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Washington University in St. Louis

Role of protein suggests strategy to kill cancer cells

By Gwen Ericson

To remain healthy, all cells must quickly mend any breaks that arise in their DNA strands. But cancer cells are particularly dependent on a process called homologous recombination to repair DNA and stay alive.

Now, School of Medicine researchers have found that a protein known as MDC1 has a role in homologous recombination. This discovery could be exploited in a two-pronged treatment strategy to eliminate cancer cells' ability to repair DNA.

"Frequently, cancer cells are more efficient at DNA repair than normal cells," said Simon Powell, M.D., Ph.D., head of the Department of Radiation Oncology and a researcher with the Siteman Cancer Center. "That's what makes them resistant to drugs or radiation treatments that physicians use in an effort to damage cancer cells' DNA and destroy them."

But in light of their findings, Powell and his colleagues believe MDC1 — along with other proteins involved in this repair pathway — may be good targets for dual-drug chemotherapeutic approaches that can completely knock out tumor cells' ability to cope with DNA damage. Their study appeared in a recent issue of *Nature Structural & Molecular Biology*.

The research group discovered that MDC1, a protein previously recognized only for its function in sensing DNA damage and signaling its presence, also transports DNA-repair proteins to the site of DNA strand breaks. Without MDC1 to pave the way, repair happens slowly because the fix-it proteins have a hard time reaching damaged areas, which are buried in the tightly packed chromosomal material of the cell's nucleus.

"MDC1 can bind to chromatin, the complex mixture of DNA and proteins that holds the genetic material," Powell said. "Because of chromatin's properties, getting into it to reach the DNA strand requires the right 'passwords.' MDC1 provides the DNA-repair proteins with this privileged access and efficiently transports them to the site of damage so they can do their jobs."

Chemotherapeutic strategies that reduce the activity of MDC1 could inhibit the ability of cancer cells to restore broken DNA. An accumulation of DNA damage would signal cells to initiate suicide pathways and die.

Although cells can find other

See **Cancer**, Page 6

KEVIN LOWDER

Encouraging interdisciplinary study Shana Russell, assistant director of admissions in the School of Law, greets M.B.A. student Ryan Lococo during a joint degrees information event Nov. 29 in Simon Hall. Sponsored by the Joint Degree Society, the fair provided an opportunity for graduate students interested in pursuing a joint degree to speak with representatives or collect information from graduate programs on WUSTL's Hilltop Campus. Nearly 50 students interacted with representatives from Arts & Sciences, the George Warren Brown School of Social Work, the Olin School of Business, the Sam Fox School of Design & Visual Arts, the School of Engineering & Applied Science and the School of Law.

Genetic diversity in jocote trees is saved by growing them locally

By Jennie Iverson

In a refreshing twist, humans have been shown to be part of the solution to the issue of decreasing genetic diversity in our world rather than part of the problem.

Global genetic diversity is being eradicated through any number of human-driven activities, the removal of large-scale forests key among them. Now, WUSTL researchers have reported that farmers and families in Central America actually have saved genetic variation in the jocote (ho-CO-tay), or *Spondias purpurea*, a small tree that bears fruit similar to a tiny mango.

They've done this by taking the plants out of the forest, their wild habitat, and growing them close to home for family and local consumption.

Allison Miller, Ph.D., a postdoctoral researcher at the University of Colorado and a former WUSTL graduate student, worked with two faculty members from the Department of Biology in Arts & Sciences: Barbara A. Schaal, Ph.D., the Spencer T. Olin Professor in Arts & Sciences; and Peter H. Raven, Ph.D., the Engelmann Professor of Botany and director of the Missouri Botanical Garden. Also assisting were WUSTL undergraduates Erin O'Mahoney Cubbison and Anna Paschke.

They have shown multiple domestications of the jocote in Central America in the midst of large-scale deforestation, a practice that endangers genetic diversity.

Weeding out genetic diversity

Modern-day agriculture entails growers selecting hardy plants that grow vigorously and continually "weeding out" genetic diversity through the selection process.

"Many of the crops are so highly domesticated that they don't have much genetic variation, and we are kind of looking at them after they've been highly domesticated and produced these elite varieties," Schaal said.

In a paper recently published in *Proceedings of the National Academy of Science*, Miller identifies the various wild and cultivated jocote species and indicates that cultivation of the jocote has preserved genetic diversity.

See **Plant**, Page 6

ITeach symposium to open the doors of technology

By Andy Clendennen

Technology changes almost faster than people can keep up with it.

The computer you bought last year is too slow and can't play that video of your grandkids; your digital camera doesn't produce high-enough-quality images; and heck, your cell phone isn't mp3- or video-equipped, so why even bother?

Technology is also making rapid strides in the classroom. But instead of being left out of the loop, several entities are joining forces to present the third ITeach symposium, Jan. 12 in Eads Hall. A workshop and support day will follow on Jan. 13.

The symposium is open to University faculty, but advance registration is requested.

ITeach is a collection of resources around the topic of teaching with technology and a collaborative effort by the Teaching and Technology Partnership — The

See **ITeach**, Page 6

Mark C. Pydynowski (left), co-founder of Somark Innovations Inc., accepts the 2005 Olin Cup from Ken Harrington, managing director of the Skandalaris Center for Entrepreneurial Studies. Pydynowski and his partner, Ramos M. Mays, will receive $50,000 in investment capital to continue building their business.

MARY BUTKUS

Happy holidays!

The *Record* will not be published again until Jan. 20. We hope you and your family have a wonderful holiday season and a happy new year.

Olin Cup winners share $75,000 in seed money

By Shula Neuman

Entrepreneurship teams from Somark Innovations Inc. and iMobile Access Technologies (iMAT) have won the University's 2005 Olin Cup and will receive a total of $70,000 in seed funding for their enterprises.

An additional $5,000 grant for student projects will be split between two winners, HomeWUrk and Suzanne Shenkman Designs.

The annual awards were announced Dec. 1 at a ceremony that featured Robert J. Skandalaris, founder and chairman of Noble International.

Somark Innovations, which will receive $50,000 of the seed money, is the brainchild of 2004 WUSTL graduates Ramos M. Mays and Mark C. Pydynowski.

Mays, who earned an engineering degree in 2004, developed an identification and tracking system that works like a Radio Frequency Identification (RFID) chip, but without a physical

See **Cup**, Page 6

Board of Trustees briefed on community engagement

At its Dec. 2 meeting, the University's Board of Trustees was briefed on a new initiative to recommend ways to strengthen the University's engagement with the St. Louis region.

The trustees also voted to approve amendments to the constitution and bylaws of the Faculty Senate, according to Chancellor Mark S. Wrighton.

Edward F. Lawlor, Ph.D., dean of the George Warren Brown School of Social Work and the William E. Gordon Professor, briefed the trustees on a process that will engage the entire academic community in finding ways to continue the strengthening of relationships between the University and the St. Louis metropolitan area.

Wrighton recently appointed a University-wide committee, chaired by Lawlor, to review opportunities for greater engagement and will be receiving recommendations from the committee this summer.

The trustees approved amendments to the constitution and bylaws of the Faculty Senate on the recommendation of the Faculty Senate Council involving the composition of the Faculty Senate Council, increasing the terms of at-large members from two to three years to improve continuity and institutional memory for ongoing issues, and ensuring that at-large seats are distributed more widely among the schools.

Following a memorial resolution and moment of silence in memory of Trustee C. Ray Holman — who died Nov. 4 in a motorcycle accident — the trustees received a report from Wrighton on University progress.

Wrighton reported that admissions applications for the fall 2006 freshman class are ahead of last year's record-setting pace, and he noted that the final application deadline is Jan. 15. He noted that the fall 2005 class was the strongest in University history, according to academic indicators.

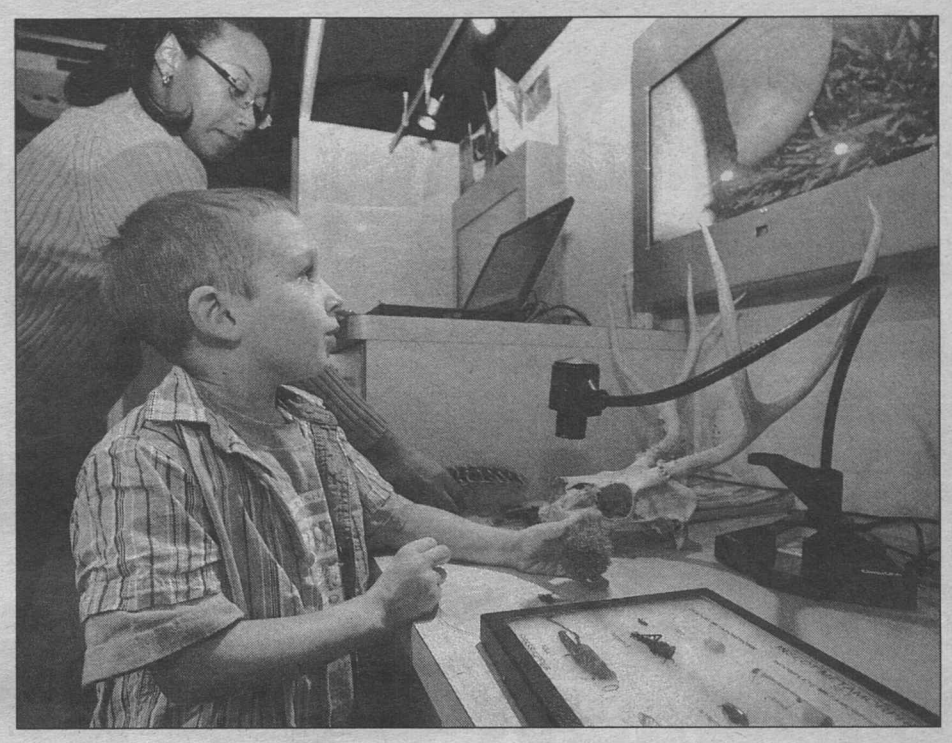
The meeting of the International Advisory Council for Asia (IACA) in Shanghai and Beijing Oct. 23-28 was reviewed by Wrighton, noting that 25 council members from more than 10 Asian nations attended and that deans of the schools met with their counterparts on several campuses in China and other Asian countries. He noted that negotiations to extend Washington University's Executive M.B.A. program with Fudan University were successfully concluded and that the new WUSTL-Fudan E.M.B.A. facility was dedicated as part of the IACA activities in Shanghai.

Wrighton also reviewed the successful launch of the McDonnell International Scholars Academy, a program to encourage greater international graduate and professional education at Washington University through partnerships with 15 of Asia's leading universities. The program is named in honor of John F. McDonnell, vice chair of the Board of Trustees and retired chairman of the board of McDonnell Douglas Corp.

Eight corporate sponsors are providing additional significant support for the first class of entering McDonnell International Scholars from these 15 partner universities. The scholars will study in the United States and then return for visits to their home campuses with Washington University "ambassadors," who will serve as mentors for the students.

Wrighton added that at the conclusion of the IACA meetings in Beijing, a highly successful graduate scholarship conference was organized by Washington University and included 10 top U.S. universities and students from 20 of China's leading universities. All together, about 600 of China's best students attended to learn more about graduate study in the United States, Wrighton said.

