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## Washington University Record, March 23, 1995

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Junior Kevin Woodyer, a painting major, takes a break to talk about the School of Art with 17-year-old Andrew Ching, one of approximately 140 prospective students participating in the first of two Multicultural Visit Weekends Feb. 23-26. Last weekend, about 170 prospective multicultural students came to Washington University, where they had the chance to interact with current students and faculty, attend classes and tour campus.

## Speed and power

### Engineers revolutionize problem analysis with ultra-fast computation

One of the greatest demonstrations of speed and power at Washington University is the ultra-high speed graphics computation in the School of Engineering and Applied Science.

Engineers collaborating with scientists on both campuses have been able to revolutionize analyses of problems ranging from engineering design to cardiac and neurological disorders all through ultra-fast computation at many billions of calculations per second. The computers from Digital Equipment Corp. (DEC), Silicon Graphics and MasPar are so speedy and innovative that they can create "movies" of research situations similar to the computer-generated special effects of such Hollywood classics as "Star Wars" and "Jurassic Park."

A cross-disciplinary group uses the Laboratory for Computation and Control, directed by I. Norman Katz, Ph.D., professor and chair of Systems Science and Mathematics, to study heart muscle, specifically the left ventricle, and the physical fluctuations the muscle undergoes from a passive to a stressed state. To understand these effects in a computer model system, the researchers run a finite element analysis on powerful Silicon Graphics workstations called Indigo and Challenge.

Finite element analysis involves subdividing an object into a very small mesh of pieces, or elements, and computing stresses and deformations for different conditions. Indigo is used for the graphics component of the research; Challenge, with two parallel processors that can compute billions of calculations per second, does the number-crunching. Parallel processing computers simultaneously divide several different computational tasks among more than one processor — the net effect a paraphrase of the old saying "many hands make light work."

While such a study appears to be strictly biomedical, the problem — the analysis of stresses and deformations —

actually is one of mechanical engineering. The research draws together Michael K. Pasque, M.D., professor of surgery, Julius M. Guccione, Ph.D., assistant professor of mechanical engineering, and mechanical engineering graduate students and surgery residents. It is supported by The Whitaker Foundation.

Ruth Okamoto, a graduate student on the heart muscle project, formerly worked at DEC on stress problems of solid substances such as steel. But the heart, she

noted, is made of much different timber.

"If you push on steel very, very hard, it eventually deforms a little, but the heart is very compliant," she explained. "As the heart is filling, it needs to stretch to accommodate the increased blood volume in the chambers. We use a program especially written for finite element analysis of the heart to see how much it deforms and where, specifically in the left ventricle, it deforms most. The program is

*Continued on page 7*

## Miller installed as Wilson professor

Michael I. Miller, Ph.D., professor of electrical engineering, was installed as the Newton R. and Sarah Louisa Glasgow Wilson Professor of Biomedical Engineering in a recent ceremony at the Lopata Hall Gallery. He is the first named professor of biomedical engineering in the School of Engineering and Applied Science.

An often-honored engineer, Miller is author of 45 articles and 13 book chapters.



Michael I. Miller

Miller joined the electrical engineering faculty in 1984. He also is a faculty member at the Institute for Biomedical Computing and the Mallinckrodt Institute of Radiology. In 1982, Miller was awarded the Institute of Electrical and Electronics Engineers Biomedical Engineering Award First Prize; the next year he won

the Johns Hopkins Paul Ehrlich Graduate Student Thesis Award. In 1986, he was presented the National Science Foundation's Presidential Young Investigator Award.

Miller is conducting research in the areas of medical imaging, computational linguistics, computational neuroscience and automated target recognition. His group's projects all rely heavily on parallel computation strategies involving the integration of more than one high-speed computer to work on the same task. His laboratory is the location of a 16000 processor MasPar machine, which is the most powerful supercomputer of its kind in the country (see above story).

The professorship is part of a final gift to Washington University from the Wilsons. Newton Wilson graduated from Washington University in 1879 and became a successful mining engineer and lumber company executive. He died in 1914. His wife died in 1938.

After her husband's death, Sarah Wilson returned to St. Louis from Louisiana, and began a series of major gifts, which contributed to the construction of the Wilson Swimming Pool, the Newton R. Wilson Memorial Hall, and the Ann W. Olin Women's Building.

## Drug therapy controls AIDS-related fungal infections, pneumonia

Two new large-scale studies shed light on the effectiveness of drug therapy to prevent life-threatening pneumonia and fungal infections in patients with advanced HIV disease, investigators reported in the March 16 issue of the New England Journal of Medicine.

In the first study, researchers compared three commonly prescribed treatments for preventing pneumocystis pneumonia (PCP) and found all to be effective. Only 1 percent of the 842 patients enrolled in the study died of PCP, even though it is the most common opportunistic infection and a major cause of death in AIDS patients.

"I tell my AIDS patients if they can only take one drug for their disease, they should take a drug to prevent PCP," said William Powderly, M.D., director of Washington University's AIDS Clinical Trials Unit and study co-author. "The study shows that preventive PCP treatment — no matter what form you take — works quite effectively. This reinforces the need to try and identify patients with HIV so they can benefit from preventive treatment."

While previous studies have shown that AIDS patients who receive preventive therapy for PCP live longer than those who do not, the same can't be said for preventive treatment for fungal infections, researchers conclude in a separate study.

The study of 428 AIDS patients is the first large-scale look at the effectiveness of the drug fluconazole in preventing invasive fungal infections. The researchers found the therapy is effective — especially in patients with low immune cell counts — but does not affect overall survival. That's because in the latter stages of AIDS, patients' immune systems are so extensively damaged that preventing fungal infections still leaves patients susceptible to a number of other AIDS-related complications, said Powderly, the lead author of the study.

Based on the results of the fluconazole study, Powderly recommends that physicians prescribe preventive fluconazole therapy on a case-by-case basis. Because the therapy did not prolong life, he cautions against widespread use of the therapy in all AIDS patients.

Both studies were conducted by researchers at Washington University, the University of California at San Diego and other clinical centers nationwide.

In the PCP study, the researchers evaluated the effectiveness of trimethoprim-sulfamethoxazole, dapsone and petamidine in preventing pneumonia in patients with CD4 immune cell counts of less than 200 per milliliter of blood.

*Continued on page 8*

### In this issue ...

#### Life-sustaining function ..... 2

A gene responsible for blocking programmed cell death is critical for embryonic development in mice

#### Fending off invaders ..... 3

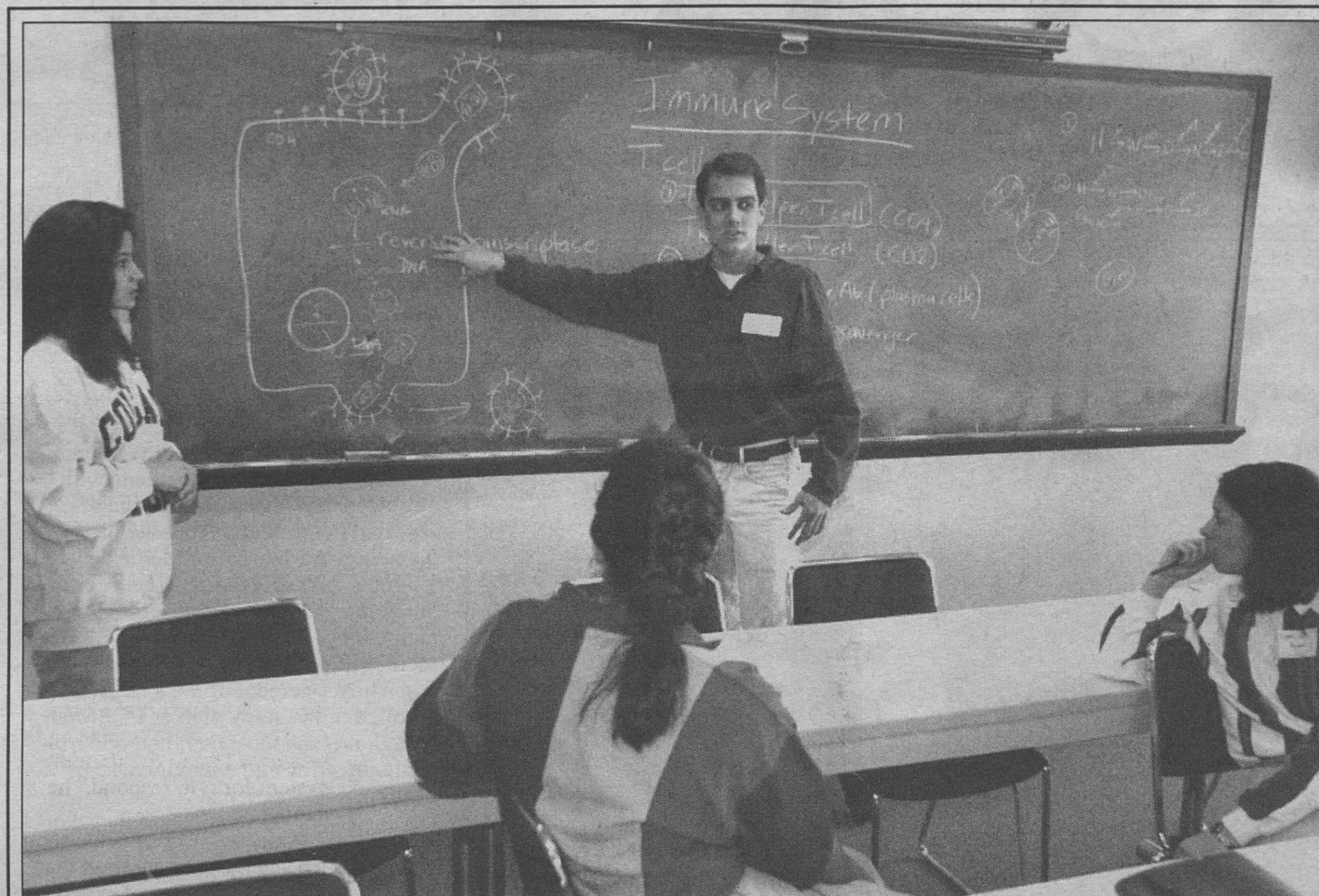
Landmark studies by Emil Unanue, M.D., have helped immunologists understand how the human body initiates an immune response

#### A lasting gift ..... 6

The Woman's Club announces plans to plant an on-campus butterfly garden honoring Elizabeth Danforth



# Medical Update



At a Wellness Program on AIDS held recently at the School of Medicine, second-year medical student Bernadette Aulivola and first-year medical student Chris Ellingson explain the effects of AIDS on the immune system to high school students. The School of Medicine's Students Teaching AIDS to Students program hosted the workshop, which was attended by students from 25 area high schools. The goal of the Wellness Program is to encourage the students to implement AIDS awareness projects in their communities.

## Key to survival

### Gene critical for blood, nervous system development in mice embryos

Within the body's cells, death is an essential part of life. Throughout development and adulthood, millions of cells undergo preprogrammed cell death to eliminate unnecessary cells or replace worn-out cells with new ones.

Now researchers at the School of Medicine report that a gene responsible for blocking programmed cell death is critical for normal embryonic development. Mice embryos that lack this key gene die before birth, devastated by extensive cell death in the blood and nervous systems, the team reported in the March 10 issue of the journal *Science*.

The researchers, led by Dennis Y. Loh, M.D., professor of medicine, genetics, and molecular microbiology and a Howard Hughes Medical Institute associate investigator, found massive cell death in regions of the blood and nervous systems populated by immature, developing cells. The report provides the first direct evidence that the gene *bcl-x* is necessary for the survival of immature cells in the blood and nervous systems.

