Our University
A NEWSLETTER FROM THE UNIVERSITY OF CALIFORNIA PRESIDENT FOR THE UC COMMUNITY

July 2008: Printer-friendly version

This printer-friendly version of “Our University” from the UC Office of the President is intended to be posted in order to be accessible to members of the UC community without easy access to a computer at work. The web version is available at http://www.universityofcalifornia.edu/news/ouruniversity/07_08.

UC's book biz

2008-07-29

By Donna Hemmila

University presses get the stereotypes from both sides: People either think their books are too stuffy or not stuffy enough.

"One of the misconceptions about university presses is that you only publish boring books by professors," said Lynne Withey, director of the University of California Press.

On the other hand, she said, there are those who think the presses are popularizing or dumbing down serious academic writing.

Both views are off the mark, particularly where the UC Press is concerned.

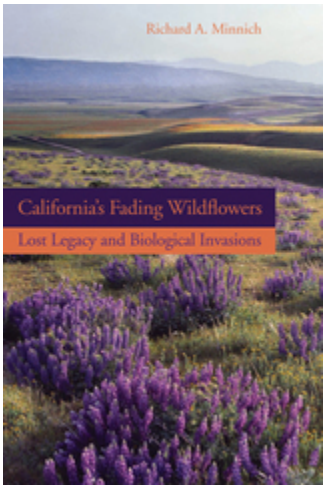
"We really aim to publish the kind of work where scholars are speaking to fairly broad audiences," said Withey. "What we're good at is getting books out to the world."

The 115-year-old university press, with a staff of 140, publishes 200 books a year with titles ranging from *Pathologies of Power* to *Perfect Pairings*, a guide to picking the right wine to go with dinner. Some titles appeal more to academics while others attract a general reading audience. In addition to books, it publishes 50 multi-issue scholarly journals.

Among the six largest academic publishers in the country – including Harvard, Yale, Princeton, MIT and the University of Chicago – UC Press is the only one connected to a public university and the only one located west of the Mississippi.

Headquartered on a side street half way between downtown Berkeley and the UC Berkeley campus, the press attracts authors from around the world. About one-fourth of them are affiliated with the UC system. Whether faculty members choose to publish with UC Press usually depends on what subject matter they're writing about since the press specializes in the humanities and social and natural sciences.

For UC Riverside professor Richard Minnich, UC Press was a logical choice to bring out his recently published *California's Fading Wildflowers.*



"I was born and raised in the state, and that's rare," said Minnich. "My father was born here. California is deep in me."

His research debunks a misconception that California's coastal regions and inland valleys were once covered with grasslands. From historical journals of Spanish explorers and early naturalists like John Muir, Minnich has documented that the state was covered in poppies, lupines, popcorn flowers and other native species before invading Europeans and their flora took over. There was so much rich source material, he could hardly confine is research to a 20-page journal article.

"The press provides an opportunity to write about research in a way I can't in a journal article," said Minnich. "For me, I'm just delighted to get this story out in book format."

The academic authors the press publishes know the value of presenting research in a way that's digestible to a general audience, Withey said, and the UC Press editors work with the writers to foster digestibility.

Whitey can appreciate both the publisher's and the scholar's perspective since she's written four books herself, including *Dearest Friend: A Life of Abigail Adams.* She has a doctorate in history from UC Berkeley and taught at Berkeley and the University of Iowa. A former administrator in the UC Office of the President, Withey has been with UC Press for 22 years. She was appointed director in 2002 and is responsible for launching the digital publishing program.

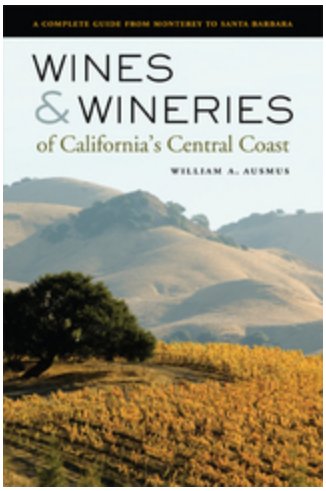
In addition to the 4,000 or so titles it keeps in print, UC Press, through a partnership with the California Digital Press, has nearly 2,000 books available free online to UC faculty, staff and students, with a significant number available free to the public. The Mark Twain Project Online is one of the major UC Press digital endeavors since it is the print publisher of the definitive scholarly editions of Twain's writings held in the Mark Twain archives at UC Berkeley.

Not all university presses are as committed as UC Press has been in publishing such costly scholarly editions, said Twain Project editor Robert Hirst.

"It's no exaggeration to say that the edition of Mark Twain on which I've spent most of my professional career simply could not have been done with a commercial publisher, who would

have been always worried about the bottom line more than anything else," said Hirst. "UC Press has been willing to meet every demand for quality we have made of it."

The Twain Project shoulders the cost of research, editing and proofreading through National Endowment for the Humanities grants and private donations. UC Press, however, has been willing to pay for quality paper, typesetting and illustration reproduction, items Hirst said a commercial printer just wouldn't invest in.



UC Press also publishes titles commercial publishers are cutting back on such as wine books. In July, UC Press issued its 23rd book in this category, *Wines and Wineries of California's Central Coast*, and will bring out six wine-related volumes this year.

Meanwhile, the press continues to feed the reading public's appetite for natural history and environmental books. Since 1959 the press has published 96 volumes in its California Natural History Guides series.

One of the most popular natural history books is The Jepson Manual, current edition 1,424 pages. It has become a reference bible for California plants. First published in 1925 by environmental pioneer Willis Linn Jepson (namesake and benefactor of UC Berkeley's Jepson Herbarium), the field guide is a favorite of botany scholars and amateur native plant enthusiasts alike.

"It's the standard manual on California plants," said Withey. "I've seen people hiking with it, and it weighs about 5 pounds."

