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Record

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Washington University in St. Louis

Cheaper ethanol one step closer

BY TONY FITZPATRICK

Cheaper ethanol through more efficient production and stronger wood are two possibilities resulting from research by Erik E. Nielsen, Ph.D., adjunct professor of biology in Arts & Sciences. The discovery, published in a recent edition of *The Journal of Cell Biology*, sheds new light on how some complex sugars in plants are directed to the construction of cell walls.

"In plants, light energy is harvested to produce sugars, and some of these are processed into complex polymers for specific uses," Nielsen said. "My team identified a distribution pathway for some of the complex sugars that are used in the construction of cell walls. This should help us understand how some of these building blocks of cell walls are delivered and how these building blocks are put together."

Nielsen's research is the first to identify some of the membrane trafficking steps in the deposition of cell wall components — a lightly researched area. His study is important because cotton, wood and other plant fibers that are vital to everyday life rely on the plant cell

wall, which gives wood the strength needed for construction and furniture, among other uses, and cotton fibers the elasticity for use in cloth. The research could lead to crops with stalks that can be used to produce biofuels more efficiently and with less waste.

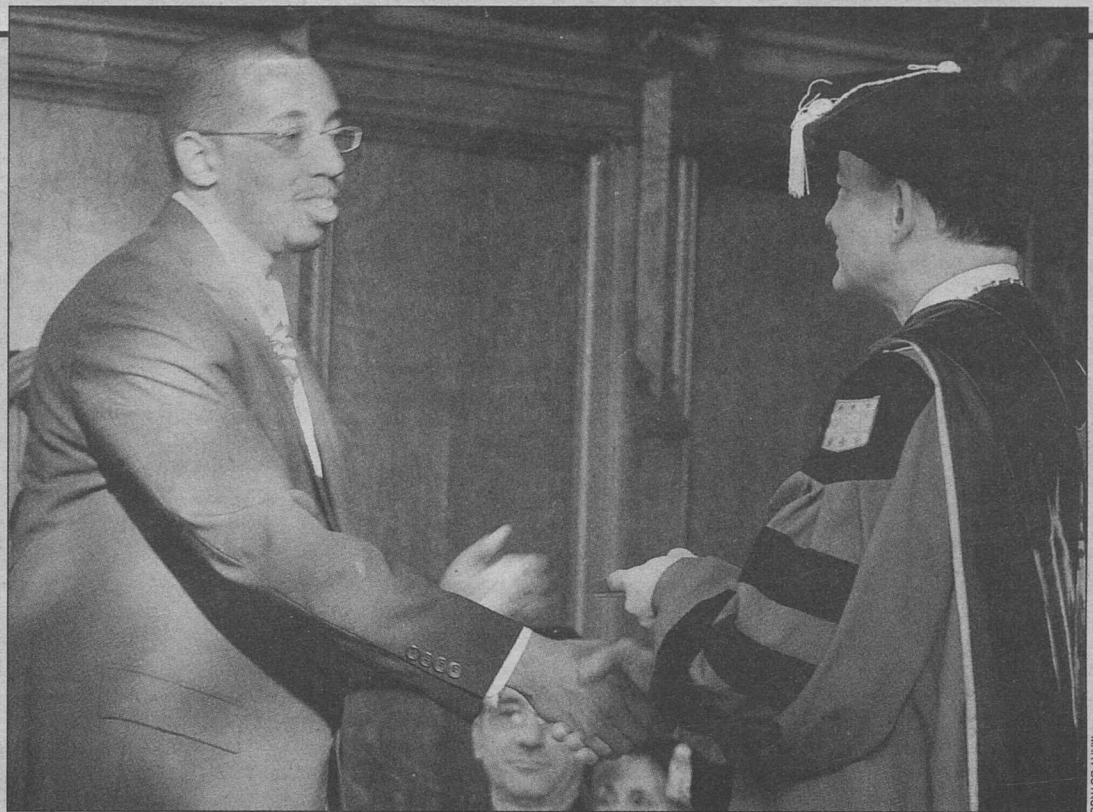
The paper's novel scientific observation is the characterization of a membrane trafficking compartment believed to be involved in polar secretion of cell-wall components in plants.

"In the paper, we describe the identification of a cellular component that is essential for the proper targeting/delivery of secretory cargo to the tips of growing root-hair cells," Nielsen said.

"Root-hair cells are a specific type of epidermal cell in roots that we have been using to monitor secretion pathways in plants. We use root-hair cells because during their development, they undergo a highly polarized expansion, in which deposition of new cell-wall components is restricted to the extreme tip of the growing root hair."

Ethanol is produced by fermenting cellulose and other polysaccharides from plant cell walls or

See **Ethanol**, Page 6



Recognizing degree candidates Jeremiah M. Giles, a master of engineering management degree candidate from the School of Engineering & Applied Science, receives a WUSTL memento from Chancellor Mark S. Wrighton during the December Degree Candidate Recognition Ceremony Dec. 3 in Graham Chapel. A reception for the more than 110 degree candidates who attended the ceremony, along with their families, friends, faculty and administrators, followed in Mallinckrodt Student Center. Ronald J. Himes, founder and producing director of The St. Louis Black Repertory Company, which is celebrating its 30th anniversary, delivered remarks at the ceremony. Himes, a 1978 graduate of University College in Arts & Sciences, is the University's first Henry E. Hampton, Jr. Artist-in-Residence in Arts & Sciences.

Women with rare breast conditions need follow-up surgical biopsies

BY CAROLINE ARBANAS

Women whose mammograms reveal a suspicious lesion need a needle biopsy to confirm or rule out cancer. But if that biopsy reveals only abnormal — not cancerous — cells, is a more extensive evaluation necessary?

Yes, according to a new study by School of Medicine physicians.

They looked at the medical records of women whose initial core-needle breast biopsies found rare, yet benign breast conditions: atypical lobular hyperplasia (ALH) or lobular carcinoma-in-situ (LCIS). While these lesions are known to increase a woman's risk of breast cancer, what the researchers found was surprising.

Follow-up surgical biopsies in which more breast tissue was removed found that up to 25 percent of

the women actually had cancer in addition to their high-risk breast conditions. Most of the cancers were invasive, meaning the tumors had penetrated normal breast tissue and would require treatment. None of the tumors had spread beyond the breast.

"This is very significant because we now know that we can't assume that women with ALH or LCIS are cancer-free," said lead author Julie A. Margenthaler, M.D., assistant professor of surgery and a breast surgeon at the Siteman Cancer Center.

The researchers published their study in the October issue of *The American Journal of Surgery*.

ALH and LCIS are known to increase the risk of breast cancer, but neither is considered a precancerous condition. Together, they represent only about 1 percent of all breast lesions, Margenthaler said.

"This seems like a small number, but with more than 100,000 core-needle breast biopsies performed in the United States each year, the number of potential cancers missed by not doing a more extensive

See **Biopsy**, Page 6



Margenthaler

University addresses ways to ease Highway 40 woes

BY BETH MILLER

The University continues to analyze various strategies to lessen the Interstate 64/Highway 40 reconstruction project's impact on students, employees and patients following the Missouri Department of Transportation's selection of Gateway Constructors as the design-build contractor.

The \$535 million project will rebuild I-64 from west of Spoeede Road to east of Kingshighway Boulevard, including rebuilding

the pavement, bridges and 12 interchanges in between. In addition, one lane will be added in each direction from west of Spoeede to Interstate 170.

The project involves rebuilding the I-64/I-170 interchange in 2007, which will result in off-peak-hour closures on I-64 and I-170 and reducing I-170 from three lanes to two at I-64; closing I-64 completely from Ballas Road to Brentwood Boulevard and rebuilding interchanges in that area

See **Highway**, Page 6

Marshall Scholarship goes to Arts & Sciences senior

BY TONY FITZPATRICK

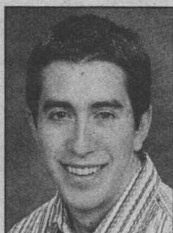
Senior Jeffrey J. Marlow is among 43 young Americans to receive a 2007 Marshall Scholarship, which provides full support for two or three years of study toward a second bachelor's degree or advanced degree at any British university.

Marlow, the son of James and Karla Marlow of Englewood, Colo., is pursuing a bachelor's degree in earth and planetary sciences in Arts & Sciences. The May 2007 degree candidate is WUSTL's first Marshall Scholar since 1993.

Marlow will join the University's newly elected Rhodes Schol-

ars Aaron F. Mertz and Leana S. Wen next fall in the United Kingdom.

"This has been a great year for Washington University student scholars," Chancellor Mark S. Wrighton said. "To have two Rhodes Scholars and now a Marshall Scholar in one year is a wonderful testimony to our entire University community and its dedication to academic excellence. Jeffrey Marlow is an impressive young man



Marlow

with many accomplishments and a great future, and I know he will represent Washington University well."

Marlow will enter Imperial College in London next fall to work on development and testing of the Urey Instrument, a component of the European Space Agency's ExoMars mission. The instrument's purpose is to collect Martian soil and analyze it for biological signatures.

Established in 1953, the Marshall Scholarships reward leadership in school, government and community endeavors, as well as excellence in scholarship and personal achievements.

Marlow has participated in

WUSTL's Pathfinder Program in Environmental Sustainability and contributed to multiple Mars missions.

Since summer 2005, he has been an Athena Team student collaborator on NASA's Mars Exploration Rover Mission and has studied boulder hazards at potential landing sites for NASA's Phoenix Mars Lander.

From summer 2004-05, he worked with NASA scientists to characterize the geomorphology of the northern plains of Mars to investigate ground ice distribution and pinpoint areas of interest for the Phoenix Lander mission.

In 2005, he was a summer re-

search fellow at California Institute of Technology; in 2006, he was a summer student fellow at Woods Hole Oceanographic Institution in Massachusetts.

In addition, Marlow has researched microbial organisms in extreme environments in an attempt to understand biological adaptations that could be relevant in the search for life beyond Earth. He has co-authored four publications.

Marlow's numerous scholarships include a Barry M. Goldwater Scholarship, an Arthur Holly Compton Scholarship, a J. Stephen Fossett Fellowship and a Robert C. Byrd Scholarship.

See **Marlow**, Page 6

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Himadri Pakrasi named the Freiberg Professor

Himadri B. Pakrasi, Ph.D., has been named the George William and Irene Koechig Freiberg Professor of Biology in Arts & Sciences. An installation will occur during the 2007-08 academic year, according to Edward S. Macias, Ph.D., executive vice chancellor, dean of Arts & Sciences and the Barbara and David Thomas Distinguished Professor in Arts & Sciences, who made the announcement.

"Some of my happiest moments as dean are recognizing and rewarding outstanding faculty members' achievements," Macias said. "Himadri Pakrasi's achievements in biology are outstanding, and he has been very successful at building bridges to several fields beyond biology and beyond Arts & Sciences."

Pakrasi's keen interest in bridging the differences between the biological and physical sciences is reflected by his recent appointment as professor of energy in the School of Engineering & Applied Science.

Pakrasi also is in the Division of Biology and Biomedical Sciences and has a special interest in guiding biochemistry and plant biology doctoral students. His teaching activities have focused on biochemistry and microbiology.

Pakrasi's research involves systems biology, photosynthesis, membrane biology, metal homeostasis, redox processes and genomics.

Several funding agencies have recognized Pakrasi's work. He leads a Membrane Biology Grand Challenge project to explore scientific enigmas in microbiology.