"The extent of cell death was impressive," said Kevin Roth, M.D., Ph.D., associate professor of pathology, assistant professor of molecular biology and pharmacology and a co-author of the report. "We were surprised to see how extensive the cell death was and how critical *bcl-x* is to survival of the mouse embryos."

The investigators suspect the embryos died due to abnormalities in the development of mature red blood cells.

*Bcl-x*, which was first identified in 1993, is a member of the *bcl-2* gene family. *Bcl-2* also inhibits programmed cell death. It has received considerable attention in recent years for its suspected role in prolonging the life span of certain immune system cells that "memorize" past infections in the body. These memory cells live on indefinitely and can mount a quick immune response if the body is attacked by the same invader again. *Bcl-2* also has been implicated in at least one type of cancer because it keeps cells from dying, increasing the chances that some will become malignant.

Earlier reports show that *bcl-2*, however, performs its life-sustaining function only in mature cells. Researchers sus-

pected that *bcl-x* would work in the same way. "But in these mice, if you don't have *bcl-x*, there isn't anything else to replace it," Roth said. "It could be that *bcl-x* keeps the immature cells alive, enabling them to mature. Then, *bcl-2* is turned on to keep the mature cells alive."

After the discovery of the *bcl-x* gene, Noboru Motoyama, Ph.D., a postdoctoral fellow in Loh's lab, used the gene knock-out method to generate mice that lacked both copies of the *bcl-x* gene. He compared the knock-out mice with mice in the same litter that had at least one copy of the gene.

The investigators found that only mice with at least one copy of *bcl-x* were born. Mice lacking *bcl-x*, Motoyama deter-

mined, died 13 days after conception. The gestation period for this strain of mice is 21 days.

Compared with litter mates who had at least one copy of the *bcl-x* gene, embryos without *bcl-x* showed massive neuronal cell death in areas of the brain stem and spinal cord undergoing cell differentiation.

In mice embryos without *bcl-x*, the investigators also found extensive cell death in the liver, where embryonic blood cells develop.

The investigators now plan to generate mice that lack both *bcl-x* and *bcl-2* to determine the role of these genes in the survival of mature cells.

— Caroline Decker

### Scientists to study parasitic tropical diseases

School of Medicine researchers have received two grants totaling \$1.5 million to study filariasis, a group of diseases that affects more than 100 million people in the tropical developing countries of Asia, Africa and Latin America.

Filarial infections are caused by microscopic worm parasites. These tiny worms are cousins of the heartworm, which is common in dogs throughout the United States.

Filariasis is transmitted by the bite of insects, namely mosquitoes and black flies that carry the worm parasites. Infection with the most common species of these tiny worms can lead to elephantiasis, a condition characterized by grotesquely swollen legs and genitalia; another species causes skin disease and blindness.

"It is my hope that advances in our laboratory will lead to better ways to detect, treat and prevent these serious infections," said Gary J. Weil, M.D., associate professor of medicine and the principal investigator of the projects.

The five-year National Institutes of Health grants will support filariasis research on two fronts. The first project will allow Weil and his co-workers to continue developing and testing new methods for diagnosing filarial infec-

tions in early stages. While filarial infections are rarely life threatening, they cause considerable pain and suffering to those who develop complications of elephantiasis or blindness.

Diagnosing and treating filarial infections before symptoms develop can halt disease progression and block transmission of the infection to others. Improved diagnostic methods also will enable public health workers to boost surveillance of filariasis and identify areas where control efforts are most needed.

Weil and co-workers at Jewish Hospital will focus their efforts on developing tests for filarial infections that cause skin disease and blindness. They already have developed a sensitive diagnostic test for the parasite that causes elephantiasis.

The second grant will support Weil's effort to understand the development of protective immunity to filarial infections. The work may one day lead to vaccines for preventing filarial infections.

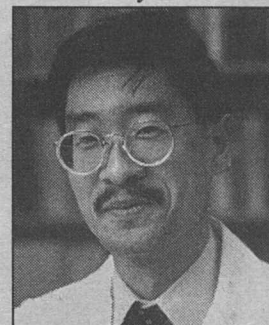
For this project, Weil's group will collaborate with researchers at Ain Shams University in Cairo, Egypt. Together, they will study villages near Cairo where filariasis is common. The researchers will study some 300 families to monitor the incidence of new filarial infections.

### Dennis Choi receives grant to investigate nervous system injury

Dennis W. Choi, M.D., Ph.D., Jones' Professor and head of the Department of Neurology at the School of Medicine, has received a grant of approximately \$5 million to continue work on injuries to the nervous system.

The five-year award comes from the Neurology Institute at the National Institute of Neurological Diseases and Stroke.

Research teams led by Choi and eight other faculty in the School of Medicine's



Dennis W. Choi

Center for the Study of Nervous System Injury will determine how interactions between cells contribute to damage when the brain is deprived of oxygen. The project will

focus on receptors for glutamate, a substance that serves as a chemical messenger between neurons.

"We are hopeful that results from these studies will aid the development of clinical strategies for treating brain injuries to patients who suffer from stroke and cardiac arrest," Choi explained.

The center's long-term goals are to develop ways to protect the brain and spinal cord from injury due to disease and trauma and to promote recovery after injury has occurred. The studies relate to a wide range of disorders, including stroke, cardiac arrest, head trauma and many neurodegenerative diseases.

In addition to Choi, the eight other faculty in the federally funded project are: Laura L. Dugan, M.D., instructor of neurology, Mark P. Goldberg, M.D., assistant professor of neurology and of anatomy and neurobiology, Chung Y. Hsu, M.D., Ph.D., professor of neurology, Michael A. Province, Ph.D., associate professor of biostatistics, William D. Snider, M.D., associate professor of neurology, Jian Xu, Ph.D., research assistant professor of neurology, Kelvin A. Yamada, M.D., assistant professor of neurology and of pediatrics, and Shan-Ping Yu, M.D., Ph.D., research assistant professor of neurology.

## Record

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**Washington**  
 WASHINGTON UNIVERSITY IN ST. LOUIS



# Washington People

## Unanue forever altered immunology research

**O**ur bodies work around-the-clock to fend off "foreign" invaders — bacteria, viruses and other microbes that have the potential to do us harm. Under the direction of the immune system, specialized cells patrol the body looking for suspicious interlopers. When a disease-causing agent penetrates the skin or is inhaled by the lungs, for example, the immune system is alerted to destroy the invader.

Immunologists have worked for decades to understand how the human body initiates an immune response. Today, scientists are closer to piecing together this complex sequence of events due, in part, to the landmark studies of Emil R. Unanue, M.D., Edward Mallinckrodt Professor and head of the Department of Pathology.

His research has enabled scientists to begin to understand just what an immune cell "sees" when it comes face-to-face with a foreign protein and is triggered into action. This work has raised the prospects for developing vaccines that generate better immune responses and novel therapies to treat autoimmune diseases such as diabetes, multiple sclerosis and arthritis. These diseases occur when the immune system misfires and attacks the body's own cells.

"A lot of people have made important contributions to the field of immunology, but Emil Unanue's contributions have put him in a class by himself," said fellow immunologist and Nobel Prize winner Baruj Benacerraf, M.D. He shared the Nobel Prize in Medicine or Physiology in 1980 for his research linking genetic makeup to the degree of an individual's immune response to diseases and foreign tissues.

Benacerraf, who now is president of Dana-Farber Inc. in Boston, first met Unanue in the 1960s when Unanue worked as an intern at Presbyterian University Hospital in Pittsburgh. Benacerraf followed Unanue's

research over the years. When Benacerraf was named head of the Department of Pathology at Harvard Medical School in 1980, Unanue was the first scientist he recruited. "I was impressed with his work," Benacerraf said. "I knew he was a very brilliant scientist."

Unanue left Harvard in 1985 to head the School of Medicine's pathology department. A respected scientist, he is motivated by a perpetual enthusiasm for scientific discovery. "In contrast to some of my colleagues who prefer clinical work, I am driven by the excitement of research — searching for answers, getting excited about lab results and looking for new issues," he explained.

Despite the demands of overseeing a large department, Unanue is extremely protective of his time in the lab, and he devotes many evenings and weekends to research.

"He is extremely well organized, with a tremendous commitment to continue to pursue what he truly loves — science," said Robert D. Schreiber, Ph.D., a longtime colleague of Unanue's and the Alumni Professor of Pathology. "Despite all of his formal responsibilities at the School of Medicine, he is one who is always accessible to the faculty of his department as well as every student and postdoctoral fellow in his lab."

### A driving force

Since his arrival, Unanue has been the major driving force behind establishing the School of Medicine as one of the major immunology research centers in the world. To date, more than 50 immunology laboratories exist on the Washington University Medical Campus and the immunology community includes an estimated 250 scientists. Ten medical school departments have immunologists on their staff.

The concentration of immunologists here led to the formation eight years ago of a predoctoral training program in immunology. The program, which Unanue initially supported with resources from his own department, is now nationally recognized.

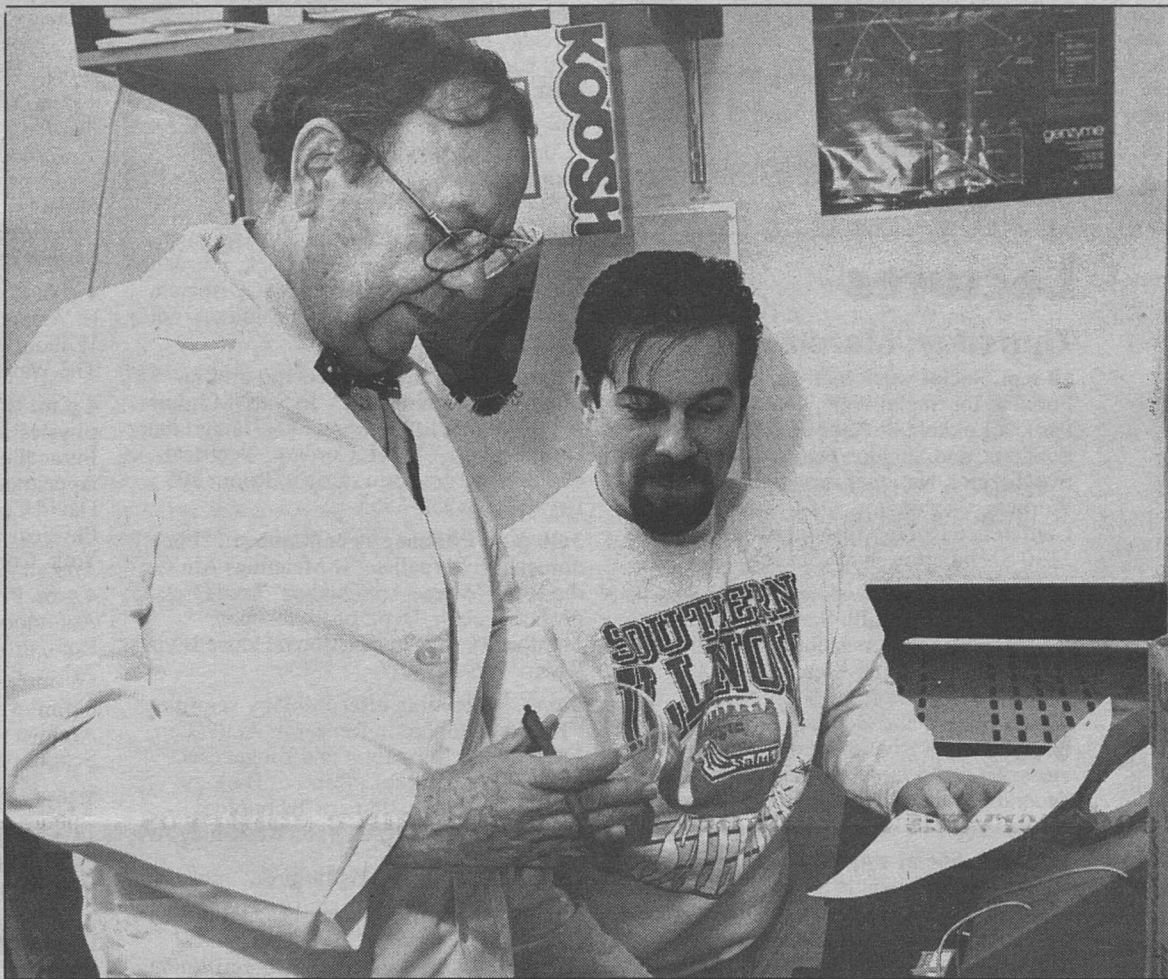
"The large-scale development of immunology at Washington University can really be attributed to Emil's efforts to make it happen," Schreiber said. "He has been involved in the recruitment of almost every immunologist that has come to the School of Medicine."