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



DAVID KILPER

Rosalynn Miller LeNoir, a program specialist with the MySci Investigation Station, works with kindergarten students from Delmar-Harvard Elementary. The mobile science classroom was designed by students and faculty from the Sam Fox School of Design & Visual Arts.

Widespread WUSTL effort makes mobile science classroom a reality

BY LIAM OTTEN

"Guys, come look — there's a lobster!"

A dozen kindergarten students from Delmar-Harvard Elementary rush forward to inspect. Welcome to the MySci Investigation Station, a mobile science classroom designed to foster early childhood interest in the sciences.

Draped in bold, colorful graphics — a grasshopper and a prairie dog; an octopus floating amidst pale green waves of seaweed — the custom-built, 37-foot-long semi-trailer is the centerpiece of MySci, a comprehensive K-2 science experience developed thanks to a $3.7 million grant from the Monsanto Fund to WUSTL's Science Outreach program.

Since April, more than a dozen faculty and students from the Visual Communications Research Studio (VCRS), part of the Sam Fox School of Design & Visual Art, have spearheaded design of the MySci materials (including the name), as well as the Investigation Station and accompanying curriculum guides.

Curricular input was provided by Science Outreach faculty, area teachers, graduate students from the Department of Education in Arts & Sciences and educators at the Saint Louis Zoo, the St. Louis Science Center and the Missouri Botanical Garden. Students and faculty from the Olin School of Business helped research costs and operations.

"If you want to engage kids with science, you need to get them involved in the act of observation," said D.B. Dowd, an illustrator and professor of visual communications, who led the design team with Heather Corcoran, assistant professor of visual communications, and Scott Gericke, director of the VCRS.

"Our research suggests that an inquiry-based approach and physical engagement work best with this audience," Dowd continued. "You have to create experiences that allow them to participate and discover things in a hands-on way."

The finished Investigation Station, unveiled Oct. 26 and now touring St. Louis-area schools, is divided into three zones, each boasting a variety of tactile, interactive displays.

The Missouri Woodland Room, entered through a fold-down ramp at the rear of the station, features a wall-sized forest scene complete with floor-to-ceiling sculpted tree. Three additional environments — prairie, ocean and desert — are depicted on a three-sided turning mural.

An illustrated library of more than 50 different animals, ranging from toads, skunks and squirrels to birds, spiders and starfish, are printed on attachable, magnetically backed vinyl.

"The idea was to let the kids manipulate the wall and create their own environments," Dowd said. "The variable environments permit teachers to pose simple questions in ways that actively engage students. Instead of just telling them that fish live in water, teachers can say 'Here's a fish. Where do you think the fish might live?'"

The Specimen Room houses a pair of video microscopes as well as drawers and display cases filled with plants, minerals, bones, feathers and other touchable samples, most drawn from the science center's collection. The Cave Room — a foam-covered replica of a Missouri limestone cave — allows students to crawl and slide amidst stalactites and stalagmites while learning about native animals, rocks and insects.

"Science Outreach programs use current research in education, which indicates that allowing students to investigate real objects and ask questions is most effective," said Victoria L. May, director of science outreach. "The design of the Investigation Station visually pulls kids in and then helps them get excited about learning more through hands-on experiences."

The accompanying curriculum — aligned with Missouri Grade Level Expectations and guided through the design and development process by Corcoran — focuses on three areas of study: plants, animals and the earth.

For each topic, two units have been developed, one for kindergarten and one unit for first and second grade. Each unit consists of pre-visit activities (including a teachers' kit), activities conducted aboard the Investigation Station and post-visit activities.

"The goal was to create a clear, accessible way for teachers to understand MySci's inquiry-based approach, as well as to provide background information about the subjects and specific lessons," Corcoran said.

"Curriculum books ask a series of open-ended questions for teachers to pose to students. They also make aggressive use of images and pictorial information design."

See MySci, Page 6

Inappropriate use of antibiotics may be harmful

BY NEIL SCHOENHERR

The sniffles. A runny nose. A cough. That's right — the cold season is here in full force.

But before you head off to your doctor demanding antibiotics to lessen your symptoms, be aware that those drugs don't always work and can have serious side effects, say two WUSTL physicians.

"People need to remember that antibiotics are used for bacterial infections," said David C. Mellinger, M.D., associate director and chief physician at the Student Health Service. "A common cold is a virus. Antibiotics simply won't work on viral infections. Antibiotics are drugs prescribed to kill bacteria, not viruses."

Each time an antibiotic is administered, there is a very slight risk of a serious reaction, Mellinger said. But more importantly, with the overuse of antibiotics, bacteria can become resistant to the antibiotic.

"We all have bacteria in our bodies," he said. "If they are constantly exposed to antibiotics, the normal bacteria can become resistant. Those bacteria can then end up actually causing more infections."

This resistance factor can cause the emergence of strains of bacteria that can no longer be killed by a particular antibiotic.

"Penicillin, one of the first antibiotics created, killed many of the bacteria that existed during the last century," Mellinger said. "But over time, bacteria have built up resistance to penicillin. Now, it is really only prescribed for streptococcus, the organism that causes strep throat, and a few other select infections."

Antibiotic-resistant bacteria are showing up more and more frequently in hospitals around the United States. Steven J. Lawrence, M.D., instructor of medicine in the Division of Infectious Diseases in the School of Medicine, said the overuse of antibiotics is making it more and more difficult for infectious-diseases specialists to manage bacterial infections.

"The discovery and production of penicillin marked the beginning of the antibiotic era, where we finally gained the upper hand in managing bacterial infections," Lawrence said. "But over the last 10 to 20 years, it is becoming more challenging to treat infections caused by bacteria, particularly those that are transmitted in hospitals, because the bacteria are becoming resistant faster than we can develop new antibiotics.

"In some instances, we have to resort to using toxic medications with potentially serious side effects because they are the only options available to treat infections from the multidrug resistant bacteria. The inappropriate use of antibiotics — for example prescribing them for colds or the flu — contributes to the problem."

Debunking urban myths

There are several urban myths revolving around bacterial infections, Mellinger said. One is that if you have yellow or green mucus in your nose it means you have a bacterial infection.

"Actually, it turns out that the body is having a white cell response," Mellinger said. "That causes the coloration. But it doesn't necessarily point to a bacterial infection.

"It could be a viral infection as well. With time, the mucus normally thins and clears up. If it doesn't, it might mean antibiotics are a good course of action."

Another myth is that if you have a sore throat, it must be strep throat. The only way to tell if it is strep is to do a throat culture, Mellinger said.

"If you have a sore throat, there's no need to demand antibiotics from your doctor," he said. "In fact, in adults, strep throat is not very common. It's usually isolated to sore throat and fever and doesn't normally include a cough or runny nose. If you have those symptoms, odds are you don't have a bacterial infection."

Mellinger said he sees many patients who come in with symptoms of a cold and want to be put on antibiotics.

For a cold, it's better to drink plenty of fluids, get rest and maybe try an over-the-counter cold remedy. If your symptoms don't clear up or get worse, see your physician.

If it turns out you have a bacterial infection, antibiotics may be prescribed.

"Antibiotics are like a lock and key," Mellinger said. "You have to pick the right key for the lock.

"It doesn't make any sense to give someone a very broad spectrum antibiotic if it won't cover the type of bacteria we think is there."

Changing prescribing practices

By changing antibiotic prescribing practices and using them only for the bacterial infections for which they are truly indicated, Mellinger hopes doctors can stay ahead of the bacteria and decrease the risk of even more resistant strains in the future.

"Patients need to stop putting pressure on their physicians to automatically prescribe antibiotics," he said. "The next time you have a cold, remember colds are caused by viruses and antibiotics won't help. They could actually even hurt you."

School of Medicine Update

Researchers identify bipolar disorder in preschoolers

BY JIM DRYDEN

Child psychiatry researchers at the School of Medicine have identified a small group of preschoolers who appear to suffer from bipolar disorder, also known as manic-depressive illness.

The findings, presented this fall at the annual meeting of the American Academy of Child and Adolescent Psychiatry, highlight symptoms that distinguish bipolar disorder from other mental health problems in very young children.

Diagnosing bipolar disorder in children is difficult because the manic phase of the illness can be confused with the more common attention deficit hyperactivity disorder (ADHD). The confusion arises because mania and ADHD both involve hyperactivity, irritability and distractibility.

These issues may be even more difficult in young children who display some of these behaviors and emotions normally.

However, Joan Luby, M.D., associate professor of child psychiatry, found mania symptoms as defined by psychiatry's Diagnostic and Statistical Manual (DSM-IV) did not occur in healthy preschoolers and that three main symptoms — elation, grandiosity and hypersexuality — distinguished bipolar disorder from ADHD in preschoolers.

Similar to the mania symptoms in older bipolar children — first outlined by Barbara Geller, M.D., professor of child psychiatry at the School of Medicine — young children who manifested elation, grandiosity and hypersexuality had dramatically higher odds of having bipolar disorder when compared with children with ADHD.

"This is different than the ordinary, energetic state of young children, even children with ADHD," Luby said. "When you ask healthy young children what they're capable of doing, they are known to inflate their capabilities and say they can run very fast or jump very high or even fly like Superman.

"What's different about grandiose children is that they become delusional and actually believe they can do things like run the preschool. An extreme example that I've seen involved a manic preschooler who believed that she made the sun rise and set."

During the manic phase of the illness children may experience exceedingly high self-esteem, an inflated sense of power or ability or may act as though they are in charge at home or school. They may act extremely happy, silly and giddy, but their moods can change rapidly.

A decreased need for sleep and excessive chatter also are common. Some bipolar children even experience depression at the same time.

In 2003, Luby and her colleagues were the first to identify clinical depression in preschoolers. In this new study, Luby's team attempted to distinguish children with bipolar disorder from those who were clinically depressed by looking for evidence of mania. They studied a community sample of 305 children aged 3-6.

The researchers used a preschool age psychiatric interview developed at Duke University, called the PAPA (Preschool Age Psychiatric Assessment), and added a mania module based on their experiences both with older bipolar children and with younger depressed preschoolers.

"We put together what we thought the symptoms of bipolar disorder would look like in younger children, hoping both to learn whether very young children could actually have bipolar disorder and if so, whether we could distinguish it from other psychiatric disorders, particularly ADHD," Luby said.

They also used a parent questionnaire and took advantage of special interview techniques, designed for young children, to identify signs and symptoms of depression and mania.

"One of the reasons this area of research has been slow to develop is that we've only recently learned how to ask very young children about their feelings," Luby said. "We use an age-appropriate puppet interview, in which we have two puppets converse with one another about how they feel and then ask the child to point to the puppet that best expresses his or her own emotion."

The team also observed children in various play schemes designed to induce a range of emotions — from joyful responses to frustration — and videotaped the children to obtain objective measures of their behavior.

They also used story stems, in which children were given a scenario that presents some type of an emotional conflict. The researchers then asked the children to play out the story to its completion.

In all, 26 of the 305 children in the study met all DSM-IV diagnostic criteria for bipolar disorder, but because the sample was put together in such a way that depressed children and others with symptoms of disruptive disorders were much more likely to be studied than healthy children, Luby said the prevalence of bipolar disorder in preschoolers certainly is much lower than was reflected in this sample.

The study also had higher numbers of children with depression and ADHD than would be found in the general population so that the researchers could compare the disorders and detect differences that allow for more precise diagnosis.