The project — a partnership between the University and the W.R. Wiley Environmental Molecular Sciences Laboratory at the Pacific Northwest National Laboratory of the Department of Energy (DOE) — involves the biology of membrane proteins in cyanobacteria, important photosynthetic microorganisms found in the world's oceans. Pakrasi is the first scientist from a university chosen by the DOE to lead an initiative in a national laboratory.

In 2004, the Frontiers in Integrative Biological Research program at the National Science Foundation awarded a \$5 million, five-year grant titled "A Systems Approach to Study Redox Regula-

tion of Functions of Photosynthetic Organisms." Pakrasi is the project's principal investigator.

Pakrasi's international recognition includes serving as an Alexander von Humboldt Fellow at Munich University in Germany, a Distinguished Fellow at the Biosciences Institute of Nagoya University in Japan and a Lady Davis Visiting Professor at Hebrew University in Jerusalem.

He is a fellow of the American Association for the Advancement of Science and a member of the American Society for Biochemistry and Molecular Biology, the American Society of Plant Biologists and the American Society for Microbiology. He is on the editorial board of the *Journal of Biological Chemistry*.

Pakrasi has served on various departmental and University-wide committees. Chancellor Mark S. Wrighton appointed him to the McDonnell International Scholars Academy as ambassador-at-large. Pakrasi will help foster partnerships between the University and other renowned research institutions, particularly those in India. He directs the University's effort to develop groundbreaking initiatives in bioenergy. He has organized and participated in several academic conferences across disciplines and served on various review panels. His publications are extensive.

Pakrasi joined Washington University in 1987 as assistant professor; he was promoted to associate professor in 1993 and to professor in 1997.

Pakrasi earned a doctorate in biology from the University of Missouri-Columbia in 1984. He earned a master's in physics from the University of Calcutta in 1976 and a master's in biophysics from the University of Rochester in 1980. He earned a bachelor's degree in physics from Presidency College in Calcutta in 1973.

The George William and Irene Koechig Freiberg Professor of Biology was established in 1984 to honor a faculty member distinguished in the field of biology who has demonstrated leadership in research and teaching.

Irene Koechig taught chemistry and microbiology at Washington University's School of Nursing from 1920 through the mid-1950s and was an instructor in biological chemistry at the School of Medicine from 1928 through the mid-1940s. She authored several scientific articles, as well as the textbook *Chemistry for Nurses*.



Pakrasi



Faculty achievement Emil R. Unanue, M.D. (left), the Paul and Ellen Lacy Professor of Pathology at the School of Medicine, and Michael W. Sherraden, Ph.D., the Benjamin E. Youngdahl Professor of Social Development in the School of Social Work, received the University's annual Faculty Achievement Awards at a Dec. 2 ceremony at the Farrell Learning and Teaching Center. Sherraden received the Arthur Holly Compton Faculty Achievement Award. Unanue received the Carl and Gerty Cori Faculty Achievement Award. The awards, which seek to build bridges between the Danforth and Medical campuses, recognize outstanding achievement in research and scholarship, prominence within the community of scholars, service and dedication to the betterment of the University and respected accomplishment in teaching. The awards include a \$5,000 honorarium.

Board of Trustees meets, elects Philpott member

At its meeting Dec. 1, the Board of Trustees elected Gordon W. Philpott, M.D., emeritus professor of surgery at the School of Medicine, as a member, according to Chancellor Mark S. Wrighton.

A recipient of the 2006 Distinguished Alumni Award, Philpott graduated cum laude from the medical school in 1961, after earning a bachelor's in 1957 from Yale University. He joined the surgery faculty in 1968, focusing his efforts on treating breast cancer, as well as colorectal cancer.

The trustees received a detailed report on buildings and grounds for the University, presented by Vice Chancellor Richard A. Roloff. Roloff reviewed the status of current construction projects, as well as forthcoming recommendations for continuing improvements and new facilities.

In his report to the trustees, Wrighton congratulated two recipients of Rhodes Scholarships and one Marshall Scholarship winner. Aaron F. Mertz, a 2006 Arts & Sciences graduate and student representative to the Board of Trustees, and Leana S. Wen, a medical student, became the 24th and 25th Washington University students since 1904 to receive Rhodes Scholarships — the world's oldest international fel-

lowship. WUSTL is one of only four schools in the nation to win more than one Rhodes scholarships this year. The two will pursue graduate study at Oxford University in England next fall. He also congratulated Jeffrey J. Marlow, a senior in Arts & Sciences and a former student representative to the Board of Trustees, for his Marshall Scholarship for graduate study next fall at Imperial College in London.

Wrighton reported that the Genome Sequencing Center was awarded a \$156 million, four-year grant to study DNA related to cancer and other diseases. It is only one of three such grants given by the National Human Genome Research Institute to U.S.-based sequencing centers. The grant also will be used to sequence genomes of primates and microbes.

The chancellor recounted the well-attended dedication of the Mildred Lane Kemper Art Museum and Walker Hall Oct. 25, as well as the dedication two days later of the Habib Health and Wellness Center in Dardick Hall.

On the international scene, Wrighton noted the key role the University played in helping organize the second International Graduate Scholarship Conference in Shanghai, China, in mid-October, bringing 17 U.S. universities — including Duke, Harvard, Yale and Penn — together with 20 leading Chinese universities and 400 prospective graduate students from China. He also noted that the Washington University-Fudan University Executive M.B.A. Program was ranked No. 1 in China and No. 8 in the world by the *Financial Times*. He announced that the International Advisory Council for Asia will hold its next meeting in mid-March in Bangkok, Thailand.

Wrighton closed his remarks by congratulating the Department of Athletics on another winning season, highlighted by the women's volleyball team — which closed its season at 38-2,

finishing No. 2 in the nation in the national championships. The women's soccer team finished 17-3 and was ranked No. 6 in the nation, while the women's cross country team finished No. 4 in the NCAA national championships.

In other action, the trustees received reports from the following committees: audit, development, educational policy, nominating, University finance, medical finance, research-graduate affairs, undergraduate life and the Alumni Board of Governors.

About Philpott

Gordon W. Philpott, M.D., began teaching at the medical school as soon as he completed a surgical internship and surgical residency at Barnes Hospital, joining the faculty as an instructor in surgery in 1968.

He served as assistant dean for curriculum from 1974-76 and was named the Harry Edison Professor of Surgery. He also served as chief of surgery at Jewish Hospital from 1976-78, becoming associate director of the hospital's Department of Surgery the following year. In 1994, he became a professor of radiology.

Philpott serves on the Medicine National Council, the Danforth Circle Eliot Membership Committee, the Alumni Board of Governors and the Siteman Community Advisory Board. He is co-chair of the Medicine Capital Resources Committee.

Last month, Philpott received the 2006 Distinguished Alumni Award at the Founders Day celebration.

Philpott is a surgeon highly regarded for his interest in issues related to patient care and physician education and his active support of the University and the medical school. Before retiring in July 1999, he devoted himself to developing the Breast Health Center at Barnes-Jewish Hospital.

The Philpott family, who are native St. Louisans, established in 1999 a foundation at the medical school to provide a student with financial support. In addition, the Philpott family previously established the Philpott Family Challenge program to encourage alumni and others to support the medical school.



Philpott

Holidays brighter thanks to University community

By NEIL SCHOENHERR

This holiday season is brighter for many needy St. Louis-area families, thanks to the generosity of the University community.

Through the yearly Give Thanks Give Back campaign, University students, faculty and staff sponsored 121 families and collected several thousand gifts in November.

Give Thanks Give Back supports a group called "100 Neediest Cases," a joint project of the *St. Louis Post-Dispatch* and the United Way. The 100 Neediest Cases actually identifies more than 10,000 cases of financially struggling area residents.

As the holiday season approaches, the newspaper publishes the personal stories of 100 families and individuals. Families are "adopted" by individuals or groups who buy gifts, clothing, household appliances or other requested items for the family.

"Give Thanks Give Back supports St. Louis area residents struggling to overcome poverty during the holiday season," said Arts & Sciences senior Katie Lombardi, co-chair of this year's event. "Give



Freshman Jeremy Missuk and junior Ariel Wentworth, both in Arts & Sciences, help wrap donated items Nov. 11.

Thanks Give Back has always aimed to provide a venue for all members of the Washington University community to make a positive impact on the St. Louis community. This year, there were 90 different student, faculty and staff groups sponsoring families. Give Thanks Give Back's central event, two gift-wrapping parties occurring in early November, similarly brings together various members of the University community."

The University's Office of Student Activities became involved in the program in 1998 when staff members adopted a single family. By 2001, the effort had evolved into a campus-wide program called Give Thanks Give Back. In 2002, the University community adopted 83 families. In each of the past four years, Give Thanks Give Back has adopted more than 100.

For more information, e-mail gtgb@sugroups.wustl.edu.

Record hiatus

This is the final issue of the *Record* this calendar year. We will resume publication Jan. 18, 2007. The *Record* staff wishes everyone a safe and happy holiday season.

School of Medicine Update

Asthma Center established through \$7.7 million grant

By GWEN ERICSON

A \$7.7 million grant from the National Institute of Allergy and Infectious Diseases (NIAID) will establish a center for asthma research at the School of Medicine.

Directed by Michael J. Holtzman, M.D., the Selma and Herman Seldin Professor of Medicine, the center will investigate the causes of asthma to develop new treatments for the disease.

Named the Asthma and Allergic Diseases Cooperative Research Center, the center will conduct research specifically focused on how the body's protective mechanism, the immune system, contributes to asthma.

"Normally, immunity is under tight control," said Holtzman,

who directs the Division of Pulmonary and Critical Care Medicine. "But if the immune response goes too far, it can cause inflammatory diseases like asthma."

Previous research showed that viral infections of the lungs at an early age could trigger long-term asthma. The scientists will test children with respiratory infections, measuring their body's response to the virus, and will follow their respiratory health for five years.

"We will look at the cell biology and the biochemistry of the children's response to respiratory



Holtzman

virus infection," Holtzman said. "We know the more severe the infection is, the more likely a patient is to develop asthma later. We want to know at the cell level what determines the severity of the infection and how we can intervene to prevent asthma."

Inflammation is the first response of the immune system, and current asthma treatments, including inhaled steroids, aid asthma sufferers by reducing inflammation. Unfortunately, steroids affect more than asthma symptoms.

"Steroids are flame-thrower drugs," Holtzman said. "They inhibit many aspects of the immune response — not only the one that causes asthma, but also the ones that protect you from pathogens."

Furthermore, steroid therapy is not a cure for asthma, Holtzman said. Research at the new center will seek asthma-specific anti-inflammatory treatments and therapies that modify the underlying causes of the disease instead of simply suppressing symptoms.

The researchers will look at

"We know the more severe the infection is, the more likely a patient is to develop asthma later. We want to know at the cell level what determines the severity of the infection and how we can intervene to prevent asthma."

MICHAEL J. HOLTZMAN

signals that cells use to rev up antiviral defenses. They suspect disruptions in the signals sent between cells to shut down the immune response could be the root cause of an excessive and prolonged inflammatory response.

Comparing deficient cell responses with excessive responses in genetically engineered experimental mice will help the researchers uncover biomarkers — proteins that can serve as indicators of the immune response to viral infection. The biomarkers can reveal the level of specific immune responses in children with viral infections to help isolate the cause of asthma.

"We will be able to take what we find in the mice and immediately translate that into what we study in patients," Holtzman said.

