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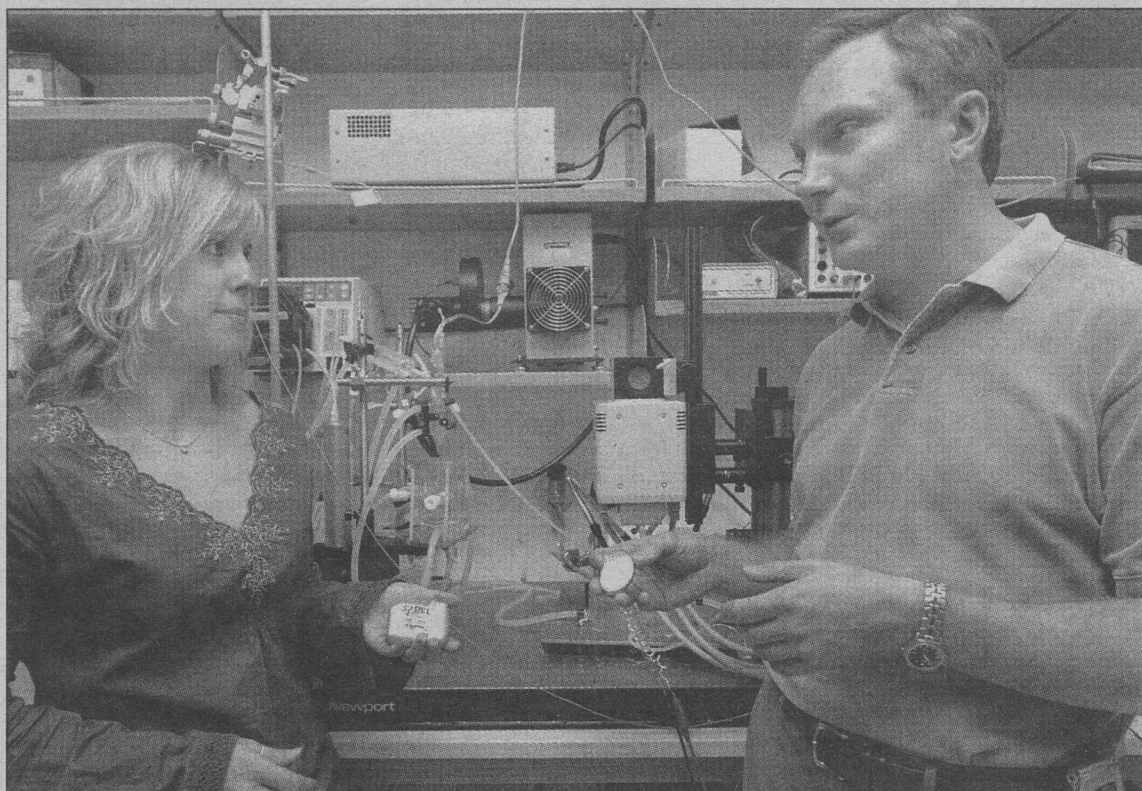
Record

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Washington University in St. Louis



Crystal Ripplinger, graduate student in biomedical engineering, and Igor Efimov, Ph.D., associate professor of biomedical engineering, discuss their work on implantable defibrillators in Efimov's laboratory. The two are co-authors of a paper describing a new method of defibrillation. Ripplinger holds the actual model defibrillator tested in the laboratory; Efimov's smaller model is the size they want the new product to be. Behind them is the equipment they use to test devices.

Engineers aim to improve defibrillators

BY TONY FITZPATRICK

When it comes to affairs of the heart, love taps are preferred over love jolts.

That's the result of a team of heart researchers including Igor R. Efimov, Ph.D., associate professor of biomedical engineering, trying to devise a better implantable heart defibrillator. Efimov and his colleagues have modeled a system where an implantable heart defibrillator focuses in on rogue electrical waves created during heart arrhythmia and busts up the disturbance, dissipating it and preventing cardiac arrest.

The jolt is much milder than that produced by presently used implantable devices, in theory sparing the heart any damage from the trauma, lessening the shock to the patient and reducing the amount of energy required for the device to do its life-saving work.

The smaller energy requirement, 5-10 times less than what is needed today, opens up the possibility of manufacturing even smaller devices that would last longer and be more comfortable to wear. This would free cardiac patients from the discomfort and danger of having to have a device replaced frequently.

Smaller devices would last longer and be more comfortable to wear. This would free cardiac patients from the discomfort and danger of having to have a device replaced frequently.

The largest killer of Americans is heart disease, claiming 1 million annually. About 300,000 of these deaths are attributed to arrhythmia.

The first line of defense against arrhythmia is defibrillation, which requires that the patient be near a trained physician and a defibrillator, unless the person is one of 175,000 worldwide who wears an implantable defibrillator.

"Improvements in heart defibrillation devices can save hundreds of thousands of lives," Efimov said. "Consider that 300,000 Americans die from arrhythmia yearly. Of all stricken, only 2 percent to 3 percent of them survive."

"Under optimal conditions, the survival rate can be brought up to 50 percent to 60 percent."

Efimov and his colleagues Valentin Krinsky, Ph.D., and Alain Pumir, Ph.D., of the Nonlinear Institute of Nice, France, published their results in a recent issue of *Physical Review Letters*.

Eighty percent of the population wearing defibrillators have had a previous infarction, which plays a role in how Efimov's model works. An implantable defibrillator functions like a computer, comprising mainly a battery and large capacitor, and senses elec-

See Defib, Page 5

Exhibits on campus highlight presidents

Flags also on display at Athletic Complex

BY ANDY CLENDENNEN

Sometimes even presidents let their guard down.

And now, the public has an opportunity to see just how much in some lesser-known photographs.

The traveling exhibition *The Presidential Image: 60 Years of the Best of White House Photography* is making a stop at the University, in conjunction with the Oct. 8 presidential debate.

The exhibition opened Sept. 25 and will continue in the lobby of Olin Library's Level 1 through Oct. 11. It comprises 68 prize-winning photographs culled from the current administration back to the Franklin D. Roosevelt years.

Included are some of the more famous photographs, such as a young John F. Kennedy Jr. saluting his father's casket, and some more obscure photos from behind the scenes.

"The Presidential Image exhibit

Debate parking restrictions

Parking and traffic patterns for the University will be severely disrupted from Oct. 1-8. See story, Page 6.

on campus is great preparation for the upcoming presidential debate," said Shirley K. Baker, vice chancellor for information technology and dean of libraries. "The photographs are stunning and, being in the lobby of Olin Library, are a magnet for students entering or leaving the building."

"We are pleased that the redesign of Olin provides such a good venue for this exhibit."

The exhibit is produced by the University of Missouri's School of Journalism and the University of Miami's School of Communication. The images were selected from the winning photos in the

See Exhibits, Page 6

National health-care dilemmas to be addressed at conference

BY KIM LEYDIG

Health care in America is at a crossroads.

What are the major political issues facing health care? How do we reduce the existing significant disparities in timely access to health-care delivery? And can we prevent biomedical advances from "breaking the bank?"

Prominent national experts in health and health-care policy will address those and other important issues affecting the future of medicine at the "Health Care Challenges Facing the Nation" conference from 7:30 a.m.- 4:45 p.m. Oct. 7 at the Eric P. Newman Education Center.

The free conference — sponsored by the Center for Health Policy in the Olin School of Business, the Weidenbaum Center on

the Economy, Government, and Public Policy in Arts & Sciences and the Brookings Institute in Washington, D.C. — aims to examine the heart of our nation's health-care system and the policies that govern it.

"Dramatic progress in medical science is producing unimagined advances in health care," said conference leader William A. Peck, M.D., the Alan A. and Edith L. Wolff Distinguished Professor of Medicine and director of the Center for Health Policy. "The best health care in the world can be found in America, but major obstacles must be overcome to ensure all Americans have access to quality health care at a reasonable cost."

Challenges include ensuring timely access to quality health

See Health care, Page 6

Students open online-sales, bike shops

BY NEIL SCHOENHERR

The face of the row of student businesses on the main level of Gregg House has changed slightly this year.

Bears' Bikes, a bicycle rental shop, and Campus Easy Sales, a service aimed at selling customers' items online, have opened in the space formerly occupied by The Mane Location.

"We are very excited to have these two new businesses," said Karen Grimes, operations manager for the Student Entrepreneurial Program. "This brings the total number of student-run businesses to eight, with more than 38 participants. The program is flourishing and gaining in popularity each year."

The Student Entrepreneurial Program was created in fall 1999, and the first few businesses

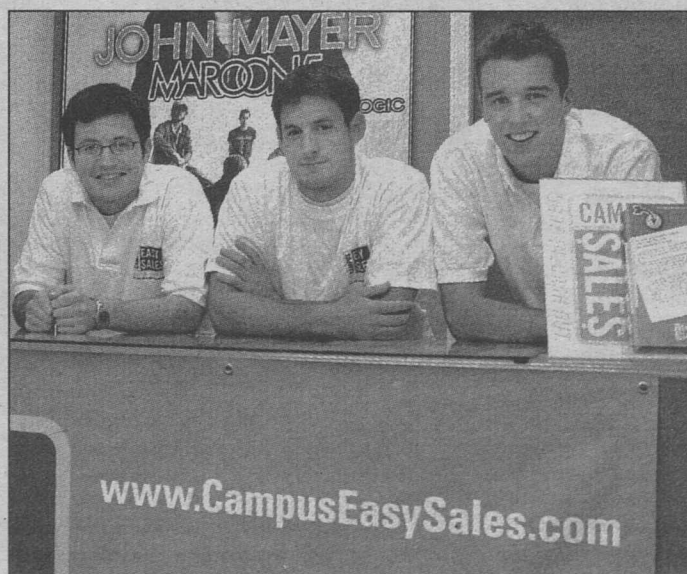
opened their doors in spring 2000.

Bears' Bikes rents Schwinn 21-speed mountain bikes to students for a yearly fee of \$150. Renters are provided guaranteed free maintenance for the year and a lock, and bikes can be stored during the winter break.

"We thought having a bicycle-rental company on campus would give students the ability to rent a bike for a year at a much lower cost without worrying about shipping costs if they want to ship their bike from home, or worry about the hassles of bringing it to campus on the top of their car," said sophomore Sam Gordon, one of the store owners. "Bears' Bikes will also reduce the number of cars on campus, reducing pollution along with parking problems."

Campus Easy Sales provides the service of

See Businesses, Page 6



Seniors (from left) Lee Garber, Phil Katz and Wyeth Killip are owners of Campus Easy Sales, located on the main level of Gregg House.

BILL STOVER



Faculty Achievement Awards Chancellor Mark S. Wrighton (center) visits with Philip D. Stahl (left) and Jonathan S. Turner at a Sept. 23 awards ceremony that was part of the Assembly Series. As winners of the University's 2004 Faculty Achievement Awards, Stahl and Turner spoke and received plaques at the event. Stahl, Ph.D., the Edward Mallinckrodt Jr. Professor and chair of the Department of Cell Biology and Physiology, won the Carl and Gerty Cori Faculty Achievement Award. Turner, Ph.D., the Henry Edwin Sever Professor of Engineering in the Department of Computer Science and Engineering, won the Arthur Holly Compton Faculty Achievement Award.

GWB's Lawlor named to Gordon professorship

By JESSICA MARTIN

Edward F. Lawlor, Ph.D., dean of the George Warren Brown School of Social Work, has been appointed the inaugural William E. Gordon Professor, Chancellor Mark S. Wrighton announced.

"Edward Lawlor is a distinguished academic leader and contributor to the advance of social work education and scholarship," Wrighton said. "An expert in health-care policy related to the aging population, an active leader in community issues and the leader of the George Warren Brown School of Social Work, Dean Lawlor is the ideal person to be the inaugural holder of the William E. Gordon Professorship."

