



A day after she was named UCSC's ninth chancellor, Denice Denton traveled to campus, where she met with members of the UCSC community.

UCSC welcomes its ninth chancellor

A STANDING-ROOM-ONLY crowd turned out to greet Denice D. Denton during her first visit to campus after the Board of Regents named her UC Santa Cruz's ninth chancellor.

Less than 24 hours after the announcement was made on December 14, Denton was welcomed to UCSC by University of California President

February 14, comes to UC Santa Cruz from the University of Washington, where she served as dean of the College of Engineering. She is clearly thrilled by her new affiliation.

"This has been a wonderful experience," said Denton of her selection. "I'm trying to enjoy it and take it all in. The University of California leads the United States and the world in public higher education," she added, noting that UC is thereby also at the forefront of the "challenges and opportunities" facing academia today.

More than 700 people applied for the top post at UCSC, a process that began in May, noted search committee member and UCSC chemistry and biochemistry professor Eugene Switkes.

"It was a sunny day when the committee was charged, and it's a sunny day this December 15 when we welcome Chancellor Designate Denton," said Switkes. "I look forward to working with you, Denice."

Robert C. Dynes, Acting Chancellor Martin M. Chemers, and several hundred people who filled the Media Theater.

Denton, who took office

The new chancellor offers her views of UCSC and outlines the emerging goals of her administration. See Q&A, pages 8-9.



A day after being named UCSC's ninth chancellor, Denice Denton met with reporters during a visit to campus.

Computer simulation of Indian Ocean tsunami

SOON AFTER HEARING news reports of the tsunami that devastated coastal regions throughout the Indian Ocean, research geophysicist Steven Ward, an expert on tsunami hazards, went to work on his computer.

Using sophisticated computational techniques to simulate the tsunami, Ward created an animated movie showing the tsunami waves spreading out through the Indian Ocean from the site of the powerful earthquake that triggered them. The simulation, based on the physics of earthquakes and tsunamis, was considered preliminary because geologists had not yet fully characterized the earthquake, Ward said.

"The tsunami model depends on earthquake parameters, so as we learn more about the earthquake I will be able to refine it. But the essence of the phenomenon is captured in the animation," Ward said in January.

A magnitude 9.0 earthquake, the most powerful earthquake recorded in more than 40 years, struck underwater off the Indonesian island of Sumatra on December 26. The resulting tsunami caused devastation throughout South Asia, with the death toll estimated at more than 200,000.

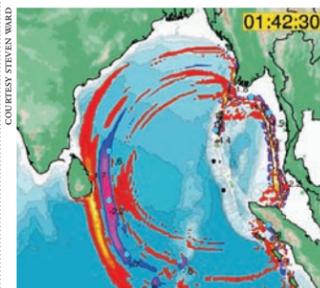
According to Ward, the speed of a tsunami depends on the depth of the water, with waves traveling as fast as 400 miles per hour in the deep ocean.

When the waves come ashore, they are typically moving at about 30 miles per hour, he said, adding that tsunami waves are very different from the waves one

usually sees at the beach.

"It's like the ocean turns into a river and starts to flow onto the land. It's not a big crashing wave like in the Hollywood movies," Ward said.

In the aftermath of the disaster in South Asia, he was contacted by numerous media outlets, including the *Washington Post*, Dateline NBC, the *New York Daily News*, and *Newsweek* magazine.



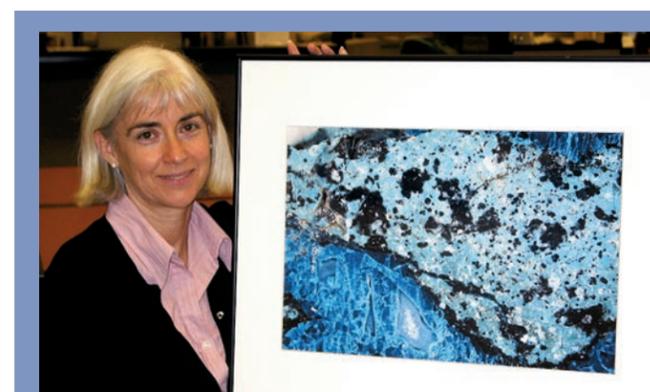
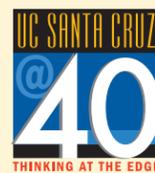
In Ward's simulation, the tsunami waves are shown approximately one hour and 42 minutes after the quake. The simulation may be viewed at: currents.ucsc.edu/04-05/01-03/tsunami.asp

Celebrating UCSC's 40th year

UCSC IS CELEBRATING its 40th anniversary in 2004-05 with a number of special events and a fundraising campaign that makes the support of undergraduate and graduate students a top priority.