The publisher's current bestseller is Planet Earth, the book companion to the 11-part , Emmy award-winning Discovery Channel series. Planet Earth has sold 137,800 copies since it was published in May 2007, the largest first-year sales of any book in UC Press history. An academic press book typically sells from 1,000 to 2,000 copies its first year.

Over their published life, other books have broken the 100,000 sales mark: *Ishi the Last Yahi* (1981), *Art and Visual Perception* (2004) and *Europe and the People Without History* (1982) are a few of the best-sellers. http://www.ucpress.edu/books/pages/1699.php

Housed under the UC Office of the President and governed by a board of directors, the press is dedicated to promoting scholarship rather than increasing the bottom line like a commercial publisher. But it still must operate like a business, Withey said.

About 85 percent of the publisher's budget comes from book and journal sales. In 2007 it brought in revenue of $29 million. Another 10 percent of its budget comes from the university, including some endowment dollars, and the remaining 5 percent is money the press raises itself through the UC Press Foundation.

With the high cost of publishing small runs of specialized books and producing highly illustrated art and science books, the press struggles to keep its publications affordable. One

way it does that is though private donations. Each year potential donors have an opportunity to sponsor a particular book or series. A three-year $5 million capital campaign is currently under way to raise money for new programs and technology improvements all aimed at advancing scholarship and enriching lives.

"We're conveying scholarship to a variety of audiences, and we're supporting research and teaching," said Withey. "There's also a real public service commitment."

Donna Hemmila is editor of Our University.

Ask it! Learning languages

2008-07-29

Q. I watch spy movies in which the spy is able to speak a foreign language with a native accent. Is that really possible if a person learned the language as an adult, or is that only a Hollywood fantasy?

A. While it is not impossible for an adult learner to develop native-like proficiency in a foreign language, your skepticism about the spies in the movies speaking foreign languages with native-like accents is certainly justified if we assume that they were recent learners of those languages.

Research in the field of Second Language Acquisition (SLA) has provided strong evidence that most learners whose first exposure to a second language occurs after puberty fail to acquire native-like pronunciation regardless of motivation and intensive instruction. Such research supports at least some version of what has been called the Critical Period Hypothesis, which holds that there is a biologically or neurologically based period for acquiring native-like proficiency, ending around the age of 12.

The Critical Period Hypothesis, which has been prominent in SLA research for more than four decades, is still being refined and challenged. Recent studies have suggested this critical or “sensitive” period for acquisition is a complex phenomenon, involving more than simply neurological changes. More attention is being given to the interaction of age and a number of other learner variables, such as the desire to sound like a native speaker, high motivation and the types and amounts of second language instruction or immersion.

In addition, while it is true that age of first exposure to a second language is a major factor in the acquisition of a native-like accent, those who learn second languages as adults can develop native-like abilities in other linguistic areas, such as syntax and vocabulary.

Fortunately, for those of us who want to learn additional languages as adults, it is not as critical to sound like a native speaker as it would be for those spies!

Jan Frodesen is director of the English as a Second Language Program and a senior lecturer in the Department of Linguistics at UC Santa Barbara.

Due to the volume of Ask it! submissions, not all questions can be answered online.

Previous Ask it! questions:

Q. With so many birds in the world, and in our urban environment, you would think we would see dead birds all over the place. But we don't. So, where do birds go to die?

Q: Weight loss is based on expending more energy than consumed, and for every 3,000 calorie deficit you lose one pound. Assuming both an obese person and someone slightly overweight eat proportionate calories and exercise at equal levels, why does the obese person lose a lot more weight in the same amount of time than the slightly overweight person?

Q. Iowa and New Hampshire aren't exactly representative of the nation as a whole and yet they have so much influence on the presidential nominating process. Why are these states first every time?

Q. Would taking steroids or human growth hormone for a brief time, to aid recovery from an injury, be worth it? As a 50-plus athlete I don't care about improved performance, I care about decreasing injury recovery time.

SYSTEMWIDE NEWS

UC accountability report under way

2008-07-29

By Donna Hemmila

President Mark Yudof has launched a new systemwide accountability initiative designed to track UC's performance in student success, faculty diversity, research outcomes and other key areas.

"In the wake of the Enron scandal, the Sarbanes-Oxley Act and the subprime mortgage lending meltdown, Americans are demanding more accountability from their private as well as their public institutions," Yudof told UC Regents as he introduced his accountability framework at their July 17 meeting.

A comprehensive collection of performance measurement data will increase the university's credibility and build public trust, Yudof said, in addition to providing a valuable resource for long-range planning and policy decisions.

Yudof expects to deliver the first annual accountability report to UC Regents in September with subreports on targeted areas delivered throughout the year.

"This is designed to say how this institution serves its students and all its constituents," Yudof said, adding that any student, parent, lawmaker or California taxpayer should be able to go to the university's systemwide Web site and find out how specific university programs are performing and how UC stacks up against comparable U.S. universities.

"UC needs to be a leader in this and not a follower," Yudof told regents.

Other large public university systems such as the State University of New York and the University of Texas, where Yudof served as chancellor, have launched accountability initiatives. While at the Texas system, Yudof was recognized as a national leader in higher education accountability and before taking over as UC president on June 16, he cited accountability as one of his top priorities.

"We are very excited to be going down this path," said Joanne Kozberg, chair of the Regents' long-range planning committee where Yudof introduced the accountability initiative.

The responsibility for measuring accountability and producing the reports will rest with a new unit in the Office of the President under the direction of Dan Greenstein, a vice provost in the Division of Academic Affairs.

"I'm not saying there's no accountability in the University of California," Yudof said. "But it's chaotic. It's not organized, and it's not repetitive in the way I want it to be. But this is not some new bureaucratic requirement. The data is basically there."

Yudof said he realizes some important work of the university can't be measured and reduced to statistics.