The installation will be Oct. 5 in Holmes Lounge. Lawlor became GWB dean July 1. His research focuses on access to health care, hospital reimbursement policy, health insurance, the health-care work force, and Medicare and Medicaid policy.

Lawlor is the founding editor of the *Public Policy and Aging Report*, a quarterly journal on policy and research in an aging society, and is the author of *Redesigning the Medicare Contract: Politics, Markets, and Agency*, which looks at Medicare as a social contract between society at large and its most vulnerable citizens.

Before GWB, Lawlor was dean of the School of Social Service Administration at the University of Chicago. He also served on the faculty of the Irving B. Harris Graduate School of Public Policy Studies and the Robert Wood Johnson Clinical Scholars Program, and was a senior scholar at the McLean Center for Clinical Medical Ethics.

From 1990-98, he was director of the Center for Health Administration Studies and the Graduate Program in Health Administration and Policy. He directed the University of Chicago/American International Health Alliance program in health management and policy in Romania.

Lawlor has been engaged in

community organizations as well as urban, state and national policy initiatives. In Chicago, he was a member and secretary of the Chicago Board of Health for 10 years. He chaired statewide commissions and task forces on health policy in Illinois for three governors.

He has served as a director for research and service organizations in child welfare, aging, HIV and AIDS services, health services and hospice, and employment and aging. He is on the boards of the National Organization for Research at the University of Chicago and the National Center on Women and Aging.

Lawlor earned a bachelor's degree in economics, government and legal studies from Bowdoin College. Before earning a doctorate from the



Lawlor

Florence Heller Graduate School for Advanced Studies in Social Welfare at Brandeis University, he was a research associate at the John F. Kennedy School of Government at Harvard University.

Lawlor's professorship is named in honor of William

Gordon, professor in the School of Social Work from 1951-1978.

In 1951, Dean Benjamin Youngdahl recruited Gordon to establish one of the nation's first doctoral programs in social work. Gordon awarded the University's first doctorate in social work to Sidney E. Zimbalist in 1955.

In 1977, Gordon received a Distinguished Faculty Award from the University, and in the same year he received the first Richard Lodge Prize of the Adelphi University School of Social Work for his contributions to the development of social work theory and for the enhancement of professional practice.

Gordon was an officer of the National Association of Social Workers, and in 1978 the organization honored him with its Resolution of Appreciation.

He was named professor emeritus in 1978.

Olin dean search committee formed

By EILEEN P. DUGGAN

Chancellor Mark S. Wrighton has appointed a 15-member committee to identify candidates for the position of dean of the Olin School of Business.

Stuart I. Greenbaum, Ph.D., recently announced his intention to step down as dean effective June 30. After a sabbatical, he plans to resume his position as Bank of America Professor at the Olin School.

"Since my arrival at Washington University in 1995, my admiration and appreciation for the Olin School of Business has grown," Wrighton said. "The school serves many important purposes and is the University's best link to the business community regionally, nationally and internationally."

"Much progress has been made under Dean Greenbaum's leadership, and I am confident we can identify and attract an outstanding successor. Selecting the next dean holds the potential for further advancing the visibility, impact and mission of the John M. Olin School of Business."

Anjan V. Thakor, Ph.D., the John E. Simon Professor of Finance in the Olin School, has been appointed chair and spokes-

Search committee members

Chancellor Mark S. Wrighton has appointed **Anjan Thakor**, Ph.D., the John E. Simon Professor of Finance in the Olin School of Business, to chair a 15-member dean search committee.

Wrighton also named the following individuals to the committee:

David J. Ader, undergraduate in the Olin School; **Kenneth C. Bardach**, associate dean in the Olin School; **Martin W. Cripps**, Ph.D., the John K. Wallace Jr. and Ellen A. Wallace Distinguished Professor of Managerial Economics;

Beth C. Hunsicker, master of business administration student; **Nicole Thorne Jenkins**, Ph.D., assistant professor of accounting; **Charles F. Knight**, chair of the Olin School of Business National Council and chairman emeritus of Emerson;

James T. Little, Ph.D., professor of

finance and economics; **William J. Marshal**, Ph.D., member of Olin School of Business National Council and president of NISA Investment Advisors; **Judi McLean Parks**, Ph.D., the Reuben C. and Anne Carpenter Taylor Professor of Organizational Behavior;

Chakravarthi Narasimhan, Ph.D., the Philip L. Siteman Professor of Marketing; **Jackson A. Nickerson**, Ph.D., associate professor of organization and strategy; **Tava L. Olsen**, Ph.D., associate professor of operations and manufacturing management;

William A. Peck, M.D., the Alan A. and Edith L. Wolff Distinguished Professor of Medicine and director of the Center for Health Policy; and **Joel Seligman**, J.D., dean of the School of Law and the Ethan A.H. Shepley University Professor.

person of the search committee.

The committee is charged with conducting a nationwide search for suitable candidates, with special attention paid to encouraging women and members of minority groups to apply.

"It is imperative that all final candidates embrace a commitment to a diverse community, realizing the benefits we achieve from diversity," Wrighton said.

The committee will identify a
See Search, Page 6

Simpson heads retirees with 46 years of service

By ANDY CLENDENNEN

It was 1957.

Ford Motor Co. unveiled the Edsel; *American Bandstand*, with 27-year-old host Dick Clark, made its network television debut; Jerry Lee Lewis recorded "Great Balls of Fire" and the USSR launched *Sputnik 1*, the first satellite.

And Josephine Simpson first reported for work at Washington University.

Simpson was one of 45 retirees — about 25 of whom were in attendance — honored at a luncheon hosted by Chancellor Mark S. Wrighton Sept. 21 at Whittemore House.

With 46 years of service, Simpson had the longest tenure of any of those recognized.

"When I started here, it was a streetcar campus," Simpson said. "Now it's totally different. I watched them build every dorm, watched them build the library. When I came here, originally it was the old library."

Although she was from the area and knew her way around the University, she had no idea that she would spend nearly five decades on the Hilltop Campus.

Especially in the athletic department, which was then known as the men's physical education department.

"I was fresh out of a convent school and was never around boys that much," she said, "so a lot of teasing took place — and lots of blushing!"

"But I'm not the least bit athletic. How I ended up in the athletic department I'll never know."

"Little did I know when I was at St. Marks School and being thrown off the baseball field when I was playing softball that I would end up here."

But here she was, and here she stayed.

"It's wonderful working with educated people, and in athletics we have the scholar-athletes, and it's an atmosphere that's a little different from anywhere else in the University," she said. "The students add a lot of joy to your life."

"The students are lovely, lovely people, and they don't get enough credit for what fine young men and women they are. It's been a very, very rewarding and enriching experience for me."

The 45 retirees recognized had



(From left) Josephine Simpson, Sarah Stanfield and Alberta Thomas are presented bouquets of flowers by Chancellor Mark S. Wrighton, marking the longest tenures of those in attendance at a luncheon for retirees Sept. 21 at Whittemore House.

a total of 998 years of service to the University.

Traditionally, special recognition is afforded to those retirees in attendance at the luncheon who have the greatest number of years of service with the University. In addition to Simpson, Alberta Thomas (41 years) and Sarah Stanfield (35 years), both from the School of Medicine, also received a basket of flowers.

All retirees were given walnut

plaques, presented by Wrighton; Larry J. Shapiro, M.D., executive vice chancellor for medical affairs and dean of the School of Medicine; Stuart I. Greenbaum, Ph.D., dean of the Olin School of Business and the Bank of America Professor; James E. McLeod, vice chancellor for students and dean of the College of Arts & Sciences; Richard A. Roloff, executive vice chancellor; and Barbara A. Feiner, vice chancellor for finance.

List of retirees

Hilltop, West campuses

Frederick Anderson, 20 years; George Burris, 33 years; Elisabeth Davis, 17 years; James Gahn, 23 years; Andrew Hargrove, 36 years; Steven Hazel, 13 years; Joyce Jackson, 23 years; Marianna Mercurio, 36 years; Bruce Miller, 10 years; Janet Olliges, 19 years; James Pfl, 11 years; Jane Rahmoeller, 36 years; Darlene Schoon, 18 years; Paul Schoon, 17 years; Mary Kay Shehan, 35 years; Yvonne Simmons, 32 years; Josephine Simpson, 46 years; Bernard Sunier, 28 years; Rodney Wegermann, 26 years.

Medical Campus

Linda Baldwin, 15 years; Myrtle Barrett, 21 years;

George Bickmore, 33 years; Joan Collins, 29 years; Rebecca Davis, 14 years; Barbara Decepidia, 14 years; Jacqueline Dudley, 10 years; Thomas Gamble, 10 years; Barbara Gearing, 26 years; Ann Hattori, 24 years; Yong-Yue He, 10 years; Arthur James, 22 years; Martha Kraatz, 28 years; Patricia Maerli, 17 years; Carolyn Miles, 10 years; Nettie Patterson, 12 years; Leland Paule, 29 years; Elizabeth Portell, 19 years; Steve Rodewald, 24 years; Richard Rudde, 12 years; Sarah Stanfield, 35 years; Alberta Thomas, 41 years; Ross Verbisky, 20 years; Sharon Walther, 15 years; Ann Wilder, 10 years; Rosemary Wood, 19 years.

School of Medicine Update

Getting hip Orthopaedic surgeons preserve joints in young adult patients

BY JIM DRYDEN

Hip replacement surgery provides pain relief and improved function for patients with advanced hip disease, but it's not a great solution for young people.

"For an adolescent or young adult patient — really for any patient under 50 — a hip replacement is sub-optimal because of activity restrictions and the fact that the synthetic hip joint is likely to wear out with time," said John C. Clohisy, M.D., assistant professor of orthopaedic surgery.

"A patient who gets a hip replacement at a very young age may require multiple hip surgeries over the course of their lifetime."

Clohisy is one of a growing number of surgeons interested in preserving the natural hip while correcting defects in the joint.

In an operation that takes two to four hours, Clohisy and his

colleagues cut the bones around the hip socket and repositioned them — radically changing the hip's structure. This technique is called the Bernese Peri-Acetabular Osteotomy.

"Most of these patients have an underlying deformity of the hip socket called hip dysplasia, and many have some degree of osteoarthritis," Clohisy said. "So as they get older, it's likely that they may need a hip replacement. Our goal is to surgically delay the progression of osteoarthritis and to prolong the life of their true hip joint."

According to Clohisy, osteotomy surgery is designed for relatively young, healthy patients. Those with multiple medical problems or advanced arthritis are not good candidates.

Patients don't need a cast, but they do need to stay in the hospital for several days and walk with crutches for several weeks.

Christopher Mackey didn't

realize he needed hip surgery. For several months, when he pitched a baseball, there was a popping sound coming from his left hip.

At first, there wasn't really any pain involved, but then his groin muscle started to hurt because it was being aggravated by his hip deformity, the same deformity that caused it to pop.

"One way to explain why these patients don't get symptoms until they are young adults is that the cartilage in the hip can function in an adverse environment for a long time," Clohisy said.

"But eventually, just as the tread on a tire will go bad, when a patient has underlying problems, their cartilage begins to wear out over time and treatment becomes necessary."

Mackey was diagnosed with congenital hip dysplasia. In the past, treatment for disorders like Mackey's frequently involved little more than restriction of activities, anti-inflammatory medicines and painkillers.

Adolescents with hip disease experienced pain, difficulty getting around and doctor's orders to stop doing activities that put stress on the hip joint.

These patients were too young for hip replacement surgery and too old for the pediatric procedures used to correct deformities in very young children. Ten to 15 years ago, many young adult patients did not even get definitive treatment for their hip problems.

