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FRANK ZAMPINO PHOTO

Retired U.S. Supreme Court justice Sandra Day O'Connor, left, administers the oath of office April 30 to Phoenix business leader Barbara Barrett, center, the new ambassador of the United States to the Republic of Finland, as Barrett's husband, Craig, looks on.

Ambassador Barrett

Barbara McConnell Barrett, a business leader and lawyer who has dedicated her life to serving her community, state, country and world, recently was sworn in as Ambassador of the United States to the Republic of Finland.

Barrett, a Paradise Valley resident and quadruple graduate of ASU, was nominated March 13 by President George W. Bush, unanimously confirmed by the U.S. Senate April 29 and sworn in by retired U.S. Supreme Court justice Sandra Day O'Connor April 30.

Barrett took the oath of office, with her husband, Craig, holding the family Bible beside her, before about 200 family members, friends, colleagues and dignitaries during a ceremony in the Great Hall at the Sandra Day O'Connor College of Law at ASU. The swearing-in ceremony was preceded by remarks from O'Connor; Mark Jacobs, the dean of Barrett, the Honors College, which was named for the Barretts in 2000; Patricia D. White, dean of the College of Law; chief justice Ruth V. McGregor of the Arizona Supreme Court; and dean emeritus Alan Matheson of the College of Law.

ASU on the Web

Officials with ASU Gammage have pulled the curtains back on the 2008-2009 M&I Bank Broadway Across America – Arizona season. The seven-show series includes some of today's biggest hits straight from Broadway, along with several blockbusters that will make their Valley return. For details, visit the Web site www.asugammage.com.

To suggest a Web site to be profiled in *ASU Insight*, send the site address to asuinsight@asu.edu.

'Physics of Star Trek' author to join ASU faculty

By Carol Hughes

Lawrence Krauss, a theoretical physicist and cosmologist whose research is so broad that it covers science from the beginning of the universe to the end of the universe, will join ASU in August to assume a leadership role in an emerging research and educational initiative on "origins."

"Lawrence Krauss has been at the forefront of trying to unify particle physics and cosmology; of trying to use the universe itself as a laboratory to understand fundamental interactions, fundamental

science and fundamental physics," says ASU President Michael Crow.



Lawrence Krauss

the long-term sustainability of life on Earth, will facilitate this new research and educational initiative

at Arizona State University."

Krauss will join ASU's faculty as professor in the School of Earth and Space Exploration in the College of Liberal Arts and Sciences. He comes to ASU after 15 years at Case Western Reserve University in Cleveland, including 12 as chair of the physics department.

Krauss previously was a member of the physics and astronomy departments at Yale University.

"What attracted me to ASU was not only the entrepreneurial spirit and wonderful new colleagues, but also the opportunity to build on existing novel interdisciplinary

programs to create a broad new structure that looks at exciting open issues of origins, ranging from the origins of the universe to the galaxy and solar system and onward to human origins, to origins of consciousness and culture," Krauss says. "We will look for new symbiotic relationships, build excitement across disciplines, and help convey the wonder of discovery to the public."

Adds Crow: "Arizona State University has a long tradition of studying the origins of human beings. We have great strengths in applied,

(See KRAUSS on page 11)

Berman to lead College of Law as new dean

By Sharon Keeler

Paul Schiff Berman, a scholar with a vision for the future of legal education and an administrator who can move with speed and agility, has been appointed dean of ASU's Sandra Day O'Connor College of Law.

Berman, currently the Jesse Root Professor of Law at the University of Connecticut School of Law, will assume his new duties before the start of the academic year.

"In Paul Berman, ASU has found a scholar and leader who reflects the core characteristics of the New American University," says ASU President Michael Crow. "Paul is a bold thinker and will push the boundaries of what a law school can be. He will move swiftly and adroitly to elevate an already great law school into the top echelon of American legal education not by chasing the handful of law schools that represent the old 'gold standard,' but rather by defining what 21st century legal education ought to be."

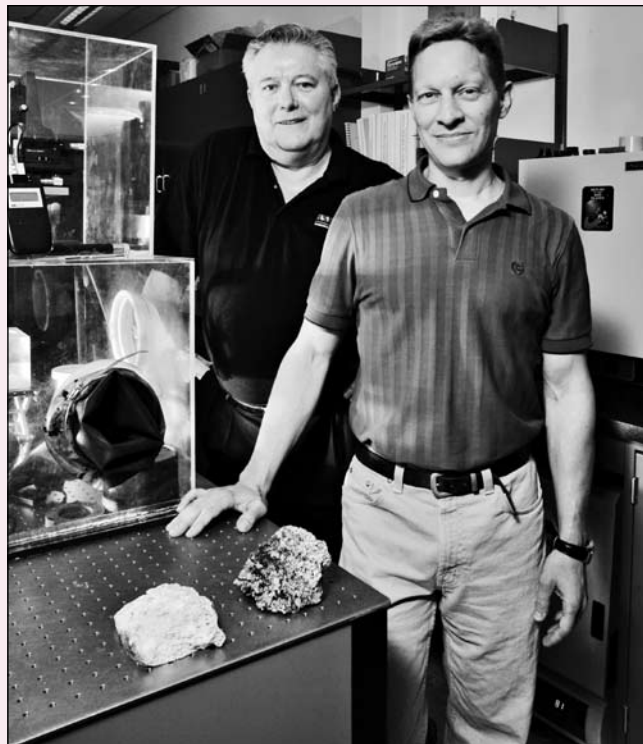
Berman, whose scholarly writing focuses on how globalization affects the intersection of cyberspace law, international law, civil procedure and the cultural analysis of law, is a 1988 graduate of Princeton University, and he received his law degree from New York University School of Law in 1995. He served as a law clerk first to chief judge Harry T. Edwards of the U.S. Court of Appeals for the D.C. Circuit, then to justice Ruth Bader Ginsburg of the U.S. Supreme Court.

"Paul Berman is incredibly creative and visionary," says Elizabeth D. Capaldi, ASU's provost and executive vice president.

(See BERMAN on page 11)

Jack Farmer, left, a professor in ASU's School of Earth and Space Exploration, and Steven Ruff, an ASU faculty research associate, pose with a spectrograph in the Mars Space Flight Facility at the university's School of Earth and Space Exploration.

TOM STORY PHOTO



Foot-dragging Mars rover discovers Yellowstone-like hot spring deposits

By Robert Burnham

Deposits of nearly pure silica discovered by the Mars Exploration Rover Spirit in Gusev Crater formed when volcanic steam or hot water (or maybe both) percolated through the ground. Such deposits are found around hydrothermal vents like those in Yellowstone National Park. That's the conclusion of planetary scientists working with data collected by the rover's mineral-scouting instrument, which was developed at ASU.

The silica discovery, announced briefly by NASA in 2007, is fully described in a multi-author paper that appeared in the May 23 issue of the scientific journal *Science*. The lead

author is Steven Squyres of Cornell University, the principal investigator for the rover science payload.

The silica finding turns a spotlight on an important site that may contain preserved traces of ancient Martian life.

"On Earth, hydrothermal deposits teem with life and the associated silica deposits typically contain fossil remains of microbes," says Jack Farmer, a professor of astrobiology in ASU's School of Earth and Space Exploration, part of the College of Liberal Arts and Sciences.

"But we don't know if that's the case here,

(See MARS on page 11)

Scientists unveil top 10 list of new species in 2007

By Carol Hughes

The International Institute for Species Exploration at ASU and an international committee of taxonomists – scientists responsible for species exploration and classification – have announced the top 10 new species described in 2007.

On the list are an ornate sleeper ray, with a name that sucks: *Electrolux*; a 75-million-year-old giant duck-billed dinosaur; a shocking pink millipede; a rare, off-the-shelf frog; one of the most venomous snakes in the world; a fruit bat; a mushroom; a jellyfish named after

its victim; a life-imitates-art "Dim" rhinoceros beetle; and the "Michelin Man" plant.

The taxonomists are also issuing an "SOS" – a State of Observed Species report card on human knowledge of Earth's species. In it, they report that 16,969 species new to science were discovered and described in 2006. The SOS report was compiled by ASU's International Institute for Species Exploration in partnership with the International Commission on Zoological Nomenclature, the International Plant Names Index, and Thompson Scientific, pub-

lisher of *Zoological Record*.

Photos and other information on the top 10 and the SOS report are online at species.asu.edu.

Among the top 10 picks is an ornate sleeper ray – *Electrolux addisoni* – whose name reflects "the vigorous sucking action displayed on the videotape of the feeding ray" from the east coast of South Africa that "may rival a well-known electrical device used to suck the detritus from carpets."

Also on the list is a 75-million-year-old giant duck-billed dinosaur – *Gryposaurus monumentensis* – discovered in southern Utah by a

team from Alf Museum, a California-based paleontology museum on a high school campus.

From the plant kingdom is the "Michelin Man" plant – *Tecticornia bibenda* – a succulent plant in Western Australia that resembles the Michelin tire man.

And, in the category of life imitating art is a "Dim" rhinoceros beetle – *Megaceras briantsaltini* – which, according to the author, looks like the Dim character from the Disney film "A Bug's Life."

"The international committee of (See SCIENTISTS on page 11)

Barrett seniors bring in outside experts to judge thesis projects

By Sarah Auffret

Seniors in Barrett, the ASU Honors College, could be excused for their furrowed brows during the spring semester. After all, their graduation hinges not only on completing a required number of honors courses and maintaining a 3.25 grade-point average, but on submitting and defending a detailed thesis or creative project.

The project can be a challenging experience, requiring them to submit a prospectus months in advance and to work long hours with an ASU mentor to refine their work.

For the past three years, a group of Barrett seniors has gone even further, however, bringing in outside experts to grill them about their theses, to see how their work measures up on a national scale.

Using funds provided by a grant from Women in Philanthropy and from Barrett student fees, they have arranged to fly in leading academics from around the country to judge their thesis defenses, and to meet with ASU faculty as a bonus activity. This spring, about 20 "external examiners" visited ASU for a day, most often giving rave reviews to the students for their work and to the university for initiating the program.

"I was incredibly impressed with the quality of the student's research and writing," says Jason Delborne, a fellow in the Department of Rural Sociology at the University of Wisconsin-Madison who reviewed Eva Wingren's thesis on science and policy. "It read more like a master's project than something typical of an undergraduate."

"I very much appreciated interacting with ASU faculty

and participating in a meeting hosted by ASU's Center for Nanotechnology and Society. Working with that group of scholars pushed my own scholarship in new directions and expanded my professional network significantly."

The external examiners program has clear benefits for students, faculty and ASU, which is why it was started, according to Mark Jacobs, Barrett's dean. He brought the idea for the program from Swarthmore College, where he was associate provost and chair of the biology department before coming to ASU in 2003.

The program holds students to national standards in their field, preparing them for graduate school, and they forge close relationships with their ASU mentors in the process. ASU faculty members get to meet with well-known experts in their fields. The university, in turn, gets a boost in prestige when the examiners return to their own universities with reports of what's going on at ASU.

"It's not often that one sees this level of commitment to undergraduate education from nationally renowned scholars on a major research university campus," says Howard Tennen, a clinical psychologist at the University of Connecticut Health Center who judged three student presentations this spring. "The very idea of inviting faculty from across the country was itself a clear indicator of the university's commitment."

"After meeting students in the program, the results of this commitment were apparent. The presentations I saw were by far the most impressive undergraduate talks I've encountered during the past 30 years. They were at least as strong as the vast majority of masters thesis oral presentations I've attended, and not far from the quality of dissertation defenses."

This spring's external examiners came from Cornell Medical School, New York University, Hunter College, the universities of Minnesota, Alabama, Nevada, New Mexico, Arizona, even a university in Spain. Journalism students brought in a producer from CNN and a reporter from the *Oregonian* in Portland.

Barrett students secure their own experts and arrange for them to read their theses beforehand, and ASU faculty members arrange other meetings and workshops around their visits. Most of this year's 420 graduates presented to committees of experts from ASU.

Immaculada De Melo-Martin, an associate professor of medical ethics at Cornell, says she particularly enjoyed getting to meet and have dinner with faculty from ASU's ethics and bioethics programs, including Jane Maienschein, Jason Robert, Margaret Walker and Joan McGregor. She met with three groups of students, including graduate students, and calls it "a rare and valuable experience" for students.

Maienschein, who has been involved with the program since its beginning, says it is "brilliant in producing benefits for everybody."

"It's a transformative program for the whole university, because it advertises ASU to some of the best universities in the nation," Jacobs says. "It adds to the quality of students' work and serves as a visiting committee for departments, a mini-national meeting for faculty. It helps us all develop."

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Denhardt takes inaugural turn as Coor Chair

By Corey Schubert

The first Lattie and Elva Coor Presidential Chair has been awarded to School of Public Affairs Director Robert B. Denhardt, providing a \$1 million endowment to develop scholarship and education in leadership and ethics across ASU.

The Coor Chair will be used to help situate ASU among the top universities in the nation with respect to the study and practice of leadership, especially public leadership. "Being named the Lattie and Elva Coor Chair is a particular honor for me, since the Coors are among the most significant public leaders in the state of Arizona and their model and example is one for all to emulate," Denhardt says.

Denhardt is Regents' Professor and Lincoln Professor of Leadership and Ethics at ASU. The School of Public Affairs is in the College of Public Programs at the Downtown Phoenix campus.

The Coor Chair was established by friends and supporters of the Coors. Former ASU president Lattie Coor is president emeritus and professor in the School of Public Affairs. He also is chairman and chief executive officer of the Center for the Future of Arizona. Elva Coor helped in founding the President's Community Enrichment Program, a highly successful university-community outreach program.

Through the Coor Chair, their example will be used to train and inspire a new generation of leaders in businesses, governments and communities. It will help the university develop research and educational programs that enable people to understand the complex nature of leadership.

Denhardt will use the proceeds to coordinate the efforts of ASU's various leadership development activities, capitalizing on the university's combined strengths and resources to develop a comprehensive and integrated leadership program.

"The fundamental goal of this work is to promote ethical behavior and sound leadership in public, private and nonprofit organizations under conditions of change, complexity and uncertainty, all of which require heightened sensitivity to moral and ethical concerns," says Debra Friedman, university vice president of the Downtown Phoenix campus and dean of the College of Public Programs.

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Robert Denhardt

CRESMET's Carlson to return to math faculty July 1

By Sarah Auffret

Marilyn Carlson, who has brought national prominence to the Center for Research on Education in Science, Mathematics, Engineering and Technology (CRESMET) in her five years as director, will return to the ASU mathematics faculty July 1.

Carlson has been a dynamic force for change since joining ASU in 1995, almost single-handedly building the First Year Mathematics program before joining CRESMET in 2003. At CRESMET, she has advanced research, particularly in the area of math education, and has taken the center to a level of national renown.