For information about anniversary events, as well as the Cornerstone Campaign, please go to www.ucsc.edu

and select the logo, shown at right. See also pages 22-23.



UCSC has received a \$500,000 gift to benefit Special Collections in the University Library. The endowment is being established in honor of the late Miller and Bunny Outcalt and their lifelong partnership in the field of photography. Christine Bunting, head of Special Collections, displays an untitled photograph taken by Miller Outcalt. Proceeds from the endowment will be used to fund a permanent staff position dedicated to work on the extensive photography archives housed at UCSC.

First major study of organic farming in state yields surprises

THE FIRST comprehensive study of organic agriculture in California challenges the popular notion that organic farming is dominated by small family-owned farms and shows how the industry's regulatory structure has thwarted the very benefits that have generated strong public support for organic agriculture.

"Organic farming is seen as an answer to the crisis in our food system, but organic agriculture in California has evolved in some peculiar ways that effectively limit the number of acres

that are in organic cultivation," said Julie Guthman, an assistant professor of community studies and author of the new book, *Agrarian Dreams: The Paradox of Organic Farming in California*.

A proponent of many of the ideals associated with organic agriculture, Guthman nevertheless believes the fastest-growing segment of farming today warrants scrutiny. Her analysis included the following findings:

- Many growers switched to higher-value organic commodities to increase earnings.
- Much of the growth of organic agriculture has come from growers who switched from conventional farming and recruited others to join them.
- Many growers went organic out of fear that pesticides they used would be banned or create health risks for themselves or others.

"There were very compelling economic and regulatory reasons for conventional growers to enter into organics," said Guthman, who believes that the organic industry's reach was also limited by its decision to self-regulate.

Julie Guthman

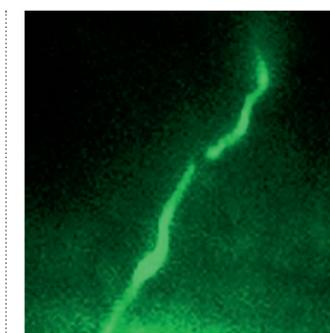


Laser technique opens opportunities for nerve regeneration research

IN A BREAKTHROUGH for research on nerve regeneration, a team of UCSC and Stanford scientists has reported using femtosecond laser pulses to precisely cut individual axons of nerves in the roundworm *Caenorhabditis elegans*, one of the most versatile and widely used experimental organisms for genetic and biomedical research.

The nerves severed by this precision technique regrew within 24 hours, often with complete recovery of function. The project was a collaboration between biologists at UCSC led by Yishi Jin and Andrew Chisholm and applied physics researchers at Stanford led by Adela Ben-Yakar.

The team's findings give researchers an experimental system in which they will be able to investigate in great detail the genetic and molecular factors that



This nerve axon was cut using femtosecond laser nanosurgery.

control whether damaged nerves can regrow, said Chisholm, an associate professor of molecular, cell, and developmental biology.

"This technique will enable us to find the genes that are important in allowing an axon to regenerate. In the worm, we can do systematic screening of large numbers of genes, and of drugs and other small molecules as well, to ask how they affect the process of regeneration," Chisholm said.

The researchers reported their findings in a paper published in the December 16 issue of the journal *Nature*.

Revisiting Vietnam in the midst of Iraq

THE VIETNAM WAR was never mentioned at all during history major Martin Smith's high school days in Tennessee. But by doing research at UCSC on that conflict in the midst of media coverage of the Iraq war, he has discovered many similarities between the two wars.

Smith, who served in the Marine Corps from 1997 to 2002, is the winner of last year's Melkonian Prize for submitting the top proposal to UCSC's Humanities Undergraduate Research Awards program: "The Soldiers' Rebellion in

Vietnam: Race, Class, and Resistance."