In addition to Holtzman, key investigators in the center include John P. Atkinson, M.D., the Samuel Grant Professor of Medicine and professor of molecular microbiology; Jonathan M. Green, M.D., associate professor of medicine and of pathology and immunology; and Kenneth M. Murphy, M.D., Ph.D., professor of pathology and immunology. The center is part of a cooperative group of 11 U.S. centers with NIAID funding set up to look for causes and treatments for asthma.

Anti-inflammatory boosts liver damage in mice with mutant gene

By GWEN ERICSON

Alpha-1-antitrypsin (AT) deficiency isn't a term that rolls off the tongue, but people diagnosed with this genetic disorder learn its potential effects well. They know they shouldn't smoke or be around smokers because they are at increased risk for developing emphysema at a young age. In addition, some patients with alpha-1-antitrypsin deficiency can develop serious liver disease, but it is not yet possible to predict who is at risk.

Now, School of Medicine research sheds light on the mechanisms that contribute to liver disease in alpha-1-AT deficiency patients. Using an experimental mouse model of the disorder, the researchers investigated the effects of a non-steroidal anti-inflammatory drug (NSAID) on liver injury. An estimated 15 million to 20 million people in the United States take NSAIDs such as ibuprofen and naproxen on a long-term basis.

The findings, published in a recent issue of the journal *Hepatology*, show that the NSAID indomethacin (brand name Indocin), administered at doses typically nontoxic to mice, significantly increased liver damage in the experimental mice.

The mice carried a mutated form of the human alpha-1-AT gene (called the alpha-1-ATZ gene), the most common form of the gene associated with the development of liver disease in people with alpha-1-AT deficiency. Greater expression of the mutant alpha-1-ATZ gene and increased amounts of alpha-1-ATZ protein in the liver accompanied the increase in liver injury in the experimental mice given the NSAID.

"These data demonstrate that environmental factors such as drug administration can affect the development of liver injury in this animal model," said lead author David Rudnick, M.D., Ph.D., assistant professor of pediatrics and of molecular biology and pharmacology. "And they raise the possibility that NSAIDs could have similar effects on gene and protein expression and perhaps on liver injury in people with alpha-1-AT deficiency."

About 1 in 2,000 individuals

has alpha-1-AT deficiency. Rudnick said that even though alpha-1-AT deficiency is the most common genetic indication for pediatric liver disease and liver transplantation, a study to investigate whether NSAIDs affect human alpha-1-AT patients may not be feasible because of the disorder's relative rarity.

"But I tell my patients with any form of chronic liver injury they should avoid NSAIDs," said Rudnick, a pediatric gastroenterologist at St. Louis Children's Hospital. "The drugs have an established potential hepatotoxicity. I would say alpha-1-AT deficiency liver disease is another example where these drugs should be avoided."

Normally, the liver secretes alpha-1-AT protein into the bloodstream, but the abnormal protein, alpha-1-ATZ, can get "stuck" in liver cells. Liver biopsies of alpha-1-AT deficiency patients reveal that their liver cells have numerous globules containing alpha-1-ATZ protein.

The defective alpha-1-ATZ doesn't reach the lungs, where alpha-1-AT normally regulates enzymes that digest protein. Loss of alpha-1-AT's regulation of protein-digesting enzymes in the lungs can result in tissue damage and emphysema.

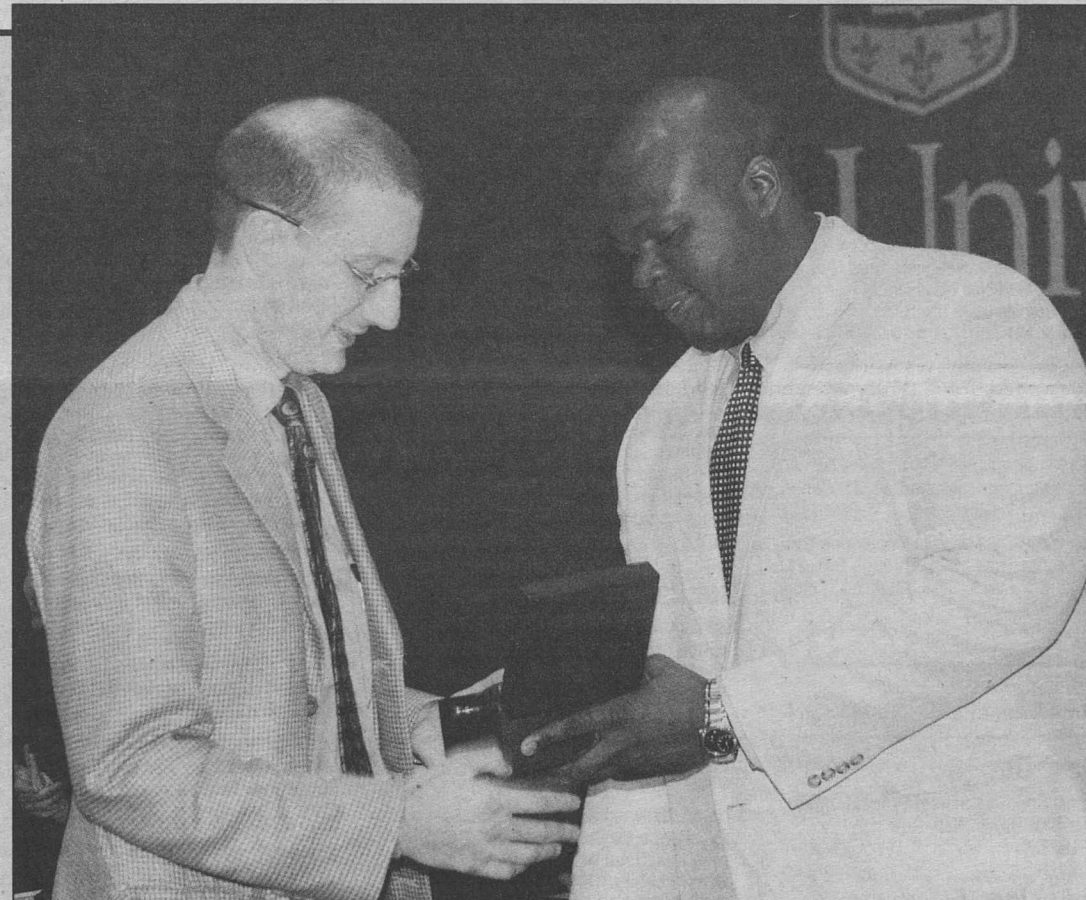
In ways not yet entirely understood, accumulation of alpha-1-ATZ in the liver can lead to both liver damage and liver cancer. In the mice carrying the human alpha-1-ATZ gene, the NSAID indomethacin caused liver cells not only to accumulate even more of the abnormal alpha-1-ATZ protein but also to proliferate or multiply faster than usual — a hallmark of liver response to injury.

People who have alpha-1-AT deficiency vary widely in the severity of liver injury: Some patients never have liver problems, while others will require a liver transplant before they are 2 years old. Only 10 percent to 20 percent of infants with alpha-1-ATZ genes will develop clinically overt liver damage.

"We don't yet know the mechanism accounting for such wide variability in this disorder, but other genetic and environmental factors must contribute," Rudnick said. "The effect of indomethacin on these transgenic mice suggests that NSAIDs may be an example of such an environmental influence."



Rudnick



Top notch Marc J. Bernstein, M.D. (left), instructor in clinical medicine, receives the Stanley Lang Lecturer of the Year Award from Wale Adeniran, president of the School of Medicine Class of 2009. The medical school Classes of 2007, 2008 and 2009 awarded nearly 50 Distinguished Service Teaching Awards to faculty Nov. 15 at the Eric P. Newman Education Center.

'Scientific American' honors 3 Alzheimer's disease researchers

By MICHAEL C. PURDY

Three Alzheimer's disease researchers at the School of Medicine have been named to the 2006 *Scientific American* 50, an honorary list of the year's "prime movers" in a variety of scientific disciplines.

The magazine's board of editors chose David Holtzman, M.D., the Andrew B. and Gretchen P. Jones Professor and head of the Department of Neurology; Randall Bateman, M.D., assistant professor of neurology; and John Cirrito, Ph.D., a postdoctoral research associate in neurology and psychiatry, based on their outstanding contributions to understanding how Alzheimer's disease originates in and affects the brain.

Their work is funded by the National Institute on Aging, the Alzheimer's Association, the Washington University Alzheimer's Disease Research Center (ADRC), the Hope Center for Neurological Disorders, the Blanchette Hooker Rockefeller Fund and the Cure Alzheimer's Fund.

The list appears in the December issue of the magazine.

Earlier this year, Bateman and Holtzman led a

multidisciplinary team of scientists that developed the first safe and effective method for assessing production and clearance of amyloid beta peptide (Abeta) in the human central nervous system.

The new test also should be helpful in efforts to diagnose Alzheimer's disease earlier and to test new treatments. It was developed in collaboration with Kevin E. Yarasheski, Ph.D., associate professor of medicine and assistant director of the Washington University Biomedical Mass Spectrometry Resource, and with the support of the ADRC, which is directed by John C. Morris, M.D., the Friedman Distinguished Professor of Neurology.

Factors affecting Abeta accumulation are also a key issue for Cirrito. Cirrito modified an existing technique called microdialysis to enable repeated sampling and measurement of Abeta levels in mouse brains genetically altered to model human Alzheimer's disease. The researchers found that turning up brain cell firing rates drove up levels of Abeta in the spaces between brain cells.

The study's results may help explain why specific brain regions are vulnerable to Alzheimer's.

University Events

U.S. premiere of 'Hana's Suitcase' comes to Edison

By LIAM OTTEN

In March 2000, a child's suitcase bearing the name and birth date of Hana Brady arrived at the Tokyo Holocaust Education Resource Center. Painted across the battered luggage was the German word *weisenkind*, or "orphan."

With these few clues, a determined group of Japanese schoolchildren, led by their teacher, Fumiko Ishioka, set out to uncover Hana's identity. Their story, intertwined with that of young Hana, became the basis of *Hana's Suitcase* (2002), Karen Levine's acclaimed children's book, which has been translated into 27 languages and won numerous awards in Canada, the United States and abroad.

At 7:30 p.m. Jan. 11, Edison Theatre will present the U.S. premiere of a stage adaptation of *Hana's Suitcase* by the playwright Emil Sher. The play, which runs through Jan. 21, is jointly produced by Edison Theatre and the Metro Theatre Company.

"Kids today are inundated by media: books, movies, television and the Internet," said Charlie Robin, executive director of Edison Theatre. "Yet the performing arts — theatre, music and dance — can

also be tremendous tools for learning. They have a kind of immediacy and emotional power that helps young people relate stories to their own lives.

"Parents are always their children's first and primary teachers," Robin continued. "But I think *Hana's Suitcase* will spark conversations that parents may not otherwise know how to begin."

Still, introducing children to events as painful as the Holocaust poses a particular challenge, noted Erin McGlothlin, Ph.D., assistant professor of Germanic languages and literatures in Arts & Sciences and an expert on Holocaust literature.

"On the one hand, you have to avoid simplistic explanations and present the Holocaust in all its historical complexity and specificity," McGlothlin said. "Otherwise it's just a tale of senseless atrocity. On the other hand, the story has to be digestible for children and offer some glimmer of hope, some affirmation of life. And you have to be careful about not traumatizing them with too much brutal detail. It's really a huge task."