Unanue's commitment to a strong immunology research program is evident to a number of Washington University scientists. Unanue, like other department heads, reviews research grant proposals from his own faculty members. "But Emil will take the time to read

grant proposals from people in other departments where he has nothing personal to gain by them getting grants," Schreiber said. "I think this is a real selfless commitment to making sure immunology works here."

Unanue, a native of Havana, Cuba, came from a large family of doctors, which made his decision to pursue a career in medicine a natural one. He graduated from the University of Havana School of Medicine in 1960, a year after Cuban leader Fidel Castro overthrew the Cuban government.

"It was tough being in medical school during that time," Unanue recalled. "It was a very insecure time, which caused a lot of panic among families. It was very hard on everybody."



Emil R. Unanue, M.D., and Brian Deck, medical research technician, count bacterial colonies in agar plates.

**"The large-scale development of immunology at Washington University can really be attributed to Emil's efforts to make it happen."**

— Robert D. Schreiber

Unanue's desire to be in control of his life and career path prompted him to leave the country. "I really wanted to have my own independence and be able to develop my own life."

Unanue left Havana for the United States in 1961, before Castro imposed travel restrictions on Cuban residents. All members of Unanue's immediate family have moved to the United States. He has not returned to Cuba.

After coming to the United States, Unanue completed a yearlong internship in pathology at Presbyterian University Hospital in Pittsburgh. He then went to Scripps Clinic for a four-year pathology research fellowship and in 1966 he began an immunology research fellowship at the National Institute for Medical Research in London.

Since the late 1960s, when Unanue first discovered that cells called macrophages activate the body's immune response to foreign invaders, his research has forever altered the way scientists study the immune system. His discoveries have thrust a previously obscure field of study — antigen presentation and processing — into the scientific mainstream.

### Unraveling the process

"His work is so fundamental to understanding how the immune system works so that it has had an impact on many different aspects of immunology and infectious and immune-mediated diseases," said fellow immunologist Harvey Colten, M.D., Harriet B. Spoehrer Professor and head of the Department of Pediatrics.

Antigens are foreign proteins, from bacteria or viruses, for example, that generate an immune response. Unanue's research helped to unravel the step-by-step process by which macrophages ingest foreign antigens and chop them up before presenting them to the immune system.

The work began in 1968 when Unanue was in London. At the time, macrophages were considered to be the scavengers of the immune system. Their primary purpose, it was believed, was to roam throughout the body and ingest dead cells. Unanue and other scientists suspected that macrophages, however, might play a dual role in which they actively participate in the body's resistance to infection.

Unanue's experiments showed that when macrophages are exposed to foreign proteins, the immune system

generates an active response. "It soon became apparent that the macrophage was a meaningful and important component of the immune response," Unanue said.

Researchers began to suspect that the immune system recognized — and then responded to — whole foreign proteins displayed on the surface of macrophages. "The thinking was that macrophages had to present the entire protein to the immune system for it to respond," he explained.

Unanue's experiments soon led scientists to question that theory. In a series of experiments published in 1981, Unanue established that macrophages had to ingest foreign antigens before the immune system could be activated to respond. Once inside the macrophages, the antigens were surrounded by vesicles containing enzymes. The enzymes chopped up the antigens into small protein fragments.

If Unanue introduced drugs to block antigen digestion, the immune system failed to mount an immune response. This suggests that the immune system only "sees" antigens after they are degraded inside the macrophages.

The discovery, however, left a lingering question: Why didn't the enzymes completely dismantle the proteins?

In an important study published in 1985 in the British journal *Nature*, Unanue, working with postdoctoral fellow Bruce Babbitt and Washington University researcher Paul Allen, Ph.D., professor of pathology, answered the question. They provided the first direct proof that antigen degradation stops when protein fragments bind to multi-gene complexes inside macrophages.

The multi-gene complex, called the major histocompatibility complex (MHC), had long been known to be involved in the immune response. But until now, researchers did not know that the antigen fragment and the MHC were bound together and displayed on the surface of macrophages for the immune system to "see."

The group began the study at Harvard, where Allen and Babbitt were postdoctoral fellows in Unanue's lab, and finished the work at Washington University. "This was a major hit. No one had been able to show this," Unanue said. "The study opened up the whole field because it explains why some people respond better to some antigens and worse to others."

The study also allowed researchers to predict exactly what portions of antigens were being presented to the immune system. "Previous to these observations, you could say that our knowledge of immunization was a field based on a great degree of empirical observations. We could immunize with a protein or a microbe and initiate an immune response, but we knew very little about what the immune system was responding to," Unanue explained.

Unanue now is applying the research to a specific clinical problem. He wants to identify which antigen is responsible for triggering the immune system to destroy insulin-producing cells in the pancreas. The irreversible condition causes insulin-dependent diabetes. Once identified, scientists could try to eliminate the immune cells that recognize the antigen, thereby blocking the immune system's response.

Allen, who now heads his own laboratory at the School of Medicine, said he has appreciated Unanue's encouragement through the years. "He works very hard to bring in young scientists, to foster them and help them in any way he can," Allen said. "He is a thorough and careful scientist, but also imaginative and innovative. He's very good at balancing those forces, and that's what I've really learned from him."

— Caroline Decker



# Calendar

March 23–April 1



## Exhibitions

**"The Matter of History: Selected Works by Annette Lemieux."** Mixed-media art addressing the Holocaust, the Third Reich and the many personal ways in which war interrupts life. Through March 26. Gallery of Art, upper gallery, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

**"First-year M.F.A. Exhibition."** Mixed media, paintings, installation, sculpture, prints, photography, ceramics and glass created by first-year master of fine arts students. Through April 8. Saint Louis Design Center, 12th Floor, 917 Locust Street. Hours: 9 a.m.-5 p.m. weekdays; 10 a.m.-4 p.m. Saturdays. 935-4761.



## Films

### Thursday, March 23

**7 and 9 p.m. Filmboard Foreign Series.** "Paisan" (1946, B&W), set during the liberation of Italy in World War II, in Italian with English subtitles. Room 100 Brown Hall. Cost: \$3. **For 24-hour Filmboard Hotline, call 935-5983.**

### Friday, March 24

**7 and 9:30 p.m. Filmboard Feature Series.** "Pulp Fiction" (1994), starring Rosanna Arquette, John Travolta and Bruce Willis. (Also March 25, same times, and March 26 at 7 p.m.) Room 100 Brown Hall. Cost: \$3.

**Midnight. Filmboard Midnight Series.** "Saturday Night Fever" (1977), starring John Travolta. (Also March 25, same time, and March 26 at 9:30 p.m.) Room 100 Brown Hall. Cost: \$3.

### Tuesday, March 28

**7 p.m. Japanese Film Series.** "Tampopo" (1987), with English subtitles. A parody of American westerns and Japanese samurai films. Sponsored by the Dept. of Asian and Near Eastern Languages and Literatures. Room 219 South Ridgley Hall. 935-5156.

### Wednesday, March 29

**7 and 9 p.m. Filmboard Classic Series.** "The Major and the Minor" (1942, B&W), starring Ginger Rogers. (Also March 30, same times.) Room 100 Brown Hall. Cost: \$3.

### Friday, March 31

**4 p.m. Jazz Film Series.** "A Man Called Adam" (1966), starring Sammy Davis Jr., is loosely based on the life of Miles Davis. Sponsored by the American Culture Studies Institute in conjunction with the upcoming

## Calendar guidelines

Events sponsored by the University — its departments, schools, centers, organizations and its recognized student organizations — are published in the Calendar. All events are free and open to the public, unless otherwise noted.

Calendar submissions should state time, date, place, sponsor, title of event, name of speaker(s) and affiliation, and admission cost. Quality promotional photographs with descriptions are welcome. Send items to Judy Ruhland at Box 1070 (or via fax: 935-4259). Submission forms are available by calling 935-4926.

The deadline for all entries is noon Tuesday one week prior to publication. Late entries will not be printed. The Record is printed every Thursday during the school year, except holidays, and monthly during the summer. If you are uncertain about a deadline, holiday schedule, or any other information, please call 935-4926.

Miles Davis Conference April 6-8. Room 149 McMillan Hall. 935-5216.

**7 and 9:30 p.m. Filmboard Feature Series.** "2001: A Space Odyssey" (1968), a science-fiction classic in Cinemascope. (Also April 1, same times.) Room 100 Brown Hall. Cost: \$3.

**Midnight. Filmboard Midnight Series.** "Spaceballs" (1987), a comedy Star Wars parody directed by Mel Brooks. (Also April 1, same time.) Room 100 Brown Hall. Cost: \$3.



## Lectures

### Thursday, March 23

**10 a.m. Social work lecture.** "Federal Funding for Social Work Research," Pamela Lokken, director of governmental relations, and Sheldon R. Goldstein, executive director, National Association of Social Workers, Washington, D.C. Second Floor Conference Room, Administrative Bldg., 1130 S. Hampton Ave. 935-5687.

**11:15 a.m. Social work lecture.** "Overview of Mental Health Service Providers to the Severely and Persistently Mentally Ill in the Greater St. Louis Area," Diane McFarland, director, St. Louis Mental Health Center, and Bonnie DiFranco, director, Great Rivers Mental Health Services, Missouri Dept. of Mental Health. Second Floor Conference Room, Administrative Bldg., 1130 S. Hampton Ave.

**1:10 p.m. Social work lecture.** "The Social Work Agenda in a Republican-led Congress," Sheldon R. Goldstein, executive director, National Association of Social Workers, Washington, D.C. Brown Hall Lounge. 935-6600.

**1:30 p.m. Geometry seminar.** "When is a Transversal Geometric Structure Transversally Homogeneous?" Renato Feres, prof. of mathematics. Room 199 Cupples I Hall. 935-6726.

**2:30 p.m. Mechanical engineering seminar.** "Creativity in Engineering Design," Mario P. Gomez, affiliate prof. of mechanical engineering. Room 100 Cupples II Hall.

**4 p.m. Assembly Series lecture.** "Environmental Justice," an Environmental Action Group lecture by Winona LaDuke, leading American Indian environmentalist. Room 100 Brown Hall.

**4 p.m. Earth and planetary sciences colloquium.** "Isotope Hydrology of Large Volume Cold Springs in Fractured Volcanic Rock, Hat Creek Basin, Calif.," Timothy P. Rose, postdoctoral fellow, Isotope Sciences Division, Lawrence Livermore National Laboratory, Livermore, Calif. Room 362 McDonnell Hall. 935-5610.

