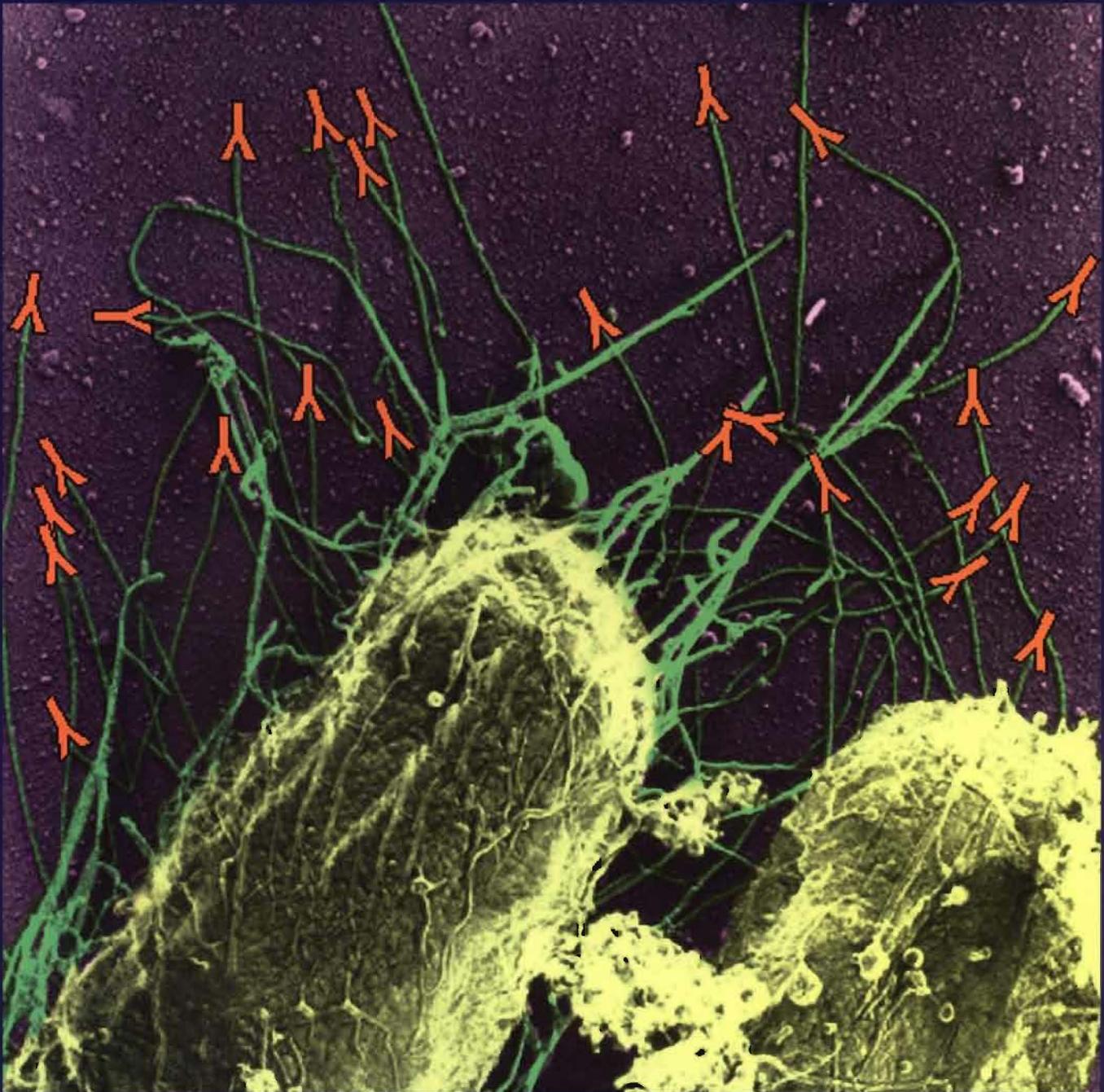


Outlook

Washington University School of Medicine

Fall 1997



Digital Library • Bladder Infection • Diversity Programs



Tim Parker Photography

Poker anyone? An ersatz poker game at the Randall Gallery downtown makes for entertaining conversation between medical students and School of Medicine faculty. From left are third-year student Allen Bruce; Dennis W. Choi, MD, PhD; third-year student Melissa Norton; and Yvette I. Sheline, MD. Choi and Sheline are society masters for the Lowry-Moore Academic Society, one of three such student societies at the School of Medicine. Bruce and Norton served as student coordinators in 1996-1997. The event, which took place earlier this year, promotes faculty-student interaction in a social setting.

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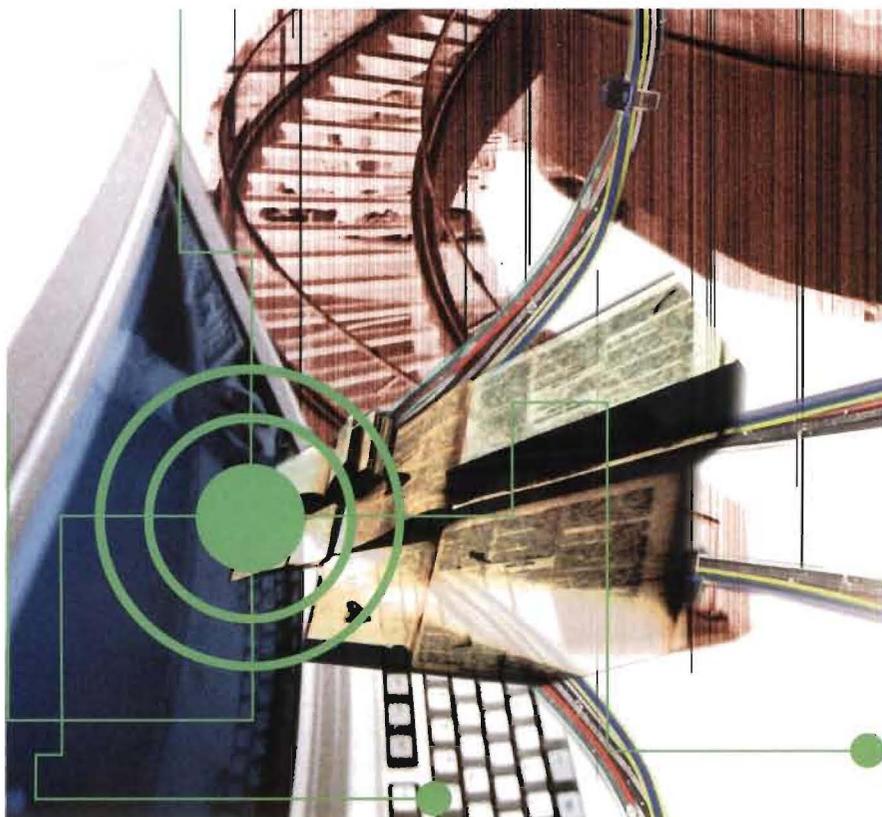
C I R C U L A T I O N

Outlook

Washington University School of Medicine



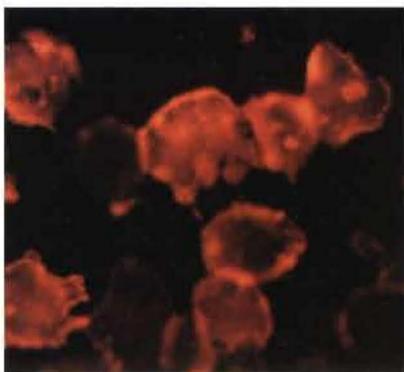
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THE COVER

The electron micrograph shows *E. coli* with hair-like appendages called pili. The orange symbols represent antibodies to FimH, an adhesive protein at the tips of pili. They are capping the adhesin, preventing the bacterium from sticking to the bladder wall. The image was generated by John E. Heuser, MD, professor of cell biology and physiology, in a collaborative study with Scott Hultgren, PhD. For more about Hultgren's research, see page 12.



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The Bernard Becker Medical Library strives to become a world leader in information technology and delivery.

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Dacey And Park Recognized With Named Professorships

RALPH G. Dacey Jr., MD, professor and chairman of neurological surgery, and Tae Sung Park, MD, professor of neurological surgery, have received named professorships at the medical school.

Dacey has been named the Henry G. and Edith R. Schwartz Professor of Neurological Surgery; Park, who also is a professor of pediatrics, has been named the Shi Hui Huang Professor of Neurological Surgery.

Dacey is the first occupant of the chair honoring Schwartz, who chaired the Department of Neurological Surgery from 1946 to 1974.

Dacey came to Washington University in 1989 from the University of North Carolina at Chapel Hill, where he was the youngest neurosurgery program director in the United States. His clinical research focuses on better ways to treat patients who have ruptured brain aneurysms — weak spots in blood vessel walls. He also studies ways to repair the tangled and malformed vessels that make up cerebral arteriovenous malformations.

In collaboration with Stereotaxis Inc. of St. Louis, Dacey is helping to develop a device to magnetically guide surgical instruments through the brain.

Dacey also is involved in basic research, in collaboration with Hans H. Dietrich, PhD, research associate in neurosurgery. The group focuses on the small vessels in the brain that bring blood to tissues.



Ralph G. Dacey Jr., MD



Tae Sung Park, MD

Park, who directs the division of pediatric neurosurgery at the medical school and is chief of pediatric neurosurgery at St. Louis Children's Hospital, is the first pediatric neurosurgeon in the United States to receive an endowed professorship.

His clinical research focuses on dorsal rhizotomy, a surgical procedure for managing the spasticity of cerebral palsy by severing the roots of some nerve fibers that lead from the spinal cord to the lower limbs. He has operated on more than 500 patients from all over the United States. His outcome studies show

that selective dorsal rhizotomy improves walking, standing and sitting in more than 95 percent of patients.

Park also specializes in pediatric epilepsy surgery. In 1994, he developed a technique to remove regions of the brain called the hippocampus and amygdala for treatment of medial temporal lobe epilepsy. The approach reaches the affected structures by going under rather than through the temporal lobe, avoiding damage to language areas.

Park also is engaged in basic research and has received grants from the National Institutes of Health for 15 consecutive years. He focuses on the pathological events that can affect the brain's tiny blood vessels during and shortly after birth.

The Schwartz Professorship was endowed in 1996 by 60 former neurosurgery residents and others in the Department of Neurological Surgery to honor Schwartz and his late wife, Edith Courtenay Robinson Schwartz, MD. Park's professorship was made possible by a gift of endowment from distinguished trustee Shi Hui Huang, MD, chairman of the board of Chinfon Global Corp. in Taiwan. ●

Kelly To Direct New Center For Cardiovascular Research

DANIEL P. Kelly, MD, has been named director of the cardiovascular division's new Center for Cardiovascular Research.

Kelly joined the faculty in 1990 as an assistant professor of medicine and became an associate professor of medicine and molecular biology and pharmacology in 1995. He has developed an internationally recognized effort in cardiovascular

molecular biology, focusing on inherited defects and molecular regulation of mitochondrial proteins essential for energy generation in the heart.

The Center for Cardiovascular Research (CCR) will provide a unique, horizontally structured research environment for scientists with diverse backgrounds but a common interest in the biology and pathobiology of the heart and

vasculature. A major objective of the CCR is to establish novel interfaces between diverse scientific disciplines. The center is structured to facilitate interaction with several research groups at the School of Medicine including the program in cardiac biophysics and bioengineering, basic science departments, the pediatric molecular cardiology group and clinical cardiovascular research groups. ●

HHMI Names New Investigators

THREE School of Medicine faculty have been designated as investigators in the prestigious Howard Hughes Medical Institute, bringing the medical school's total to 11. They are Eduardo A. Groisman, PhD, associate professor of molecular microbiology, Kenneth M. Murphy, MD, PhD, associate professor of pathology, and Wayne M. Yokoyama, MD, professor of medicine and of pathology, and the Sam J. and Audrey Loew Levin Professor of Arthritis Research.

In its third national competition, the Institute chose 70 new investigators out of 370 nominees from more than 200 U.S. institutions.

HHMI is a medical research organization that enters into long-term collaboration agreements with universities and other academic research organizations where its investigators hold faculty appointments. Hughes investigators conduct research in cell biology, genetics, immunology, neuroscience and structural biology. ●

Physical Therapy Faculty Honored

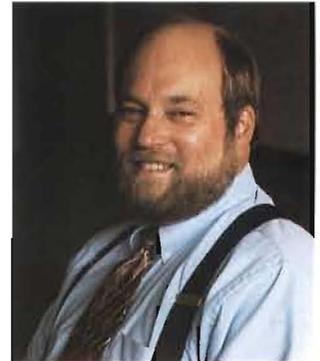
THE American Physical Therapy Association recognized two faculty members from the School of Medicine's Program in Physical Therapy at its recent annual conference.

Shirley A. Sahrman, PhD, PT, FAPTA, associate professor of physical therapy, received two of the association's highest awards: the 1997 Henry O. and Florence P. Kendall Practice Award and the Mary McMillan Lectureship. The Kendall award recognizes excellence in clinical practice, and the McMillan Lectureship is the highest honor APTA confers. With it, Sahrman will have the opportunity to address the association's membership at the 1998 Annual Conference to share professional perspectives and projections for the future of physical therapy education, research and practice.

Scott D. Minor, PhD, PT, assistant professor of physical therapy, received the Lucy Blair Service Award, which honors members who have made exceptional contributions to the association through district, state or national activities. Among his other accomplishments,



Shirley A. Sahrman, PhD



Scott D. Minor, PhD

Minor was recognized for his outstanding work with the section on research as combined sections meeting program chair. ●

13-Member Board Selected To Guide Clinical Practice

A 13-MEMBER board has been selected to steer development of the Faculty Practice Plan at the School of Medicine. The board's task is to revamp clinical care at the school to better serve patients, referring physicians and health care insurers.

Ralph G. Dacey Jr., MD, head of neurological surgery at the School of Medicine, will chair the Practice Plan Board, and James P. Crane, MD, associate vice chancellor for medical affairs, will serve as the plan's chief executive officer.

With more than 800 physicians and clinical revenues of more than \$250 million in 1996, the full-time

physician faculty at the School of Medicine compose one of the largest consolidated multispecialty group practices in the nation.

The new practice plan board includes three full-time faculty members who focus primarily on clinical care. They are Diana L. Gray, MD, obstetrics and gynecology; Marilyn J. Siegel, MD, radiology; and Bruce H. Haughey, MD, otolaryngology.

Other department heads on the board are: Alex S. Evers, MD, anesthesiology; Gustav Schonfeld, MD, internal medicine; Alan L. Schwartz, MD, PhD, pediatrics; and Samuel A. Wells Jr., MD, surgery.

William A. Peck, MD, dean of the school, and Robert H. Waterston, MD, PhD, head of genetics, also are on the board. As practice plan CEO, Crane has a seat on the board.

Two members of the board come from outside Washington University: Vinod K. Sahney, PhD, senior vice president of the Henry Ford Health System in Detroit, and another yet-to-be-named St. Louis business leader. For information about the School of Medicine's Practice Plan, visit <http://med-school.wustl.edu/events/> and click on "Practice Plan Newsletter." ●

Employer-Assisted Housing Program Makes Dreams Come True

ERIC Ahern and Elizabeth de la Garza-Ahern have a lot (and a house) to smile about.

The Aherns were the first participants to purchase a home through an employer-assisted housing program sponsored by Fannie Mae, Washington University, the Washington University Medical Center and BJC Health System. Employees of the University, the Medical Center and BJC Health

System are eligible for loans up to \$4,000 for down payments and closing costs if they purchase one-to-four-unit properties in the Forest Park Southeast or Skinker-DeBaliviere neighborhoods.