"I believe the value of the 55,000 students who leave UC campuses each year with new degrees and unlimited potential is probably greater than the market capitalization of Google," he said. "But that would be difficult to quantify."

But because UC can't measure everything, he said, doesn't mean it should measure nothing. The first report won't be perfect, he told regents, but every year it will be refined.

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California burning: UC's research on wildfires

2008-07-18

By Donna Hemmila

First there was the drought. Then the fire season hit, much earlier than Californians expected this year. By the end of June, more than 1,450 wildfires were burning in California. The flames have consumed nearly 380,000 acres.

UC faculty are at the center of the state's wildfire research -- studying the effects of global warming, land management and firefighting practices -- with institutions including the UC Berkeley Center for Fire Research and Outreach, UC San Diego's Scripps Institution of Oceanography, the UC Merced-based Sierra Nevada Research Institute and the UC Davis-based California Institute for Hazards Research. Here is a sample of their research and opinions.

Richard Minnich, professor of geography, UC Riverside earth sciences department

Fire historian Richard Minnich blames California's fire suppression policies for the growing severity of the state's wildfires. Decades of putting out wildfires has actually increased the fire danger he says, and the state would be better off letting wilderness fires burn themselves out.

"We seem to think we can control fire," he says. "Let's play a word game. Smokey the Bear says, 'Help prevent earthquakes.' Smokey the Bear says, 'Help prevent tornadoes.' Smokey the Bear says, 'Help prevent hurricanes.' Nobody in Western culture assumes that we can prevent those things. Why do we assume we can prevent fires? "

Minnich has compared the fire ecology and historical records of fires in Southern California with conditions in Baja California, looking at an area stretching roughly 150 miles on each side of the border. The terrain, climate and vegetation are similar, and before heavy development,

the California side looked much like the Mexican side with grasses, sage scrub and woody chaparral. In Baja, he says, there is no fire suppression.

"There are many small fires down there -- 10 times as many as the United States side but 10 times smaller," Minnich says.

He can find no natural reason for those differences and attributes the contrast to firefighting policies. U.S. agencies have a practice of putting out wildfires as quickly as possible. In Mexico they burn until they burn out.

California's fire suppression has created large swaths of dense, old-growth vegetation that hasn't burned in decades. When those areas do ignite, the devastation is wider spread. In an area that burns more often, the landscape forms patches of vegetation of varying ages. When an older, more combustible area burns, it eventually runs into a patch of less combustible younger growth that stops the fire's progress.

"In California, we're really good at putting out nine out of 10 fires," he says. "The survival of the fittest comes into play. That one 'fit' fire hammers the urban interfaces."

Minnich supports controlled burning as a way to clear out dense vegetation and in the urban interface, more stringent development policies.

"We need really vigorous zoning and land management to prevent people from building in those areas," he says. "We should treat chaparral as gasoline. No one in their right mind would build a house in a pool of gasoline."

Donald Turcotte, distinguished professor of geology, UC Davis

Using the same kind of mathematical modeling as he uses for earthquake forecasting, Donald Turcotte, a professor of geology at UC Davis, studies wildfire forecasting. (Fire forecasts can predict where fires are likely to break out, but not when. Public agencies use the forecasts to plan resource deployment during fire season.) The fire models have shown that large fires are more likely to occur when fuel is allowed to build up because small fires are suppressed. Those findings have steered him to the same conclusions Minnich has reached about the way California fights fires.

"The controlled burn is a big thing," says Turcotte. "This is a highly emotional issue. My feeling is it's a very good thing, but ecological groups are against it."

Yet the areas susceptible to burning are too vast to reduce the fuel by cutting it out, Turcotte says.

Critics of the let-it-burn philosophy point to the other factors that contribute to wildfire: ignition and wind. The early outbreak of California's June fires have been attributed, in part, to unusual strikes of dry lightning in Northern California and high winds in the early days of the conflagrations. While those natural phenomena are factors, Turcotte says, the availability of fuel is what causes the biggest fire danger.

"Sooner or later, you'll get ignition," he says. "You don't want fires to start but in terms of having big fires, it's inevitable."

He, too, favors stronger land management polices such as forcing homeowners who build in high fire-danger areas to keep vegetation cleared from around their structures. Local agencies should enforce the setback policies, he says, and insurance companies shouldn't pay the claims if a homeowner didn't keep the setback cleared.

More research emphasis needs to be on fires, he says, and suggests putting a fee on all homeowner insurance policies in California to pay for studying issues such as fire-resistant building practices and fire suppression methods.

Anthony Westerling, assistant professor of environmental engineering, and geography, UC Merced; principal investigator, California Applications Program and Climate Change Center at Scripps Institution of Oceanography

Anthony Westerling's groundbreaking 2006 study was one of the first to show a link between climate change and the increase in wildfires in the western United States.

"In the last several decades there has been a tremendous increase of fires in the western United States, and it's directly related to climate changes," he says. "Warmer spring and summer and earlier snowmelt."

Westerling and researchers from the Scripps Institution of Oceanography and other institutions constructed a database of large wildfires, more than 1,000 acres, between 1970 and 2003 and compared it with climate data. They found a sudden and dramatic increase in fires in the mid-'80s that they link to climate warming.

A temperature increase of less than 1 degree Celsius, Westerling says, resulted in a 300 percent increase in the number of fires and a 600 percent increase in the areas burned. The temperature increase also lengthened the fire season by 78 days. The average large fire in the '70s typically burned for a week. In the 2000s, he says, big fires go for an average of five weeks.

Some climate change scientists have predicted that average temperatures will increase by 1.5 degrees C to 5.8 degrees C by the end of the 21st century. If that scenario materializes, more wildfires are in the future, and the impact on the state will be devastating.

"Suppose you had a location that burned every 100 years and now because of climate change it wants to burn every 20 years?" Westerling asks. "What would that do to the ecosystem? You might get a shift in species and carbon storage."