"There has been resistance [among soldiers] to every war we have ever fought," he said. "But in Vietnam the resistance to fight was on a scale never before seen by the U.S. military."

Smith found that one reason why resistance in Vietnam was so much greater than in previous wars was the contradiction between what the U.S. government claimed was occurring in Vietnam and what the troops were actually encountering on the ground. He also uncovered the existence of hundreds of underground newspapers that were utilized to help build an anti-war GI movement.

UCSC scientist endorses nitrogen-management efforts

AS A SOIL SCIENTIST at UCSC, Marc Los Huertos helps farmers on the Central Coast manage nitrogen levels to maximize harvests and minimize pollution.

He is also part of a growing global effort to address the problem of farm-generated nitrogen pollution. Back from the Third International Nitrogen Conference in Nanjing in October, Los Huertos had a sobering message for farmers: “China is ramping up agricultural production, and strong international environmental regulations could be what saves U.S. farming from a formidable competitor,” said the research



Marc Los Huertos and CASFS colleagues monitor the Elkhorn Slough.

manager for UCSC’s Center for Agroecology & Sustainable Food Systems (CASFS).

Convinced that U.S. farmers have a huge stake in regulations that would force global competitors to clean up their act, too, Los Huertos is eager to increase public understanding of agricul-

ture-related nitrogen pollution.

In Nanjing, about 800 conference participants approved a declaration that urges the UN, among other things, to promote understanding of the nitrogen cycle, assess consequences of its disturbance, and provide policy advice.

U.S. Senate called ‘unrepresentative’

THE ELECTORAL COLLEGE isn’t the only outdated political system that should be overhauled, according to a UCSC political scientist who says the antiquated ways of the U.S. Senate contribute to congressional gridlock and thwart American democracy.

The gravest threat to fair representation is the mandate that each state elect two senators to the U.S. Senate regardless of population, a system that has created “perhaps the most unrepresentative legislative chamber in the world,” says Daniel Wirls, a professor of politics at UCSC and coauthor of the new book *The Invention of the United States Senate*.

Exploring the political meaning of words

DEMOCRACY, patriotism, family...these are words spoken with overwhelming fervor in the aftermath of 9/11, the invasion of Iraq, and the days that preceded the November presidential election.

But what do those words really mean? Apparently, different things, depending on your political affiliation.

Shock and Awe: War on Words explores the political meaning of words through essays, photographs, poems, and drawings by nearly 80 scholars, artists, and poets from UCSC and around the world.

Created by the campus’s Institute for Advanced Feminist Research (IAFR), the book is “an effort to reclaim language that’s been debased in the politics of the ‘war on terror,’” explained IAFR director Helene Moglen, who holds a UC Presidential Chair in Literature at UCSC.

Three receive top awards from Alumni Association

A GIFTED TEACHER of the Spanish language, a public defender who successfully argued a case before the U.S. Supreme Court, and a dedicated scholarship adviser received the Alumni Association’s highest honors for the 2004–05 year.

M. VICTORIA GONZÁLEZ PAGANI received the Distinguished Teaching Award; ROBERTO NÁJERA, the Alumni Achievement Award; and CHERYL PERAZZO, the Outstanding Staff Award. The three were honored at the association’s awards luncheon on campus in early February.



FROM LEFT: Victoria González Pagani, Roberto Nájera, and Cheryl Perazzo

Student evaluations of distinguished teacher González Pagani, a leader in the field of language teaching and technology, stress her “extraordinary commitment of time and energy” noted Gildas Hamel, chair of UCSC’s Language Program. Added one of her students, Lisa Peake: “She is so personally invested as a teacher that students cannot help but achieve for the sake

of making her proud.”

Alumni recipient Nájera, who graduated in 1979 from Merrill College with a bachelor’s in sociology, is a Contra Costa County deputy public defender. As such, he was an unlikely choice to argue a case before the Supreme Court. But he believed that a California law retroactively extending the statute of limitations for child sexual abuse was unconstitu-

tional. The court agreed.

Staff member Cheryl Perazzo, scholarship coordinator for UCSC’s Office of Financial Aid, has been described as “a miracle worker” for her efforts to help students. “I know I will look back to my college years and see Cheryl Perazzo as my guiding light,” said Heather Hazen, a student who came to UCSC badly in need of financial assistance.