The Aherns, who moved into their home in the 1000 block of South Taylor in May, were recognized at a media conference in August by officials of the University, City of St. Louis and Fannie Mae.

Eric, who is a research technician in radiation oncology at the Medical Center, says the program helped them purchase a home sooner than they had planned.

"It would have taken us a few more months to have saved what we needed for the down payment," he says. "The money we received provided most of it."

Eric, 27, has worked at the Medical Center for 2 1/2 years; his wife, Elizabeth, 26, is an international manager at Mallinckrodt Corp. in Chesterfield. The two, who have been married four years, previously rented an apartment in the Tower Grove Park area.

"We feel at home here," says Elizabeth, who is also a graduate student at St. Louis University.

"With the rewarding experience of helping Eric Ahern and his wife, Elizabeth, achieve their dream of home ownership, we can now call this program a success," says William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. "Buying a home is an investment of a lifetime — an investment we hope more employees are willing and able to make." ●



Eric Ahern and Elizabeth de la Garza-Ahern, center, are recognized by St. Louis Mayor Clarence Harmon, left, and William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine.

Asthma Center Now Under The Wing Of The School Of Medicine

THE Asthma Center, renowned as a regional leader in asthma care, has been purchased by the School of Medicine from Barnes-Jewish West County Hospital. The faculty has remained essentially the same, ensuring continued excellent care for people with severe asthma.

"We try hard to look at the underlying causes of asthma, including allergies, sinus disease and psychological factors," says Daniel L. Hamilos, MD, associate professor of medicine and medical director of the center. "It takes an experienced team to address these issues." The

center also treats people with other airway diseases such as emphysema and sinusitis.

The Asthma Center staff includes clinical nurse specialists, nutritionists, social workers, physical and speech therapists, as well as School of Medicine physicians. Patients have access to support groups, counseling, education, medical care and exercise in one convenient location.

Phillip E. Korenblat, MD, clinical professor of medicine and senior medical director of the center, recently conducted a one-year study

of the quality of life of the center's clients. Preliminary results showed that people treated at the center experienced a 41 percent reduction in hospitalizations, a 20 percent reduction in emergency room visits, and a 59 percent reduction in unscheduled doctor visits.

Hamilos says the School of Medicine will build on the center's reputation for excellence. "It's a great way for us to integrate the clinical care of asthma into our education and research missions," he says. ●

Spotted On The WorldWideWeb

THE Cancer Center Embryonic Stem Cell Core invites visits to its new site on the WorldWideWeb at <http://medicine.wustl.edu/escore>.

The site answers many questions concerning gene targeting experimentation, from the design of targeting vectors to the growth, maintenance and transfection of embryonic stem cells. It offers the Washington University community quality controlled embryonic stem cell lines and hands-on training in the production of targeted ES clones. Using clickable icons, visitors may browse or download daily protocols and/or see the cells at all critical stages of the process. Protocols for all essential methods are provided, and the site is frequently updated.

The emergency medicine division also has a new web site at http://internalmed.wustl.edu/divisions/emer_med/home.htm.

The site contains information about the four-year Emergency Residency Training Program recently begun at Washington University including curriculum, faculty, electives and a conference schedule.

The site links to the School of Medicine and Hilltop Campus sites, as well as to state and national emergency medicine organizations, the Department of Internal Medicine, Medline and EUCLID, the library's biomedical information system.

The School of Medicine's quarterly magazine, *Outlook*, also can be perused at http://medschool.wustl.edu/~wumpa/final_html/outlook_html/. Issues from fall and winter 1996 are up for viewing. The site also is accessible through the School of Medicine's home page at <http://medicine.wustl.edu/>. ●

Outlook Readers Express Themselves

LAST October, the *Outlook* staff sent a four-page questionnaire to 500 randomly selected readers who represent 1.8 percent of the total readership of 27,500. We received 85 responses for a 17 percent rate of return.

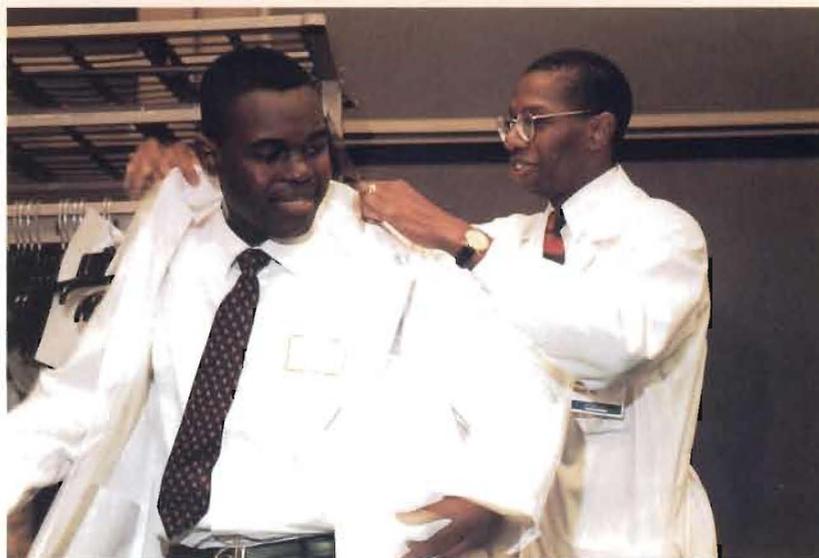
Who responded? Twenty-five percent were MDs and 25 percent were former house staff; 12 percent were nursing school graduates; 8 percent were Health Administration Program graduates; 14 percent were full-time or part-time faculty members, with the remainder comprised of graduates of the occupational or physical therapy programs, non-academic staff and parents of students.

What do people read? Eighty-four percent of respondents prefer the shorter articles in the People, Events and Research sections, followed by the feature articles, with 83 percent. Class Notes, the Alumni and Development section and alumni profile or Silhouette followed

in popularity, with 64 percent, 47 percent and 47 percent readership respectively. Readers say they are most likely to read an article in *Outlook* because the topic interests them, they are attracted by a title or headline, or because they know the individuals involved in the work.

More than half of the respondents say *Outlook* does a good job of covering a wide range of topics, such as basic research, student news, patient care, faculty or institutional changes and Alumni and Development. A number of respondents did, however, request more news about the allied health programs, such as OT, PT and HAP. Nearly two-thirds of the respondents rated the overall quality of *Outlook* as excellent. Readers gave particularly high marks to the design of the cover; the use of color photography and illustrations; the level and quality of writing, and the story subject matter. ●

A Symbol Of Professionalism



First-year medical student Kevin Sterling receives his white coat from Will R. Ross, MD, associate dean and director of the Office of Diversity Programs, at the annual White Coat Ceremony that takes place during orientation in August. Sterling was among 121 first-year medical students presented with a white coat, which has long been a symbol of the medical profession.

C-Peptide May Reverse The Ravages Of Diabetes

A SMALL protein once thought to be a useless waste product may effectively prevent and even reverse cardiovascular disease and nerve damage in diabetics, say researchers at the School of Medicine.

In a joint study with Eli Lilly and Co., the researchers found that treatment with a human protein called C-peptide repaired damaged blood vessels and nerves in diabetic rats. The protein, a by-product of the production of insulin, is present in non-diabetic individuals but scarce or absent in type I (insulin-dependent) diabetics.

The protein is exciting for the sheer novelty of its effects as well as its therapeutic potential. Its *modus operandi* seems to be unprecedented, suggesting that the long-accepted view of how proteins affect cell function is far from the whole story. The study is described in the July 25 issue of *Science*.

The protein is already abundant in many pharmaceutical laboratories, says Yasuo Ido, PhD, a research associate in pathology and lead author of the paper. Whenever insulin is manufactured, whether in the body or in a lab, C-peptide is released as a by-product. If the protein proves to be effective for human diabetics, the by-product

might one day be almost as prized as insulin.

Type I and type II (non-insulin-dependent) diabetes each greatly increase the risk of nerve damage and cardiovascular disease.

other cardiovascular complications in a given year.

Ido and colleagues injected diabetic rats with larger doses of synthetic human C-peptide, exceeding the levels of C-peptide that rats produce naturally. The results were dramatic: Nerve cells worked normally and vessels almost completely stopped leaking.

"Since this protein is so effective at preventing and reversing vascular leakage, it brings up the possibility that it could prevent cardiovascular disease in both types of diabetes," says Joseph R. Williamson, MD, professor of pathology at the School of Medicine and director of research for the Kilo Diabetes and Vascular Research Foundation.

Researchers say they will need to look much closer at C-peptide — and develop a better understanding of how diabetes damages cells — before they can determine the function of the protein.

The research was supported by Eli Lilly and Co., the National Institutes of Health and the Kilo Diabetes and Vascular Research Foundation. ●

Continuing The Fight

THE news about C-peptide has reverberated across the country, giving new hope to people with diabetes. This is not the first time that Joseph Williamson, MD, professor of pathology, and the Kilo Diabetes and Vascular Research Foundation have made a major contribution to diabetes research. More than 25 years ago, Williamson and Charles Kilo, MD, clinical professor of medicine, helped prove a concept that doctors now take for granted: People with diabetes can improve their health by controlling their blood sugar.

Today, people with diabetes regard insulin shots and blood sugar monitors as facts of life. But not long ago, many doctors saw little need to control blood sugar. They believed that faulty genes — not abnormal sugar levels — caused the complications of diabetes.

But Williamson and Kilo were skeptical that doctors and patients were helpless to prevent cardiovascular disease, blindness, amputations and kidney failure. Kilo was convinced from his clinical practice that many patients benefited from careful control of blood sugar, and he asked Williamson to help him prove it.

Unable in the beginning to secure funding for their unorthodox ideas, Williamson and Kilo co-founded the Kilo Diabetes and Vascular Research Foundation in St. Louis to help support their work. Through painstaking research, they exposed serious shortcomings in previous studies and helped affirm the importance of blood sugar control through insulin and/or oral medication.

That battle is now part of medical history, but its legacy lives on in the continuing work of the Kilo Diabetes and Vascular Research Foundation. According to Williamson, the C-peptide research would have been impossible without the foundation's support, as well as from generous contributions from the St. Louis National Charity Horse Show and the St. Louis Blues Hockey Team. ●

According to the Centers for Disease Control, diabetics are two to three times more likely than other people to die of atherosclerosis or

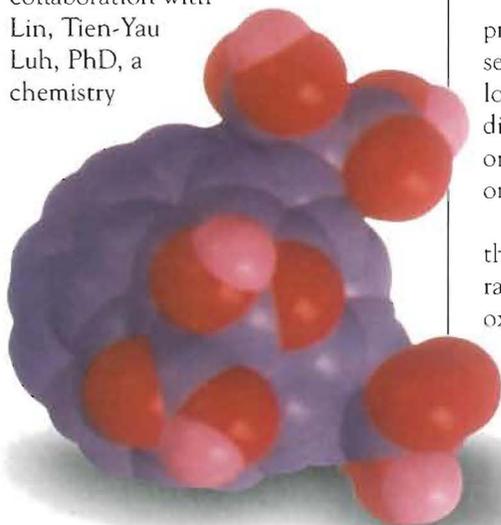
Buckyballs Fight Nerve Damage

MOLECULES the shape of soccer balls shield nerve cells from many different types of damage, a new study finds. These buckyballs also delay symptoms and death in a mouse model of amyotrophic lateral sclerosis (ALS), or Lou Gehrig's disease.

The work, published in the Aug. 19 *Proceedings of the National Academy of Sciences*, suggests that buckyballs might lessen the after-effects of stroke, head trauma and spinal cord injury, according to lead author Laura L. Dugan, MD, assistant professor of neurology and medicine.

Buckyballs — buckminsterfullerenes — are hollow spheres of 60 carbon atoms. Their architecture resembles that of R. Buckminster Fuller's geodesic domes. Because of their unique chemical structure, they can mop up huge quantities of highly reactive chemicals called free radicals.

Unmodified buckyballs are useless for medical research because they can dissolve only in harmful organic solvents, such as benzene. But Tien-Sung (Tom) Lin, PhD, a professor of chemistry at Washington University, suggested a way to make buckyballs water-soluble and biologically useful. In collaboration with Lin, Tien-Yau Luh, PhD, a chemistry



professor at National Taiwan University, added side chains to the molecules. Buckyballs with carboxyl side chains — one carbon, two



Laura L. Dugan, MD

oxygens and one hydrogen — were completely water-soluble, Luh determined.

In Dugan's experiments, the modified buckyballs shielded cultured neurons during several harmful treatments that are known to increase free-radical production. For example, they protected against damage from chemicals that mimic glutamate, a neurotransmitter that kills brain cells after head injury, stroke or cardiac arrest. They also blocked the disintegration of nerve cells deprived of oxygen and glucose, the initial event in stroke.

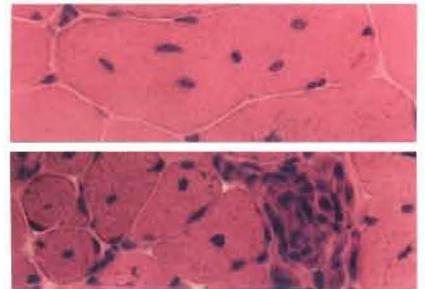
Moreover, they prevented the programmed cell death that follows serum removal or exposure to amyloid peptide, a culprit in Alzheimer's disease. A cascade of cellular signals orchestrates this cellular suicide, and one of these signals is a free radical.

"Our working hypothesis is that the buckyballs act as generalized radical scavengers that prevent oxidative damage to cell membranes," Dugan says. "They also may interrupt the cell-suicide chain of commands." ●

A Mouse Model Of Duchenne MD

FOR the first time, scientists have developed a mouse with realistic symptoms of Duchenne muscular dystrophy, a devastating muscle disease that usually kills patients by age 20.

The work should greatly advance the search for better treatments, says Joshua R. Sanes, PhD, professor of anatomy and neurobiology, who led the team. R. Mark Grady, MD, an instructor in pediatric cardiology, was lead author of the paper that appeared in the Aug. 22 issue of *Cell*. In it, researchers described how the mouse develops muscle wasting and heart disease and dies by early adulthood.