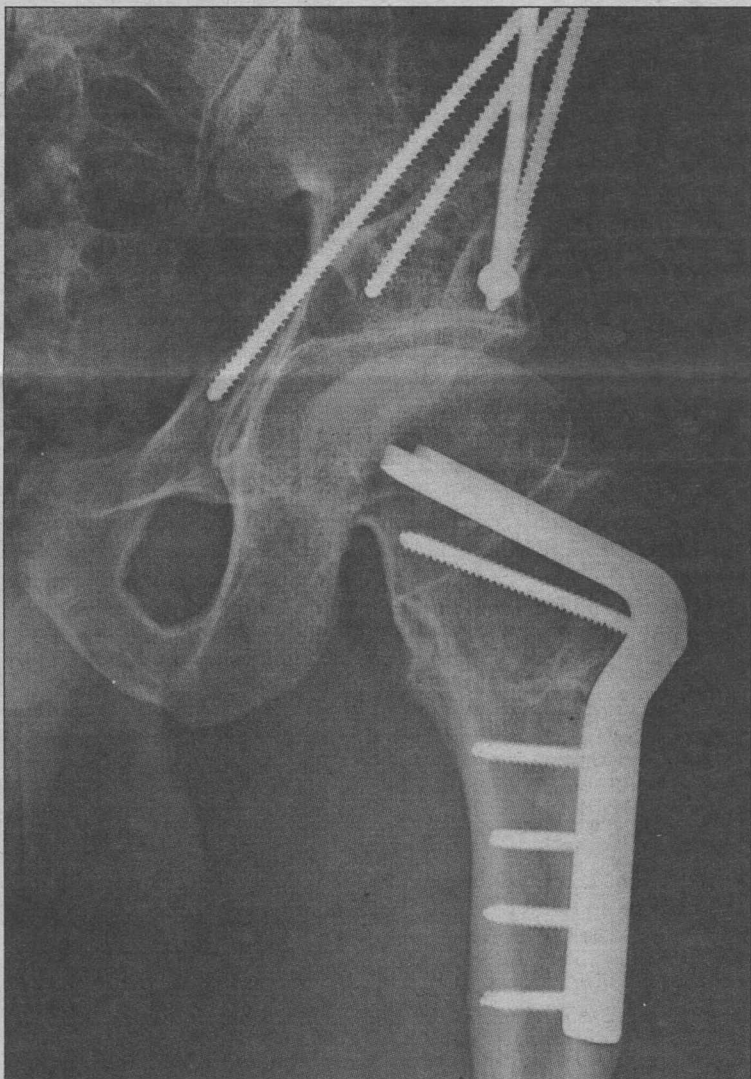
After osteotomy surgery, many patients have returned to cycling, swimming, hiking, golf, tennis and baseball. Some have even returned to high-level competition. However, Clohisy discourages them from taking up repetitive-impact activities.

Clohisy and Perry L. Schoeneker, M.D., professor of orthopaedic surgery and chief of pediatric orthopaedics at St. Louis Children's Hospital and Shriners Hospital, operated on Mackey's left hip on Feb. 14, 2003.

Now Mackey can look forward to doing many things he would not be able to do without surgery. He plans to pitch next spring for Southwest Missouri State, where he earned a baseball scholarship.

"With advances in the surgical technique, we can give patients a hip joint that is very functional and can allow them to be active and to enjoy several healthy years of life," Clohisy said.

"Most patients experience major relief and have very little, if any, hip pain after the operation."



An X-ray of Christopher Mackey's hip following osteotomy surgery to correct hip dysplasia.

Hip fracture study needs elderly patients

BY GILA Z. RECKESS

More than 80 percent of hip fracture patients don't fully recover with traditional rehabilitation methods. That's why University researchers are trying a new approach that entails combining extended exercise therapy with daily use of a topical testosterone gel.

Individuals over 65 who've had surgery to treat a hip fracture in the past four months may be eligible to participate.

As covered by Medicare and most third-party insurance plans, hip fracture rehabilitation typically involves up to 16 weeks of therapy conducted in the home.

But a team led by Ellen F. Binder, M.D., assistant professor of medicine in the Division of Geriatrics and Nutritional Sciences, recently published a study that showed extending supervised outpatient rehabilitation by six months helps elderly patients recover more fully from hip fractures.

"Hip fractures are very prevalent in the elderly, and research shows that most patients have significant difficulty performing daily activities even after standard

therapy," Binder said. "Our goal is to help elderly hip fracture patients live independently in their own homes for as long as possible, which is usually an important component of their quality of life."

Binder's team is taking their approach one step further by combining the additional six months of exercise therapy with six months of daily testosterone gel treatment. Researchers believe testosterone's contribution to muscle mass and strength may enhance recovery from hip fractures.

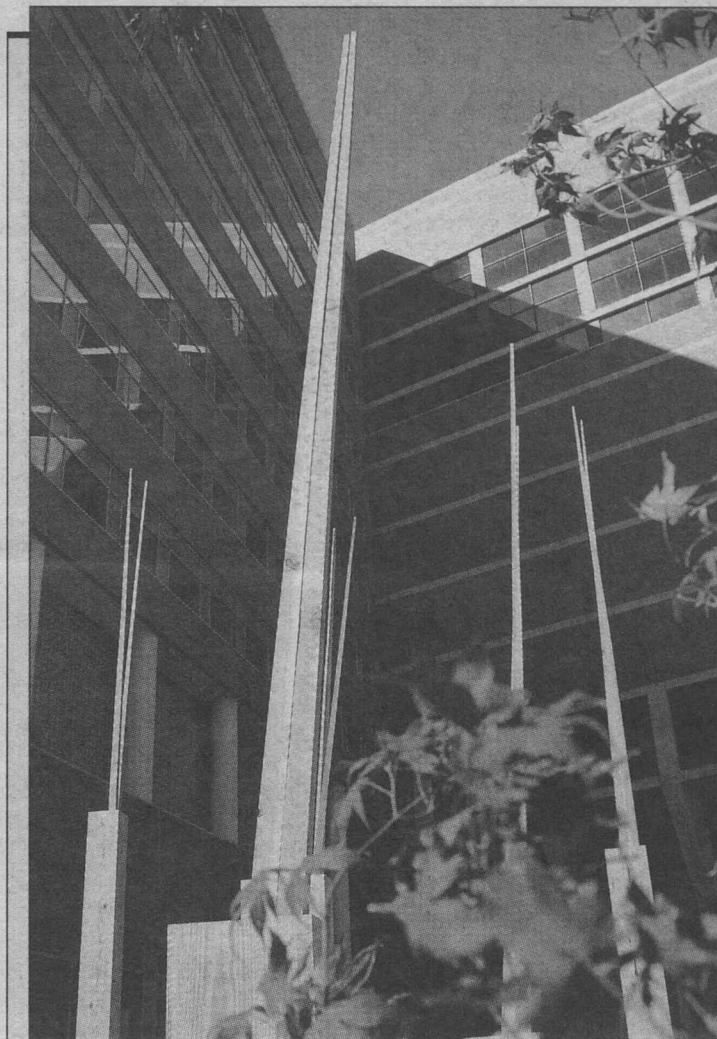
Participants who qualify will be randomly assigned to receive either a topical testosterone gel or an inactive, placebo gel. The dosage of testosterone will differ between male and female participants.

In addition, female participants will be prescribed a six-month, home-based exercise program, supplemented by a monthly exercise session at the School of Medicine.

Male participants will be asked to attend a supervised exercise-training program at the Medical Campus three times a week for six months.

All study-related evaluations and medications are free.

For more information, call 286-2716.



Artistic expression In the Midst: 20 Degrees East, a wood sculpture by Joe Chelsa, is one of 10 pieces featured in the St. Louis Spatial Synergy: Transforming Space exhibit that showcases work by St. Louis artists across the Medical Campus. Chelsa's work is located in the courtyard of the McDonnell Pediatric Research Building. The exhibit runs through June.

Protein may prevent cells from self-attack

BY MICHAEL C. PURDY

University scientists have identified a protein that can reduce chances that immune B cells will erroneously attack the body's tissues, causing autoimmune disorders such as lupus, allergies, arthritis and diabetes.

The protein is the first of its kind to be identified in B cells and could provide scientists with a new target for treatments of those conditions.

Scientists assumed for many decades that misguidance was the crux of the problem when immune attack cells went awry and assaulted the body's tissues, causing autoimmune conditions.

But a theory gaining widespread favor suggests a more complicated picture with new possibilities for treatments that ease or prevent autoimmune disorders.

"We used to think of mature immune cells like T cells and B cells as metabolically inactive when waiting for infections or other signals that trigger an attack," said Stanford L. Peng, M.D., Ph.D., assistant professor of internal medicine and of pathology and immunology. "We're now thinking these resting cells actually are very active but are kept in a quiescent state by genes actively working to shut down activating proteins."

Peng and his colleagues, who earlier this year discovered the first of these immune system "leashes" in T cells, now have given the theory another key boost by identifying the first leash in a B cell: a protein called microphthalmia-associated transcription factor (MITF).

Peng and his colleagues found MITF through study of a lupus mouse model produced by scientists selectively breeding mice for other research goals in the 1960s and '70s.

Peng's group compared levels

of messenger RNA for various genes in cells of normal mice to mice with lupus-like conditions. Messenger RNA acts like an order slip for production of a copy of a gene's protein, so scientists believe levels of messenger RNA for a particular gene are likely representative of that gene's level of activity in a cell.

They found that MITF was much less active in the B cells of mice with lupus-like conditions than in normal mice. When they suppressed MITF activity in normal mice, B cells turned themselves on and began making antibodies, clumps of proteins normally designed to attack invaders. However, the new antibodies in the mice were autoantibodies, antibodies targeted to the body's tissues that are a characteristic symptom of lupus.

"This is the first transcription factor we've found that has to be active in the resting B cell to keep it that way," Peng said.

MITF appears to restrain interferon regulatory factor 4 (IRF4), a transcription factor previously linked to the activation of B cells. But it appears to have that effect through its influence on several other genes that in turn act to keep IRF4 in check.

Peng and his colleagues are working to further understand the effects of MITF, and they have also begun looking for signs of abnormal MITF activity in human patients.

"We've been focusing our efforts to develop new treatments for autoimmune disease on pathological targets — genes that are overused or used inappropriately, leading to immune system attacks on self," Peng said.

"Another concept we should keep in mind is that the loss of one of these regulatory genes that keep the immune cells in check also may contribute to autoimmune problems."

University Events

Conservative Kristol to discuss presidential election

By NADEE GUNASENA

Political analyst and popular neoconservative thinker William Kristol will present "The 2004 Election: What's at Stake?" as part of the Assembly Series at 11 a.m. Oct. 7 in Graham Chapel.

Widely recognized as one of the nation's leading political analysts and commentators, Kristol appears regularly as a commentator on Fox News.

In 2003, he and Lawrence

Kaplan co-wrote *The New York Times* best-selling *The War Over Iraq: Saddam's Tyranny and America's Mission*. In it, they explain the importance of U.S. involvement in Iraq and turn a critical eye on foreign-policy decisions of past administrations concerning Saddam Hussein, analyzing both the Bush and Clinton administrations.

Kristol is the founding editor and publisher of *The Weekly Standard*, a Washington, D.C.-based political magazine. The

Standard is one of Washington's most acclaimed political magazines.

He led the "Project for the Republican Future," working with other prominent Republicans to shape the strategy that produced the 1994 Republican Congressional victory.

In 1997, Kristol co-founded the "Project for the New American Century," a nonprofit educational organization seeking to promote "American global leadership." This movement, com-

prising liberal and conservative leaders, is credited with influencing some of the foreign-policy decisions of the current Bush administration.

During his political career, Kristol has enjoyed prominent roles within the government. During the Reagan administration, he served as chief of staff and counselor to Secretary of Education William Bennett. He was chief of staff to Vice President Dan Quayle.

Kristol earned a bachelor's

degree in government (1973) and a doctorate in political science (1979), both from Harvard University. He then taught American politics and political philosophy at the University of Pennsylvania for four years and worked at Harvard's Kennedy School of Government from 1983-85.