Dynes, legislators visit UCSC to dedicate engineering buildings

TOP UC OFFICIALS, including President Robert C. Dynes, joined state government representatives and leaders of Silicon Valley industry at UCSC in November to dedicate the campus’s new Engineering 2 Building and the Jack Baskin Engineering Auditorium.

Engineering Dean Steve Kang announced two major gifts to the engineering school at the dedication. Kumar Malavalli, a prominent leader in the data-storage industry, has made a \$1 million gift to establish the Kumar Malavalli Endowed Chair in Storage Systems Research (see story, page 23). Cisco Systems, a leading provider of network products and services, has donated equipment for teach-



In November, (l-r) State Senator Bruce McPherson and Assemblymember John Laird presented a resolution from the California State Legislature to Acting UCSC Chancellor Martin M. Chemers and UC President Robert C. Dynes, honoring the dedication of the engineering buildings.

ing and research valued at \$575,000. “With strong support from our partners, we are building 21st-century engineering,” Kang said.

Engineering 2 includes facilities for two California Institutes for Science and Innovation: the Institute for Quantitative Biomedical Research (QB3) and the Center for Information Technology Research in the Interest of Society (CITRIS).

These multicampus research centers are supported by state funding and industry partnerships to provide the technological foundation for the state’s future economic growth.

Participating in the dedication ceremonies was Jack Baskin, whose \$5 million gift established the Baskin School of Engineering. A subsequent \$1 million gift helped fund construction of the auditorium that also bears his name.

Engineers develop technologies to assist the blind

UCSC RESEARCHERS are developing new assistive technologies for the blind based on advances in computer vision that have emerged from research in robotics. A “virtual white cane” is one of several prototype tools for the visually impaired developed by Roberto Manduchi, an assistant professor of computer engineering, and his students.

The traditional white cane is still the most common mobility device for the blind. It is a simple and effective tool that enables users to extend their sense of touch and “preview” the area ahead of them as they walk. But the long, rigid cane is not well-suited to all situations or all users.

Manduchi’s high-tech alternative is a laser-based range-sensing device about

the size of a flashlight. A laser, much like the one in an ordinary laser pointer, is combined with a digital camera and a computer processor that analyzes and integrates spatial information as the user moves the device back and forth over a scene. The user receives feedback about the scene in the form of audio signals, and an additional tactile interface

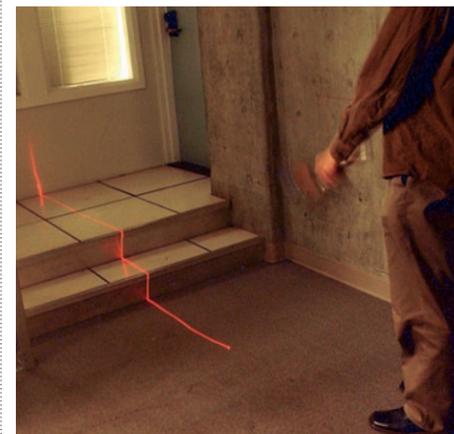
is being developed for future prototypes.

“In the audio signal, the pitch corresponds to distance, and there are also special sounds to indicate features such as a curb, step, or drop-off,” Manduchi said.

Dan Yuan, a graduate student working with Manduchi on the virtual white cane project, built the initial prototype.

The Santa Cruz researchers are collaborating with the Smith-Kettlewell Eye Research Institute, a nonprofit research institute in San Francisco, on the virtual white cane and other projects.

“The people at Smith-Kettlewell are helping us to understand the real needs of the blind, and they have blind engineers who test the systems we develop,” Manduchi said.



The “virtual white cane” combines a laser, a camera, and a computer processor to give a blind person feedback about features such as stairs and curbs.

Antibiotic shows promise for fighting Parkinson’s disease

UCSC RESEARCHERS have shown that rifampicin, an antibiotic used to treat

leprosy and tuberculosis, can prevent the formation of protein fibrils associated with the death of brain cells in people with Parkinson’s disease. The drug also dissolved existing fibrils in lab tests.

The research was carried out by a team of scientists in the lab of Anthony Fink, professor of chemistry and biochemistry.



Jie Li, one of the project researchers in the UCSC lab, is the first author of a paper describing the team’s results. The paper was published in the November issue of the journal *Chemistry and Biology*.