"In a major accomplishment, she has ratcheted up the reputation of CRESMET across the campus and nationally, and has done a marvelous job of increasing the amount of funding," says George Hynd, senior vice provost for education and innovation and dean of the Mary Lou Fulton College of Education. "I knew about CRESMET when I was dean of education at Purdue. It has served as a model for developing centers at major universities that help faculty connect across disciplines."

CRESMET is an interdisciplinary research center that produces new knowledge to improve the education of all students in science, mathematics, engineering and technology (STEM). Teams from across campus develop, refine and share products that support better instruction in the four fields.

Carlson is the recipient and principal investigator for CRESMET's largest current initiative, Project Pathways, a \$12.5 million, five-year research effort funded by the Na-



Marilyn Carlson

tional Science Foundation to produce and test a new model for enhancing instruction of precalculus math and science in grades 9-12.

Her work has focused on how students learn central concepts of mathematics, particularly functions. She has received an NSF CAREER Award and an NSF Teacher Professional Continuum Grant, and has been on the Governor's Council on Innovation and Technology.

James Middleton, who recently was appointed associate senior vice provost for STEM education improvement, will serve as interim director until a new director is appointed.

Middleton, who is a longtime colleague of Carlson, praised her work in the community, as well as her transformative research.

"At CRESMET, Dr. Carlson has focused attention on relationships with our local school partners and has worked tirelessly to create opportunities for teachers to benefit from the expertise of ASU faculty," he says. "In addition, she has continued to work extensively in the reform of undergraduate mathematics."

"She is one of our top faculty working in education in terms of external funding and national reputation. I am grateful for her support and collegiality over the years and, in my interim role, will work just as hard to keep CRESMET moving in a positive direction as we search for a scholar of national repute to take over where Dr. Carlson has left off."

Hynd says Middleton will continue to encourage the collaboration of ASU faculty across the four campuses to increase the ability to respond to the nation's needs for more math and science teachers.

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Services help Arizonans who've been scammed out of their homes

Civil Justice Clinic volunteers earn top award for efforts

The Civil Justice Clinic at the Sandra Day O'Connor College of Law recently received a prestigious pro bono award for providing legal services to Arizonans who've been scammed out of their homes.

Jennifer Barnes, director of the college's clinical program and the Civil Justice Clinic, along with clinical professor Bob Dauber and several law students, accepted the Frank X. Gordon Jr. Traveling Award at a reception April 30. The award was given by the Arizona Supreme Court's chief justice, Ruth V. McGregor.

The award is the highest honor presented annually by the Volunteer Lawyers Program (VLP), a joint project of the Maricopa County Bar Association and Community Legal Services.

Patricia Gerrich, VLP director and an alumna of the College of Law, said the

clinic, its students, faculty, staff and supporters deserve the honor because of their work with plaintiffs in five challenging real-estate fraud cases.

"VLP appreciates the many hours of service that law students and faculty have provided to represent low-income families," says Gerrich, a 1983 College of Law alumna. "The pro bono representation they provide can help families get justice and avoid losing their homes, or get a fresh start for themselves and their children."

The award is named for Gordon, a former chief justice of the Arizona Supreme Court who retired in 1992. It was created as a traveling trophy to recognize individuals and groups of legal advocates who further the cause of ensuring equal access to justice for those who can't afford representation in civil law matters.

ASU Insight

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ASU earns notice for impact of research in fields of ecology, environmental sciences

By Margaret Coulombe

ASU placed sixth in the Thomson Scientific's U.S. University's top 10 in the subject area of ecology and environmental sciences. The rankings, developed for 21 subject areas, were derived from an examination of 9,200 publications (from 2001 to 2005) associated with the Thomson's University Science Indicators database.

The top scores were held by the University of California-Santa Barbara, Stanford University, the University of Wisconsin-Madison, Harvard University and the University of Washington.

"This honor reflects the breadth of ASU in ecology and environmental sciences, spanning microbial to social groups, marine to landscape and urban – and, with recent hires, has become one of the very best in behavioral ecology," says Rob Page, a professor and founding director of the School of Life Sciences.

Page believes it is ASU's interdisciplinarity and research excellence in these areas that led to the ranking on this top 10 list, and there is plenty of evidence to support this opinion. For example, the School of Life Sciences, located within the College of Liberal Arts and Sciences, has 101 researchers, 250 graduate students, more than 832 publications since 2001 and topped ASU's charts for research expenditures for academic units in 2007.

Life sciences researchers study a diverse array of subjects and systems, from philosophy of sciences to transmission of disease. While their academic homes are in the School of Life Sciences, many of these scientists also are leaders or collaborators in ASU's research centers and institutes, including the Global Institute of Sustainability, the Biodesign Institute at ASU, the Center for Social Dynamics and Complexity, the International Institute for Species Exploration and the Center for Biology and Society.

A recent example of the multifaceted environmental sciences resources being created at ASU is the "ecoSERVICES ASU" group in the College of Liberal Arts and Sciences. Under the leadership of life sciences professors Ann Kinzig and Charles Perrings, this group "studies the causes and consequences of change in ecosystem services – the benefits that people derive from the biophysical environment – and analyzes biodiversity change in terms of its impacts on the things that people care about."

EcoSERVICES ASU plays host to Diversitas, an international program

that meshes with another international initiative around the science of biodiversity and ecosystem change, the International Mechanism for Scientific Expertise on Biodiversity, supported by the International Council for Science and the United Nations Educational, Scientific and Cultural Organization, or UNESCO.

The breadth of ASU's expertise in ecology and environmental sciences creates a big footprint. It spans the boundaries of schools, centers and institutes, and has a collaborative focus, running the gamut from urban to ant studies, environmental engineering, water resources, sustainability, nutrient cycling, and everything fish, fowl, microbial and ecosystems in between.

Since 1966, ASU researchers have published more than 44,644 total publications; 31,858 articles in peer-reviewed journals, according to the Thomson's "ISI Web of Knowledge" tool. The top two highly cited papers at ASU to date are held by Sudhir Kumar, director of the Center for Evolutionary Functional Genomics and professor in the School of Life Sciences, for two publications in molecular evolutionary genetics. Thomson's database tool is not inclusive of all publications and journals of significance, but it still provides an indicator in these 21 fields of the impact of an institution's research enterprise.

Some of ISI's highly cited researchers within the subject category include ASU professors Nancy Grimm, James Collins, James Elser, Jingle Wu, Michael Rosenberg and Phil Hedrick, the latter for his work in conservation genetics.

So what do lists like this ultimately mean?

Thomson notes that such data, "derived as they are from the reliable journal publication and citation information found in Web of Science ... provide organizations, including the National Science Foundation, data for national performance analysis" and assessments.

"This national ranking illustrates the long standing success and impact of our life sciences research enterprise at ASU and arises directly as a result of attracting outstanding faculty in our ecological, evolutionary and environmental sciences," says Sid Bacon, dean of natural sciences in the College of Liberal Arts and Sciences.

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Biodesign Institute recruits environmental expert

By Joe Caspermeyer

To help advance one of the Biodesign Institute's core research themes of improving the environmental health of the planet, the institute's Center for Environmental Biotechnology counts among its faculty newly appointed associate professor, Rolf Halden.

Halden plans to further his already extensive research on the environmental fate of mass-produced chemicals, associated health risks, toxic body burdens effects in humans, and biotechnologies helpful in reclaiming contaminated drinking water and agricultural soils.

"Our goal is to uncover environmental health problems and deliver solutions to our society," says Halden, who in addition to leading and expanding research at the center, will also coordinate the specialty areas of Environmental Engineering and Water Resources in the expanding Department of Civil and Environmental Engineering at the Ira A. Fulton School of Engineering.

Halden's research is right in line with the Biodesign Institute's mission to solve pressing issues concerning renewable energy, sustainability and human health. He notes that "most of our environmental and human health issues are

self-inflicted" and that "opportunities abound to improve quality of life by learning our lessons from past mistakes."

For example, by monitoring human cord blood and breast milk, his research group has discovered problematic chemicals – exposure to which begins in the womb and continues on from birth for a lifetime.

"Putting more thought into chemical design and usage potentially could save millions of lives and save billions of dollars in health care," Halden says. "To avoid environmental and human health problems, we need to develop alternative products made from chemicals that are safe, and that will break down much more rapidly than we can introduce them into the biosphere."

Halden comes to ASU from the Johns Hopkins University Bloomberg School of Public Health, where he was an adjunct associate professor of Environment Health Sciences and held a joint appointment in Geography and Environmental Engineering.

"Rolf Halden tremendously expands our center's ability to do multidisciplinary research on the fate of environmental chemicals, and also on the microbial communities that we use to

improve the quality of water and soil," says Bruce Rittmann, director of the Center for Environmental Biotechnology.

Halden says the Biodesign Institute's interdisciplinary approach to research makes the center's opportunities so promising.

"Stepping out of our academic silos is fun and increases research productivity," he says. "Biodesign has the ability to provide an umbrella, a roof, where people from different disciplines can jointly find solutions to problems that appear insurmountable when viewed through the lens of a single discipline, be it medicine or engineering. When you put it all together, it's very exciting."

Before joining academia, Halden was project engineer at the Lawrence Livermore National Laboratory, where he directed the construction and operation of physical and biological groundwater treatment systems. He received his master's and doctoral degrees in civil and environmental engineering from the University of Minnesota, and earned a master's in microbiology from the Technical University of Brunswick, Germany.

Caspermeyer, with the Biodesign Institute, can be reached at (480) 727-0369 or joseph.caspermeyer@asu.edu.

Technological influences shape new degree program

By Chris Lambrakis

Students in Arizona interested in studying the role that science and technology have on societies around the world, and the structure and mechanisms of government or globalization, will have a new degree program available to them at ASU this fall.

The School of Applied Arts & Sciences at ASU's Polytechnic campus is rolling out a bachelor's degree in science, technology and society, which will help establish the university as a leader in this area.

"We are truly excited about the new program and its immense promise at ASU," says Nicholas Alozie, professor and head of social and behavioral sciences. "The new degree has an important niche within the state of Arizona."

In fact, ASU is the only higher education institution in the state offering this type of comprehensive, interdisciplinary degree. The program's core provides students with a strong understanding of social systems and theory; the history and development of science and technology, with emphasis on societal control of science and technological pursuits; analytical techniques required for a sophisticated study of science and society; and the basics of science and technology studies.

The degree is designed to complement ASU's emerging interdisciplinary doctoral program in human and social dimensions of science and technology. It offers three focus areas, which are:

- Science, technology and governance.
- Global technology and development.
- General science and technology studies.

"Each area is tailored to develop expertise in different aspects, such as the interaction of science and technology with issues of governance or for the

understanding of how technology, processes of globalization and society influence one another," Alozie says. "Students outside of the major can use the general science, technology and society focus to design a double major, minor, or to pursue interests such as pre-law or pre-med."

The curriculum will benefit students majoring in engineering, science, technology or other programs, Alozie says.

"Educating future engineers, scientists and other professionals about how their innovations and activities will influence society – and the societal imperatives that control the way they do their work – is as important as the innovation itself," he says. "There has never been a better time to place studying the interaction of science, technology and human systems center stage in our educational system in Arizona."

Students who graduate with the degree will use the degree as a launching pad for careers in government at all levels, international organizations (the United Nations, International Monetary Fund), business and nonprofit organizations. Moreover, students interested in a broad-based preparation for graduate and professional schools will find the program useful.

This type of degree is needed as part of a sound 21st century education, Alozie says, adding: "We are moving more and more into a world of technological determinism. Whether we are asking questions regarding the organization and governance of human communities, cultural change, sustainability, public health, or national security and public safety, science and technology are never far behind."

More information can be found online at www.poly.asu.edu/saas/social-behavioral or by calling (480) 727-1987. For information to enroll, visit the Web site www.asu.edu/prospective.

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In THE NEWS

ASU experts frequently are called upon by the local and national news media to provide insight and opinion on current events and issues of public interest. Following are excerpts of recent news articles featuring ASU representatives.

ASU engineering professor **Harindra Fernando** and his researchers are investigating the phenomenon known as "urban heat island." "Our freeways, streets and structures all hold in heat, creating a reservoir of heat in the Valley," Fernando says. "There was almost no heat-island effect in the Valley until the late 1940s, but it was rising by the late 1950s and has risen quickly since then. If you keep increasing the heat-island effect, as we have, at some point it will become so uncomfortable that people will start leaving the Valley. It becomes the difference between comfort and misery." *Arizona Republic*, April 5.

Mars rovers Spirit and Opportunity, who have now endured four years past their expected life of 90 days, are credited with helping researchers see Mars in a whole new light. "The first thing that was really surprising was how complicated the geology is," says **Phil Christensen**, ASU Regents' Professor in the School of Earth & Space Exploration. Although the project now costs about a \$1.5 million a month, Christensen sees no downside because the rovers have outlived their life expectancy. "It's basically great," Christensen says. "We're making new discoveries every day." *Florida Today*, April 23.

As the second Arizonan to clinch the top spot on the GOP ticket, Sen. John McCain is still somewhat in the shadow of Barry Goldwater, Arizona's original straight-talking Republican presidential candidate. However, in some respects, McCain has outshone his predecessor, says **Michael Rubinoff**, a former political consultant and a film and media studies professor at ASU. "Most importantly, he's more viable to win the presidency than Goldwater was," Rubinoff says. "In that sense, he is bigger than Goldwater was in his time." *Arizona Republic*, May 4.

An increasing number of family and friends who can't be at commencement ceremonies are now tuning in to the event online. "A lot of schools are seeing this as a nice amenity to offer graduates," says **Melissa Werner**, ASU's university ceremonies director. "If they are not doing it now, they are looking into it." *Chicago Sun-Times*, May 9.

ASU cosmologist **Paul Davies** told attendees at the Future Summit in Sydney, Australia, recently that conservative academics must break free of their intellectual silos and work together on the looming complex problems. "It's the new way of doing science," he says. "Australia must abolish traditional research boundaries, such as biology, chemistry and computing technology, and group around themes." *Australian*, May 13.

Researchers are touting the importance of vitamin B12, found only in animal proteins, which is essential for making healthy nerve and blood cells, as well as replicating DNA. The vitamin helps stave off dementia, Alzheimer's disease and pernicious anemia, and it might protect against heart disease and pancreatic cancer. "B12 is the only vitamin that we actually keep a 10-year supply of in the liver, which indicates that it is very, very important," says **Carol Johnston**, ASU's Department of Nutrition chair. *Kiwi Magazine*, May 2008.

ASU researchers synthesize molecule that exhibits self-control

By Skip Derra and Jenny Green

Plants have an ambivalent relationship with light. They need it to live, but too much light leads to the increased production of high-energy chemical intermediates that can injure or kill the plant.

The intermediates do this because the efficient conversion of sunlight into chemical energy cannot keep up with sunlight streaming into the plant.