The ability to distinguish a problem like bipolar disorder from ADHD is critical because although the disorders share some symptoms and some children meet the diagnostic criteria for both disorders, Luby said treatment with stimulant medications that can help kids with ADHD can be problematic for children with bipolar disorder.

How best to treat bipolar disorder remains an open question, not just for preschoolers but for older children, too. Although several effective treatments exist for adults, children often respond to medications differently.

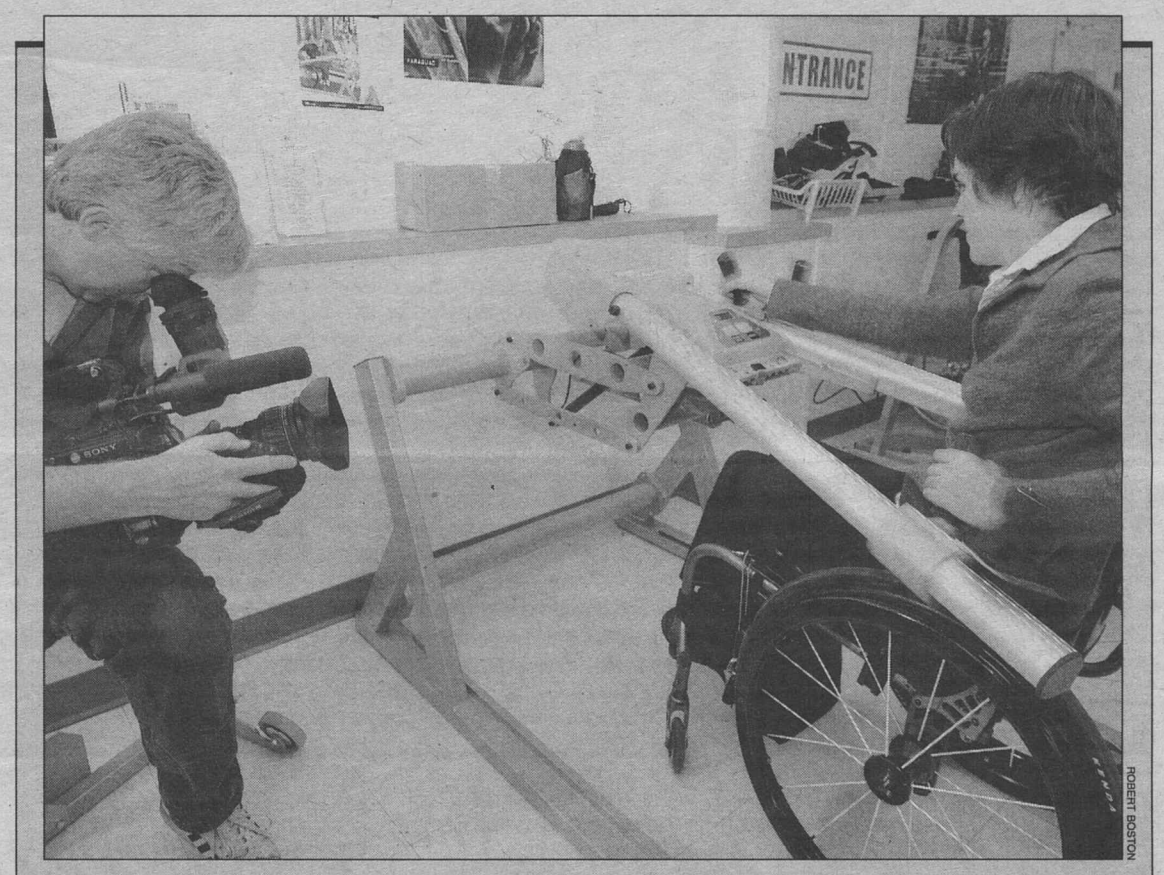
A National Institute of Mental Health (NIMH)-funded study called the TEAM (Treatment of Early Age Mania) study is comparing the effectiveness of treatments in older children. At the national level, Geller is leading the multicenter TEAM study.

The School of Medicine's Early Emotional Development Program is one of five sites participating in the TEAM study. Luby is the study's principal investigator in St. Louis.

Researchers are comparing how well different medications and medication combinations work in making bipolar children aged 6-15 feel better. Qualified participants are randomly selected to receive either lithium, a drug commonly prescribed for adults with bipolar disorder; valproate, an anticonvulsant drug that has been related to improvement of manic symptoms in a few smaller studies; or risperidone, an antipsychotic medication used in adults with schizophrenia that is also being tested in children with autism.

"We hope that by comparing these drugs and drug combinations, we might be able to find better ways to control this severe illness in older, affected children," Luby said, "and as those results become available, we can look at whether these treatments also might help younger children."

The TEAM study is recruiting children ages 6-15 with a diagnosis or symptoms of bipolar disorder. For more information, call 286-2783.



ROBERT BOSTON

Working out Rusty Reed, a photographer with Ivanhoe Broadcast News, tapes Kerri Morgan, instructor in occupational therapy, as she exercises using accessible equipment at the Enabling Mobility Community Center. Ivanhoe was taping a story about a grant the Program in Occupational Therapy recently received to provide exercise programs for people with mobility impairments.

Ellenberger named head of biochemistry & molecular biophysics

BY GWEN ERICSON

Thomas Ellenberger, D.V.M., Ph.D., has been named the Raymond H. Wittcoff Professor and head of the Department of Biochemistry and Molecular Biophysics.

The appointment was announced by Larry J. Shapiro, M.D., executive vice chancellor for medical affairs and dean of the School of Medicine, and will become effective Jan. 1.

Ellenberger comes to the University from Harvard Medical School, where he was the Hsein Wu and Daisy Yen Wu Professor of Biological Chemistry and Molecular Pharmacology.

"We are pleased to welcome Dr. Ellenberger to the University," Shapiro said. "Not only has he proven himself an outstanding teacher and scientific mentor, but also his expertise in a key area of biochemical investigation establishes him as a pre-eminent researcher. Under his leadership, the department will continue to play a pivotal role in the BioMed 21 initiative, which calls for converting knowledge of the genetic blueprint into practical applications."

Ellenberger will succeed Carl Frieden, Ph.D., professor of biochemistry and molecular biophysics, who has served as department head since 1996.

"I am absolutely delighted that Tom is taking over," Frieden said. "This will be an exciting time for the department as new faculty are added and as we develop new areas of research. Tom is the perfect person to guide us into the future."

The Department of Biochemistry and Molecular Biophysics has a long and distinguished history at the School of Medicine, and its achievements include pioneering research by eight Nobel Prize winners.

"I am thrilled by the opportunity to lead a department with a storied past that today has unparalleled strengths in computational and experimental analyses of biomolecular structure and function," Ellenberger said. "We are poised to use these molecular-scale insights to develop new tools for the diagnosis and treatment of human diseases.

"I am especially attracted to the richly talented and collegial environment of Washington University School of Medicine, where clinical insights can significantly shape the basic research enterprise."

The School of Medicine's ability to attract a professor of Ellenberger's caliber was enhanced by a $6 million grant from the Danforth Foundation, a St. Louis-based, private foundation that supports plant and life sciences development in the region.

Ellenberger

The funds established an endowment that will provide the new department head with the resources to fund research projects, acquire equipment and train the next generation of leading scientists.

The Danforth Foundation's gift recognizes the department's contributions to medical advancements and, more specifically, in supporting the mission of the BioMed 21 initiative. The department's faculty members possess a wide range of expertise in the physical chemistry and structure of the biological macromolecules (proteins, lipids, DNA and RNA) of which cells are made. These molecular-level investigations are essential for understanding the basis of disease and translating that knowledge into treatments.

Ellenberger is known for pioneering research in elucidating the structures of proteins that replicate DNA or repair DNA damage and thereby ensure the faithful transmission of our genetic blueprint from generation to generation. He recently co-authored the second edition of the textbook *DNA Repair and Mutagenesis*.

His research has provided a foundation for understanding the body's normal defenses against disease-producing mutations and the molecular bases of inherited diseases that cause chromosomal instability and/or cancer. He now hopes to target some of these same vital processes for the development of selective antibiotics and other treatments of infectious diseases.

Ellenberger earned a Ph.D. in pharmacology from Harvard Medical School in 1989, where he studied with Stephen M. Beverley, Ph.D., now the Marvin A. Brennecke Professor and head of the University's Department of Molecular Microbiology. Ellenberger's focus during his doctoral work was on the genetic mechanisms of acquired drug resistance in *Leishmania major*, a parasite that infects approximately 12 million people worldwide.

Before his graduate studies at Harvard, Ellenberger earned a doctorate in veterinary medicine from Iowa State University's College of Veterinary Medicine, where he developed an abiding interest in pharmacology and medicine.

Ellenberger has published more than 60 scientific papers and reviews and has served on the editorial boards of several prestigious scientific journals. He serves on the scientific advisory boards of several synchrotron light sources that support research in structural biology, materials science and particle physics.

During 12 years at Harvard, Ellenberger mentored 40 postdoctoral and graduate students and taught a variety of graduate and medical courses.

In recent years, Ellenberger received several awards, including his favorite, the Stange Award for Outstanding Professional Achievements from Iowa State's College of Veterinary Medicine.

University Events

'Tis the season Music ensembles to present concerts during December

BY LIAM OTTEN

The Department of Music in Arts & Sciences will conclude its fall season with a series of December concerts.

The Concert Choir of Washington University — under the direction of John Stewart, director of vocal activities — will perform works from the Renaissance and American folk songs at 8 p.m. Dec. 9 in Graham Chapel.

The program is dedicated in memory of Elizabeth Gray Danforth, wife of Chancellor Emeritus William H. Danforth and the University's first lady for nearly a quarter-century, who passed away March 30 at the age of 75.

"During her many years of association with Washington University, Elizabeth Danforth faithfully supported its students in their various endeavors, including music-making," said Dolores Pesce, Ph.D., professor and chair of music.

"In appreciation of her support for our department, we dedicate this concert to her memory."

The department will host its annual sing-along of George Frideric Handel's oratorio *Messiah* at 3 p.m. Dec. 11 in Graham Chapel. The performance, which will last about an hour, will include the Christmas portion of *Messiah* as well as the "Hallelujah Chorus."

Those who wish to may sit in special sections arranged according to voice type (soprano, alto, tenor, baritone), though those who choose not to sing are also welcome to attend. Copies of the music will be available.

John Stewart will direct the performance, and William Partridge will be the organist. Soloists — all students or recent graduates of music's vocal performance program — will include soprano Megan Higgins; alto Jade Hornbaker; tenor Adam Cromer; and baritone Scott Levin.

At 8 p.m. Dec. 14 in Holmes Lounge, the music department will present a recital by campus chamber ensembles.

Finally, the Washington University Opera, directed by Jolly Stewart and conducted by John Stewart, will present "Two Operatic Cinderellas," a program of excerpts from Gioacchino Rossini's *Cenerentola* and Jules Massenet's *Cendrillo*, at 8 p.m. Dec. 16-17 in Umrath Hall Lounge.

All the concerts are free and open to the public.

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

Women's Health • There's a Hole in the Bucket • Canada's Incredible Parks

"University Events" lists a portion of the activities taking place Dec. 9-Jan. 26 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).

KEVIN LOWDER

Just a little off the top Stylist Randall Wilson of D-Zine Hair & Art Studio holds up nearly a foot of hair he just removed from sophomore Betsy Nichols' head during the recent Locks of Love event in Mallinckrodt Student Center. Locks of Love is a national nonprofit organization that provides quality real-hair wigs for children afflicted with medical hair loss. The event was sponsored by the St. Louis Hillel at Washington University.