Like the book, the stage adaptation of *Hana's Suitcase* cuts



A stage adaptation of children's book *Hana's Suitcase* opens Jan. 11.

back-and-forth between two narrative threads. As Fumiko and her class pursue clues from Tokyo to Prague, Czechoslovakia and ultimately, Canada — where they learn Hana's fate — we also see glimpses of the Brady family, whose happy life in the small Czech town of Nove Mesto is shattered in 1939 by the Nazi invasion.

"Hana's story isn't sugar-coated," McGlothlin said. "But there's also a moment of redemption in

that the Japanese children are able to rescue her story from oblivion. By emphasizing their active involvement, *Hana's Suitcase* shows that children can play a positive role in shaping their world and responding to injustice — that they're not just passive victims."

Carol North, artistic director for Metro Theatre, directs the cast of nine, which is led by Haruna Tsuchiya as Fumiko and Leah Schumacher as Hana.

Also starring are Don Castro as Akira and Stephanie Kim as Maiko, two of Fumiko's students; Nicholas Kryah as Karel Brady and George Brady, Hana's father and older brother, respectively; and Stephanie Strohmman as Marketa Brady, Hana's mother. John Wolbers is the young George Brady. Beckah Voigt is featured in the roles of Michaela and Friedl Dicker-Brandeis. Eddie Webb performs triple duty as Viktor, Uncle Ludvik and Kurt Kotouc.

"We are thrilled to be partnering with Edison Theatre to bring this powerful play to St. Louis audiences," North said. "Emil Sher's script weaves past and present in a seamless theatrical journey that takes us through the darkness of the Holocaust and into the light of hope. I'm so moved by Fumiko Ishioka's quest to find answers for children who needed to know the truth of Hana's story. She is my inspiration as we prepare Metro Theatre Company's production."

Performances are at 7:30 p.m. Fridays, 2 and 7:30 p.m. Saturdays and 2 p.m. Sundays. Tickets prices range from \$8-\$15.

For more information, call 935-6543 or visit edisontheatre.wustl.edu.

Asset Accumulation • Flute Choir • IdeaBounce • Mapping Genes

"University Events" lists a portion of the activities taking place Dec. 7-Jan. 17 at Washington University. Visit the Web for expanded calendars for the Danforth Campus (calendar.wustl.edu) and the School of Medicine (medschool.wustl.edu/calendars.html).

Exhibitions

Caught! Modern dance photographs by Barbara Morgan. Through Dec. 21. Olin Library, Lvl. 1, Ginkgo Rm. 935-5495.

Eyes on the Prize 1 & 2: Documenting the Civil Rights Movement. Through Dec. 21. Olin Library, Lvl. 1, Grand Staircase Lobby. 935-8679.

Film

Friday, Dec. 8

7:30 p.m. **Sam Fox School Presentation.** *The Matrix*. Brown Hall, Rm. 100. 935-4523.

Friday, Jan. 5

6:30 & 8 p.m. **Travel Lecture Film Series.** *Bringing Home Sardinia: Italy's Mediterranean Isle.* Steve McCurdy, dir. Graham Chapel. For information and costs: 935-5212.

Lectures

Thursday, Dec. 7

Noon. Genetics Seminar Series. "Transcription, Biosensors and Fluorescence." Tomasz Heyduk, prof. of biochemistry & molecular biology, St. Louis U. McDonnell Medical Sciences Bldg., Rm. 823. 362-2139.

1 p.m. Condensed Matter/Materials & Biological Physics Seminar. "Metallic Hydrogen as a 'Permanent' Quantum Liquid." Neil Ashcroft, Horace White Professor of Physics, Cornell U. Compton Hall, Rm. 241. 935-6276.

3 p.m. Physics Theory Seminar. "SU(N) Chiral Gauge Theories on the Lattice." Maarten Golterman, prof. of physics and astronomy, San Francisco State U. (2:30 p.m. Coffee.) Compton Hall, Rm. 241. 935-6276.

4 p.m. History Colloquium. "Eastern Peace and Western Tranquility: Cantonese Migrants and Social Mobility in the West River Basin, 1575-1722." Steven Miles, asst. prof. of history. (Reception follows.) Brown Hall Lounge. 935-5450.

4 p.m. Ophthalmology & Visual Sciences Seminar. "Cytokines, Chemokines and Co-receptors, Their Role in Herpetic Keratitis, a Story in Progress." Patrick Stuart, research asst. prof. of ophthalmology &

visual science. Maternity Bldg., Rm. 725. 362-3315.

Friday, Dec. 8

9:15 a.m. Pediatric Grand Rounds. "Genetic Syndromes and the Heart: More Than a Plumbing or Electrical Problem." Mark Johnson, assoc. prof. of pediatrics. Clifton Aud., 4950 Children's Place. 454-6006.

Noon. Cell Biology & Physiology Seminar. "Combining Viral and Immune Cell Therapy in the Treatment of Cancer." Stephen Thorne, research assoc. in pediatrics and Bio-X program, Stanford U. 362-5104.

Monday, Dec. 11

8:30 a.m.-4 p.m. Center for the Application of Information Technology Two-day Workshop. "Writing Skills for IT Professionals." (Continues 8:30 a.m.-4 p.m. Dec. 12.) Cost: \$820; reduced fees available for CAIT member organizations. CAIT, 5 N. Jackson Ave. To register: 935-4444.

11 a.m. Midwest Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research Guest Lecture. "SARS in China: Lessons Learned." James Maguire, prof. and head of international health, U. of Md. McDonnell Medical Sciences Bldg., Erlanger Aud. 286-0432.

4 p.m. Immunology Research Seminar Series. "The Regulation of V(D)J Recombination." Mark Schlissel, prof. of molecular & cell biology, U. of Calif., Berkeley. Farrell Learning & Teaching Center, Connor Aud. 362-2763.

7 p.m. Sam Fox School Architecture Lecture Series. "KM3 and After." Winy Maas, principal architect, MVRDV Architects, Rotterdam, the Netherlands. Whitaker Hall Aud. 935-9300.

Tuesday, Dec. 12

Noon. Molecular Microbiology & Microbial Pathogenesis Seminar Series. "Bistability and the Regulation of Competence in *Bacillus subtilis*." David Dubnau, prof. of microbiology & molecular genetics, Public Health Research Inst., Newark, N.J. Cori Aud., 4565 McKinley Ave. 935-7888.

Wednesday, Dec. 13

8:30 a.m. Center for the Application of Information Technology Executive & Management Forum. "Big Business Impact Through Next Generation Mobile Solutions." Dave Hoyt, corporate v.p. of strategy & solution delivery, Daugherty Business Solutions. Eric P. Newman Education Center. To register: 935-4444.

4 p.m. Biochemistry & Molecular Biophysics Seminar. "Bacterial Reprogramming of Eukaryotic Cell Biochemistry." Eric Stebbins, assoc. prof. of structural microbiology, Rockefeller U. Cori Aud., 4565 McKinley Ave. 362-4152.

Thursday, Dec. 14

Noon. Genetics Seminar Series. "Genome Wide Association and Candidate Gene Study of Nicotine Dependence — A Two Pronged Approach." Laura Bierut, assoc. prof. of psychiatry. McDonnell Medical Sciences Bldg., Rm. 823. 362-2139.

Friday, Dec. 15

9:15 a.m. Pediatric Grand Rounds. "Savings and Asset Accumulation by the Poor." Michael Sherraden, Benjamin E. Youngdahl Professor of Social Development. Clifton Aud., 4950 Children's Place. 454-6006.

11 a.m. Electrical & Systems Engineering Seminar. "Adaptive Tracking and Disturbance Rejection: Recent Advances and Current Research." Alberto Isidori, prof. of systems science and mathematics. Bryan Hall, Rm. 305. 935-5565.

Noon. Cell Biology & Physiology Seminar. "Extracellular Microfibrils in Development and Disease." Francesco Ramirez, dir. & prof., Child Health Inst. of N.J. McDonnell Medical Sciences Bldg., Rm. 426. 362-2254.

Monday, Dec. 18

8:30 a.m. Center for the Application of Information Technology Three-day Workshop. "Project Management Professional Concepts Review and Exam Prep." (Continues 8:30 a.m.-4 p.m. Dec. 19 & 20.) Cost: \$1,230; reduced fees available for CAIT member organizations. CAIT, 5 N. Jackson Ave. To register: 935-4444.

4 p.m. Immunology Research Seminar Series. "Deciphering the Complex Interactions Between Immunity and Developing Tumors." Robert Schreiber, Alumni Professor of Pathology & Immunology. Farrell Learning & Teaching Center, Connor Aud. 362-2763.

5:30 p.m. Cardiac Bioelectricity & Arrhythmia Center Seminar Series. "Molecular Basis of Drug-induced Block and Activation of Cardiac K Channels." Michael Sanguinetti, prof. of physiology, U. of Utah. (5 p.m. Reception.) Whitaker Hall, Rm. 218. 935-7887.

Tuesday, Dec. 19

Noon. Molecular Microbiology & Microbial Pathogenesis Seminar Series. "p2 GTPases and Interferon-mediated Resistance to Pathogens." Greg Taylor, asst. research prof. of medicine, Duke U. Cori Aud., 4565 McKinley Ave. 362-8873.

King's legacy to be celebrated

By NEIL SCHOENHERR

The University's 20th annual celebration honoring Martin Luther King Jr. takes place at 7 p.m. Jan. 15 in Graham Chapel. The event kicks off a semester-long series of related activities.

The celebration is titled "The Dream of One; the Actions of Many; the Responsibility of All."

Chancellor Mark S. Wrighton will begin the program with a welcome and remarks. The evening will include performances by the YMCA Boys Choir, the University's Visions Gospel Choir and Black Anthology, as well as testimonials from University students.

A reception in the Women's Building Formal Lounge follows the program.

Emphasis will be placed on the 20th anniversary of the 14-part series *Eyes on the Prize*, a documentary of the civil rights movement by filmmaker and alumnus Henry E. Hampton (1940-1998). The award-winning series ran on PBS. A St. Louis native, Hampton graduated from WUSTL in 1961, and the Henry Hampton Collection is part of the University's Film & Media Archive.

The celebration, sponsored by several student groups and campus departments, is free and open to the public. For more information, call 935-5970.

Other free, public King-related events include:

- The School of Medicine's Office of Diversity Programs annual Martin Luther King Jr. celebration lecture, 4 p.m. Jan. 15 in the Eric P. Newman Education Center. Patricia J. Williams, professor of law at

Columbia Law School and author of *The Alchemy of Race and Rights*, will speak. For more information, call 362-6854.

- The Black Law Students Association's annual Martin Luther King Jr. commemorative speaker event, 11 a.m. Jan. 17 in Anheuser-Busch Hall. Sherrilyn Ifill, associate professor of law at the University of Maryland, presents "Twenty-first Century Challenges to Racial Justice Lawyering." Ifill is a nationally recognized advocate in the areas of civil rights, voting rights, judicial diversity and judicial decision-making. For more information, call 935-4958.

- MLK Jr. Financial Freedom Conference, sponsored by the George Warren Brown School of Social Work and the Society of Black Student Social Workers, 10 a.m. Jan. 20 in Brown and Goldfarb halls. The asset-building conference for students and community members offers workshops focused on providing financial education and tools for building personal and intergenerational wealth. For more information, call 935-9116.

- Black Anthology's annual celebration of the black experience in America, 7 p.m. Feb. 2-3 at Edison Theatre.

- Morehouse College Glee Club performance, 7 p.m. March 5 in Graham Chapel.

