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Record

Dec. 2, 2005

Volume 30 No. 16



Washington University in St. Louis



Graduate student leaders Shabnam Sedaghat (left), a dental medicine student at the University of Pennsylvania, receives her registration material for the 2nd National Conference on Graduate Student Leadership (NCGSL) from Sarit Smila, a doctoral student in the Department of Philosophy in Arts & Sciences, as Elaine Berland, Ph.D., associate dean of the Graduate School of Arts & Sciences and conference director, looks on. Because of the success of the first-of-its-kind NCGSL in 2003, which WUSTL convened, the University was asked to convene it again with the Woodrow Wilson National Fellowship Foundation. Some 55 delegates from 19 participating universities in the foundation's Responsive Ph.D. Initiative attended the conference Nov. 18-20 and exchanged ideas about important issues in doctoral education with the goal of bringing ideas and promising practices back to their own campuses. The proceedings will be available in print and online this spring.

Mind readers? Researchers use brain scans to predict behavior

By MICHAEL C. PURDY

By peering into the minds of volunteers preparing to play a brief visual game, School of Medicine neuroscientists have found they can predict whether the volunteers will succeed or fail at the game.

"Before we present the task, we can use brain activity to predict with about 70 percent accuracy whether the subject will give a correct or an incorrect response," said lead author Ayelet Sapir, Ph.D., a postdoctoral research associate in neurology.

Eleven seconds before volunteers played the game — discriminating the direction of a field of moving dots — scientists showed them a hint: an arrow pointing to where the moving dots were likely to appear. The dots were visible for only one-fifth of a second, and therefore were easy to miss if a subject was not paying attention

to the correct area.

After the hint and prior to the appearance of the moving dots, researchers scanned the volunteers with functional brain imaging, which reveals increases in blood flow to different brain areas indicative of increased activity in those regions. Based on brain activity patterns that reflected whether the subjects used the hint or not, scientists found they could frequently predict whether a volunteer's response would be right or wrong before the volunteers even had a chance to try to see the dots.

The study's results are available at the *Proceedings of the National Academy of Sciences* Web site (pnas.org) and will be published in the journal's print edition Dec. 6.

Sapir and her colleagues concluded that volunteers don't use the hint the same way every trial.

See **Brain**, Page 6

Building acquisition to greatly enhance music, performing arts space

By LIAM OTTEN

Washington University has reached an agreement with Webster University to purchase the Community Music School building at 560 Trinity Ave. in University City.

The purchase will provide Washington University with additional — and much-needed — performance, rehearsal and teaching facilities.

The building includes the 1,115-seat E. Desmond Lee Concert Hall, a 300-seat theater, a small recital hall, dozens of classrooms and practice spaces, a recording studio and administrative offices.

The concert hall will become the largest performance space at Washington University.

Built in 1929, the two-story, 45,000-square-foot former synagogue is located less than a mile from the Hilltop Campus at the intersec-

The concert hall in the Community Music School building will become the largest performance space at Washington University.

tion of Trinity and Delmar Boulevard, near the western end of the Delmar Loop shopping and entertainment district. It has been home to the Community Music School since 1974.

Webster will use proceeds from the sale to fund construction of Community Music School headquarters on its main campus in Webster Groves.

"This is a wonderful addition to Washington University's music and performing arts spaces," said Edward S. Macias, Ph.D., executive

vice chancellor, dean of Arts & Sciences and the Barbara and David Thomas Distinguished Professor in Arts & Sciences. "It will ease pressure on existing facilities and be of great benefit to our students and faculty, many of whom live in the neighborhood."

The deal includes a purchase price of \$4,935,000. Webster will continue to occupy the property for one year. At the end of that term, Webster will have use of the E. Desmond Lee Concert Hall for two Sundays per month for an additional eight months.

Macias noted that Washington University's current performance facilities — principally the 650-seat Edison Theatre; the 100-seat A.E. Hotchner Studio Theatre; and the 100-seat Annelise Mertz Dance Studio — are striving to balance the needs of student, departmental and professional groups.

See **Building**, Page 6

Scientists seek to solve hydrogen storage problems

By DOUG MAIN

A WUSTL chemist hopes to find the right stuff to put the element hydrogen in a sticky situation.

Lev Gelb, Ph.D., assistant professor of chemistry in Arts & Sciences, prepares theoretical models of molecules that may be used to store and transport hydrogen gas.

Gaseous at room temperature, hydrogen is even lighter and less dense than natural gas and thus harder to store. So, while hydrogen has a high energy-per-weight, it has a low energy-per-volume.

"If you had a kilogram of hydrogen at atmospheric pressure, you'd have to store it in about 100 big balloons, if you can picture that," Gelb said. "A kilogram of gasoline, on the other hand — that would be a small container."

Gelb works on one possible

solution to this storage problem, a process called "gas physical adsorption."

"The idea here is to create materials composed of molecules hydrogen likes to stick to," Gelb said. "If hydrogen stuck to these particles, you could carry around the substance, along with the hydrogen."

Such a substance would have to be relatively lightweight and very porous, having a high surface area, in order to adsorb as much hydrogen as possible. Then it is hoped that the hydrogen can be removed at the site of combustion by applying some low-energy force such as a vacuum.

"The problem is that as far as we know, nothing is sticky enough without being too heavy," Gelb said.

But this doesn't stop him: his

See **Hydrogen**, Page 6



Welcome aboard (From left) Richard A. Roloff, vice chancellor, and Ralph H. Thaman, associate vice chancellor for facilities, planning & management, greet Carmon Colangelo, recently named the first dean of the Sam Fox School of Design & Visual Arts, at a Nov. 18 reception in Holmes Lounge. Colangelo's appointment, effective July 1, comes amidst a nearly \$60 million campaign to improve campus arts facilities. Plans include extensive renovations to Bixby, Steinberg and Givens halls, as well as two new buildings — the Mildred Lane Kemper Art Museum and Earl E. and Myrtle E. Walker Hall — designed by Pritzker Prize-winning architect Fumihiko Maki.

Jacquín, Losos & Osdoby elected AAAS fellows

By TONY FITZPATRICK

ASchool of Medicine neuroscientist and two Hilltop Campus biologists have been elected by their peers as fellows of the American Association for the Advancement of Science (AAAS).

Mark F. Jacquín, Ph.D., research professor of neurology at the medical school, was cited for distinguished contributions to somatosensory research in rodents, including the molecular mechanisms for the development of circuitry in the trigeminal system.

Jonathan B. Losos, Ph.D., professor of biology in Arts & Sciences, was cited for distinguished contributions to the field of animal evolution and for studies on morphology and adaptive differentiation in Anolis lizards.

And Philip A. Osdoby, Ph.D., professor of biology, was cited for distinguished contributions to the field of bone osteoclast development and physiology and for studies on cell-matrix interactions in bone.

The three are among 376 people this year awarded the honor by AAAS because of their scientifically or socially distinguished efforts to advance science or its applications. New fellows will be presented with an official certificate and a gold and blue (representing science and engineering, respectively) rosette pin at the Fellows

See **AAAS**, Page 6



Compton's X-ray research lands WUSTL on register of historic physics sites

By SUSAN KILLENBERG MCGINN

Physicist Arthur Holly Compton, Ph.D., the University's first faculty member to receive a Nobel Prize (1927), is still getting recognition for his groundbreaking research more than 40 years after his death.

The latest acknowledgment comes from the American Physical Society (APS), which has designated Washington University — where Compton did his Nobel Prize-winning research on X-rays — as a site of historical significance to physics.

The APS Historic Sites Committee selected Washington University along with four other U.S. sites to be the first listed on the APS Register of Historic Sites.

John L. Hopfield, Ph.D., president-elect of the APS and the Howard A. Prior Professor in the Life Sciences at Princeton University, will present a commemorative plaque to Chancellor Mark S. Wrighton during an 11 a.m. ceremony Dec. 12 in the Women's Building Lounge.

The APS plaque will hang alongside a University plaque just inside the Eads Hall main entrance that marks the building in which Compton discovered the X-ray scattering effect.

Three talks about Compton, including a keynote address by Neal F. Lane, Ph.D., former director of the National Science Foundation and chief science adviser to President Bill Clinton, will begin at 2 p.m. Dec. 12 in Crow Hall, Room 201.

Lane, the Edward A. and Her-

mena Hancock Kelly University Professor at Rice University, will discuss "Compton and Science Policy." Lane also holds appointments as a senior fellow of the James A. Baker III Institute for Public Policy, where he is engaged in matters of science and technology policy, and in the Department of Physics and Astronomy at Rice.

Michael W. Friedlander, Ph.D., WUSTL professor of physics in Arts & Sciences, will address "Compton as Chancellor." And John S. Rigden, Ph.D., adjunct professor of physics, will discuss the scientific and historical significance of Compton's experiment.

Compton's association with the University began when he was appointed the Wayman Crow Professor of Physics in Arts & Sciences and chair of the physics department in 1920 — when he was just 28 years old. During his three years as a faculty member, Compton did the experimental work that resulted in the Nobel Prize in physics.

In 1923, he left the University for the University of Chicago, where he made important contributions to cosmic rays physics and later played a major role in World War II's atomic bomb project as director of the Metallurgical Laboratory.

He returned to Washington University in 1945 to become its ninth chancellor and served for eight years. Compton brought many outstanding faculty to the University, particularly in the sciences, and in so doing began the University's rise to

See **Compton**, Page 6

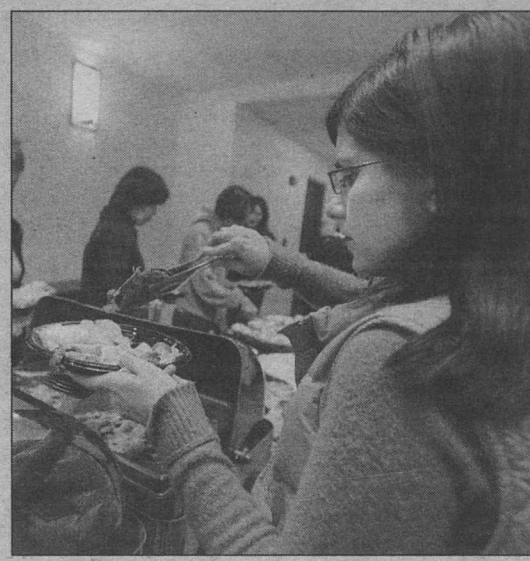


Happy Thanksgiving!

For University community members who could not head home, or for those just looking for a good meal, several traditional Thanksgiving dinners were held on campus to celebrate the holiday.

ABOVE: Mahendra R. Gupta, Ph.D., dean of the Olin School of Business and the Geraldine J. and Robert L. Virgil Professor in Accounting and Management (middle), and his wife, Sunita, chat with Olin School students Tracy Yao from China and Shashvat Desai from India during the school's annual Thanksgiving dinner for students, staff and faculty Nov. 24 in the Charles F. Knight Executive Education Center.