"The intermediates don't have anywhere to go because the system is jammed up down the line," says ASU chemist Devens Gust.

Plants employ a sophisticated process to defend against damage.

To better understand this process, Gust, along with fellow ASU researchers Thomas Moore and Ana Moore, both professors of chemistry and biochemistry, designed a molecule that mimics what happens in nature. They reported results with their molecule in the advanced online publication of *Nature Nanotechnology* (May 4).

In nature, plants defend against this sunlight overload process using non-photochemical quenching (NPQ). This process drains off the excess light excitation energy as heat so that it cannot generate the destructive high-energy species.

The ASU-designed molecule works in a similar fashion, in that it converts absorbed light to electrochemical energy but reduces

the efficiency of the conversion as light intensity increases. The ASU-designed molecule has several components, including two light-gathering antennas: a porphyrin electron donor, a fullerene acceptor and a control unit that reversibly photoisomerizes between a dihydroindolizine (DHI) and a betaine (BT).



Devens Gust

the generation of excess electrochemical potential.

When white light (sunlight) shines on a solution of the molecules, light absorbed by the porphyrin (or by the antennas) is converted to electrochemical potential energy. When the white light intensity is increased, the DHI on some molecules change to a different molecular structure, BT, that drains light excitation energy out of the porphyrin and converts it to heat, avoiding

the generation of excess electrochemical potential. As the light becomes brighter, more molecules switch to the non-functional form, so that the conversion of light to chemical energy becomes less efficient. The molecule adapts to its environment, regulating its behavior in response to the light intensity. "One hallmark of living cells is their ability to sense and respond to surrounding conditions," Thomas Moore says. "In the case of metabolic control, this process involves molecular-level recognition events that are translated into control of a chemical process."

"Functionally, this mimics one of the processes in photosyn-

thesis that severely limits the energy conversion efficiency of higher plants. One way in which this work is important is that, by understanding these events at the molecular level, one can imagine redesigning photosynthesis to improve energy conversion efficiency – and, thereby, come closer to meeting our energy needs."

The research also is important to one aspect of the exploding field of nanotechnology, that of regulation, Gust says. Biological systems are known for their ability to engage in adaptive self-regulation. The nanoscale components respond to other nanoscale systems, and to external stimuli, to keep everything in balance and functioning properly. The ASU research shows how a bio-regulation system has been captured in a non-biological molecular scale analog process.

"Achieving such behavior in human-made devices is vital if we are to realize the promise of nanotechnology," Gust says. "Although the mechanism of control used in the ASU molecule is different from that employed in NPQ, the overall effect is the same as occurs in the natural photosynthetic process."

In addition to Gust, Thomas Moore and Ana Moore, the ASU work was carried out by Stephen Straight, Gerdenis Kodis, Yuichi Terazono and Michael Hambourger.

Derra, with Media Relations, can be reached at (480) 965-4823 or skip.derra@asu.edu. Green, with the Department of Chemistry and Biochemistry, can be reached at (480) 727-6243 or jenny.green@asu.edu.

Research team develops new nanomotors

In a "major step" toward a practical energy source for powering tomorrow's nanomachines, researchers at ASU's Biodesign Institute report the development of a new generation of tiny nanomotors that are up to 10 times more powerful than existing motors.

Just like weekend hot-rodders who tinker with their car engines in the ultimate quest for speed, a research team led by Joseph Wang, who directs the institute's Center for Biosensors and Bioelectronics, set out to improve on the design of current nanomotors. These so-called "catalytic nanomotors" are made with gold and platinum nanowires and use hydrogen peroxide (the same chemical that bleaches hair) as a fuel for self-propulsion.

But these motors are too slow and inefficient for practical use, with top speeds of about 10 micrometers per second, the researchers say. One micrometer is about a 25,000th of an inch across, or almost 100 times smaller than the width of a human hair. (If one could somehow magnify the nanoworld to human scale by multiplying by a factor of 100,000, the speed would be the same as a walking speed of 3.6 miles per hour.)

Wang and colleagues supercharged their nanomotors by inserting carbon nanotubes into the platinum, thus boosting average speed to 60 micrometers per second. This was the first time that carbon nanotubes had been added to the existing gold and platinum nanowires. The tiny tubes, only a few atoms thick, help conduct electricity and heat.

"This is the first example of a powerful, man-made nanomotor," says Wang, who is an ASU professor with a joint appointment in the departments of chemical and material engineering in the Ira A. Fulton School of Engineering, and chemistry and biochemistry in the College of Liberal Arts and Sciences.

Spiking the hydrogen peroxide fuel with hydrazine (a type of rocket fuel) kicked up the speed still further, to 94-200 micrometers per second (using the same multiplying factor of 100,000, the top speed would now be equal to a moped-like speed of 43.2 miles per hour). This innovation "offers great promise for self-powered nanoscale transport and delivery systems," Wang says.

Authors on the paper include: Rawiwan Laocharoensuk, Jared Burdick, and Joseph Wang. Their study appeared in the May 27 issue of *ACS Nano*, a monthly journal. They also reported their findings in the online edition of *ACS Nano*.

Study examines link between gut bacteria, obesity

By Joe Caspermeyer

Obesity is more than a cosmetic concern, because it increases a person's risk for developing high blood pressure, diabetes and many other serious health problems. It's well-understood that consuming more calories than you expend through exercise and daily activities causes weight gain. But with about one in every three American adults now considered obese, researchers are attempting to identify additional factors that affect a person's tendency to gain and retain excess weight.

In the April issue of *Mayo Clinic Proceedings*, researchers from Mayo Clinic Arizona and the Biodesign Institute at ASU examine the role that bacteria found in the human gastrointestinal tract play in regulating weight and the development of obesity.

Known as gut microbiota, the trillions of bacteria that populate the human gastrointestinal tract perform a variety of chores. These "friendly" microbes help extract calories from what we eat, help store these calories for later use, and provide energy and nutrients for the production of new bacteria to continue this work.

According to John DiBaise, a Mayo Clinic Arizona gastroenterologist and lead author of the *Mayo Clinic Proceedings* article, several animal studies suggest that gut microbiota are involved in regulating weight and that modifying these bacteria could one day be a treatment option for obesity. Other authors of the article include Husen Zhang, Rosa Krajmalnik-Brown and Bruce E. Rittmann of the Biodesign Institute's Center for Environmental Biotechnology; and Mayo Clinic Arizona researchers Michael Crowell and G. Anton Decker.

One study cited by the authors observed that young, conventionally reared mice have a significantly higher body fat content than a laboratory-bred, germ-free strain of mice that lack these bacteria, even though they consumed less food than their germ-free counterparts. When the same research group transplanted gut microbiota from normal mice into germ-free mice, the germ-free mice experienced a 60 percent increase in body fat within two weeks, without any increase in food consumption or obvious differences in energy expenditure.

The study was the result of a unique collaboration between physicians at Mayo Clinic and environmental remediation experts at the Biodesign Institute, made possible by seed funding provided by the Mayo Clinic to pursue innovative solutions to leading problems affecting human health.

Scientists create new nanotechnology building blocks

By Joe Caspermeyer

In the fast-growing world of nanotechnology, researchers are constantly on the lookout for new building blocks to push innovation and discovery to scales much smaller than the tiniest speck of dust.

In the Biodesign Institute at ASU, researchers are using DNA to make intricate, nano-sized objects. Working at this scale holds great potential for advancing medical and electronic applications.

DNA, often thought of as the "molecule of life," is an ideal building block for nanotechnology because it self-assembles, snapping together into shapes based on natural chemical rules of attraction. This is a major advantage for Biodesign researchers such as Hao Yan, who rely on the unique chemical and physical properties of DNA to make their complex nanostructures.

While scientists are fully exploring the promise of DNA nanotechnology, Biodesign Institute colleague John Chaput is working to give researchers brand new materials to aid their designs. In an article recently published in the *Journal of the American Chemical Society*, Chaput and his research team have made the first self-assembled nanostructures composed entirely of glycerol nucleic acid (GNA) – a synthetic analog of DNA.

"Everyone in DNA nanotechnology is essentially limited by what they can buy off the shelf," says Chaput, who also is an ASU assistant professor in the Department of Chemistry and Biochemistry. "We wanted to build synthetic molecules that assembled like DNA, but had additional properties not found in natural DNA."

The DNA helix is made up of three simple parts: a sugar and a phosphate molecule that form the backbone of the DNA ladder, and one of four nitrogenous bases that make up the rungs. The nitrogenous base pairing rules in the DNA chemical alphabet fold DNA into a variety of useful shapes for nanotechnology, given that "A" can only form a zipper-like chemical bond with "T," and "G" can only pair with "C."

In the case of GNA, the sugar is the only difference with DNA. The five-carbon sugar commonly found in DNA, called deoxyribose, is substituted by glycerol, which contains just three carbon atoms.

Chaput has had a long-standing interest in tinkering with chemical building blocks used to make molecules such as proteins and nucleic acids that do not exist in nature. When it came time to synthesize the first self-assembled GNA nanostructures, Chaput went back to basics.

"The idea behind the research was what to start

with a simple DNA nanostructure that we could just mimic," Chaput says.

The first self-assembled DNA nanostructure was made by Ned Seeman's lab at Columbia University in 1998, the very same laboratory where Yan received his doctoral degree.

Chaput's team, which includes graduate students Richard Zhang and Elizabeth McCullum, was able to duplicate these structures – and, unique to GNA, the team members found they could make mirror-image nanostructures.

In nature, many molecules important to life, such as DNA and proteins, have evolved to exist only as right-handed. The GNA structures, unlike DNA, turned out to be "enantiomeric" molecules – which, in chemical terms, means both left- and right-handed.

"Making GNA is not tricky," Chaput says. "It's just three steps – and, with three carbon atoms, only one stereo center. It allows us to make these right- and left-handed biomolecules. People have made left-handed DNA, but it is a synthetic nightmare. To use it for DNA nanotechnology could never work. It's too high of a cost to make, so one could never get enough material."

Caspermeyer, with the Biodesign Institute, can be reached at (480) 727-0369 or joseph.caspermeyer@asu.edu.

Insight *On campus*

May 30, 2008

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ASU faculty to develop first Spanish screener for language disorders

By Erica Velasco and Verina Martin

Two faculty members in ASU's Department of Speech and Hearing Science, and a faculty member in the Mary Lou Fulton College of Education, have been awarded a \$1.6 million grant to develop a Spanish-language screening measure to identify children at risk for language impairment. The four-year grant has been funded by the U.S. Department of Education's Institute for Education Sciences.

There are no measures of language impairment designed specifically for Spanish-speaking children. Existing tools have been translated from English to Spanish with the assumption that a translation is a valid measure. However, the tools do not take into account changes in language complexity, cultural background or literacy. This can result in unidentified language impairment in children who need treatment, or in children who have typical language abilities being identified as having a language disorder.

"Tests that are available now are culturally or linguistically biased," says Laida Restrepo, an associate professor in

the Department of Speech and Hearing Science. "They are based on experience. So if you don't know the vocabulary or if you don't know the forms that others are using, you are penalized. Because these children don't have the same experiences as English-speaking children or may not have the advantage of a highly literate environment, a screener is needed that recognizes these differences."

Shelley Gray, a speech and hearing associate professor in the College of Liberal Arts and Sciences is on Restrepo's team, along with Joanna Gorin, an assistant professor in the Mary Lou Fulton College of Education.

"With the current instruments, children are not being accurately identified," says Gorin, an expert in educational assessment design and analysis. "When children are tested outside of their native language with improper tools, it raises an issue of validity."

The team will develop dynamic tasks for the screener that will control for experience and culture.

"We are developing tasks that evaluate language and evaluate abilities that could contribute to the problem a child's having," Gray says. "Dynamic learning tasks assess how your brain is functioning while you learn the new material, and that is different than most tests that evaluate knowledge at one point in time. But dynamic learning tasks allow you to watch children learn something new and see the problem by the mistakes a child makes, or the amount of effort it takes for the task."

Gorin will help create the new screening measure in Spanish working with Spanish-language items, for children ages 4 to 8, generated by Restrepo and Gray. She says this unique collaboration exemplifies the benefit of using expert knowledge from different disciplines.

"This is an exciting project for me, because it really hits on my primary emphasis, which is merging substantive theory with assessment design and analysis," Gorin says. "So few projects I work on can do that. It's incredibly

(See ASU FACULTY on page 8)

ASU art professor Klett wins governor's award

By Laura Toussaint-Newkirk

Mark Klett, Regents' Professor of Photography in the ASU Herberger College School of Art, has received the 2008 Governor's Arts Award as a living artist who has made a significant contribution to the arts in Arizona through his photographs of the American West.



Mark Klett

Gov. Janet Napolitano presented the award to Klett at the 27th Annual Governor's Arts Awards Dinner, which took place April 23 at the Arizona Biltmore Resort.

Klett was selected for the award by the Arizona Commission on the Arts and Arizona Citizens for the Arts upon nomination of Marilu Knode, associate director of Future Arts Research (F.A.R.). Klett was among five individuals and arts organizations to receive the prestigious awards.

"I'm extremely honored to be recognized by the arts community in Arizona," Klett says. "Artists depend on their communities for support, and Arizona has been a great place to live, create and teach. I hope that my work can contribute to our understanding and appreciation of the state's incredible mix of landscapes and cultures."

Klett, who is trained as a geologist, photographs the intersection of culture, landscapes and time. He established his artistic perspective on the American West landscape as the chief photographer for the Rephotographic Survey Project (1977-1979), which re-photographed Western sites first captured by surveyors in the late 1800s. Since then, Klett has written 13 books, including his most recent works, "Saguars," "After the Ruins," "Yosemite in Time" and "Third Views, Second Sights."

Klett has received fellowships from the Guggenheim Foundation, the National Endowment for the Arts, the Buhl Foundation and the Japan-U.S. Friendship Commission. His work is exhibited, published and collected nationally and internationally.

Toussaint-Newkirk, with the Herberger College of the Arts, can be reached at (480) 965-8796 or laura.toussaint@asu.edu.



MARK KLETT PHOTO

This is the cover image from Mark Klett's latest book, "Saguars."

Publisher named Cronkite School's Gaylord Professor

N. Christian Anderson III, who led the *Orange County Register* to two Pulitzer Prizes as editor and later became the newspaper's award-winning publisher, will join ASU this fall as the Edith Kinney Gaylord Visiting Professor in Journalism Ethics.

Anderson, who was named the Publisher of the Year by *Editor & Publisher* magazine last year, will teach two journalism ethics courses at the Walter Cronkite School of Journalism and Mass Communication during the fall semester.



N. Christian Anderson III

He will be the third Gaylord Visiting Professor at the Cronkite School, following former *St. Louis Post-Dispatch* editor Ellen Soeteber and former *Akron Beacon Journal* publisher James Crutchfield.