- "Gandhi, King and Ikeda: A Legacy of Building Peace," an exhibition in Olin Library, April 16-27. Lawrence Edward Carter Sr., dean of the Martin Luther King Jr. International Chapel at Morehouse College, will attend the April 15 opening reception.

Sing-along and concerts round out the year

BY LIAM OTTEN

The Department of Music in Arts & Sciences will conclude its fall season with a series of December concerts, including the annual sing-along of George Frideric Handel's *Messiah*.

The Washington University Opera, under the direction of Jolly Stewart, will present a program titled **"In Women's Chambers"** at 8 p.m. Dec. 8-9 in Umrath Hall Lounge. The program will include portions of three 20th-century operas: Benjamin Britten's *The Rape of Lucretia* (1946), Conrad Susa's *Black River* (1975) and Mark Adamo's *Little Women* (1998).

Also Dec. 9, the Kingsbury Ensemble — directed by Maryse Carlin, instructor in harpsichord — will celebrate the 250th anniversary of the birth of Wolfgang Amadeus Mozart (1756-1791) with **"Mozart in the Age of Enlightenment."** The concert begins at 8 p.m. in Holmes Lounge. Admission is \$15; \$10 for seniors, faculty and staff; and free for students.

The program of chamber music includes works by two of Mozart's contemporaries: Franz Joseph Haydn (1732-1809), a fellow Austrian who served as a mentor to the younger composer, and Ludwig van Beethoven (1770-1827), who traveled to Vienna at age 17 to meet Mozart.

The program will open with Haydn's popular Piano Trio in G Major ("Gypsy Rondo") (1795),

followed by Mozart's Sonata in E minor, K. 304, for violin and fortepiano (1778), and his Piano Trio in B-flat Major, K. 502 (1786). Two works of Beethoven — his Variations on "Bei Männern" from Mozart's *The Magic Flute* for cello and fortepiano and the Piano Trio in C minor, op. 1, no. 3 — conclude the concert.

Performers are Christina Mahler, principal cellist of Toronto's esteemed Tafelmusik Baroque Orchestra; her colleague in the group, violinist Aisslinn Nosky; and fortepianist Seth Carlin, professor and head of keyboard performance in music.

The fortepiano is the intermediary keyboard instrument between the harpsichord, that saw its popularity wane during the Classical era of Haydn and Mozart, and the earliest versions of the modern piano, which were built during Beethoven's lifetime.

The University's annual sing-along of Handel's oratorio *Messiah* will take place at 3 p.m. Dec. 10 in Graham Chapel. The performance, which lasts about an hour, will include the Christmas portion of *Messiah*, as well as the "Hallelujah Chorus." John Stewart, director of vocal performance, conducts.

William Partridge Jr., campus organist, provides the instrumental accompaniment. Soloists are graduates and students in the Department of Music, including soprano Dana Hudson, mezzo-soprano Debra Hillabrand, tenor Adam Cromer and baritone

Robert Reed.

Special sections within the audience will be arranged according to voice type (soprano, alto, tenor, baritone), though those who choose not to sing also are welcome to attend. Copies of the music will be available for those who do not bring their own scores.

Concluding the season are three concerts by student ensembles.

The 13-member **Washington University Flute Choir**, under the direction of Jan Smith, teacher of applied music, will perform at 8:30 p.m. Dec. 11 in Graham Chapel.

Six **string quartets**, under the coaching of Elizabeth Macdonald, director of strings, will perform along with a consort featuring various sizes of viols, a family of string instruments popular in the Renaissance and Baroque eras that paralleled the developing violin family. The concert begins at 8 p.m. Dec. 12 in the Olin Women's Building Lounge.

At 8 p.m. Dec. 14, a dozen students of guitar, under the direction of Alan Rosenkoetter, head of guitar performance, will present **"Guitar Gale"** in Graham Chapel. The program will include solo classical works, works for voice with two guitars and pieces for solo jazz guitar.

All concerts are free and open to the public unless otherwise noted.

For more information, call 935-4841 or e-mail staylor@wustl.edu.

Sports

Men's hoops wins 23rd Annual Lopata Classic

The men's basketball team shot 74.1 percent in the second half to claim the 23rd Annual Lopata Classic with an 81-65 win against Pomona-Pitzer Colleges Dec. 2 at the Field House. Washington U. trailed 28-25 at halftime but hit 19 of its first 22 shots in the second half to build a 70-48 lead.

Sophomore forward Tyler Nading earned the Robert L. Burnes Most Valuable Player honors after scoring 22 points and pulling down a career-high 13 rebounds. The double-double for Nading was the first of his career.

Sophomore guard Sean Wallis joined Nading on the All-Tournament Team, recording his first career double-double with a career-high 12 assists and 10 points. The 12 assists by Wallis tied the Lopata Classic single game record. He also set the Lopata Classic record with 18 assists in the tournament.

Women's basketball wins two at Classic

The women's basketball team (4-3) picked up two wins Dec. 2-3 at the Viking Classic in Chicago. WUSTL opened the Classic with a 66-62 win against St. Mary's College (Ind.) Dec. 2. Senior forward Rebecca Parker notched her third double-double of the season with 20 points and 14 rebounds. On Dec. 3, the Bears rolled past North Park University, 58-34. Sophomore forward Jaimie McFarlin scored 13 points and grabbed a career-high 20 rebounds.

Men's and women's swimming 2nd at invite

The men's and women's swimming and diving team totaled 21 NCAA provisional qualifying times, two NCAA automatic marks and three school records Dec. 1-2 at the Wheaton Invitational in Illinois.

The men finished second out of nine squads, while the women took second out of eight teams. On Day 1, the men recorded seven NCAA "B" cuts; the women posted six provisional marks and one automatic qualifying time.

Fowler-Finn named player of the year

Senior midfielder MeghanMarie Fowler-Finn of the women's soccer team has been named the *D3Kicks.com* National Player of the Year, as announced by the Web site.

Fowler-Finn is the fifth women's soccer all-America selection in school history and the first to earn National Player of the Year honors. Fowler-Finn, the 2006 UAA Player of the Year, led the Bears in shots (65) and game-winning goals (4) and was second in goals (11) and points (23). A first-team all-America, all-region and all-UAA selection, Fowler-Finn finished her career ranked third in school history in game-winning

goals (12), and fourth in goals (39) and points (86).

She was named to the 2006 *ESPN The Magazine* College Division Second-Team Academic-America Team. Fowler-Finn became just the fourth player in the WUSTL women's soccer program to earn Academic All-America honors.

A three-time Academic All-UAA and two-time Academic All-District VII honoree, Fowler-Finn has a 3.71 GPA and is expected to graduate in May with a degree in psychology and environmental studies.

Volleyball to be featured on CBS Dec. 30

The volleyball team — which fell to No. 1 Juniata College, 3-2, Nov. 18 in the NCAA championship match — will be featured on "CBS Presents the Championships of the NCAA" at 2 p.m. Dec. 30 on CBS. The show will highlight 2006 NCAA Championships from the fall Division II and Division III sports seasons.

Men's tennis ranked eighth in Division III

The men's tennis team is ranked No. 8 in the Intercollegiate Tennis Association (ITA) Division III Fall Rankings, as announced by the ITA. The Bears are ranked third in the Central Region. Freshman John Watts is ranked No. 1 in the Central Region and third nationally after capturing the Central Region championship and placing third at the National Small College Championship. Watts enters the spring with a 10-2 record in singles. Sophomore Charlie Cutler is ranked eighth in the Central Region after advancing to the semifinals of the ITA Fall Championship.

Five soccer players earn all-region honors

The men's and women's soccer team was well represented on the inaugural *D3kicks.com* All-Regional Team, as announced by the Web site. Senior midfielder MeghanMarie Fowler-Finn and junior goalkeeper Carrie Sear of the women's squad were named first team; senior Talia Bucci was named second team.

On the men's side, junior midfielder Elie Zenner was named to the second team, while freshman goalkeeper John Smelcer earned third-team honors.

Wethington named UAA Defensive Player of Year

Senior defensive lineman Drew Wethington capped his four-year career by being named the UAA Defensive Player of the Year, as announced by the conference office. Wethington, who shared the honor with Case Western Reserve University linebacker Tom Brew, becomes the eighth Bear to receive the honor.

Legal scholarship workshop Feb. 9-11

The School of Law's Center for Empirical Research in the Law (CERL) will host the workshop "Conducting Empirical Legal Scholarship: The Advanced Course" Feb. 9-11 in Anheuser-Busch Hall.

The workshop, co-sponsored by CERL and Northwestern Uni-

versity, is designed for law-school faculty interested in furthering their training in empirical research.

"Legal academics are increasingly conducting empirical research to better understand law, courts and the legal system," said Andrew D. Martin, Ph.D., CERL

director and professor of political science in Arts & Sciences and of law. "For years, Washington University has been a leader in empirical research with active faculty in the law school, Arts & Sciences and the Olin School of Business."

Martin will serve as a workshop instructor, along with Lee Epstein, Ph.D., the Beatrice Kuhn Professor of Law at Northwestern University.

Course topics include multiple regression, regression models for limited dependent variables, presenting results from nonlinear models, matching methods for casual inference, and data visualization and graphics.

Tuition is \$750 for those who register by Dec. 13. After Dec. 13, the fee is \$850. For more information, visit cerl.wustl.edu/events/acels07s/ or call CERL coordinator Karma Q. Jenkins at 935-9490.

Free vehicle inspections offered

Free travelers' vehicle safety inspections will take place from noon-3 p.m. Dec. 9 in the parking lot outside the WUSTL Police Department/Parking Services office on the South 40.

The WUSTL Police Department and Parking Services, in partnership with Hartmann's Towing, are offering the service to students, faculty and staff.

The inspection includes a check of tire pressure, fluid levels, wipers, headlights and taillights. Local businesses donated oil and

windshield-washer fluid to top off fluids.

"Too often, we all neglect to check our vehicles before taking off on a trip," Chief of University Police Don Strom said.

"This is a great, quick and easy opportunity for members of our campus community to get their vehicles inspected and help ensure they have a safe trip over the upcoming break," Strom added.

For more information, call 935-5084.

Music

Thursday, Dec. 7

8 p.m. **Jazz at Holmes.** Phil Dunlap, piano, and his trio. Ridgley Hall, Holmes Lounge. 935-4841.

Friday, Dec. 8

8 p.m. **Washington University Opera.** "In Women's Chambers." Excerpts from operas by Britten, Susa and Adamo. (Also 8 p.m. Dec. 9.) Umrath Hall Lounge. 935-4841.

Saturday, Dec. 9

8 p.m. **Concert.** "Mozart in the Age of Enlightenment." Kingsbury Ensemble. Cost: \$15; \$10 for seniors and WUSTL faculty & staff; free for students. Ridgley Hall, Holmes Lounge. 862-2675.

Sunday, Dec. 10

3 p.m. **Messiah sing-along.** John Stewart, dir. Graham Chapel. 935-4841.

Monday, Dec. 11

8 p.m. **Concert.** Flute Choir. Jan Smith, dir. Graham Chapel. 935-4841.

Tuesday, Dec. 12

8 p.m. **Concert.** Chamber ensembles. Elizabeth Macdonald, dir. Women's Bldg. Formal Lounge. 935-4841.

How to submit 'University Events'

Submit "University Events" items to Genevieve Posey of the Record staff via:
e-mail — recordcalendar@wustl.edu
campus mail — Campus Box 1070
fax — 935-4259
Deadline for submissions is noon on the Thursday prior to publication date.