RIGHT: George Warren Brown School of Social Work student Lena Steinhorn helps herself to a serving of turkey during the school's annual Thanksgiving dinner Nov. 20 in the Brown Hall Lounge.



Charity Navigator gives WUSTL 4 stars for 5th straight year

A four-star rating from Charity Navigator — the largest independent charity evaluator in America — is the highest score possible.

For the fifth consecutive year, Washington University has received a four-star rating, based on an evaluation of two broad areas of financial health.

The first, organizational efficiency, measures a charity's fund-raising results against fund-raising, program and administrative expenses. The second, organizational capacity, measures how well the charity has sustained its programs and services over time, even in the face of significant economic challenges.

The four-star rating indicates that the University is committed to fiscal responsibility and sound management practices.

"Less than 12 percent of the (more than 4,000) charities we've rated have received at least two consecutive four-star evaluations, indicating that Washington University in St.

Louis outperforms most charities in America in its efforts to operate in the most fiscally responsible way possible," said Trent Stamp, executive director of Charity Navigator. "This 'exceptional' rating from Charity Navigator differentiates Washington University in St. Louis from its peers and proves that it's worthy of the public's trust."

Chancellor Mark S. Wrighton said, "It is gratifying to be evaluated as a good steward of the gifts we are so fortunate to receive from our alumni and friends who choose to support Washington University. We appreciate their confidence in us, and I pledge that we will continue to use their investments in this university wisely."

According to David T. Blasingame, executive vice chancellor for alumni & development programs, the University received gifts totaling more than \$120 million from donors during the fiscal year ending June 30, 2005.

taillights. Local businesses have donated oil and windshield-washer fluid to allow fluids to be topped off.

The WUPD Bear Patrol will assist the police and parking staff.

The Police Department is reminding those traveling during the holiday season to get plenty of rest, pay close attention to weather and road conditions, make sure your vehicle is in good working condition and always wear a seatbelt.

For more information, call the WUPD Crime Prevention Office at 935-5084.

Arvidson chairs Mars Exploration Program Analysis Group

By TONY FITZPATRICK

Raymond E. Arvidson, Ph.D., the James S. McDonnell Distinguished University Professor and chair of earth and planetary sciences in Arts & Sciences, is the chair of the Mars Exploration Program Analysis Group (MEPAG). His duties began July 1, and he will serve for three years.

Arvidson's experience with NASA spans three decades, starting in 1974 and continuing today with the highly successful Mars Exploration Rover mission (MER), for which Arvidson has served as deputy principal scientist. Other WUSTL members of the MER team include Edward Guinness, Bradley Jolliff, Daniel Scholes, Susan Slavney, Thomas Stein, Alian Wang, Jennifer Ward and Sandra Wiseman.

MEPAG, comprising scientists and engineers, draws on the expertise of its members and other

sources to provide analyses of plans and options to NASA on Mars exploration, including robotic exploration of Mars to search for evidence of life, to understand the history of the solar system and to prepare for future human exploration.

The committee also comments on plans for human expeditions to Mars, plans that will be in place once adequate knowledge is acquired about the planet using robotic missions and after successfully demonstrating sustained human exploration missions to the moon. Committee analyses will help guide program prioritization, budget formulation, facilities and human capital planning and technology investment.

At a Nov. 2-3 committee meeting, Arvidson oversaw 275 attendees, including scientists and representatives from seven of NASA's 10 field centers, NASA

headquarters, delegations from 25 universities, aerospace industry, nonprofit research institutes, other government agencies and private research organizations. There was also substantial participation from the international community.

According to Arvidson, the Mars Exploration Program Plan, outlining Mars exploration over the next decade and beyond, was discussed at length. The plan's overall focus is to understand Mars as a global system and how the planet's climatic and tectonic processes have evolved with time.

There is an emphasis on whether the planet was or is habitable and if life developed and evolved. MEPAG concluded that the team wishes to continue to "follow the water," the evidence for which has been detected on Mars and to start focusing on the search for current and past habitable zones on the planet.

Free vehicle inspection Dec. 10

By NEIL SCHOENHERR

On Dec. 10, University Police and the Department of Parking and Transportation, in partnership with Hartmann's Towing, will once again sponsor a free vehicle inspection service to students, faculty and staff.

People traveling by car for the holiday break can bring their vehicles to the parking lot on the west side of University Police Headquarters on the South 40 between noon-3 p.m. for inspections.

Staff will check tire pressure, fluid levels, wipers, headlights and



Seesawing around the clock Chancellor Mark S. Wrighton enjoys a teeter-totter ride with senior Mallorie Hulse Nov. 9 in front of the Campus Y. Students, staff and faculty members seesawed for 48 straight hours and raised \$1,100 for the Campus Y Partner Campaign.

School of Medicine Update

Eye's structure engineered to help brain manage movement

By MICHAEL C. PURDY

The design of the eye and the muscles and bone that surround the eye help the brain manage certain complex aspects of eye movement, according to School of Medicine researchers.

The finding, published in *Neuron*, may help push an old debate about how eye movement is controlled toward resolution and help eye surgeons better diagnose and treat disorders such as strabismus (crossed eyes) that lead to misalignment of the eyes.

The task of orienting the eyes is more complicated than it might seem at first glance, noted senior investigator Dora Angelaki, Ph.D., the Alumni Endowed Professor of Neurobiology.

"When we roll our head sideways, our eyes must counter-roll or move in the opposite direction to keep the visual world stable on the retina," Angelaki said.

"This is a well-studied reflex called the vestibulo-ocular reflex, or VOR, and it's what lets us see clearly when we walk, drive a car or turn around to see a friend."

Adding to the complexity, rotation of a round, three-dimensional object such as the eye has a property known as non-commutativity. This means that the result of a series of motions — a quarter-turn left and a half-turn up, for example — is dependent on the order in which those motions

are performed. Reverse the order of two steps in the series of motions, and the end result is different.

Scientists began to debate in the late 1980s whether the complexities of these problems were handled solely by signals from the brain or accomplished via contributions both from the brain and from the eye.

The latter group theorized that the "motor plant" of the eye — which includes the eye, the orbit or eye socket and the muscles that pull on it — could handle some aspects of these tasks without input from the brain. The different models suggested very different things about the way the brain controls eye movement.

Angelaki and first author Fatema F. Ghasia, a WUSTL post-doctoral fellow, conducted two sets of tests in primates. In the first test, the primates tracked a moving target by moving only their eyes; in the second, the bodies or heads of the primates were rotated while their eyes fixed on the target, invoking VOR.

In both tests, scientists electrically measured the activity of oculomotor neurons, the nerves that control eye muscles. They also measured the vertical, horizontal and torsional (toward the shoulders) movement of the eyes.

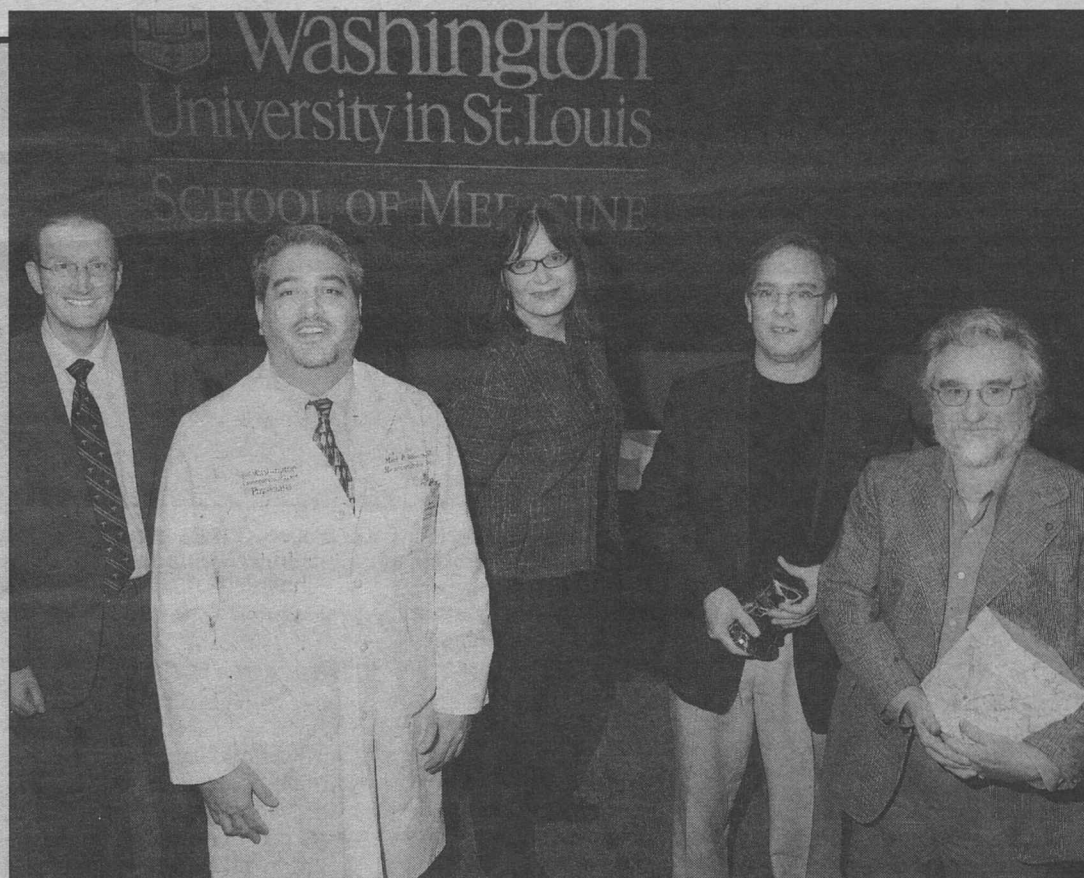
The oculomotor neurons changed their firing activity in the

test that included head and body movement, demonstrating the brain's involvement in control of VOR. But in the first test, oculomotor nerves did not significantly change their firing patterns as the primates tracked the target by moving their eyes, suggesting some of the guidance for the

eye's movements was coming from the eye itself and its surrounding tissues.

"It appears that the motor plant of the eye is optimized to solve the problem on its own, and then whenever you need to step in and override that process, the brain has a way to take over,"

Angelaki said. "Better understanding of how this ability is naturally engineered into the motor plant of the eye is going to be very important for clinical applications, because every time a surgeon manipulates the muscles around the eye it might interfere with these abilities."



Extraordinary educators Medical students honored teachers for distinguished service at the annual teaching awards ceremony, held Nov. 21 at the Eric P. Newman Education Center. Recognized were (from left) Marc J. Bernstein, M.D., Class of 2008 Stanley Lang Lecturer of the Year; Mark P. Goldberg, M.D., Class of 2006 Clinical Lecturer of the Year; Erika C. Crouch, M.D., Ph.D., Class of 2007 Course Master of the Year; Barry P. Sleckman, M.D., Ph.D., Class of 2008 Professor of the Year; and Glenn C. Conroy, Ph.D., Class of 2008 Course Master of the Year.