"Chris Anderson is one of the most innovative newsroom leaders of his generation," says Christopher Callahan, the Cronkite School's dean. "Our students have been enormously fortunate to learn from two terrific journalists in Ellen Soeteber and Jim Crutchfield, and now they will benefit greatly from the wisdom, passion and values that Chris will bring from the newsroom to the classroom."

The Edith Kinney Gaylord Visiting Professorship in Journalism Ethics, named in honor of the late pioneering newswoman, was created with a generous gift from the Ethics and Excellence in Journalism Foundation of Oklahoma City. Gaylord created the foundation in 1982 to improve the quality and ethical standards of journalism.

"We are thrilled that Chris Anderson is joining the Cronkite School as the Edith Kinney Gaylord Visiting Professor in Journalism Ethics," says Robert J. Ross, president and chief executive officer of the foundation. "Chris' distinguished background makes him uniquely qualified to take on the important role of teaching the next generation of journalists about the importance of ethics in all media."

Anderson became editor of the *Register* in 1980 at age 30. He is credited with turning the newspaper into one of the nation's largest and most respected.

Under his leadership, the *Register* won its first Pulitzer Prize, awarded for photography for coverage of the 1984 Summer Olympics. Five years later, the newspaper won the Pulitzer Prize for specialized reporting for its investigation of night

(See NEWSPAPER on page 8)

Speaker urges revolution in engineering education

By Joe Kullman

A revolution in engineering education and practice in the United States is needed if the nation is to remain a leader in the field.

That was the central message delivered recently to about 70 faculty members of ASU's Ira A. Fulton School of Engineering by nationally prominent educator James Duderstadt.

"America faces the very real prospect of losing its engineering competence in an era in which technological innovation is the key to economic competitiveness, national security and social well-being," said Duderstadt, who is president emeritus of the University of Michigan, where he is a professor of science and engineering.

Duderstadt also is founder and director of the Millennium Project, a laboratory at the University of Michigan studying the impact of "over-the-horizon" technologies on society.

In an address titled "Engineering for a Changing World,"



James Duderstadt

Duderstadt pointed to warning signs of daunting challenges for engineering.

He cited the off-shoring of engineering jobs, inadequate investment in long-term engineering research, inadequate innovation in engineering education and declining interest among students in careers in science, technology, engineering and math.

Duderstadt noted the warning of the National Academies – the nation's advisers on science, engineering and medicine – of "a gathering storm" building toward a national crisis of shrinking technological innovation because the country's universities are graduating fewer engineers and scientists.

Bold actions are required to reverse the troubling trends, he said.

The approach to engineering education must broaden to include training in creative thinking, communication, leadership and entrepreneurial skills, globalization and knowledge integration, he said.

Even more, it must expose engineering students to varied aspects of a well-rounded liberal arts education. More education in

(See DUDERSTADT on page 8)



Events are free, unless otherwise noted. Items in the "Exhibitions" section run at exhibit opening and on the first of each month only. Building abbreviations are listed according to the official ASU phone directory. Send information to Judith Smith at jps@asu.edu or fax (480) 965-2159. For information about ASU events, visit the Web at <http://events.asu.edu>.

Miscellaneous

■ Wednesday, June 4

Roundtable Discussion: Multidisciplinary Proposals, 9-10 a.m., Centerpoint (CTRPT) room 310B, Tempe. Sponsored by Office for Research and Sponsored Projects Administration. Information: (480) 727-0765 or ORSPA-Training@asu.edu.

■ Wednesday, June 11

Immigration: From Global to Local to Kids, 4-5 p.m., University Center, Downtown Phoenix campus. The Morrison Institute for Public Policy's first networking event in a new quarterly series called Forum 411 focuses on issues facing immigrant children in Arizona. R.S.V.P. by June 6 at cschick@asu.edu. Information: Nicole Haas at nicole.haas@asu.edu.

Roundtable Discussion: Supplemental Proposals, 9-10 a.m., CTRPT room 310B, Tempe. Sponsored by Office for Research and Sponsored Projects Administration. Information: (480) 727-0765 or ORSPA-Training@asu.edu.

Technology Training Program Microsoft Access 2003 Level 1 Training, 8:30 a.m.-4:30 p.m., University Services Building (USB), room 1502, Tempe. Sponsored by Office of Human Resources. Information: www.asu.edu/hr/training/tech.

■ Thursday, June 12

Technology Training Program Microsoft Access 2003 Level 1 Training, 8:30 a.m.-4:30 p.m., USB, room 1502, Tempe. Sponsored by Office of Human Resources. Information: www.asu.edu/hr/training/tech.

Entertainment

**Indicates tickets are available at ASU Gammage, Mill Avenue and Apache Boulevard, (480) 965-3434; ASU Kerr Cultural Center, 6110 N. Scottsdale Road, Scottsdale, (480) 596-2660.

■ Friday, June 6

Viola Congress, 8 p.m. ASU Gammage. Featuring the 36th International Viola Congress.**

■ Tuesday, June 17

My Fair Lady, 7:30 p.m. ASU Gammage. Through Sunday, June 22.**

Exhibitions

ASU Art Museum, Nelson Fine Arts Center – Regular hours: 11 a.m.-9 p.m., Tuesday; 11 a.m.-5 p.m., Wednesday-Saturday; 1-5 p.m., Sunday. Summer hours: 10 a.m.-5 p.m., Tuesday-Saturday. Information: (480) 965-2787.

Through Aug. 30, "Exploring Dreams: Images from the Permanent Collection." Ninth Annual Family Fun Day, 10 a.m.-2 p.m., July 12. "Exploring Dreams" presents artwork that echoes the dreamlike, surreal images encountered in the depths of sleep and in the shades of waking. The exhibition examines the concepts and science of dreams; what dreams are; and their purpose and meanings. To further enhance viewers' experiences, hands-on and informational activities in the gallery encourage visitors to explore their own dreams through images and text. Family Fun Day will be a dream-inspired day, with activities such as making dream-catchers and other dream-inspired arts and crafts, and dance, music and theatrical performances in partnership with CONDER Dance, AZ Opera in a Box and other local groups and volunteers. Eight/KAET-TV will bring a favorite character for photos with children. "Exploring Dreams: Images from the Permanent Collection" is made possible in part through an investment by IKEA, Changing Hands Bookstore, the ASU Art Museum Advisory Board and the Friends of the ASU Art Museum.

ASU Art Museum Ceramics Research Center – 11 a.m.-5 p.m., Tuesday-Saturday, Tempe Center.

Through Aug. 2, "Susan Beiner: Synthetic Reality." This ambitious, room-sized installation explores the artist's concerns of genetically altered foods, cloned animals and the

hybridization of the material world. Crossing the boundaries of conventional ceramics, Beiner's focus is making what is organic, synthetic. This exhibition is supported by the Independence Foundation and a Herberger College of the Arts research and creativity grant. Information: (480) 965-2787.

ASU Gammage – 1-4 p.m., Monday. Information: (480) 965-6912.

Through June 29, photographs by Edward L. Davies, and museum-quality canvas and archival ink artworks by Cooper Downs. Davies, of Tempe, is a Native American. His photography has focused primarily on Native American subjects and themes, but he has begun to explore the natural world from his perspective, finding "amazing forms in fire and flame, light and darkness." Downs, a Scottsdale resident, captures intuitive impressions on a computer, then uses a wide-format printer to transfer the art to canvas. The result is fine art that contains exquisite and intricate details delineated with vivid colors that appear illuminated and in fluid motion.

The Galleria – 8 a.m.-6 p.m., Monday-Friday, located in Mercado Building C, 502 E. Monroe St., Phoenix. Information: (602) 496-1500.

Through June 30, "Two Generations of Photography." An exhibit by Ed Valinski Sr. and E. J. Valinski Jr. This father-son duo has traveled extensively throughout the Southwest, which has drawn them closer to the tradition and history of the past. Their color and black-and-white prints capture buildings, people and places, as well as the past and present, for others to appreciate and reflect on. Memories of their experiences have been frozen in the frames of time.

Defenses

Wenping Wang, PhD, Elec. Engr., 9:30 a.m., Jun. 2, GWC 409.

Scott Thompson, PhD, Bus. Adm., 10:00 a.m., Jun. 3, BAC 445.

Laura Inman, DMA, Mus., 10:00 a.m., Jun. 3, MUSIC W-36-V1.

Terrilee Asher, PhD, Psy., 10:00 a.m., Jun. 4, PSY 217.

Qinghui Tang, PhD, Elec. Engr., 10:00 a.m., Jun. 11, BYENG 455.

Piper Center offers summer writing workshops to writers across the globe

By Judith Smith

Writers of all experience levels – and even those who never have tried their hand at a short story or poem – are invited to enroll in summer writing workshops sponsored by ASU's Virginia G. Piper Center for Creative Writing.

This summer's schedule for the Piper Writer's Studio includes one in-depth, in-person workshop and three online courses, all meeting between June 2 and July 28.

The online courses offer a new and exciting way for people to take advantage of the Piper Writer's Studio from anywhere in the world. Participants will use Web-based forums to submit their work, and to interact with the instructor and other class members.

The in-person course, "Intensive Short Story Writing," will be taught by former *Arizona Highways* editor and longtime *Ari-*

zona Republic journalist Robert J. Early at the Piper Writers House on ASU's Tempe campus, from 6 p.m. to 8 p.m., day to be determined.

Erin Sweeten will teach two online courses – "Beginning Creative Writing" and "Beginning Poetry Writing" – and Jennifer Spiegel will teach an online course titled "Beginning Fiction Writing."

Sweeten's poetry and prose have appeared in a number of journals, including the *Formalist*, the *Cream City Review*, *Hiram Poetry Review* and *Salt*. She earned a master's degree from the writing seminars at Johns Hopkins University.

Spiegel earned a master's degree in politics from New York University and a master's degree of fine arts in creative writing (fiction) from ASU. Her work has appeared in several journals, including *Frostproof Review*, the *Seattle Review*, *Nimrod* and the *Gettysburg Review*.

Early's class will focus on short stories, short-short stories (1,000 words or less) and flash fiction (100 words or less).

Early will teach his students a technique that demonstrates to the writer whether she or he has a viable story.

"The result is that the writer knows the proposed story is complete and effective so no time is wasted writing into a dead end," Early says.

Sweeten says her creative writing class will be "perfect for writers looking for a safe, encouraging place to experiment and challenge themselves. We will search for inspiration, create drafts, and gently revise memoir, poetry and fiction, with plenty of games and activities to get the juices flowing."

In her poetry class, Sweeten says her students "will treat poetry like a creativity buffet, sampling poems in different modes and styles. Projects will include a nature

poem, a persona poem, a weird poem, a list poem and more!"

"Writing fiction can be intellectually, emotionally, spiritually and even physically challenging," Spiegel says. "Rumor has it that Hemingway wrote standing up! This online fiction studio will focus on the short story and the principles of writing fiction. We'll write our own stories, exchange work, critique stories for the purpose of revision and use two exciting texts: 'The Idiot's Guide to Creative Writing' and 'The Best American Short Stories, 2007.'"

The fee for Early's course is \$500. The online courses are \$100 each. Piper Center members receive a 10 percent discount.

For more information, visit the Web site www.asu.edu/piper or call (480) 965-6018.

Smith, with *Media Relations*, can be reached at (480) 965-4821 or jps@asu.edu.

EMPLOYMENT

The following positions are available as of May 30 and are subject to change. All positions will be advertised in *Insight* only once. The staff requisition or job order number for each position is indicated by the (#) sign. ASU is an equal opportunity-affirmative action employer.

ASU POSITIONS

A complete job announcement for classified, administrative and service professional positions at the Downtown Phoenix, Polytechnic, Tempe and West campuses is available on the Human Resources Web page at www.asu.edu/asujobs, or the Telecommunication Device for the Deaf at (480) 965-3002.

For complete position descriptions and application requirements for academic positions, contact the appropriate department listed below. Faculty, academic professional and graduate assistant positions are also listed on the Human Resources Web sites and details must be obtained from the hiring department. Application deadlines are listed.

Dates listed are application deadlines, and application material is due by 11:59 p.m. on that date. Positions are 100 percent, full-time employment (FTE) unless otherwise noted. Codes below are: (O) – position is open to the public; (L) – position is limited to current ASU, Northern Arizona University, University of Arizona and Arizona Board of Regents employees.

STAFF POSITIONS

TEMPE CAMPUS

Professional

Academic Success Specialist (O) #16578 – College of Liberal Arts and Sciences (June 13).
Assistant to Dean (O) #16631 – College of Liberal Arts and Sciences (June 4).
Business Operations Specialist (O) #16664 – College of Liberal Arts and Sciences, School of

Justice and Social Inquiry (June 13).

Coordinator (L) #16730 – College of Liberal Arts and Sciences (June 9).

Management Analyst Senior (University Architect Office) (O) #16492 – University Services (June 4).

Systems Analyst Associate (O) #16496 – VP-Research and Economic Affairs (June 9).

Technical Director Senior (O) #16698 – Public Events (June 11; and every other week thereafter until search is closed).

Administrative support

Administrative Specialist (O) #16896 – VP-Research and Economic Affairs (June 11).

Office Specialist (O) #16504 – College of Liberal Arts and Sciences and the Department of English (June 4).

Service/field craft/maintenance

Grounds Crew Chief (Facilities Management) (L) #15419 – University Services (June 4).

Parking/Transportation Manager (O) #16689 – University Business Services (June 13).

Utility Piping Specialist (O) #15759 – University Services (June 6; every week thereafter until search is closed).

DOWNTOWN PHOENIX CAMPUS

Administrative support

Office Assistant/Receptionist Senior (O) #16733 – College of Nursing & Healthcare Innovation (June 4).

POLYTECHNIC CAMPUS

Professional

Management Intern (O) (part-time) #16603 – Polytechnic campus (June 10).

WEST CAMPUS

Professional

Instructional Specialist Senior- Student Affairs (O) #16526 – TRIO Academic Achievement Center (June 11).

Parking/Transportation Manager (O) #16689 – Parking & Transit Service (June 13).

Technical and computer

Technology Support Analyst (O) #16696 – Teacher Education & Leadership (June 9).

Technology Support Analyst Assistant (O) #16871 – UTO Desk Side Tech Support (June 11).

ACADEMIC POSITIONS

TEMPE CAMPUS

Clinical Assistant Professor #9166 – Herberger College of the Arts-School of Theatre and Film (July 28; every week thereafter until search is closed).

NSF Career Award funds efforts to advance solar energy technology

By Joe Kullman

Finding better materials to harvest energy from sunlight by using photovoltaic technology is the goal of research to be funded through a National Science Foundation (NSF) Career Award recently received by Jian Li, an assistant professor in ASU's School of Materials.

The award recognizes scientists and engineers the NSF considers to have potential to become leaders in their fields.

Li's award will provide \$590,000 over five years to support research on organic photovoltaic materials.