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.

Rosa Parks: A Celebration of the 50th Anniversary of the Montgomery Bus Boycott. Through Dec. 31. Olin Library, Lvl. 1 Lobby. 935-8679.

Film

Wednesday, Dec. 14

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

Friday, Jan. 6

6 & 8:30 p.m. Travel Lecture Series. *Canada's Incredible Parks.* Dale Johnson, dir. Cost: $5. Graham Chapel. 935-5212.

Lectures

Friday, Dec. 9

9:15 a.m. Pediatric Grand Rounds. "Insights 'In-vivo' for the At-risk Newborn Brain." Terrie Inder, assoc. prof. of pediatrics. Clopton Aud., 4950 Children's Place. 454-6006.

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. 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.

Friday, Dec. 16

9:15 a.m. Pediatric Grand Rounds. "There's a Hole in the Bucket: Molecular Pathogenesis of Congenital Diaphragmatic Hernia." David Wilson, assoc. prof. of pediatrics. Clopton Aud., 4950 Children's Place. 454-6006.

Noon. Cell Biology & Physiology Seminar. "Cancer and Aging — Rival Demons?" Judith Campisi, prof., U. of Calif., Berkeley. McDonnell Medical Sciences Bldg., Rm. 426. 362-7437.

Monday, Jan. 9

Noon. Cardiac Bioelectricity & Arrhythmia Center Seminar. "Modulation of Calcium Channels by Accessory Subunits." Geoffrey Pitt, asst. prof. of pharmacology and medicine, Columbia U. Whitaker Hall, Rm. 218. 935-7887.

Saturday, Jan. 14

7:30 a.m.-4:30 p.m. Women's Health CME Course. "Eighth Annual Contemporary Women's Health Issues." Cost: $135 for physicians, $85 for allied health professionals. Eric P. Newman Education Center. To register: 362-6891.

8 a.m.-5 p.m. Physical Therapy CME Course. "Introduction to Concepts and Application." (Continues 7:30 a.m.-3:30 p.m. Jan. 15.) Cost: $395. 4444 Forest Park Blvd., Rm. 112. To register: 286-0100.

8 a.m.-5 p.m. Physical Therapy CME Course. "Lower Quarter Advanced Application." (Continues 7:30 a.m.-3:30 p.m. Jan. 15.) Cost: $395. 4444 Forest Park Blvd., Rm. 112. To register: 286-0100.

Wednesday, Jan. 18

11 a.m. School of Law "Access to Justice" Public Interest Law Speakers Series. "Shall We Overcome? Democracy, Race, & Multiculturalism in the 21st Century." Sheryll Cashin, prof. of law, Georgetown U. Anheuser-Busch Hall, Bryan Cave Moot Courtroom. 935-6419.

Thursday, Jan. 19

3 p.m. Siteman Cancer Center Basic Science Seminar Series. Herman & Ethel Kleyman Memorial Lecture. James R. Downing, chair, dept. of pathology, St. Jude Children's Research Hospital. Eric P. Newman Education Center. 454-7029.

Monday, Jan. 23

Noon. Cardiac Bioelectricity & Arrhythmia Center Seminar. "Risk Stratification for Sudden Arrhythmic Death: Is Ejection Fraction Alone Sufficient?" Michael Cain, Tobias and Hortense Lewin Professor of Medicine. Whitaker Hall, Rm. 218. 935-7887.

4 p.m. Immunology Research Seminar Series. "Transmembrane Ubiquitin Ligases Contribute to Viral Immune Modulation and Tumorigenesis." Klaus Frueh, Vaccine & Gene Therapy Inst., Ore. Health & Science U. Moore Aud., 660 S. Kingshighway Ave. 362-2763.

Wednesday, Jan. 25

11 a.m. School of Law "Access to Justice" Public Interest Law Speakers Series. "Civil Liberties in Wartime." Geoffrey Stone, Harry Kalven Jr. Distinguished Science Professor of Law, U. of Chicago. Anheuser-Busch Hall, Bryan Cave Moot Courtroom. 935-6419.

On stage

Friday, Jan. 20

8 p.m. OVATIONS! Series. Turtle Island String Quartet & Ying Quartet. Cost: $28, $24 for seniors, WUSTL faculty & staff, $18 for students and children. Edison Theatre. 935-6543.

Sports

Saturday, Dec. 10

3 p.m. Men's Basketball vs. Ill. Wesleyan U. Athletic Complex. 935-4705.

Saturday, Dec. 17

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.

Saturday, Jan. 7

1 p.m. Women's Basketball vs. U. of Chicago. Athletic Complex. 935-4705.

3 p.m. Men's Basketball vs. U. of Chicago. Athletic Complex. 935-4705.

Friday, Jan. 13

6 p.m. Swimming & Diving vs. Lindenwood U. Athletic Complex. 935-4705.

Saturday, Jan. 14

1 p.m. Swimming & Diving vs. Wabash College. Athletic Complex. 935-4705.

Friday, Jan. 20

All day. Swimming & Diving. Washington University Invitational. (Continues all day Jan. 21.) Athletic Complex. 935-4705.

6 p.m. Women's Basketball vs. New York U. Athletic Complex. 935-4705.

8 p.m. Men's Basketball vs. New York U. Athletic Complex. 935-4705.

Sunday, Jan. 22

11 a.m. Men's Basketball vs. Brandeis U. Athletic Complex. 935-4705.

1 p.m. Women's Basketball vs. Brandeis U. Athletic Complex. 935-4705.

Worship

Saturday, Dec. 24

4:30 p.m. Catholic Christmas Eve Mass. Graham Chapel. 935-9191.

11 p.m. Catholic Christmas Eve Candlelight Mass. Catholic Student Center, 6352 Forsyth Blvd. 935-9191.

And more...

Monday, Jan. 23

11:30 a.m.-4:30 p.m. Blood Drive. Co-sponsored by Phi Delta Theta fraternity. (Also 11:30 a.m.-4:30 p.m. Jan. 24, Mallinckrodt Student Center, Lower Lvl., The Gargoyle; 5-10 p.m. Jan. 25 & 26, Wohl Student Center, Friedman Lounge.) Mallinckrodt Student Center, Lower Lvl., The Gargoyle. 935-5066.

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.

Upon request, forms for submitting events may be e-mailed, mailed or faxed to departments to be filled out and returned.

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

Grant helps Center for Social Development invest in poor

By Barbara Rea

At the Center for Social Development (CSD) in the George Warren Brown School of Social Work, Director Michael W. Sherraden, Ph.D., and his faculty colleagues, staff and graduate students are dedicating themselves to addressing the root causes of poverty and finding solutions. To this end, the CSD has found a partner in the Ford Foundation, whose goals include asset-building to create better societies.

Over the years, the Ford Foundation has generously supported the CSD, the most recent being a $2.5 million grant — which the University must match on a one-to-one basis — supporting the creation of a permanent endowment for the CSD.

"The Ford Foundation has been very generous to many of the University's programs and projects," Chancellor Mark S. Wrighton said. "This recent gift will enable the Center for Social Development to support groundbreaking work that will improve lives and lift communities.

"It is a gift that keeps giving many times over, and for that we are very grateful."

The central theory of asset-building is to invest in people to increase participation in the economy and involvement in society.

Sherraden's idea — giving people individual development accounts (IDAs) to invest in life goals such as homes, education and businesses — is an asset-building concept gaining wide support because it increases participation in the economy, strengthens communities, encourages citizenship and harmony, and creates more responsive and effective human-service and community-development organizations.

"We are giving people the tools they need to increase saving and investment, not just giving them income for consumption," said Sherraden, the Benjamin E. Youngdahl Professor of Social Development.

He noted the CSD is close to concluding a national research project spanning eight years and 13 sites. Another large study now under way is testing savings accounts for children.

"Building equity among low-income people is an approach to poverty reduction that produces multiple benefits," said Edward F. Lawlor, Ph.D., dean of the School of Social Work and the William E. Gordon Professor. "The Center for Social Development shows governments how to invest in their people.

"Because of the great success of these research studies, asset-building is having an impact on new policy. The idea of matching savings, which was unknown in public policy just a few years ago, is becoming more common."

Indeed, the CSD has participated in drafting legislation at both the state and federal levels; more than 35 states have some type of IDA policy. The concept is also spreading internationally.

The Ford Foundation is an independent, nonprofit, grant-making organization. For more than 50 years, it has worked to strengthen democratic values, reduce poverty and injustice, promote international cooperation and advance human achievement.

Headquartered in New York, the foundation also makes grants through offices in Africa, Asia and Latin America. Since its inception, the foundation has provided more than $12 billion in grants, projects and loans.

Its Asset Building & Community Development Program is a recognized leader in the field. It provides support for building human, social, financial and environmental assets that enable people and their communities to expand opportunities and participate more effectively in society.

"The Ford Foundation grant gives us the resources to capitalize on our successes and keep up the momentum," Sherraden said. "We are extremely grateful for their interest in the CSD and support of our research."

MARY BUTKUS

Recognizing faculty achievement The School of Law's Stephen H. Legomsky visits with the School of Medicine's Alison M. Goate at the Faculty Achievement Awards Ceremony Dec. 3 in the Bryan Cave Moot Courtroom in Anheuser-Busch Hall. Legomsky, J.D., D.Phil., the Charles F. Nagel Professor of International and Comparative Law, received the Arthur Holly Compton Faculty Achievement Award. Goate, D.Phil., the Samuel and Mae S. Ludwig Professor of Genetics in Psychiatry, and professor of genetics and of neurology, received the Carl and Gerty Cori Faculty Achievement Award. Each also gave a presentation of their scholarly work.

Business student wins big on college *Jeopardy!*

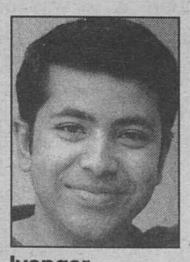
By Shula Neuman

Not many people can say they've fulfilled one of their life's dreams by the time they're 20. But if you want to know what it's like, then talk to business undergraduate Jayanth Iyengar, a recent contestant on the 2005 *Jeopardy!* College Championships tournament.

"I've been watching *Jeopardy!* since I was 8 or 9," the junior said. "I always enjoyed playing along, and I wanted to audition for a long time, but every time I would check the Web site it would say 'auditions are closed.'

"I checked this summer and it was open, so I applied. In July, I flew to Memphis to take the test."

It's been more than two month since Iyengar was at North Carolina State University to tape the shows, and he's still glowing — not only from the thrill of having played, but also from making it to the final round. He placed third and received $25,000 in prize money.



Iyengar

Iyengar said at first he was disappointed that he didn't win. After all, everyone plays the game to win.

"I figure that I was selected from 800 to 1,000 people and then I was part of this group of 15 who were on the show," Iyengar said. "I found out later that a lot of these guys had tried three or four times to even get to the tryouts.

"I just applied once and made it to the tryouts and got on the show. I think I had a tremendous amount of luck."

Iyengar said that the thrill of playing on *Jeopardy!* was matched by the fun he had meeting the other 15 contestants and one alternate. He said they were an interesting mix of people with different experiences.