Sports

Saturday, Dec. 9

7 p.m. **Women's basketball vs. McKendree College.** Athletic Complex. 935-4705.

Wednesday, Dec. 13

6 p.m. **Women's basketball vs. Maryville U.** Athletic Complex. 935-4705.

8 p.m. **Men's basketball vs. Maryville U.** Athletic Complex. 935-4705.

Saturday, Dec. 16

1 p.m. **Women's basketball vs. Fontbonne U.** Athletic Complex. 935-4705.

3 p.m. **Men's basketball vs. Fontbonne U.** Athletic Complex. 935-4705.

Friday, Jan. 12

6 p.m. **Swimming & diving vs. Lindenwood U.** Millstone Pool. 935-4705.

And more...

Thursday, Dec. 7

5:30 p.m. **Skandalaris Center Event.** IdeaBounce. (Reception follows.) Simon Hall, May Aud. For information and to register: sc.wustl.edu.

7 p.m. **Sam Fox School Artist Talk.** Tom Friedman. Kemper Art Museum. 935-4523.

Friday, Dec. 8

1 p.m. **Skandalaris Center Event.** Innovators & Entrepreneurs Workshop. (Reception follows.) Simon Hall. For information and to register: sc.wustl.edu.

Sunday, Dec. 10

2 p.m. **Kemper Art Museum Tour.** Featuring current special exhibitions. Kemper Art Museum. 935-4523.

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NIH mandates proposals to be filed electronically

By BETH MILLER

Researchers applying for R01 grants from the National Institutes of Health (NIH) will no longer have to spend hours copying and collating paper. The NIH has mandated that all proposals be filed electronically, starting with the February 2007 submission period.

The R01 application is the most prevalent NIH funding request. Historically, the February submission period has generated the highest volume of submissions.

Because of the heavy volume of proposals expected for the NIH's Feb. 5 deadline, the Research Office at the Danforth Campus and Grants & Contracts at the School of Medicine will need at least 10 full working days to process each proposal before it can be filed electronically, said John Michnowicz, director of Grants & Contracts.

This time will allow the University to address any potential issues with the application transmission.

"All of us as principal investigators, me included, are used to the idea of turning in the grant right before it's due," said Samuel L. Stanley Jr., M.D., vice chancellor for research. "But these are special circumstances, and because of the massive change, we have to move the deadline up."

To prepare for the transition from paper submission to electronic submission, an eSubmission Working Group with members from both campuses was established in March.

In addition, a Faculty Advisory Committee was formed in August to provide the faculty's perspective.

In October and November, the Research Office and Grants & Contracts, in coordination with Administrative Information Systems, trained more than 400 employees — who had proposals due Nov. 1 or Dec. 1 — in the new electronic filing system.

Additional training will be offered this month for staff who have not yet had it or would like a refresher, Michnowicz said. In addition, there will be specific training for faculty that will focus on uploading the research plan, viewing specific sections of the research plan and the approval process for submitting the proposal.

"Electronic filing has a lot of positive implications," Stanley said. "It will ultimately reduce paper, help facilitate the reviewing process and allow us to track submissions."

"Like any other major change, there will be some growing pains, but the team has done their best to identify problems and pitfalls," Stanley said. "But until we go live, it will be difficult to know what to expect."

Cindy White, director of the Research Office, echoed Stanley's sentiments.

"We're trying to inform faculty that our offices need to have materials in as much as 10 full working days early at least for the first few deadlines," White said.

Once faculty and staff get acquainted with the process, the 10-day lead time could be reduced, she said.

Marlow

— from Page 1

Throughout his college career, Marlow has participated in a number of community service and school outreach programs in the St. Louis area in an effort to introduce students to inquiry-based science.

He also participated in student government in a variety of positions. For instance, from spring 2005 to spring 2006, he was one of two undergraduate representatives to the Board of Trustees, sitting on several committees and discussing University concerns with trustees. He researched the state of the intellectual communi-

ty at the University and presented the findings to the board.

Since 2002, he has run in six marathons, winning his age division in the 2002 Mile High City Marathon and the 2004 Lewis and Clark Marathon. He has climbed mountains in North America and Europe and participated in club ice hockey and tennis.

"The Marshall Commission could not have made a better choice," said Ian MacMullen, Ph.D., assistant dean in the College of Arts & Sciences. "Jeff is a first-rate young scientist with a remarkable record of extracurricular leadership and service. And he climbs mountains. We are proud that he will be Washington University's man in London for the next two years."

Ethanol

Less waste after harvest additional bonus

— from Page 1

by fermenting starch from plant seeds. Fermenting starch from plant seeds is the preferred method because it is easier, but it is expensive because starch has other uses, such as food. Cellulose fermentation is not as efficient because the sugars in the cell wall are harder to release. In addition, other cell-wall components can interfere with the fermentation process.

"If we could modify the content of the plant cell wall, we may be able to produce plants whose cellulose and other cell-wall polysaccharides are more readily available for fermentation," Nielsen said. "The other advantage if we could figure out how to make cellulosic ethanol fermentation work better is that these cell-wall sources — such as corn husks and stalks — are not really used for much else at present."

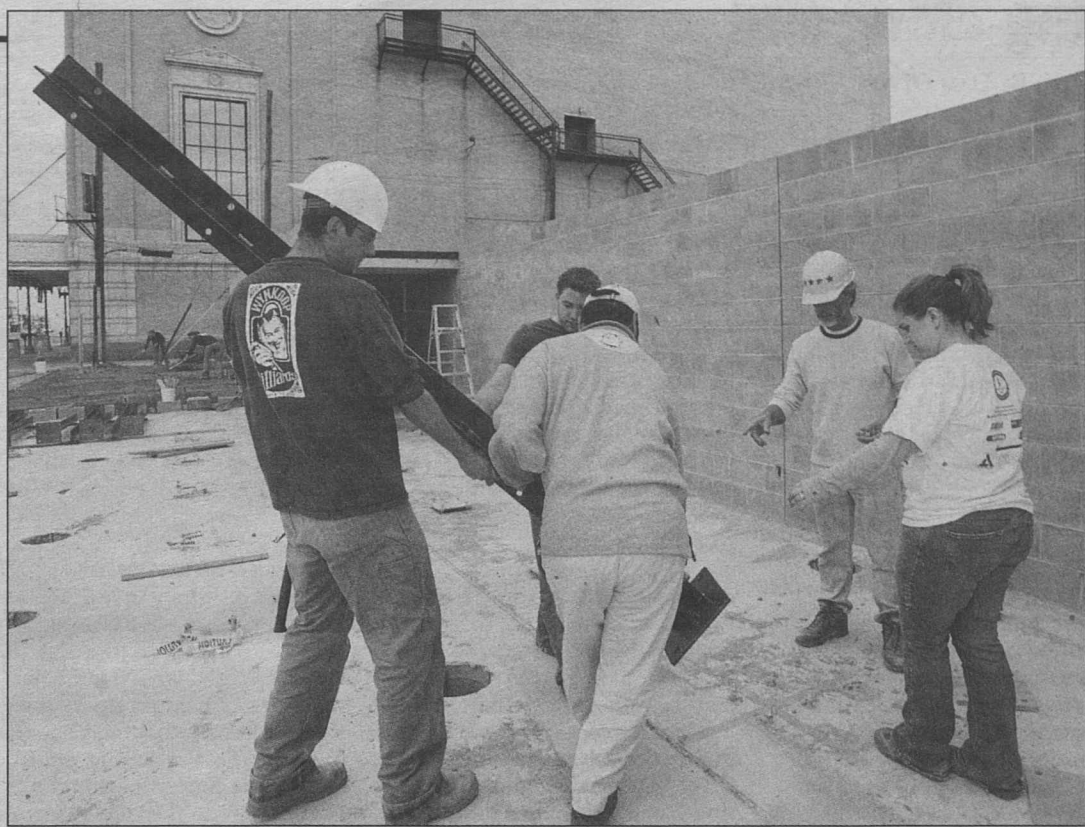
Yet there are challenges in al-

tering plant cell walls to make cellulose-based ethanol fermentation more efficient.

"A real problem is that we really don't know much about how plant cell walls are put together," Nielsen said. "While cellulose, the main load-bearing polysaccharide in plant cell walls, is synthesized at the plasma membrane, most of the other cell-wall polysaccharides and cell-wall proteins are synthesized and modified in the plant Golgi complex. These then have to somehow be delivered by membrane trafficking pathways to the correct places at the right times in order for normal plant cell growth and development to occur."

Even the cellulose syntheses that make cellulose have to be sorted and delivered properly using membrane trafficking pathways. But Nielsen's research offers a promising step.

"We really have no idea how all this sorting and packaging of cell-wall components is accomplished," Nielsen said. "So what we've done with this research is to finally begin to characterize some of the compartments and membrane-trafficking pathways that are involved in cell-wall deposition."



A grand center Ten architecture students from the Sam Fox School of Design & Visual Arts, led by Professor Carl Safe, spent the fall semester creating a public plaza for visual art in Grand Center, St. Louis' premier arts and entertainment district. The plaza — located adjacent to the Saint Louis Symphony Orchestra's Powell Hall — will host outdoor exhibitions, site-specific installations, performance pieces, and video and new-media work by local and nationally known artists. The \$45,000 budget was funded by the Sam Fox School, the Pulitzer Foundation for the Arts and Grand Center Inc., with additional materials and labor provided by the St. Louis Cement Masons Joint Apprenticeship Program, the Masonry Institute of St. Louis and the Ironworkers Joint Apprenticeship Program. A formal dedication of the plaza will take place at 11 a.m. Dec. 15 in Powell Hall, 718 North Grand Blvd. For more information, call 935-6200.

Highway

Metro, RideFinders offer commuters options

— from Page 1

in 2008; and closing I-64 completely from Hanley Road east to Kingshighway and rebuilding interchanges in that area in 2009. By Dec. 31, 2009, all lanes on I-64 and I-170 are expected to be completed and open, with final work complete by July 31, 2010. Landscaping should be complete by the end of October 2010.

To help ease traffic on alternate routes, MoDOT will stripe an additional lane in each direction on Interstates 70 and 44. It also will upgrade signals on Page Avenue, Olive Boulevard, Manchester Road and Lindbergh Boulevard to improve traffic flow.

University faculty, staff, students and patients need to start thinking now about alternative routes or modes of transportation.

Benefits-eligible employees and full-time students can renew the Metro Universal Pass

for the spring semester, which provides free access to the MetroLink and MetroBus services. Those interested in obtaining a spring pass can apply online at the Parking and Transportation Services Web site at parking.wustl.edu.

A Metro system map, schedules, addresses of MetroLink stations and a list of those with commuter park-ride lots are listed at metroslouis.org/metrolink/stationlist.asp.

In addition, employees and students can use the RideFinders regional rideshare program, carpool with co-workers or bicycle or walk to the two campuses.

James P. Crane, M.D., associate vice chancellor for clinical affairs, chief executive officer of the Faculty Practice Plan and leader of a WUSTL-BJC joint task force addressing the highway shutdown, said the task force will continue working with MoDOT, administrators and clinical managers to provide visitors and patients with information to make their trips to both campuses and physicians' offices as smooth as possible.

Gateway Constructors, a group of about 10 contractors,

and MoDOT have put in place several measures to assist motorists during the construction, which is scheduled to begin in spring 2007.

The project Web site, www.thenewi64.org, is updated regularly and allows motorists to sign up for e-mailed updates on the construction schedule.