**4 p.m. East Asian studies lecture.** "China-Japan: Scientific and Educational Relations During the Deng Era," Mary Bullock, director, Asia Program, Wilson Center, Washington, D.C. Room 331 Social Science and Business Bldg., U. of Missouri-St. Louis, 8001 Natural Bridge Road. Sponsored by the Joint Center for East Asian Studies. 516-5753 or 935-4448.

**4:30 p.m. Math colloquium.** "Quadrature Domains and Hyponormal Operators," Mihai Putinar, prof. of mathematics, U. of California, Riverside. Room 199 Cupples I Hall. 935-6726.

**8 p.m. German reading.** "Engel sind schwarz und weiß," Ulla Berkewicz, author from Frankfurt/Main, Germany. Sponsored by the Dept. of Germanic Languages and Literatures and its Center for Contemporary German Literature. Reading kicks off the "Multiculturalism in Contemporary German Literature: A Writers' Conference." Stix International House. 935-5106.

### Friday, March 24

**9:15 a.m. Pediatric Grand Rounds.** "Fetal Ascites, Protracted Varicella and Carpopedal Spasm: An Illustrative Patient," James P. Keating, prof. of pediatrics, School of Medicine, and director, Pediatric Residency Program and Division of Diagnostic Medi-

cine, St. Louis Children's Hospital; Talal A. Chatila, assoc. prof. of pediatrics, School of Medicine and Division of Immunology and Rheumatology, St. Louis Children's Hospital; S. Andrew Spooner, instructor in pediatrics and research associate, Dept. of Internal Medicine, School of Medicine, and Division of Diagnostic Medicine, St. Louis Children's Hospital. Clopton Aud., 4950 Children's Place. 454-2706.

**Noon. Cell biology and physiology seminar.** "Molecular and Functional Analysis of the 5HT<sub>1B</sub> Receptor," Mark Voigt, asst. prof., Dept. of Pharmacological and Physiological Science, St. Louis U. School of Medicine. Cell Biology Library, Room 426 McDonnell Medical Sciences Bldg.

**Noon. Environmental engineering lecture.** "Current Air Quality Issues," Kenneth Hagg, senior consultant, Woodward-Clyde, St. Louis. Room 216 Urbauer Hall.

**Noon. Left forum meeting.** "A Unionist's View of Journalism," Joe Pollack, journalist and theater critic, St. Louis Post-Dispatch. Lambert Lounge, Room 303 Mallinckrodt Center. 935-6808.

**1 p.m. Solid-state engineering and applied physics seminar.** "'In Situ' Monitoring of Engine Lubricating Oils Using Fiber-optic Sensors," M. H. Cordaro, electrical engineering graduate student. Room 305 Bryan Hall. 935-5565.

**3:30 p.m. Philosophy colloquium.** "Phenomenal Externalism: If Meanings Ain't in the Head, Where Are Qualia?" Fred Dretske, prof. and chair, Dept. of Philosophy, Stanford U. Stix International House Living Room. 935-5119.

**4 p.m. Molecular microbiology seminar.** "The Erythropoietin Receptor: Activation, Intracellular Signalling and Biogenesis," Harvey Lodish, prof., Dept. of Biology, Massachusetts Institute of Technology, Cambridge. Cori Aud., 4565 McKinley Ave.

### Monday, March 27

**3 p.m. Art lecture.** "Artemisia Gentileschi: Feminist Portrayals of Biblical Times," Judith Testa, prof. of art, Northern Illinois U., DeKalb. Sponsored by depts. of Art History and Archaeology, Jewish and Near Eastern Studies and Women's Studies. Room 200 Steinberg Hall.

**3:45 p.m. Condensed matter seminar.** "Theory of 4-fold Amorphous Carbon," David Drabold, prof. of physics. Room 241 Compton Hall. 935-6250.

**4 p.m. Biology seminar.** "Cytochrome P450s in Plant-insect Interactions: Inductions and Deductions," May R. Berenbaum, prof., Dept. of Entomology, U. of Illinois, Urbana. Room 322 Rebstock Hall.

**4 p.m. Cognitive psychology colloquium.** "Separating Automatic and Controlled Influences: Attention, Awareness and Control," Larry Jacoby, prof. of psychology, U. of Texas, Austin. Room 162 McDonnell Hall. 935-6546.

**4 p.m. Neurology and neurological surgery lecture.** "GABA Receptor Multiple Identities: A Challenge in Drug Discovery," Erminio Costa, McDonnell Visiting Professor in Neurology. Erlanger Aud., McDonnell Medical Sciences Bldg.

**8 p.m. Architecture lecture.** "Merging Two Realities," Michael Rotondi, director, SCI-Arc, Los Angeles. Steinberg Hall Aud.

### Tuesday, March 28

**Noon. Social work lecture and brown bag lunch.** "Organizing for Community Reinvestment." Sponsored by the Center for Social Development, George Warren Brown School of Social Work. Brown Hall Lounge. 935-7433.

**4 p.m. Chemistry seminar.** "Hydrogen Complexes and Hydrogen Bonds," Robert J. Crabtree, prof., Dept. of Chemistry, Yale U. Room 311 McMillen Lab.

**4 p.m. Diabetes research group seminar.** "Ca<sup>2+</sup>-Independent PLA<sub>2</sub> and Pancreatic Islets," Sasanka Ramanadham, research instructor, Dept. of Medicine. Pathology Library, Room 3723 West Bldg. 362-7435.

**4:30 p.m. Math colloquium.** "The Inverse Galois Problem: A Partial Survey," Jack Sonn, prof. of mathematics, Technion and U. of British Columbia, Vancouver. Room 199 Cupples I Hall. 935-6726.

**6 p.m. Social work presentation and panel discussion.** "1995 White House Conference on Aging: A Missouri Preview." Presenta-

tion by Deborah Pullam, Missouri Division of Aging. Brown Hall Lounge. 935-6606.

### Wednesday, March 29

**8 a.m. Obstetrics and Gynecology Grand Rounds.** "The Physician's Role in Promoting Breast Feeding," Mary Jane Kopac, chair, BJC Health System Breast Feeding Task Force, and lactation consultant, Jewish Hospital. Clopton Aud., 4950 Children's Place. 362-3122.

**3 p.m. Math analysis seminar.** "Hardy Spaces and Compensated Compactness," Chun Li, prof. of mathematics, Macquarie U., Sydney, Australia. Room 199 Cupples I Hall. 935-6726.

**4 p.m. African and Afro-American Studies lecture.** "Art History and Black Memory: Toward a Blues Aesthetic," Richard J. Powell, assoc. prof., Dept. of Art and Art History, Duke U., Durham, N.C. Co-sponsored by the American Culture Studies Institute. Steinberg Hall Aud. 935-8556.

**4 p.m. Assembly Series lecture.** Benjamin E. Youngdahl Lecture on Social Policy. William Raspberry, syndicated columnist, The Washington Post. Graham Chapel.

**4 p.m. Biochemistry and molecular biophysics seminar.** "Some Protein Domains in Intracellular Signal Transduction: Their Appearances, Affinities and Interactions," David Cowburn, assoc. prof., Laboratory of Physical Biochemistry, Rockefeller U., New York. Cori Aud., 4565 McKinley Ave.

**4 p.m. Physics colloquium.** "The Physics of Automobile Fuel Use and Emissions," Marc Ross, prof. of physics, U. of Michigan, Ann Arbor. Room 204 Crow Hall. 935-6276.

**8 p.m. Architecture lecture.** "Aesthetics and Architecture," Jeffrey Kurtzman, prof., School of Music. Room 116 Givens Hall.

### Thursday, March 30

**11:15 a.m. Social work lecture.** "Evaluating Outcomes of Mental Health Services," Kathryn Rost, assoc. prof., Dept. of Psychiatry, U. of Arkansas, Little Rock. Second Floor Conference Room, Administrative Bldg., 1130 S. Hampton Ave. 935-5741.

**1:30 p.m. Geometry seminar.** "When is a Transversal Geometric Structure Transversally Homogeneous? (cont.)," Renato Feres, prof. of mathematics. Room 100 Cupples I Hall. 935-6726.

**4 p.m. Anesthesiology lecture.** The Seventh Annual C.R. Stephen lecture. "Neural Circuits Underlying Opioid Analgesia," Howard L. Fields, prof., depts. of Neurology and Physiology, and vice chair, Dept. of Neurology, U. of California, San Francisco. Moore Aud., 660 S. Euclid Ave. 362-6978.

**4 p.m. Assembly Series lecture.** Tyrrell Williams Memorial Lecture. "The Role of the Counsel to the President," Lloyd Cutler, former special counsel to President Clinton. Graham Chapel. 935-5285.

**4 p.m. Chemistry seminar.** "bZIP Proteins: Kinetics, Mechanism and the Role of Accessory Factors," Alanna Schepartz, prof., Dept. of Chemistry, Yale U. Room 311 McMillen Lab. 935-6530.

**4 p.m. Earth and planetary sciences colloquium.** "Experimental Constraints on the Stability of Organic Species in Hydrothermal Systems," Jeffrey S. Seewald, assistant scientist, Dept. of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, Woods Hole, Mass. Room 362 McDonnell Hall. 935-5610.

**4:30 p.m. Math colloquium.** Colin Adams, prof. of mathematics, Williams College, Williamstown, Mass. Room 199 Cupples I Hall. 935-6726.

### Friday, March 31

**9:15 a.m. Pediatric Grand Rounds.** "Molecular Mechanisms of Anesthesia," Alex S. Evers, Henry F. Mallinckrodt Professor of Anesthesiology, and prof., depts. of Internal Medicine and Molecular Biology and Pharmacology and head, Dept. of Anesthesiology. Clopton Aud., 4950 Children's Place. 454-2706.

**Noon. Cell biology and physiology seminar.** "A Pair of Potassium Channel Surprises," David E. Clapham, prof., Dept. of Pharmacology, Mayo Clinic and Foundation, Rochester, Minn. Cell Biology Library, Room 426 McDonnell Medical Sciences Bldg. 362-6950.

**Noon. Environmental engineering seminar.** "Optical Remote Sensing for Industrial



and Hazardous Waste Site Monitoring," Judith Zwicker, manager of technical services, Remote Sensing Air Inc. Room 216 Urbauer Hall. 935-8590.

**4 p.m. Math seminar.** "Real Estate in Hyperbolic Space: Investment Opportunities for the '90s," Mel Slugbate, Slugbate and Mossbutter Real Estate Brokers. Room 199 Cupples I Hall. 935-6726.

**4 p.m. Microbial pathogenesis seminar.** "Molecular Analysis of the Hemolysin/Bacteriocin of *Enterococcus Faecalis*," Michael Gilmore, assoc. prof., Dept. of Microbiology, U. of Oklahoma, Norman. Room 775 McDonnell Medical Sciences Bldg. (Refreshments: 3:45 p.m.) 362-1485.

**4 p.m. Music lecture.** "Questions of Interpretation in Musical Analysis," Marion A. Guck, assoc. prof. of music theory. Room B-8 Blewett Hall. 935-5581.



## Music

### Friday, March 24

**8 p.m. Double bill opera performance.** Washington University Opera presents "Beauty and the Beast" by Vittorio Giannini, and "The Village Singer" by Stephen Paulus. (Also March 25, same time.) Sponsored by the Dept. of Music. Graham Chapel. Cost: \$5. 935-5581.