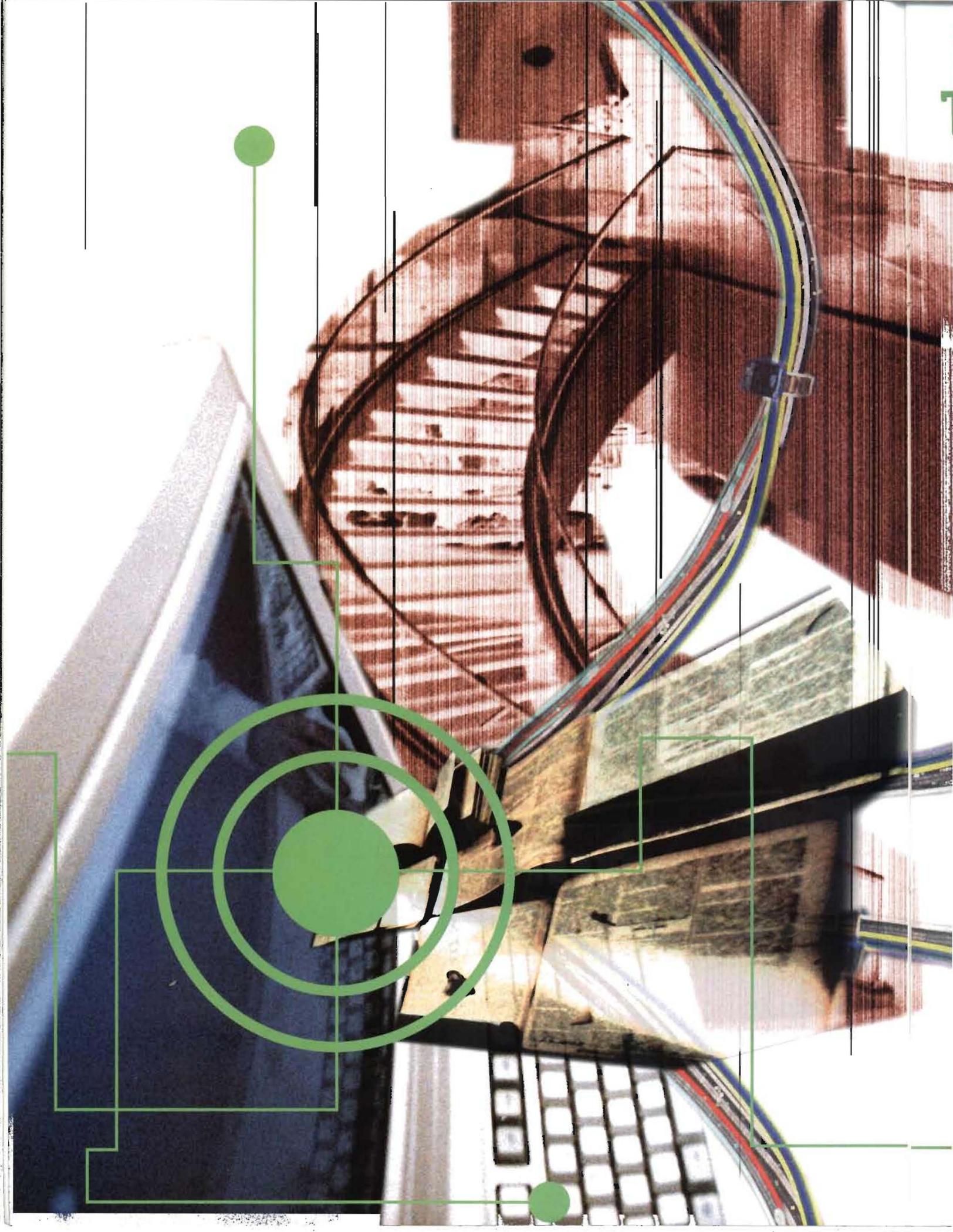


Stained muscle samples from two mice — one with symptoms similar to Duchenne muscular dystrophy, the other with no symptoms. The (top) sample looks almost normal under the microscope, whereas the other sample has deteriorated and looks similar to muscle of children with Duchenne muscular dystrophy.

Duchenne muscular dystrophy is the most common disorder of muscle, affecting mostly boys. There currently is no effective therapy.

The disorder results from a defect in the gene for a protein called dystrophin, which forms part of the scaffold in muscle fibers.

The mouse now can be used to learn more about the mechanisms of Duchenne and possibly suggest a new strategy for treatment. ●



The

DIGITAL

LIBRARY

They say you can't judge a book by its cover. But did you ever think the same could be said for a library?

In the last five years, the School of Medicine's Bernard Becker Medical Library has been transformed from a traditional depository for treasured and topical volumes into a high-tech provider and manager of digital information.

It has embraced the electronic age by focusing on providing access — not only to information, but to computer technology, networking technology, desktop support, database development and computer training.

"When I became director of the library five years ago, it was a very beautiful building with an outstanding collection and talented people," says Mark E. Frisse, MD, associate dean for academic information management. "But there was no substantial computer network in the building — none. Now we have well over 100 public access terminals, and we have a staff of 25 computing and networking people. We've gone from an organization of about 50 people to one of 100 people in various capacities simply because the demand for information technology has grown."

Frisse's computer savvy (he has a master's degree in computer

science) and business acumen (he is one of three MBAs working in the library) have been instrumental in redefining what the medical library can and should be — a world leader in information technology and delivery.

"It would be difficult to find another medical school library that employs more than 23 professionals with master's degree-level training or higher, including three MBAs. Our experts can do virtually everything from install the computer plug in your wall to provide computer services, desktop support, instruction on how to use and manage information technology and deliver content and licensing," he says.

Frisse says the library's present mission is to ensure that anyone who is a member of the Washington University medical school community can access its services wherever their work takes them.

"There are literally thousands of people within walking distance of the library who are not always getting their information needs met," says Frisse. "And as health care has become decentralized and moved away from the focus of the hospital, the issue becomes 'how do we present the answers to questions at the point in time at which people need them.'"

by
**Kleila
Carlson**

Computer Illustration
by Steven Norkaitis

The library is involved in several efforts that address this issue. Project Spectrum is a multimillion-dollar collaborative effort of BJC Health System, Washington University, IBM and Kodak. Its goal is to allow physicians access to published material and other types of printed text via computer wherever and whenever they want it.

Funding from an Integrated Academic Information Management System (IAMS) planning grant also supports the library in its goal to extend and unify information technology between administrative areas, clinical areas, library services and research areas into one common framework.

Complementing these efforts is the library's prominence as a Resource Medical Library (RML). In the Midcontinental Region of the



Mark E. Frisse, MD, associate dean for academic information management and director of The Bernard Becker Medical Library, is steering the library toward becoming a world leader in information technology and delivery.

National Network of Libraries of Medicine, it is the largest of its kind from Missouri to Utah, handling approximately 28,000 document delivery requests a year. Clients, both academic and corporate, who request documents can have them delivered to their desktop within hours. Frisse says the WorldWideWeb has made it possible for the library to reach around the globe on behalf of university activities into countries such as Japan, Argentina, South Korea, Latvia, Eastern Europe and Russia.

A FRIEND TO STUDENTS



In the Medical Campus, the library is actively involved in serving students, and, in particular, delivering their new curriculum. Betsy Kelly, associate director for the library's media/computer center, worked with two computer programmers and a designer to develop the Lotus Notes applications that first-year students began using this fall as part of the recently implemented new curriculum. Although the media center originally was designed as an audiovisual center, it now encompasses computers, the media collection (including videotapes, slides, audiotapes and some

film reels), projection services and software for medical education.

"It's interesting to be working with the curriculum in delivering the services and resources that will make it possible for students to learn in a better way," says Kelly.

The media/computer center maintains

about 60 computers on the sixth floor of the library for student use. There is an eight-station computer lab in McDonnell Sciences and 10 computers in two labs of Olin dorm. The facilities are available to anyone in the Medical Center community.

"We have two full-time classes of (first- and second-year) medical students – that's about 250 students – relying very heavily on computers for mail, curriculum materials and word processing. Then, we also have the students in occupational therapy, physical therapy and health administration," says Kelly. "So, we

are pretty busy throughout the school year."

In addition to teaching the newcomers about computer services, Kelly and Linda Mercer, associate director for information services and training programs at the library, oversee about 75 computer classes that are offered to all Medical Center employees through the library's education series. Subjects range from "Introduction to your Macintosh" and "Windows 95" to creating home pages and surfing the Internet. The library also will customize courses according to a group's needs.

BEHIND THE SCENES



The invaluable link the library provides – which makes it possible for clients to connect with a laboratory across campus or across the country, or to dial into the network from personal computers at home day or night – is composed of a 25-person organization that works throughout the library and in the lower level of Old Shriners Hospital.

The group, known as Medical School Computing and Networking Services (MSCNS), maintains an information infrastructure capable of guaranteeing the reliable delivery of library services 24 hours a day to persons within and outside of the Medical Center. Among the group's responsibilities: maintenance of servers (15 of which provide e-mail and WorldWideWeb services to all medical, OT, PT and HAP students; central administration staff; and faculty and staff within the Department of Surgery), technical support for desktop computing, maintenance of the Medical Campus networking backbone, and a centralized Help Desk for telephone support and trouble calls associated with its systems and network.

In addition, the group maintains the library's EUCLID biomedical information system, billing

applications, data network, and file and print servers.

Four MSCNS programmers also develop database applications.

MSCNS' networking team also has been involved in the building plans for the first phase of campus integration.

"For every new building that goes up, we are in on the meetings before the architectural plans are finalized," says Paul Schoening, MBS, director of computing and networking services. "We make sure that people think about data communications in addition to telephones."

Like all library departments, Schoening's group bills for every service it provides. E-mail accounts are \$10. If a student wants dial-up access from home, computing and networking services can provide Internet access through the 48 dial-up modems it maintains. Schoening says his department bills about 3,300 network connections a month. He keeps tabs on this as well as on the number of job requests that come in each month (additions, moves, changes, activations, deactivations), and the time it takes the department to respond. The department tries to complete new jobs within two weeks.

A WEB OF INFORMATION AND SERVICES

The growth of electronic information on the Internet has challenged the library to offer new products and to create customized services to help users take advantage of the latest technology. Subscribers to the library's EUCLID biomedical information system now have direct access to the full text of 84 key medical publications and a collection of literature databases that features the National Library of Medicine's MEDLINE. Specialized literature databases covering the fields of nursing, allied health, health administration and psychology also are available. The library also offers network access to a growing list of electronic reference books, chemistry and pharmaceutical resources, and patient information databases.

To help bring all of these resources together, the library created its own site on the WorldWideWeb and an additional web service called "WebCites" that

provides users with links to databases, newswire services and more than 700 biomedical publications currently available on-line.

While cutting-edge electronic information may appear to be getting all of the attention, the library's print collection is far from being ignored. Pat Gunn, associate director for technical services, manages an annual collection budget that currently exceeds \$1 million. By forging cooperative purchasing alliances with Olin Library on the Hilltop Campus, Gunn's group has strengthened the Medical Library's collection with the addition of unusual and specialized reference and research tools.

"Ultimately, libraries are very complex," says Frisse. "Behind the stacks of the library are a collection of creative, perceptive and energetic people that you never see, but who make sure that when you need something, it is there, be it in electronic form or print." ●

Editor's Note: The address for the Becker Library home page is <http://medschool.wustl.edu/library>. WebCites can be viewed at <http://medschool.wustl.edu/webcites>.



Facts About The Bernard Becker Medical Library

How does Washington University stack up against other major medical university libraries in a given year?

The number of reference questions answered:

University of Pennsylvania	77,000
Washington University	67,000
Columbia University	61,000
Harvard	57,000
Johns Hopkins	52,000
Yale	17,000

The number of computer and information management classes:

Johns Hopkins taught 532 classes to 4,100 people

Washington University taught 279 classes to 2,241 people

Yale taught 251 classes to 996 people

Columbia University taught 205 classes to 1,200 people

University of Pennsylvania taught 132 classes to 735 people

Stanford taught 127 classes to 1,200 people

Harvard reported no classes

Other statistics the library keeps:

EUCLID accounts: 2,386

Monographs purchased in 1996-1997: 3,389

Serial subscriptions purchased in 1996-1997: 2,142

Miles of fiber optic cable: 72

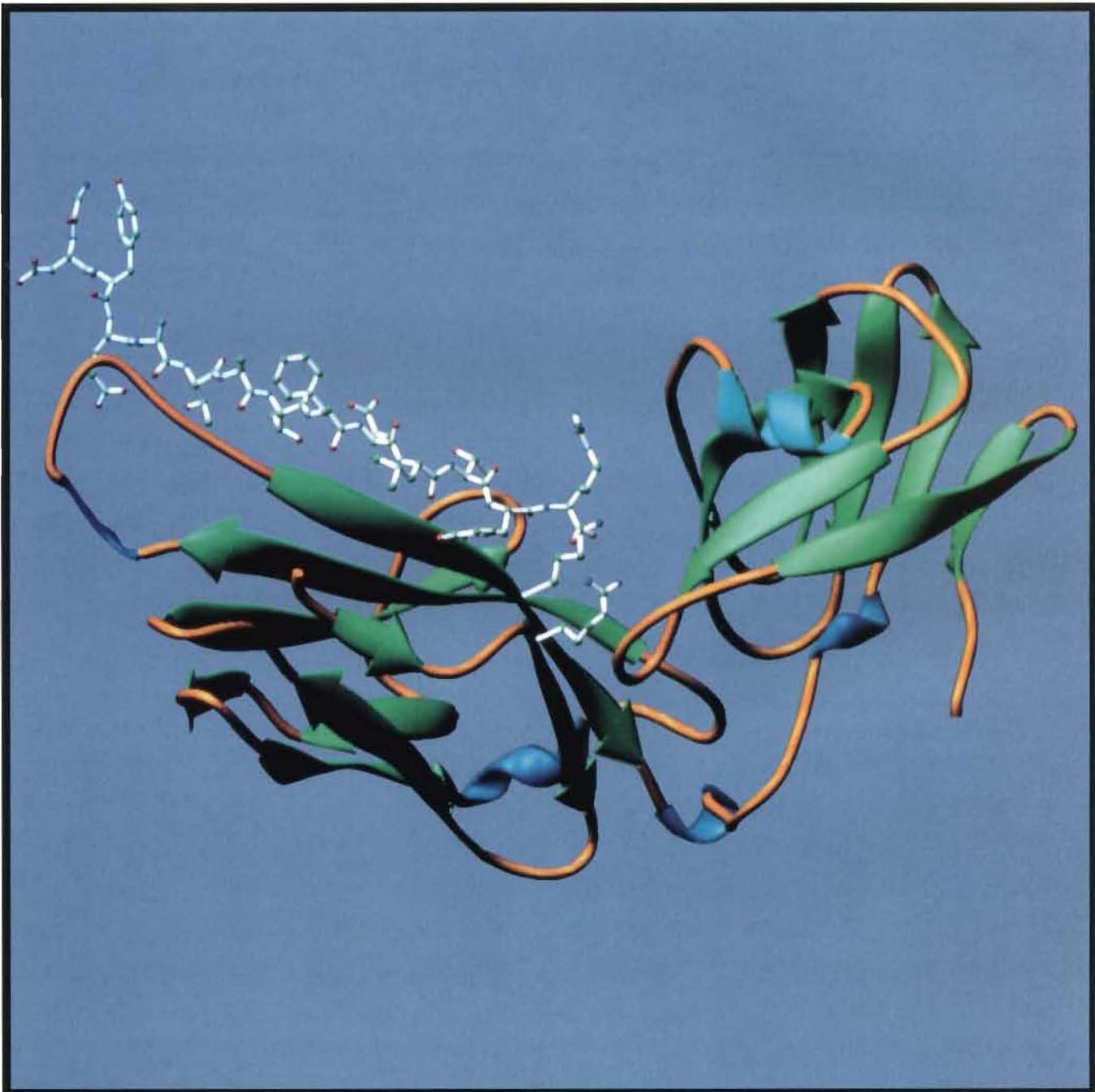
Miles of copper wiring: 265

Nodes (points of attachment) throughout the Medical Campus: 3,300

Comparisons represent 1995-1996 statistics.