It also will fund education programs based on his research.

Li is working in the Advanced Photovoltaics Center led by Ghassan Jabbour, a

professor in the School of Materials, which is jointly administered by ASU's Ira A. Fulton School of Engineering and the College of Liberal Arts and Sciences.



Jian Li

Li says progress in this area is slow because of a limited choice of materials that can use sunlight efficiently. He is attempting to overcome such

limitations by developing new kinds of organic materials that absorb sunlight more efficiently and optimize the power of the electrical current from these materials.

Electrical currents are needed to operate the systems (for example, appliances) connected to the solar cells. Li's approach focuses on using heavy metal ions incorporated into the materials.

Understanding how to engineer the properties of organic materials will improve the performance of organic solar cells and move forward commercialization of organic photovoltaic technology, he says.

The award also will help support Li's educational outreach efforts, including his participation in the "Science is Fun" program administered by ASU's LeRoy Eyring

Center for Solid State Science.

Each year, the program trains 30 undergraduate and graduate student interns to give 450 hourlong science and engineering presentations at 60 Arizona schools to as many as 20,000 kindergarten-through-eighth-grade students and teachers.

With help from the Science is Fun program, Li's project – called "Solar Electricity" – will provide science demonstrations for K-12 students, focusing on topics such as light, electricity generation and energy storage.

It also will provide classroom materials for teachers.

Kullman, with the Ira A. Fulton School of Engineering, can be reached at (480) 965-8122 or joe.kullman@asu.edu.

In the Spotlight

Esma Gel, an associate professor in ASU's Department of Industrial Engineering, recently received the Hamid K. Eldin Outstanding Young Industrial Engineer in Education Award from the Institute of Industrial Engineers (IIE) at its annual conference in Vancouver, Canada. The award recognizes young IIE members who have demonstrated leadership and professionalism in industrial engineering education. Since joining the Ira A. Fulton School of Engineering in 2000, Gel has been teaching graduate and undergraduate course in operations research and production systems. Her research focuses



Esma Gel

on the use of applied probability techniques for modeling, design and control of production systems and supply chains, with emphasis on work force engineering. Her work has been published in leading journals and funded by the National Science Foundation, and by industrial partners such as Intel, IBM and Infineon. Gel earned her master's degree in science and her doctoral degree from Northwestern University in 1995 and 1999, respectively.

Orde Félix Kittrie, an associate professor at the Sandra Day O'Connor College of Law, testified recently before the United States Senate Committee on Finance about sanctions against Iran detailed in the Iran Counterproliferation Act. At the April 8 hearing, Kittrie addressed public international law, trade law and humanitarian implications of the act, which would significantly increase U.S. sanctions. The act is designed to directly influence Iranian policy and persuade other countries to lessen their ties to Iran in light of Iran's nuclear program and support for terrorism. In recent months, Kittrie has worked on nuclear nonproliferation legal issues. In March, he traveled to Vienna, Austria, to speak on legal aspects of various proposals to resolve the dispute over Iran's nuclear program. The symposium in which Kittrie participated was organized by the Stockholm International Peace Research Institute and the Carnegie Moscow Center, and it included participation by officials from the United States, Russia, Iran, Sweden, Egypt, Syria, China and the International Atomic Energy Agency. In February, Kittrie wrote the legal chapter for a new report produced by the National Academies of Science, in coordination with the Russian Academy of Sciences. The report is titled "The Future of the Nuclear Security Environment in 2015," and Kittrie's chapter analyzes critical legal issues necessary for future U.S.-Russian nuclear security cooperation. Before joining the ASU law faculty in 2004, Kittrie served for 11 years at the U.S. Department of State, where he worked extensively on sanctions and nuclear issues.



Orde Kittrie

Kelin Whipple, a professor in ASU's School of Earth and Space Exploration, has been named a 2008 EGU Ralph Alger Bagnold Medalist. Whipple was selected for his outstanding contributions to the understanding of how climate, tectonics and surface processes interact in the sculpting of the Earth's surface. His most outstanding contributions have been in deepening our understanding of landform evolution in active tectonic settings, examining the interactions of climate, tectonics and the mechanics of river incision into bedrock, and their impact on sculpting of the Earth's surface, particularly in mountainous areas. "My work shows how the interaction of tectonics and river incision influences the morphology of mountain regions," Whipple says. Initially, his work focused mainly on steady-state models of uniform incision and supply-limited removal, but his work has expanded to consider the constraints of transporting capacity and

grain-size changes through the system. Whipple holds a bachelor's degree in geology from the University of California-Berkeley, and a master's degree and a doctorate in geological sciences from the University of Washington. He spent a year as a postdoctoral research associate in the St. Anthony Falls Hydraulic Lab at the University of Minnesota, then took a faculty position in the Department of Earth, Atmospheric and Planetary Sciences at the Massachusetts Institute of Technology (MIT) in 1995. Ralph Alger Bagnold (UK, 1896-1990) was a soldier, explorer and scientist. Although many people may not be familiar with his name, Bagnold's fundamental work on the physics of sediment transport in air and water, and the dynamics of bedforms, continues to serve as a framework for modern studies of processes shaping the surface of planets. Because of his influential and long-lasting body of work on Earth surface processes, Bagnold was named a member of the Royal Society, in addition to a number of other recognitions and awards.

Joe Feller, a professor at the Sandra Day O'Connor College of Law, will take a leave of absence beginning in June to work for a year at the National Wildlife Federation. Feller will serve as a senior counsel in the conservation organization's Rocky Mountain Natural Resource Center in Boulder, Colo. The job is a perfect fit for Feller, a former physics professor at Columbia University who began teaching at the College of Law 20 years ago. Feller is a faculty fellow in the college's Center for the Study of Law, Science and Technology.

Jennifer Barnes, director of the clinical program and the Civil Justice Clinic at the Sandra Day O'Connor College of Law, has been selected as one of the top 50 pro bono attorneys in Arizona, an honor given annually by the Arizona Foundation for Legal Services & Education. Barnes is a former trial attorney who represented clients in products liability, premises liability, toxic tort and wrongful death litigation for 14 years before coming to the College of Law in 2001. She also is an alumna of the college (Class of 1987). As director of the Civil Justice Clinic – which on April 30 received the top pro bono award from the Volunteer Lawyers Program in Phoenix – she manages a hands-on program that teaches students to represent clients in civil disputes, such as foreclosure rescue scams and predatory lending actions. Barnes was nominated by the Volunteer Lawyers Program, a partnership of the Maricopa County Bar Association and Community Legal Services Inc. (CLS). Barnes and other lawyers will be honored at a reception June 19 at the Westin La Paloma Resort in Tucson, in conjunction with the State Bar of Arizona's annual convention.



Jennifer Barnes

Marek P. Wosinski, a senior lecturer in ASU's Department of Psychology and an associate professor at the Warsaw School of Social Psychology in Poland, has been named the recipient of the 2007 Outstanding Educator Award from the Society for Community Research and Action (SCRA). The purpose of the Outstanding Educator Award is to recognize an SCRA member who has made exemplary and innovative contributions to the education of students about community psychology, and community research and action. Wosinski obtained his doctorate in psychology from the University of Warsaw (Poland) in 1979. For about 25 years, Marek has been working in the area of mental health as a psychologist, and in the years 1993 to 2003 he was in charge of the counseling center at St. Timothy Catholic Community in Mesa. Since September 2006, he has been working on the development of University-Community Partnership for Social Action Research

Network (UCP-SARnet) and serves as its facilitator. UCP-SARnet, located on the World Wide Web at <http://ucpsarnet.asu.edu>, is a global internet network of practitioners, students, university faculty and staff ready to initiate multicultural collaborations to address local and global community issues.

Walter Cosand, a professor of music and keyboard area coordinator at the ASU School of Music, recently served as a visiting professor of music at the invitation of the Department of the Arts of the Universidad Nacional Autónoma de Honduras, a school in Tegucigalpa, Honduras, with an enrollment of 83,000 students. Cosand taught piano students at the university and at the Conservatorio Nacional Francisco Diaz Zelaya. He also presented public solo recitals at the Museo del Hombre Hondureño and at the Escuela Nacional de Música.

Barry Silverman of the Ninth U.S. Circuit Court of Appeals regaled nearly 200 people with funny stories of his law school years after he was honored recently by the Sandra Day O'Connor College of Law at the annual *Arizona State Law Journal* awards banquet. Members of 21 law firms, along with *Journal* staffers, attended the dinner and event at the Arizona Historical Society Museum in Tempe. Silverman, 56, a member of the College of Law's Class of 1976 who has been a state court judge, federal magistrate and circuit court judge for more than 20 years, was given the John S. Lancy Award, named for the *Journal's* first editor-in-chief. Silverman, who was born in the New York borough of the Bronx, arrived in Phoenix in his teens and has called Arizona home ever since. He attended ASU, graduating summa cum laude, and went on to law school, during which he served on the *Law Journal*. Before his appointment to the Ninth U.S. Circuit Court of Appeals by President Bill Clinton in February 1998, Silverman was a U.S. magistrate judge for the District of Arizona from 1995 to 1998, and in Maricopa County Superior Court from 1984 to 1995. Silverman has received several awards, including the Henry Stevens Award, given by the Maricopa County Bar Association to a trial judge "who reflects the finest qualities of the judiciary." He has served as chair of the Ninth Circuit Federal Defender Committee.



Barry Silverman

Maria Luz Cruz Torres, an associate professor of women and gender studies and transborder Chicana/o and Latina/o studies has been awarded a 2008 Wenner Gren Foundation post-doctoral grant. The grant, part of an internationally competitive program, is among one of the most sought-after awards in anthropology. The grant program is open to applicants worldwide in the areas of research in social and cultural anthropology, archaeology, biological and physical anthropology, linguistics and closely related disciplines.

Paul Espinosa, a professor of transborder Chicana/o and Latina/o studies, and his co-principal investigator, **Daniel Cutrara**, an assistant professor of film and media studies, have received a \$45,000 grant from the Institute for Humanities Research to develop their proposal "The Dawning of Liberty." The study will be the basis for a major film on one of the most important figures of the 19th century in southwestern North America – Padre Jose Antonio Martinez, who lived from 1793 to 1867 and who struggled under American ecclesiastical and political restrictions of *Espanoles Mexicanos*. Martinez went on to establish the first co-educational system in the New Mexican Territory (which included Arizona), and he also made major inroads in education, public welfare and representative politics.

Students compete in business plan challenge

Jay Golden, director of the National Center of Excellence for SMART Innovations and an assistant professor at ASU's School of Sustainability, led a team of four ASU undergraduates to compete in the "Better Living Business Plan Challenge" sponsored by Wal-Mart April 18.

The sustainability competition, which took place at the company's home office in Bentonville, Ark., was created to provide students from around the world with an opportunity to invent sustainable products or business solutions and present them to a panel of Wal-Mart executives, government officials, suppliers and environmental organizations.

Wal-Mart invited students from nine leading universities to submit business plans on topics ranging from clean air, water and soil, to energy-efficient and healthy products.

The ASU squad's entry was Green Taxi Cab, Arizona's first all-hybrid taxi service. The company was founded by ASU student Andrew Nelson, a supply chain management senior who received funding through ASU's Edson Student Entre-

preneurship Initiative. Other ASU team members included Jenna Schaefer, a junior in nonprofit management and leadership; Jonathon Cooper, a junior in journalism and Barrett, the Honors College; and Calvin Bovee, a junior in management.

The ASU team earned \$1,000 for its efforts, which included praise from the judges for having the best presentation and being the best prepared in responding to very difficult questioning. The \$20,000 top prize in the competition was awarded to a team from the University of Michigan.

"Being invited as one of a select group of leading academic institutions focused on bridging sustainability and entrepreneurship was an honor for our faculty and students," Golden says. "The Green Taxi Cab excelled in the competition because the business model encapsulates the true meaning of sustainability. It's that rare kind of business that has the potential to completely revolutionize an industry in a very positive way."

For more information on the Green Taxi Cab, visit the Web site www.greencabaz.com.

Duderstadt calls for revolution in way engineers are educated

(Continued from page 1)

the humanities and social sciences is necessary to produce young engineers with a deeper comprehension of the cultural and historical forces within which scientific and technological advances have emerged.

Such an expanded educational horizon will provide students with the ability to see their engineering pursuits as part of a larger picture of the sociological, economic, political and environmental dynamics that are shaping the 21st century.

Giving students an understanding of the impact of science, engineering and technology on shaping the quality of life in the world will "infuse them with a new spirit of adventure" for engineering research and practice, he said.

Duderstadt said the nation's universities must be committed to "creating a new breed of engineer that is better able to respond to the incredible pace of intellectual change" and to thrive in the modern global knowledge-based economy.

For the United States to maintain an edge in engineering innovation, it's also critical to "elevate the status of the en-

gineering profession," he said. That will require engineers to take on more visible roles in influencing public policy through leadership in government and business.

Such status-raising is crucial to efforts to increase the nation's investment in the kinds of basic science and engineering research that has historically spawned technological innovation, he said.

After his presentation on May 7, Duderstadt was awarded an honorary doctoral degree by ASU.

Deirdre Meldrum, dean of the Ira A. Fulton School of Engineering, called Duderstadt "a visionary leader" for the changes he is proposing for engineering education.

"It was an honor to have him at ASU and to learn more about his ideas," Meldrum said. "What we are doing at ASU to lead engineering discovery and innovative education will be a step toward realizing some of the bold ideas conceived by his Millennium Project."

Kullman, with the Ira A. Fulton School of Engineering, can be reached at (480) 965-8122 or joe.kullman@asu.edu.

Newspaper publisher Anderson joins Cronkite School as Gaylord Professor

(Continued from page 1)

goggles used by the military.

Anderson is credited with pushing a series of newsroom innovations, including the bold use of color, photography and graphics. The National Press Foundation named him Editor of the Year in 1989.

In 1990, Anderson became executive editor of Freedom Newspapers Inc., the media corporation that owns the *Register*, and two years later he was named the newspaper's executive vice president and associate publisher.

Anderson left the *Register* in 1994 to become publisher of the *Colorado Springs Gazette*. He returned to the *Register* as

publisher and chief executive officer in 1999 and was named senior vice president of Freedom Communications in 2001. He stepped down from the positions in September.

Anderson will be the third former president of the American Society of Newspaper Editors on the Cronkite School faculty, joining former *Minneapolis Star Tribune* editor Tim McGuire, the school's Frank Russell Chair in the Business of Journalism, and former *Sacramento Bee* executive editor Rick Rodriguez.

"I am delighted to join the outstanding faculty of the Cronkite School and to have this opportunity to help students think about the many ethical challenges that

journalists face," Anderson says. "In this time of change for news organizations, the one constant is the demand from customers for information that is credible and reflective of the fullness of the communities where they live."