The one thing they all had in common was their passion for trivia, a fact that became evident to Iyengar when he and his peers trekked to a Baskin Robbins for some ice cream one afternoon.

"While we were ordering, someone started naming off presidents," Iyengar said. "I don't know why, but suddenly the whole thing became a group, roundtable effort to name the presidents in order.

"There weren't that many people in the store, but they were probably very confused."

The camaraderie Iyengar had with his fellow players lasted into the competition. During the finals, Iyengar started falling behind while one of his peers, Nico Martinez from Stanford University, steamed ahead and eventually won the championship.

Still, Iyengar had nothing but praise for his competitor.

"Nico was so dominant," Iyengar said. "He seemed to have a sixth sense on knowing just when to hit his button. I think Nico, Adam (Pinson from the University of Alabama-Birming-ham) and I were well-matched.

"It could have been any of us that won. It really came down to his timing on the buzzer and his knowledge."

Iyengar said he would love to repeat the experience, but he probably won't ever have the chance.

"Under current rules, I would not be able to appear on adult *Jeopardy!*" Iyengar said. "But I'd do it again. It was such a phenomenal experience.

"I was living out a childhood dream."

Sports

Women's hoops team wins invitational

The No. 9 women's basketball team (7-0) won the Eleanore Moyer Tournament on Dec. 3 in Hanover, Ind. WUSTL senior Kelly Manning, who scored a career-high 32 points in the championship game against host Hanover College, took home tournament MVP honors.

The Bears defeated Thomas More College on Dec. 2 in the opening round of the Tournament behind senior Danielle Beehler's career-best 24 points.

Despite falling behind, 29-16, WUSTL rallied for a 41-38 halftime lead. The Bears opened the second half with a 9-2 run to take a 50-40 lead and never looked back.

In the championship against Hanover, the Bears outscored the Panthers 48-24 in the second half en route to an 82-53 win. Manning, who shot 11 for 21 from the field and grabbed eight rebounds, hit four of her six 3-pointers in the opening half.

Beehler joined Manning on the All-Tournament Team.

Men's hoops claims Lopata Classic crown

The men's basketball team improved its overall record to 5-2 by winning the 22nd Annual Lopata Classic at the Field House.

WUSTL opened play with a 67-43 win over University of Dallas on Dec. 2. Sophomore Troy Ruths ended the game with 18 points and tied a school-record with seven steals. Freshman Tyler Nading finished the game with 15 points and eight boards; sophomore Danny O'Boyle came off the bench to tie his career-high with 10 points on 2-for-3 shooting from 3-point range.

In the championship game Dec. 3 against Wisconsin Lutheran College, the Bears used a 19-0 run early in the second half to post an 80-65 win. Ruths scored a career-high 25 points on 7-of-11 shooting from the field and 11-of-13 shooting from the free-throw line to earn the Robert L. Burnes Most Valuable Player Award. He added a season-high nine rebounds.

Ruths was joined on the all-tournament team by Nading, who finished the championship game with 14 points and seven rebounds.

Men's swimmers, divers roll to title

The men's swimming team won the Wheaton College Invitational Dec. 3 in Wheaton, Ill. The Bears racked up 742.5 points, far ahead of second-place Wheaton (673).

The WUSTL women took third place with 607 points, behind UW-Stevens Point (623) and UW-Milwaukee (877.5).

Senior Michael Slavik led the Bears' men, earning a share of six school records, five NCAA automatic qualifying times and two NCAA provisional qualifying times.

Slavik shattered three individual records, helped two relay teams to school records, and achieved a team-high five NCAA "A" cuts on the first day of the Invitational. Slavik led off the record-setting 200-yard freestyle relay squad, which recorded an NCAA automatic qualifying time of 1:22.34. His 50-yard split of 20.52 was also a school record.

Moreover, Slavik won the 100 freestyle after clocking a 44.49 in prelims to break the Bears' record; senior Eric Triebe, who totaled three "A" cuts, two "B" cuts and two school records on the weekend, also added an "A" cut in the event (45.62).

Slavik led off and Triebe anchored WUSTL's winning 800-free relay squad that finished in 6:47.42. Slavik's opening leg also resulted in another school record, a 200-yard time of 1:39.77.

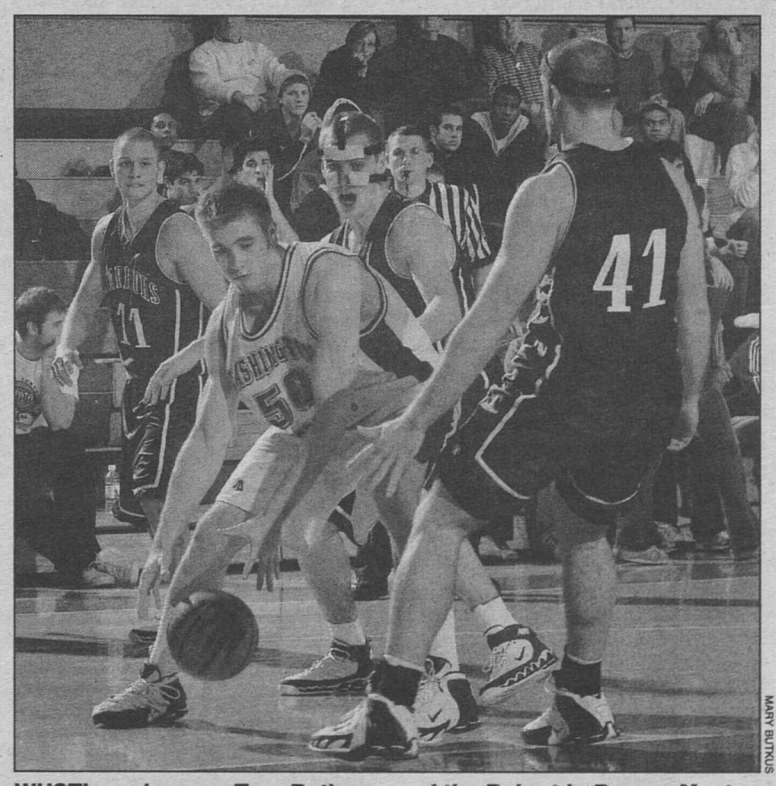
On the second day of the meet, Triebe won the 50-yard freestyle in 20.73, while Slavik took second place. Slavik also won the 200-freestyle and clocked a time of 1:40.38 in prelims, automatically qualifying for the NCAA Championships.

Triebe finished in second place. The two also led the 400-free relay team to a school-record swim of 3:04.29 to provisionally qualify for the NCAAs.

On the women's side, senior Jenny Scott and sophomore Meredith Nordbrock paced the Red and Green, as each achieved two NCAA automatic qualifying times and five provisional qualifying marks for the weekend.

Scott anchored the record-breaking 800-free relay team, while Nordbrock provisionally qualified in three events, including the 200 back and 200 IM. She also swam the first leg of the 400-medley relay.

Nordbrock automatically qualified for NCAAs in the 100 backstroke. She also led off the 200-medley relay squad and anchored the 400-free relay. Moreover, Scott took first place in the 200 free, clocking an NCAA automatic-qualifying time of 1:53.37.



MARY BUTKUS

WUSTL sophomore Troy Ruths earned the Robert L. Burnes Most Valuable Player Award at the 22nd Annual Lopata Classic. He followed up an 18-point, seven-steal performance in the Bears' opener with a 25-point effort in the championship game (above).

On the Web

For complete sports schedules and results, go to **bearsports.wustl.edu**.

Plant

Jocote DNA extracted for analysis

– from Page 1

Genetic diversity has been estimated to have decreased by as much as 80 percent in cultivated populations through the last century, so it's quite a remarkable occurrence when domestication is identified as being a process for preserving genetic diversity, rather than limiting it.

With less than 2 percent of the Central American tropical dry forests remaining, jocotes would be significantly limited if it were not for the cultivation of the species.

Miller, primary author on the study, collected nearly 100 samples of *S. purpurea* through field studies in Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama. In each of 11 geographic regions, samples were taken from wild and cultivated habitats.

DNA extracted from the jocote samples allowed for analysis of the chloroplast spacer, a commonly used molecular marker in botanical studies.

The authors say that, through multiple domestications, genetic diversity in the jocote has been preserved.

This is the "first phylogeographic evidence of multiple domestications of a cultivated fruit tree in the Mesoamerican center of domestication," Miller said.

There is considerable variation in the jocote species. The mature fruit can be green, yellow, orange, red or violet, and they can have varying lengths, textures and tastes.

The wild fruits are generally bright red, smaller and more acidic than cultivated varieties. Wild jocotes reproduce by seed, whereas cultivated varieties reproduce through cuttings — indicating that domestication has altered the species.

"I think it is really amazing to consider that the food we eat today, the foods we find in grocery stores, originated in all different parts of the globe," Miller said. "For me, it is interesting to think that every crop species, including even a little-known fruit tree from Mexico and Central America, has an involved and unique evolutionary history."

Cancer

Dual strategy would allow for one-two punch

– from Page 1

ways to repair DNA, Powell said a dual strategy that used a second drug to knock out the survival mechanism in cells would deliver a one-two punch to tumors. It would force tumor cells to rely more heavily on homologous recombination repair and then block that route as well.

The research group has already begun studies that investigate the potential of targeting homologous recombination as a tumor-specific strategy. In this case, they are focusing on tumors with BRCA1 and BRCA2 deficiencies.

BRCA1 and BRCA2 are tumor-suppressor proteins, and mutations in the genes for these proteins are widely known for being associated with a high risk of breast cancer in 5 percent to 10 percent of women. Tumors with BRCA1 and BRCA2 deficiencies have ineffective homologous recombination repair mechanisms, and Powell's group has begun using this handicap to attack the tumors.

"BRCA1- and 2-deficient tumor cells represent a special case in which the homologous recombination repair pathway is already messed up," Powell said. "So we are trying to further sensitize BRCA1- and 2-deficient cancer cells to see if that approach can destroy them."

Having uncovered a role for MDC1 in homologous recombination repair, the group now will be able to build on their BRCA1/BRCA2 research as they develop chemotherapeutic strategies that take advantage of MDC1's cellular function.

ITeach

Sessions 'for faculty in every area'

– from Page 1

Teaching Center, University Libraries and The Teaching Lab in Arts & Sciences.

"ITeach includes an array of sessions on timely topics that are all intended to promote active discussions about the art and science of teaching," said Dennis J. Martin, associate vice chancellor and associate dean of Arts & Sciences. "This is a great chance for faculty to take a step back and interact with colleagues from across the University to explore both the latest trends in classroom technology and the essential elements of teaching and learning."