Sticky Solutions

Researchers Find A New Strategy For Vaccine Development



by Linda Sage

Like many people, Scott J. Hultgren, PhD, has photos of the high points of his life: Visits to Wrigley

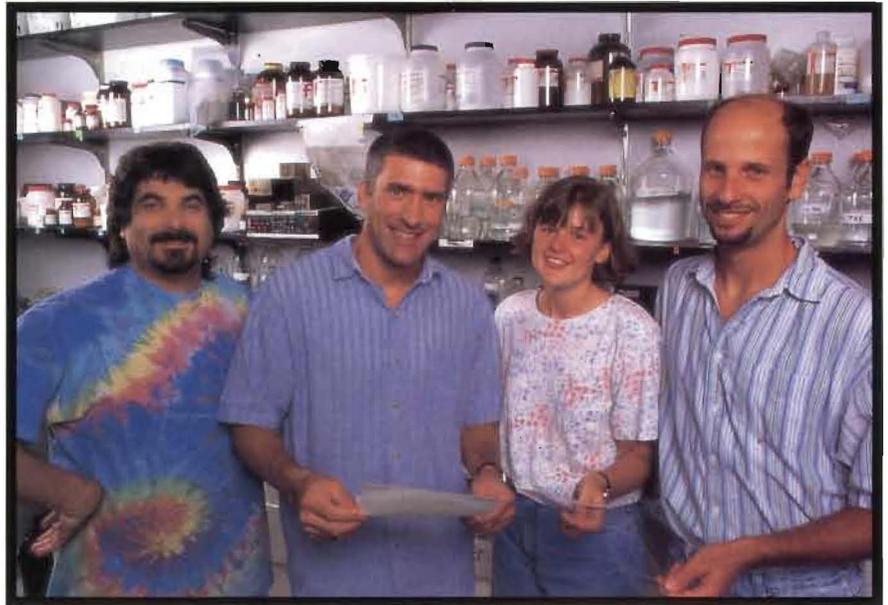
Field with his dad, his Uncle Roland, Neil Young concerts with his brother, his wedding in Aurora IL, the birth of his son in Sweden. But several intimate shots of *E. coli* also are in this collection: The feathery tips of the bacterium's surface hairs. A hair protein squatting in the cleft of another protein. A Fruit-Loop-shaped protein that assembles the hairs.

Hultgren, an associate professor of molecular microbiology, studies bacterial hairs because they hold a key to infection. "Many disease-causing bacteria have sticky hairs that cling to human tissues, allowing the microbes to set up shop," he explains. "Finding a way to stop the hairs from sticking to their targets might be a way to prevent many types of infectious disease."

Many people have tried to purify hair proteins for use as vaccines. Such proteins could prime the immune system to destroy molecules of their kind, preventing the bacterium from attaching to target tissue. Without this foothold, the *E. coli* that colonizes the bladder would be swept away by the stream of urine, unable to cause disease.

All previous attempts to purify adhesins — the sticky components of the hairs — have failed. "But the idea of using an adhesin-based vaccine is very attractive," Hultgren says, "because it would give bacteria a double whammy — antibodies against the vaccine would both block attachment and mark bacteria for destruction by the immune system."

Scott Hultgren, PhD, is dissecting the intricate pathway through which bladder-infecting E. coli assemble their pili. The model at left is derived from X-ray crystallographic studies by Carl Brändén in collaboration with Derek Ogg, PhD, at the University of Uppsala. It shows a key event in pilus assembly: the zipping of part of a pilus subunit (white) with a protein called a chaperone (blue-green).



Figuring out the details of pilus assembly is a team effort. Some members of the team are from left: Jerome S. Pinkner, C. Hal Jones, PhD, Michelle Barnhart and Scott Hultgren, PhD.

For the past 10 years, Hultgren's group has assembled a comprehensive picture of how *E. coli* makes and exports its sticky hairs. This painstaking work led to a way to hijack an adhesin for use as a cystitis vaccine. Earlier this year, Hultgren, in collaboration with MedImmune Inc., a biotechnology company in Gaithersburg MD, found that the vaccine prevents *E. coli* from colonizing the bladders of mice. This breakthrough, described in the April 25 issue of *Science*, has led to monkey trials in Sweden. MedImmune hopes to test the vaccine in humans in 1998.

The same approach could lead to a range of new products, the researchers believe. "This basic principle should be applicable to many infections, including meningitis, middle-ear infections, pneumonia, kidney infections and gonorrhea."

The Chaperone's Role

At the University of Umea in Sweden, Staffan J. Normark, MD, PhD, discovered in 1987 that *E. coli* adhesins are minor components of hair-like structures called pili, which

are made of thousands of protein subunits. The adhesins lock into receptors in the body, so their structure partly determines which tissue a microbe can infect. "Understanding the structural basis of how bacteria assemble pili and their adhesins will give us a molecular snapshot of a key event in the early stages of all bacterial infection," Hultgren says.

During a postdoctoral fellowship with Normark from 1987 to 1989, Hultgren discovered that a protein called a chaperone plays an essential role in pilus assembly. His work at the School of Medicine since 1989 suggests that the chaperone picks up the linear precursors of pilus proteins from their hitching post, the cytoplasmic membrane. The proteins then fold into the correct 3-D shapes. The complexes cross the space to the outer, periplasmic membrane through which pili emerge like sprouting hairs.

Understanding the chaperone's role explained why attempts to purify adhesins had previously failed: Making bacteria overproduce adhesin but not chaperone doesn't work because the adhesin misfolds and is destroyed by the cell's molecular garbage disposer.

Hultgren decided to genetically alter *E. coli* so that it would overproduce both adhesin and chaperone. The chaperone protected the adhesin, and the bacterium made large amounts of correctly folded protein.

The researchers also have determined how the chaperone recognizes pilus subunits and adhesin. Using a combination of crystallography, genetics and biochemistry, they showed that these proteins interact with the boomerang-shaped chaperone by zipping themselves along the boomerang's cleft.

Postdoctoral fellow C. Hal Jones, PhD, discovered that this beta-zipper releases the pilus subunit or adhesin from the cytoplasmic membrane, which also contains part of the zipper. "As far as we know, this is the first detailed insight into how bacterial chaperones assist in getting



Detailed electron micrographs by John Heuser, MD, revealed feathery tips at the end of *E. coli*'s rod-like pili. Such structures had never before been imagined. Subsequent work by C. Hal Jones demonstrated that adhesins are located in the tip fibrillae.

proteins across membranes and into the periplasm," Hultgren says.

These findings could lead to antimicrobial drugs that bind to the zipper and prevent it from attaching to pilus components. Unable to assemble subunits, the bald bacterium would be as helpless as a Post-It note without adhesive.

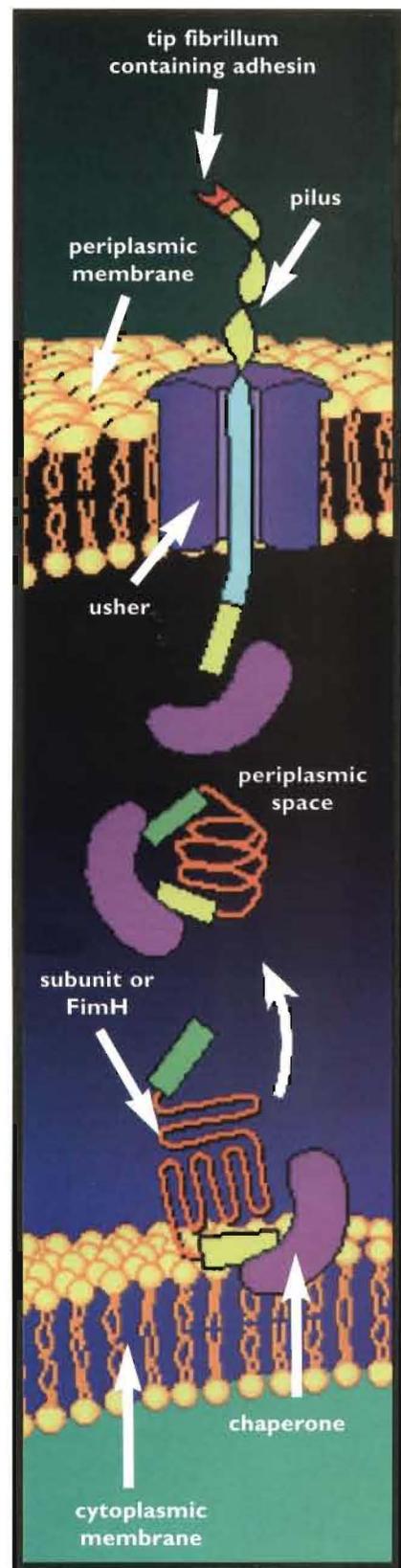
The Usher Steps In

Understanding what normally happens to the chaperone and its protein cargo was the next key step in developing the vaccine. In 1993, Karen W. Dodson, PhD, showed that these complexes interact with a protein in the periplasmic membrane called the usher. Graduate student Danielle L. Hung has since determined the molecular details of how at least 30 different types of adhesins are assembled via this chaperone-usher pathway.

Studies by David Thanassi, PhD, suggest that one part of the Fruit-Loop-shaped usher unhooks adhesin and pilus proteins from the chaperone, allowing them to zip to each other. Another forms a channel through which the growing pilus passes to the surface of the cell.

Hultgren realized that removing the usher would imprison chaperone-adhesin complexes in the periplasmic space, the only part of the cell from which soluble adhesin could be obtained. He therefore used a mutant of a bladder-infecting strain of *E. coli* which no longer produced usher protein. He also turned up two of the bacterium's genes to obtain consistently high levels of chaperone and adhesin. The recombinant bacterium became a miniature factory for producing easily accessible and correctly folded adhesin — a protein called FimH.

Head technologist Jerome S. Pinkner separated FimH from the complex mixture of proteins in the bacterial cell and worked out a method for quickly obtaining large quantities of pure adhesin.



David Thanassi, PhD, worked with John Heuser, MD, to obtain electron micrographs of the usher protein, revealing it to be a Fruit-Loop-shaped structure through which the growing pilus can pass. The role of the usher in pilus assembly is depicted above.

Testing The Vaccine

Cystitis, or bladder infection, accounts for 7 to 8 million visits to physicians and hospitals each year at a cost of \$1 billion. At least half of American women have this painful disease once during their lives, while

up to 10 percent suffer three to five infections per year. There currently is no vaccine to prevent cystitis, and antibiotics are becoming increasingly ineffective.

Graduate student Michelle Barnhart proved the relevance of FimH to the clinical condition. By removing the FimH gene from *E. coli* and tagging the mutant with a fluorescent dye, she demonstrated that the altered bacterium was unable to bind to the bladder lining of mice or humans. In contrast, the lining became covered with fluorescent spots when it was exposed to unaltered *E. coli*. "The bacterium is recognizing a receptor that is right on the surface of the lining," Barnhart says. "It has taken advantage of a protein that is easy to find in the bladder."

In a mouse model, the wild-type *E. coli*, which makes FimH, caused cystitis, while the mutant strain that lacked FimH was unable to cause disease. Therefore the binding event

that Barnhart uncovered seems critical in the ability of bacteria to cause disease.

MedImmune researchers showed that FimH varies little in bacterial samples from cystitis patients across the nation. Therefore the adhesin seems like an ideal candidate for a vaccine to protect against many different strains of *E. coli*.

To see if purified FimH could have the same effect in live animals, the MedImmune researchers inoculated *E. coli* into the urinary tract of mice. The animals developed full-blown bladder infections — unless the *E. coli* lacked the gene for FimH. But vaccination with purified FimH allowed normal mice to resist infection and their bladder linings had 100 to 1,000 times fewer bacteria than those

of unvaccinated mice. The anti-adhesin antibodies also prevented bladder infection when introduced into the bloodstream via the abdominal cavity.

"This was the first demonstration that antibodies targeted to a bacterial adhesin offer protection," Langermann says. "It also suggests that, by targeting proteins such as adhesins, one might be able to induce protection through systemic immunization."

As vaccine tests proceed, Hultgren is seeking more *E. coli* pictures for his collec-

tion. "We want to determine the 3-D structure of the adhesin, the adhesin in complex with the chaperone, the usher, and the usher binding to a chaperone-adhesin complex," he says. "Understanding the structural basis of the entire pathway will aid drug development and give us fundamental insights into protein transport and folding." ●

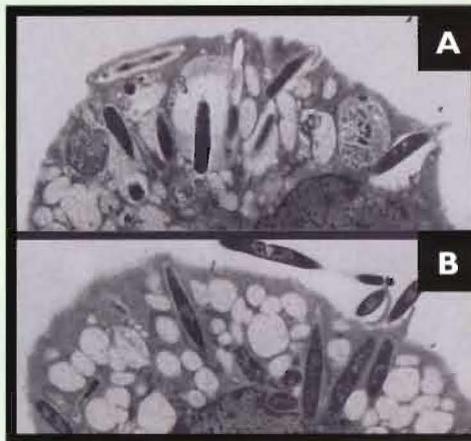
Hidden From View

A team led by Soman N. Abraham, PhD, assistant professor of pathology, recently discovered that FimH is a dual-purpose protein. As well as enabling *E. coli* to cling to the bladder lining, it persuades cells that normally destroy disease-causing microorganisms to shelter the bacterium from harm. "When you give a patient antibiotics, *E. coli* hides and reproduces inside white blood cells, called phagocytes," Abraham says. "Once the antibiotic has gone, the bacteria that come out of the macrophages survive, and the patient develops yet another full-blown bladder infection."

FimH tricks a surface protein called CD48 into letting it into macrophages, pathology resident David M. Baorto, MD, PhD, discovered. When it enters by that route, it goes to a safe haven inside the cell instead of being sent to a compartment called the lysosome — an extermination chamber that douses microbial pathogens with strong acid and toxic free radicals.

"So *E. coli* is virulent not only because it clings to the bladder lining, but also because it hides out in deeper tissue," Abraham says. "By vaccinating with FimH, you presumably could prevent the bacterium from binding CD48 and gaining access into its intracellular refuge." ●

Solomon Langermann, PhD, director of MedImmune's Department of Immunology and Molecular Genetics, found that FimH triggered a strong, long-lasting immune response when injected into mice. He also applied the resulting antibodies to cultured cells from the bladder lining, finding that they prevented 94 percent of *E. coli* isolates from binding to the cells.



E. coli that use FimH to enter macrophages end up in a different compartment than those that are tagged by the immune system for destruction. The former appear mainly in tight-fitting vacuoles (arrowheads in B), whereas the latter are seen predominantly inside large spacious vacuoles filled with diffuse material (arrowheads in A).

Looking Beyond
Diversi

**Program
Designed To
Promote
Pluralism
Among
Students**

by Candace O'Connor

Will R. Ross, MD, associate dean and director of the Office of Diversity Programs, is enthusiastic about his year-old job. But he has a vision for the future in which the job does not exist.

"If I'm successful, I will be phased out," says Ross, who is also assistant professor of medicine. "The dean will call and say, 'Will, we don't need you anymore.' That's what I want: to be told I'm not needed."

ity

That will only happen if he can implement an ambitious seven-year strategic plan — the "2004 Plan" he calls it — which he began to develop soon after becoming director. He conducted student focus groups and formed an advisory task force composed of faculty from throughout the university. Now the School of Medicine has adopted the plan as a kind of blueprint for a more diverse future.

"The medical school supports this plan with highest enthusiasm," says William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. "It is most important that we promote cultural diversity and pluralism in our educational environment. The ultimate outcome will be a healthier population. I believe that Will Ross has the talent and the vision to guide us in the right direction."

The plan consists of three parts. First, Ross wants to increase the diversity of the student population — and especially to recruit more talented students and faculty from underrepresented minority groups: African Americans, Native Americans, Mexican-Americans and

mainland Puerto Ricans. Currently, Hispanics and African Americans represent 21 percent of the U.S. population but only 10 percent of the students and 3 percent of the faculty at the School of Medicine.