Anderson will start just as the Cronkite School moves from its longtime home on ASU's Tempe campus to the university's new campus in downtown Phoenix, the nation's fifth-largest city.

The school's new home – a six-story, \$71 million media education complex that opens in August – will be within walking distance of major-market television, radio, online, newspaper and magazine outlets.

ASU faculty members to develop first Spanish screener for language disorders

(Continued from page 1)

important to start out with a well-specified model of what you're trying to measure, or it's basically going to have a lot of noise and error in it."

The goal is to design an assessment that is easy to administer and score by paraprofessionals in Arizona schools.

"There are still not enough highly qualified bilingual personnel in Arizona schools," Restrepo says. "So often you have people with a high school degree working as a teacher's aide or paraprofessional. We want them to be able to administer the

screener easily, without requiring knowledge of technical information."

The hope is to develop a universal screening tool for prekindergarten and kindergarten students across the United States and for speech-language pathologists to assess first- through second-grade students who have been referred by teachers, physicians or parents.

The belief is that early and accurate identification of learning impairment risk will lead to timely evaluation, identification and treatment. As a result, English language learners can be more successful academi-

cally, which ultimately affects academic achievement in U.S. schools.

"Oftentimes we get referrals of Latino children who are already too far behind in their education," Restrepo says. "So this screener will help identify children at risk and provide them with services early and access the services they should be receiving."

Adds Gorin: "Preschool- and school-aged children should be screened as soon as they go to school. It's really important for early intervention. The earlier children that have disorders get help, the better you can prevent children from failing in school – and,

as Laida said, it has clinical application and it has educational application for our own research and others as well.

"As speech-pathologists know, there are no validated language screening measures available for Spanish-speaking children. Now there will be a tool that researchers and speech-language pathologists can use to identify children at risk for language impairment."

Velasco, with the College of Liberal Arts and Sciences, can be reached at (480) 965-1156 or erica.velasco@asu.edu. Martin, with the Mary Lou Fulton College of Education, can be reached at (480) 965-4911 or verina.martin@asu.edu.

In BRIEF

Virden to retire after 30 years at ASU

Randy Virden, director of the parks and recreation management program in the School of Community Resources and Development, is retiring after 30 years at ASU.

He was the founding director of the school, which is part of the College of Public Programs at the Downtown Phoenix campus. Virden is a former chairman of the Department of Recreation Management and Tourism.

He served as graduate coordinator and was a member of the faculty in the natural resource recreation and tourism program for more than 20 years.

Upon retirement in June, Virden will become an emeritus faculty member at ASU and will move to San Jose, Calif.

Devils' Workshop participants sought

Staff members who play an instrument, sing, write poetry or present performance art are invited to participate in the Devils' Workshop 2008, the second annual staff arts festival. Performances will take place at several lunch hours in July in Katzin Concert Hall and Organ Hall (dates to be announced).

Also, artists who would like to demonstrate their art or craft are invited to give brief talks during lunch hours in July.

Artists who wish to sell their work are invited to participate in the 2008-2009 art sales, Nov. 19 and April 1, on Hayden Lawn. These two events, both from 10 a.m. to 4 p.m., are open to faculty, staff, students, alumni and their spouses.

For more information, contact Judith Smith at (480)

965-4821 or jps@asu.edu, or Mary-Beth Buesgen at (480) 965-7092 or buesgenware@gmail.com.

Weight Watchers offers summer session

Weight Watchers, in conjunction with the Employee Wellness Program, will offer a summer session that begins June 17 and ends Aug. 19.

Participants will meet in the College of Design (north building) room 64, from 11:45 a.m. to 12:30 p.m.

The cost is \$100 for the employee's initial 10-week session. Each additional 10-week session is \$90.

For more information, or to register, employees can attend any session.

ASU officials discuss PeopleSoft project

Members of the ASU community spoke about ASU's PeopleSoft project at the Alliance 2008 conference held in Las Vegas from March 10-13. ASU recently replaced its aging student and administrative systems with PeopleSoft in record time and at little cost.

Topics included ASU's strategy for implementing the PeopleSoft system, enterprise project management, and training and security methods.

Highlighted presentations included ASU's "Grade Card: Implementing PeopleSoft in Months, not Years" by Max Davis-Johnson, associate vice president of UTO.

"Alliance is a wonderful opportunity for higher-education institutions to share common experiences," Davis-Johnson says.

"It's a rare opportunity when you have 5,000 higher-ed PeopleSoft users all in the same place. Higher education is very good about sharing the good and the bad."

Since the conference in March, several universities, including the University of Auckland, the University of Queensland, the University of Arizona and the Sonora Institute of Technology in Mexico have visited ASU to talk about the university's implementation. Brown University, the University of Montreal, and City University of New York also have conducted conference calls with ASU.

ASU chooses vendor for off-site shredding

ASU, through the offices of Tom Sassatelli, Purchasing and Business Services, has centralized its document shredding services with two points of contact: one for on-site shredding and one for off-site shredding.

Sonoran Shredders has been chosen as ASU's off-site document shredding vendor. Off-site shredding consists of placing three types of secured containers throughout ASU, with 125-pound, 250-pound and 350-pound capacities. These receptacles will be emptied periodically in a small clean, quiet and secured vehicle by employees with badges and uniforms. A document of destruction will be provided if needed.

Collected material will be transferred to a paper mill near ASU, where it will be processed and recycled for further use.

For more information, contact Pilar Sanchez at (480) 734-0910 or pilar@sonoranshredders.com, or Ernesto Sanchez at (602) 478-6298 or ernesto@sonoranshredders.com.

Baral to chair Department of Computer Science and Engineering

By Joe Kullman and Emily Falkner

Attracting top high school students and undergraduates to the world of computer technology innovation is high on the priority list of professor Chitta Baral, as he takes on his new role as chair of the Department of Computer Science and Engineering in the School of Computing and Informatics.

The school is part of ASU's Ira A. Fulton School of Engineering.

"Sometimes it's difficult for high school students to distinguish between computers and computer science," Baral says. "They're seeing computers only from a user's perspective, but not seeing everything that is behind the technology that enables computers to do all the things that they can do today."

In addition to an outreach program aimed at high schoolers, Baral plans for his department to develop an introductory course for undergraduates designed to

make students aware "of all the top-notch discoveries and inventions in computer science" to pique their interest in majoring in the field.



Chitta Baral

"There are so many interesting and exciting challenges," he says. "It's not just stereotypical programming. It's about making computers smarter, designing better graphics, creating the next Google or Digg.com. There are so many lucrative career options to consider."

Baral, who earned a doctorate in computer science from the University of Maryland in 1991, came to ASU in 1999 after about eight years on the faculty of the University of Texas-El Paso.

During that time, he also was a visiting scientist at i2 Technologies in Dallas, and

a visiting faculty member in the computer and information science department at Linkoping University in Sweden. He has been a consultant to the Translational Genomics Research Institute (TGen) in Phoenix.

Baral is the author of a textbook on knowledge representation and reasoning. His research involves studying biologists' knowledge of cell behavior, looking at cell signaling and gene-protein interactions and examining various kinds of reasoning used for determining the side effects of drugs, explaining abnormal cell behavior and designing drug therapy.

He has done research in bioinformatics, artificial intelligence, logic programming and cognitive robotics. He is an associate editor of the *Journal of Artificial Intelligence Research* and an editor of the *ACM (Association for Computing Machinery) Transactions of Computational Logic*.

Baral has been a recipient of presti-

gious National Science Foundation (NSF) awards – the NSF Career Award and the NSF Research Initiation Award – and finished in first place in the 1997 American Association for Artificial Intelligence robot contest.

In addition to NSF funding, his research has been supported by NASA, the Office of Naval Research and Science Foundation Arizona.

"An accomplished and forward-thinking scholar and researcher such as Chitta Baral is someone who can take us to the next level in computer science and computer engineering education," says Sethuraman Panchanathan, director of the School of Computing and Informatics.

Kullman, with the Ira A. Fulton School of Engineering, can be reached at (480) 965-8122 or joe.kullman@asu.edu. Falkner, with the Ira A. Fulton School of Engineering, can be reached at (480) 965-3190 or emily.falkner@asu.edu.



JESSICA SLATER PHOTO

Ira A. Fulton School of Engineering leaders recently held a celebration for the Carl Hayden High School Falcon Robotics team, which won the Chairman's Award in the international FIRST Robotics Competition in April in Atlanta. It's the event's most prestigious award, recognizing the team that

best represents a model for other robotics teams to emulate and best embodies the goals of FIRST (For Inspiration and Recognition of Science and Technology), a nonprofit group that organizes programs and competitions to inspire a respect for science and technology among young students.

ASU's expertise helps high school team conquer international robotics competition

By Joe Kullman

Carl Hayden High School's Falcon Robotics team celebrated its recent victory in an international robotics competition at a May 7 event conducted by ASU's Ira A. Fulton School of Engineering.

In April, the Phoenix high school team bested 350 other high school robotics teams from 26 countries in taking the first-place prize in the competition in Atlanta.

Many of the Falcon team's 42 members came to the celebration at ASU for a demonstration of computer-game development, an exchange of ideas with ASU robotics experts, a congratulatory presentation by the engineering school's dean, Deirdre Meldrum, and its executive dean, Paul Johnson, a dinner and a tour of the engineering school's robotics facilities.

The engineering school has played a role in the education of the Falcon team through its outreach efforts to spark interest in science, engineering and technology among K-12 students.

With support of a U.S. Department of Education grant, faculty members Wei-Tek Tsai, Gary Bitter, Yinong Chen, James Collofello and Yann-Hang Lee have been developing high school computing curriculum since 2006. Robotics programming has been used to teach computing concepts, Chen says.

With funding from a Science Foundation Arizona grant, Chen taught a robotics-based computing class to a group of Arizona high school teachers in 2007. Two of the teachers, Steu Mann and Eira Rodriguez, were from Carl Hayden High School.

That led Chen to meet Carl Hayden High School teacher Faridodon Lajvardi and Allan Cameron, the founders of the Falcon Robotics team. They now are working together, using the attraction of robotics to in-

terest students in all aspects of engineering.

They also are working with Intel Corp. to provide scholarships for two of the Falcon Robotics team's programmers to attend the engineering school's Summer Robotics Camp in June and July.

The camp experience "will prepare (the students) to improve the programming of their robots for future competitions," Chen says.

"We are celebrating not just our success in robot building," Cameron says. "We are celebrating how our students have been inspired – and how they are inspiring others about the fun of engineering."

Falcon team members have been giving demonstrations of their robotics work to schoolchildren and community groups.

"We are influencing the culture of our neighborhoods, the state and the country," Cameron says. "Our robotics team has become a model for those who want to positively affect their world."

Winning the international robotics competition was "a thrilling accomplishment," he says, "but broadening our culture's appreciation of science, technology, engineering and math is the goal we are really striving for, and the celebration of our victory by ASU's engineering school is a great encouragement to us."

The involvement of ASU's engineering school faculty "has raised the expectations, ambitions and academic achievement levels of students," he says. "We feel like ASU is our university, and we look forward to more collaboration. I think there are quite a few future ASU Sun Devils at Carl Hayden High School who will be studying in the Ira A. Fulton School of Engineering."

Kullman, with the Ira A. Fulton School of Engineering, can be reached at (480) 965-8122 or joe.kullman@asu.edu.

Osher Foundation's \$1 million endowment assists ASU students

By Matt Crum

A \$1 million endowment from the Bernard Osher Foundation, plus an additional \$50,000 bridge grant for the 2008-2009 academic year, will provide scholarships annually to 20 or more ASU students attending the West campus.

The scholarship fund targets adult students returning to school after a gap in their pursuit of a bachelor's degree. Unlike many other scholarships, Osher Re-entry Scholarships are available to part-time as well as full-time students.

"This generous gift further solidifies our strong working relationship with the Bernard Osher Foundation," says John Hepburn, dean of ASU's College of Human Services, which also houses the Osher Lifelong Learning Institute at ASU.

For the past two years, the Bernard Osher Foundation has provided \$50,000 annually in scholarships for re-entry students in the College of Human Services, plus three other ASU colleges and schools located on the West campus: the New College of Interdisciplinary Arts and Sciences, Teacher Education and Leadership, and Global Management and Leadership.

Establishment of the \$1 million endowment makes the scholarship program a permanent fixture on the West campus.

OFASU's four campuses, the West campus possesses the highest percentage of undergraduate students in the 25-to-50 age range (32.9 percent, as of fall 2007).

"We're interested in seeing more people earn a bachelor's degree," says Andy Lynch, program officer for the Bernard Osher Foundation. "Students returning to school later in life often have family and financial obligations greater than those of traditional students. At the same time, re-entry students regularly receive less financial aid support. The Osher Re-entry Scholarship is intended to fill that gap."

Re-entry students are a tremendous asset to ASU's student body, according to Osher Re-entry Scholarship faculty adviser Vincent Waldron, professor of communication studies and faculty research director of ASU's Osher Lifelong Learning Institute.

"Most re-entry students are bright, hard-working and well-organized, and they also possess life experiences that enrich classroom discourse," Waldron says.

"The scholarship I received from the Osher Foundation helped me continue my education without delay, and I am very grateful for their support," adds Bonnie Wentzel, a previous scholarship recipient. "It took me 25 years to become a Sun Devil. As a lifelong Valley resident, a degree from ASU was always my goal."

Wentzel says support from her husband and three children was critical to her pursuit of a bachelor's degree. She graduated from the College of Human Services and the Barrett Honors College in May 2007.

Wentzel is pursuing a master's degree in communication studies, working toward a goal of teaching at the college level and establishing a nonprofit organization dedicated to helping other multiple-role students who return to college later in life.

As part of her master's degree program, Wentzel is organizing an April conference at the West campus designed to "Celebrate Adults in the College Classroom." Students, college and university support staff, and community organization representatives will be invited.

"Bonnie is a perfect example of the type of talented, enthusiastic re-entry student who can benefit from an Osher Re-entry Scholarship," Waldron says.

Full-time undergraduate students in any of the four colleges on ASU's West campus typically are awarded Osher scholarships worth \$2,000 or more. Part-time students are eligible for smaller awards, depending on the tuition bills they face. Recipients are chosen based on factors such as academic performance and financial need.

Crum, with Public Affairs at the West campus, can be reached at (602) 543-5209 or matthew.crum@asu.edu.

Undergraduates at ASU bring passion to research projects

By Corey Schubert

Valencia Johnson points to symbols on a research poster and makes her message very clear: these are not just numbers on a page.

"These are women who have suffered childhood emotional, physical and sexual abuse, and they need help," says Johnson, a sophomore at the School of Community Resources and Development.

She's working closely with Dominique Roe-Sepowitz of the School of Social Work on a faculty research project focusing on women from a Phoenix-area residential exiting program for prostitutes.