Researchers look for early indicators of Alzheimer's

By MICHAEL C. PURDY

The School of Medicine will receive \$5.9 million over the course of five years to begin an ambitious and potentially decades-long search for the earliest signs that a seemingly normal person may someday develop Alzheimer's disease.

"The brain changes that cause Alzheimer's disease begin many years before they culminate in dementia, the symptom that brings most patients in for diagnosis," said John C. Morris, M.D., director of the University's Alzheimer's Disease Research Center (ADRC) and principal investigator for the grant from the National Institute on Aging.

"By the time of diagnosis, there has already been so much brain damage that any treatment we start is unlikely to be effective at restoring patients."

To make it possible to detect Alzheimer's disease before it progresses to the level of dementia, ADRC scientists are using the grant to fund the "Adult Children Study."

Scientists plan to conduct comprehensive health assessments every three years of two groups each comprising 120 participants: people with at least one parent with Alzheimer's, and a control group of people whose parents never had Alzheimer's. Volunteers in both groups will be cognitively normal and between the ages of 45-74.

"We will evaluate not only clinical symptoms such as memory changes and personality changes, but also genetic factors, neuropsychiatric performance and several different kinds of brain imaging," Morris said. "We will also look at the levels of various proteins that are suspected to be linked to Alzheimer's in the blood and the cerebrospinal fluid."

The short-term goal of the study, likely to be completed in the initial five-year funding period, will be to determine whether the adult children of parents with

"The brain changes that cause Alzheimer's disease begin many years before they culminate in dementia, the symptom that brings most patients in for diagnosis. By the time of diagnosis, there has already been so much brain damage that any treatment we start is unlikely to be effective at restoring patients."

JOHN C. MORRIS

Alzheimer's have more of the potential early indicators of Alzheimer's disease than the control group.

Over the long term, researchers hope to develop a battery of tests that clinicians can use to weigh the chances that a patient will eventually develop Alzheimer's.

Currently, the best treatments for Alzheimer's can only slow the progress of the disease. However, Morris noted that under way at the ADRC are clinical trials of new agents that may be able to stop the brain mechanisms that cause Alzheimer's disease.

"Ideally, we'd one day like to identify patients many years before clinical onset and put them on treatments that can stop the disease," he said.

If any volunteers develop Alzheimer's disease during the study, they will be switched to yearly evaluations at the ADRC.

Scientists began recruitment and initial evaluations of participants in October. They are close to meeting their goals for adult children of Alzheimer's but are still looking for participants for the control group whose parents did not develop Alzheimer's.

Grants to bolster Division of Clinical Sciences

By DIANE DUKE WILLIAMS

Three grants will help the Division of Clinical Sciences take a major step forward in educating and training clinical investigators to work on biomedical research problems in multidisciplinary teams.

The Division of Clinical Sciences, one of three programs within BioMed 21, was established as a cross-department and cross-campus division to improve the performance of patient-oriented research. Such studies move basic science insights into the clinic, working to understand in the most practical terms why people develop diseases and how to treat those diseases.

Victoria J. Fraser, M.D., clinical chief of the Division of Infectious Diseases and professor of medicine, has been awarded a K12 Multidisciplinary Clinical Research Career Development grant from the National Institutes of Health. The five-year, \$11.5 million award will train diverse groups of clinical investigators from numerous schools in the metropolitan area so that they can collaborate on complicated problems such as diabetes and cancer.

The schools are WUSTL, Saint Louis University School of Public Health, St. Louis College of Pharmacy, University of Missouri-St. Louis College of Nursing and Southern Illinois University Edwardsville School of Nursing.

"This is very exciting because this type of training in clinical research hasn't existed before at Washington University," Fraser said.

"Previously, each department conducted its own training."

Providing funding for up to 15 junior faculty members, the K12 grant will support training as well as tuition for course work leading to a master's degree in clinical investigation or in public health. It will also provide each junior faculty member \$25,000 of research assistance per year. For more information or to apply, contact Fraser at 454-8272 or vfraser@wustl.edu.

Additionally, Jay Piccirillo, M.D., associate professor of otolaryngology, has received a five-year, T32 Predoctoral Interdisciplinary Clinical Research Training grant to provide clinical research training among predoctoral students in fields such as medicine, physical therapy, occupational therapy, biomedical engineering, audiology and communication sciences, and social work.

"Our long-term objective is to promote the career development of nascent health-care professionals who will become outstanding patient-oriented researchers," Piccirillo said.

This \$2.8 million grant will fund 24 training slots per year — 12 two-month summer research experiences and 12 12-month immersion programs. Students will take pre-existing and new courses focused on clinical research design, biostatistics, the ethical and legal aspects of clinical research and scientific writing.

To emphasize interdisciplinary team-building, clinical research trainees will pair with another trainee, as well as at least one mentor, for their practicum research program.

Medical students who opt for the 12-month immersion program can earn a master's degree through the M.A./M.D. program at the School of Medicine.

Bradley Evanoff, M.D., M.P.H., chief of the Division of General Medical Sciences and the Richard and Elizabeth Henby Sutter Professor of Occupational, Industrial and Environmental Medicine, has received a five-year, K30 Clinical Research Curriculum Award to develop course work and multidisciplinary training in clinical research.

This \$1.5 million grant will fund the development of a core curriculum in clinical research, providing the basic foundation of knowledge required for clinical research including courses in research design, statistics, epidemiology, scientific writing and ethical issues.

In addition, the program will offer a Mentored Training Program in Clinical Investigation, which will offer course work and mentorship to fellows, postdocs and junior faculty committed to careers in clinical research.

"The core curriculum is meant to provide instruction to a broad spectrum of trainees and faculty interested in clinical research, while the mentored training program is designed for junior faculty and fellows who have support from their department to pursue research training for at least two years," Evanoff said.

"Beginning January 2006, we plan to offer a master's degree in clinical investigation for participants in this program."

Both M.D.s and Ph.D.s with a strong interest in clinical research are being encouraged to apply to the mentored training program.

For more information on the Piccirillo or Evanoff grants, contact program administrator Julie Follman at 454-8540 or follman@wustl.edu, or go online to k30.im.wustl.edu.

As BioMed 21 progresses, the creation of new interdisciplinary teams is planned to enhance research efforts in an even wider range of diseases and involve faculty from the entire University.

University Events

University Dance Theatre to present *Reach/Rebound*

BY LIAM OTTEN

Washington University Dance Theatre (WUDT), the annual showcase of professionally choreographed works performed by student dancers, will present *Reach/Rebound*, its 2005 concert, in Edison Theatre.

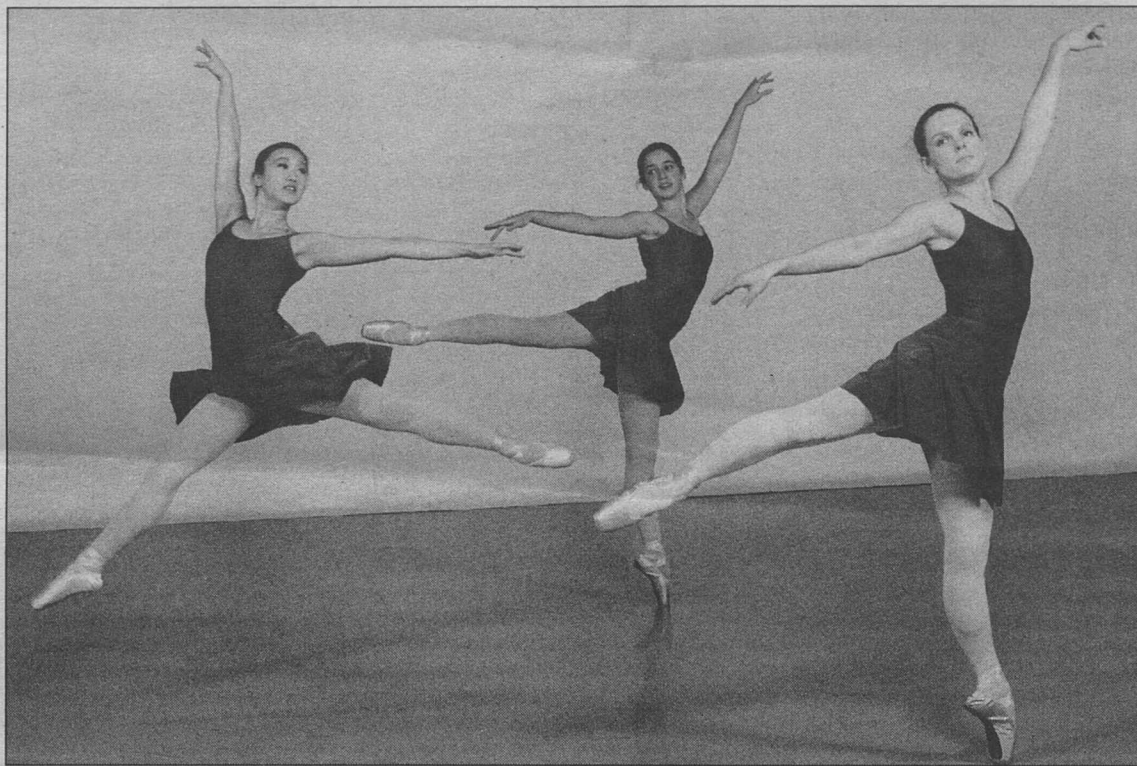
Performances — sponsored by the Performing Arts Department in Arts & Sciences — will begin at 8 p.m. Dec. 2-3 and at 2 p.m. Dec. 4.

Reach/Rebound will feature close to 40 dancers, selected by audition, performing six works by faculty and guest choreographers.

The program will highlight excerpts from *Koto*, a five-part ballet by Alonzo King, founder and artistic director of Alonzo King's LINES Ballet in San Francisco.

King, who was in residence earlier this fall thanks to a grant from the National College Choreography Initiative, originally developed the large-scale ensemble piece — named for a traditional seventh-century Japanese musical instrument — in 2002 with composer Miya Masaoka. The result, according to the *Los Angeles Times*, weds "mystery and even mysticism to powerful classical technique."

King, who founded LINES Ballet in 1982, has created dances for many of the world's finest companies, including the Joffrey Ballet, Hong Kong Ballet and Alvin Ailey American Dance Theatre.



What's the Pointe? by Christine Knoblauch-O'Neal, senior lecturer and director of the Ballet Program, choreographs the exploration of a dancer preparing for a ballet performance. The work is part of Washington University Dance Theatre's annual showcase of professionally choreographed works performed by student dancers, to be presented Dec. 2-4 in Edison Theatre.