Assembly Series talks are free and open to the public. For more information, call 935-4620 or go online to assemblyseries.wustl.edu.

Jazz at Holmes • William Gass • The Political Process

"University Events" lists a portion of the activities taking place Oct. 1-14 at Washington University. Visit the Web for expanded calendars for the Hilltop Campus (calendar.wustl.edu) and the School of Medicine (medschool.wustl.edu/calendars.html).

Exhibits

The Washington University School of Art Faculty Show. Through Dec. 5. Kemper Art Museum. 935-4523.

Human Comedies: 19th-Century French Caricature. Steinberg Hall, Lower Lvl., Teaching Gallery. 935-4523.

The Presidential Image: 60 Years of the Best in White House Photography. Through Oct. 11. Lobby of Olin Library, Lvl. 1. Viewable during library hours. 935-5410.

Presidential Debates at Washington University. Photo exhibit. Oct. 5-Nov. 3. Whispers Café, Olin Library, Lvl. 1. Viewable during café hours. 935-5410.

American Flag Exhibit. Oct. 4-5. Athletic Complex. Scheduled tours only. 935-5040.

American Presidents: Life Portraits. Opens Oct. 5. Athletic Complex. 935-4619.

Lectures

Friday, Oct. 1

9:15 a.m. Pediatric Grand Rounds. "Understanding the Timing of Birth: The Continuing Challenge to Prevent Prematurity." Louis J. Muglia, assoc. prof. of pediatrics, of molecular biology & pharmacology and of obstetrics & gynecology. Clopton Aud., 4950 Children's Place. 454-6006.

Noon. Cell Biology & Physiology Seminar. "Sub-cellular and Multicellular Signal Transduction Mechanisms of Glucose-stimulated Insulin Secretion." David W. Piston, assoc. prof. of molecular physiology & biophysics, Vanderbilt U. McDonnell Medical Sciences Bldg., Rm. 426. 362-6630.

Saturday, Oct. 2

8 a.m.-1:30 p.m. Medicine CME Course. "Breast Health & Disease for Primary Care Providers." Cost: \$90 for physicians, free for allied health professionals and trainees. Eric P. Newman Education Center. 362-6891.

10 a.m. Physics Saturday Lecture Series. "1905: The Wonder Year." John Rigden, prof. of physics. Crow Hall, Rm. 201. 935-6276.

Monday, Oct. 4

8:30 a.m.-4:30 p.m. Center for the Application of Engineering Technology Two-Day Workshop. "Offshore Project Management Fundamentals." (Continues 8:30 a.m.-4:30 p.m. Oct. 5.) Cost: \$1,060, reduced fees available to member organizations.) CAIT, 5 N. Jackson Ave. To register: 935-4444.

Noon. Molecular Biology & Pharmacology Seminar. Raymond Deshaies, assoc. prof. of structural, molecular and cell biology, Calif. Inst. of Technology. South Bldg., Rm. 3907, Phillip Needleman Library. 362-0183.

Noon. Work, Families, & Public Policy Brown Bag Seminar Series. "Long-Term Care of the Disabled Elderly: Spouses, Children, and Stepchildren." Robert A. Pollak, Robert E. Herrreich Distinguished Professor of Economics. Eliot Hall, Rm. 300. 935-4918.

4 p.m. Immunology Research Seminar Series. "Mechanisms of Immune

Recognition and Evasion." Daved Fremont, assoc. prof. of pathology & immunology. Eric P. Newman Education Center. 362-2763.

4 p.m. Physics Seminar. "How Does Physics Matter in Biomaterials?" Jay X. Tang, asst. prof. of physics. Brown U. Whitaker Hall, Rm. 100. 935-6276.

7 p.m. Architecture Monday Night Lecture Series. 2004 Coral Courts Lecture. "Reflections and Recent Work." Carlos Jimenez, architect, principal, Carlos Jimenez Studios, Houston. (6:30 p.m. reception, Givens Hall.) Steinberg Hall Aud. 935-6200.

Tuesday, Oct. 5

Noon. Molecular Microbiology & Microbial Pathogenesis Seminar Series. "Prions Bare All: Proteins That Elicit Disease or Expose Diversity." Heather L. True-Krob, asst. prof. of cell biology & physiology. Cori Aud., 4565 McKinley Ave. 747-2132.

7 p.m. Architecture Monday Night Lecture Series. "Immateriality & Transparency." Juhani Pallasmaa, Raymond E. Maritz Visiting Professor of Architecture. (6:30 p.m. reception, Givens Hall.) Steinberg Hall Aud. 935-6200.

Wednesday, Oct. 6

8:30 a.m.-4:30 p.m. Center for the Application of Engineering Technology Two-Day Workshop. "IT as a Service Organization." (Continues 8:30 a.m.-4:30 p.m. Oct. 7.) Cost: \$1,195, reduced fees available to member organizations.) CAIT, 5 N. Jackson Ave. To register: 935-4444.

12:30 p.m. Academic Women's Network Brown Bag Lunch Seminar. Panel Discussion: "Managing the Lab: The Faculty Perspective." John Atkinson, prof. of medicine, Susan Dutcher, prof. of genetics, Robert Mecham, prof. of cell biology & physiology, Kelly Moley, assoc. prof. of obstetrics & gynecology, and Skip Virgin, prof. of pathology & immunology. Cori Aud., 4565 McKinley Ave. 362-6040.

4 p.m. Biochemistry & Molecular Biophysics Seminar. "Single-Molecule Visualization of Protein-DNA Interaction." Stephen C. Kowalczykowski, prof. of microbiology, U. of Calif., Davis. Cori Aud., 4565 McKinley Ave. 362-0261.

4 p.m. Physics Colloquium. "Structure of Exotic Nuclei." Witold Nazarewicz, prof. of physics, U. of Tenn. (3:30 p.m. coffee, Compton Hall, Rm. 245.) Crow Hall, Rm. 204. 935-6276.

Thursday, Oct. 7

8:30 a.m.-4:45 p.m. Center for Health Policy Ethnic & Racial Disparities in Health Care Conference. Eric P. Newman Education Center. 935-5652.

11 a.m. Assembly Series. College Republicans/Conservative Leadership Alliance Lecture. "The 2004 Election: What's at Stake?" William Kristol, editor and publisher of *The Weekly Standard*. Co-sponsored by the School of Law "Access to Justice" Public Interest Law Speakers Series. Graham Chapel. 935-5285.

Noon. Genetics Seminar Series. "Multifaceted Translational Regulation in *Drosophila* Body Patterning." Paul MacDonald, prof. and chair of molecular cell & developmental biology, U. of Texas. McDonnell Medical Sciences Bldg., Rm. 823. 362-2139.

4 p.m. Ophthalmology & Visual Sciences Seminar. "Activation of Astrocytes by the Epidermal Growth Factor Receptor." Arthur H. Neufeld, Bernard Becker Professor of Ophthalmology. Maternity Bldg., Rm. 725. 362-1006.

4:15 p.m. Earth & Planetary Sciences Colloquium. Stephen Zelman Memorial Lecture. "Dynamics of the Diffuse Oceanic Plate Boundaries in the Indo-Australian Composite." Richard Gordon,

Oct. 1 WUSTL art events

• Sam Fox Arts Center "Festival of the Arts." 5-7 p.m. Grounds of Bixby, Givens and Steinberg halls. 935-9347.

• *The Rubber Frame: The Visual Language of Comics From the 18th Century to the Present.* Opening 6-8 p.m.; on view through Nov. 30. Olin Library Grand Staircase Lobby and Special Collections Reading Room. 935-5495.

• *The Rubber Frame: American Underground and Alternative Comics, 1964-2004.* Opening 7-9 p.m.; on view through Oct. 30. Des Lee Gallery, 1627 Washington Ave. 621-8537.

Shuttle service will be available between the festival and *The Rubber Frame* exhibitions. ALSO: *Michael Byron: A Decade of Work on Paper and Outlaw Printmakers*, curated by lecturer Tom Huck. Both opening 6-9 p.m.; on view through Nov. 6. Philip Slein Gallery, 1520 Washington Ave. 621-4634.

William W. Keck Professor of Geophysics, Rice U. Earth & Planetary Sciences Bldg., Rm. 203. 935-5610.

Friday, Oct. 8

9:15 a.m. Pediatric Grand Rounds. "Ending the Missouri Epidemic of Folic Acid — Preventable Spina Bifida." Godfrey Porter Oakley Jr. visiting professor of epidemiology, Emory U. Clopton Aud., 4950 Children's Place. 454-6006.

Noon. Cell Biology & Physiology Seminar. "Going Nuclear: Nup98 and the Dynamic Nuclear Pore Complex." Maureen A. Powers, assoc. prof. of cell biology, Emory U. McDonnell Medical Sciences Bldg., Rm. 426. 747-4223.

Saturday, Oct. 9

10 a.m. Physics Saturday Lecture Series. "Special Relativity." Michael Friedlander, prof. of physics. Crow Hall, Rm. 201. 935-6276.

Monday, Oct. 11

8 a.m.-5 p.m. St. Louis STD/HIV Prevention Training Center Course. "STD Laboratory Methods." (Continues 8 a.m.-5 p.m. Oct. 12 & 13.) Cost: \$75. Becker Medical Library, Rm. 601A. 747-1522.

Noon. Neurology/CSNSI Research Seminar. Marc Diamond, asst. prof. of neurology and cellular and molecular pharmacology, U. of Calif., San Francisco. Maternity Bldg., Schwarz Aud. 362-9460.

4 p.m. Biology Seminar. "The Radiation of a Flowering Plant Clade, Dipsacales." Michael Donoghue. G. Evelyn Hutchinson Professor of Ecology & Evolutionary Biology, Yale U. Rebstock Hall, Rm. 322. 935-6706.

4 p.m. Immunology Research Seminar Series. "Adjusting Host Responses to Viral Infection." Michael Holtzman, Seldin Professor of Internal Medicine. Eric P. Newman Education Center. 362-2763.

5:30 p.m. Radiology Lecture. Annual Wendell G. Scott Memorial Lecture. "The Politics of American Health Care: The

Role of Government and a Free-market Economy." Steven H. Lipstein, president and chief executive officer, BJC Health-Care. Scarpellino Aud., 510 S. Kings-highway Blvd. 362-2866.

7 p.m. Architecture Monday Night Lecture Series. "New Worlds." James Timberlake, architect, Kieran Timberlake Architects, Philadelphia. (6:30 p.m. reception, Givens Hall.) Steinberg Hall Aud. 935-6200.

Tuesday, Oct. 12

4 p.m. Anesthesiology Research Seminar Series. David C. Wartier, prof. and senior vice chairman of anesthesiology, Zablocki VA Medical Center, Milwaukee. Clinical Sciences Research Bldg., Rm. 5550. 362-8560.

4 p.m. Anthropology Colloquium. "Reflections on the History of Physical Anthropology." Elwyn Simons, head of the Division of Fossil Primates and senior primate biologist, Duke U., and Friderun Ankel-Simons, research assoc. prof. of biological anthropology & anatomy, Duke U. McMillan Hall, Rm. 149. 935-5252.

Wednesday, Oct. 13

7:30 a.m.-3:45 p.m. Infectious Diseases CME Course. "ID 2004: Management of Infectious Diseases. A Practical Course for Clinicians." Cost: \$135 for physicians, \$105 for allied health professionals. Eric P. Newman Education Center. To register: 454-8215.

11 a.m. Assembly Series. Olin Fellows Lecture. Susan Faludi, author. Graham Chapel. 935-5285.

11 a.m. School of Law Access to Justice Speakers Series. "Abu Ghraib and the Unpleasant Question of Torture." David J. Luban, Frederick J. Haas Professor of Law & Philosophy, Georgetown U. Co-sponsored by the Center for the Study of Ethics and Human Values. Anheuser-Busch Hall. 935-4958.