Scott Stephens, associate professor of fire sciences, UC Berkeley; co-director, Center for Fire Research and Outreach

Scott Stephens, who directs the Fire Science Laboratory at UC Berkeley, is in Australia studying that country's fire management policies.

"The Australians are way ahead of us in managing fire in the urban interface," he says.

They've reduced their losses from wildfires by 80 percent, he says, through a different approach to battling fires in the regions where development is butting up against wilderness areas, a condition that is growing outside every major urban area in California.

In Australia, rural fire brigades are trained to stay and defend their homes rather than wait for local fire departments to rescue them or evacuate the area. Communities have fire trailers equipped with hoses and firefighting equipment they are trained to use. When fire erupts they either leave immediately, he says, or stay prepared to fight.

"They engage people much more in the firefighting process," he says. "If you're going to fight your own fires, you're going to make sure your house is pretty fire safe."

That has been the building trend in Australia's urban interface, Stephens is finding. California's urban interface continues to spread out into more wilderness areas. Stephens believes if tougher building codes were imposed and enforced by a state agency such as CalFire, those new developments would be more fire-resistant and eventually form a protective buffer around the older urban interface communities.

"Unless we really start to engage the urban interface dwellers, we're going to keep building in the same way," he says. "Why would it change? We're going in the wrong direction, and we're very vulnerable."

Donna Hemmila is editor of Your University.

Alan L. Hoffman appointed UC senior vice president for external relations

Date: 2008-07-17
Contact: University of California Office of the President
Phone: (510) 987-9200

Acting on the recommendation of President Mark G. Yudof, the University of California Board of Regents today (July 17) confirmed Alan L. Hoffman as senior vice president for external relations for the UC system. The appointment will take effect on or before Aug. 11, 2008.

Hoffman, 42, brings to the position his experience as chief of staff to U.S. Sen. Joseph Biden, as vice president for external affairs for the RAND Corp., as a federal prosecutor, and as a staff member in the White House and two federal agencies. As senior vice president at UC, he will report directly to the president and will have responsibility at the system office for communications, advocacy, and governmental relations at the state and federal levels.

"We are extraordinarily fortunate to have secured Alan Hoffman's leadership for the external relations activities of the UC system," Yudof said. "One of the goals I have established as president is a reinvigorated external relations program that strengthens the university's relationships and educates all Californians about the importance of the university's work to their families and to the future of the state. Alan's strategic vision, sound judgment, high standards and good humor suit him very well for the responsibilities awaiting him in the UC system."

The senior vice president position establishes strategy and oversees coordination with campuses in the implementation of communications, advocacy and governmental relations

activities for the UC system, with the goal of building understanding and support for the university's mission of teaching, research and public service.

"I am honored to join one of the world's leading universities and look forward to helping foster closer connections between the institution and the people it serves," Hoffman said. "The work of UC affects the lives of people around the globe and in every community in California. Its success is dependent upon public understanding of its mission, open dialogue with policy-makers and constituents, and responsiveness to the needs of the public. I look forward to working with President Yudof and my colleagues throughout the UC system in pursuit of those objectives."

Hoffman has served twice, from 1998 to 2003 and again from 2006 to 2008, as chief of staff to Sen. Biden, the Delaware Democrat and current chairman of the Senate Foreign Relations Committee. As chief of staff, Hoffman directed the senator's legislative agenda, communications strategy, political operations and office management.

From 2004 to 2006, Hoffman was vice president for external affairs for RAND, the nonprofit global policy think tank based in Santa Monica. There he was responsible for the organization's communications, government relations, fundraising, marketing, community relations, Web site development and corporate publications, serving also as an adviser to senior leadership.

From 2003 to 2004, Hoffman served as vice president in the Washington offices of Timmons & Co., a consulting and lobbying firm. In the mid-1990s, prior to joining Sen. Biden's staff, he served in the U.S. Department of Health and Human Services as special assistant to the assistant secretary for legislative affairs; in the U.S. Department of Justice as special counsel to the assistant attorney general for legislative affairs; and then as an assistant United States attorney in Philadelphia prosecuting federal crimes for the Justice Department.

His previous experience includes service in the White House as a staff member on the President's Task Force on National Health Care Reform and as a special assistant to Hillary Rodham Clinton during the 1992 presidential campaign and transition.

For the last four months, Hoffman has been serving as a consultant on a contract basis at the UC Office of the President, evaluating and assisting external relations programs while they have reported on an interim basis to Executive Vice President Katherine Lapp.

A Philadelphia native, Hoffman holds J.D. and master of public administration degrees from the University of Southern California and a B.A. degree from Lafayette College in Easton, Pa.

As senior vice president, Hoffman will receive an annual salary of $370,000. Given that he wishes to maintain an existing family home in the Los Angeles area, his appointment allows for up to one day per week of telecommuting. Per university policy, he will receive an annual automobile allowance of $8,916 and will be eligible for reimbursement of relocation expenses associated with establishing housing in the Oakland area and for participation in the University Home Loan Program. As an exception to policy, approved by the Regents, he will receive reimbursement of reasonable costs associated with temporary accommodations in the Oakland area, not to exceed $25,000 over a six-month period.

Hoffman also will receive standard pension and health and welfare benefits and standard senior management benefits, including senior manager life insurance, executive business travel insurance, executive salary continuation for disability, a monthly contribution of 5 percent of base salary to the senior management supplemental retirement benefit program, and an administrative fund for official entertainment and other purposes that comply with university policy. It is estimated that after 10 years of service, he would be eligible for a monthly retirement benefit of $3,233 under the standard UC Retirement Plan formula.