Earlier this fall, he received the 2005 New York Dance and Performance (or "Bessie") Award for Sustained Achievement.

Next spring, he will return to St. Louis with LINES Ballet as part of the Edison Theatre OVA-TIONS! Series.

Also on the program is *The*

WOMEN by Cecil Slaughter, lecturer in dance and director of WUDT as well as rehearsal director for *Koto*. Slaughter describes his piece, which features 12 dancers, as "homage to the women who give of themselves with unconditional love and nurturing guidance to those that are in

their lives."

Other works include:

• *Didadi*: Diadié Bathily, artistic director for the St. Louis companies Afriky Lolo and Yélé Sunshine, choreographs this original work for 10 dancers. Bathily, a native of Ivory Coast, West Africa, notes that *Didadi* (which trans-

lates as "good as the honey") is a traditional dance of Mali's Bamana people, designed to "celebrate the arrival of an important person, often during the end-of-the-year holidays."

• *Shall We ... ?*: Mary-Jean Cowell, associate professor and coordinator of the Dance Program, choreographs 15 students in a humorous reinterpretation of ballroom dance.

"Ideas of gendered movement, partnering positions and signature steps have been used to create new movement expressions of the 'couple's dance,'" Cowell said. The result "may be unlike anything previously seen on the ballroom dance floor."

• *What's the Pointe?*: Christine Knoblauch-O'Neal, senior lecturer and director of the Ballet Program, choreographs this exploration of a dancer preparing for a ballet performance. The piece is partly inspired by her own backstage preparations as a professional dancer with companies such as American Ballet Theatre, the National Ballet and the Cincinnati Ballet.

• *Untitled*: An evocative duet for two male dancers choreographed by David W. Marchant, senior lecturer in dance.

Tickets are \$15 — \$9 for students, senior citizens and WUSTL faculty and staff — and are available through the Edison Theatre Box Office, 935-6543, and all MetroTix outlets. For more information, call 935-6543.

Kwaidan • What Heated the Asteroids? • Lopata Classic

"University Events" lists a portion of the activities taking place Dec. 2-15 at Washington University. Visit the Web for expanded calendars for the Hilltop Campus (calendar.wustl.edu) and the School of Medicine (medschool.wustl.edu/calendars.html).

Exhibits

American Writers at Home — Photographs From the Book by J.D. McClatchy and Erica Lennard. Washington University Special Collections. Olin Library, Grand Staircase Lobby and Ginkgo Reading Rm. 935-5495.

Film

Friday, Dec. 2

6 & 8:30 p.m. Travel Lecture Series. *Irish Stories and Glories*. Sandy Mortimer, dir. Cost: \$5 at the door. Graham Chapel. 935-5212.

Wednesday, Dec. 14

7 p.m. Asian & Near Eastern Languages & Literatures Japanese Film Series. *Kwaidan* (1964). Kobayashi Masaki, dir. Ridgely Hall, Rm. 219. 935-5110.

Lectures

Friday, Dec. 2

8 a.m.-5 p.m. Siteman Cancer Center Presentation. "Cancer Biology at the Edge of Technology." Sponsored by the Small Animal Imaging Resource and Molecular Imaging Center. Eric P. Newman Education Center. 747-1364.

8:30 a.m.-4 p.m. Center for the Application of Information Technology Workshop. "Strategies to Increase Your Value as an IT Professional." Cost: \$1,195, reduced fees available for CAIT member organizations. CAIT, 5 N. Jackson Ave. 935-4444.

Noon. Cell Biology & Physiology Seminar. "Transcriptional Control of Stem Cell Fate." David Gottlieb, prof. of anatomy & neurobiology. McDonnell Medical Sciences Bldg., Rm. 426. 362-6040.

4 p.m. Music Lecture. "The Choral Tradition: Dreams of a New Life." Amy Kaiser, dir., Saint Louis Symphony

Chorus. Music Classroom Bldg., Rm. 102. 935-4841.

Saturday, Dec. 3

7:30 a.m.-Noon. Cardiovascular Division CME Course. "Congestive Heart Failure Update." Cost: \$95. Eric P. Newman Education Center. To register: 362-6891.

8 a.m.-2 p.m. Siteman Cancer Center Retreat. "Oncologic Imaging Retreat." Co-sponsored by the Oncologic Imaging Program. To register: watsonj@ccadmin.wustl.edu.

Monday, Dec. 5

Noon. Molecular Biology & Pharmacology Seminar. "Highthroughput Biology to Link TGFbeta Signaling to Development and Disease." Jeff Wrana, sr. investigator, Samuel Lunenfeld Research Inst., Toronto. McDonnell Medical Sciences Bldg., Erlanger Aud. 362-0183.

Noon. Work, Families, and Public Policy Brown Bag Seminar Series. "Teen Employment: Shifting Patterns by Parental Education and Family Structure." Anne Winkler, prof. of economics, U. of Mo.-St. Louis. Eliot Hall, Rm. 300. 935-4918.

4 p.m. Immunology Research Seminar Series. "Dynamics of T Cell Responses in Vitro and in Vivo." Matthew Krummel, prof. of pathology, U. of Calif., San Francisco. Moore Aud., 660 S. Kingshighway. 362-2763.

5-8 p.m. Center for the Application of Information Technology Workshop. "Business Finance & Budget Fundamentals for IT Professionals." (Continues 5-8 p.m. Dec. 7.) Cost: \$820, reduced fees available for CAIT member organizations. CAIT, 5 N. Jackson Ave. 935-4444.

5:30 p.m. Cardiac Bioelectricity & Arrhythmia Center Seminar Series. "Surgery for Atrial Fibrillation: Present State of the Art and Future Directions." Ralph Damiano, John M. Shoenberg Professor of Surgery. Whitaker Hall, Rm. 218. 935-7887.

Tuesday, Dec. 6

Noon. Molecular Microbiology and Microbial Pathogenesis Seminar Series. "Catalytic Lattices on Pirated Membranes: Cell Biology of Poliovirus RNA." Karla Kirkegaard, prof. and chair, dept. of microbiology and immunology. Cori Aud., 4565 McKinley Ave. 362-4829.

5:30 p.m. Biophysical Evening Seminar. "Thrombin Allostery." Enrico Di Cera, prof. of biochemistry and molecular biophysics. Cori Aud., 4565 McKinley Ave. 362-4152.

Wednesday, Dec. 7

7:30 a.m. Center for the Application of Information Technology Workshop. "The Business Value of Portal Technology." World Trade Center Saint Louis, 121 S. Meramec, Ste. 1111. 935-4444.

4 p.m. Biochemistry and Molecular Biophysics Seminar. "Mechanistic Explorations on Cotranslational Protein Folding." Silvia Cavagnero, asst. prof. of chemistry, U. of Wis. Cori Aud., 4565 McKinley Ave. 362-4152.

Thursday, Dec. 8

4 p.m. Ophthalmology & Visual Sciences Seminar. "Animal Models for Autosomal Dominant Cataract." Mark Petrasch, prof. of ophthalmology & visual sciences. Maternity Bldg., Rm. 725. 362-1006.

Friday, Dec. 9

Noon. Cell Biology & Physiology Seminar. "The Developmental Origins of Mammalian Skull Bones and Sutures." Gillian Morriss-Kay, prof. of human anatomy & genetics, U. of Oxford, England. Co-sponsored by molecular biology & pharmacology. McDonnell Medical Sciences Bldg., Rm. 426. 362-3908.

Monday, Dec. 12

8:30 a.m.-4 p.m. Center for the Application of Information Technology Two-day Workshop. "Business Finance & Budget Fundamentals for IT Professionals." (Continues 8:30 a.m.-4 p.m. Dec. 13.) Cost: \$820, reduced price available for CAIT member organizations. CAIT, 5 N. Jackson Ave. 935-4444.

3 p.m. Neuro-Oncology Research Group Seminar Series. "Meningiomas: Current Classification and Molecular Features." Arie Perry, assoc. prof. of pathology & immunology. McDonnell Medical Sciences Bldg., Rm. 928. 454-8981.

4 p.m. Immunology Research Seminar Series. "Lymphocyte Antigen Receptor Gene Assembly: Maintaining Order and Genomic Stability." Barry Sleckman, assoc. prof. of pathology & immunology. Moore Aud., 660 S. Kingshighway. 362-2763.

5:30 p.m. Cardiac Bioelectricity and Arrhythmia Center Seminar. "Connexin Remodeling in Heart Disease: Substrate for Arrhythmogenesis." Kathryn Yamada, research assoc. prof. of medicine. Whitaker Hall, Rm. 218. 935-7887.

Tuesday, Dec. 13

Noon. Molecular Microbiology & Microbial Pathogenesis Seminar

Series. "Helicobacter pylori: Genetic Diversity and Genome Evolution." Douglas Berg, prof. of molecular microbiology. Cori Aud., 4565 McKinley Ave. 362-3692.

Noon. Program in Physical Therapy Research Seminar. "The Role of IGF-I in Experimental Diabetic Autonomic Neuropathy." Robert Schmidt, prof. of pathology & immunology. 4444 Forest Park Blvd., Lower Lvl., Rm. B108/B109. 286-1404.

Wednesday, Dec. 14

4:30 p.m. Program in Physical Therapy Professional Conclave. 4444 Forest Park Blvd. For more information: 362-1406.

Thursday, Dec. 15

3 p.m. Siteman Cancer Center Basic Science Seminar Series. Stanley J. Korsmeyer Memorial Lecture. H. Robert Horvitz, prof. of biology, Howard Hughes Medical Inst. Eric P. Newman Education Center. 454-7029.

4 p.m. Ophthalmology & Visual Sciences Seminar. "Modeling Optic Nerve Tumors in Mice." David Gutmann, Donald O. Schnuck Family Professor of Neurology. Maternity Bldg., Rm. 725. 362-1006.

4:15 p.m. Earth & Planetary Sciences Colloquium. "What Heated the Asteroids?" Alan Rubin, research geochemist, U. of Calif., Los Angeles. Earth & Planetary Sciences Bldg., Rm. 203. 935-5610.

Music

Sunday, Dec. 4

4 p.m. Concert. Jazz Combo. Tietjens Hall. 935-4841.

7:30 p.m. Concert. WU Chamber Winds. Umrath Hall Lounge. 935-4841.

Monday, Dec. 5

8 p.m. Concert. Flute Choir of Washington University. Graham Chapel. 935-4841.

Tuesday, Dec. 6

8 p.m. Dept. of Music Student Recital. Graham Chapel. 935-4841.

Wednesday, Dec. 7

8 p.m. Graduate Recital. Sanja Stojicevic, piano. Graham Chapel. 935-4841.