The empathy and passion in Johnson's voice is contagious. It spread among the faculty and staff at the College of Public Programs April 30 when she won a presentation contest during the college's first symposium highlighting undergraduate research.

The college in downtown Phoenix is among numerous ASU schools and colleges that offer undergrads the chance to work with faculty members on a faculty research project each semester. The Office of the Provost, in collaboration with the Office of the Vice President for Research, plans to develop a funding mechanism that will expand undergraduate research opportunities across the university within the next year, says Delia Saenz, ASU's vice provost for undergraduate education.

"We think it's very important to incorporate research into the undergraduate experience because it reaps benefits – not only for the students, but also for the departments and the colleges that are involved," Saenz says. "Involvement in research with faculty is a key to undergraduate student engagement and success; it is linked to both persistence and graduation."

Other academic units that offer formal undergraduate research programs include the College of Nursing and Healthcare Innovation, W. P. Carey School of Business, Morrison School of Management and Agribusiness, the College of Teacher Education and Leadership, the School of Life Sciences, the Ira A. Fulton School of Engineering, and the College of Liberal Arts and Sciences.

At the College of Public Programs, upon recommendation of a faculty member, students can work for at least 10 hours a week with an instructor during their undergraduate education. For the first semester, they get a \$500 scholarship from the dean's office. They receive a \$1,000 scholarship for the second semester and a



FELIPE RUIZ-ACOSTA PHOTO

Dominique Roe-Sepowitz, left, of ASU's School of Social Work, and Valencia Johnson, a sophomore at the School of Community Resources and Development, examine research for a project focusing on women

\$1,500 scholarship for the following semesters.

Fourteen students have been involved in undergrad research projects with faculty at the college so far.

For winning the contest, Johnson will receive a small travel grant to a conference, where she'll present her research to colleagues in the field.

The symposium took place in tandem with a scholars' reception that brought together about 50 students who were among those on the dean's list this semester. Guest speaker Gordon Shockley, an assistant professor at the School of Community Resources and

from a Phoenix-area residential exiting program for prostitutes. Numerous ASU schools and colleges offer undergrads the chance to work with faculty members on a faculty research project each semester.

Development, spoke about his own educational journey.

Other student research projects presented at the event included an analysis of state tourism brochures to determine the ways gender is marketed in tourism, an examination of bias and self-determination among social workers, and an assessment of the ways religious communities can help elderly victims of abuse.

For information about undergraduate research projects at the college, contact Dana Newell at (602) 496-0416.

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Morrison Institute study takes closer look at state's 'megapolitan' future

By Nicole Haas

Two out of three Americans are expected to live in just 20 "megapolitan" areas in about 30 years, and one of these megapolitans – the Sun Corridor – is in Arizona.

Arizona already is one of the most urban and fastest-growing states, and much of its projected growth is expected to be in the Sun Corridor, which stretches from Santa Cruz and Cochise counties to the center of Yavapai County.

"Megapolitan: Arizona's Sun Corridor," a report just released by Morrison Institute for Public Policy at ASU, is the first comprehensive analysis of this new geography.

The Morrison Institute's Grady Gammage Jr., Rob Melnick and Nancy Welch wrote the report along with ASU's John Stuart Hall and Robert E. Lang of Virginia Tech.

People have been predicting for 50 years that Phoenix and Tucson would grow together into one giant desert conglomeration. A diverse pattern of land ownership in central and southern Arizona most likely will prevent that. But what is happening now, according to the report,

"The megapolitan concept is powerful in part because it reinforces the strength of fundamental forces shaping Arizona and the world."

– Rob Melnick

is that the economies of metropolitan Phoenix and metropolitan Tucson are merging.

With about 5 million people now and nearly 8 million projected for 2030, the Sun Corridor will be at the heart of Arizona's expansion – and the state's opportunities and challenges, too.

Predictions of growth are not new. But because growth and development are happening nationwide at an unprecedented pace, the "mega" concept is mov-

ing into the mainstream of public policy and planning.

"The megapolitan concept is powerful in part because it reinforces the strength of fundamental forces shaping Arizona and the world," Melnick says, adding that its strength lies in the recognition that an economic merger brought on by overlapping community patterns and shared interests is more important than a physical one.

How the Sun Corridor will change in the short term depends largely on choices in five "megaton" areas:

- Global connections.
- Governance.
- The "trillion-dollar questions" related to residential and commercial development plus infrastructure.
- Water.
- Quality of life.

The report concludes with a critical question: "Do you want to live in the Sun Corridor?"

Adds Gammage: "The future of the Sun Corridor isn't inevitably either rosy or bleak. It is what we make it. What can we do collectively to make the Sun Corridor somewhere we want to stay?"

"Megapolitan: Arizona's Sun Corridor" is one of the first reports in the nation to analyze one megapolitan area. Robert Lang, co-director of the Metropolitan Institute at Virginia Tech and a visiting ASU scholar in 2006, helped develop the megapolitan concept in 2005 as part of projecting where the next 100 million Americans would live. Lang's definition is based on economic interdependence, population and the U.S. Census Bureau's "combined statistical area" designation.

To download "Megapolitan: Arizona's Sun Corridor," visit the Web site www.morrisoninstitute.org.

Funding for the report was provided by the Stardust Foundation, Arizona Public Service Corp., Salt River Project, and the UniSource Energy Corp. family of companies: Tucson Electric Power and UniSource Energy Services.

The Morrison Institute for Public Policy conducts research that informs, advises, and assists Arizonans. It is a part of the ASU School of Public Affairs and College of Public Programs.

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5 ASU students make most of chance to explore sustainable energy

By Karen Leland

The Sustainable Energy Fellowship has announced its 2008 cohort of student fellows. The students, selected from a highly competitive pool from around the country, have begun the yearlong fellowship process at an intensive weeklong program to explore the technologies, policies and economics of sustainable energy.

Researchers from ASU, Cornell University, Duke University, the Massachusetts Institute of Technology and the University of Michigan designed and direct the fellowship to be a unique educational and research experience for students to address the global need for the use of energy reduction designs supplemented by renewable energy technologies.

During the weeklong program, which ends May 31, students are exposed to research and education in energy production, conversion, storage, and sources that are environmentally friendly and renewable such as wind, solar, biomass, and geothermal. Additionally, students are being educated in effective Life Cycle Management Programs and Innovations that can

be used by manufacturers and the service sector.

Leading practitioners from industry, government, and nongovernmental agencies supplement the learning experience by providing divergent points of view and technical expertise. This year's program took place at Duke University, and expenses for accepted students were underwritten by Shell and Ford Motor companies.

"This is a great venue to expose some of the nation's most talented students to sustainability and sustainable engineering research and education programs being undertaken at ASU, and we hope to excite them to continue advanced studies with our School of Sustainability," says Jay Golden, the director of ASU's National Center of Excellence for SMART Innovations and an assistant professor in the new School of Sustainability. "We also have the opportunity to interact and continue to position our Fellows with some of the leading industrialists, politicians, and thought leaders in energy, sustainability, and climate change."

Golden, who directs the fellowship with colleagues Andy Hoffman from the University of Michigan, Lincoln Pratson of Duke University, Jeff Tester of MIT and Larry Walker of Cornell, sees

an urgent and growing need for this kind of transdisciplinary training.

"For the first time in history, the world is predominantly urban and growing more urban every day," Golden says. "This growing population is primarily served by nonrenewable energy sources that can have adverse impacts to the environment while also being susceptible to price fluctuations and availability."

The fellowship chose 40 students from 20 universities. Among the universities represented in addition to ASU, Duke, Cornell, MIT and Michigan are: Stanford, UC-Berkeley, Penn State, Georgetown, Columbia, Brandeis, Smith College, University of North Carolina, Wisconsin, Vanderbilt, USC, and Virginia Tech.

Students chosen from ASU are Jessica Katz (civil and environmental engineering), Yeshpal Gupta (mechanical and aerospace engineering), Maura McGarry (meteorological and atmospheric science), Helme Castro (material sciences and engineering) and Laurence Rosenberg (School of Sustainability).

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Berman to lead College of Law as new dean

(Continued from page 1)

"From the first meeting, he impressed us all with his energy and ideas for building excellence in the law school, including greater interdisciplinary connections and new academic programs that will increase access, excellence and impact. He has terrific support from the faculty of the law school, and from the other deans. I am very excited we have attracted him here."

Berman begins his deanship with an ambitious agenda built on the idea that the College of Law is poised for transformative growth in both the quality and scope of its student body, its faculty, its programs and its physical plant.

"Ultimately, I envision a truly multidisciplinary legal center, where future lawyers develop essential skills for both transnational and local legal practice, where leading scholars from around the world come to engage in high-level discourse on law's role in society, where policy-makers can address the pressing social issues of our time, where corporate leaders can find the latest information on the legal regulation of cutting-edge scientific and technological innovation, and where even those who do not intend to be lawyers can spend at least a year exploring law's crucial role in a multicultural democracy embedded within an increasingly interconnected world," Berman says.

Berman will succeed the college's current dean, Patricia D. White, who is stepping down after nearly a decade of leadership of the college to return to teaching. She will be a visiting professor at Georgetown University for one year before returning to the College of Law to teach tax law.

At Connecticut, Berman has taught cyberspace law, conflict of laws, civil procedure and copyright law, and an interdisciplinary seminar titled "Law, Culture and Community," in addition to a course on federal courts and the appellate process.

Berman, who was a visiting professor and visiting research scholar (2006-2007) in the Princeton University Program in Law and Public Affairs, is the author of a half-dozen scholarly books and more than a dozen scholarly journal articles. He has given more than 75 invited lectures and conference presentations and is frequently cited as a legal expert by the news media.

Berman was awarded a University of Connecticut Provost's Research Fellowship in the spring of 2004 and was named one of "Connecticut's New Leaders of the Law" by the Connecticut Law Tribune in the fall of 2004. He is a member of the Association of American Law Schools, the American Society of International Law, and the Association for the Study of Law, Culture and the Humanities.

His activities outside the field of law include being founder and artistic director of the Spin Theater; the chief administrative officer for another theater company, the Wooster Group; and administrative director of the Ontological-Hysteric Theater at Saint Mark's Church. All three theater companies are nonprofit and located in New York.

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Krauss, author of 'The Physics of Star Trek,' to join ASU faculty

(Continued from page 1)

use-inspired research, in the Biodesign Institute and across our colleges and schools. We also have tremendous interest in fundamental research, and Dr. Krauss will help define for ASU a major, comprehensive initiative, to answer the complex questions of our time.

"It's foolish for us to believe that all origins have already happened. On the eve of a set of very rapid changes in our world, the only kind of origins we can observe, can truly document, are the origins of the future. ASU aims to be a global leader in this area. This new, far-reaching initiative will help us build strong links with many of our existing research centers, including the Institute of Human Origins and the Beyond Center for Fundamental Concepts in Science."

"Human beings have always been interested in the origins around them, whether of the universe or of Earth," says Sander van der Leeuw, director of ASU's School of Human Evolution and Social Change. "Arizona State University has achieved an international reputation in human origins, with our Institute of Human Origins and our published research

on the origins of modern humans and the origins of human uniqueness. While we already are addressing many questions of origins, there is a lot of space for a broader origins initiative at ASU, to address the origins story in a wider sense."

Adds Paul Davies, a theoretical physicist, cosmologist and director of ASU's Beyond Center for Fundamental Concepts in Science: "ASU has scored a major success in recruiting Krauss. He will act as a magnet for other world-class researchers. Krauss' appointment will greatly strengthen ASU's expertise in cosmology – the study of the origin, evolution and fate of the universe as a whole."

"Cosmology and its related area, particle astrophysics, are probably among the most exciting experimental and theoretical parts of physics and perhaps all of science, right now," Krauss says. "We're opening new windows on the universe, and with that, our understanding of our place within it is dramatically changing."

When he looks across ASU, Krauss sees many complementary aspects for a comprehensive origins initiative.

"There's great strength in human origins, sustainability, Biodesign, astrophysics, geology, life sciences and astrobiology," Krauss says. "In fact, the person in Cleveland who discovered Lucy and built the human origins program at the Cleveland Museum of Natural History, where I am currently a trustee, is of course, Don Johanson, who's at ASU."

"From a research perspective, it will be incredibly interesting to mesh everything from cosmology to culture and at the same time to think of new ways to teach undergraduates. We'll use the unifying principles to teach as well, and to try to get students from humanities and science together and interested in courses from each other's areas."

"Lawrence Krauss' research and approach to teaching transcends boundaries and fits squarely with the mission of the college to integrate and innovate across the disciplines of natural sciences, social sciences and humanities," says Sid Bacon, dean of natural sciences in the College of Liberal Arts and Sciences.

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Mars rover discovers Yellowstone-like hot springs deposits

(Continued from page 1)

because the rovers don't carry instruments that can detect microscopic life," adds Farmer, who is one of the paper's co-authors. "What we can say is that this was once a habitable environment where liquid water and the energy needed for life were present."

NASA landed the two Mars rovers, Spirit and Opportunity, on opposite sides of the planet in January 2004 to look for rocks showing the presence of water. As of now, the rovers are more than four Earth years into a mission designed to last just three months. Despite dust collecting on their solar panels and mechanical wear-and-tear, both are continuing to explore.

Dawning realization

The silica discovery unfolded in slow motion as Spirit emerged from hibernation after its second Martian winter. The rover spent those months on the edge of a football-field-size feature dubbed "Home Plate."

Home Plate lies in the Columbia Hills, a range of low hills in the middle of Gusev Crater, which spans 100 miles (170 kilometers) wide. The Columbia Hills rise about 300 feet (100 meters) above the flat lava plain that fills Gusev, but their structure and origin remain unclear to scientists.

"We were going back to an area of exposed soil called the Tyrone site, which we didn't have time to investigate before winter began," says Steven Ruff, a faculty research associate at ASU's Mars Space Flight Facility.

Ruff is another of the paper's co-authors.

The Tyrone soil proved rich in sulfate minerals, a phenomenon seen by Spirit at other locations in the Columbia Hills, where Spirit has been exploring since late 2004. While sulfates can form in several ways, water is involved in most.

"While parked next to Tyrone, we used the Mini-TES to look at some nearby light-toned and knobby outcrops," Ruff says.

Mini-TES is short for the Miniature Thermal Emission Spectrometer, an instrument placed on each rover to identify minerals by their infrared spectrum. Ruff is the scientist in charge of day-to-day operations for Mini-TES, which was designed by ASU's Philip Christensen, a Regents' Professor of Geological Sciences and director of the Mars Space Flight Facility.

Silica surprise

"It wasn't clear what we were seeing in the knobby outcrops, because they were contaminated with dust and wind-blown soil," Ruff says. "But I thought they might be silica-rich."

Additional surveys with Mini-TES identified other outcrops, similarly contaminated but likewise hinting at silica.