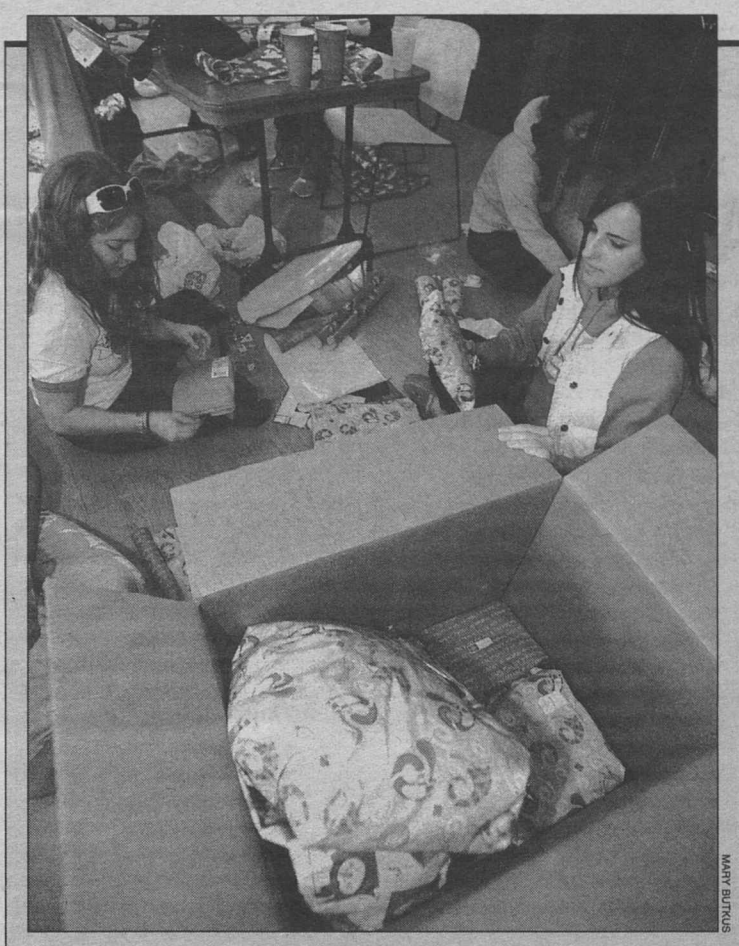
Some of these elements highlighted in this year's symposium include the use of clickers for classroom response; peer-led team learning; Telesis course-management system; tablet PCs; and the digital library of the future.

"Google, Yahoo and the proliferation of mass digitization of libraries offer previously-unimaginable research opportunities for humanist and social scientists," said Shirley K. Baker, vice chancellor for information technology and dean of University Libraries. "Faculty can hear the inside story about how these and other projects that will affect resources available to them."

And don't think each of the 16 individual sessions will focus on specific academic areas or are otherwise narrow in scope.

Rather, people from all walks of the University will be able to come away from nearly every presentation having gained some sort of knowledge that will help make his or her job easier.

"There is a session for faculty in every area at the symposium," said Kathy Atnip, director of academic services and The Teaching Lab in Arts & Sciences. "Sessions on using electronic response devices, 'clickers' in biology should be useful not only to instructors in the sciences but also to those in many other disciplines.



MARY BUTKUS

That's a wrap (From left) Junior Nicole Sugar, sophomore Lana Volftsun and junior Lindsey Glucksman wrap presents in Umrath Hall as part of a recent Give Thanks Give Back gift-wrapping party. Members of the University community "adopted" 135 area families in need this holiday season, donating clothes, toys, toiletry items and food through the Give Thanks Give Back campaign.

"Similarly, the session on 'taking humanities problems in bytes' will describe ways to use modeling and simulation, usually the domain of science and engineering, to shed light on challenges in teaching history and literature."

The first campus-wide ITeach symposium was hosted in January 2002, attracting an audience of more than 170 faculty members and offering a selection of presentations, panel discussions, hands-on workshops and informal opportunities to engage in discussions.

Since then, ITeach symposia have been held on a biannual basis during winter break. About 150 people attended the 2004 symposium.

The specific sessions for this year were chosen with the common theme of the process of designing and refining teaching, according to Atnip.

"The types of technologies discussed have been 'field-tested' by our faculty, and valuable feedback about their effectiveness and challenges will be presented," she said. "Some of these examples include the aforementioned clickers in biology, the interactive SMARTboards in many classrooms and the Telesis course-management system developed by the University."

For more information, a complete listing of the sessions or to register, go online to *artsci.wustl.edu/~iteach/iteach2006*.

MySci

Typical 'residency' goes Monday-Thursday

– from Page 2

In addition to Delmar-Harvard, the Investigation Station has already visited Lemasters School in North County, Old Bonhomme Elementary in Olivette and Drummond Elementary in Pattonville. Upcoming stays are planned for Dunbar Elementary in St. Louis City and Central Elementary in Wellston.

A typical "residency" will run Monday through Thursday, with Friday dedicated to preparing for the next stop.

"We're delighted that our students get to experience the Investigation Station," concluded Victoria Gonzalez-Rubio, principal of Delmar-Harvard. "Many of our students live in an urban environment and do not get to experience nature outside of their own back yards.

"This visit allows them to learn about Missouri nature and science in a way that is interactive and fun."

Cup

Competition was founded in 1988

– from Page 1

microchip or antenna. The system uses a biocompatible material that the Food and Drug Administration has already approved and that can be used to tag anything from clothing to people.

Somark intends to market the product initially to livestock owners, in response to a recent U.S. Department of Agriculture mandate that requires the identification and tracking of cattle. Once the entrepreneurs obtain enough capital to develop a prototype, they expect the product to be ready for market within 15-20 months.

Mays and Pydynowski said winning the Olin Cup has been a longtime goal.

"When you consider previous Olin Cup winners, you become quickly humbled and honored to be included in such a prestigious group," Pydynowski said. "It is a prize that I have had my eye on since I entered the Olin Cup in 2003 and failed to make the first cut.

"We have been very fortunate to surround ourselves with great people that have been a springboard to our success."

iMAT, the second winner in the competition, will receive $20,000 in seed funding. Also a high-tech company, iMAT focuses on improving communication for the deaf and hard of hearing.

Founder Stephen Foster was born deaf and has developed a wearable device that transcribes spoken words into text that the user can read.

Foster said the device may come in the form of eyeglasses that can project the text into the user's field of vision. iMAT is working with several technological and design partners on an advanced prototype that could be available in early 2006.

The student winners' business concepts are both service-oriented. Junior business student Teddy Purnomo founded HomeWUrk, a company that assists college students as they move into residence halls. HomeWUrk will sell decorative items, electronics and toiletries to dormitory dwellers and their parents.

To help customize their selections, students can go online and create a mock-image of their room with the selected items in place. The company will deliver the merchandise directly to campus.

Second-year M.B.A. student Suzanne Shenkman founded a company to create clothing and accessories from vintage neckties. Suzanne Shenkman Designs will sell belts, wristbands and throw pillows to fashion-conscious consumers interested in products that are original in concept and unique in design.

More than 20 judges selected the Olin Cup winners from an initial field of more than 50 proposals, which were narrowed down as contestants completed a series of presentations and meetings. Six teams were finalists.

Olin Cup judges typically represent early stage business investors, executives and venture capitalists.

"Every year, the Olin Cup competitors are higher quality," said Ken Harrington, executive director of the Skandalaris Center for Entrepreneurial Studies. "This year, it was even harder for the judges to pick a winner.

" … the ventures are just steadily improving. I'm sure that we'll see this continue again next year, especially in the students' competition."

The Olin Cup competition was founded in 1988 as part of The Hatchery entrepreneurship course at the Olin School of Business.

The competition began awarding up to $70,000 in seed funding in 2001 with the support of the Skandalaris family.

This year was the first time that an additional $5,000 grant was awarded to the best student teams.

To date, the competition has resulted in the formation of more than 50 new businesses by business students and alumni.

"It's encouraging to see the Olin Cup Competition add to the entrepreneurial spirit of St. Louis," Harrington said.

In 2003, the Kauffman Foundation selected WUSTL as one of eight U.S. universities to share $25 million in grants through a program designed to make entrepreneurship education available across campuses and transform the way entrepreneurship is viewed, taught and experienced. WUSTL received a $3 million grant.

Campus Watch

The following incidents were reported to University Police **Nov. 30-Dec. 6**. 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. 30

10:56 a.m. — A housekeeping manager reported the theft of $70 from an employee. The money was taken from the victim's purse inside a locked black metal cabinet in Wohl Student Center. There were no sign of forced entry. The theft occurred between 8:15-9:45 a.m.

11:05 a.m. — An unknown person took a Sony data projector from the ceiling of Eliot Hall, Room 213. The theft occurred between Nov. 23-29. Total loss is estimated at $5,000.

4:14 p.m. — Four wireless microphones were stolen from Louderman and Rebstock halls between Nov. 28-30. An investigation is continuing.

Dec. 1

11:01 p.m. — A person reported that he parked his secured vehicle on the north side of Parking Lot 10 (south of Brookings Hall) at 7:50 p.m. and found it missing at 10:30 p.m. A search of the area was conducted without locating the vehicle.

In addition, University Police also responded to three larcenies, two auto accidents and one report each of spill, property damage, alarm, lost article and parking violation.

Notables

Of note

Chenyang Lu, Ph.D., assistant professor of computer science and engineering, is serving as program co-chair for next year's International Workshop on Parallel and Distributed Real-Time Systems, to be held on the Island of Rhodes in April 2006. **Chris Gill**, Ph.D., assistant professor of computer science and engineering, was general co-chair for this year's workshop, held April 4-5 in Denver. Gill also is co-editor of an upcoming special issue of the *Journal of Computer and System Sciences*, which will contain selected papers from the 2005 IEEE Real-Time and Embedded Technology and Applications Symposium. …

Weixong Zhang, Ph.D., associate professor of computer science and engineering, has received a $300,000 grant from Monsanto for research titled "Genome-wide Identification of Stress Genes in Plants." Zhang recently became an editorial board member of the *Journal of Artificial Intelligence Research* and associate editor of *AI Communications — The European Journal on Artificial Intelligence*. …

Ervin Y. Rodin, Ph.D., professor of electrical and systems engineering, has received a three-year, $659,731 grant from the U.S. Air Force Office of Scientific Research for research titled "Simulation and Optimization Methodologies for Military Transportation Network Routing and Scheduling." …

R. Martin Arthur, Ph.D., the Newton R. and Sarah Louisa Glasgow Wilson Professor of Engineering, has received a three-year, $818,414 grant from the National Cancer Institute for research titled "3D Noninvasive Temperature Estimation with Ultrasound." …

Da-Ren Chen, Ph.D., associate professor of electrical and systems engineering, has received a two-year, $40,000 grant from the University of Minnesota's Center for Filtration Research. …

Amy Q. Shen, Ph.D., assistant professor of mechanical engineering, and **William F. Pickard**, Ph.D., senior professor of electrical and systems engineering, have received a three-year, $190,000 National Science Foundation grant for research titled "Self-powered Sensory Nerve System for Civil Structure Using Hybrid Forisome Actuators." …

Bruce Fegley, Ph.D., professor of earth and planetary sciences in Arts & Sciences, has received a three-year, $174,890 grant from NASA for research titled "High Temperature Geochestry. "…

Stacey Freedenthal, graduate fellow in social work, has received a six-month, $25,571 grant from the National Institute of Mental Health for research titled "Youth Suicidality and Mental Health Service Use. "…

Guojun Bu, Ph.D., associate professor of pediatrics, has received a three-year, $239,993 grant from the Alzheimer's Association for research titled "Role of LRP1B in APP Trafficking and Alzheimer's Disease." …

John C. Morris, M.D., the Harvey A. and Dorismae Hacker Friedman Professor of Neurology, has received a one-year, $200,000 grant from the Fidelity Non-profit Management Foundation for research titled "Continuing Study of Antecedent Biomarkers for Alzheimer's Disease and PET Scanning Amyloid Imaging." …

Yuan-Huan Tai, Ph.D., assistant professor of radiology, has received a one-year, $172,088 grant from the National Cancer Institute for research titled "A Novel Device to Allow Zoom-in Imaging for PET Scanners." …