Thursday, Dec. 8

8 p.m. Concert. Guitar Gala, featuring guitar

On stage

Friday, Dec. 2

8 p.m. Performing Arts Dept. Production. *Reach/Rebound*. Cecil Slaughter, dir. (Also 8 p.m. Dec. 3; 2 p.m. Dec. 4.) Cost: \$15, \$9 for students, children, seniors, WUSTL faculty & staff. Edison Theatre. 935-6543.

Sports

Friday, Dec. 2

8 p.m. Men's Basketball vs. U. of Dallas. Annual Lopata Classic. Athletic Complex. 935-4705.

Saturday, Dec. 3

6 & 8 p.m. Men's Basketball Annual Lopata Classic. Consolation and championship games. Athletic Complex. 935-4705.

Worship

Thursday, Dec. 8

12:05 p.m. Catholic Mass. Medical Campus. For location and information, call 935-9191 ex. 222.

5:30 p.m. Catholic Mass. Catholic Student Center, 6352 Forsyth Blvd. 935-9191.

How to submit 'University Events'

Submit "University Events" items to Genevieve Posey of the Record staff via:

- (1) e-mail — recordcalendar@wustl.edu;
- (2) campus mail — Campus Box 1070; or
- (3) fax — 935-4259.

Deadline for submissions is noon on the Thursday eight days prior to the publication date.

University authors to be featured at colloquium

Larry May, Ph.D., J.D., professor of philosophy in Arts & Sciences, will deliver a keynote address on "The Moral Writer" as part of "Celebrating Our Books, Recognizing Our Authors," the University's fourth annual faculty book colloquium, at 4 p.m. Dec. 7 in the Olin Women's Building Formal Lounge.

Celebrating Our Books will honor the work of scholars from across the arts and sciences disciplines. Featured faculty presenters — who will read from their works and take questions from the audience — will be Keith Sawyer, Ph.D., associate professor of education in Arts & Sciences, most recently the author of *Social Emergence: Societies As Complex Systems* (2005); and Rebecca Lester, Ph.D., assistant professor of anthropology in Arts & Sciences, author of *Jesus in Our Wombs: Embodying Modernity in a Mexican Convent* (2005).

In addition, Carter Revard, professor emeritus of English in Arts & Sciences, will read three poems from his latest collection, *How the Songs Come Down* (2005).

In conjunction with the event, the University's Campus Store will display books by colloquium participants, all of which will be available for purchase. Authors will be available after the colloquium to sign their works.

May is the author of *The Morality of Groups* (1987), *Sharing Responsibility* (1992), *The Socially Responsive Self* (1996), *Masculinity and Morality* (1998) and *Crimes Against Humanity* (2005). The latter volume is the first in a proposed trilogy on the normative foundations of international criminal law. The second and third volumes, now in various stages of draft, are *War Crimes and Just Wars* and *Crimes Against Peace and Waging Aggressive War*.

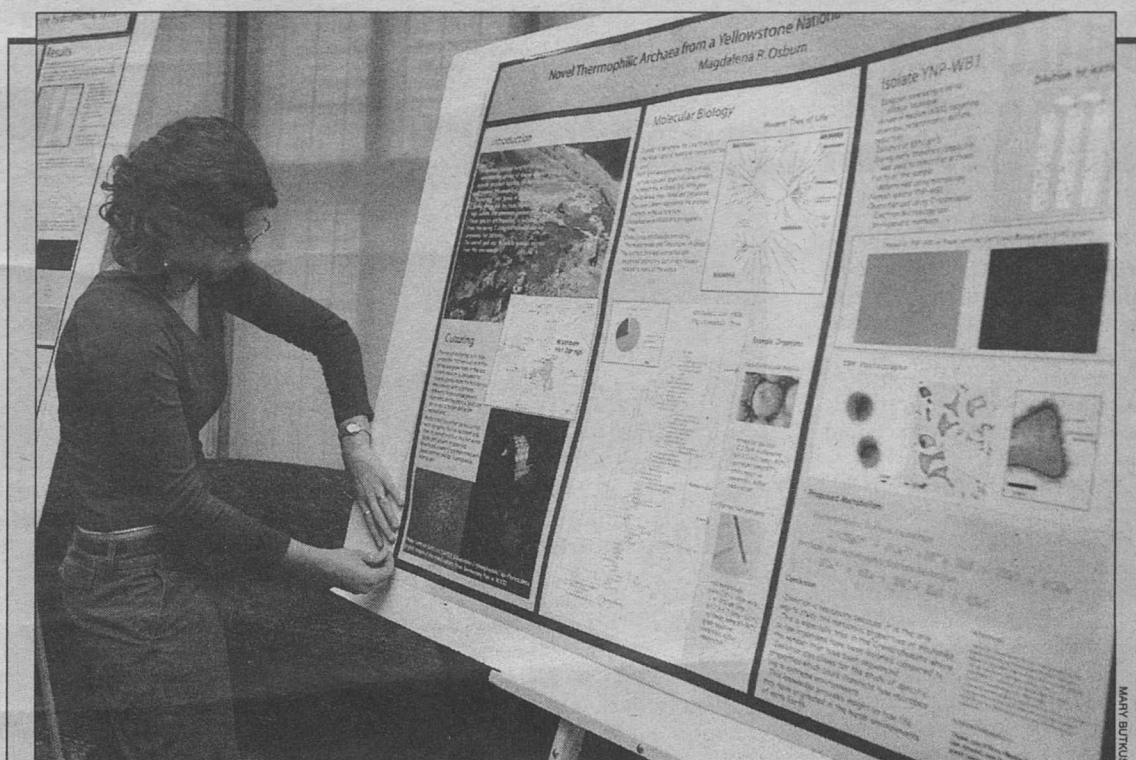
Lester's *Jesus in Our Wombs* takes readers behind the walls of a Roman Catholic convent in central Mexico to explore the lives, training and experiences of a group of postulants — young women in the first stage of religious training as nuns. Lester, who conducted 18 months of fieldwork in the convent, provides a rich ethnography of these young women's journeys as they wrestle with doubts, fears, ambitions and setbacks in their struggle to follow what they believe to be the will of God.

Sawyer is the author or editor of six books, including *Improvised Dialogues: Emergence and Creativity in Conversation* (2002) and *Group Creativity: Music, Theater, Collaboration* (2003). In *Social Emergence*, he compares relationships between the individual and the group to complex systems in computer science, physics, biology and other disciplines. His studies reveal that creativity and improvisation are key aspects of social emergence, and that creative groups display emergent properties that cannot be understood through psychological analysis of the participating individuals.

Revard, in addition to *How the Songs Come Down*, is the author of *Ponca War Dancers* (1980), *Cowboys and Indians Christmas Shopping* (1992), *An Eagle Nation* (1993), *Family Matters*, *Tribal Affairs* (1998) and *Winning the Dust Bowl* (2001). Earlier this year, he received a Lifetime Achievement Award from the Native Writers' Circle of the Americas.

Celebrating Our Books, sponsored by The Center for the Humanities in Arts & Sciences, is free and open to the public, although seating is extremely limited.

For more information or to RSVP, call 935-5576.



Going public Junior Magdalena Osburn puts the finishing touches on her project, "The Isolation and Characterization of a Novel Hyperthermophilic Archaeon From Yellowstone National Park," during the Undergraduate Research Symposium Nov. 14 in the Women's Building Formal Lounge. The symposium showcased undergraduate research performed by more than 30 students, who described their research through posters and visual presentations, across several academic disciplines.

Campus Watch

The following incidents were reported to University Police Nov. 16-29. Readers with information that could assist in investigating these incidents are urged to call 935-5555. This information is provided as a public service to promote safety awareness and is available on the University Police Web site at police.wustl.edu.

Nov. 17

2:14 p.m. — A staff member at Simon Hall reported the theft of a wireless networking device from an unsecured closet in Room 112. The theft occurred between Nov. 11-14. Total loss is estimated at \$800.

Nov. 29

11:23 a.m. — An unknown person entered an unlocked

seminar room in Goldfarb Hall and took a ceiling-mounted projector, a computer keyboard, a mouse and a hub sometime between 5 p.m. Nov. 28 and 8:10 a.m. Nov. 29. An investigation is continuing.

1:07 p.m. — An unknown person removed three wireless microphones and an audio-visual control unit from the Arts & Sciences Laboratory Sciences

Building, Room 300. The theft occurred between 1 p.m. Nov. 28 and 10 a.m. Nov. 29. Total loss is estimated at \$4,800.

Additionally, University Police responded to 10 larcenies, three lost articles, two parking violations, two auto accidents and one report each of trespassing, false identification, liquor violation, forgery and fire.

Sports

Women's cross country finishes third nationally

The No. 3 women's cross country team took third place at the NCAA Championship for the second straight season, matching its program-best finish from a year ago.

The women were led by junior Beth Herndon and sophomore Tyler Mulkin, who each earned All-America honors. Washington U. totaled 132 points for third place behind Williams College (107 points) and SUNY-Genesee (87 points).

Herndon posted a time of 22:33.5 in the 6K run to finish 11th, while Mulkin clocked a time of 22:54.0 to finish 29th.

Senior Steph Felz took 40th place (23:09.3), sophomore Kate Pentak took 76th (23:40.5) and junior Lindsay Harkema took 78th (23:43.7) to round out WUSTL's scorers.

Senior Brennan Bonner and junior Kevin Gale represented WUSTL in the men's 8K race. Bonner took 67th place (26:55.1), while Gale finished in 70th place (26:57.5) in a field of 211 finishers.

Women's hoops wins two tournaments

The No. 14 women's basketball team went 3-0 last week and won the fifth annual McWilliams Classic, a week after winning the WUSTL Tip-Off Tournament Nov. 18-19.

The Bears opened the week with an 84-54 win Nov. 22 against Webster University. Senior Danielle Beehler (12 points, 12 rebounds) and junior Rebecca Parker (21 points, 13 rebounds) led the way.

On Nov. 26, the Red and Green

defeated Middlebury College, 90-52, to open the McWilliams Classic. Kelly Manning led WUSTL with 18 points and Beehler added 13 points and seven rebounds.

The next day, WUSTL claimed the Classic title with an 83-50 win against Denison University. Parker led the Red and Green with a career-best 23 points and also pulled down seven rebounds. Manning, the tournament MVP, registered 19 points, seven boards and three blocks.

The McWilliams Classic title came on the heels of the WUSTL Tip-Off crown, which the Bears won by defeating Coe College, 80-44, and No. 22 DePauw University, 72-61. Beehler posted 14 points and 15 rebounds, while Parker tallied 17 points, 10 rebounds, four assists and four blocks to claim the title.

Men's hoops wins 3, climbs above .500

The men's basketball team (3-2) opened the week with a 83-63 win over Webster University on Nov. 22. Junior Nick Nikitas posted a career-high 17 points to lead the Red and Green to their first win of the season.

Freshman Tyler Nading finished with 13 points and six rebounds, while sophomore Troy Ruths registered 13 points and nine boards.