"By 2004, this medical school should have something close to national parity for minorities," Ross says, "and that means approximating the percentage of minorities in the nation. But that's a big jump, and it's not going to happen overnight."

Second, he hopes to create a campus environment that celebrates diversity. In fact, the word "diversity" does not go far enough; it sounds too passive, he says. Within this rich mix of students, there must be interaction and an exchange of ideas.

Otherwise, they may separate into individual groups, becoming "balkanized" or isolated from one another.

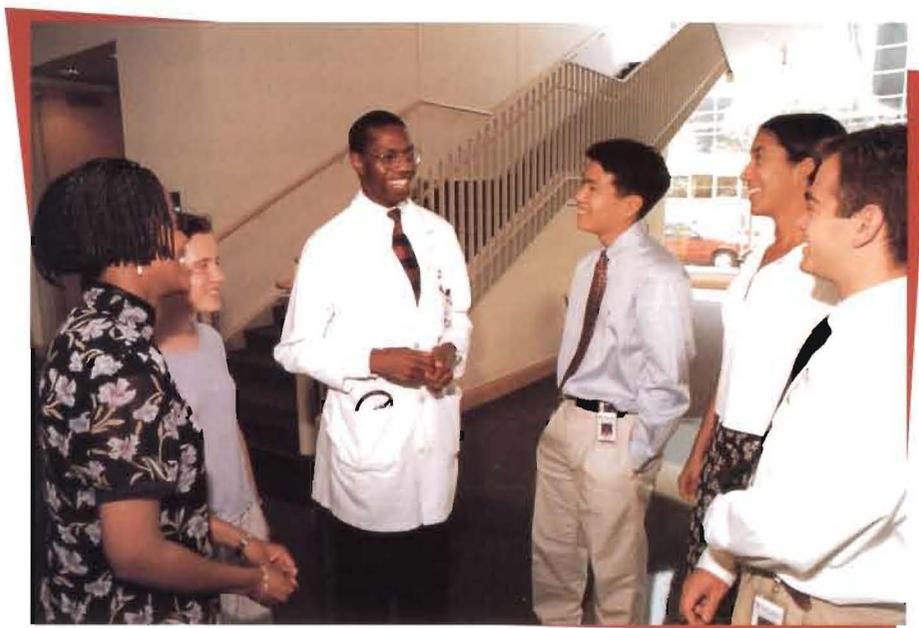
"What I want to promote is pluralism: an active process of bringing cultures together, getting them to talk and to share their differences," he says. "Minorities have some life experiences that are different from majority students; majority students have some that are different from

minorities. All these have to be discussed in an open forum where there is free discourse."

Lastly, he wants to foster the sense of a "school without borders," in which medical students take an active part in the larger community through service activities. Students, he says, need a broader view of medicine and particularly of health care issues affecting minorities. At the same time, medical centers must be accountable to the areas in which they are located.

Altogether, he says, the challenge that lies ahead of him is daunting. "But this program is beneficial for everyone," he says. "It's good for minority students who interact with other students, and for majority students who learn from a new perspective. It's good for the school to have the diversity of faculty talent to do basic science and clinical research. It's also good for the hospitals, because we are encountering a patient mix that is increasingly diverse."

"And it's going to work," he adds emphatically. "There is absolutely, unequivocally, no reason why this can't be the most successful program in the country."



Will R. Ross, MD, associate dean and director of the Office of Diversity Programs, center, visits with first-year medical students during orientation in August. From left are Lineo Thahane, Rebecca Stacy, Ross, Gilbert Cheung, Lauren Burwell and Jay Druz.

A Look Back

In 1972, Julian C. Mosley, Jr., MD, became the first African-American student to graduate from the School of Medicine after a four-year matriculation. At the time, he says, social activism was in vogue and, among his majority classmates, he found strong support. Together, they started mentoring programs and took trips to recruit more minority medical students.

"There was obviously a need for more minority students at the school and also a need for more minorities in the academic research and clinical areas in medicine," says Mosley, a St. Louis surgeon and assistant professor of surgery. "So, I tried to make Washington University a place where minority students who were interested in those areas would have a good opportunity to come and study."

Mosley, who was president of the medical school's alumni association in 1996-97, has been heavily involved over the years in recruiting activities. For the past decade, he has served as a member of the Admissions Committee. In 1979, he helped to recruit Robert Lee, PhD, the school's first assistant dean of minority student affairs, who worked actively to increase minority enrollment.

When Lee left in 1994, Helen Nash, MD — who joined the school's faculty in 1949 as its first African-American member — took over his position on an interim basis. Nash, now professor emeritus of clinical pediatrics, invited students to dinner and to cultural events, traveled out of town on recruiting trips and interviewed prospective students.

And she tried to get a message across to all medical students,

especially those from a minority background. "Just because students are in the minority here does not mean they are slow," she says. "A lot of people think that a black person at a big school like this is in by affirmative action and is therefore not as bright — but that's just not the case."

In 1996, Will Ross was appointed to fill the director's post.

A Memphis native and 1984 graduate of the School of Medicine who also did a renal research fellowship here, Ross had originally planned a career in basic research. Then one day, a colleague who had been called out of town asked Ross to give a lecture for him on minority health issues. In

researching the talk, Ross was overwhelmed by the scope

of the problem. A leadership forum with former U.S. Surgeon General Antonia Novello about the need for outreach to minority communities only confirmed his sense of urgency.

So, Ross changed focus and took a job at St. Louis Regional Medical Center, first as director of the renal program and later as vice president for medical affairs. "There, I started looking at the big picture and lecturing across the country on the need to focus on minority health issues from a national perspective," he says. "Did you know, for instance, that 10 percent of the nation consumes 70 percent of the resources? But I also realized we could never really address this problem unless we look at the way we are training physicians — with the sensitivity to deal with these issues."

When the School of Medicine offered him the director's position, he adds, "It was perfect, absolutely perfect. I brought those real-world experiences back here, and now I have an opportunity to transform the minds of future physicians. It's an exciting position to be in."



Esi Morgan DeWitt, WUMS III

Diversity Gets New Direction

The first thing Ross did was to change the name of his office from Minority Student Affairs to Diversity Programs. The title change, he says, indicates that his vision transcends the narrow niche of minority student recruitment. He wants to involve the entire campus community in a range of activities: retreats, lectures, conferences, social and cultural events.

Last year, his office commemorated Dr. Martin Luther King's birthday and held a well-attended lecture series recognizing the old Homer G. Phillips Hospital. In September, the office conducted a diversity retreat for 60 students of various backgrounds; it was so successful that the students helped plan a "Diversity Week" in January, which culminated in a festival of ethnic foods and dress.

Ross also has acted as faculty adviser for a student-run clinic in Forest Park Southeast, a multicultural neighborhood of African Americans, Bosnians and Southeast Asians adjacent to the Medical Center. "It's the epitome of pluralism in action," he says. "A group of students runs the clinic, and any student can participate in it. They encounter a diverse patient population, with its language barriers and social differences, and they learn that 'My gosh, Dr. Ross, we do have to understand the social aspects of medicine.'"

Ross also has been active in the area of minority recruiting — a "buyer's market," he says, in which talented students have their pick of medical schools. So how to attract them? Three minority merit scholarships help in this effort, but Ross also believes that creating a receptive, multicultural environment is crucial to making students feel welcome.

Third-year student Esi Morgan DeWitt agrees. She is co-president of the Student National Medical Association (SNMA), the student affiliate of the National Medical Association, an organization of minority physicians. The SNMA chapter at the School of Medicine works closely with Ross on various activities — such as a breakfast program that matches up prospective students with current students — to increase minority enrollment and create a more diverse campus climate.

"When people are interviewing," she says, "they want to go to a place where they feel comfortable. That's why the Office of Diversity Programs is important — because it shows the school is committed to issues of diversity. But so much is also individual. Do these students see other faces that look like theirs? Are the people who have come before them performing well? Are they happy? I think the office is here to support that."



Ramiro Jervis, WUMS III

At the same time, Ross is trying to establish closer ties to the school's most obvious feeder institution: the Hilltop Campus. He invites minority pre-medical students to activities sponsored by his office; he hosts events at his home in which they meet medical students. He introduces pre-medical and medical students to minority physician organizations. And he has hired Lisa Hammonds, former director of multicultural affairs for the Hilltop Campus, as associate director of multicultural student recruitment, with responsibility for maintaining a connection between the two campuses.

Further, he has begun looking "down the pipeline" toward exceptional minority high school students, encouraging them to consider medicine as a profession — and the School of Medicine as a place to matriculate. In St. Louis, he has

"What I want to promote is pluralism: an active process of bringing cultures together, getting them to talk and to share their differences."

-Will R. Ross, MD

helped to establish partnerships with several local high schools and has supported the school's effort to invite select students to campus for a Saturday Scholars Program.

To encourage current students to look beyond the walls of the school, Ross has served as consultant for a health newsletter, published by the *St. Louis American* newspaper. In the future, he wants to expand his community involvement efforts by helping to promote two new student-run clinics: in the Hispanic community and in the Asian community.

In fact, third-year student Ramiro Jervis — whose parents are from Ecuador — has been prodding Ross to recruit more Hispanics into the medical school. Along with others, he also asked Ross for support to incorporate a course on medically related Spanish into the curriculum. "Dr. Ross has been great at listening to me and to these concerns," he says.

More challenges lie ahead — such as the need for new funds to provide scholarships for talented minority students. But overall, Ross is encouraged by his first year's efforts. "The programs are there, the will is there, the vision is there." he says. "We're just getting started." ●

Improving

Researchers Work to Increase Patient Survival After Bone Marrow Transplant

An allogeneic bone marrow transplant is a drastic step — a last-ditch and risky attempt to save lives. About one in eight people who receive this type of transplant — which requires genetically similar bone marrow — dies within 100 days of the procedure as a result of toxic chemotherapy and radiation treatments they must undergo prior to transplant. An equal number may succumb to bacterial and other infections because of weakened immune defenses.

Through clinical and research efforts within the division of bone marrow transplantation and stem cell biology at the School of Medicine, physicians work to reduce the number of deaths caused by this otherwise potentially life-giving treatment. One of the 10 largest programs in the world, the division performs more than 200 transplants a year, with many patients undergoing modified procedures that improve survival.

Bone marrow transplants replace bone marrow cells ravaged by disease, such as leukemia or genetic disorders of the blood.

An allogeneic transplant requires that a donor be a sibling or individual who is genetically compatible to the patient. Some patients can undergo an autologous transplant, in which patients donate their own bone marrow cells that are transfused back into them following chemotherapy/radiation treatment.

“New treatment methods have eliminated most of the treatment-related, life-threatening bleeding and infections that occur with these transplants,” says John F. DiPersio, MD, PhD, associate professor of medicine and pathology and chief of the bone marrow transplant division.

Improved methods also have allowed older and weaker patients to undergo transplantation, a rarity until recently. The division has performed some 200 transplants on people over age 55.

Dolores Engel, 66, from Barnhardt MO, has benefited from new treatment methods being explored at the School of Medicine.

Engel developed severe aplastic anemia — a blood disorder that occurs when the body’s immune defenses attack the marrow stem cells which develop into blood cells — and was dependent on transfusions to keep her alive. She received an allogeneic peripheral blood stem cell transplant here in 1994. Today, her disease is in remission.

“I feel so blessed to be alive,” says the retired customer service representative. “When I was first diagnosed, my daughter gave me a diary to jot down my thoughts during treatment. Initially, I was reluctant, because I thought I was going to die. Now, the diary is a precious reminder of my survival.”

To reduce the number of deaths and prolong the lives of patients like Engel, researchers are investigating new ways to perform transplants, to lessen toxic treatments and to boost patients’ immune defenses after transplantation.

The treatment Engel received, which enhances immune system recovery, is a cornerstone of these efforts. The method, which involves the donor receiving injections of the growth hormone granulocyte-colony stimulating factor, has been used in more than half of the transplants performed here since 1993. It allows patients to receive 10 times the number of donor stem cells — cells in the bone marrow and peripheral blood that produce blood cells — received with traditional transplants, which collect bone marrow from the donor’s hip. The growth hormone shifts the donor’s stem cell



Dolores Engel, right, who had a peripheral blood stem cell transplant in 1994, visits with John F. DiPersio, MD, PhD, at one of her regular check-ups.

the Odds

by Barbra Rodriguez



production into overdrive. The extra cells move into the bloodstream, where they can be collected and separated from other blood components through the process of apheresis.

The peripheral blood stem cell method speeds up recovery of the immune system after transplant and cuts in half the number of patients who die shortly after transplantation. Hospital stays are reduced, and some people can be seen as outpatients within weeks of transplantation.

Refining the Method

Despite the apparent advantages of allogeneic peripheral blood stem cell transplants, questions had to be answered. For instance, researchers had to determine how many stem cells needed to be collected to ensure rapid recovery of a patient's blood cell supply.

Randy Brown, MD, assistant professor of medicine, studied 50 patients who had received blood stem cells donated by a sibling. He determined an appropriate number of donor stem cells to be collected to promote rapid recovery and discovered which donors produce the most stem cells, a finding that should improve collection methods.

Brown also helped clarify understanding of a condition called graft vs. host disease, a potentially lethal complication which develops in many bone marrow patients after transplantation. With this condition, immune cells, called T cells, from the donor that normally

protect the body from infection turn against the host, the patient. Graft vs. host is a two-edged sword in that the process also kills tumor cells. Therefore, a mild form of the disease appears to benefit bone marrow transplant patients, while severe forms can cause death — sometimes years after transplant.



Randy Brown, MD, left, and Mary Beth Smegar, check on blood products being collected by an apheresis machine.

Brown's study found that there is no increased risk of a patient contracting acute graft vs. host immediately following peripheral blood stem cell transplant. However, a chronic, less toxic, form of the disease did appear some months later in the majority of patients. Brown says if researchers can learn how to control the chronic form of the disease with medication, it may help prevent cancer from recurring in patients at greatest risk for relapse.

Brown and Douglas R. Adkins, MD, assistant professor of medicine, have been using the peripheral blood stem cell transplant method to try to lessen the toxic radiation and chemotherapy treatments used to destroy unhealthy bone marrow cells. Evidence that the immune

system can be harnessed through graft vs. host to attack cancers of the blood as effectively as chemotherapy and radiation has led them to try cutting back on the toxic regimens that inadvertently cripple immune defenses.

"Graft vs. host disease is perhaps the most important part of the transplant in killing cancer cells and can be used to reduce transplant risks," Brown says.

In an ongoing study, Brown is trying to determine if a milder chemotherapeutic drug, called cytosine arabinoside, will be sufficient to treat patients over 55 who have aggressive leukemias and are receiving allogeneic peripheral stem cell transplants. Early results in five patients show that the approach causes few side effects and allows transplanted stem cells to grow in the patient's bone marrow.

Adkins also is using the stem cell transplant method to examine the effectiveness of lower radiation doses, including one study that involves a single radiation dose rather than the standard treatment of multiple doses. The single dose treatment he has tested in 18 leukemia patients over the age of 50 provides half the overall dosage of standard treatment. "Radiation is a very important part of preventing relapse in many patients with leukemia," he says.

Adkins' early study results suggest that allogeneic donor stem cells are produced in the recipient and that patients suffer fewer open mouth sores as a result of radiation treatment, which may reduce the chance of life-threatening infections.

However, he says, it is too early to know if the leukemias will recur.