Leonard B. Maggi Jr., Ph.D., postdoctoral research scholar in internal medicine-medical oncology, has received a one-year, $124,416 grant from the USA Med Research ACQ Activity for research titled "Role of the ARF Tumor Suppressor in Prostate Cancer." …

Jennifer R. Smith, Ph.D., assistant professor of earth and planetary sciences in Arts & Sciences, has received a two-year, $216,451 grant from the National Science Foundation for research titled "Developing a Record of Quartenary Climactic Oscillation for the Eastern Sahara through Analysis of Fossil-Spring Tufas and Lacustrine Deposists Western Desert, Egypt." …

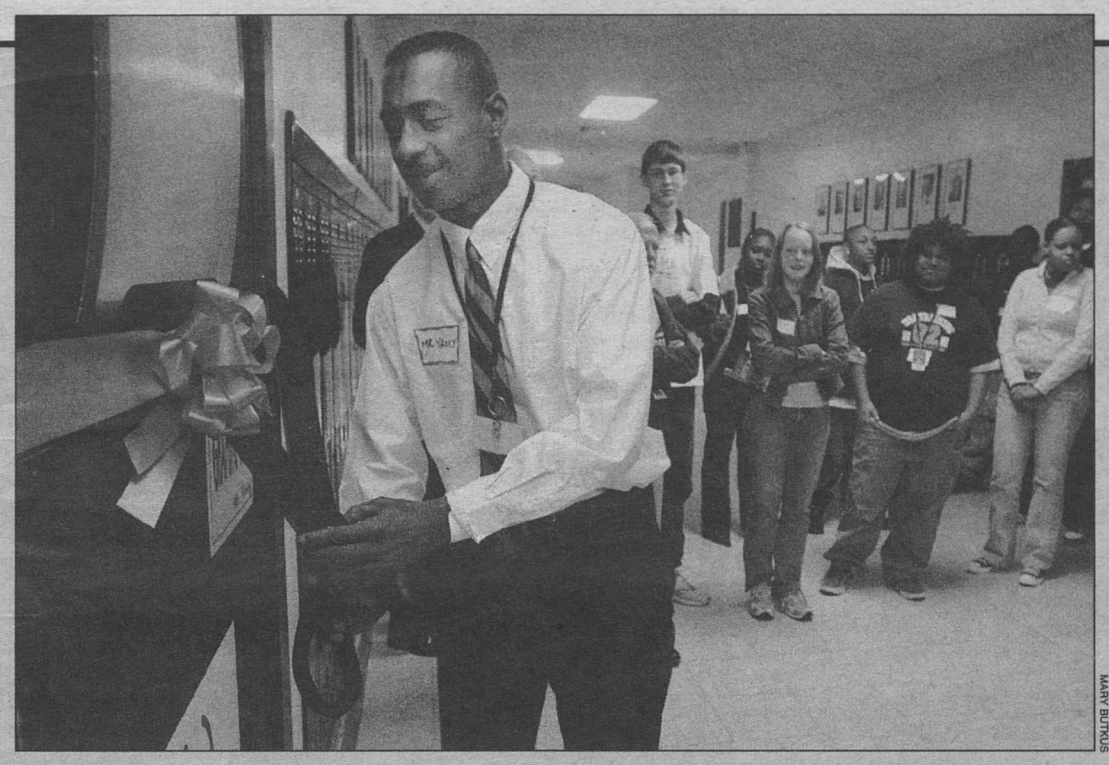
Karen Wooley, Ph.D., professor of chemistry in Arts & Sciences, has received a five-year, $12,549,737 grant from the National Heart, Lung, and Blood Institute for research titled "Integrated Nanosystems for Diagnosis and Therapy," and a one-year, $34,011 grant from the National Science Foundations for research titled "U.S.-Japan Seminar: Advances in Polymer Chemistry and Their Impacts Upon Society." …

Libby Cowgill, graduate student of anthropology in Arts & Sciences, has received a one-year, $11,542 grant from the L.S.B. Leaky Foundation for research titled "Ontogeny of Long Bone Diasphyses in Immature Late Pleistocene Postcrania." …

Lingfei Xu, M.D., research instructor in medicine, has received a two-year, $200,000 grant from the Bayer Healthcare LLC, Biological Products Division for research titled "Developing and Producing Progressive Treatments with the Purpose of Extending and Enhancing the Lives of Persons with Hemophilia." …

J. Dewey Holten, Ph.D., has received a three-year, $440,000 grant from the Department of Energy for research titled "Studies of Ground-state Hole/Electron Transfer in Porphyrin-based Modular Architectures." …

Bradley Jolliff, Ph.D., research associate professor of earth and planetary sciences in Arts & Sciences, has received a three-year, $120,000 grant from NASA for research titled "Integrated Remote Sensing and Sample Approaches to Understanding Planetary Surface Compositions: Moon and Mars."



MARY BUTKUS

Community connection Art teacher Todd Yancy officially opens a newly outfitted computer room at University City High School in a recent ceremony. WashUCity, a mentoring program that connects visual communications majors from the Sam Fox School of Design & Visual Arts with high-school students studying graphic design, raised about $30,000 to fund a dozen new computer stations. The program was launched in 2002 by Heather Corcoran, assistant professor of visual communications, and local designer Traci Moore, a University City High alumna and chair of the Municipal Commission on Arts & Letters.

Campus Authors

R. Keith Sawyer, Ph.D., associate professor of education in Arts & Sciences

Social Emergence: Societies As Complex Systems

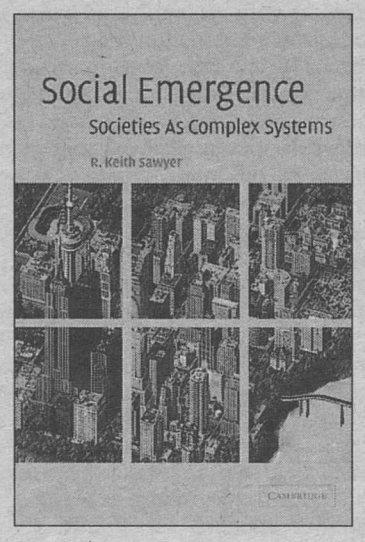
Cambridge University Press (October 2005)

Can we understand important social issues by studying individual personalities and decisions? Or are societies somehow more than the people in them? Sociologists have long believed that the study of individual decisions and behaviors cannot fully explain the complex modern phenomena which emerge when people interact in organizations, institutions, and societies.

In contrast, most psychologists and economists tend to treat social phenomena as if they were reducible to the actions of individuals, whose independent choices can simply be added together to explain complex social processes.

Social Emergence takes a new approach to these longstanding questions. Sawyer argues that societies are complex dynamical systems, and that the best way to resolve these debates is by developing the concept of emergence, focusing on multiple levels of analysis — individuals, interactions, and groups — and a dynamic focus on how social group phenomena emerge from communication processes among individual members. This book makes a unique contribution not only to complex systems research but also to social theory.

"I wrote this book to contribute to a debate about the



relationship between individuals and social groups," Sawyer said. "I've been studying improvisational theater groups for over 10 years, and I've always been fascinated with how the individual creativity of all of the actors combines together to create a performance that's greater than the sum of the parts. That's what I call 'social emergence' — when something emerges from the group that no one planned ahead of time and that no one could have predicted."

Sawyer is the author or editor of six previous books, including *Group Creativity* and *Improvised Dialogues*.

— From the book jacket

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Washington University in St. Louis

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Hilltop Campus

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

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Curator 050226
Exec. Dir. Regional Development Progs. 050248
Islamic Studies Catalog/Subject Librarian 050260
Reference/Web Services Librarian 050261
Health Services Physician 050266
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Lab Technician IV 050279
Senior Dir. of Capital Projects 060012
Admissions Officer 060018
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Regional Dir. of Development 060045
Lab Technician III 060053
Assoc. Dir. of Development, School of Business 060060
Temporary Filing Clerk 060061
Accounting Asst. 060063
Academic Coord. 060065
Dir. of the Digital Library 060074
Curator Modern Lit. Collection/Manuscripts 060094
Dir. of Development, School of Social Work 060096
Network Systems Engineer (Unix) 060099
Assoc. Dir. of Foundation Relations 060100
Technology Specialist 060105
Exec. Dir. of Development 060108
Senior Dir. of Development Arts & Sciences 060109
Business Manager/Asst. to the Dean 060111
Administrative Coord. 060114
Material Transfer Agreement (MTA) Coord. 060115
Administrative Asst. 060118
Health & Safety Technician—Clinical Specialist 060119
Input Output Clerk/Operator 060120
Administrative Asst. 060122
Dir. of Orientation & Parents Weekend Programs 060123
Department Secretary 060124
Research Asst. 060125
Project Leader/IS 060126
CFU Accounting Manager 060127
Asst. Laboratory Preparation Specialist 060128
Research Technician 060129
Nurse Practitioner 060130
Research Asst. 060131
Library Technical Asst. (Serials) 060132
Temporary Data Entry Clerk 060138
Department Secretary 060139
Exec. Dir. of Principal Gifts 060140
Statistical Data Analyst 060288
Payroll/Accounting Clerk—Part Time 060504
Grants/Budget Specialist 060542
Medical Records Clerk—Part Time 060544
Medical Asst. II 060546
Medical Records Clerk 060547
Programmer I 060548
Statistical Data Analyst 060553
Research Patient Coord./Professional 060554
Clinical Research Nurse Coord. 060555
Public Safety Officer 060556
Public Safety Officer 060557
Research Patient Coord. 060560
Medical Secretary II 060561
Clinical Laboratory Asst. 060562
Secretary II 060563
Grant Analyst 060564
Programmer Analyst I 060565
Programmer Analyst I 060566
Custodian 060568
Accounting/Purchasing Asst. II 060569
Clinical Research Nurse Coord. 060570

Medical Campus

This is a partial list of positions in the School of Medicine. Employees: Contact the medical school's Office of Human Resources at 362-7196. External candidates: Submit résumés to the Office of Human Resources, 4480 Clayton Ave., Campus Box 8002, St. Louis, MO 63110, or call 362-7196.