Ruths scored a career-high 24 points to lead the Bears to a 73-68 overtime victory over Claremont-Mudd-Scripps Colleges on Nov. 25 at the David Wells Classic in Claremont, Calif.

The Bears extended their winning streak to three games with a 70-60 victory over Pomona-Pitzer Colleges on Nov. 26 Nading

scored a career high 18 points on 8-of-9 shooting from the field to lead the Bears.

The season didn't start so well for the Bears, who suffered two losses at the University of Wisconsin-Platteville Tip-Off Tournament.

On Nov. 18, the Bears fell to Robert Morris College, 76-73, in the season opener. Senior Scott Stone led the Bears with 21 points while Ruths added 17.

The next day, Washington U. dropped a 96-84 decision to Simpson College. Senior Mike Grunst scored a career-high 23 points, while Stone added 20 points.

Men's swimmers win Thanksgiving invite

The men's swimming and diving team won the 2005 WUSTL Thanksgiving Invitational at Millstone Pool.

The men tallied 841 points, well ahead of second-place Lindenwood University (800 points). The Bears women took second place at the Invitational, tallying 736 points; Lindenwood won with 819 points.

Senior Michael Slavik recorded four season-best times for the Bears, as he helped WUSTL to four of its 12 individual titles. He won the 100- and 200-yard backstrokes, anchored the winning 200-medley relay team and led off the winning 200-free relay squad.

Freshman Mike Scarpati also turned in some impressive performances. Scarpati won the 100-yard breaststroke and the 200-yard breaststroke in 2:18.98.

Senior Jenny Scott highlighted WUSTL's women, provisionally qualifying for the NCAA Cham-

pionships in the 500-yard freestyle. Scott also won the 100 freestyle, swam the second leg of the winning 200-free relay and anchored the 200-medley relay.

Volleyball's run ends in quarters

The No. 3 volleyball team fell to No. 6 University of La Verne, 3-0, on Nov. 17 at the NCAA Quarterfinals in Salem, Va. With the loss, the Bears ended the season with a 35-2 record.

La Verne picked up its first NCAA Tournament win against Washington U., which defeated ULV 3-0 in the 2003 and 2004 NCAA semifinals.

The Bears hit a season-low .109 for the match. Whitney Smith led the Bears with 13 kills, while junior libero Amy Bommarito added a team-high 16 digs. Senior setter Kara Liefer closed out her career with six kills, a .357 hitting percentage, 23 assists, 10 digs and two blocks.

Senior Rizzo named Gagliardi finalist

Senior defensive back Joe Rizzo has been named a finalist for the 13th annual Gagliardi Trophy, the award presented to the outstanding football player in NCAA Division III.

Rizzo, a three-time, first-team all-UAA selection, led the Bears with six interceptions and had 37 tackles in 2005. An accounting and finance major, Rizzo ranks fifth in Division III in passes defended and 21st in interceptions. Rizzo was a COSIDA first-team Academic All-District selection in 2005 and is a three-time Academic All-UAA selection.

Football players named all-UAA

Senior wide receiver Brad Duesing capped his four-year career by being named the UAA Offensive Player of the year, as announced by the conference office. Duesing is only the second player in conference history to repeat as UAA Player of the Year.

Duesing had a school-record 75 catches for 1,136 yards and 10 touchdowns in 2005. Duesing, who ranks first in school history in pass receptions and receiving yards, ranks third in Division III history in receptions (287) and sixth in receiving yards (4,249).

Joining Duesing on the first-team offense was sophomore tight end Jeff Howenstein, who had 10 catches and a touchdown.

The Bears defense had five first-team selections, including three-time first-team selection Rizzo. Senior linebacker Ben Schaub, junior defensive lineman Drew Wethington, sophomore linebacker Tyler McSparin and senior defensive lineman Jared Weis rounded out the first team.

Junior quarterback Nick Henry, junior running back DaRonne Jenkins, junior offensive lineman Ryan Kennon, sophomore wide receiver Joe Lubelski and sophomore offensive lineman Scott Reigle were second-team offense; senior defensive lineman Aaron Albritton, senior defensive back John Grit, senior defensive lineman Drew Martin and junior defensive back Joe Shaughnessy each earned defensive second-team honors.

Freshman punt returner Drew Makar and junior punter Chaz Moody earned all-UAA special teams honors.

Building

'A larger, acoustically brilliant space'

— from Page 1

The Department of Music and the Performing Arts Department, both in Arts & Sciences, currently combine for about 100 graduate and undergraduate majors, though hundreds of non-majors participate in student theatrical productions, dance concerts and music ensembles.

These range from the PAD's large biannual mainstage productions to the 75-member Washington University Symphony Orchestra, the 65-member Washington University Concert Choir and numerous student-run groups.

"Additional space for music and performing arts will allow us to present new activities not possi-



The Community Music School building at 560 Trinity Ave. in University City was recently purchased by Washington University to serve as additional performance, rehearsal and classroom space for music and performing arts programs.

ble before," Macias said.

"By providing room for everything from individual lessons to group rehearsals to student performances, this building greatly enhances our ability to meet an increasing demand from vari-

ous entities."

Meanwhile, the professional Edison Theatre OVATIONS! Series, now in its 33rd year, brings to St. Louis a wide variety of nationally and internationally known performing artists.

Charlie Robin, executive director of Edison Theatre, pointed out that the E. Desmond Lee Concert Hall will provide "a larger, acoustically brilliant space" in which to present select concerts and other community events.

Hydrogen

Has potential, but also many challenges

— from Page 1

theoretical chemistry work aims at calculating what the properties of such a material would be — what the material should be made of, what it should look like. Gelb and some of his postdoctoral researchers are looking at a class of materials called coordination polymers — recently synthesized, highly porous materials that have shown some promise in hydrogen gas adsorption.

Building molecular models

By focusing on building molecular models of such materials, Gelb can screen potentially promising molecules. This way he can have a good idea whether a certain material might be a good candidate before someone else devotes the time and energy involved in synthesizing it.

"Hydrogen gas has a lot of promise," Gelb said. "It has two basic advantages: it is an efficient fuel and produces no pollutant by-product."

Hydrogen burns in the same way as natural gas. It is a promising alternative energy, however, because its chemical energy can be directly and efficiently converted to electricity in special fuel cells that are easily miniaturized.

In burning natural gas, on the other hand, chemical energy first must be converted to mechanical energy in order to create electricity, an extra step that reduces efficiency.

Hydrogen's very high energy-to-weight ratio is higher than that of natural gas and gasoline. Most appealing, perhaps, is that hydrogen is clean-burning — its com-

bustion yields only water. Natural gas, along with all fossil fuels, burns to produce water and carbon dioxide, the most abundant greenhouse gas.

Unfortunately, there are many problems that have prevented and continue to prevent hydrogen from being used on a large scale, of which storage and transport is only one.

There are several other possible solutions to the storage/transport problem, but each has significant downsides.

Pressing matter

The most likely option in the near future, Gelb said, is to simply compress the gas at very high pressure. Hydrogen-powered car prototypes made by General Motors, for example, use this storage option.

There are several drawbacks, however; storage tanks are expensive and inherently dangerous, especially since hydrogen is combustible. Additionally, it is energetically costly to compress the hydrogen, making a net efficient usage of energy difficult to achieve.

Another potential storage solution involves cooling the gas to extremely low temperatures until the gas becomes a liquid. This option, however, would also be energetically costly and presents the problem of evaporation.

A third idea involves chemically incorporating the hydrogen in a solid material, for instance in a class of materials called metal hydrides. Hydrogen can be stored in these materials at such high densities as to surpass the density of liquid hydrogen.

Unfortunately, it is very difficult to get the hydrogen out of the material, requiring more energy. Also, these hydrides are often very reactive, dangerous materials; many react violently with both air and water and cease working.

Hydrogen burns in the same way as natural gas.

It is a promising alternative energy, however, because its chemical energy can be directly and efficiently converted to electricity in special fuel cells that are easily miniaturized. Most appealing, perhaps, is that hydrogen is clean-burning — its combustion yields only water.

But the biggest problem with hydrogen, according to Gelb, is producing it.

For one thing, considering hydrogen gas to be an energy "source" is a misnomer — it does not naturally occur on Earth; it must be derived from something else. While hydrogen is the most abundant element in the universe, on our planet all of it is bound with other elements.

Water, for example, is two parts hydrogen, one part oxygen, and it is also bound up in hydrocarbons and a milieu of other compounds. Thus, hydrogen production is the larger problem that stands in the way of ever achieving a "hydrogen economy."

Currently, the vast majority of hydrogen gas is produced from natural gas in a process called steam reforming. Besides using up natural gas, this process also creates carbon dioxide — the byproduct absent in hydrogen combustion, which contributes to much of its promise as a "green" fuel.

While there has been some progress in sequestering this car-

bon dioxide in places where it cannot seep into the atmosphere, such as deep underground, producing hydrogen via steam reforming has only limited promise for reducing greenhouse emissions and is not a renewable strategy.

"The case has been made persuasively that you'd be better off just burning the natural gas, rather than going to the trouble of producing hydrogen from natural gas and going through all the problems associated with its storage and transport," Gelb said.

But that doesn't stop him from trying to solve these problems.

Gelb, in fact, is working in collaboration with several other University researchers in energy-related science.

This work is supported by the University's recently established Center for Materials Innovation. Gelb's WUSTL colleagues in this endeavor are Pratim Biwas, William Buhr, Dewey Holten, Ramki Kalyanaraman, Kenneth Kelson, Richard Loomis, Thomas Vaid and Amy Walker.

Compton

Honor coincides with World Year of Physics

— from Page 2

international stature.

During his original tenure at WUSTL, in his laboratory in the basement of Eads Hall, Compton investigated the dual nature of X-rays.

He found that when an X-ray scatters off an electron, the X-ray loses energy in the same way that a billiard ball does when it bounces off another ball. This became known as the "Compton effect" and showed that radiation also behaved like a particle. His work served as a stimulus a few years later for the theory of quantum mechanics.

"In three early years at Washington University and one bold, masterful stroke of experimental physics, Compton not only put Washington University on the world map of quantum physics, but also America itself, for the first time and for all time," said John W. Clark, Ph.D., the Wayman Crow Professor and chair of the Department of Physics.

"The Compton X-ray scattering experiment was a 'smoking

gun' in the history of science, establishing that the theoretical photon of Einstein's photoelectric effect that won him the Nobel Prize was real, and that light has an alter ego as a particle," Clark added.

"It is fitting in the World Year of Physics celebrating Einstein's wonder year of 1905, that Washington University, through Arthur Compton's greatness, has a permanent link with one of the scientific revolutions stimulated by Einstein."

The APS launched its historic sites register this year to coincide with the World Year of Physics, in which events are being held worldwide to raise public awareness of physics.