Thursday, Oct. 14

Noon. Genetics Seminar Series. "Regulation of Ciliary and Flagellar Motility by Phosphorylation: Protein Kinases Anchored in the 9+2 Axoneme." Winfield Sale, prof. of cell biology, Emory U. McDonnell Medical Sciences Bldg., Rm. 823. 362-2139.

4 p.m. Ophthalmology & Visual Sciences Seminar. "Pharmacological Chaperones and the Intracellular Folding of P23H Opsin." Shalesh Kaushal, asst. prof. of ophthalmology, U. of Fla. Maternity Bldg., Rm. 725. 362-1006.

6:15 p.m. Germanic Languages and Literatures Lecture. Biennial Liselotte Dieckmann Lecture. "Oriental Drag." Katrin Sieg, assoc. prof. of German, Georgetown U. Co-sponsored by the committee on comparative literature. Duncker Hall, Rm. 201, Hurst Lounge. 935-4360.

Music

Sunday, Oct. 3

2:30 p.m. Concert. Washington University Symphony Orchestra. Dan Presgrave, dir. Graham Chapel. 935-4841.

Thursday, Oct. 14

8 p.m. Jazz at Holmes. Kevin Gianino Quartet. Ridgely Hall, Holmes Lounge. 935-4841.

On Stage

Thursday, Oct. 14

8 p.m. Performing Arts Department Production. *The Awakening*, by Kate

Chopin. Henry I. Schvey, dir. (Also 8 p.m. Oct. 15 & 16 and 2 p.m. Oct. 16 & 17.) Cost: \$12, \$8 for students, seniors, WUSTL faculty & staff. Mallinkrodt Student Center, Edison Theatre. 935-6543.

Worship

Thursday, Oct. 7

10 a.m. Simchat Torah Festival. Sponsored by Chabad on Campus. Bais Abraham, 6910 Delmar Blvd. Reservations suggested: 721-2884.

Sports

Tuesday, Oct. 5

7 p.m. Men's Soccer vs. Webster U. Francis Field. 935-4705.

Friday, Oct. 8

3:30 p.m. Volleyball vs. Greensboro College. Washington University Midwest Classic. Held at Fontbonne U. 935-4705.

7:30 p.m. Volleyball vs. U. of Wis.-LaCrosse. Washington University Midwest Classic. Held at Fontbonne U. 935-4705.

Saturday, Oct. 9

10:30 a.m. Volleyball vs. Illinois College. Washington University Midwest Classic. Held at Fontbonne U. 935-4705.

2:30 p.m. Volleyball vs. Fontbonne U. Washington University Midwest Classic. Held at Fontbonne U. 935-4705.

Sunday, Oct. 10

11 a.m. Women's Soccer vs. Emory U. Francis Field. 935-4705.

1:30 p.m. Men's Soccer vs. Emory U. Francis Field. 935-4705.

And more...

Friday, Oct. 1

11 a.m.-noon. Olin Weston Career Resources Center Event. WCRC Junior On-campus Recruiting Training. Open to business, economics and math students. Simon Hall, Rm. 120. 935-8303.

Monday, Oct. 4

4:30 p.m. Student Union Educate Yourself: 2004 Panel Discussion. "The Political Process." Rebstock Hall, Rm. 215. 935-7878.

Tuesday, Oct. 5

5 p.m. Career Center Event. Resume & Cover Letter Writing. Umrath Hall, Rm. 157, The Career Center. 935-5930.

Wednesday, Oct. 6

4 p.m. Olin Weston Career Resources Center Event. WCRC Junior On-campus Recruiting Training. Open to business, economics and math students. Simon Hall, Rm. 106. 935-8303.

5 p.m. Career Center Event. Interviewing Skills 101. Umrath Hall, Rm. 157, The Career Center. 935-5930.

Thursday, Oct. 7

4 p.m. Career Center Event. Job Search Strategies. Umrath Hall, Rm. 157, The Career Center, 2nd Fl. Conf. Rm. 935-5930.

Exhibitions, book trace development of comics

BY LIAM OTTEN

There's no shortcut from popular art to cultural respectability. Film and television, novels and musicals, jazz, blues and rock 'n' roll — all spent years in the wilderness of critical, if not commercial, neglect.

Few have wandered longer than comic books, direct origins of which date back to the early 1800s. Yet in recent decades — thanks to such acclaimed graphic novels as Art Spiegelman's Pulitzer Prize-winning *Maus* (1986-1991) and Chris Ware's *Jimmy Corrigan, The Smartest Kid on Earth* (2000) — the form has begun to receive its critical and scholarly due.

The School of Art today is opening *The Rubber Frame: Culture and Comics*, a pair of exhibitions (and an accompanying book; see separate story) that together trace the evolution of comics from early precursors in England and Switzerland to turn-of-the-last-century newspapers, underground comix of the 1960s and '70s and contemporary alternative comics.

"Comics have long since overcome abiding prejudices about their cultural value, or lack of same," said D.B. Dowd, a nationally known illustrator and professor of visual communications in the School of Art, who organized *The Rubber Frame* with 2002 alumnus M. Todd Hignite, editor of the award-winning *Comic Art* magazine.

"The innovation of *The Rubber Frame* will be to subject primarily American comics to multiple perspectives," Dowd continued. "These include broader thinking about antecedents; sustained formal and content analysis; arguments about the relationship between creative strategy, technology and distribution; and reflections about representations of, and contributions from, African-American characters and artists."

The Visual Language of Comics From the 18th Century to the Present — on view in Olin Library's Grand Staircase Lobby and Special Collections Reading Room — examines a variety of formal, technological and commercial forerunners to modern comics. Highlights include illustrations by Thomas Rowlandson; a color proof from R.F. Outcault's *Yellow Kid*, the first major comic strip

character; original art from Winsor McCay's groundbreaking *Little Nemo in Slumberland*; and George Herriman's final *Krazy Kat* drawing.

"Legend has attributed the beginning of comics to the New York newspapering battle between Hearst and Pulitzer in the 1890s," said Dowd, who curated the show from private collections; university archives; and The Center for the Humanities in Arts & Sciences' collection of 3,500 comics and graphic novels.

"But recent scholarship has shown that the earliest comic strips — sequential pictures inside boxes, accompanied by captions or speeches and arranged in sequential rows — appear as early as the 1840s, while the speech bubble, a staple of the comics language, can be found in British caricatures from the 1780s and copper engravings from as early as 1730.

"The modern comic book, as we think of it today, was essentially created by the advertising industry," Dowd added. "Printers realized they could sell more printing business by repackaging Sunday strips as advertising premiums for companies like Gulf Oil and Proctor & Gamble. The next step, taken in the 1930s, was simply to begin producing original content."

American Underground and Alternative Comics, 1964-2004 — at the School of Art's Des Lee Gallery, 1627 Washington Ave. — focuses on the taboo-shattering underground comix of the 1960s and '70s and their spiritual successor, the modern alternative movement.

Curated by Hignite, the exhibition includes approximately 150 original drawings by 30 artists, including underground pioneers Robert Crumb, Kim Deitch, Spain Rodriguez, Gilbert Shelton and Frank Stack (aka Foolbert Sturgeon). The latter, a longtime art professor at the University of Missouri, is widely credited with publishing the first underground comic, *The Adventures of Jesus* (1964).

Contemporary practitioners include Spiegelman, Ware, Charles Burns, Daniel Clowes, Gary Panter and Jaime Hernandez, the latter co-founder (with brothers Gilbert and Mario) of the seminal alternative book *Love and Rockets*. Also featured are St. Louis artists Kevin Huizenga, Ted May and Dan Zettwoch.

"This is really a world-class show, in terms of the quality and



Jaime Hernandez's original cover art for *Love and Rockets* No. 15 (1986), published by Fantagraphics Books, is part of the exhibition *The Rubber Frame: American Underground and Alternative Comics, 1964-2004* opening at the University today.

depth of material on view," Hignite said. "Virtually everything is culled from private collections — including those of the artists —

and much of it has never been displayed before."

"One of our goals was to contextualize things as much as pos-

Book *The Rubber Frame: Essays in Culture and Comics*

BY LIAM OTTEN

Edited by D.B. Dowd, professor of visual communications in the School of Art, and 2002 alumnus M. Todd Hignite, *The Rubber Frame: Essays in Culture and Comics* investigates a series of key themes and moments in the history of comics.

Angela Miller, Ph.D., associate professor of art history & archaeology in Arts & Sciences, observes in her introduction, "Comics were postmodern before the word was invented. ... They are at once the most conventional and the most unfettered in their playful exploration of the form."

In "Strands of a Single Cord: Comics & Animation," Dowd examines the intertwining histories of those media, from Winsor McCay's *Little Nemo in Slumberland* — which debuted as a Sunday newspaper strip in 1905 and as an animated film in 1911 — to popular crossovers such as Buster Brown, Felix the Cat and Mickey Mouse. Dowd also chronicles the recent explosion of multimedia Web-based projects, including Derek Kirk Kim's lowbright.com, salon.com's *Dark Hotel*, and samthedog.com.

Daniel Raeburn, publisher of the comics 'zine *The Imp*, surveys "Two Centuries of Underground Comic Books," beginning with the work of Rodolphe Töpffer (1799-1846), the Swiss prep-school teacher whose humorous — and widely copied — narratives are generally considered the first true comics.

Other topics include the ribald *Tijuana Bibles* of

the 1930s; Jack T. Chick's countercultural pamphlets of the early 1960s; and Chris Ware's *Jimmy Corrigan, The Smartest Kid on Earth*, which began as a self-published booklet in Chicago in 2000.

Hignite profiles Jaime Hernandez's *Locas*, an ongoing series today numbering well over 900 pages. In its formal daring, conceptual sophistication and emotional complexity, Hignite argues, *Locas* serves as a kind of bridge between classic mid-century American comics, the underground generation and a myriad of contemporary approaches.

Finally, Gerald L. Early, Ph.D. — the Merle Kling Professor of Modern Letters, professor of African and Afro-American Studies and of English and director of The Center for the Humanities, all in Arts & Sciences — considers "The 1960s, African-Americans and the American Comic Book." The piece investigates depictions of African-Americans in mainstream comics (*Fantastic Four*, *Mad* magazine, *Frontline Combat*); in sports and television tie-ins (*Jackie Robinson*, *I-Spy*, *The Young Lawyers*); and, perhaps most complexly, in Robert Crumb's provocative oeuvre.

The Rubber Frame is published by WUSTL and designed by Heather Corcoran, assistant professor of visual communications and principal of Plum Studios. Cost is \$25.

The book is available at the Campus Store in Mallinckrodt Student Center and at the Des Lee Gallery, 1627 Washington Ave.

Saturday, Oct. 9

7:30 p.m. A Celebration of William Gass. Readings & exhibition in tribute to William Gass, professor emeritus of English. Olin Library, Whispers Café. To register: 935-5418.

Monday, Oct. 11

11:30 a.m.-4:30 p.m. Blood Drive. Co-sponsored by Delta Gamma Sorority, Alpha Phi Omega and WUSTL Marrow Registry. (Continues 11:30 a.m.-4:30 p.m. Oct. 12, Mallinckrodt Student Center, Lower Lvl., The Gargoyle; 5-10 p.m. Oct. 13 & 14, Wohl Center, Friedman Lounge.) Mallinckrodt Student Center, Lower Lvl., The Gargoyle. 291-4741.

3:30 p.m. Career Center Event. Internship Search Strategies. Umrath Hall, Rm. 157, The Career Center. 935-5930.

4:30 p.m. Student Union Educate Yourself: 2004 Panel Discussion. "Reproductive Rights." Rebstock Hall, Rm. 215. 935-7878.

Tuesday, Oct. 12

3 p.m. Career Center Event. On Campus Recruiting Approval Afternoon. Umrath Hall, Rm. 157, The Career Center. 935-5930.