### Thursday, March 30

**8 p.m. Senior honors clarinet recital.** So Hyun Rhee, clarinet, and Sharon Tash, piano. Program: works by Claude Debussy, Robert Schumann, Willson Osborne and W. A. Mozart. Graham Chapel. 935-5581.



## Performances

### Friday, March 31

**8 p.m. Performing Arts Dept. presents** "The Illusion," adapted by Pulitzer Prize-winner Tony Kushner and based on the 17th-century French play "L'illusion Comique." Features an all-student cast. (Also April 1, same time.) Edison Theatre. Cost: \$8 for the general public; and \$6 for senior citizens, WU faculty, staff and students. 935-6543.



## Miscellany

### Thursday, March 23

**8 p.m. Writer's conference.** "Multiculturalism in Contemporary German Literature: A Writer's Conference" opens with a reading in German. Conference commemorates the 10th anniversary of the University's Center for Contemporary German Literature. Stix International House. Continues through March 26 in the Women's Bldg. and West Campus Conference Center. (All lectures in

German; discussions in German and English.) Sponsored by the Dept. of Germanic Languages and Literatures, European Studies Program, Olin Library and International Writers Center. For schedule or to register, call 935-4360.

### Friday, March 24

**3 p.m. Bus tour and lecture.** Sponsored by the International Student Resource Group. Bus leaves Stix International House for a tour of McDonnell Douglas Corp. at 3 p.m. and returns at 5 p.m. 935-4787.

### Saturday, March 25

**10 a.m. Bookmaking workshop.** "Time, Space, Art and the Cosmos: About Comics," Carol Denbow, co-owner of Star Clipper Books, talks about the creative storytelling medium of comics and shows examples to demonstrate its range of imagery, intent and appeal. Bixby Gallery, Bixby Hall. Cost: \$7.50. 935-4643.

### Sunday, March 26

**Noon. Roller-blading event.** "Blade for ALS and AIDS." Sponsored by Delta Theta fraternity and Alpha Epsilon Phi sorority. Proceeds benefit the St. Louis Effort for AIDS and the Greater St. Louis Chapter for ALS (Amyotrophis Lateral Sclerosis). Registered participants receive refreshments, a raffle ticket and a T-shirt. Cost: \$5 for the general public and \$3 for students. Meet in front of the Steinberg Memorial Skating Rink, Forest Park. To register, arrive at 11 a.m. or call 935-3051, or send fee and T-shirt size to Howie Olson, 8 Fraternity Row, St. Louis, Mo., 63130.

### Monday, March 27

**7-10 p.m. Office of Continuing Medical Education seminar.** "Internal Medicine Review." The topic is hematology. Steinberg Amphitheater, Jewish Hospital. Part of an ongoing series that runs Monday nights through May 22. For schedules, cost and credit info., call 362-6893.

### Tuesday, March 28

**7:30 p.m. Feminist reading group.** Faculty and graduate students discuss "Volatile Bodies: Toward a Corporeal Feminism," by Elizabeth Grosz. Hurst Lounge, Room 201 Duncker Hall.

### Wednesday, March 29

**4 p.m. International Studies panel discussion.** "Using Foreign Languages in the Workplace." Sponsored by the Office of International Studies, Career Center and Graduate School of Arts and Sciences. Stix International House. 935-4613.

### Thursday, March 30

**6:30 p.m. Literacy Council symposium and dinner.** "An Evening of Awareness: Illiteracy in Healthcare." Ruth Parker, asst. prof. of medicine, Emory U., Atlanta, and Julius Hunter, news anchor, KMOV-TV Channel 4. Monsanto Hall, The Missouri Botanical Garden, 4344 Shaw Ave. Sponsored by the Literacy Council of Greater St. Louis and Washington University School of Medicine. Proceeds benefit the Literacy Council. Cost: \$25; \$15 for health professional students; group discounts (\$200 for table of 10) available. Reservations required. 776-7102.

### Saturday, April 1

**9 a.m.-5 p.m. Comparative literature seminar.** "Oral Literature." University speakers: Peter Heath, assoc. prof. of Arabic and chair, Dept. of Asian and Near Eastern Languages and Literatures; Robert Henke, asst. prof. of drama and comparative literature; and William Merritt Sale, prof. of classics and comparative literature. Alumni House Living Room. 935-5170.

**10 a.m. Bookmaking workshop.** "The Fine Art Book: Text Plus Image," Douglas Dowd, asst. prof. of art, will talk about his own fine art books and the fine art print as historical narrative. Bixby Gallery, Bixby Hall. Cost: \$7.50. 935-4643.

## Festival features student-produced films

"Neapolitan," a feature-length film produced by, directed by and starring Washington University students, will be the centerpiece of the Second Annual Student Film Festival to be held Thursday, March 30, through April 1 in May Auditorium, Simon Hall.

The film presentation will begin nightly at 7 p.m. with a showing of six student-produced film briefs, followed by an intermission and the showing of "Neapolitan," a story of social polarity among college students. A second showing of the films will be offered at 10 p.m. on April 1.

"Neapolitan" is the second film to be produced by Houston Pictures, a Washington University student group formed in 1993. Written and directed by senior Yahya

Jeffries-El, "Neapolitan" is the story of three friends from different backgrounds who meet freshman year. The film explores how the friendship is tested by interaction with and pressure from various racial and social groups on campus.

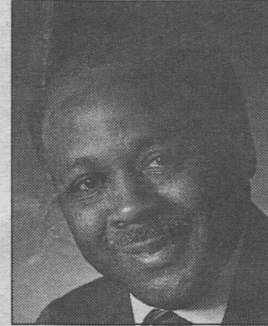
Houston Pictures' executive board includes producers Meisha Liebowitz and Brian Rainman, both juniors, and cinematographer Jamie Schutz, a senior. More than 40 students took part in production, which began in April 1994. About a dozen students have key roles in the film.

Tickets are \$3 and will be on sale starting Monday, March 27, during lunch hours at tables inside Mallinckrodt and Wohl student centers. For more information, call 727-8121.

## Urban affairs columnist to speak

William Raspberry, urban affairs columnist for The Washington Post, will give the 1995 Benjamin E. Youngdahl Lecture on Social Policy at 4 p.m. Wednesday, March 29, in Graham Chapel. The lecture, part of the Assembly Series, is free and open to the public.

Since 1966 Raspberry has been writing his award-winning column on urban



William Raspberry

The Washington Post once dubbed him "The Lone Ranger of Columnists."

affairs. He has a reputation for independent thinking, and allies himself with neither side of the political spectrum, considering the merits of issues, not the ideology. A colleague at

In 1977 The Washington Post Writers Group decided to nationally syndicate Raspberry's column, which now appears in 175 newspapers nationwide, confronting issues such as drug abuse, education, crime, justice and housing and addressing the latest ideas and proposals for answers to end social problems.

Raspberry joined The Washington Post in 1962 as a teletype operator and worked his way up through assignments as diverse as obituary writer, police and court reporter, copy editor, general assignment reporter and city editor.

Born in Okolona, Miss., Raspberry graduated in 1958 with a bachelor's degree in history from Indiana Central College.

This lecture is co-sponsored by the Assembly Series, George Warren Brown School of Social Work, Student Union and Washington University Political Society.

For more information, call 935-5297.

## Former special counsel to President Clinton to give Tyrrell Williams Memorial Lecture

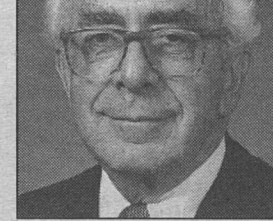
Lloyd Cutler, former special counsel to President Clinton, will give the 1995 Tyrrell Williams Memorial Lecture at 4 p.m. Thursday, March 30, in Graham Chapel. His lecture, titled "The Role of the Counsel to the President," is part of the Assembly Series and is free and open to the public. A reception, open to the University community, will take place in Seeley G. Mudd Hall following the lecture.

In addition to serving from March to September 1994 as special counsel to President Clinton, Cutler was counsel to President Carter.

Under President Reagan he was senior consultant for the President's Commission on Strategic Forces (Scowcroft Commission) from 1983-84, as well as a member and chair of the Quadrennial Commissions on Legisla-

tive, Executive and Judicial Salaries in 1985 and 1989.

Cutler has been a partner in the Washington, D.C., law firm of Wilmer, Cutler and Pickering since 1946 and is senior counsel to the firm.



Lloyd Cutler

Cutler received a bachelor's degree from Yale University in 1936 and a LL.B. degree from Yale Law School in 1939.

This lecture is co-sponsored by the Assembly Series and School of Law. For more information, call 935-5297.

## Sports

Compiled by Mike Wolf, director, and David Moessner, asst. director, sports information.

### Baseball Bears produce UAA gem on the diamond

The Washington University baseball team captured a share of its first University Athletic Association (UAA) crown last week with five straight wins.

Competing in a six-day round-robin tourney held March 9-13 in Cocoa, Fla., the Bears lost to Case Western Reserve University and then rattled off victories over Emory University, Johns Hopkins University, Brandeis University, University of Rochester and University of Chicago.

This past weekend, the Bears slipped to 8-5 after dropping three of four games to Augustana College and Illinois Wesleyan University.

WU head coach Ric Lessmann, in his second season on the Hilltop after 27 campaigns at Meramec Community College, enters the week with 998 career collegiate wins. Only nine current coaches — at any collegiate level — have reached the 1,000-win plateau.

Current record: 8-5 (5-1 UAA co-champions)

This week: 1 p.m. Tuesday, March 21, at Illinois College (2), Jacksonville, Ill.; 12:30 p.m. Friday, March 24, vs. Wisconsin-Platteville (2), Kelly Field; 1 p.m. and 3:30 p.m. Saturday and Sunday, March 25-26, vs. Rose-Hulman Institute and Simpson College, Kelly Field.

### Outdoor track teams open with strong outings

The outdoor track and field season opened March 18 at the Rhodes College Invitational. The men's team surged to a one-point victory over University of Missouri-Rolla in the seven-team field, while the women finished a strong second, behind Carthage College.

Junior Ira Becton, Clayton, Mo., paced the men's effort, winning both the 400-meter dash and the long jump. Other WU winners were sophomore Jason Hudnall, Mt. Vernon, Ill., who took top honors in the pole vault, and junior Asa Flanigan, Kankakee, Ill., who won the 3,000-meter steeplechase.

Sophomore Jerylin Jordan, Kaneohe, Hawaii, claimed two of the women's six individual victories, winning both the 1,500-meter run and the 3,000-meter run. Other winners were junior Julie Pearman, Desloge, Mo., in the 400-meter intermediate hurdles, first-year student San San Wu, Longmeadow, Mass., in the 800-meter run, sophomore Amy Chi, Olympia Fields, Ill., in the 5,000-meter run, and sophomore Alyce Nelson, Oberlin, Ohio, in the high jump.

This week: 10 a.m. Saturday, March 26, Washington University All-Comers Meet, Bushyhead Track and Francis Field.

### Women's tennis shines on annual spring fling

The women's tennis team, coming off an unblemished 6-0 fall campaign, brought in the spring with three wins in four tries at its annual sojourn to Hilton Head, S.C.

The Bears stormed past Catholic University, Emory & Henry College and Carson-Newman College by 9-0 scores and fell to Swarthmore College by a tight 5-4 count.

Senior Tara Salamone, Greenlawn, N.Y., and sophomore Nida Poosuthasee, Evansville, Ind., shined individually at the first and second singles slots and together as the No. 1 doubles tandem.

Current record: 3-1

This week: 3:30 p.m. Tuesday, March 21, vs. William Woods University, Tao Tennis Center.