The four other places on the inaugural APS Register of Historic Sites are Case Western Reserve University, site of the Michelson-Morley experiment; the Franklin Institute in Philadelphia, in recognition of Benjamin Franklin's pioneering work in electricity; Johns Hopkins University, where Henry Rowland revolutionized spectroscopy with his ruled gratings; and Yale University, where J. Willard Gibbs made fundamental contributions to thermodynamics.

The Dec. 12 ceremony and talks are open to the public, but seating is limited. For more information, call 935-6276.

Brain

Variability of internal signals is important

— from Page 1

One speculation was that some of the brain signals they detected might be signs of the brain's struggle to cope with an ambiguity built into the test: The volunteers knew the hint was only accurate 80 percent of the time.

"Whether the hint is accurate or not was determined by the computer's random number generator, and the volunteers were not going to be able to beat that," said co-author Giovanni d'Avossa, M.D., instructor in neurology.

"But regardless of how hopeless it was to try to outguess the computer, some of our data suggest that the brain may still have been trying to do just that — to figure out a formula or a rule based upon which it could predict whether a hint was valid and should be trusted."

Researchers based this speculation on a spike in brain activity partially found in the rewards system in the frontal lobes.

"The rewards system is involved in regulating behavior based on previous experiences of rewards and punishments," d'Avossa said. "It also may help us build up predictions of what the world should be like and how certain events go together. When it works well, the world makes sense to you."

Sapir noted that the reward systems' predictive abilities may be damaged or missing in some patients with mental illness, causing these patients to perceive the world as alien and unpredictable.

Other areas involved in prediction included regions in the visual cortex involved in the analysis of the motion display and regions involved in the control of visual attention.

"These activations may reflect the degree to which subjects variably directed attention on each trial to the location of the stimulus prior to its presentation," said Maurizio Corbetta, M.D., the Norman J. Stupp Professor of Neurology and the study's senior author.

Regardless of how the results are interpreted, Corbetta said, the study clearly showed that visual perception not only depends on the quality of sensory signals but also on the variability of internal signals.

AAAS

Fellows announced in Oct. 28 Science

— from Page 1

Forum during the 2006 AAAS Annual Meeting Feb. 18 in St. Louis.

This year's AAAS fellows were announced in the Oct. 28 issue of *Science*.

The tradition of AAAS fellows began in 1874. Currently, members can be considered for the rank of fellow if nominated by the Steering Groups of the association's 24 sections, or by any three fellows who are current AAAS members (so long as two of the three sponsors are not affiliated with the nominee's institution), or by the AAAS chief executive officer.

Each Steering Group then reviews the nominations of individuals within its respective section. A final list is forwarded to the AAAS Council, the policymaking body of the association, which votes on the aggregate list.

Record

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Calendar Coordinator Genevieve Posey
Print Production Carl Jacobs
Online Production Alice Hoette

News & Comments

(314) 935-6603

Campus Box 1070

kiley@wustl.edu

Medical News

(314) 286-0111

Campus Box 8508

williamsdia@wustl.edu

Calendar Submissions

Fax: (314) 935-4259

Campus Box 1070

recordcalendar@wustl.edu

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Notables

WUSTL team takes top prize in regional programming contest

By TONY FITZPATRICK

A team of WUSTL students has won the mid-central regional International Collegiate Programming Contest, placing first out of 122 teams from Kentucky, Tennessee, Illinois, Missouri and Arkansas.

The annual contest is run by The Association for Computing Machinery (ACM). The contest involves teams of college students trying to solve difficult programming problems, against the clock. The WUSTL students competed at Webster University Nov. 5 in St. Louis.

The students are James Aguilar and Adam Norberg, undergraduates in computer science and engineering, and Albert Mao, a graduate student from the School of Medicine.

William Smart, Ph.D., assistant professor of computer science and engineering, coached the team.

"The win in the regional means that we'll be going to the world finals in San Antonio in April," Smart said. "Only 75 teams from all over the world will be at this event."

"This is a real feather in the team's cap, because these contests are really hard."

Aguilar said, "The problems are generally just tricky questions that one can use a computer to solve. One possible instance of a problem would be a problem that describes a very complicated board game and asks a contestant to write a program that determines who won the game after a certain set of moves."

"Another possible problem would be to give the contestant a university course schedule including prerequisites and require the contestant to write a program that will determine the minimal number of semesters required to complete all of the courses."

The problem may seem easy on the surface, but Aguilar said that the hard part is that the contestants can only write programs that answer the question — the contestant is not allowed to help the program answer any of the questions.

Another difficult twist to the competition is that if your pro-

gram fails, you are given chances to fix it, but the judges will not tell you *how* your program failed — only that it failed. Contestants have to figure out the "how" on their own.

"The contest questions are extremely difficult," Aguilar said. "For example, one of the seven problems our team solved was unsolved by any other team in the entire region. When you consider that among those teams there are 372 of the most brilliant collegiate programming minds in the Midwest, the fact that only one team answered the question correctly becomes more impressive."

"Perhaps the greatest indication of the difficulty of the questions is that there was one of the nine questions which no team solved — ours didn't even try, after reading it."

There's also an element of teamwork that is very important here. The three students only have a single computer among them. This means that they must optimize the process of solving problems.

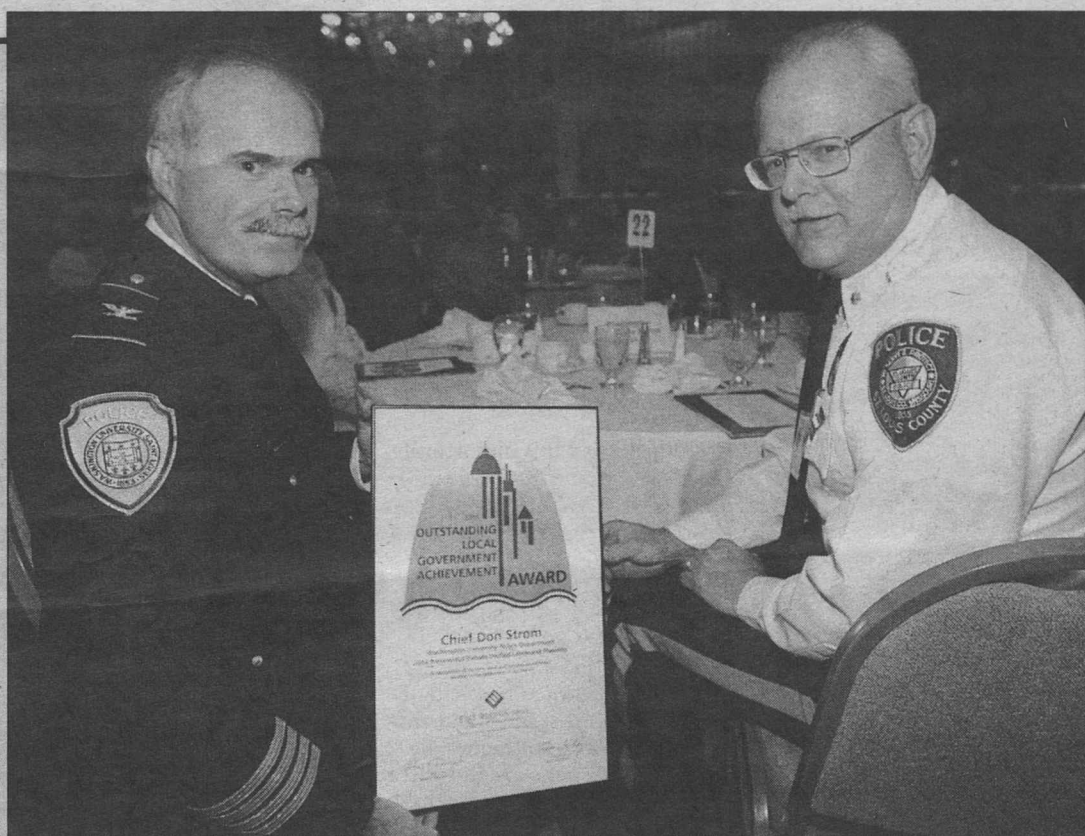
Deciding who should actually type in the solution to a particular problem, and who should be thinking about the next problem is a surprisingly difficult thing to do. Because the problems are timed, the ability to perform this coordination effectively can often be the difference between winning and losing.

The WUSTL team did a particularly good job in this aspect of the competition, and that was reflected in its final score, which was considerably better than that of the second-place team.

The WUSTL team took about 4.5 hours to complete the questions they answered. There is a time limit of five hours for the entire contest, which is completed simultaneously across the entire region.

"Being able to win against such a tough field is probably the best thing about winning the contest," Aguilar said. "After we won, we were all in shock, and it definitely makes me feel like there is no obstacle too large for me to conquer in the future."

"Being a champion in the true sense of the word feels amazing."



Outstanding achievement At a ceremony Nov. 18 at the downtown Millennium Hotel St. Louis, University Police Chief Don Strom (left), joined by Maj. Robert Trittler of the St. Louis County Police Department, displays a plaque that recognizes the University's police department as a 2005 Outstanding Local Government Achievement Award recipient from the East-West Gateway Council of Governments. The annual award is presented to honor the achievements of local government officials, staff and citizens who work diligently to improve the quality of life in metro St. Louis.

Bulawsky honored with Emerson teaching award

Lisa Bulawsky, associate professor of printmaking and drawing in the Sam Fox School of Design & Visual Arts, has been honored with an Excellence in Teaching Award from Emerson Electric Co.

She was presented the award in a Nov. 20 ceremony at The Ritz-Carlton in Clayton.

Bulawsky, who came to the University in 1996, teaches undergraduate and graduate printmaking and drawing majors, as well as general elective printmaking. In addition, she has taught a series of special topics in printmaking, including "Contemporary Processes," "Guerilla Printmaking" and "From Propaganda to Decoration."

In 2003, Bulawsky worked with students to create "Operation Pandemic Joy" — a "multimedia propaganda campaign" promoting joy through SMART (Social Message Art) bombs, leaflets and printed magnets — as part of WUSTL's Sesquicentennial celebration.

Other special projects include *Making Connections*, an oversized woodcut printed by a city bus, and *Target Feedback*, a collaborative exhibition focusing on social self-portraiture.

Bulawsky's own works on paper have been exhibited nationally, most recently in the solo show *Merry Folly (all fall down)* at the Philip Slein Gallery, 1319 Washington Ave., and in the group exhibition *Outlaw Printmakers*, which traveled to New York,

Minneapolis, St. Louis, Kansas City, Mo., and Austin, Texas.

Her works are included in numerous public and private collections, including those of the Nelson-Atkins Museum of Art in Kansas City; the Royal Academy of Fine Art in Antwerp, Belgium; and the Frans Masereel Graphik Centrum in Kasterlee, Belgium. Other honors include a National Endowment for the Arts/Mid-America Arts Alliance Regional Grant.