Wednesday, Oct. 13

11:45 a.m.-12:45 p.m. Career Center Event. Lunch With a Pro: Business for Liberal Arts. Umrath Hall, Rm. 157, The Career Center. 935-5930.

"Crossing Network Lines" conference

BY JESSICA MARTIN

The Center for Social Development (CSD) in the George Warren Brown School of Social Work will host "Crossing Network Lines: Facilitating Partnerships and Building Coalitions Across Aging and Disability Service Networks to Improve Service Delivery," a scientific meeting of national and local scholars, practice professionals, public officials and policy makers Oct. 7 at the Chase Park Plaza.

"This meeting brings together national experts and community-based professionals in an open discussion to evaluate where we are in terms of partnerships and coalitions between aging and disability organizations and what we need to do to improve our ability to work together," says Michelle Putnam, Ph.D., assistant professor of social work and the conference organizer.

"There is a general understanding among scholars and practice professionals that part-

nering is important. Our charge is to think about how research can help forward work in this area."

A highlight of the meeting will be Putnam's presentation of a John A. Hartford Foundation-sponsored case study on partnerships between aging and disability service providers in Missouri.

Additional presenters include Rosalie Kane, D.S.W., professor of public health at the University of Minnesota; Margaret Campbell, Ph.D., program review coordinator for the National Institute on Disability and Rehabilitation Research; and Fernando Torres-Gil, Ph.D., professor of social welfare and policy studies at the University of California, Los Angeles.

The meeting is sponsored by The National Institute on Aging, the CSD and GWB.

For more information, call Patricia Welch Saleeby at 935-9075 ex. 2 or e-mail agingdisabilityevents@gwbmail.wustl.edu.

Defib

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trical activity in the heart. An electrode extends through a vein inside of the heart and records an electrocardiogram (ECG) at all times.

If the computer reads an abnormal ECG, it will deliver a strong electrical shock to the whole heart.

When arrhythmia starts, it generates electrical wave vortices — think of little tornadoes dithering about the heart muscle. These are what stop the heart's pumping.

Efimov and his collaborators knew that these little tornadoes are naturally attracted to scarred heart muscle. State-of-the-art implantable defibrillators target the entire heart with an electric current of 3-10 joules of energy to disrupt these tornadoes and shock the heart back to producing normal electrical activity.

A joule is a standard energy unit equal to one watt of power generated or dissipated for one second.

"We thought: Why don't we

sible, especially the history and larger culture surrounding the medium; the artistic process; and the means of distribution," Hignite added.

To that end, the exhibition will also include printed comics, a reading room stocked by Star Clipper Comics and multimedia displays.

The Visual Language of Comics opens with a reception from 6-8 p.m. and will remain on view through Nov. 30. For hours or more information, call 935-5495.

American Underground and Alternative Comics opens from 7-9 p.m. and will remain on view through Oct. 30. For hours or more information, call 621-8537.

Support for *The Rubber Frame* is provided by The Center for the Humanities, the American Culture Studies Program and the Department of Art History & Archaeology — all in Arts & Sciences — and by the Missouri Arts Council, a state agency, and the Regional Arts Commission, St. Louis.

Also opening today — at the Philip Slein Gallery, 1520 Washington Ave. — are Michael Byron: *A Decade of Work on Paper*, featuring prints and drawings by the professor of art, and *Outlaw Printmakers*, curated by lecturer Tom Huck. Receptions are from 6-9 p.m., and both shows will remain on view through Nov. 6.

For hours or more information, call 621-4634.

just affect the important part of the heart that sustains arrhythmia?" Efimov said. "Instead of shocking the whole heart, let's shock just the tornado activity around the scar. It's much gentler and requires less use of energy."

Efimov and his collaborators calculate the energy output from their mild shock would be a half-joule. The shock dislodges and eliminates the electrical tornado, displacing it from the scarred tissue and flinging it toward healthy muscle.

There it disappears or is eliminated by mild antitachycardia pacing, a therapy that uses small bursts of low-power electrical pacing pulses to return a racing heart to its normal rhythm.

Next for Efimov and WUSTL colleagues Vladimir P. Nikolski, Ph.D., assistant professor of biomedical computing, and graduate student Crystal Ripplinger are in vitro studies of rabbit hearts undergoing arrhythmia, where the phenomenon will be photographed with sophisticated imaging techniques to see how the waves propagate.

If the in vitro studies prove successful, clinical trials in humans will be next.

Health care

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care regardless of race, ethnicity and socioeconomic status; controlling the high and rising costs of health care; and ensuring the efficiency and effectiveness of future health-care delivery without sacrificing the pace and promise of medical progress.

For the past year, Peck and Steven S. Smith, Ph.D., director of the Weidenbaum Center and the Kate M. Gregg Professor of Social Sciences, and their staffs have been organizing this conference.

Oct. 7 — the day before the presidential debate at the University — was carefully selected in an attempt to heighten awareness about health-care policy issues.

"The presidential election is an excellent time to consider and set forth the concerns — and possible remedies — for issues surrounding health care," Peck said. "The quality and financing of health care in America and the world is one of the most important issues for many people, including the two main political parties."

According to Peck, among the most frequently cited health-care concerns are the high and rising cost of health care and prescription drugs and the large population of uninsured and underinsured Americans.

"Solving these and other problems requires a collaborative effort by policymakers, the private sector, the medical profession and academia to ensure that the United States has policies, laws, regulations and public-private partnerships that encourage and sustain an outstanding health system for all," Peck said. "Identifying effective solutions is now among the most important and difficult tasks facing our nation."

To help overcome those obstacles, Peck founded the Center for Health Policy last winter. It aims to identify key issues, then design and conduct projects aimed at understanding and developing policies that will lead to improved health care as well as providing a base for experts from the United States and abroad to undertake relevant projects.

"We are also very interested in

Conference speakers and participants

• **Mark McClellan, M.D., Ph.D.**, president of Medicare and Medicaid and former Food and Drug Administration commissioner, has agreed to speak or to participate in an interactive videoconference.

• **David Satcher, M.D., Ph.D.**, director of the National Center for Primary Care at the Morehouse School of Medicine and former U.S. Surgeon General, will speak on the "Politics of Health Care" from 8:40-9:50 a.m.

• **Henry J. Aaron, Ph.D.**, senior fellow of economic studies and the Bruce and Virginia MacLaury Chair at the Brookings Institute, will discuss "Financing Health Care With Limited Resources" from 10:10-11:30 a.m.

• **Gail Wilensky, Ph.D.**, senior fellow of Project Hope, will speak on the "Quality of Health Care in the Future" from 11:30 a.m.-12:45 p.m.

• **James Kimmey, M.D.**, president and chief executive officer of the Missouri Foundation of Health, will discuss "Spatial and Racial Disparities in Health Care" from 1-2:15 p.m.

• **David Cutler, Ph.D.**, professor of economics and academic dean of Arts & Sciences at Harvard University, will speak on the "Impact of Medical R&D Costs" from 2:30-3:45 p.m.

the relationship between the medical marketplace and innovation," Peck said.

"We have to be very careful that we don't impair the spirit of innovation and invention in medical science."

Peck added that in addition to undertaking health-policy studies and analyses, the University is also dedicated to sponsoring conferences like "Health Care Challenges Facing the Nation" to help generate open discussion on important health-care issues.

Reservations are required to attend the conference; call 935-5652 or e-mail warren@wc.wustl.edu to reserve a space.

still earn money."

The Student Entrepreneurial Program is open to all University undergraduate students. The primary objective is to fill the storefronts with businesses that provide goods and services appealing to residential students.

Students interested in starting a business must complete a business plan and present it to an advisory board for approval. If there is a storefront available, the owners sign a lease agreement with the University for the school year.

To encourage student entrepreneurs, the University pays a small subsidy for rent, pays for the utilities and offers access to voice and data services in each storefront. However, students are on their own to "make it or break it" in the world of business.

For more information, e-mail Bears' Bikes at sgordon@wustl.edu, or contact Campus Easy Sales at 935-5286 or campus easysales.com.

person selected will serve as a member of the University Council, comprising deans of schools and vice chancellors who work with Wrighton to formulate, set and implement University-wide policies.

After presentation of the finalists, the committee will assist Wrighton in making the final choice.

Wrighton plans to have the new dean in place by July 1.

Campus access, parking to be restricted during debate week

By ANDY CLENDENNEN

With the presidential debate just around the corner, more concessions are necessary by University personnel.

Parking and traffic patterns will be severely disrupted from Oct. 1-8, as television networks CNN and MSNBC will be broadcasting from the Hilltop Campus for several days and will take up parking spaces with production trucks and other vehicles.

As more and more guests, visitors and members of the media come to the University — estimated to be around 2,000 — fewer and fewer parking spaces will be available. However, shuttles from West Campus will be available from the garage near the corner of Forsyth Boulevard and Jackson Avenue. The shuttles will run to the Hilltop Campus approximately every 10 minutes as traffic permits.

Parking lots 28, 30, 31 and 32 will close at 6 p.m. Oct. 1. This includes the surface lot north of the Athletic Complex, as well as the entire parking area east of the Athletic Complex and south of the School of Law. This closure will affect approximately 381 parking spaces.

Portions of the top level of Millbrook Garage will be unavailable for general parking Oct. 6-7. The entire top level will be unavailable for general parking Oct. 8. These closures will affect 100-330 parking spaces.

There will be additional parking closures and restrictions Oct. 8, including Lot 35 directly south of Simon Hall. There will also be other smaller space reservations around campus throughout the week — signage will indicate which spaces are unavailable.

Due to increased security, access to campus on Oct. 7-8 will be limited to students, faculty and staff with a University identification card or to those individuals who are guests of the chancellor or the Commission on Presidential Debates.

All persons should carry and be prepared, upon request, to show a valid, current University identification card.

Oct. 8, the day of the debate, will see the most disruption as several roads leading into and onto the Hilltop Campus will be closed. Additionally, daily parking passes will not be honored on Oct. 8 — only those with annual permits will be allowed to park on campus.

The WUSTL shuttle system will be running regular schedules through Oct. 7 but will be operating reduced schedules and changed routes Oct. 8. There will be delays and reroutes on the Hilltop Campus as

required by security and road closures.

More detailed information can be found online at debate.wustl.edu. The following briefly describes the changes to the shuttle service:

• The Gold Line will run the route as scheduled from the Medical Campus to the Hilltop Campus throughout most of the day. After approximately 11 a.m., Mallinckrodt Student Center will be the only Hilltop stop serviced by this route. Restrictions could be in place after 4 p.m. Service will resume regular schedule as soon as possible, hopefully between 10-11 p.m.

A separate bus will run the West Campus portion of the route. Restrictions could be in place after 4 p.m. Service will resume regular schedule as soon as possible, hopefully between 10-11 p.m.

• The Green Line will run through the University City neighborhoods close to its normal schedule during the day. No stops will be serviced on Delmar Boulevard west of Kingsland Avenue after 9 a.m. After about 11 a.m., the Mallinckrodt Student Center will be the only Hilltop stop serviced by this route.

The route will terminate completely for part of the day, with the last trip into University City from Mallinckrodt at 3:52 p.m. Service will resume when possible, hopefully by the 10:52 p.m. trip from Mallinckrodt, providing 10:52 p.m., 11:52 p.m. and 12:52 a.m. trips. A separate bus will provide transportation to the South 40.

• The Red Line will run its daytime route only, with no extended service to the Galleria, Target, etc. After approximately 11 a.m., the Mallinckrodt Student Center will be the only Hilltop stop serviced by this route.

The route will terminate for part of the day, with the last trip leaving campus at 3:37 p.m. Service will resume when possible, hopefully by the 10:37 p.m. trip from Mallinckrodt, providing 10:37 p.m., 11:37 p.m. and 12:37 a.m. trips.

To help ease the pain of traffic congestion and road closures, University personnel is encouraged to find alternate modes of transportation during this week, including carpooling, bicycling, walking, public transportation or having another driver drop off employees near campus.