Woman's Club President Jan Kardos and Elizabeth "Ibby" Danforth study blueprints of a butterfly garden to be planted on campus in Danforth's honor.

## Woman's Club dedicates butterfly garden to Elizabeth 'Ibby' Danforth

There were butterflies on the invitation and in the centerpieces.

Guests listened to poetry and songs about gardens. But it still came as a surprise to Elizabeth "Ibby" Danforth when, at the end of a March 3 luncheon, members of the Woman's Club announced that they were planting an on-campus butterfly garden in her honor.

"I'm just overwhelmed," said Danforth, wife of Chancellor William H. Danforth, after Woman's Club president Jan Kardos presented her with the blueprints of her gift. "I never dreamt it would be a butterfly garden. It will be a thing of beauty, I know."

The 30-foot by 40-foot garden, with woody plants, perennials and annuals, including butterfly bush, butterfly weed, cone flowers, milkweed, snapdragons and periwinkle, will be planted at the north end of the new psychology building's quadrangle.

The butterfly garden is being created by members of the Woman's Club, with the help of Steve Cline, director of the William T. Kemper Center for Home Gardening at the Missouri Botanical Garden, and June Hutson, senior horticulturist and curator for the Heckman Rock Garden, Dwarf Conifer Garden and Temperate House, also at the Missouri Botanical Garden. Woman's Club members will help the horticulturists plant the garden in September, soon after construction of the new

psychology building is scheduled for completion.

"The garden will be a quiet spot that will invite passers-by to stop and enjoy a respite from busy University life," Kardos said. "We thought it would be a joyful, lasting gift that would remind all of the joy and warmth you have brought to Washington University."

Danforth has been an active member of the Woman's Club since her husband, who has announced plans to retire June 30, became chancellor 23 years ago.

The Woman's Club of Washington University was founded in 1910 by a group of faculty wives from the School of Medicine and Hilltop Campus to stimulate friendships. Almost 85 years later, the club has more than 260 members, primarily composed of wives of faculty and administrators, as well as women who teach and work at Washington University. Club members are involved in myriad activities, including art appreciation, bridge, gardening, gourmet cooking, literature, music appreciation, needlecraft, aerobics and movie discussion groups.

The club also sponsors an annual Assembly Series lecture, contributes to the Olin Library fund, grants a scholarship to an academically deserving female who is changing or returning to a career, and hosts activities for international wives and University newcomers. For more information, call 863-0253.

## Awareness week culminates in powwow

American Indian powwow celebrations and storytelling are just a few of the activities planned for American Indian Awareness Week, Monday, March 27, through April 1. Activities are free and open to the public. The event is sponsored by the Kathryn M. Buder Center for American Indian Studies at the George Warren Brown School of Social Work and the American Indian Center of Mid-America.

Activities culminate with a powwow from 1 to 10 p.m. April 1 at the University's athletic practice fields. (In case of inclement weather, the event will be in the Field House.)

The fifth annual powwow includes American Indian dancers, trading booths, storytelling and food. Special ceremonies include gourd dancing, blanket dancing, intertribal dance contests, flag songs, honor songs and memorial songs.

Unless otherwise noted, all events will be held in Brown Hall Lounge.

From 5 to 7 p.m. Monday, March 27, an American Indian arts and craft demonstration and tasting of American Indian cuisine will be held. Local artists will display authentic porcupine quilling,

moccasin design, shawl-making, feather work and beadwork. A small selection of items will be for sale.

An American Indian documentary film festival will be held Tuesday, March 28, in Room 209 Brown Hall. Featured films are: "The Faithkeeper" at noon, "Wiping the Tears of 7 Generations" at 1 p.m., and "Turner Network — Plains Indians" at 2 p.m.

From 4 to 5:30 p.m. Thursday, March 30, a discussion of American Indian research issues will be led by Jasper Washa, executive director, and Bernard Albaugh, staff member of the Cheyenne Nation's Center for Human Behavioral Studies, Weatherford, Okla.

During the Center for American Indian Studies Alumni Showcase at 4 p.m. March 31, American Indian social work alumni will discuss their work in Indian social service programs on reservations and other locations across the country. At 7:30 p.m. Tom Berryhill Jr., spiritual leader of the Muskogee Nation, will discuss "Cross-Cultural Spirituality With Emphasis on American Indian Tradition."

For information, call 935-4510.

## U.S. News ranks graduate schools

The Program in Physical Therapy at the School of Medicine has been ranked No. 1 in the country and the School of Law jumped 19 places in the annual U.S. News & World Report poll published in the March 20 issue of the magazine.

This is the first year the magazine has rated physical therapy programs in its annual guide to "America's Best Graduate Schools." "This is a tremendous recognition of faculty effort and student quality," said Susan Deusinger, Ph.D., director of the Program in Physical Therapy.

The Washington University School of Medicine retained its rank of No. 5 overall and its No. 1 position in student selectivity. In addition the Department of Internal Medicine was ranked fifth.

"We are extremely proud of our students, who are especially bright and well-prepared academically," said William A. Peck, M.D., vice chancellor for medical affairs and dean of the School of Medicine. "But we are equally proud that they so clearly possess other characteristics one needs to become an excellent physician, including altruism, empathy, dedication and compassion. Despite the rigorous curriculum, a great many of our medical students are involved in volunteer community service activities."

The School of Law was ranked 29th of 177 accredited law schools in the country. "Although the effort to rank law schools remains an inexact science, I am

gratified that the Washington University School of Law's ranking in the survey is now consistent with our reputation among law professors, lawyers and judges, who have long placed us among the top 30 law schools in the country," said Dorsey D. Ellis Jr., dean of the School of Law.

"Washington University School of Law continues to take pride in its outstanding teaching and faculty accessibility to students, factors not included in the U.S. News rankings," Ellis said.

The School of Engineering and Applied Science was ranked 46th this year, marking the first time the school was ranked among the top 50 engineering schools by U.S. News.

"What's leading us in this surge of recognition is our remarkable increase in research activity over the past five years," said School of Engineering and Applied Science Dean Christopher I. Byrnes, Ph.D. "We are ranked 20th nationally in overall research activity, compared with 29th just last year, itself a significant improvement. That's a very impressive designation in light of the many outstanding engineering schools in the United States."

The John M. Olin School of Business ranked 30th among business schools in the country. The school was cited in the story for providing community field-work opportunities.

U.S. News ranked Washington University's doctoral political science program No. 20.

## Staff encouraged to bring daughters to work

Plans are under way for the second annual "Take Our Daughters to Work Day" at Washington University. On April 27, parents — with permission from their supervisors — are encouraged to bring their daughters aged 9 to 15 to the office, laboratory, classroom or wherever else they spend their working hours.

"Take Our Daughters to Work Day," the brainchild of the Ms. Foundation for Women, based in New York City, is a national event designed to give young girls positive messages about work and self-worth.

This year's event, headed by Jane Schoenfeld, associate dean of admission, promises activities designed to introduce the young girls to strong female role models and convey their parents' enthusiasm about work. Library staff, for example, will take the girls for a spin on the Internet. Volleyball Coach Teri Clemens and her NCAA National Championship team of female scholar/athletes plan to spend time with the young visitors and take them on a tour of the South Forty. And the Greenleafs, the University's female cappella singing group, have been asked to perform at lunch.

"Shirley Baker and Elaine Berland

laid the foundation for this program last year, and created some great opportunities for the daughters who came to work with their parents," Schoenfeld said. "There's a lot of enthusiasm on campus. We hope that all parents will consider bringing their daughters to campus on April 27, especially knowing how welcome we plan to make them feel."

Employees who have ideas for activities, questions about the day, or plan to bring their daughters to work on April 27 are encouraged to call Schoenfeld at 935-8505.

## King symposium set

Political activists Eldridge Cleaver, former minister of information for the Black Panther Party, and Bobby Seale, former chair of the party, will speak during the University's 1995 Martin Luther King Jr. Symposium April 2-8.

Other activities include a discussion on activism, a tribute to black women on campus, and "Motown at the Cotton Club," featuring students reading poetry, singing, dancing and acting. A detailed schedule will appear in the March 30 Record. For information, call 935-5994.

## Campus Watch

The following criminal incidents were reported to the Hilltop Campus Police Department March 6-19. Readers with information that could assist the investigation of these incidents are urged to call 935-5555. This release is provided as a public service to promote safety awareness on campus.

### March 6

8:30 a.m. — A student's portable compact disc player and 12 discs were reported stolen from the women's locker room in the Athletic Complex sometime between 1:30 p.m. March 5 and 8:13 a.m. March 6.

### March 9

10:30 a.m. — A student's watch was reported stolen from a bathroom of Kappa Sigma sometime between 2 and 10:30 a.m.

5:40 p.m. — A suspicious male was reported in the women's locker room in the Athletic Complex at 5 and 5:40 p.m.

### March 13

7:03 p.m. — Two rings belonging to a student were reported stolen from a room in Eliot Residence Hall sometime between Feb. 20 and March 13.

### March 14

11 p.m. — A student's laptop computer was reported stolen from a room in Millbrook Apartments sometime between March 4-14.

### March 15

2:30 a.m. — A student reported seeing three subjects running away from a fire outside of Sigma Alpha Epsilon. A couch had been set on fire. Police are investigating the incident.

### March 16

11:10 a.m. — A student's backpack was reported stolen from outside of the dance studio in Mallinckrodt Center.

3:32 p.m. — An employee notified police of a bush and leaves on fire in Bowles Plaza. The fire was extinguished.

### March 18

5:52 p.m. — A student's case containing credit cards and identification was reported stolen from Wohl Center at 9 p.m. March 17. Campus police also responded to 10 reports of vandalism and two reports of stolen bicycles and locks outside of Liggett and Lopata halls. In addition, a Coca-Cola employee reported money stolen from vending machines in Mudd, Eliot and Givens halls sometime between March 10-17.



# For The Record

*For The Record contains news about a wide variety of faculty, staff and student scholarly and professional activities.*

## Of note

**Karen L. O'Malley**, Ph.D., associate professor of anatomy and neurobiology, received a \$642,340 three-year grant from the National Institute on Drug Abuse for a project titled "Modulation of Dopamine Autoreceptor Function by Cocaine."...

**Helen Piwnica-Worms**, Ph.D., associate professor of cell biology and physiology, received a \$979,787 four-year grant from the National Institute of General Medical Sciences for a project titled "P34CDC2 and Cell Cycle Control."...

**Wai-Mo Suen**, Ph.D., associate professor of physics, received the 1995 Outstanding Young Researcher Award by the Overseas Chinese Physicists Association. The award honors Suen's innovative and seminal work in the application of computers in solving Albert Einstein's equations for highly dynamical situations involving black holes and gravitational waves. Suen will receive the \$1,000 award on April 18 during the American Physical Society's meeting in Washington, D.C. ...

**Denise Ward-Brown**, assistant professor of art, will be the featured sculptor in the Saint Louis Art Museum's "Currents" exhibition, which will open on May 16. The show, Ward-Brown's ninth solo exhibit, will include her work titled "Heading East and East," a dedication to the Africans who died on the Middle Passage, the boat voyages from Africa to the United States. Ward-Brown also recently was featured in the book "Gumbo Ya Ya: Anthology of Contemporary African-American Women Artists" published by Midmarch Press. ...

**Elizabeth B. Wattenberg**, a senior biology major, was accepted into the Peace Corps. On June 7 Wattenberg will travel to Togo, West Africa, where she will work on a health extension assignment, focusing on maternal care and child survival.

## Speaking of

During the Computers in Libraries Conference in Washington, D.C., **Shirley K. Baker**, dean of University Libraries, presented a paper on "Future Document Delivery Services."...