In 2001, she was named the School of Art's Professor of the Year by Student Union.

In addition, Bulawsky is the founder of Vertigo Press, an umbrella organization for carrying out a variety of public art projects and interventions, and Blindspot Galleries, an alternative exhibition space — Bulawsky's white Ford minivan — which displays artworks printed on thin strips of magnetic-backed vinyl.

The Excellence in Teaching program, sponsored by Emerson Electric Co., annually recognizes over 100 teachers from pre-school through higher education. The program began in 1989 as part of St. Louis' VP Fair, but in 1991 it was adapted to coincide with the beginning of National Education Week in the fall.

Honorees are selected by their school districts or institutions for exceptional efforts in the education field.

Obituary

Schwartz; helped lead Baby Tooth Survey

By ANDY CLENDENNEN

Alfred Seymour Schwartz, M.D., former clinical professor at the School of Medicine and a leader in a study that contributed to a ban on testing nuclear weapons in the atmosphere, died of prostate cancer Thursday, Nov. 10, 2005, in University City. He was 92.

As one of the leaders of the world-renowned St. Louis Baby Tooth Survey conducted from 1959-1970, Schwartz and his colleagues analyzed nearly 300,000 teeth for evidence of strontium 90, a radioactive material created in atomic and hydrogen bomb explosions.

The study, spearheaded by then-professor of biology in Arts & Sciences Barry Commoner, Ph.D., found that the teeth absorbed nuclear material.

The findings contributed to a ban on testing nuclear weapons in the atmosphere.

Born on July 12, 1913, in New York, Schwartz earned a bachelor's degree from Amherst College in 1932 and a medical degree at Johns Hopkins University in 1936 before doing a residency at St. Louis Children's Hospital.

He remained in the area to conduct a private practice with offices in St. Louis, Clayton and Creve Coeur.

He was associated with Barnes-Jewish Hospital and served as a clinical professor at the School of Medicine. He authored several papers in medical journals about childhood behavior problems and was vice president and treasurer of the Greater St. Louis Citizens Committee for Nuclear Information.

He also was a fellow of the American Academy of Pediatrics and was a director of the American Civil Liberties Union of Eastern Missouri. Several years ago, he was the first recipient of the group's Eugene Buder Spirit of Liberty Award for volunteerism.

His wife of 63 years, Ellen Jane Freund Schwartz, died in 2004.

Survivors include sons Stephen, Andrew and Charles; six grandchildren; and four great-grandchildren.

A memorial service will be at 2 p.m. Jan. 7 at the Ethical Society of St. Louis, 9001 Clayton Road in Ladue.

Memorial contributions may be made to the Scholarship Foundation of St. Louis, 8215 Clayton Road, St. Louis MO, 63117.

Adelstein named director of community relations & local government affairs

By ANDY CLENDENNEN

Cheryl L. Adelstein has been appointed director of community relations and local government affairs, announced Pamela S. Lokken, vice chancellor for government and community relations.

Adelstein takes over for Leah Merrifield, who in June was appointed special assistant to the chancellor for diversity initiatives and has served in both capacities since.

"Cheryl is the right person at the right time to become the University's new director of community relations and local government affairs," Lokken said. "She will build on the great work done by Leah Merrifield and take our community relations program to another level of excellence."

A St. Louis native, Adelstein has 17 years of experience in government and not-for-profit management. Most recently, she served as executive director of the Central Reform Congregation, one of the fastest-growing Jewish congregations in the country, in the Central West End.

Her background includes stints as the village administrator for Swansea, Ill., where she managed administration and citizen relations of the rapidly growing southwestern Illinois community; and as the director of government services with RJK Inc., where she ensured com-

pliance with federal and state regulations in the expenditure of \$30 million in grants to purchase 700 flood-damaged properties and relocate 200 families in one year.

She has also been the manager of local government services for the East-West Gateway Council of Governments and was assistant to the city administrator in St. Charles, Mo.

"I consider myself to be a generalist with a strong understanding of local government and how it functions," Adelstein said. "I enjoy working in collaboration with citizens, volunteers and community groups to accomplish goals."

"Working for Washington University was attractive to me because the University has a major impact on the quality of life in the St. Louis region. This position enables me to use my

background in local governments and community outreach to further the mission of the University."

Adelstein earned a bachelor of arts in international studies, magna cum laude, from American University in 1985, and a master of government administration from the University of Pennsylvania's Fels Institute of Government in 1987.

She and her husband, Daniel Davison, live with their daughters Hannah, 10, and Mara, 7, in the Benton Park neighborhood of South St. Louis.



Adelstein

Washington People

In 1989, Kim Donica took a social work position in the Neonatal Intensive Care Unit (NICU) at St. Louis Children's Hospital. As a small part of her job, Donica was asked if she would work with families whose babies had contracted HIV from their mothers.

"When I had this opportunity, I knew working with these families was what I wanted to do," says Donica, now program director of Project ARK (AIDS/HIV Resources and Knowledge) and research administrator in pediatric infectious diseases.

Now a national policy maker and the key figure in the field of HIV services for women and children in St. Louis, colleagues say Donica brings patience and a level head to her emotionally challenging work.

"Many local families literally



Kim Donica (left) and Stacey Slovacek, child life specialist, sort toys for Project ARK's annual toy drive, which provides toys for more than 1,000 children affected by HIV in the St. Louis area.

Guiding Project ARK with compassion

Kim Donica helps children, adolescents and women with HIV

BY DIANE DUKE WILLIAMS

owe her their lives," says Lynn Cooper, who has worked with Donica for 15 years as president of Doorways, a local interfaith AIDS residence program. "She's gotten them out of bad situations and connected them with lifesaving services, case management and resource referral."

When Donica started working with families with HIV, she knew firsthand what an HIV diagnosis meant for a family and the struggles it would face: Her brother-in-law and two other family members had already been diagnosed with the disease.

Working with Greg Storch, M.D., professor of pediatrics, and Kathleen McGann, M.D., associate professor of pediatrics, Donica helped access services for families with the disease, such as respite, daycare and home-health services.

"Kim is an outstanding people person," Storch says. "She understands human behavior very well and has great insight into people's needs."

"I have also seen her do a great job of developing the skills of personnel at Project ARK."

Following a spike in the number of mother-to-child transmissions, in 1995 Donica, Storch and McGann wrote the grant to establish Project ARK, which would provide health-care and support services for children with HIV. The program was established through the School of Medicine's Department of Pediatrics with a \$300,000 budget.

Today, with a budget of \$2 million, the organization provides services to almost 600 people and is

the only local agency specifically dedicated to serve children, adolescents and women living with HIV.

Storch says Donica has been critical in overseeing the growth of Project ARK.

"I consider her an organizational genius," he says. "She's very good at understanding how organizations work, fitting the right people into the organization and making sure they're successful."

"She also is a very creative problem-solver."

When Donica first began help-

orphaned by the disease.

The children and families helped by Project ARK often view the staff as an extended family.

This feeling is fostered by Camp Hope, an annual camp Project ARK hosts for children with HIV and their families at Trout Lodge in Potosi, Mo.

Not only do the families connect with the staff and provide great support to each other — away from the stigma and rejection they may face at home — but they also share advice about

the Ferguson Medical Group and the Missouri Delta Community Hospital, not far from Puxico.

Donica was that hospital's first social worker and provided both mental-health and medical social-work services. She distinctly remembers the case of an anorexic young girl whom she referred to the local health-care facility and saw recover.

After she earned a master's degree, Donica was hired by the Ferguson Medical Group for a short while and then joined the Bootheel Mental Health Center, where she worked for five years.

In 1987, Donica's 1-year-old daughter, Kirsten, was diagnosed as profoundly hearing impaired at St. Louis Children's Hospital. Donica and her husband, Kevin, decided to move to St. Louis to enroll her in the St. Joseph Institute for the Deaf.

Kirsten's younger brother, Aaron, also is profoundly hearing impaired. Both children received cochlear implants from the Washington University Hearing Rehabilitation and Cochlear Implant Program and now attend the hearing-impaired program at Brentwood High School.

The couple's other son, Evan, attends Kirkwood High School. She and her husband spend much of their free time at their children's school activities, and they also enjoy traveling and taking dance and wine-tasting classes.

Whether it's helping a family deal with a diagnosis of HIV or facing some of the challenges in her own life, Donica maintains a positive outlook.

"I believe I have been very fortunate," she says.

She's also inspired by the Project ARK staff and the physicians she works with every day.

"From the start, we believed we could develop a comprehensive program to help address the many needs these families have, and we did," she says proudly.

"I consider her an organizational genius. She's very good at understanding how organizations work, fitting the right people into the organization and making sure they're successful. She also is a very creative problem-solver."

GREG STORCH

ing families with HIV, babies born to mothers with the disease were being infected before, during or after birth at an alarming rate. But since 1994, when women with HIV started taking the drug AZT during pregnancy, the transmission rate has plummeted.

Seeing fewer mother-to-child HIV transmissions and longer life expectancies in children with HIV has been very rewarding for Donica.

"When I first started working in this area, the life expectancy for children with this disease was 3-to-5 years old," she says. "Now, many are living through adolescence and into young adulthood. Many of these kids have complicated lives, but for the most part enjoy a good quality of life. They are very brave and a true inspiration."

More children today — about 70 percent of the families that Project ARK works with — tell school administrators about their disease.

Under Donica's guidance, Project ARK developed a plan of action that families can use when they make this disclosure.

One of the hardest parts of Donica's job, she says, is helping children who have been

how to get family members to take their medications on a regular basis.

"It's immeasurable what Camp Hope means to these families," Donica says.

Donica grew up the middle child in a close-knit family in Puxico, Mo., a town of fewer than 1,000 people, located between Poplar Bluff and Cape Girardeau.

But people in little Puxico had big dreams, Donica says: "It seemed the entire town had a belief that you could do anything or be anything."

Some of Donica's classmates became physicians, CEOs of companies and political leaders.

The late Chris Sifford became a top aide for former Missouri Gov. Mel Carnahan; and Roy Temple served as chief of staff for U.S. Sen. Jean Carnahan.

Donica's father farmed and taught social studies at Puxico Middle School, but he was a social worker by his actions. He was always helping elderly neighbors and others in need.

Donica majored in social work at Southeast Missouri State University. When she graduated, she received a full scholarship for a master's degree at the George Warren Brown School of Social Work. The scholarship was given to a social worker who promised to practice in a rural area after graduating.

As part of her master's degree, she completed a practicum with



Kim and husband Kevin with children (from left) Kirsten, Aaron and Evan.

Kim Donica

Position: Program director of Project ARK and research administrator in pediatric infectious diseases

Family: Husband, Kevin; children, Kirsten, 19; Evan, 17; and Aaron, 14

Hobbies: Wine-tasting and playing card games such as spades and Shanghai. "At family gatherings, we have fiercely competitive card tournaments," Donica says.