Once the project begins, the site will have an interactive map that will allow motorists to enter their starting point and destination to get alternate routes.

In addition, once the contract with Gateway Constructors is finalized, the group plans to hold informational open houses for the public to ask questions and see construction maps.

The Gateway Guide cameras, sensors and message boards will operate inside the Interstate 270 loop at all times, providing travel times on all of the area's interstates. These are available online at gatewayguide.com.

The team also plans to set up a 511 telephone number for motorists to get traffic updates and travel times and to maintain electronic message boards on the highways that will provide traffic advisories.

Biopsy

Findings have 'dramatic effect' on early diagnosis

— from Page 1

follow-up biopsy is sizeable," Margenthaler said.

The study included 35 women who received more extensive surgical biopsies after the initial core-needle biopsies showed ALH or LCIS. Core-needle biopsies are performed with local anesthesia and use a hollow needle to remove several small samples of breast tissue that are examined under a microscope for telltale signs of cancer. If the cells are abnormal, a surgical biopsy can be performed immediately. It involves removing the entire suspicious area, along with some of the surrounding normal tissue, which leaves a small scar.

In the study, core-needle biopsies found LCIS in 16 patients, and follow-up surgical biopsies detected cancer in four of these women. Of the 19 patients initially diagnosed with ALH, surgical

biopsies found that three of them had cancer. All but one of the seven cancers was invasive. The researchers noted no difference between those with cancer and those without in terms of age, number of children, hormonal status or previous breast biopsies — all risk factors for breast cancer.

The cancers detected in the current study are too small to be felt by a woman or her doctor, said senior author Jill R. Dietz, M.D., assistant professor of surgery and a breast surgeon. "In patients who were ultimately found to have cancer, it is likely that the core-needle biopsy simply missed the cancer cells and instead extracted the benign cells."

As a comparison, the study also included 61 women whose core-needle biopsies detected a precancerous condition called atypical ductal hyperplasia (ADH). Previous studies have found that many of these women actually have cancer in addition to ADH. For several years, breast surgeons have recommended that women with ADH routinely undergo more extensive surgical biopsies to look for cancer.

That recommendation was

confirmed by the current study. The more extensive surgical biopsies found cancer in 31 percent of the women who initially were diagnosed with ADH from the needle biopsy.

Based on the study's results, all patients whose initial breast biopsies show ALH or LCIS at Barnes-Jewish Hospital now routinely receive a follow-up surgical biopsy to confirm or rule out cancer.

"This is an important shift in the way we approach these patients," Margenthaler said. "In the past, whether women received a more extensive biopsy was often an arbitrary decision, based on the recommendation of the surgeon or the pathologist."

As the number of women getting mammograms continues to increase and imaging techniques improve, Dietz and Margenthaler said they expect to see a rise in cases of ALH and LCIS.

"Knowing that these women should receive more extensive surgical biopsies will have a dramatic effect on our ability to diagnose breast cancer at the earliest stage possible and ensure the women get the treatment they need," Dietz said.

Notables

WUSTL, SIUE combine to host research symposium

BY ANDY CLENDENNEN

In a unique joint effort, the University and Southern Illinois University Edwardsville are partnering to host the Metropolitan St. Louis Grants Conference Jan. 10-11.

Conference topics will include updates on the latest funding trends from federal agencies and informative sessions for academic researchers on research policies, practices and opportunities. Attendees also will have the chance to explore ways to enhance the success of their individual and collaborative research projects.

The conference is the first of what is hoped to be a biennial event and is intended to facilitate faculty research opportunities and stimulate broad-based increases in sponsored research and scholarship, interdisciplinary collaborations and institutional partnerships.

"We find that sponsors, both federal and private, are drawn to crosscutting research that demands real and effective collaborations across the campus and the world, not just deals or structures cobbled together in time for a proposal deadline," said Cindy White, director of WUSTL's Research Office. "We hope that this kind of event will spark ideas and conversations that lead to great research partnerships in the future."

Washington University will host the first day's program in Whitaker Hall. Chancellor Mark S. Wrighton will deliver introductory remarks, and Samuel L. Stanley Jr., M.D., vice chancellor for research, will introduce the day's first session and deliver closing remarks at the end of the day.

Barbara A. Schaal, Ph.D., the Spencer T. Olin Professor in Arts & Sciences in biology and vice president of the National Academy of Sciences, will be one of three presenters in the "Fostering International Collaborations" concurrent session on Day 1.

In another session, Marty Igel, foundation relations director at WUSTL, will moderate the panel "Seeking Foundation Support."

Highlighted federal guests include Richard Buckius, the recently appointed head of the Engineering Directorate at the National Science Foundation (NSF), and Norka Ruiz Bravo, director of extramural research at the National Institutes of Health (NIH). These senior federal officials will speak on the significance and im-

pact of the American Competitiveness Initiative and the NIH Roadmap Initiative, respectively, on the faculty and research programs of the Danforth Campus schools.

"This is a very special opportunity to hear from our most important partners in the research arena and to get their views on present and future trends in this realm," Stanley said. "It is not often that we can bring such high-ranking leaders at the federal level to the Midwest, and I encourage our faculty to take full advantage of this chance."

The two research days have comprehensive objectives:

One is supporting junior faculty by offering exposure to larger collaborative activities and interdisciplinary thinking and to problem-solving models outside their fields of expertise.

Another is encouraging sponsored international collaborations by building on the University's strong multicultural and international foundation by promoting dialogue with colleagues who have experienced successful international partnerships.

And a third is shaping the research agenda through invitations to federal agency representatives, private foundation delegates and key faculty members to discuss the direction of future and current research.

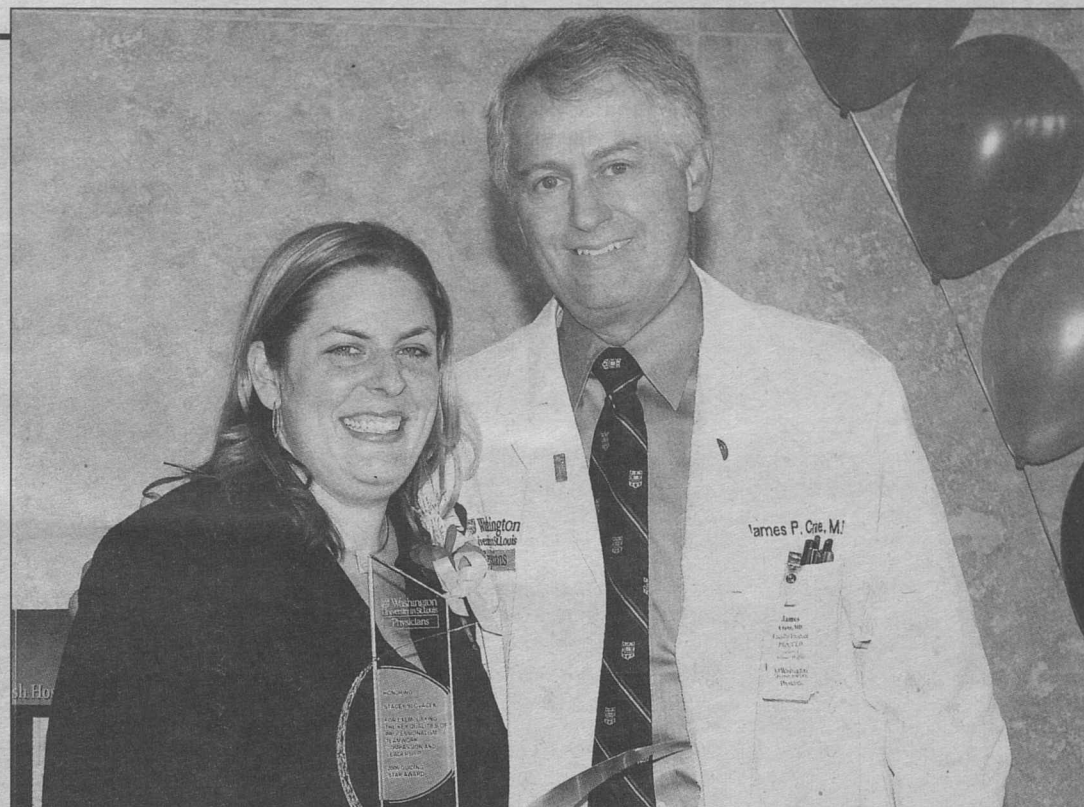
The conference will be structured around keynote speakers, panelists, break-out sessions and exhibits. The NSF, U.S. Department of Agriculture, U.S. Department of Energy, NIH and National Endowment for the Humanities (NEH) will be represented, along with several participants from select foundations and institutions.

Day 2 will be hosted by SIUE at its conference center and will feature a program at the National Corn-to-Ethanol Research Center, a key partner in a Washington University center proposal on biofuels research.

In addition, the NEH will host a regional outreach conference in the afternoon at SIUE, a must for potential project directors and fellows.

For more information, visit research.wustl.edu/ResearchDay/conference.htm.

Registration is free to all WUSTL and SIUE faculty members. Guests from other area institutions should submit their registration via mail (address provided on Web site registration form) by Dec. 21.



Shining star Stacey Slovacek, a research patient assistant in the Division of Pediatric Infectious Diseases, received the Guiding Star award for 2006 from James P. Crane, M.D., associate vice chancellor for clinical affairs and chief executive officer of the Faculty Practice Plan. The Guiding Star award is given to a clinical staff member who models clinical excellence and professionalism; has unwavering commitment to respectful, compassionate and responsive patient care; and has the ability to inspire co-workers and others through his or her daily actions. Slovacek dedicates both her working and non-working hours to children that are infected with and affected by HIV.

Trustees grant faculty promotions, tenure

At recent Board of Trustees meetings, the following faculty members were promoted with tenure, appointed with tenure, granted tenure or granted track/title change effective July 1, 2006, unless otherwise noted.

Promotion with tenure

Heather Corcoran, to associate professor of art

Michael Diamond, to associate professor of medicine

Lev D. Gelb, to associate professor of chemistry

Martin Jacobs, to associate professor of rabbinic studies

Phyllis I. Hanson, to associate professor of cell biology and physiology, (promotion effective Jan. 1, tenure effective March 3, 2006)

David B. Haslam, to associate professor of pediatrics, effective Jan. 1, 2006

Erik D. Herzog, to associate professor of biology

Kathleen B. McDermott, as associate professor of psychology

James C. Morley, to associate professor of economics

Robert B. Pless, to associate professor of computer science and engineering, effective March 3, 2006

Scott Saunders, to associate professor of pediatrics

Ralf Wessel, to associate professor of physics

Jeffrey M. Zacks, to associate professor of psychology

Appointment with tenure

Robert E. Blankenship, as professor of biology and of chemistry

Michele Boldrin, as professor of economics

Carmon Colangelo, as the E. Desmond Lee Professor for Community Collaboration in the Arts and dean, Sam Fox School of Design and Visual Arts

Thomas E. Ellenberger, as the Raymond H. Wittcoff Professor of Biochemistry and Molecular Biophysics and head of the Department of Biochemistry and Molecular Biophysics (appointment effective Jan. 1, 2006, tenure effective May 5, 2006)

Matthew J. Gabel, as associate professor of political science

Raj Jain, as professor of computer science and engineering, effective March 3, 2006

Evan D. Kharasch, as professor of anesthesiology, (appointment effective Oct. 1, 2006, tenure ef-

fective March 3, 2006)

Timothy R. Kuklo, as associate professor of orthopaedic surgery (appointment effective Aug. 15, tenure effective Oct. 6, 2006)

David K. Levine, as professor of economics

Bruce M. Lindsey, as professor of architecture and dean, college of architecture, effective Aug. 9, 2006

George A. Macones, as professor of obstetrics and gynecology, (appointment effective Sept. 1, 2005, tenure effective March 3, 2006)

James F. Spriggs II, as professor of political science

Lihong Wang, as professor of biomedical engineering, effective Sept. 1, 2006

Stephen D. Williamson, as professor of economics

Granting of tenure

Ingrid B. Borecki, associate professor of genetics, effective Oct. 6, 2006

Track and title change

Mark F. Jacquin, to professor of neurology with tenure, effective Oct. 6, 2006

Flynn named a Missouri Nurse of the Year

BY BETH MILLER

Patricia Flynn, clinical research nurse coordinator in the Department of Psychiatry, has been named Nurse of the Year by the Missouri Nurses Association's Third District.