The University of California, recognized worldwide for its academic distinction, includes more than 220,000 students, 170,000 faculty and staff, and an $18 billion annual budget at its 10 campuses at Berkeley, Davis, Irvine, Los Angeles, Merced, Riverside, San Diego, San Francisco, Santa Barbara and Santa Cruz. The university offers programs in more than 150 disciplines, many of which are ranked among the top 10 nationally, and for the last 12 years has generated more patents than any other university in the nation. UC's five medical centers support the clinical teaching programs of the university's medical and health sciences schools and handle more than three million patient visits each year. The UC system also is involved in managing the U.S. Department of Energy national laboratories at Berkeley, Livermore and Los Alamos, N.M.

2008 IT innovation winners announced

Date: 2008-07-21
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University of California acting Associate Vice President for Information Resources and Communications Paul Weiss announced the winners of the 2008 Larry L. Sautter Award Program today (July 21) at the UC Computing Services Conference in Santa Barbara.

Five awards and five honorable mentions were presented. The 2008 winners are as follows:

Golden Awards for Innovation in Information Technology
• Calendar Network (UC Berkeley)
• Effort Reporting System (UC Office of the President)
• Epilepsy Phenome Genome Project: Innovation in Clinical Study Informatics (UC San Francisco)

Silver Awards for Achievement in University Computing
• Academic Personnel eFile System (UC Riverside)
• California Digital Newspaper Collection (UC Riverside)

Honorable Mentions
• Conflict of Commitment Reporting System (UC Riverside)
• Emergency Notification System (UC Riverside)
• Graduate Application Review System (UC Davis)
• My Travel and Entertainment (UC Davis)
• Permitless Parking (UC Irvine)

Project descriptions are posted on the Sautter Award Program Web site at http://www.ucop.edu/irc/itlc/sautter.

The award program is sponsored by the UC Information Technology Leadership Council and recognizes innovations in IT that advance the university's mission of teaching, research, public service and patient care, or that improve the effectiveness of business or administrative processes. To be eligible for an award, projects must be operational at a UC campus. Because a goal of the program is to encourage the sharing of innovative solutions across the university, all project applications are posted on the program Web site after the awards announcement.

Berkeley Lab wins four R&D 100 Awards for technology advances

Date: 2008-07-10
Contact: Pam Seidenman
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Email: psseidenman@lbl.gov
BERKELEY, CA — Four of *R&D Magazine's* prestigious R&D 100 Awards for 2008, which recognize the 100 most significant proven technological advances of the year, have gone to researchers at the U.S. Department of Energy's Lawrence Berkeley National Laboratory and their colleagues. Go here for a Berkeley Lab press release with images.

The awards bring the total of Berkeley Lab's R&D 100 Awards — also called the "Oscars of Invention" — to 48, plus two Editors' Choice Awards over the years.

The 2008 award designees are:

-Berkeley Lab PhyloChip — a DNA microarray that quickly, comprehensively, and accurately identifies species within microbial samples from any environmental source, without any culturing required.

-Biomimetic Search Engine — a search engine that mimics the human cognitive process to find hidden and contextually relevant information in literature, databases, music, and other digital content.

-FastBit Bitmap Index — the fastest indexing technology for accelerating searching operations of massive databases. FastBit is able to search up to 100 times faster than other technologies.

-Nanostructured Polymer Electrolyte for Rechargeable Lithium Batteries — a polymer electrolyte that enables the development of rechargeable lithium metal batteries with energy density that is at least a factor of two larger than that of existing technology.

Cheryl Fragiadakis, who heads Berkeley Lab's Technology Transfer and Intellectual Property Management Department, says, "Winning four awards is a tremendous achievement that speaks very highly of the strength of our science and its relevance to solving complex global problems. I am particularly pleased to note that this year's winners are already being used or

further developed by partners in the private sector."

Berkeley Lab Phylochip

The PhyloChip packs an enormous amount of analytical power into a device not much larger than a quarter. Its ability to test all manner of environmental samples for their microbial content is unprecedented. It allows scientists to detect what was undetectable before now, at a speed inconceivable before now. It was developed by Gary Andersen, Todd DeSantis, Eoin Brodie, and Yvette Piceno of Berkeley Lab's Earth Sciences Division.

The PhyloChip's contributions to public health, medical diagnostics, and environmental cleanup projects have already paid large dividends. The information that it has already provided about the airborne bacterial content above U.S. cities is a first step in distinguishing between a climate-related bacterial change and a real bioterrorist threat. It promises even more advances in the development of biofuels and carbon sequestration. In short, scientists are continually finding new ways to use the PhyloChip, and make significant new discoveries along the way.

Biomimetic Search Engine

The Biomimetic Search Engine is the only search engine that couples the way people learn with the unmatched speed and data storage capabilities of computers. In doing so, it is revolutionizing how digital content is searched and utilized. Users can search huge databases and determine how objects are related, in what contexts they are related, and the strengths of those relationships. It was developed by Kasian Franks and Connie Myers, formerly of Berkeley Lab's Life Sciences Division, and Raf Podowski. Both Franks and Podowski are now with the Emeryville, CA-based start-up company SeeqPod. A music search engine using the Biomimetic Search Engine can be found at www.seeqpod.com.

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Germany, and improved the matching between web page content and advertisements at Yahoo! Research. A FastBit-enabled grid-based analysis of high-energy physics data received an award from the 2005 International Supercomputer Conference in Heidelberg, Germany, and the work on network traffic analysis received an honorable mention in the High Performance Analytics Challenge at the Supercomputing 2005 conference in Seattle. In short, FastBit contains significant innovations that are well-recognized and have a broad impact in science, technology, and education.

Nanostructured Polymer Electrolyte for Rechargeable Lithium Batteries

Until now, rechargeable battery architectures that include solid electrodes and liquid electrolytes have not advanced far beyond what they were at the birth of the first batteries. That's beginning to change, thanks to solid-state batteries containing a nanostructured polymer electrolyte. The technology introduces a radically new architecture with a potential to enable electric battery-driven transportation technology. It was developed by Nitash Balsara, a scientist in Berkeley Lab's Materials Sciences Division who also conducts research with the Lab's Environmental Energy Technologies Division. He's also a professor in UC Berkeley's Department of Chemical Engineering. The technology has been licensed to the start-up company Seeo Inc., located in Berkeley, CA.