For selected patients with recurrent leukemia after radiation, Adkins is trying a chemotherapy regimen involving the drug cytoxan, followed by injection of allogeneic donor stem cells and T cells. An immunosuppressive drug also is given in the first few months after transplantation to control graft vs. host disease. So far, none of the dozen patients treated this way has died from acute graft vs. host disease.

Other efforts are designed to enhance a patient's immune defenses after transplantation. For example, some patients receive antibodies that attack the T cells responsible for graft vs. host disease. Others get injections of cells, called granulocytes, that develop into



Douglas R. Adkins, MD

infection-fighting immune cells. Injection of granulocytes in combination with peripheral stem cell transplant shortens the period after transplantation during which the immune system is weak from about 20 days to two days.

L. Tim Goodnough, MD, professor of medicine and pathology and director of transfusion services at Barnes-Jewish Hospital, also has found a way to increase the availability of blood products, called platelets, for patients during transplantation. By giving normal platelet donors the hormone thrombopoietin, platelet production is expanded and the number of platelets collected is substantially increased. Platelets are important for blood clotting to prevent unwanted bleeding, from the smallest cut to a cerebral hemorrhage.

Clues to Discovery

Many other division efforts to increase patient survival focus on mouse models of graft vs. host and other processes. These efforts include:

- The use of genetically altered T cells that express a unique surface protein that causes the cells to die when exposed to an antiviral drug. Mark S. Sands, PhD, assistant professor of medicine and genetics, has developed genetically altered mouse T cells which soon will be tested in DiPersio's lab in a mouse bone marrow transplant model.

- DiPersio and Daniel C. Link, MD, assistant professor of medicine and pathology, are identifying factors that control stem cell development. Link is studying how stem cells migrate to and from the bone marrow.

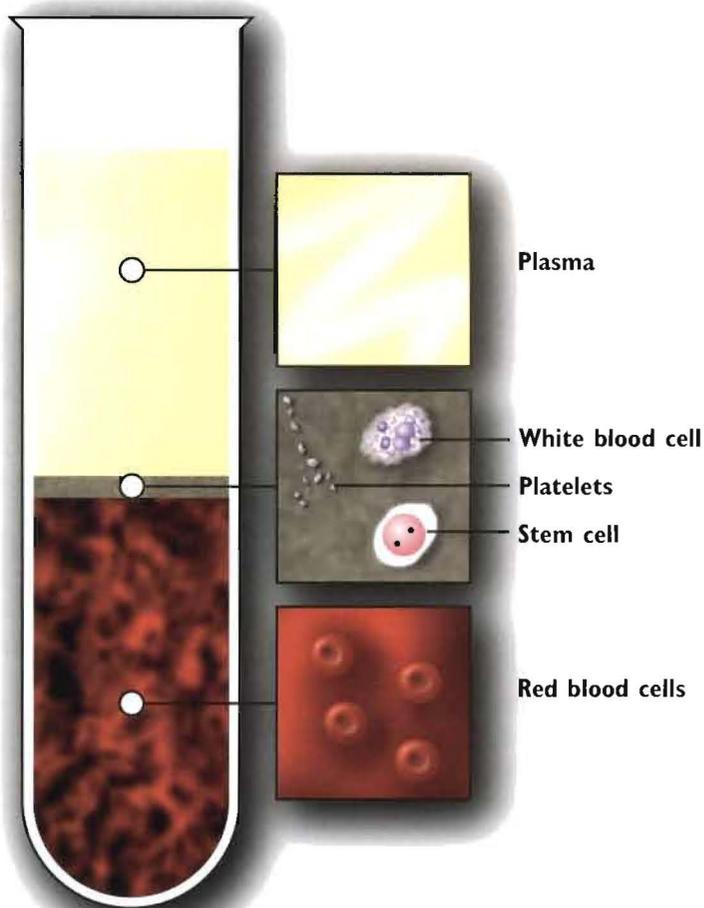
- Timothy J. Ley, MD, professor of medicine and genetics, has created a genetically altered strain of mice that closely mimics human promyelocytic leukemia. His studies suggest the majority of these leukemias result from the swapping of genetic material between two human chromosomes.

These genetically identical mice should respond to leukemia treatment in similar ways, Ley notes. "This might help us sort out different kinds of therapy more quickly than can be done in humans," he says.

DiPersio says the division will continue to seek novel therapies for patients in need of bone marrow transplants.

"We have made great strides in improving these transplants and will continue developing treatments to target hematologic cancers and to control graft vs. host disease and other conditions affecting these patients," DiPersio says. ●

How stem cells are collected from donors:



Donors receive injections of a growth hormone that initiates production of stem cells, which migrate to the bloodstream. The blood is collected, and its components are separated based on density by an apheresis machine. After separation, the middle layer that contains stem cells is injected into patients in need of bone marrow replacement.

Introducing...The First-Year Class

by Kleila Carlson

THE School of Medicine's biggest asset is its exceptional and diverse medical students. The few that are invited to attend medical school here are selected from among more than 5,000 applicants annually. Not only must they meet the highest academic standards in the country, but they also must

have a wide range of extracurricular interests. This year's entering class of 121 students is no exception.

What follows are excerpts from the personal essays (which are part of the application process) written by the 12 first-year students selected to receive full-tuition scholarships offered by the School of Medicine.

These renewable merit scholarships include the Distinguished Alumni Scholarship (DAS), Distinguished Student Scholarship (DSS) and Distinguished Minority Scholarship (DMS), and are awarded to students of proven academic excellence and distinguished personal achievement.



Robert Brophy, Palo Alto CA
AB-Economics
BS-Electrical Engineering
MS-Industrial Engineering
Stanford University
Stanford CA
DAS

Entering college, soccer was my passion, and I derived great satisfaction from my success as a collegiate and professional soccer player. However, laboring in a potato-packing plant the summer between my freshman and sophomore years, I recognized the difference between work and a career. After preparing for a career in business and technology, I now believe medicine achieves a blend of intellectual challenge and personal interaction unmatched by most careers. Furthermore, having the responsibility for the well-being of others and the opportunity to help others imparts a sense of urgency and reality I have not found elsewhere. I want to be in a position to help people directly, to make a difference in humanistic terms. Nevertheless, in today's era of managed care, I anticipate many opportunities to apply my economics and business education and experience.



Joseph Chen, Sunnyvale CA
BS-Biology
BA-Music
Stanford University
Stanford CA
DSS

Ever since elementary school, people have been advising me to apply to Julliard and dedicate my life to music. However, in high school, a fascinating internship with a pediatrician, invaluable volunteer hours at Washoe Medicine Center, and an inspiring chemistry teacher all convinced me that I had a profound interest in science and medicine as well. After exploring both music and science during my four

years at Stanford, I have come to realize that although I will always consider music one of my greatest passions, I cannot choose a professional career in music because doing so would mean giving up my long-standing interest in science and my desire to help improve the health and well-being of individuals. Although music satisfies my love for the arts, one reason that medicine appeals to me more is the fact that medicine is both an art and a science.



Emily Cronbach, San Francisco CA
BA-Film
San Francisco State University
San Francisco CA
Certificate-Premedical
Mills College
Oakland CA
DSS

My love for the visual arts led me to study cinema as an undergraduate. I worked in documentary film after graduating, and a turning point for me was a film for which I interviewed several teenagers about their experiences with pregnancy and abortion. I was struck by the fact that many of the issues about which I felt passionate, such as reproductive rights, HIV education and HIV prevention, were fundamentally issues of health care. Filming teens talking about how they would feel if they got pregnant, I was moved to step out from behind the camera. I wanted to do more than present their stories: I wanted to help with the difficult decisions they were making. I began to think seriously about becoming a physician. I sought out doctors to ask about their work, their motivation and the positive impact they had on young people. Their sense of purpose and enthusiasm convinced me that practicing medicine will satisfy my desire to implement solutions to the problems I see around me.



Pankaj Gore, McLean VA
BA-Biology/Economics
University of Virginia
Charlottesville VA
DSS

I have had an interest in medicine for as long as I can remember. I can distinctly recall, however, when this interest coalesced into the desire to be a medical doctor. At the age of 11, I had the unique opportunity to witness brain surgery. My uncle, the only neurosurgeon in my parents' hometown in India, had invited me to watch him remove a deep brain tumor. Even though the patient's prognosis for survival was less than a year, my uncle decided to perform the surgery to make life a little more livable for the short time the patient had. With stark clarity, I realized the weight that doctors must bear every day. The tenuous threads of human health and life are dependent on their knowledge, their ability to diagnose problems correctly, and, often, the dexterity of their hands. Standing there, watching my uncle perform the operation, I knew that I had found my calling.



Scott Josephson, Carmel IN
BAS-Biological Sciences/Political Science
Stanford University
Stanford CA
DSS

My research experiences at Stanford and Oxford, in addition to my direct work with patients while serving as a national director and volunteer for United Students for Veteran's Health (USVH), helped convince me of my desire to pursue medicine both for the caring, altruistic life it promises and for the lifelong intellectual challenge that it demands. However, the influence of the doctor I most respect in this world, my father, served as the final step which allowed me to commit to the profession of medicine. The joy with which my father embraces his profession has become clear through many conversations we have shared, ranging from specific diagnoses to new dementia treatment strategies to the National Health Service in Britain. My father has sold me on the idea of medicine as a career not by steering me toward medical school but through simply acting authentically and illustrating to me just how much the field of medicine can bring enjoyment to a doctor's life.



Jonathan Lam, West Memphis AR
BA-Biochemistry
Harvard University
Cambridge MA
DAS

What draws me to medicine is an urge to utilize my skills to make a difference in people's lives — to play a significant role in restoring both health and hope to individuals devastated by illness. During my childhood, an unusual prevalence of cancer in my family resulted in the untimely deaths of my paternal grandfather and three of my father's siblings. Their illnesses inspired me to study the biological sciences to better understand how people become ill. I set out to learn the basics of biological science, fell in love with the elegant beauty of biochemistry and acquired the skills to jump into scientific research. Research experiences in clinical settings have shown me that I possess an insatiable scientific and analytical curiosity to pursue both theoretical considerations and their practical applications to patient care. My volunteer experiences have allowed me to gain a sense of what it means to give unselfishly to someone in need.



Jennifer Langsdorf, Middletown DE
BA-Political Science
University of Delaware
Newark DE
DSS

During my last two years as an undergraduate, I experienced a severe knee injury which made my career choice clear. After completing a bicycle trip from Oregon to Washington, DC, I suffered from bilateral knee problems which left me unable to walk freely for almost two years. During that time, I rediscovered my interest in biology as I learned about the structure of the knee and the origins of my difficulties. The experiences of those two years also taught me about enduring physical problems and pain. I also realized for the first time in my life what it is like to have one's independence limited by a health condition. During my senior year, I decided to study medicine to someday help others with similar problems.



Erin Long, Oklahoma City OK
BSE-Civil Engineering
Princeton University
Princeton NJ
 DAS

I am descended from a long, unbroken line of physicians. My great-grandfather was the health commissioner of the Choctaw Nation when Oklahoma was still Indian Territory. He insisted on inoculating every tribal member against smallpox. Due to his foresight, the Choctaw was the only Indian tribe that experienced no deaths from smallpox. He also helped establish the Oklahoma School of Medicine and served as its first dean. His sons became physicians, and one of them was my grandfather. Both of my grandfather's children, my aunt and my father, are physicians. I am proud to continue my family's healing tradition with the long-term goals of battling serious Native American health problems.



Allen Mendez, Urbana IL
BS-Physiology
University of Illinois
Urbana-Champaign IL
 DMS

I have managed to overcome many obstacles on the path to my current academic status, despite an unconventional background that was in no way conducive to an academic lifestyle. My motivation to succeed is deeply embedded for a variety of reasons, including the fact that no one in my family has received a formal education. I also think that life events I have experienced — such as my father's death of a brain aneurysm when I was very young, and the life-threatening injuries my mother suffered in a motorcycle accident — have contributed to my strong motivation toward becoming a physician. My wife, who I married the summer after graduating from high school, has been an invaluable source of support and encouragement for me. Together — she will enter the health field as a registered nurse — we will strive not only to treat our future patients, but to care for them as well.



Gina Serraiocco, La Canada CA
BS-Biology
California Institute of Technology
Pasadena CA
 DAS

Some of my free time this year has been spent getting Caltech students involved with a local program called Project Angel Food. The organization, based in Hollywood,

provides food for hundreds of homebound people living with AIDS. When I first got involved with the program, I thought of it as simply "doing my part" for the community. However, after just a few days of volunteering, the program came to mean much more to me. My most memorable moments are with AIDS patients Donna and Chelsea, who call me their angel every time I arrive at their door with food. It is touching to see that while these patients are suffering from a life-threatening disease, they still have so much love to give. If simply delivering food can make two people happy, imagine what finding a cure could do.



Alison Stuebe, New York NY
BS-Biology
Duke University
Durham NC
DSS and Mr. and Mrs. Spencer T. Olin
Fellowship for Women in Graduate Study

I once thought that I could pursue my interest in early childhood education by reporting on scientific research and pilot preschool programs, but I have realized that for me defining the problem is not enough. I've also found that what I loved most about serving as editor of *The Chronicle*, the daily student newspaper at Duke University, is not journalism, but the opportunity to teach students and to make difficult decisions on a deadline that matter to the people around me. I want to become a pediatrician, using my journalism experience to communicate with parents and patients, and nursing my love for research and education in a teaching hospital.



Lineo Thahane, Annandale VA
BA-Biology
Princeton University
Princeton NJ
 DMS

My family comes from the small country of Lesotho, in southern Africa. It was during yearly summer visits to my parents' country that I first became interested in the field of medicine. As I visited Lesotho, I noticed the devastating effects of the country's poverty on its health care system: inadequate hospital facilities, numerous deaths from treatable illnesses, and patients forced to travel out of the country for basic medical care. As a child, I was sometimes shocked by what I saw. My developing interest in medicine was encouraged by several people — my mother, who is a pediatrician, and two aunts (one a surgeon, the other a family practitioner) were powerful role models. All three, who successfully took on the challenges faced by black women in fields traditionally dominated by white males, taught me that anything was possible. ●

A Doctor Finds Her Way

by Steve Kohler

WHEN Janice Itson Holyfield completes her PhD — and one gets the impression there's no doubt that she will — her education will include advanced degrees in an unlikely combination of fields: medicine and theology.

Uncommon juxtapositions abound in the life of the woman who is physician (MD '88) and ordained minister, stepmother to six and businesswoman, charitable foundation director and wife of heavyweight champion Evander Holyfield. All her incarnations she weaves together seamlessly.

For Dr. Janice, as she prefers to be called, there are no contradictions in playing such a diversity of roles. She believes disease is as much a function of a disjointed spirit as it is of germ theory. Respect and concern for others govern her business dealings as much as they do parent/child matters. And the aggression that characterizes her beloved spouse's occupation poses no trouble for the devout

religious beliefs of either husband or wife because it occurs as athletic competition in a regulated arena.