**Merton Bernstein**, LL.B., professor of law, was appointed a delegate to the White House Conference on Aging. As a

delegate, Bernstein will attend the conference's meeting to be held May 2-5 in Washington, D.C. Former U.S. Rep. Alan Wheat (D-Mo.) named Bernstein to the post. ...

At the Documentation and Conservation of the Modern Movement conference in Barcelona, Spain, **Susan Bower**, visiting assistant professor of architecture, presented a paper titled "The Sixth Plane and Illumination."...

During the Malawi Constitutional Conference held at the State House in Lilongwe, Malawi, **Peter Mutharika**, J.S.D., delivered papers on "The Presidency and Vice Presidency," "The Structure and Role of Parliament" and "The Relationship Between Branches of Government Under the Constitution." Malawi is working to adopt a new democratic constitution after 30 years under dictatorship rule. The president of the Republic of Malawi and the Constitution Committee of the Malawi Parliament invited Mutharika to deliver the papers. ...

**Murray L. Wax**, Ph.D., professor emeritus of anthropology, will deliver a public address on "The Past, Present and Future of Qualitative Research" at St. Louis University on March 27. In addition, he will discuss the challenges of conducting ethnographic research on

racial problems in public schools at the Society for Applied Anthropology's annual meetings to be held in Albuquerque, N.M., March 29-April 2.

## To press

**Stephen P. Leet**, visiting assistant professor of architecture, wrote an article on the Shanley Building in Clayton, Mo., for *Domus* magazine. He also created a fold-out map containing information on the late St. Louis architect Harris Armstrong for the publication. ...

**Stanley L. Paulson**, J.D., Ph.D., professor of law and of philosophy, wrote a paper on "Radbruch on Unjust Laws: Competing Earlier and Later Views?" that will be published in the *Oxford Journal of Legal Studies* later this year.

## Guidelines for submitting copy:

Send your full name, complete title, department, phone number and highest-earned degree, along with a typed description of your noteworthy activity to For The Record, c/o Carolyn Sanford, Campus Box 1070, or p72245cs@wuvmd.wustl.edu. Items must not exceed 75 words. For information, call Sanford at 935-5293.

## University supercomputer is integral to pioneering biomedical computing research — from page 1

written for the particular geometry of the heart, and gives coordinates that actually mimic the shape of the heart from a passive state to one under stress."

The analysis renders 3-D views of the heart muscle in various stages of deformation. Guccione and Okamoto are using finite element analysis to simulate how the pressure from a square suction cup applied externally to the left ventricle of heart muscle will deform the muscle.

The mathematics that underlies the computer modeling allows the Washington University engineers to run many different variations of what may happen in an experiment on a live animal model. This advantage ultimately saves many hundreds of thousands of dollars and months of research time involved with experiments on animal models.

"We can actually make a movie of physical systems like membranes contracting through these calculations," Katz pointed out. "The movie is not based on pictures, rather it is based on the computer simulation that graphically shows the calculations."

Katz also is an active researcher in finite element methods. He and his graduate students use the powerful computational capabilities of the Challenge to solve the large systems of equations that arise in finite element modeling of complex structures.

## Studying nonlinear systems

Christopher I. Byrnes, Ph.D., dean of the School of Engineering and Applied Science and professor of systems science and mathematics, uses the Laboratory for Computation and Control for his studies of nonlinear systems. He and his graduate students have developed new methods to shape the response of complicated nonlinear physical systems using feedback strategies.

These strategies are of fundamental importance in the design of such feedback systems as automatic pilots, process control, robotics and controls and stabilization of high-performance aircraft. The high-resolution graphical output of the Indigo, coupled with the high-speed computations of the Challenge, produce excellent visualizations of complex dynamical feedback processes. The visualization is a major tool both in understanding the processes and explaining them to others. Much of Byrnes' work is done in collaboration with Alberto Isidori, Ph.D., an engineering professor at the University of Rome with a half-time appointment at Washington University, and with David S. Gilliam, Ph.D., a mathematics professor at Texas Tech University.

A large portion of the lab equipment

was purchased with a grant from the U.S. Air Force Office of Scientific Research. Byrnes is principal investigator in this grant, which is intended to support the research activities of Byrnes, Katz and Barna Szabo, Ph.D., Albert P. and Blanche Y. Greensfelder Professor of Mechanics, as well as related work.

Szabo has developed a computer software program called Design Check that has made the traditional role of engineering handbooks nearly obsolete. Design Check, which he runs on workstations but can be adapted to many personal computers, was just released in 1994 and already has users at Ford Motor Co., McDonnell Douglas Corp., the Israeli aircraft industry, NASA, the Air Force Rome Laboratory, Kelly Air Force Base, European industries and universities in the United Kingdom.

## Efficient problem-solving

Design Check merges the notion of the handbook with the computer. Engineering handbooks are collections of classical solutions derived from various research papers. The solutions can be fairly close to what a designer seeks, but most often they are lacking in accuracy. There is also the risk of misreading or miscopying the data from a design book, presenting an even larger margin for error.

But Design Check is loaded with a long laundry list of pre-solved problems that help engineering designers light upon a problem with both feet running.

The software presents a host of options that allows the designer to address the problem from scratch in a matter of minutes. The handbook approach would take longer and provide less useful information.

"The program was written to help designers make better decisions regarding basic parameters and characteristics of their design," said Szabo. "This is the most creative part of engineering, when a designer is looking at alternative solutions, but it takes so much time to explore these options in detail. We are making this explorative process practical by providing designers with a capability far beyond what handbooks were capable of doing. Design Check makes the notion of handbooks seem like something out of the Stone Age."

Szabo said computer programs such as Design Check speed up the concept-to-product cycle, making industries more productive and competitive.

"Design Check compared with traditional methods is minutes vs. weeks," he said. "It frees engineers to focus their attention on vital areas so they can come up with better solutions to a large variety of engineering problems."

## Using fluid data transfer

There is a whistling that fills the air of the Electronic Systems and Signals Research Laboratory, Room 426 Jolley Hall, directed by Donald L. Snyder, Ph.D., Samuel C. Sachs Professor of electrical engineering. It is the sound of the massively parallel supercomputer MasPar making its billions of calculations per second. The Washington University MasPar, the most powerful supercomputer of its kind in the nation, is integral to the pioneering work of Michael I. Miller, Ph.D., professor of electrical engineering, of radiology and of biomedical computing. On a recent morning, Miller's colleague, Gary Christensen, Ph.D., research instructor in surgery, was calling up brain images on the Onyx workstation, which is up to the speed of the supercomputers that made such amazingly lifelike dinosaurs in "Jurassic Park."

However, Christensen, who holds a joint appointment in radiology, was not interested in rendering what is called surface volume data to make a texture map of a two-dimensional T-Rex. Surface volumes are comprised of basic geometrical shapes, such as triangles, that involve computing a relatively small amount of numbers. Christensen wanted to show volume transformations of human and monkey brains — 3-D data sets of magnetic resonance imaging and computer tomography scans, and other medical imaging techniques involving millions of different numbers.

Working with Miller and Brown University mathematician Ulf Grenander, Ph.D., Christensen has been influential in developing a computerized textbook map of biological variation. Such a map takes into account that, despite the basic similarity between one person's thalamus (or any other anatomical part) and another's, there is little chance that the two are precisely alike. That is a critically important precept for neurosurgeons operating on the brain. The idea is that one day neurosurgeons and neurologists will be able to take the Washington University textbook map and contrast it to the biological coordinates of a real brain for comparison purposes, which they also have created with the aid of MasPar. This will give a "virtual reality" 3-D image of the patient's brain as it is functioning, a real example of biological variation.

The research is funded by the National Science Foundation, the National Institutes of Health and other agencies. It draws together scientists in the electrical engineering, surgery and radiology departments. Miller, Christensen and former Washington University mechanical engineering professor Richard

Rabbitt, Ph.D., now at the University of Utah, are the first researchers to do a 3-D fluid transformation of the data. This presents a picture of the volumes as a moving fluid, the normal environment of the brain. The fluid transformation analyzes the speed of the data and keeps it a coherent image so it can be fitted with the textbook.

Such a breakthrough relies on the speed of the MasPar supercomputer and the graphics capability of the Onyx to show the images. The Onyx has the built-in capacity to connect with a videocassette recorder (VCR), which then shows "movies" of the different brains for presentations the Washington University group makes to researchers nationwide. The VCR is important because scientists at other institutions don't have the computing power to view the Washington University research.

Christensen is collaborating on breakthrough research with Miller and David Van Essen, Ph.D., Edison Professor of Neurobiology and head of the Department of Anatomy and Neurobiology. Boxes on the Onyx workstation display four different images of a monkey's visual cortex. The upper left is the textbook image; the upper right is an image of the "target" anatomy; the lower left the elastically deformed textbook image; the lower right the "difference" image between the fluid transformation of the textbook and target anatomies. The fluid transformation box showed the marked biological contrast between the textbook occipital lobe, the site of the visual cortex, and the study's occipital lobe.

"What we did is change the shape of the textbook into the shape of the individual, creating an individualized textbook of this one monkey," Christensen said. "If you know the location of the visual cortex in the textbook, you can find it in the individual and then determine if it's shaped differently, if it's normal or abnormal. That's the power of this technique — moving individual shape variations and then mapping out where the functioning brain of the individual is much more accurately than is currently possible."

Christensen and Miller also are working with Michael W. Vannier, M.D., professor of radiology, Marcus E. Raichle, M.D., professor of neurology, and Jeffrey L. Marsh, M.D., professor of surgery, and others, on deforming human data.

"The hope is that one of these days we will have this kind of data for everyone who walks in off the street," Christensen said.

— Tony Fitzpatrick



# Opportunities & personnel news

## Hilltop Campus

The following is a list of positions available on the Hilltop Campus. Information regarding these and other positions may be obtained in the Office of Human Resources, Room 126 North Brookings Hall, or by calling 935-5990. Note: All positions require three letters of recommendation.

### Coordinator of Custodial Services

**950201. Facilities Planning and Management.** Requirements: bachelor's degree preferred; two years supervisory experience preferred, particularly with a quality control emphasis, such as house-keeping department of a major hotel chain or hospital; 24-hour availability for emergencies and willingness to work during evening, graveyard and weekends on a regular basis; willingness to accept hands-on involvement; high energy level; enthusiastic, personable individual with a passion for detail and thoroughness; willingness to be outspoken about concerns and a compassionate attitude in listening to problems; proven ability to take a proactive approach to management with an obsession for providing the campus community a pleasing environment that meets their various needs; ability to promote teamwork among the community contractor and University staff. Resumé required.

### Programmer Analyst III

**950203. Computing and Communications.** Requirements: bachelor's degree; good language and people skills; ability to work with minimal supervision; ability to learn quickly and adapt to new circumstances; experience with use and management of desktop computers; knowledge of desktop database technology in a client/server environment highly de-

sired; familiarity with DOS, Macintosh systems; knowledge of NOVELL, Appletalk, Windows and TCP/IP networking highly desired. Resumé required.

### Assistant Director of Recruitment

**950208 and 950209. Office of Undergraduate Admission.** Two openings available. Requirements: bachelor's degree, preferably from Washington University; ability to effectively relate to prospective students and parents; enthusiasm for his/her University academic experience; demonstrated leadership ability in extracurricular activities; flexibility; strong organizational skills and self-motivation; ability to perform effectively in team and individual work settings; willingness to work long days and weekends; a high level of energy; strong dedication toward providing a "personalized touch"; a sense of humor. These are two-year appointments with the possibility of an extension. Resumé required.