Flynn, who has worked in the department for four years, received the award Nov. 30 in Jefferson City, Mo. The Third District includes St. Louis city and County.

With more than 20 years of experience as a clinical research coordinator, Flynn recently completed two National Institutes of Mental Health-sponsored clinical trials: a neuro-imaging trial that

investigated brain changes in elderly people with depression and an electroconvulsive therapy trial for determining dosage and placement of stimulus.

In 2006, she completed a pivotal clinical trial that studied transcranial magnetic stimulation (TMS) for treating hard-to-treat depression in adults.

Flynn also is involved in treating post-partum depression using TMS, a strategy that seems to alleviate treatment-resistant depression in some patients by pulsing the brain with magnetic energy.

Keith S. Garcia, M.D., Ph.D., assistant professor of psychiatry, who is conducting the post-partum depression study, said Flynn's recognition is well deserved.

"It is Patty's concern for our research participants and her meticulous attention to detail that makes her an invaluable part of our team," Garcia said.



Flynn

Obituaries

Chilson, professor emeritus of biology, 73

Oscar P. Chilson, Ph.D., adjunct instructor and professor emeritus of biology in Arts & Sciences, died Wednesday, Nov. 22, 2006, after a brief illness. He was 73.

Chilson was born in North Little Rock, Ark. He earned a doctorate in 1963 from Florida State University. He earned a bachelor's degree from the Arkansas State Teacher's College and a master's from the University of Arkansas. He did post-doctorate work at Brandeis University in Boston.

Chilson joined the Department of Biology in 1965 and chaired the department twice during his tenure. He was chair from Aug. 1, 1997-Dec. 31, 1998, and acting chair from Jan. 1, 1981-June 30, 1983. He was associate chair from Jan. 1, 1978-Dec. 31, 1980.

His research was in enzymology and protein structure. He especially was interested in the in-

crease in activity of specific enzymes during development; membrane binding characteristics of particular proteins; and comparative structure of enzymes from different species, using rabbit antibody binding properties as a measure of similarity.

He retired from full-time teaching in 2003 but remained active in the department, continuing to teach summer-school courses.

Chilson was a member of Saint Francis Xavier College Church. He is survived by his wife, Anne, an adjunct instructor of biology; daughters Sha'an and Erin; son, Brian; and grandchildren Brady Chilson and Olivia and Alex Rapp.

A memorial Mass was held Nov. 25 at Saint Francis Xavier. His body was donated to research.

The biology department is

planning a memorial service. The Record will provide details when they become available.

In lieu of flowers, donations may be made to the Siteman Cancer Center, 4921 Parkview Place, St. Louis, MO 63110, or to Saint Francis Xavier College Church Outreach, 3628 Lindell Blvd., St. Louis, MO 63108.

Daugherty, 49

Claudia Daugherty, coordinator of the nonprofit management master's degree program in University College in Arts & Sciences, died Wednesday, Nov. 29, 2006, at her home in Wildwood, Mo. She was 49. The cause of death was not known.

A celebration of her life will be held at 1 p.m. Saturday, Dec. 9, at the Regional Arts Commission, 6128 Delmar Blvd., St. Louis.

Washington People

BY JIM DRYDEN

When Keith S. Garcia was a boy, he wanted to build rockets. He probably wasn't the only one in his neighborhood, either, growing up in Houston, the home of the Johnson Space Center and Mission Control for the Apollo moon flights of the late 1960s and early 1970s.

His dad was an engineer, and Keith liked science, but his dreams focused on applied science rather than medicine. Although his maternal grandfather had been a surgeon, Garcia never really thought about becoming a doctor himself.

"My first exposure to biology was really unpleasant," he says.

But that changed in high school when a chemistry teacher got him interested in biochemistry. Later, as an undergraduate at Rice University, he planned to get a doctorate in biology and use that degree as a basic, biological scientist.



Keith S. Garcia, M.D., Ph.D., reviews a chart of a candidate for transcranial magnetic stimulation with Patricia Sharp, administrative coordinator. "Keith's background in neuroscience, physiology and psychiatry really matches up well with this type of clinical research," says Charles F. Zorumski, M.D.

From dreaming of rockets to treating depression

An interest in psychiatry led Keith S. Garcia, M.D., Ph.D., to a change of mind

But then he learned about a combined M.D./Ph.D. program and started thinking about applying science to real-world problems.

"I thought medicine must be like the applied science of biology, that becoming a doctor was somehow similar to becoming a biology engineer," Garcia says. "When I got into the program, however, I realized that at times being a physician/scientist was a little like being a bus driver/plumber. They can just be two completely different things."

While learning that medicine wasn't simply "applied biology," he also discovered he enjoyed interacting with patients. In fact, he really liked psychiatry. Garcia did basic neuroscience research while earning a doctorate. He found that in psychiatry, he could apply some of that basic research and also listen to people tell him their stories.

The same sort of thing attracted his brother, Donald, to the field. Back when Keith was interviewing for medical school, he told his mother that an interest in the brain had him thinking about psychiatry as a specialty. He didn't realize it, but his brother, a third-year medical student at the time, had decided on a similar career path. Later, he learned his father had originally wanted to be a psychiatrist, but when he went to Tulane University for undergraduate training, there were no pre-med scholarships available, so he took an engineering scholarship instead.

"Maybe there's a psychiatry gene in my family," Garcia says.

Garcia spends most of his time in the clinic, seeing patients eight to 10 months each year. He also spends a lot of time teaching medical students and psychiatry residents. He came to the University as a psychiatry resident and eventually became chief resident. Now, he directs the resident clinic and also runs the outpatient psychiatric day hospital at Barnes-Jewish Hospital.

"He's one of our best clinical teachers," says Barry A. Hong, Ph.D., professor of psychiatry. "He just does a wonderful job with the residents. And in those rare cases where he has trouble teaching them to be better psychiatrists, he's able to help in other ways. He throws these legendary Texas barbecues that keep many of the residents both happy and well-fed."

Applying science

Although his work on the bench as a basic researcher is behind him, the assistant professor of psychiatry hasn't left research behind completely. Garcia is involved in several studies investigating transcranial magnetic stimulation (TMS) as a potential treatment for a number of problems, especially depression.

The treatment involves placing a magnet on a patient's head and stimulating key regions of the brain with electromagnetic fields. Garcia and colleagues aim the magnetic pulses at the brain's prefrontal cortex, but he says in the brain, everything tends to be connected to everything else, so additional brain regions also are stimulated. Patients get daily, 45-minute treatments for about two weeks.

"It seems to work faster than antidepressant drugs," Garcia says. "Generally, by the end of two weeks, people start noticing improvements in their symptoms, but once a person's depression goes into remission, we try to maintain them with medication because we don't really know how often people need to repeat TMS treatments to remain symptom-free."

Currently, only about half of patients treated with antidepressant drugs get better following a single course of treatment. Even after several rounds of drug therapy, between 10 percent and 15 percent of patients remain depressed.

In a study of patients who hadn't been helped by antidepressant drugs, Garcia and other investigators found that without any medication, about a third got better with TMS treatment alone.

"That's a pretty good percent-

age," he says. "I imagine we might be able to help even more people if we started investigating protocols that would combine medication with TMS."

The TMS research program has been under way at the University for more than five years. Garcia, who was still a resident when the research began, inherited several studies when Keith E. Isenberg, M.D., associate professor emeritus, recently left. Department head Charles F. Zorumski, M.D., says Garcia is a good fit for the research program.

"TMS, vagal nerve stimulation and other investigational techniques we're studying soon may offer help to people whose depression doesn't respond to currently available treatments," says Zorumski, the Samuel B. Guze Professor of Psychiatry. "Keith's background in neuroscience, physiology and psychiatry really matches up well with this type of clinical research."

Garcia says TMS often is compared to electroconvulsive therapy (ECT), which delivers an electric stimulus to the brain. ECT requires anesthesia, but because TMS doesn't, patients can eat and drink before treatment and often can drive themselves to and from their treatment sessions. The seizures induced by ECT also pose problems, including memory loss and cardiovascular risks. It's an effective therapy, but Garcia says he thinks if TMS could provide similar results, most people would prefer it.

He's testing that idea now as principal investigator for the WUSTL portion of a multi-center grant comparing the two therapies. Other TMS studies include using it as a treatment for people with tinnitus, the condition that causes unexplained ringing in the ears.

"From studies involving patients with schizophrenia, it turns out you may be able to lessen the severity of auditory hallucinations by using TMS," he explains. "The idea is that in tinnitus, the ringing in your ears is kind of like a hallucination because there's not really any stimulus. So we're using TMS to stimulate auditory areas of the cortex to see whether we can reduce or eliminate ringing in the ears."

He's also looking at TMS as a potential treatment for new mothers with post-partum depression. Many don't want to take antidepressant drugs because those medications are secreted in breast

milk. Garcia says the evidence suggests that antidepressants in breast milk probably won't harm the baby. "But if TMS can do the job without drugs, many mothers would prefer to not take chances," he says.

He hopes to recruit by February about 12 new mothers who are experiencing post-partum depression to see whether the therapy can help them feel better and more fully enjoy those first months of bonding with their babies.

Fidel and Dad

Growing up in Houston, Garcia knew his father was from Cuba, but he didn't know some of the amazing details of the elder Garcia's story. Not much was said about how he had escaped from that island by being smuggled onto a KLM jet. English was the official language in the Garcia house. His father was fluent, and his mother was fluent in Spanish, albeit with something of an Alabama accent.

Garcia's father was at Tulane when Castro took over in Cuba. Young Keith didn't know it during his childhood, but his father, Donald, actually returned to Cuba for several years as part of a counter-revolutionary effort that ultimately failed. It was then that a pilot friend stowed him on a plane and got him back to the United States.

"I would love to write a story about his experiences someday," Garcia says. "My dad even met Ernest Hemingway at the Havana Yacht Club, where Hemingway used to hang out. Funny thing is, we never talked about this stuff when I was growing up."



Keith Garcia and his wife, Karen, are expecting their first child in February.

Keith S. Garcia

Born: April 14, 1967, Houston

Education: Bachelor of arts in biology and biochemistry, 1989, Rice University, Houston; M.D., 1997, University of Texas Medical School, Houston; Ph.D., 1998, University of Texas Graduate School of Biomedical Science, Houston

University position: Assistant professor of psychiatry; director, resident psychiatry clinic and outpatient psychiatric day hospital at Barnes-Jewish Hospital

Family: Wife, Karen, first child due in February; mother, "Momma" Peggy; father, "Pop" Donald; brother, Donald; sister Leigh Ann