Two UCSC scientists elected AAAS fellows

TWO UCSC SCIENTISTS—Anthony Fink, professor of chemistry and biochemistry, and Russell Flegal, professor of environmental toxicology—were among the 2004 fellows of the American Association for the Advancement of Science (AAAS) announced by the association.

Election as a fellow is an honor bestowed upon members of AAAS by their peers.

The association recognized 308 members as 2004 fellows for their efforts to advance science or its applications that are deemed scientifically or socially distinguished.

An acknowledgement ceremony for the new fellows took place during the 2005 AAAS Annual Meeting in Washington, D.C., in mid-February.

Students collaborate with museum to create gallery exhibit

THE BIG AND BOLD exhibit, on display this past fall at the Santa Cruz Museum of Art and History, is a prime example of the benefit derived from combining university research with an important cultural institution in the community. The exhibit featured an array of large and oversized graphic art from premier American artists such as Roy Lichtenstein, Robert Rauschenberg, and Helen Frankenthaler.

Working closely with the museum, 12 students from UCSC art history professor Catherine Soussloff's *History and Visual Culture* class researched large-scale prints by prominent American artists from 1970 to the present. They

held collaborative discussions, interviewed living artists, and visited the presses that produced the prints—in addition to conducting extensive archival, library, and web-based investigations. Based on this research, the students then produced original



Catherine Soussloff, with a James Rosenquist print

wall-label descriptions and interpretations for each of the prints displayed to help educate the public about the exhibition.

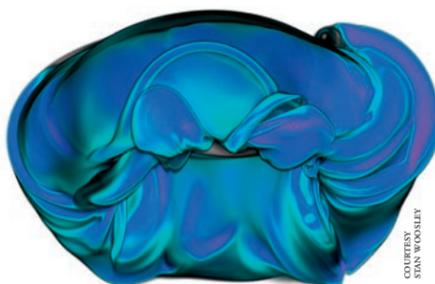
"It's very unusual for students to work directly with such well-known artists at a museum," noted Soussloff.

Scientists harness new supercomputer at NASA Ames

ASTROPHYSICISTS and cosmologists at UCSC are among the first scientists to have access to the powerful new Columbia supercomputer at the NASA Ames Research Center. The UCSC scientists have been using the new system's unprecedented computing power to run simulations of complex phenomena such as supernova explosions, gamma-ray bursts, and dark matter halos.

NASA featured the work of UCSC researchers in demonstrations and presentations

in November at SC2004, the premier international conference on high-performance comput-



Astrophysicist Stan Woosley, heading up one of the UCSC groups using the supercomputer, is running simulations of a "burning floating bubble," representing a small piece of an exploding supernova.

ing, networking, and storage.

The Columbia supercomputer, named to honor the crew of the space shuttle *Columbia* lost in 2003, has achieved a

sustained performance of 51.9 trillion operations per second, or teraflops, making it one of the world's fastest supercomputers.

Jim Taft of NASA's Advanced Supercomputing Division said access to Columbia was determined by a review committee that established a list of prioritized activities. "The UCSC work was at the top of the

list, so we were authorized to give early access to a number of UCSC projects. These guys have been burning up the cycles ever since," Taft said.

Unusual structure in the SARS virus offers target for drugs

RESearch on the genome of the virus that causes severe acute respiratory syndrome (SARS) has revealed an unusual molecular structure that looks like a promising target for antiviral drugs.

A team of scientists at UCSC has determined the three-dimensional shape of this structure, an intricately twisted and folded segment of RNA. Their findings suggest that it may help the virus hijack the protein-building machinery of infected cells.

The SARS virus is a type of RNA virus, meaning that its genetic material is RNA rather than the more familiar DNA found in the chromosomes of everything from bacteria to humans. All RNA viruses have relatively high mutation rates, making their genomes highly variable. In HIV, for example, this high rate of mutation contributes to the rapid appearance of drug-resistant strains of the virus. In SARS and related viruses, however, one segment of the RNA genome—known as the s2m RNA—remains virtually unchanged.

"Because viral evolution has not been able to tamper with this sequence, it is clear that it must be of vital importance to the viruses that have it, but no one knows exactly what its function is," said William Scott, an associate professor of chemistry and biochemistry.