Also, any visitors coming to campus should be made aware of these parking restrictions. Rescheduling appointments or moving meetings to locations away from the Hilltop Campus is being advised.

For the most recent information regarding the debate, go online to debate.wustl.edu/debate_update.

Exhibits

— from Page 1

University of Missouri's annual Pictures of the Year International photo competition.

The images have been designed into a freestanding exhibition of 16 3-foot-by-4-foot panels. National Public Radio's Scott Simon wrote the foreword, which is featured on the first panel.

Award-winning University of Miami faculty member Loup Langton edited the exhibit, and U.S. News and World Report's Director of Visuals David Griffin designed it.

The exhibition will also travel to Arizona State University, thus covering the three presidential debate sites.

"It is a wonderful set of pictures and a great stimulus and backdrop for discussions about our history, the political process and how we remember these world leaders," said David Rees, director of Pictures of the Year International.

Olin Library will also showcase the exhibit *Presidential Debates at Washington University*, which will be on view from Oct. 5-Nov. 3 in Whispers Café during normal café hours.

The exhibit will include memorabilia and photographs from the 1992 showdown with Bill Clinton, George H.W. Bush and H. Ross Perot and the 2000 debate between George W. Bush and Al Gore.

A third exhibit, featuring 16 rare and historically important American flags, is on display at various locations within the Athletic Complex.

Included in this collection is an extremely rare and original



This photograph of Richard Nixon is one of 68 featured in the exhibit *The Presidential Image: 60 Years of the Best of White House Photography*.

13-star flag from the early 19th century with blue stars on a white star field. This unusual and visually striking flag was later modified for the 1880 presidential campaign when Democrats Winfield S. Hancock and William English placed their names prominently on the flag.

Also on display is a large flag associated with Abraham Lincoln's funeral. The flag flew over the Albany railroad station in New York when Lincoln's body arrived to be placed in the state Capitol rotunda on April 25, 1865.

The flags are part of the much larger collection of WUSTL alum-

ni Louise Veninga (1972) and Ben Zaricor (1972).

Flags are on display on various walls inside the debate media center, as well as in hallways, alcoves and lobbies surrounding the media center. The flags inside the media center will only be able to be seen through limited public tours of the debate venue Oct. 4-5.

Tours will begin at 10 a.m., with the final tours concluding by 6 p.m. Groups (including schools) should contact Bill Woodward (935-5040) in advance to make arrangements. Cameras and camera phones will not be allowed inside the debate venue.

A fourth exhibit, *American Presidents: Life Portraits*, is sponsored by C-SPAN and the White House Historical Association. This exhibit, which will open Oct. 5 in the Athletic Complex, features the only complete collection of American presidential oil portraits by one artist, Chas Fagan.

Accompanying the Fagan portraits are biographical sketches of the 42 presidents, along with photographs and prints capturing each president's time in the White House. The exhibit has expanded to include historical front pages of American newspapers announcing presidential election results.

Since its debut in 1999, *American Presidents* has traveled to many U.S. venues, including the White House Visitor Center, the Gerald R. Ford Library and Museum and the George Bush Presidential Library and Museum.

The exhibit has also been displayed at a number of campaign sites, including the New Hampshire primary and the 2004 Democratic and Republican National conventions.

Businesses

— from Page 1

selling items on eBay. An employee picks up the item the customer wants sold, helps write a description of it, prepares a detailed ad copy, takes a digital photograph and lists the item on eBay.

When the auction is finished, the customer is informed and a store employee ships the item to the buyer.

"We put together a business plan modeled after other eBay drop-off stores around the country that were gaining a lot of momentum and interest," said senior Phil Katz, one of the store owners. "We thought that there would be a similar demand and need for this service at the University."

"Our slogan is 'Drop in, cash out. We'll take care of everything in between.' That's the nature of the business. You do nothing and

Search

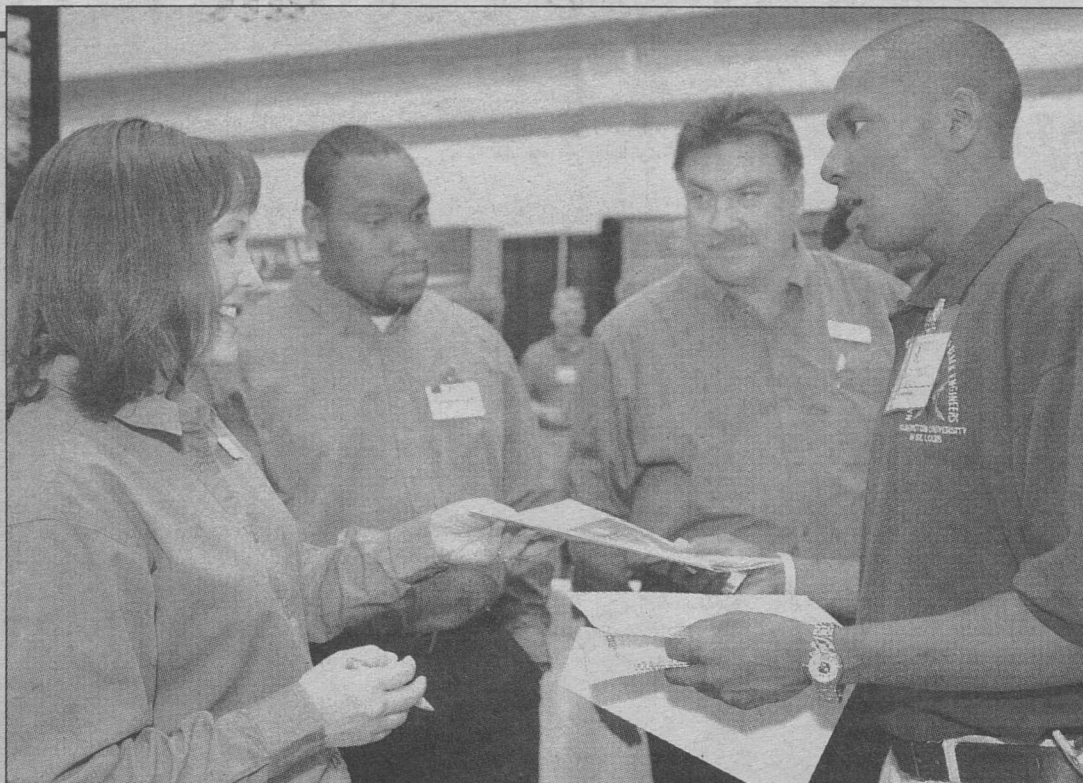
— from Page 2

non-ranked list of 3-5 finalists by Dec. 15.

Wrighton expects to select a candidate with high intellectual distinction, integrity, outstanding leadership qualities and administrative ability.

Besides serving as dean, the

Notables



Great jobs for great students Sophomore Evan Sharp (right), a finance major in the Olin School of Business, talks with (from left) Christina Konieczka, David Knight and Joe Chehoski of LaSalle Bank during the University-wide Career Fair, sponsored by the University chapter of the National Society of Black Engineers, Sept. 24 in the Athletic Complex. Nearly 600 students were able to meet and interview with representatives of more than 60 local and national companies.

Physics lectures aimed at general audience

The Department of Physics in Arts & Sciences is presenting its annual series of lectures aimed at a general audience.

The talks, which will focus on a series of papers published in 1905 by Albert Einstein, will be held at 10 a.m. each Saturday in October in Crow Hall, Room 201.

The schedule is as follows:

• **Oct. 2: "1905 — The Wonder Year,"** by John Rigden, Ph.D., visiting professor of physics in Arts & Sciences. Einstein's role in physics was unique. What was the state of physics in 1905? What were the puzzles that confronted physicists? What was so unusual about Einstein's style and achievements?

• **Oct. 9: "Special Relativity,"** by Michael W. Friedlander, Ph.D., professor of physics in Arts &

Sciences. What motivated Einstein to explore the nature of time, and how did this lead him to deduce the equation $E=mc^2$, probably the most famous formula in all of science? What, indeed, does the special theory describe?

• **Oct. 16: "General Relativity,"** by Clifford M. Will, Ph.D., professor of physics in Arts & Sciences. Einstein went beyond special relativity to consider the nature of gravity and its relationship to other forces in nature. This is still a puzzle and is one of the most important areas of astrophysical research.

• **Oct. 23: "Einstein Sheds Light on Light,"** by Carl M. Bender, Ph.D., professor of physics in Arts & Sciences. Using Max Planck's new concept of the quantum of radiant energy, Einstein

was the first to combine the ideas of waves and particles to explain the way in which light can eject electrons from some surfaces. It was for this that Einstein was awarded the 1921 Nobel Prize in physics.

• **Oct. 30: "Brownian Motion,"** by Anders E. Carlsson, Ph.D., professor of physics in Arts & Sciences. In 1827, botanist Robert Brown discovered that pollen grains on the surface of a pond move in irregular ways. Einstein showed how this Brownian motion was the result of buffeting by water molecules, and his theory provided the first clear demonstration of the reality of molecules and their movements.

The lectures are free and open to the public. For more information, go online to physics.wustl.edu.

Fields to deliver talk at Graham Chapel today

By ANDY CLENDENNEN

Wayne Fields, Ph.D., the Lynne Cooper Harvey Distinguished Professor of English and director of the American Culture Studies Program, both in Arts & Sciences, will deliver a lecture at 11 a.m. today in Graham Chapel.

The talk, "Learning for Life," has been arranged for high school students and their parents visiting from St. Louis and around the country for one of the annual campus visit weekend programs. The lecture is open to the University community.

"It is not surprising, given the cost of higher education and the uncertain world in which we live, that in promoting Washington University to prospective students we tend to emphasize how one's time in college, this college in particular, will 'pay off,' quite literally, in a better career and higher social position," Fields said.

"Inadvertently we place the emphasis on how attending this University will influence the way in which others will see you, judge you better prepared to be a student in their graduate or professional program, ready for a particular line of employment, better trained to serve the needs and expectations they have of you.

"But today I want to consider

instead how a liberal education might influence who you become as a person, the way you live — not only with others, but with yourself."

This semester, Fields is leading a seminar for first-year students called "Presidential Rhetoric," which focuses on the presidency and the speeches through which presidents attempt to express the nature of American union and to express the challenges and opportunities of the times in which they serve.

The subject allows a multidisciplinary approach to the office, and also a special opportunity to focus on the nature of language and argument in a democratic society.

The weekend program is hosted by the Office of Undergraduate Admissions; Arts & Sciences; the schools of Architecture, Art, Business, and Engineering & Applied Science; and a large number of student groups.

Current WUSTL students will serve as hosts for the visitors. While they are on campus, visiting students will attend classes, attend information sessions about the University and its programs, have interviews, and take tours of the campus and of the surrounding area.

For more information, call 935-6000.

For the Record

Jonathan S. Turner, Ph.D., the Henry Edwin Sever Professor of Engineering, has received a four-year, \$2.1 million grant from the National Science Foundation for research titled "ITR-M: Technologies for Dynamically Extensible Networks." ...

Jeffrey M. Zacks, Ph.D., assistant professor of psychology in Arts & Sciences, has received a two-year, \$1,397,484 grant from the NSF for research titled "Event Models in Cognition and Perception: From Text to Real-Time." ...

Erika C. Crouch, Ph.D., professor of pathology and immunology, has received a one-year,

\$5,750 grant from the United States-Israel Binational Science Foundation for research titled "Role of Surfactant Protein D (SP-D) in the Defense Against Gram-negative Bacteria."

Obituary: Burrus

Harry Burrus, tennis coach and Athletics director at the University in the 1960s and an instrumental figure in the forming of the Dwight Davis Tennis Center, died Monday, Sept. 20, 2004, in Winter Haven, Fla., of pneumonia. He was 82.