The nanostructured polymer electrolyte exhibits high ionic conductivity, but can be engineered to be mechanically rigid, therefore resisting the growth of dendrites when contacted with a lithium metal electrode. Dendrite growth has prevented the commercialization of rechargeable batteries with a lithium metal anode. Batteries made with the nanostructured polymer electrolyte are also inherently safe because they lack liquids and flammable components, which prevent thermal runaway. In addition, products of side reactions cannot circulate and amplify within the cell. Solid-state lithium-ion batteries made possible by Berkeley Lab's nanostructued polymer electrolyte are expected to meet the energy density goal established by the Department of Energy for electric vehicles — the highest hurdle for battery technology.

The R&D 100 Award-winning technologies were nominated by Berkeley Lab's Technology Transfer and Intellectual Property Management Department. All winners of the 2008 award will receive a plaque at *R&D Magazine's* formal awards banquet in Chicago on October 16.

Berkeley Lab is a U.S. Department of Energy national laboratory located in Berkeley, California. It conducts unclassified scientific research and is managed by the University of California. Visit our website at www.lbl.gov.

Berkeley Lab wins four R&D 100 Awards for technology advances

Email this article
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BERKELEY, CA — Four of *R&D Magazine's* prestigious R&D 100 Awards for 2008, which recognize the 100 most significant proven technological advances of the year, have gone to researchers at the U.S. Department of Energy's Lawrence Berkeley National Laboratory and their colleagues. Go here for a Berkeley Lab press release with images.

The awards bring the total of Berkeley Lab's R&D 100 Awards — also called the "Oscars of Invention" — to 48, plus two Editors' Choice Awards over the years.

The 2008 award designees are:

-Berkeley Lab PhyloChip — a DNA microarray that quickly, comprehensively, and accurately identifies species within microbial samples from any environmental source, without any culturing required.

-Biomimetic Search Engine — a search engine that mimics the human cognitive process to find hidden and contextually relevant information in literature, databases, music, and other digital content.

-FastBit Bitmap Index — the fastest indexing technology for accelerating searching operations of massive databases. FastBit is able to search up to 100 times faster than other technologies.

-Nanostructured Polymer Electrolyte for Rechargeable Lithium Batteries — a polymer electrolyte that enables the development of rechargeable lithium metal batteries with energy density that is at least a factor of two larger than that of existing technology.

Cheryl Fragiadakis, who heads Berkeley Lab's Technology Transfer and Intellectual Property Management Department, says, "Winning four awards is a tremendous achievement that speaks very highly of the strength of our science and its relevance to solving complex global problems. I am particularly pleased to note that this year's winners are already being used or further developed by partners in the private sector."

Berkeley Lab Phylochip

The PhyloChip packs an enormous amount of analytical power into a device not much larger than a quarter. Its ability to test all manner of environmental samples for their microbial content is unprecedented. It allows scientists to detect what was undetectable before now, at a speed inconceivable before now. It was developed by Gary Andersen, Todd DeSantis, Eoin Brodie, and Yvette Piceno of Berkeley Lab's Earth Sciences Division.

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Los Alamos National Laboratory technologies capture prestigious R&D 100 awards

Contact: Tatjana K. Rosev, trosev@lanl.gov, () -

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LOS ALAMOS, N.M., July 3, 2008 -- Cutting-edge innovations garnered Los Alamos National Laboratory researchers two of R&D Magazine's prestigious R&D 100 Awards. The awards, which will be presented October 16 in Chicago, recognize the top 100 industrial innovations worldwide in 2008. Winning Laboratory projects are the 3-D Tracking Microscope and Laser-Weave technology.

"Congratulations to our R&D 100 award-winners for this acknowledgement of scientific excellence," said Laboratory Director Michael Anastasio. "The awards demonstrate that the Laboratory continues at the forefront of developing innovative concepts and translating them into practical applications."

This year's awards bring Los Alamos's total to 107 since the Laboratory began entering the competition in 1978.

3-D Tracking Microscope
Los Alamos researchers have developed the 3-D tracking microscope, the only confocal microscope capable of following the motion of nanometer sized objects, such as quantum dots, organic fluorophores, single green fluorescent proteins, as they move through 3-dimensional space at rates faster than many intracellular transport processes. The 3-D tracking microscope was developed by Jim Werner of the Laboratory's Center for Integrated Nanotechnologies.

Laser-Weave
The Laser-Weave process uses innovative technology to synthesize inorganic fibers. Laser-Weave is able to grow high-strength inorganic fibers into useful shapes and complex patterns, braid or weave strong cables, cloth, or composites with lasers, produce new high-value, cost-effective refractory ropes and textiles, and prototype novel high-aspect ratio microelectrical mechanical systems. Laser-Weave was developed by Jim Maxwell of the Lab's Applied Electromagnetics group.

The R&D 100 Awards program honors significant commercial potential in products, materials, or processes developed by the research and development community worldwide. R&D Magazine uses technical experts to judge the submissions.

Los Alamos National Laboratory is a multidisciplinary research institution engaged in strategic science on behalf of national security. The Laboratory is operated by a team composed of Bechtel National, the University of California, BWX Technologies, and Washington Group International for the Department of Energy's National Nuclear Security Administration.

Los Alamos enhances national security by ensuring the safety and reliability of the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction, and solving problems related to energy, environment, infrastructure, health and global security concerns.

Girls' and boys' math performance now equal

Email this article
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BERKELEY -- Girls now equal the performance of boys on standard mathematics assessment tests, probably because girls now match boys in the number and level of math courses they take in elementary and high school, according to a new study by researchers at the University of California, Berkeley, and the University of Wisconsin, Madison.