As it happened, the rover's jammed right front wheel inadvertently produced the "Aha!" moment. Ruff and others on the science team noticed that the stuck wheel had gouged a trench a few inches deep through the soil as the rover drove ahead in reverse, dragging the crippled wheel behind.

"The trench looked bright white," Ruff says. "But we thought initially it was just more sulfate minerals."

Over the winter, however, Ruff got curious.

"We aimed Mini-TES at the trench, and it showed a clear silica spec-

trum," he says. "This prompted us to drive back to it, where the rover's alpha particle X-ray spectrometer told us the white soil was more than 90 percent silica. That's a record high for silica on Mars."

Fumaroles and hot springs

Making such pure silica requires a lot of water, Ruff says.

"On Earth, the only way to have this kind of silica enrichment is by hot water reacting with rocks," he says.

This, Ruff says, links the silica with Home Plate, which the rover team already knew was a volcanic feature.

"Home Plate came from an explosive volcanic event with water or ice being involved," he says. "We saw where rocks were thrown into the air and landed to make small indentations in the soft, wet ash sediment around the vent."

Once alerted what to look for, the scientists found more silica in many places nearby.

"It's not just the soil in a trench in one place," Ruff says. "It's a broader story of outcrops that extend 50 meters (about 150 feet) away from Home Plate. It's not a small scale, modest phenomenon."

The combination of geothermal heat and water produces a hydrothermal system like the one that powers the hot springs, geysers, mudpots and fumaroles (steam vents) of Yellowstone National Park.

Capturing evidence

Farmer helped with the mineral identification by supplying a variety of high-silica rock samples from his laboratory collection. They included rocks from hot spring and fumarole deposits in Yellowstone and New Zealand. These rocks provided reference spectra for Mini-TES.

"The best fit we got was with siliceous sinter," he says, referring to deposits of "opal," a type of amorphous silica laid down by hot springs.

Farmer explains that hydrothermal systems generally precipitate silica and other minerals as heated groundwater rises, cools and gives off dissolved gases.

"If there were organisms living there, our terrestrial experience shows that microbes can easily be entrapped and preserved in the deposits," he says.

Silica is an excellent medium for capturing and preserving traces of microbial life, Farmer says.

Whether Mars ever had life is unknown. But if there was once a Martian biosphere, both Ruff and Farmer say the deposits around fumaroles and hot springs are ideal places to start hunting for it.

Although the microscopic imagers on the current rovers cannot resolve the microbial remains seen in terrestrial hot spring deposits, Farmer notes that the new microscopic imagers now in development for future rovers should let scientists detect such features *in situ*.

"We just need to deliver such instruments to the right place," Farmer says. "The discoveries at Home Plate have helped us know where to go next."

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Scientists unveil top 10 list of new species in 2007, issue 'SOS' report card

(Continued from page 1)

taxon experts who made the selection of the top 10 from the thousands of species described in calendar year 2007 is helping draw attention to biodiversity, the field of taxonomy, and the importance of natural history museums and botanical gardens in a fun-filled way," says Quentin Wheeler, an entomologist and director of ASU's International Institute for Species Exploration. "We live in an exciting time. A new generation of tools are coming online that will vastly accelerate the rate at which we are able to discover and describe species. Most people do not realize just how incomplete our knowledge of Earth's species is or the steady rate at which taxonomists are exploring that diversity. In 2006, for example, an average of nearly 50 species per day were discovered and named."

"We are surrounded by such an exuberance of species diversity

that we too often take it for granted. Charting the species of the world and their unique attributes are essential parts of understanding the history of life and is in our own self-interest."

The May 23 announcements fell on the anniversary of the birth of Carolus Linnaeus, who initiated the modern system of plant and animal names and classifications. The 300th anniversary of his birth was celebrated worldwide in 2007, and this year marks the 250th anniversary of the beginning of animal naming.

The majority of the 16,969 species described (named) in 2006 were invertebrate animals and vascular plants, which according to the SOS report is consistent with recent years and reflects, in part, "our profound ignorance of many of the most species-rich taxa inhabiting the planet."

There are about 1.8 million species that have been described since Linnaeus initiated the modern systems for naming plants and

animals in the 18th century. Scientists estimate there are between 2 million and 100 million species on Earth.

According to the authors of the SOS report: "There are many reasons that scientists explore Earth's species: to discover and document the results of evolutionary history; to learn the species that comprise the ecosystems upon which life on our planet depends; to establish baseline knowledge of the planet's species and their distribution so that non-native pests and vectors of disease may be detected; to inform and enable conservation biology and resource management."

The State of Observed Species report will be issued annually on May 23 by ASU's International Institute for Species Exploration, along with the top 10 new species from the previous year.

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Jamie Adamson



Laurie Dermer



Robert Dominguez



Emily Falkner



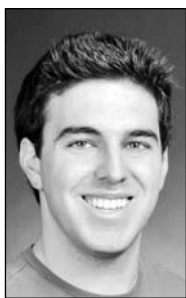
Jonathan Kelley



Ian Lee



Gabriella Sanchez



Taylor Spears



Eva Wingren

Students studying abroad extend ASU's global reach

By Sarah Auffret

At least 21 ASU students and recent graduates will be studying and teaching abroad next year, having won prestigious Fulbright and National Security Education Program (NSEP) awards. Their destinations include 17 different countries.

Their projects range from studying the elections process in Russia to analyzing Arabic media in Egypt. One student will examine the development of nanotechnology in Mexico, while another plans to explore the creative and technical aspects of Samoan operas in New Zealand.

Each award winner developed a proposal and applied for a specific country. ASU students are especially successful at winning these overseas study grants, partly because of ASU's emphasis on global studies and foreign languages. Other factors are the strong support they receive from faculty mentors and word-of-mouth among peers, particularly at Barrett, the Honors College.

ASU led the country in NSEPs last year and was fourth-highest among public schools for Fulbright awards. This year, ASU has won nine NSEPs and 14 Fulbrights so far, though two students declined the Fulbright awards to pursue other opportunities.

Fulbright students find specialists who are willing to work with them on their chosen study project, or they teach English. All receive full travel, living and academic expenses for an academic year. The NSEP awards provide up to \$20,000 for a year's study in countries that are outside Western Europe, Australia and New Zealand.

Both programs are aimed at increasing international understanding and, in the NSEP program, providing a base of future leaders in parts of the world that are of critical interest to the United States. Three students will be in Russia next year and three in Egypt, with the rest spread throughout the globe.

The following students are 2008 Fulbright Scholars:

- Jamie Adamson, a December graduate in political science with a concentration in international studies, will teach English in Taiwan. After returning, she plans to apply

to Teach for America, then get a graduate degree and work for the U.S. State Department.

- Courtney-Savali Andrews, a doctoral student in opera and musical theatre conducting, will go to New Zealand to study and document the techniques of five Samoan operas. As an accomplished musician whose mother was a native of American Samoa, she hopes to introduce one of the operas in the United States after her return.

- Roberto Dominguez, who graduated in December in economics and Spanish, plans to teach English in Spain. He also hopes to study the impact the European Union has had on the country's economy and its citizens, the citizens' language dialects and their standards of living.

- Emily Falkner, who just received a master's degree in mass communication, will teach English to university students in Poland. At ASU, she created an educational and cultural blog that will be used in class activities and assignments for Slavic language classes.

- Jonathan Kelley, a December graduate in communication, plans to teach English in South Korea. He spent the last two summers teaching English in the Czech Republic, and he hopes eventually to publish journal articles about his international communication experiences.

- Ian Lee, who graduated in December in broadcast journalism, has an ambitious project to analyze Arabic and English press in Cairo, Egypt, comparing coverage in the two media of major historical events over the past 10 years. He also will work on an electronic journal at American University of Cairo's Center for Electronic Journalism.

- Cara Steiner Kiggins, a graduate last year in anthropology who was involved in refugee resettlement during her time at ASU, will pursue a graduate degree in forced migration and refugee studies at the American University in Cairo, Egypt. She is director of Community Outreach and Advocacy for Refugees, an organization that has grown from an ASU student club to a mature nonprofit.

- Zachary Pirtle, a master's student in environmental engineering, will study developments in nanotechnology in Mexico and their consequences, interviewing key researchers and scientists. Mexico is on the verge of implementing fundamental changes in its science policy, with nanotechnology research at the center.

- Ryan Sandell, who just received a bachelor's in music and philosophy, will study for his master's in Indo-European linguistics, at the University of Leiden in the Netherlands. Though he concentrated his undergraduate career on clarinet performance, he has shifted his focus to language, planning an academic career as a linguist.

- Taylor Spears, a May graduate in economics and math, plans to enter a master's program in science and technology policy at the University of Sussex in England. As one of the most outstanding graduates from Barrett, he has been involved in sustainability initiatives since he was a freshman, and he has been an intern for the Consortium for Science, Policy and Outcomes.

- Eva Wingren, who graduated in May in anthropology, will teach English in Malaysia. She also hopes to do research into the integration of traditional and Western medical practices, and the extent to which the two systems coexist. Eventually she wants to work in public health.

- Julianne Yee, a May graduate in finance and English literature, plans to teach English in Hong Kong. She also hopes to improve her facility with speaking Cantonese and to eventually attend law school.

These students are 2008 NSEP Scholars:

- Francine Banner, a doctoral student in justice and social inquiry, will study the Russian language in Moscow and will conduct research on Chechen women's experiences during and after the Russo-Chechen wars.

- Laurie Dermer, a senior in Slavic languages and language theory, also will go to Russia to study the language. She will examine Russian media reports on the Russian government's foreign policy, particularly with respect to its involvement in the Middle East.

- Matthew Jacobs, a senior in global studies, will attend the University of Sarajevo in Bosnia and Herzegovina to study the Bosnian, Croatian and Serbian languages. He hopes to examine the role of languages in ethnic tension.

- Derek Kedziora, a senior in Slavic languages and literature, is headed for Kyrgyzstan in Central Asia, a strategically important country in the struggle against the Taliban. As interethnic relations and language policy are intertwined, he will study the Russian and Kyrgyz languages and how they relate to security issues.

- Seth Pate, a master's student in political science, will study at the University of Hyderabad in India, researching India's effort to use the Hindi language as a tool to create national unity.

- Gabriella Sanchez, a doctoral student in justice and social inquiry, plans to spend more than a year in Tangier, Morocco, studying the increase in human and drug trafficking networks.

- Sara Schwalm, a senior in Slavic languages and political science, will study in Russia for a year, both to investigate the role of Russian media corruption in the 2008 presidential election and to increase her fluency in Russian.

- Tegan Tonge, who received an anthropology degree in May, will go to Egypt to examine the problem of the arrival of thousands of refugees from Africa and the Middle East. She will study Arabic at the American University in Cairo, take classes in the university's refugee studies program and volunteer with a refugee agency.

- Samantha Willey, a senior in Spanish and political science, is headed for Brazil to complete two projects. She hopes to spend one semester at a field school program in the Amazon rainforest, studying how Brazil-U.S. biofuel partnerships affect human ecology and the Amazon. In the second semester, she aims to improve her fluency in Portuguese at a language school in Maceio, Brazil.

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Downtown Phoenix campus classes aim to reduce teacher shortage

By Julie Newberg

An expanding population. Low retention rates. New educational requirements. These are some of the factors that influence the teacher shortage in Arizona.

What's especially needed are teachers in subjects such as math, science and special education.

ASU's College of Teacher Education and Leadership is addressing the shortage in the state by expanding educational offerings to the Downtown Phoenix campus.

Students who are interested in pursuing an education degree to become a teacher can take classes downtown this fall semester.

"We've established a venue to bring educational programs downtown to focus on urban, K-12 education needs," says Heather Carter, director of Education Downtown.

The College of Teacher Education and Leadership will offer undergraduate and graduate programs downtown.

Undergraduate students who are interested in becoming teachers can take all of their lower-division courses at the Downtown Phoenix campus. General education and liberal arts courses are offered through the School of Letters and Sciences.

"We are prepared to serve generations of teachers through robust offerings in science, languages, social sciences and humanities," says Frederick C. Corey, director of the School of Letters and Sciences.

Those future teachers can practice their skills in a special program for ASU students in the Madison School District. They will receive close supervision, experience in learning how to teach and plenty of opportunities to work with students.

"We have had existing partnerships for a number of years in the Madison and Osborn school districts, and we are looking forward to working with students downtown – putting them in schools where they really become much appreciated as future teachers,"

says Mari Koerner, dean of the College of Teacher Education and Leadership. "Offering the programs which have produced successful teachers for years is a real advantage that ASU has. We can offer programs that we know work at different campuses. We know there are many advantages to being immersed in schools while students are taking their coursework."

Education students who complete "district-based" teacher preparation typically continue in their teaching career longer than students trained in a more traditional program.

"They have been trained in the district environment, so they know the nuances of what it is like to go into a school," Carter says. "Madison is an elementary undergraduate program where they leave with a full English as a Second Language endorsement. That is very marketable."

Undergraduate degrees are not the only avenue to becoming a teacher. Many College of Teacher Education and Leadership students are pursuing teaching as a career via the Induction, Masters and Certification route now offered at the Downtown Phoenix campus.

Programs such as Teach For America and Phoenix Teaching Fellows recruit highly dedicated people who have a bachelor's degree to work as paid teachers in low-income schools. These teachers enter the classroom on an intern teaching certificate, while they simultaneously are enrolled in a teacher preparation program.

"Our partnership with Teach For America is award-winning, capturing both the 'Best of the West' award for higher education and the ASU Presidential Award for Social Embeddedness," Carter says.

One of the unique opportunities with this program is that students earn a master's degree in elementary education, secondary education or special education while simultaneously working on state certification requirements.

Programs such as this require extensive support and mentoring.

"The first year of teaching is so challenging," Carter says. "Teaching is usually done in isolation. It's one adult with 30 kids sitting in front of you. You need mentoring and support systems in your first year. We know this is important, so the College of Teacher Education and Leadership is providing both university preparation classes, and supervision and mentoring, for new teachers in Phoenix in their own classrooms. The College of Teacher Education and Leadership will have 18 full-time faculty out in the K-12 classrooms supporting intern teachers in the fall."

Programs such as Teach For America and Phoenix Teaching Fellows are ideal for people who have their bachelor's degree and are hired by school districts to be teachers.

Koerner says that because ASU and the College of Teacher Education and Leadership are committed to preparing teachers for the classrooms of Arizona, the university is able to offer many possibilities to students who are downtown.

Students also can work toward their education master's degree in the Osborn School District via the Masters and Certification program. This program allows teachers to work toward certification within one year in a district-based environment, then interview for a teaching job and finish their master's degrees.

"This is a fast-track program, whereby students have the luxury of studying to be a teacher in a professional development program before they take on the full responsibility of teaching," Carter says.

For additional information about education opportunities at the Downtown Phoenix campus, send an e-mail to educationdowntown@asu.edu.

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