Dr. Janice always has transcended petty or obvious contrasts and done things in her own uncon-

ventional manner, putting together elements with an eye toward a higher calling. In medical school, even while training to be a scientist, she

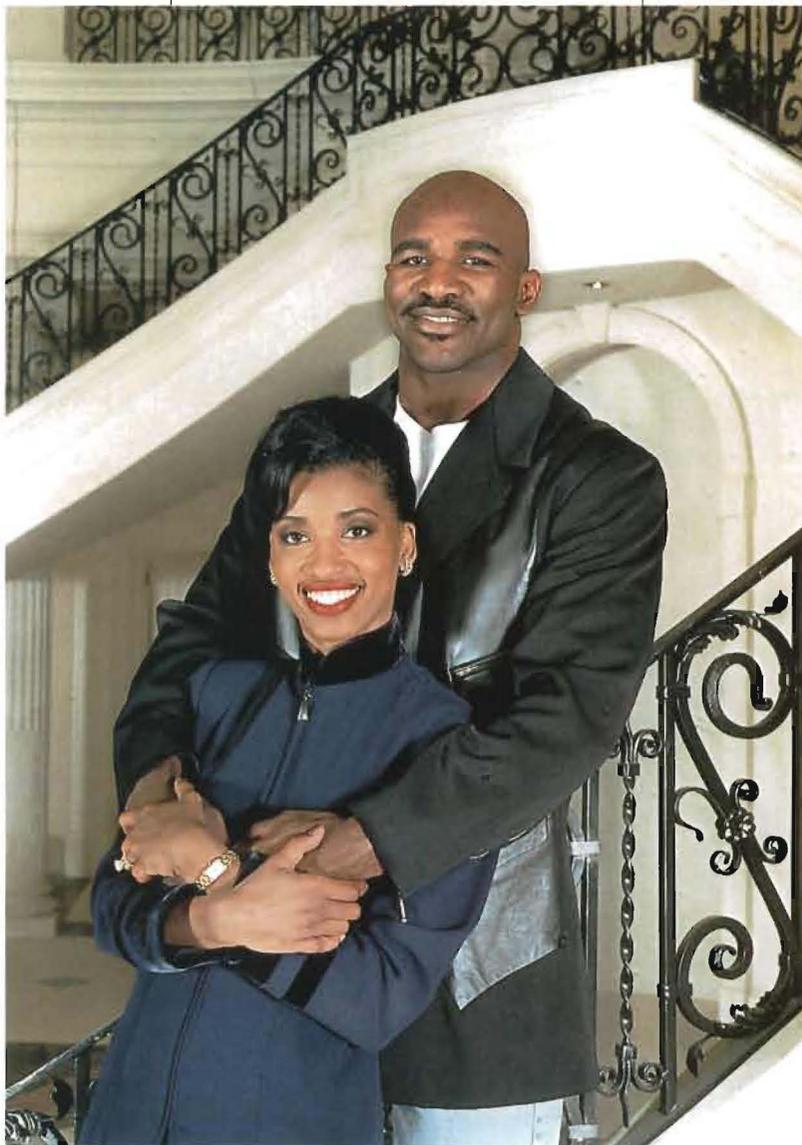
Holyfield has taken her away temporarily from the day-to-day practice of medicine, she says, "Someday, I plan to return to practicing medi-

cine, maybe providing services in a free clinic." Until that happens, she has the family home, several businesses, the children and a newly developed charitable foundation to grow.

The house, as widely reported, is a \$15-million, 54,000-square-foot, 17-bath, Olympic-pooled structure in Fairburn, outside of Atlanta. It is rightly referred to as a mansion, but Dr. Janice is unimpressed by its grandeur. She is more concerned with the sanctuary it provides for her family and the benefit it can offer to those less fortunate.

The 188-acre estate soon will be the site of a Holyfield Foundation-sponsored facility designed to provide both education and athletic training to inner city youth up to the age of 18. "I got the education I wanted, Evander got

the athletics he wanted," she says of the foundation's design. Her point supports the assertion that their marriage is a partnership of two people, each with a personal vision and direction.



Janice Itson Holyfield, MD, '88, with her husband Evander Holyfield, current heavyweight champion of the world.

went on a 21-day fast to seek guidance for her true calling. "I always knew there was something bigger God wanted me to do," she says.

And now, she has found it. Although her partnership with

Atlanta Journal-Constitution/Eric Williams

On the foundation's board are former Atlanta mayor Andrew Young and Michael Douglas the actor, among many others.

Dr. Janice — who refers to her assistant as Miss Caroline and often calls her husband Mr. Holyfield out of deep respect — says her medical training is responsible for making her a hands-on manager. "I make phone calls all day and work too much," she says. "But

I have a doctor's mentality. When you have a chance to create something, you make certain it's what you want it to be. A doctor finds a way."

She is equally active in the corporate side of the empire. Warrior Properties' offices are located on the estate grounds, and she is the driving force there. Dr. Janice is the chief executive officer of Holyfield Management, and she oversees the champion's fan club and web site and the startup of a new line of clothing that bears the Holyfield name.

It is a clear sign of the depth of the trust that Evander has in her that he has completely turned over management of his financial affairs to Dr. Janice. Her earliest success was to stop what she calls "slow leaks" from the Holyfield coffers due to mismanagement. She has said that she probably owns more business books than medical books or Christian books.

Much of the energy she expends in pursuit of professional matters pays her a bonus dividend. "If the children see what's right, they won't want what's wrong," she says, lowering her tone and slowing her delivery to emphasize what she believes to be an important point. "We keep the children close, in a down-to-

earth family. They see me working hard in what I was called to do. And that example gives them a way to know what they want," she says.

The six children, ranging in age from 13 to two, are the force that ultimately brought Dr. Janice and Holyfield together. They met originally at a gospel crusade while she was practicing internal medicine in Chicago after completing her train-

"...I have a doctor's mentality. When you have a chance to create something, you make certain it's what you want it to be. A doctor finds a way."

ing at Michael Reese. In the beginning, she says, neither was interested in the other romantically. "I was the only woman who didn't pursue him," she says. Instead, they developed a deep friendship, spending long hours discussing the Bible and exploring their visions for the future. For two years, they stayed mostly telephone friends.

But Holyfield was impressed; Dr. Janice knew the Bible well and had a strong sense of purpose. Eventually he imposed upon his friend to come to Atlanta to care for the children while he was busy training in Houston for a Tyson fight.

The nurture and care of the youngsters was an opportunity that appealed to her, and she accepted, taking a leave of absence from her work. From there, it was a matter of time until each recognized that the other was a partner. At that time, she had never seen a boxing match.

Now she is a powerful business manager, an active stepmother to the six children, and she recently

was ordained as a minister. She says she is sure that the couple will be blessed with children of their own before long, something they both want. She also attends Evander's bouts to root and pray for him.

But the children remain near the center. "We struggle to help the children understand that it is important to know which people like them for who they truly are and not

for who their father is or what we can do for them," she says.

"We don't go away from home much; the family makes sure there's always someone to talk to."

An 11-year-old daughter, Ashley, is being home schooled, and Janice's mother now lives on the estate, extending the family

that is centered there.

Dr. Janice's own childhood she describes as "unremarkable," by which she means "not marked by trauma or stress." Her father was a Chicago transit authority driver, and her mother taught school. Her training as a physician and subsequently as a business person supports her efforts to define Holyfield's financial position and use it to do good.

And, she says, the education still proves directly useful. Her specialty in pain management helps her care for the champion and the children. "Oh," she says, "I'll always be a doctor. They're always calling from somewhere. Either a horse is sick or a child has hurt herself." And, of course, she made daily checks of the champion's ear as it healed after the infamous biting incident in the fight against Mike Tyson. When the time came for the sutures to be removed, it was Dr. Janice whom the champion trusted with the job. ●

Milder Named WUMCAA President

BARRY D. Milder, MD '73, assumed leadership of the Washington University Medical Center Alumni Association (WUMCAA) on July 1, 1997.

Milder, an ophthalmologist, has been in private practice in St. Louis for 19 years. A faculty member since 1978, he is an assistant professor of clinical ophthalmology and each year teaches a course on refraction techniques for residents here and at other universities around the country. He is on the medical staffs of Barnes-Jewish, Barnes-St. Peters, St. Louis Children's, St. Luke's and Missouri Baptist hospitals.

"The Alumni Association makes a significant contribution to the medical students, both in

support of their activities and in improvements to their medical school environment," says Milder.



Barry D. Milder, MD

He hopes that his Class of 1973 will contribute substantially this year toward continuing this support. In

addition to numerous student-run programs, the Alumni Association provides funds for items as diverse as computer equipment and year-end graduation festivities.

Milder received his undergraduate degree in life sciences from the Massachusetts Institute of Technology. After graduating from medical school, he completed an internship at Baylor College of Medicine in Houston, and a residency and fellowship in ophthalmology at the University of Florida.

He is a diplomate of the American Board of Ophthalmology, a fellow of the American Academy of Ophthalmology and a member of a number of professional societies. ●

Annual Fund Drive A Success

THE School of Medicine's annual fund drive ended June 30, with \$1,194,241 raised for fiscal 1997 from Medical Center alumni, according to annual fund chairman Emily Smith, MD '68.

Several reunion fund efforts resulted in donations of more than \$330,000 from 55 percent of the reunion class members. They include a \$100,000 matching grant challenge

from Allan H. Rappaport, MD '72, designated, in part, toward establishing a Class of 1972 Scholarship. More than \$97,000 was raised to endow the scholarship. Robert B. Katims, MD, and W. Edward Lansche, MD, challenged their Class of 1952 with their combined gifts. The Class of 1947 generated more than \$36,000 to provide interest-free loans to medical students. ●

WUMCAA Elects New Officers

THE annual meeting of the Washington University Medical Center Alumni Association was held May 9, 1997, with Julian C. Mosley Jr., MD, presiding. Following his report on the association's activities and fund allocations of the past year, officers and executive council members were elected.

The new vice-president is John W. Hubert, MD '75; the new secretary-treasurer is Anne Goldberg, MD, FHS. Dolores Tucker, MD '74, moves from vice-president to president-elect.

New council members elected are Micki Klearman, MD '81, Herluf Lund Jr., MD '85, Scott A. Mirowitz, MD '85, Susan C. Rayne, MD '87, Lester Reese, MD, FHS, and Nathaniel L. Crump, MD '78. Dolores Tucker, MD '74 and Robert C. Packman, MD '56 will be medical representatives to the University's Alumni Board of Governors. ●



Robert Burstein, MD '48, left, a St. Louis private practitioner, and Mark Frisse, MD '78, director of The Bernard Becker Medical Library, are the new School of Medicine Eliot Society co-chairmen.

30s

Philip V. Dreyer, MD '36, and his wife have been married 62 years. He still does the gardening and yard work and cuts wood to burn in their fireplace. The Dreyers, who live in Huntsville MO, have three grandchildren and one great-granddaughter.

Hope Mitchell Lewis, NU '36, lives in a retirement home in Santa Cruz CA, following surgery for a benign tumor on her pituitary gland last year. She says she misses her friends, but is glad to be living near her son and his family.

40s

James A. Kinder, MD '41, recently received the Missouri State Medical Association's 1997 Citizenship and Community Service Award. Kinder, a pediatrician, has been practicing in Cape Girardeau since 1947 and this year moved his practice to the Cape Girardeau County Public Health Center's Primary Care Clinic, where he sees indigent children of Cape County and surrounding areas. Among the many organizations he has served are the State Advisory Board for the Department of Health and Dental Care for Handicapped and Retarded Children, the Boy Scouts, the Missouri State Crippled Children Service, and state and local chapters of Easter Seals.

Hiraku Ishida, MD '42, and his wife celebrated their 50th anniversary on August 10, 1997, in Vancouver WA.

John A. Wilson, MD '43, has retired after 52 years in practice. He lives in Tucson AZ.

Robert J. Glaser, MD, HS '44-'47, has been elected a fellow of the Royal College of Physicians of London. He also will receive the Florence Rena Sabin Award for contributions to medical education and public health. Glaser, who is a consulting professor of medicine emeritus at Stanford University Medical School, retired on June 30 as trustee

and director for medical science of the Lucille P. Markey Charitable Trust, which also closed on that date.

Richard D. Hawkins, MD '46, finished his memoirs, *From the Charleston to the Macarena*, last year.

Ann Anderegg Fee, NU '47, writes that 14 members of the Class of March '47 celebrated 50 years of friendship at the home of Annadelle Steffen Sweiger and James Sweiger in Plattsburg MO on May 26.

Huston G. Kellogg, MD '47, retired from his pediatrics practice in 1995. He chairs the project and allocations committee of the Grossmont Hospital Foundation, is a member of the Home of Guiding Hands Foundation and is marshal on the divan of Al Bahr Shrine in San Diego. He married Eleanor K. Duncan in 1990.

50s

Richard V. Bradley, MD '52, is the new chairman of the Physician Insurers Association of America (PIAA), a group of 60 medical professional liability insurance companies owned and operated by physicians. Bradley is president and CEO of Missouri Medical Insurance Co. (MOMEDICO), which he co-founded in 1974, and a clinical associate professor emeritus of general surgery at Washington University.

Ansel R. Marks, MD '53, JD, has been named executive secretary of the Board for Professional Medical Conduct in New York.

Lester E. Johnson, HA '54, retired as chief executive officer of the Willmar (MN) State Hospital. He recently endowed the Margaret Foley Johnson Memorial Scholarship at Illinois College in his wife's memory.

David E. Langdon, MD '54, received one of the five Distinguished Clinician awards of the American Gastroenterological Association at its national meeting in Washington DC in May. Langdon is in private practice in Arlington TX, and is a clinical professor at the

University of Texas Southwestern Medical School in Dallas. Formerly a colonel in the United States Air Force, he founded the gastroenterology fellowship program at Wilford Hall, USAF Medical Center, and received the Legion of Merit.

William L. Brydon, MD '56, received a Professional Achievement Award from Idaho State University at the 1997 Commencement ceremonies. He currently has a Pocatello medical practice in allergy, asthma and immunology. He is a former chair of the pediatric departments at both Pocatello Regional Medical Center and Bannock Regional Medical Center.

Eugene B. Feigelson, MD '56, has been named interim president of the State University of New York Health Science Center at Brooklyn. He will continue as senior vice president for biomedical education and research, dean of the college of medicine and professor of psychiatry at the health science center.

William A. Reynolds, MD '56, is president of the American College of Physicians, the nation's largest medical specialty organization, and will preside at the annual session of the college to be held in San Diego in April 1998. Reynolds practiced internal medicine and endocrinology in Missoula MT for 33 years. He also is clinical professor of medicine at the University of Washington School of Medicine.

Robert O. Andrews, MD '57, retired in November 1996 after 32-plus years of anesthesia practice. He and his wife, Tillie, have eight children and seven grandchildren and now hope to spend time together traveling and staying fit.

Allan E. Kolker, MD '57, received the "1997 Golden Medallion Award" from the Missouri Ophthalmological Society in June. He recently left the full-time faculty at Washington University to join Eye Health Care Associates in the private practice of ophthalmology in St. Louis.

George A. Koehler, MD '58, has retired and is now an avid golfer. He has been to the USGA Senior Amateur Championship twice. He also has returned to school and is in his third year of studying German.

John A. Headrick, MD '58, retired as senior vice president for medical affairs at Christian Health Services in St. Louis in 1992.

William H. Martin, MD '58, and his wife, JoAnne, served as volunteer medical missionaries in 1995-1996. They spent six months in Kwai River Christian Hospital in Thailand near Burma, and four months in the Nekursini Christian Hospital in rural West Bengal, India.

Hemprova McDonald, MD, HS '58, published Volumes I and II of the series, "*New Concepts in Blood Formation and Cell Generation in Benign and Malignant Tissues*" in 1989 and 1995, respectively. Copies of both have been donated to The Bernard Becker Medical Library at the Washington University School of Medicine.

Ronald K. McGregor, MD '58 and **Paul DeBruine, MD '59**, recently retired from The Associated Anesthesiologists of Decatur Ltd., after more than 30 years of practicing anesthesiology at Decatur Memorial Hospital in Illinois. DeBruine was president and McGregor was director of education for the group, which is associated with a master's degree program for nurse anesthetists through Bradley University.