That wasn't the case 20 years ago, when studies showed nearly identical performance at the elementary school level but girls lagging boys at the high school level. Since then, girls' participation in higher level mathematics classes has risen to the same level as boys', with predictable results, according to study co-author Marcia Linn, UC Berkeley professor of education.

"In the past, there were differences in test scores, and women took fewer advanced courses in mathematics than men," she said. "Now that enrollment in advanced math courses is equalized in high school, we don't see gender differences in performance on state tests."

The Wisconsin and UC Berkeley researchers report their findings in the July 25 issue of *Science*.

Funded by a grant from the National Science Foundation, the researchers reached their conclusions after sifting through mountains of data, including math scores from 7 million students who were tested in accordance with the federal No Child Left Behind Act (NCLB). The team compared not only the average performance of all students on these tests, but also the scores of just the most gifted children, as well as the ability of children to solve complex math problems. In all cases, girls measured up to boys.

Persistent math stereotypes

Study leader Janet Hyde, a psychology professor at UW-Madison, noted that, despite the fact that girls now take just as many advanced high school math courses as boys, and women earn 48 percent of all mathematics bachelor's degrees, the stereotype persists that girls struggle with math. Not only do many parents and teachers believe this, but scholars also use it to explain the dearth of female mathematicians, engineers and physicists at the highest levels, Hyde said.

Such cultural beliefs are "incredibly influential," she said, making it critical to question them. "If your mom or your teacher thinks you can't do math, that can have a big impact on your math self-concept."

Linn and Hyde have long collaborated on studies of gender differences in math and science learning, including an analysis that appeared in Science in 2006 that showed that differences in math performance were far greater between different cultures than between men and women. For example, Japanese and Taiwanese children perform far better on math tests than do American children, irrespective of gender.

For their current study, the team acquired math scores from state exams now mandated annually under No Child Left Behind, along with detailed statistics on test takers, including gender, grade level and ethnicity, in 10 states. Using data from more than 7 million students, they then calculated the "effect size," a statistic that measures the degree of difference between girls' and boys' average math scores in standardized units.

The effect sizes they found -- ranging from 0.01 and 0.06 -- were basically zero, indicating that the average scores of girls and boys were the same.

"Boys did a teeny bit better in some states, and girls did a teeny bit better in others," said Hyde. "But when you average them all, you essentially get no difference."

Some critics argue, however, that even when average performance is equal, gender discrepancies may still exist at the highest levels of mathematical ability. To account for this possibility, researchers compared the variability in boys' and girls' math scores, the idea being

that if more boys fell into the top scoring percentiles than girls, the variance in their scores would be greater.

Again, the team found little difference, as did a comparison of how well boys and girls did on questions requiring complex problem solving. What the researchers did find, though, was a disturbing lack of questions that tested this ability. In fact, they found none whatsoever on the 10 state assessments for NCLB, requiring them to turn to another data source for this part of the study.

What this suggests, said Hyde, is that if teachers are gearing instruction toward states' NCLB assessments, abilities in complex problem solving may drop in the future in both boys and girls, leaving them ill-prepared for careers in math, science and engineering.

"The tests we are currently using are really not asking students to perform the types of tasks they are likely to encounter in the workforce," Linn said. The lack of complex problems on assessment tests "doesn't motivate teachers or textbook developers to create material that challenges students, and it sends the wrong message to schools with regard to what should be emphasized in math courses."

Review of SAT scores

The study's final piece was a review of the granddaddy of all high school math tests, the SAT. The fact that boys score better on it than girls has been widely publicized, contributing to the public's notion that boys truly are better at math. But Hyde and her co-authors think there's another explanation: sampling artifact.

For one thing, since it is administered only to college-bound seniors, the SAT is hardly a random sample of all students, the researchers noted. What's more, greater numbers of girls take the test now than boys because more girls are going to college.

"So, you're dipping farther down into the distribution of female talent, which brings down the average score," said Hyde. "That may be the explanation for (the results), rather than girls aren't as good as boys in math."

While girls have reached parity with boys in enrollment in math classes, Linn said, girls still are underrepresented in advanced science courses such as physics and in careers in physical science and engineering that require knowledge of physics and mathematics.

In a July 16 talk before the Congressional Science Technology Engineering & Math Education caucus, Linn discussed the trends in mathematics performance and called for increased emphasis on science courses where women are underrepresented. She called for attention to improving the quality and enrollment of women in science courses and emphasized the opportunity to use new technologies, such as simulations of complex processes, to strengthen course content.

The study's other authors, all from UW-Madison, are graduate students Sara Lindberg and Carolyn Williams, and assistant professor Amy Ellis of the Department of Curriculum and Instruction.

Featured Campus: UCLA

Archaeology abroad: Dispatches from worldwide digs

E-MAIL THIS STORY

Program participants from summer 2007 work in rappelling gear while moving historic remains.

It's studying abroad, Indiana Jones-style.

UCLA's archaeology institute and its study abroad office have teamed up to send students to field digs around the world. They'll excavate mummies in Chile's Atacama Desert, comb the jungle near the remains of an Indian village in Panama, and map ancient graves in Albania. Best of all, these intrepid Bruins, some of their field advisers and students joining the digs from other colleges will send back dispatches about their adventures throughout the month of July. The Summer Digs blog will feature their travel notes here, thanks to the collaboration between the Cotsen Institute of Archaeology, UCLA's International Education Office (IEO), UCLA Magazine and UCLA Today.

- Read more about the program in this article or in the program descriptions,
- peruse the press release,
- hear two perspectives from a previous summer in Chile,
- or jump straight to the blog postings.

These archaeologists do all kinds of digging: program participants in Canada celebrate completing construction of their outhouse.