Sports

Men's soccer wins two by shutout

The men's soccer team went 2-0 last week, picking up a pair of shutouts. The Bears blanked Westminster College, 2-0, Sept. 24 in Fulton, Mo. Junior Rob Weeks led the way with his third game-winning goal of the season. Freshman Brian San Francisco added an insurance goal, his first collegiate tally. Weeks continued his strong play two days later in a 1-0 win over Millikin University. He tallied his second game-winner in as many games and leads the Bears with six goals this season.

Sports shorts

The football team suffered a 38-28 loss at North Central College on Sept. 25 in Naperville, Ill. North Central (3-0) took the opening kickoff 72 yards on seven plays to gain the 7-0 advantage, but WUSTL answered with a 77-yard drive of its own. Senior Adam Meranda connected with senior Zak Clark for a 6-yard touchdown strike.

Early in the fourth quarter, North Central held a 35-21 lead before Brad Duesing had a 43-yard TD reception, his second score of the game. But that was all the Bears could manage in dropping to 1-2. Meranda finished the day with

305 yards passing and four touchdowns; Duesing had nine catches for 154 yards.

The No. 6 women's soccer team posted a 2-1 record last week and moved to 8-1 overall. WUSTL suffered its first loss Sept. 21 when the Bears fell 2-1 at Illinois Wesleyan University. Sophomore Meghan Marie Fowler-Finn scored late in the second half to prevent the shutout. On Sept. 24, the Bears thumped Blackburn College, 11-0. Freshman Katie Campos paced the Bears with two goals and a school-record five assists.

The Bears' 11 goals were the most in a game since Sept. 4, 1999, when they shut out Anderson, 12-0. WUSTL's eight second-half goals were a school record, and its 12 assists tied a school mark. Washington U. closed out the week with a 1-0 win against Millikin Sept. 26 at Francis Field. Fowler-Finn scored the game-winner in the 61st minute.

The No. 13 women's cross country team and No. 25 men's squad sent representatives to the Roy Griak Invitational in Minneapolis, and the Miner Invitational in Rolla, Mo. The women placed seventh at the Roy Griak, paced by Maggie Grabow, who finished 11th in a field of 191. On the men's side, WUSTL finished 11th. The women took fourth at the Miner Invitational, while the men placed fifth.

Employment

Go online to hr.wustl.edu (Hilltop Campus) or medicine.wustl.edu/wumshr (Medical Campus) to obtain complete job descriptions.

Hilltop Campus

For the most current listing of Hilltop Campus position openings and the Hilltop Campus application process, go online to hr.wustl.edu. For more information, call 935-5906 to reach the Human Resources Employment Office at West Campus.

Scientific Computing Systems Manager 040108

Planned Giving Officer 040145

Research Statistician 040221

Senior IT Auditor 040222

Staff Psychiatrist 040227

Department Secretary 040236

University Archivist 040242

Internship Specialist 040249

Supervisor of Gift Acknowledgements 040250

Assoc. Dir. Medical Dev./Exec. Faculty Liaison 050008

Instructional Technology Programmer 050012

Assoc. Dean & Dir., Weston Career Resources Ctr. 050021

Radiation Safety Specialist I 050027

Japanese Catalog Librarian/Subject Librarian 050037

Sr. Research Asst. 050041

Secretary 050042

Study Coordinator 050048

Secretary/Receptionist 050051

Asst. Dean for Corporate Relations 050053

Research Coord. 050058

Admin. Dir. of IP & Bus. Formation Legal Clinic 050066

Grant Preparation & Reporting Asst. 050067

Admin. Asst. to the Office of the Dean 050069

Assoc. Dir. of Dev. & Dir. of Annual Fund 050070

Library Technical Asst. 050071

Administrative Asst. 050074

CFU Accountant (Reporting) 050077

Biological Sequence Analyst/Curator 050078

Assoc. General Counsel 050080

Mental Health Services Researcher 050081

Purchasing Asst. 050084

Medical Asst. II 050328

Patient Billing/Service Representative II 050329

Research Technician I 050330

Shipping & Receiving Clerk 050331

Sr. Research Technician 050332

Sr. Research Technician 050335

Patient Billing Service Rep. I 050338

Programmer Analyst 050343

Sr. Research Technician 050363

Project Manager I.S. 050364

RN Staff Nurse 050366

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RN Staff Nurse—PRN 050369

Medical Asst. II 050

Washington People

What's in a flame? That basic question has driven Richard L. Axelbaum, Ph.D., associate professor of mechanical engineering, for more than 20 years in his career as teacher and researcher in combustion, materials and environmental sciences.

Thanks to his pursuit of understanding the phenomena of fire and light, Axelbaum and colleagues have discovered a wealth of new materials and come up with a highly regarded patented technique to produce valuable particles in the nanometer-sized range.

Fire and light also have been the driving force behind Axelbaum developing a theory that would enable the elimination of soot, the most troublesome of all air pollutants, in the flame and combustion environment.

For more than a decade, Axelbaum has conducted innovative research in synthesizing nanometer-sized particles — nanoparticles, as they are called in the burgeoning field of nanotechnology. These particles — just 10 to 100 atoms across — are the building blocks for nanostructured materials; when they are formed into



(From left) Richard L. Axelbaum, Ph.D., graduate student Ben Kumfer and postdoctoral researcher Sun Zhen, D.Sc., watch soot form on a pipette in Axelbaum's Urbauer Hall laboratory.

'Playing' with fire

Richard L. Axelbaum sets the nanoparticle world aflame with new uses for old element

By TONY FITZPATRICK

final parts, their properties are far superior to those made from conventional materials.

Nanostructured materials can be used for a variety of industrial uses, most notably in the electronics, aerospace, defense, medical and sports and recreation industries.

Axelbaum has developed a patented process that makes nanoparticles smaller and more pure than competing technologies, and the process is faster and cheaper than existing commercial processes for conventional materials. He calls his technology the sodium/halide flame and encapsulation technology (SFE).

With an intense, turbulent flame inside a flow reactor, Axelbaum uses sodium reduction of metal halides, such as boron trichloride and titanium tetrachloride, to produce metal and ceramic nanoparticles.

While flames are used to produce hundreds of millions of tons of materials annually from silica for fiber optics to carbon black for tires, Axelbaum is the first person to patent a flame technique that makes stable nonoxide materials in the nanoparticle range. The SFE technology is licensed to AP Materials Inc., St. Louis.

His group has produced six metals and four ceramics with the technique, and he estimates that more than 30 metals, intermetallics, ceramics and composites can be produced with his technology.

"Material production is accomplished in a single step with our technology," Axelbaum said. "The key feature of the process is that we're able to produce stable, high-purity particles in large quantities. We're also able to have control of particle size and shape. Our present focus is tantalum metal for electronic capacitors. The nanoparticles will allow for smaller, faster and more sophisticated electronics."

Axelbaum grew up with his three brothers in University City and Creve Coeur, Mo., graduating from Parkway Central High School in 1973 and enrolling at Washington University that fall.

"I'd always been good in math and science and I loved building things," said Axelbaum, whose father was an industrial engineer and a graduate of WUSTL.

After graduating from the University, he worked a year with General Electric and then three more with Barry Wehmiller in St. Louis, before being accepted for graduate work at the University of California, Davis. There he first probed interests in optics and combustion-generated soot, studying with physicist Thomas Cahill, Ph.D., a renowned air quality researcher.

"Over time, I realized what I really wanted to do was apply optics to study the thermal sciences," Axelbaum recalled from his second-floor office in Jolley Hall. "Then a world-renowned mechanical engineer named Ed (C.K.) Law came to campus. His expertise provided me the perfect fit of optics, thermal science and combustion."

At UC-Davis, a unique gathering of office mates catalyzed a spiritual awakening in Axelbaum that led to his embracing Orthodox Judaism, the focus of his life to this day. In his office were an atheist, a born-again Christian, a devout Muslim, and Axelbaum, then a non-practicing Jew.

"We had lively discussions and when a question would be posed about the stand that Judaism took on certain issues, I'd respond, 'I don't know, but I'll find out,'" Axelbaum said.

"As I did this, I learned about my religion, began to appreciate its beauty and got more involved."

Axelbaum said Orthodox Juda-

ism gave him definitive answers based on traditions more than 3,500 years old. He likes the discipline and camaraderie that thrice-daily services at his synagogue, Young Israel in University City, provides. His family, wife Maurie, sons Aaron, 16, and Ari, 14, and daughter Adira, 11 — who attend Orthodox Jewish Day School — are equally committed.

He is the immediate past-president of his synagogue and was responsible for designing an optical device for his synagogue that is now used across the nation. He received the Innovation of the Year Award from the National Council of Young Israel for this invention.

Axelbaum sees no conflict between science and religion.

"Science is evolving all the time," he said. "It has evolved into a position today much more compatible with religion than it was 100 years ago. For instance, instead of a steady state view of the universe totally inconsistent with the creation scenario, science now recognizes that there was a beginning to the universe. The fact that science can make such a radical change to conform with religion shows that science and religion don't have to be at odds."

"Religion also gives added meaning to my occupation. The Torah, the Jewish Bible, teaches that fire was a gift to mankind from the Creator. Anyone that has delved into the mysteries of fire and sees how closely it is tied into the existence of man has to realize that the creation of fire is no accident."

Using his imagination and knowledge of combustion, Axelbaum in the late '90s created something that defies imagination: a spherical flame, a veritable "ring of fire." Funded by NASA, Axelbaum set out to prove his flame design theory, which holds, in part, that industrial flames can be designed to be soot-free. He used the microgravity environment to develop a spherical flame — in the absence of gravity, the flame is no longer buoyant, which means it does not rise and thus can be made spherical.

He employed drop tower studies — dropping an experiment in a tower for two-to-five seconds creates the equivalent of microgravity in space — to observe the phenomenon and concluded that he can make flames that are extremely strong and are free of soot.

"Rich is a marvelous professor and a great citizen," said David A. Peters, Ph.D., professor and chair of mechanical engineering. "I have

known him since 1975 when he was a student in one of my classes. We all knew then that he was destined for greatness. His research has always been in the area of combustion, but he has been very innovative in combining that with materials science."

"Rich is one of our most popular teachers, and is central in our courses on thermodynamics, combustion, and heat transfer. He is great at combining practical and theoretical knowledge into a coherent class structure."

Axelbaum also has played a vital role in reestablishing the Environmental Engineering Science program. He credits his colleagues, particularly Pratim Biswas, program chair, with much of the success, but is proud to be part of this team.

In the early '90s, Axelbaum was part of an interdisciplinary Washington University team comprising chemist William Buhro, Ph.D., physicist Kenneth Kelton, Ph.D., and mechanical engineer Shankar Sastry, Ph.D., to study nanoparticles. They were in the vanguard of the emerging nanotechnology field, sponsored by a new initiative by the National Science Foundation, and were the first to make the world's smallest, cleanest ceramic titanium boride.

Today the core of that group is still active as members of the University's Center for Materials Innovation (CMI), launched in the fall of 2003.

Axelbaum noted that the rabbinical writings teach that the Third Temple of the Jews will be rebuilt from fire. What exactly this means is unknown, but by combining his use of fire to create advanced materials, and his observance of Torah law, he hopes to play a very small part — a nanopart? — in that historic event.

Richard L. Axelbaum

Title: Associate professor of mechanical engineering

Education: Ph.D., mechanical engineering, University of California, Davis, 1988; M.S., mechanical engineering, University of California, Davis, 1983; B.S., mechanical engineering, Washington University, 1977

Family: Wife, Maurie; sons Aaron, 16, and Ari, 14, daughter, Adira, 11

Hobbies: Axelbaum and his family love exploring six acres of Missouri countryside that they own outside of Wentzville. The family also enjoys working together on pottery projects.



Richard Axelbaum with his wife, Maurie, and children (from right) Aaron, 16, Ari, 14, and Adira, 11, at Ari's Bar Mitzvah last year.