### Customer Service Representative

**950213. Facilities Planning and Management.** Requirements: high school diploma or equivalent, associate's degree preferred; typing 40 wpm with accuracy; good English, grammar and telephone etiquette skills; personal computer data entry experience; dispatching experience preferred, especially pertaining to facilities management; ability to work with diverse groups of people; excellent customer service experience; ability to work independently with little supervision; ability to promote teamwork. Clerical tests required.

### Administrative Assistant

**950215. Board of Trustees.** Requirements: some college, bachelor's degree preferred; typing 50 wpm with accuracy; efficiency in word processing and data processing; creativity in developing and improving existing records and forms; skill in

bookkeeping, both keeping track of budgets and expenses and developing reports for the Board of Trustees account; skill in proofing minutes and reports; appreciation of need for accuracy, even in routine things; interest in maintaining organized data and filing systems for efficient retrieval; pleasantness with fellow workers and external constituencies on the phone; willingness to work occasionally outside of office hours to set up meetings; five years secretarial experience. Clerical tests required.

### Department Secretary

**950216. Department of Anthropology.** Requirements: associate's degree or equivalent; typing 60 wpm with accuracy; ability to answer routine questions of students concerning registration procedures, course locations, faculty office hours and other departmental procedures; proficiency in WordPerfect. Clerical tests required.

### Computer Specialist, Part Time

**950219. Department of Earth and Planetary Sciences.** Requirements: bachelor's degree; knowledge of C programming, UNIX and MS-DOS; familiarity with Macintosh and knowledge of TCP/IP and LocalTalk networking preferred; excellent communication skills; self-motivation; ability to work under minimal supervision; ability to interact well with faculty, students and staff; capable of independent problem-solving involving both hardware and software. Resumé required.

### Associate Director of Executive Programs

**950222. John M. Olin School of Business.** Requirements: master's degree in business administration or equivalent; five years of executive development or university administration experience preferred; some weekend and evening availability and some travel. Duties: manage all operations of Executive Programs, in-

cluding customized executive education programs and the Executive MBA program; custom program and management, and client support; manage the operating budget and accounting controls as well as staff management. EMBA program responsibilities include course scheduling, planning and logistics of annual residencies, and supporting the director in student advisement and recruiting. Resumé required.

## Medical Campus

The following is a partial list of positions available at the School of Medicine. Employees who are interested in submitting a transfer request should contact the Human Resources Department of the medical school at 362-4920 to request an application. External candidates may call 362-7195 for information regarding application procedures or may submit a resumé to the Human Resources office located at 4480 Clayton Ave., Campus Box 8002, St. Louis, Mo., 63110. Please note that the medical school does not disclose salary information for vacancies, and the office strongly discourages inquiries to departments other than Human Resources.

### Network Engineer

**940772-R. Medical Networking Services.** Requirements: bachelor's degree in computer science or electrical engineering, plus three years related experience; working knowledge of TCP/IP, DECNET, LAT, Appletalk, IPX, LAST, LAD protocols.

### Computer Programmer I

**950214-R. Library.** Requirements: associate's degree in computer science, bachelor's degree preferred; experience with software development languages (3GLs and 4GLs); experience with databases and Query languages.

### Secretary II

**950538-R. Ophthalmology.** Requirements: high school graduate or equivalent; three years secretarial experience, preferably in an academic setting; supervisory experience helpful; experience with word processing, Macintosh and Microsoft Word; typing 55 wpm.

### Programmer Analyst I

**950541-R. Ophthalmology.** Requirements: bachelor's degree; experience us-

ing SAS; experience in research data management preferred; experience with IBM personal computer (DOS and Windows); ability to upload, download and manage disk files and directories.

### Project Assistant

**950542-R. Ophthalmology.** Requirements: master's degree in public health or epidemiology; three years experience in academic coordinating center, managing clinical studies; experience with statistical and database programming, preferably SAS.

### Preventive Maintenance Mechanic

**950564-R. Plant Maintenance.** Schedule: 4 p.m.-12:30 a.m. Mondays through Fridays. Requirements: high school graduate or equivalent with institutional and heating, ventilation and air conditioning experience.

### Facilities, Maintenance and Service Coordinator

**950567-R. Plant Maintenance.** Requirements: high school graduate or equivalent; minimum of two years related experience in skill trade functions; demonstrated ability to perform varied maintenance tasks.

### Secretary I

**950633-R. Neurology.** Schedule: part time, 20 hours per week, flexible. Requirements: high school graduate or equivalent, some college preferred; experience with library research using computers preferred; typing 50 wpm.

### IBC Assistant II/Floater II

**950638-R. Washington University Shared Billing Collection Service.** Requirements: high school graduate or equivalent; two years related work experience; knowledge of IDX scheduling, BAR and CERNER application systems, third-party reimbursement, including HMO and PPO; knowledge of medical terminology. Position located at West Campus.

### Secretary II

**950675-R. Allergy and Immunology.** Schedule: part time, 21 hours per week, 8 a.m.-12:20 p.m. Mondays through Fridays. Requirements: high school graduate or equivalent, some college or secretarial training preferred with two years related office experience, preferably in a research or academic setting; experience with WordPerfect 5.1; typing 50 wpm.

### RN Staff Nurse

**950684-R. Cardiology.** Schedule: part time, 20 hours per week, 8:30 a.m.-5 p.m. Mondays and Fridays, 8:30 a.m.-12:30 p.m. Thursdays. Requirements:

graduate of an approved school of nursing with current Missouri license; knowledge of computers and transtelephonic equipment.

### Application Support Analyst

**950687-R. Washington University Shared Billing Collection Service.** Requirements: high school graduate or equivalent, bachelor's degree in related area preferred; two years support experience. Responsibilities: analysis, installation and ongoing support of IDX corporations enrollments, referrals, capitation/risk management and claims adjudication computer applications.

### Data Entry Operator I

**950697-R. Psychiatry.** Schedule: part time, 20 hours per week, 8 a.m.-noon. Mondays through Fridays. Requirements: high school graduate or equivalent; CRT experience preferred; typing 35 wpm.

### Clinic Coordinator I

**950704-R. Neurological Surgery.** Requirements: licensed registered nurse with experience in direct patient care/contact, preferably neurosurgical; experience in an outpatient setting.

### Professional Rater II

**950705-R. Allergy and Immunology.** Schedule: part time, 20 hours per week, flexible hours, including some evenings and weekends. Requirements: associate's degree, bachelor's degree in social or physical science preferred; experience in data entry and computers highly preferred.

### Clerk I

**950725-R. Cardiology.** Schedule: part time, 20 hours per week, 1-5 p.m. Mondays through Fridays. Requirements: high school graduate or equivalent, experience with CRT; IBM word processing experience preferred; typing 30 wpm.

### Statistical Data Analyst

**950742-R. Biostatistics.** Requirements: bachelor's degree, master's degree preferred; SAS experience with data analysis or data management. Duties include assisting investigators in the design of experiments, clinical trials and epidemiological studies.

### User Support Specialist

**950748-R. Medical Computing Services.** Requirements: bachelor's degree in related discipline or equivalent technical training preferred; experience with DOS Windows, MACROS and common office support software packages.

## Drug prevents opportunistic infections — from page 1

The study is the first long-term comparison of these drugs. The patients, all of whom had not previously had PCP, were randomly assigned to receive one of the drug therapies.

Over the course of the three-year study, the risk of contracting PCP in each of the three groups was 18 percent, 17 percent and 21 percent, respectively. However, patients with CD4 counts less than 100 benefited most from trimethoprim-sulfamethoxazole or dapsone.

In all, 137 cases of PCP were reported.

Trimethoprim-sulfamethoxazole and dapsone are systemic therapies, taken in pill form. Pentamidine is an aerosol spray, which has a localized effect on the lungs.

The greatest gains in preventing PCP are likely to come from identifying more people with HIV infection, Powderly said. "From a public health perspective, this study is very important. We're still seeing a lot of PCP, but we're seeing it mostly in people who have not been diagnosed with HIV and, therefore, have not had an opportunity to get preventive therapy."

In the fluconazole study, researchers studied whether the drug could reduce the incidence of life-threatening, invasive fungal infections in patients with CD4 counts less than 200. Fluconazole already has been shown to prevent superficial fungal infections in smaller, short-term studies, but there have been no studies evaluating it as a primary preventive therapy. Physicians also were uncertain about whether the drug has long-term toxicity.

Invasive fungal infections such as cryptococcal meningitis and histoplasmosis occur in 5 to 10 percent of AIDS patients and cause death in 10 to 20 percent of those infected.

The researchers found the benefit of fluconazole therapy was greatest in pa-

tients with CD4 counts less than 50.

The researchers found few drug-related side effects of fluconazole, suggesting the therapy is safe for long-term use. Fluconazole also was effective in preventing superficial fungal infections, such as thrush.

Based on the study's results, the researchers recommend that fluconazole be considered for long-term use in AIDS patients with CD4 counts less than 50. The drug, however, is expensive, costing \$15 to \$20 a day.

AIDS patients who live in regions of the country where fungal infections are more common — namely the Southeast and Midwest — may be more likely to benefit from fluconazole, Powderly added.

Until researchers find a cure for the AIDS virus, the best hope for improving the lives of patients is with effective control of opportunistic infections, Powderly said. Most AIDS patients ultimately die of infections and cancers that strike after the virus weakens the body's immune system.

"As long as the virus is unchecked, AIDS patients will continue to experience progressive destruction of their immune systems and be vulnerable to other infections and cancers," Powderly said. "It's our hope that effective control of the virus will eliminate the need for preventive therapy. In the interim, we need to have therapies that maximize patients' quality of life and, ideally, help prolong survival."

AIDS has recently become the leading cause of death among Americans 25 to 44 years old, according to the Centers for Disease Control and Prevention in Atlanta. More than 440,000 cases of AIDS have been reported since the epidemic was first recognized in 1981. So far, more than 250,000 people have died of AIDS or AIDS-related causes.

— Caroline Decker

## Q&A

### Addressing employee questions concerning the Washington University community

**Q:** I learned in the Feb. 16 issue of the Record that there is an employee fitness program over the lunch hour for Medical Center employees. Are there any employee fitness programs (i.e. organized aerobic programs) offered at the Athletic Complex for Hilltop employees. If so, how much does it cost?

**A:** The Department of Athletics currently is offering a step aerobics class that is open to employees. The class, which meets three times a week through May 5, already is full. For information about future classes, call 935-5128.

In addition, the Campus Y is offering three different aerobics classes for its second spring session. Participants can join after the initial session. YRobic Intermediate, a high-energy, low impact class, meets from 5-6 p.m. Tuesdays and Thursdays, March 21 through April 20, in the Wydown Multipurpose Room.

The cost for faculty and staff is \$35. A step aerobics class is offered from 5-6 p.m. Mondays and Wednesdays, March 20 through April 19, in the Wydown Multipurpose Room. The cost for faculty and staff is \$40. A "Firm and Tone" class is offered from 5-6 p.m. Mondays and Wednesdays, March 20 through April 19, and from 6-7 p.m. Tuesdays and Thursdays, March 21 through April 20, in Lambert Lounge, Room 303 Mallinckrodt Center. The cost for faculty and staff is \$35. For more information about Campus Y aerobic programs, call 935-5010.

Submit questions about the University, which have broad appeal, to Q&A, c/o Susannah Webb, Campus Box 1070, or p72245sw@wuvmd.wustl.edu. Questions will be answered by the appropriate administrator. Though employee questions will appear anonymously in the Record, please submit your full name, department and phone number with your typed question. For information, call Webb at 935-6603.