Among the recent posts:

- UCLA's Vanessa Muros in Albania takes a break from ancient archaeology to explore the nearby communist-era bunkers, complete with diagrams describing how to attack.
- UCLA professor and archaeologist Ran Boytner explains the origin of Chile's La Tirana Festival and sends photos of the colorful costumes that go with it.
- Bees and buffalo are part of the daily dig scene in Catalina, writes UCLA anthropology student Mike de Vera.
- In Chile, UCLA student Evelyn Rubio writes in about analyzing mummies, and about witnessing the role of children in a local funeral service.
- Not everyone on the Albania program knows the language, and their Albanian colleagues don't all know English. It makes for a fun, if muddled, good time, writes UCLA student Jamie Aprile.
- UCLA's Ran Boytner discusses finding a thousand-year-old mummified mouse in Chile, and how it could help determine whether human mummies were locals or immigrants.
- Erika Varady from Kansas State University learns about the "real" archaeologist's toolkit while mapping prehistoric sites in Catalina.
- UCLA student Kerry Pusey in Peru tries a local delicacy: guinea pig.
- UCLA's Ran Boytner sends a photo from Chile of the ancient petroglyphs, or rock art carvings, that his students are identifying and documenting.
- Carlton College student Nicholas Scott-Wittenborn shares the tale of how a set of gymnastic rings helped his archaeological group in Chile bond with skeptical locals.
- UCLA student Lily Henry Roberts learned to use a machete and build an outhouse in Canada.

A student on the nearby Santa Catalina Island summer expedition surveys a historic habitation site.

More than 130 students from UCLA and other universities are participating this summer. For more details, see Cotsen Archaeology's student guide to the field programs. Some blog participants will also send their posts in Spanish.

UCLA Today is the campus's staff and faculty newspaper, and UCLA Magazine is the university's alumni magazine. Together, Cotsen, IEO, the paper and the magazine have worked together to create this blog. For questions or more information, check out the contact page.

PEOPLE

Accentuating the positive

2008-07-29

By Donna Hemmila

Christine Carter makes it her business to be happy. The executive director of UC Berkeley's Greater Good Science Center has dedicated her academic career to happiness – how to learn it, how to practice it and – most importantly for the center's mission – how to share it with the world.

"I just consider myself so lucky to be able to focus on happiness," she said. "If you have happiness, what else do you need?"

The Greater Good Science Center, housed within UC Berkeley's Institute of Human Development, supports research into the roots of positive emotions. UC Berkeley alumni Thomas and Ruth Ann Hornaday helped launch the center in 2001 with a $1 million gift. Originally called the Center for the Development of Peace and Well-being, the interdisciplinary

research center operates on the premise that you can't have a peaceful world without peaceful people. The center offers undergraduate and graduate fellowships and publishes a quarterly Greater Good Magazine to highlight research into altruistic behavior, healthy relationships and positive child development.

"Hundreds of years of academic research has focused on negative things," Carter said. "Our focus is radically different, and our goal is to translate it so people can use it."

At the freethinking Berkeley campus, Carter's happiness research finds fertile ground to flourish, but among academics outside the UC system she has drawn her share of snickering: "I was told, 'People will think you're dumb. It's too soft. It's not rigorous.' I could care less."

Carter, who graduated from Dartmouth College before earning a doctorate in sociology from UC Berkeley, has a background in marketing management and business consulting. Her academic interests in being happy took a fortuitous turn after daughters Fiona and Molly were born. Carter, like most new parents, began looking for information on raising well-adjusted, happy children.

"I woke up one day and realized I have two children, and I didn't know what I was doing," she said.

Not content with run-of-the-mill parenting books, she set about to find sound scientific research that would aid in creating happy childhoods for her daughters.

Today one of the mainstays of the Greater Good center's outreach is her lively Half Full Blog: Science for Raising Happy Kids. There she shares tips on topics such as developing gratitude, surviving summer vacation and changing bad habits into good ones. The blog comes with videos, book recommendations and an extensive reference list for further reading.

The blog offers parents a wealth of information on how to foster a happy home life, all backed up with scientific research. When Carter is extolling the benefits of family dinnertime, for example, she cites a Harvard study that found kids who ate dinner with their families five days a week or more learned an average of seven times more new vocabulary words than kids who were read to every night.

To say Carter has a passion for the power of family meals would be an understatement. No other family activity produces so many positive benefits, she said, and the results of a simply meal together go beyond linguistic accomplishments. Other studies have shown the positive influence dining as a family have on social and emotional development as well as family bonding.

"There's also symbolic value," said Carter. "Families have a lot of rituals around holidays and major events. Those daily symbolic rituals are just as significant as the big ones."

In her own family, the dinner ritual includes a time to express gratitude. Carter encourages her daughters, now 7 and 5, to share things they are grateful for while the family holds hands.

"It's a very sweet moment for ourselves and our family," said Carter. "We all end up feeling a sense of connection."

Carter said she is often asked if she and her family are, indeed, really happy. She believes they are, but that doesn't mean they don't all experience other emotions. When her children are sad or angry, she encourages them to share those feelings as well. And one of her recent blog topics focused on how to fight with your partner without emotionally scarring your children.

"I'm not happy all the time," Carter said. "But I am one of the happiest people you'll meet."

Donna Hemmila is editor of Our University.

DID YOU KNOW?

Entertainers with UC connections include Carol Burnett (UCLA), Francis Ford Coppola (UCLA), Benicio del Toro (UC San Diego), Adam Duritz (UC Berkeley, UC Davis), Jack Johnson (UC Santa Barbara), Jon Lovitz (UC Irvine), Camryn Manheim (UC Santa Cruz), Jim Morrison (UCLA), Gregory Peck (UC Berkeley), Jim Rome (UC Santa Barbara) and Charlyne Yi (UC Riverside).

What would you like to read about the UC system in future editions of “Our University”? Send your feedback and story suggestions to donna.hemmila@ucop.edu. Produced by Strategic Communications, University Affairs, UC Office of the President.