James A. Cross, MD '59, is the composer of an etude, "*Sacred Rain*," which received a standing ovation when it was performed last year at the Kennedy Center by acclaimed pianist Christopher O'Riley.

Charles C. Norland, MD '59, was installed as the 19th president of the St. Louis Metropolitan Medical Society in January. He is chief of gastroenterology at Missouri Baptist Hospital and a professor of

clinical medicine at Washington University.

60s

Donald H. Stewart Jr., MD '61, has been named to the board of directors for Hospice of Northern Virginia. He is a retired clinical assistant professor of neurosurgery from the Upstate Medical Center in Syracuse NY.

Alan L. Bisno, MD '62, remains at the University of Miami Medical School and the Miami VA Medical Center. His wife, Barbara, is an assistant U.S. attorney. Children Susan and Neal are doing fine, gainfully employed, "not yet hitched."

David A. Williams, MD '62, continues in solo radiology practice at Los Alamos Medical Center. He and his wife recently celebrated their 35th wedding anniversary. Son David is a board certified architect and son Kevin is an MD in his second year of radiology residency at the University of Colorado at Denver.

Jeannie J. Kinzie, MD '65, completed an MBA degree at the University of Phoenix in March. She lives in Evergreen CO.

Dan S. Wilford, HA '66, president of Memorial Healthcare System in Houston, received this year's ACHE Gold Medal Award for Outstanding Leadership and Excellence in Health Care Administration.

Michael B. Jacobs, MD '67, of Portola Valley CA, was named one of the "Bay Area's Best Physicians" in the March 1997 issue of the PBS magazine, *Focus*.

Lawrence Kotner, MD '68, joined the full-time faculty at Washington University School of Medicine in January 1994 and is now an associate professor of radiology and coursemaster for the senior medical student electives at Barnes-Jewish Hospital.

William Berman Jr., MD '69, a pediatric cardiologist, is participat-

ing in clinical trials of a new device that saves children born with holes in their hearts from open heart surgery. He was one of two physicians who performed the first implant of the "CardioSeal Septal Occlusion System," at Presbyterian Hospital in Albuquerque. FDA approval of the device is expected sometime in the year 2000.

George M. Bohigian, MD, HS '69, was a volunteer for ORBIS International Inc., the world's only flying eye hospital, in Yerevan, Armenia, last October. The volunteer organization brings eye care and teaching to remote parts of the world in an attempt to fight blindness. Bohigian is clinical professor of ophthalmology and visual sciences at Washington University.

Genell Hoskins-Moore, NU '69, has retired as director of nursing and school health services with the St. Louis Public School District.

70s

Toby L. Simon, MD '70, recently completed a two-year term as president of the Blood System Foundation of Scottsdale AZ, and America's Blood Centers in Washington DC. He has relocated to become vice-president of medical and scientific affairs at Jerologicals Corp. in Atlanta.

Michael A. Covert, HA '72, has been appointed ACHE Regent for the State of Florida.

Robert D. Fry, MD '72, has been elected a director of the American Board of Surgery. He lives in Gladwyne PA.

Glenn E. Potter, HA '72, was named president and CEO of Health Interprises of Iowa and its related companies in December 1996.

N. Bruce Clement, HA '73, became chief executive officer of Marquette Regional Medical Center in Michigan in August 1996.

Thomas C. Namey, MD '73, is professor of medicine, nutrition and

exercise science, chief of sports medicine, and associate director of the Nutrition Institute at the University of Tennessee Graduate School of Medicine in Knoxville. The Nameys have four children: Tom, 17; Carolyn, 15; and twin daughters, 6.

Robert L. Graves, HA '75, administrator of Virginia Beach General Hospital, was selected as Hampton Roads Health Care Person of the Year by the Health Care Administrators of Tidewater.

Jorge A. Covarrubias, MD, HS '76, has returned to practice in Phoenix and sends greetings to all his colleagues and professors.

John M. Fraser, HA '78, was named president and chief executive officer of Methodist Hospital in Omaha NE effective April 1.

Lindsay R. Resnick, HA '78, was named managing director, health care, DeHayes Consulting Group.

80s

Julie Nathan Lennon, PT '80, is in the private practice of sports medicine. She and her husband George have four daughters and one son. They live in Skokie IL.

Mark J. Brostoff, HA '82, president of Mark One Distributors and Outdoor Outlet, was selected as commanding officer, Naval Hospital, Great Lakes Detachment P1, with headquarters at the Naval and Marine Corps Reserve Center in Indianapolis. He also was recently promoted to the rank of commander, Medical Service Corps, United States Naval Reserve.

Robert J. Glow, HA '83, was named chief financial officer for the Creighton University School of Medicine in Omaha.

Barbara Crawford Buenemann, HA '84, has a son, Eric Crawford, born July 29, 1996, and a daughter, Allison. Barbara is executive director of Principal Health Care of St. Louis Inc.

Gary Chun, MD '84, entered "a new decade of life," the day

before his second original musical show for Christian Youth Theatre opened in San Diego in March.

Robert W. Pritts, HA '85, has been promoted to executive director for LAB Home Health Inc. He also was elected to the board of directors for the Missouri Alliance for Home Care and was appointed to the Missouri Home Health Advisory Council.

Randy Sue Katz, PT '86, moved back to Columbus OH in July 1996. She works part-time at Ohio State University at an outpatient rehabilitation center doing physical therapy with orthopaedic and neurological patients.

Doug Steele, PT '86, is director of Comprehensive Physical Therapy, Northside Office, in Jacksonville FL, and is working on a doctorate in education at the University of North Florida.

Carlos Buznego, MD '87, received the "Curtis Benton MD Young Ophthalmologist Leadership Award" from the Florida Society of Ophthalmology at its annual meeting last October. He also was elected vice president for legislation and serves on the board of the society's political action committee.

Paul L. Martin, MD '87, his wife, Lenore, and three daughters enjoy their new home in Chapel Hill NC, where Martin is on the faculty of Duke University Medical Center.

Gina Maria Musolino, PT '87, is assistant professor with Nova Southeastern University's Master's in Physical Therapy Program in Fort Lauderdale FL.

James A. Humphrey, HA '87, has been promoted to director of PHO operations for Western Plains Health Network in Greeley CO. The Humphreys celebrated their daughter Rachel's first birthday in May.

Mary Lou Auchos, MD '88, writes, "Nadia Teresa was born on Oct. 9, 1996, turning our lives upside-down once again. Rich is an endocrinologist at UCSF and I am a

hematologist-oncologist at David Grand Medical Center, Travis Air Force Base."

Joan Clark, PT '88, and husband, Bryan, have three children: Michelle, Aaron and Juliet. Joan works part-time for Alegent Health, doing home health physical therapy.

Janice Itson Holyfield, MD '88, writes, "Well, guys, I no longer practice medicine, although my husband just joined a medical school board. Life is different being married to the heavyweight champion of the world. If ever in Atlanta, give us a holler!"

Lisa Speech, HA '88, was named vice president for support services at Crouse Hospital in Syracuse NY.

Glenn Shopper, MD '88, and his wife, Lisa, are still in Kansas City. His son Daniel is 4 and daughter Molly is 18 months. They are still having a good time, but haven't been to any tractor pulls yet.

90s

Kate Conrad, HA '91, and **Rob Wunar, HA '95**, published "Cost Accounting Helps Ensure Group Practice Profitability" in the November 1996 issue of *Healthcare Financial Management*. Kate is a management associate with McManis Associates Inc., in Independence MO, and Rob is a consultant with KPMG in Dallas.

Julie A. Hall, HA '92, has been appointed senior health policy analyst in the Office of the Assistant Secretary of Defense, Health Affairs, Health Budgets and Policy, Capitation Financing Division.

Tom Tressler, PT '93, works at TriHealth's Glenway Medical Center Physical Therapy, an outpatient orthopaedic and sports medicine clinic in Cincinnati.

Rita Schroeder, OT '94, married Wade Lambrightsen on Oct. 5, 1996. She is employed as an OT at Sacred Heart Hospital in Eau Claire WI.

Julie Hopson, PT '95, is working at an outpatient orthopaedic

clinic in Rock Island IL. She now lives in East Moline IL.

Douglas Pogue, MD '95, has been appointed chief resident of the Department of Internal Medicine at the University of Maryland Medical Center for 1998-99.

Mark Koler, MD '95, reports "Danielle and I are doing great in San Antonio! I'm going to take a year off from surgery residency to do pediatric surgery research. My wife is now a drug rep for Smith-Kline. Hello to all my classmates!"

Mario A. Harding, HA '96, executive management trainee with the Methodist Hospital of Houston, was elected co-treasurer of the Greater Houston Chapter of the National Association of Health Services Executives.

Steven Stein, MD '92, is a staff anesthesiologist for the U.S. Air Force in San Antonio and plans to marry soon.

Peter Bridge, MD '93, was married May 17 to Donna Rupolo, MD '95 (Ohio State University) in Columbus.

Michele (Francoeur) Gasper, MD '93 and **Kirk Gasper, MD '93**, celebrated the birth of their daughter, Noelle Elisabeth Gasper, on February 23, 1997. The Gaspers live in Beaufort SC.

Kimberly Cannon Green, OT '93, and husband Thomas G. Green are the parents of a daughter, Caitlin Piper Green.

B. Keith Ellis, MD '96, was honored as Intern of the Year at the Medical Center of Louisiana in New Orleans. He is completing an internship in internal medicine at Tulane.

IN MEMORY

Paul I. Robinson, MD '28, died in Dallas on May 14, 1997, at the age of 92. A native of Waltonville IL, he served 30 years in the military and retired as a decorated major general in the U.S. Army Medical Corps. In the 1970s he served as director of the Alabama Medicaid

Agency. He was the son of Anna Elliston Robinson and James Wilson Robinson, MD, also a graduate of Washington University School of Medicine.

William H. Meinberg, MD '32, died Sept. 30, 1996, in Northridge CA. An ophthalmologist, he was an emeritus faculty member of Washington University School of Medicine. He is survived by his wife, Mary Neil Meinberg, **NU '27**.

William B. Look, MD '37, died at his home in Carmel CA on October 26, 1996.

Luke F. Crutcher, MD '39, died in Ontario CA, on February 28, 1997. He was a retired family practitioner.

G.O. Proud, MD '39, died at St. Luke's Hospital in Kansas City MO, on March 19, 1997. He was professor emeritus and past chairman of the otorhinolaryngology department at the University of Kansas Medical Center. He completed an internship at St. Luke's in Kansas City, and a residency in otorhinolaryngology at Washington University. He served in the Medical Corps of the United States Navy, and, upon his return, was named assistant of otorhinolaryngology at Washington University. He was a member of the American Medical Association, Kansas Medical Society, board of directors of the American Board of Otolaryngology (executive committee) and a founding member of the Association for Research in Otolaryngology. Survivors include his wife, Prinny, two daughters and a grandson.

William L. Topp, MD '41, died in Seattle of kidney failure on February 3, 1997. He was 79 and is survived by his wife, Elise, and three daughters. He was an obstetrician/gynecologist and surgeon for more than 35 years and had delivered more than 7,000 babies.

Wilfred E. Wooldridge, MD '43, died Jan. 18, 1997, at his home

in Springfield MO. He was 79. He was a dermatologist in Springfield for 38 years before retiring in 1987. He also served as an associate professor emeritus at the University of Missouri School of Medicine and taught specialty aspects of dermatology at schools of medicine at the University of Oklahoma, the University of Arkansas and at Washington University. He was a vocalist, composer and musician throughout his life. Survivors include his wife, Frances; sons Robert, Evanston IL, and Kent, Springfield MO, and six grandsons.

Shael S. Bronson, MD '45, died of neoplastic disease on November 16, 1996, at the age of 75. He had been a clinical professor of neuropsychiatry at St. Louis University School of Medicine.

Gordon Read Heath, MD '52, died on March 12, 1997, at the age of 71. He had been ill for several years. He was a retired pediatrician in Lakeland FL.

John Mosby Grant, MD '54, died in St. Louis of neoplastic disease on April 1, 1997. He was an associate professor of internal medicine at Washington University School of Medicine and had practiced at the Grant Clinic, founded by his father.

Warren C. Seibert, MD '57, died November 8, 1996, in Napa CA. He had retired from his internal medicine private practice due to advanced Parkinson's Disease. He is survived by his wife, Lois, and five children.

Hugh M. Foster Jr., MD, HS '58, of Big Sky MT, and Perrysburg OH, died of pneumonia May 20, 1997, at the age of 64. He retired from his practice of cardiovascular and thoracic surgery in 1991 due to ill health and later received a liver transplant. ●



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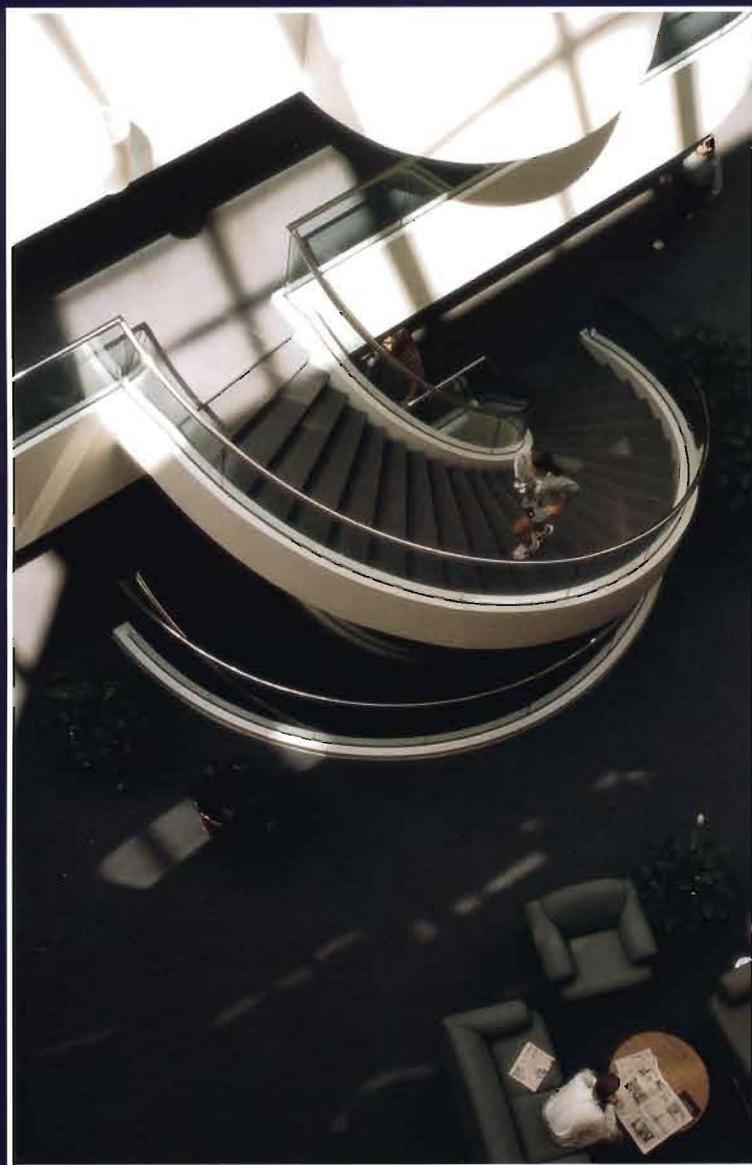


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