Scott's lab used x-ray crystallography to map the structure of this RNA element with nearly atomic resolution. The results showed several unique features of the s2m RNA, including a distinctive fold that appears to be capable of binding to certain proteins involved in regulating protein synthesis in cells.



Two UCSC education faculty members, Judit Moschkovich (left) and Julia Aguirre, are participating in a multicampus collaboration addressing the mathematics needs of Latino students in kindergarten through eighth grade. The new Center for the Mathematics Education of Latinos/as will examine math learning and teaching in school, family, and community settings. The goal is to discover new ways to teach Latino students mathematics by building on the cultural and linguistic diversity they bring to the classroom.

Scientists closer to reconstructing genome of common ancestor

CONTRARY to the movie *Jurassic Park*, in which scientists recreate dinosaurs from ancient DNA, genetic material more than about 50 thousand years old cannot be reliably recovered. Nevertheless, a team of scientists has now demonstrated that computers could be used to reconstruct the DNA of a creature that lived at the time of the dinosaurs more than 75 million years ago—a small, furry nocturnal animal that was the common ancestor

of most placental mammals, including humans.

Knowing this ancestral mammal's complete genome would not mean that scientists could bring it to life.

But that's not the point, said a member of the team, David Haussler, UCSC professor of biomolecular engineering. "We will be able to trace the molecular evolution of our genome over the past 75 million years. It's a very exciting new way to think about our origins, a kind of DNA-based archaeology to understand how we came to be," said Haussler, a Howard Hughes Medical Institute investigator and director of UCSC's Center for Biomolecular Science and Engineering.



The common ancestor of placental mammals probably looked like *Eomaia scansoria*, the earliest known placental mammal, shown here in an artist's reconstruction based on a 125-million-year-old fossil skeleton found in China in 2002. Researchers now say they can reconstruct the DNA of the common ancestor of placental mammals with 98 percent accuracy.

Annual alumni panel will take place at spring fair April 16

AN ACCLAIMED museum curator, a prize-winning journalist, a tech entrepreneur, and a wildlife photographer are among the graduates of UCSC's Class of '75 who will participate in a panel discussion on campus on April 16 during the Banana Slug Spring Fair reunion weekend.

The four graduates, who will discuss the relationship between their UCSC education and current careers, are as follows:

• **PHILIP BROOKMAN** (Porter '75, B.A. 20th-century art history and fine arts), who is senior curator of photography and media arts at the Corcoran Gallery of Art.

• **LAURIE GARRETT** (Merrill '75, B.A. biology), a science and health writer. A Gates Senior Fellow at the Council on Foreign Relations, Garrett is the only person to be awarded all three of the major prizes in journalism: the Peabody, the Polk (twice), and the Pulitzer (for which she has also been a finalist three times).

• **CAROL REALINI** (Oakes '75, B.A. mathematics), a veteran of three decades in technology, and one of the industry's most accomplished entrepreneurs. Peppers and Rogers One-To-One Marketing Group named Realini as a "One-To-One Pioneer," and McGraw-Hill recognized her with the prestigious listing in the "Top 100 Women in Computing."



• **GORDON WILTSIE** (Kresge '75, B.A. individual major and literature/creative writing), whose photography appears regularly in leading magazines such as *National Geographic*, *Outside*, and *Ski*. After more than 25 years leading and photographing expeditions to the Earth's wildest corners, Wiltzie has achieved international acclaim for his visual artistry.

The panel takes place on Saturday, April 16, at 10:30 A.M., in the University Center's Bhojwani Dining Room. For more information on the panel discussion and other Banana Slug Spring Fair reunion events, see page 24 or go to: alumni.ucsc.edu.

UCSC astronomer receives Lawrence Award in Physics

THE U.S. DEPARTMENT of Energy awarded the 2004 E. O. Lawrence Award in Physics to Claire Max, a professor of astronomy and astrophysics at UCSC.

Max, who is deputy director of the Center for Adaptive Optics at UCSC and holds a joint appointment at the Lawrence Livermore National Laboratory, received the award for her contributions to the theory of laser guide star adaptive optics and its application in ground-based astronomy. Adaptive optics sharpens the vision of telescopes by correcting for the blurring effects of the atmosphere.

The E. O. Lawrence Award is given in seven categories to honor scientists and engineers for exceptional contributions in the field of atomic energy.