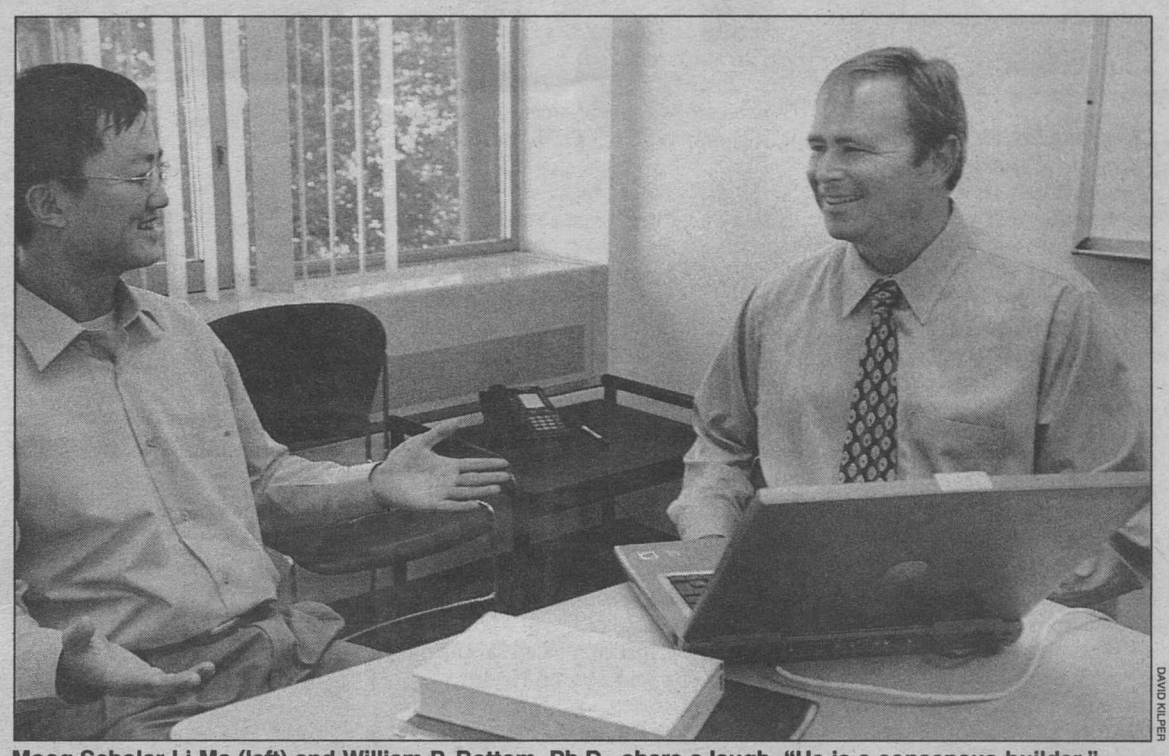
Physician Asst. 051434

Washington People

The road less traveled

Eschewing psychology for business, William Bottom has helped the Olin School grow

BY SHULA NEUMAN



Moog Scholar Li Ma (left) and William P. Bottom, Ph.D., share a laugh. "He is a consensus-builder," says colleague Ron King. "He's very open to other people's opinions, and he really listens when you ask him a question."

DAVID KILPER

Bill Bottom

Age: 44

Birthday: Sept. 9

Childhood home: Murphysboro, Ill.

Current home: Kirkwood, Mo.

Colleague comment: "What impresses me is that he is very widely read. He knows a huge amount about the Middle East, the Ottoman Empire — he really is well-studied in everything he applies himself to."

— Ambar Rao, Ph.D., the Fossett Distinguished Professor of Marketing

The past few years were rather frantic for William P. Bottom, Ph.D.

After all, until the start of this semester, Bottom was senior associate dean of the Olin School of Business, a position that made him responsible for research and faculty development, and for directing the Ph.D. program.

He performed these duties while continuing his research and teaching classes in the Olin School's Executive M.B.A. program in both St. Louis and Shanghai, China.

Having scaled back his duties, the Joyce and Howard Wood Distinguished Professor of Organizational Behavior has had more time to do what he enjoys most: spend time with his family and focus on research and teaching.

The added duties weren't really burdensome. Bottom says he enjoyed his work as senior associate dean. In fact, all of the responsibilities he's assumed since he first came to Washington University in 1988 have given him a greater appreciation for the school and for his colleagues.

Bottom points to the recent *Financial Times* ranking that placed the faculty at the Olin School of Business 10th in the world in terms of research productivity.

Bottom says that while rankings may not the best measure of a school's success, he's not entirely surprised to see his peers being recognized internationally.

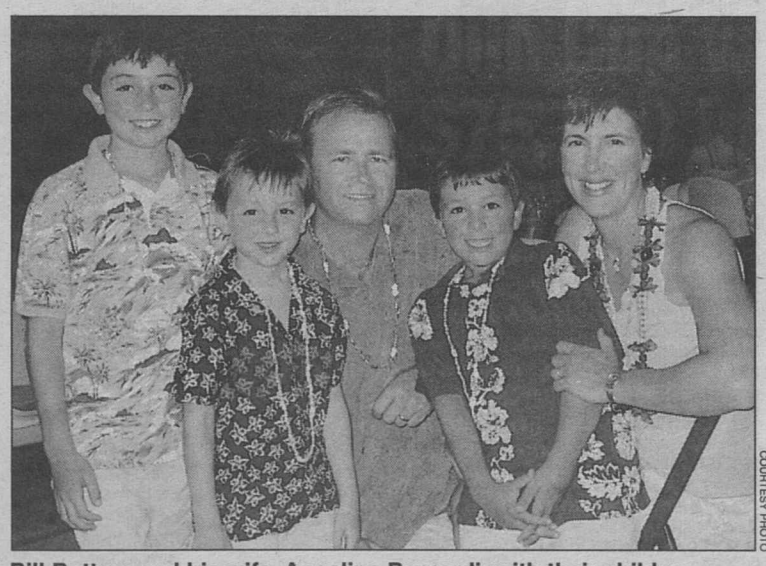
"One of the things I initiated as senior associate dean for research was a program to track research productivity in the school," Bottom says. "We started recording all papers published in top journals over the past 10 years, total citations to the work of Olin faculty, and other indicators or faculty research. The program quickly confirmed my intuitive beliefs about the incredible strides the school made in faculty development over the past 10 years.

"It's tremendously rewarding to think of the contributions I've made to the school, see what we've accomplished and then realize that I've played a part in doing it," Bottom says.

Former business school Dean Stuart I. Greenbaum, Ph.D., the Bank of America Professor, pointed out that that Bottom's strength in contributing to the business school is easily matched by the depth of his research.

"His scholarship has demonstrated business insights in the area of negotiation that are applicable to a wide range of problems in governance outside the business world," Greenbaum says. "He provided leadership at the school when he was associate dean. And he was instrumental to building up the organizational behavior group."

Bottom notes that he is also quite impressed with the work his fellow organizational behavior professors have produced and is glad that he had a role in developing the group into the powerhouse it is today.



Bill Bottom and his wife, Angelina Bernardi, with their children, (from left) Vincent, Dominick and Edward.

COURTESY PHOTO

But these days — at least for a little while — professional accomplishments have taken a back seat to a greater source of pride: his family. Bottom is married to Angelina Bernardi, a homemaker and business consultant whom he met when he was a graduate student at the University of Illinois.

The couple now has three boys, Vincent, 10, Edward, 7, and Dominick, 5. Bottom says the boys are busy with all kinds of activities — swimming, piano, soccer — but it's experiences like the one he had in over the summer that brings him the most gratification.

"Vincent was off at Boy Scout Camp and I had to go down to spend an evening with him," Bottom recalls. "When I saw Vincent doing as well as he was and how he was handling being out on his own, more or less, in the wild, well, that was a big source of pride."

So for now, Bottom spends his free time with his family and has put his own hobbies on hold — sort of. He still tries to get in on a game of basketball now and then — even though he has first-hand knowledge that it can be a dangerous sport.

"I broke both my wrists within a year playing basketball," Bottom says. "That was in 1997-98. I was coming up for tenure and actually, I think the fractures at least got me a sympathy vote. I think it worked out in my favor."

According to his colleagues, Bottom didn't need to break his wrists to get tenure; he was pretty much assured of it anyway.

"From the beginning he was a prolific researcher," says Ron King, Ph.D., the Myron Northrup Professor of Accounting. "He really helped raise the profile for the quantity and quality of research coming out of Olin."

Not bad for someone who wasn't even convinced that he'd want to work in academia.

Bottom claims that most of the positions he looked into didn't interest him. Since his doctorate is in psychology, several of Bottom's job options were in psychology departments. However, he says, his interest didn't lie in pure psychology.

Rather, he wanted to be able to approach research from a broad perspective and to be able to apply basic concepts to pursue some common goal and common good. Bottom considered returning to his former job at IBM, where he had conducted personnel research.

Then he interviewed at the Olin School.

"What interested me about this place was the people here, the kind of research agenda they were pursuing and what they wanted to do with the school," Bottom says. "Additionally, there was an interdisciplinary focus that really appealed to me. It seemed that there was some kind of driving force behind the faculty.

"I learned that it was the development of an initiative to build ties across areas so people can deal with much more substantive questions and apply many different techniques and tools to answer those questions."

As it turns out, Bottom's experience over the past 17 years has lived up to his expectations and, it seems, Bottom has lived up to his colleagues' expectations.

Bottom's research collaborations have cut across a wide swath of disciplines. He's teamed with Nicholas Baloff, Ph.D., professor of business administration, Gary J. Miller, Ph.D., a professor of political science in Arts & Sciences, in addition to King.

Bottom says it's the atmosphere at the University that makes these joint ventures so easy to pursue. While that may be true, his colleagues believe that Bottom has a way of bringing people together.

"He is a consensus-builder," King says. "He's very open to other people's opinions, and he really listens when you ask him a question. I think this characteristic accounts for his success as head of the Ph.D. program. He worked with a committee to figure out how to change the quality of students' experience in the program."

The ability to work across disciplines applies to some of his teaching as well. Bottom primarily teaches in the Executive and Professional (part-time) M.B.A. programs. He says that he practically teaches in tandem with the other professors who are mostly senior faculty and who have worked together for many years.

"For example, I know reasonably well what Todd Milbourne (associate professor of finance) is going to do in a mergers and acquisitions class," Bottom says. "So, even though he's teaching finance and I'm teaching conflict negotiation, I can build on what he's taught and he'll refer to things he knows I've taught."

The result is a richer experience for both students and professors, Bottom says. Finance problems don't happen in a vacuum, nor do problems of leadership or operations, which is why it makes sense to teach subjects with some cross-pollination.

"The students appreciate it when you can address a problem using multiple perspectives. It helps them to understand the concepts and how to apply them that much better," Bottom says. "We could make that work across the board. I think the students in all of our programs would be better for it."

Bottom's observations on the value of interdisciplinary work aren't just based on his experience in the classroom. His primary area of research has focused on conflict and the way in which people negotiate to resolve those conflicts.

Lately, however, Bottom has turned his attention to the history of research in social science and particularly its application to professional business education.

Bottom contends that there's a gap in our understanding of how the current structure of most business schools developed.

The issue has become especially relevant ever since an article was published in the *Harvard Business Review* several months ago asserting that M.B.A. programs have become obsolete.

Bottom says the issues being debated today aren't that different from the era when business schools were first emerging — long before World War II — when people were seeking to define what a business school should do.

"One thing they were concerned about from the beginning were ethical dilemmas," Bottom says. "Do you want a university training people to be better at advancing their narrow self-interested agenda? Or do we want it to provide a firmer set of principals by which people can pursue something for the broader good?

"I think they were very cognizant from the beginning that there's a danger involved in helping people get really good at pursuing their own personal interests."

Bottom says ethics wasn't the only issue. Scholars also wondered if the school should focus on research like any other social science, or should it be a kind of vocational school?

If professors pursue research, will they become so specialized that people lose sight of working on larger issues?

The last concern may have been a premonition, Bottom says, since lot of the research lately has become overly narrow in its focus.

Still, he's not concerned.

"My sense is there very may well be a pendulum shift and I think it would be a welcome change were it to happen," Bottom says. "You see a lot of encouraging signs, not just in the business schools but in the social sciences more generally.

"Sometimes it's very difficult to figure out what someone's background is just by looking at the question they're researching and the methods they're using.

"At one level that may be a source of frustration but it may be a healthy sign that there's a corrective on the way."