in USC College who is collaborating with UIUC religion professor Wayne Pitard. “But we have proven that this is wrong.”

The artifacts are cylinder seals used in Mesopotamia [modern-day Iraq].

Inside a darkened lab at University Village, two professors and a group of students huddled around a computer screen depicting the image of a person or deity whose head resembled a fastener doohickey.

“There’s the Wing Nut Man,” one student cracked. Everyone laughed, then launched into a discussion about the primitive-looking image and jotted down notes.

A casual observer might dismiss the scene as one of the countless interesting research projects taking place at USC every day. But take a closer look. These undergraduates from USC College and the University of Illinois Urbana-Champaign (UIUC) are conducting original research on 3,000- to 4,000-year-old artifacts borrowed from a prized museum collection.

Such research is usually reserved for experienced scholars.

“The conventional wisdom is that undergrads are not able to do serious, even groundbreaking research,” said Bruce Zuckerman, a professor of religion in USC College.

A New Kind of Literacy

Louis de Bernières wrote that love is a temporary madness. St. Augustine said that love is the beauty of the soul. Still, Lope de Vega said harmony is pure love, for love is a concerto.

But what if you had to explain love in a picture? The assignment for the multimedia lab class had been to bring in a powerful image representing love.

“We’re going to ask you to think visually in a way that you’ve never done before,” Allison de Fren told her class recently at Taper Hall.

Each student sat at a large computer screen depicting images such as an iPod, the cover of “The Freewheelin’ Bob Dylan” album, a mother breastfeeding her baby and primates snuggling.

De Fren was a teaching assistant in a pilot program launched this fall, dubbed Multimedia in the Core. The program extends USC’s multimedia pedagogy from a select group of students to the undergraduate community at large.

This academic year, as many as 420 students will take seven general education (G.E.) courses that offer hands-on experience in multimedia authorship. The program will expand next year.

The enterprise is a joint effort between USC College of Letters, Arts & Sciences and the USC School of Cinematic Arts’ Institute for Multimedia Literacy (IML). A leader in undergraduate education, USC is the first university to incorporate multimedia curriculum in a wide variety of courses — from earthquakes to early American Indian history. Only a few universities offer a spattering of G.E. courses involving multimedia projects.

“USC’s emphasis in multimedia lit... continued on page 4
Dear Friends,

Six months ago, USC President Steven B. Sample and Provost C.L. Max Nikias asked me to take on the interim deanship of USC College. I was honored to accept this opportunity, and delighted to appoint one of the College’s finest professors, Hilary Schor, to replace me as the College’s dean of undergraduate programs.

Transitions in leadership can be challenging. My predecessor Joseph Aoun’s great success in increasing the quality, stature and visibility of USC College has made this transition an especially critical one. Now more than ever, we need to push on to ensure that USC College continues its rapid ascent into the very top tier of American research and teaching colleges. To stand still, or even to slow down, would be to compromise our ambitious vision for the future of the College.

This fall, among other accomplishments, we came tantalizingly close to attaining the goal of our Senior Hiring Initiative — to hire 100 world-class faculty in a few short years. We also marked the halfway point in our Tradition & Innovation Fund-raising initiative, with nearly $20 million raised thus far.

In this issue of the USC College Magazine, you will see that the balance implied in the title of our initiative, “Tradition & Innovation,” very much applies to the College’s response to the increasing importance of technology in the world of higher education.

Living in the age of digital technologies requires a whole new literacy: an ability to manipulate and analyze audio and visual texts, to supplement competencies in the traditional forms of writing and textual analysis. In recognition of this, the College and the USC School of Cinematic Arts recently launched Multimedia in the Core, a pilot program that integrates the authorship and critical analysis of multimedia texts into the university’s general education curriculum.

At USC, the multimedia age has arrived. All USC classrooms are now wired for the Internet. The campus has gone wireless. More than a dozen rooms have been transformed into sophisticated studio classrooms for technology-enhanced learning. More and more, College professors are using podcasts, videos, simulations and even wikis to enrich their courses.

But this sea change has not diminished the importance of the human interactions that are at the very core of the college experience — a student visiting her professor’s office hours and finding a mentor; students working together on a project of original research; students going out into the world to put their knowledge to work. Technology is at its most powerful when it serves as a supplement to the rich human interactions that make learning at a premier academic institution meaningful and lasting.

Sincerely,

Peter Starr
Dean of USC College

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USC College Taps Literature Scholar for Dean Post

Hilary Schor leads College’s undergraduate programs

This summer, USC College appointed Hilary M. Schor, professor of English, as the new dean of undergraduate programs.

Schor replaced Peter Starr, professor of French and comparative literature, who assumed the post of dean of the College on an interim basis in July.

In his letter to the faculty announcing the appointment, Starr wrote, “Those of you who know Hilary know her as an exceptional scholar of Victorian literature and culture, a brilliant teacher and as fine an institutional mind as we have at this university.”

In her new position, Starr wrote, “Hilary will be instrumental in our efforts to implement the new College Honors Society, the Multimedia in the Core program and our undergraduate team research initiatives.

“But I dare say that she will also be taking the undergraduate programs office in directions not yet foreseen.”

Schor holds a joint appointment in the department of comparative literature and is a professor of law in the Gould School of Law. She is an active member and past co-director of the USC Center for Law, History and Culture.

Her previous leadership experience includes serving as chair of gender studies, director of the Center for Feminist Research and past president of the USC Academic Senate.

“As someone who has taught at USC since 1986, I appreciate the continuing strengths of the College as well as the new possibilities that come with the bright, lively, imaginative students we’ve been attracting,” Schor said. “These students bring more to USC and expect more from us — and I’m looking forward to working with them to diversify our curriculum and make undergraduate education at USC richer and more challenging for all of us. I can’t think of a better job right now.”

Schor’s scholarship focuses on narrative theory, as well as on law, property and the nature of subjectivity in literature, popular culture and film.

Schor, an avid scholar of Charles Dickens, is actively involved in the University of California Dickens Project. Known for her ability to communicate the relevance of literary titles to students, Schor has led many graduate seminars and organized conferences, the titles of which include “Victorian Sounding,” “Victoria Redressed: Feminism and Nineteenth-Century Studies,” and “Victorian Terror.”


She has written essays in companions to Dickens, Jane Austen and film, the Victorian novel and Victorian literature and culture, as well as essays on Bleak House, Bastard Out of Carolina and Victorian “character” trials.

Schor received her bachelor’s degree in British and American literature from Scripps College in Claremont, Calif., and her master’s and doctoral degrees from Stanford University, where she specialized in 19th century literature and culture, drawing on work in intellectual history, feminist studies and the history of the novel.

She has received numerous fellowships and awards, including a John Simon Guggenheim Memorial Foundation Fellowship, Stanford Humanities Center Fellowship, Graves Foundation Fellowship and USC-Zumbeger Faculty Research Fellowship.

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PHOTOS BY PHIL CHANNING

A MESSAGE FROM THE DEAN

On Change & Continuity

Peter Starr
Dean of USC College

Hilary M. Schor

2 USC College of Letters, Arts & Sciences Winter 2006/07 VOLUME 7 NUMBER 3
Tradition & Innovation

One year after its official launch, USC College’s fund-raising initiative gathers steam

In November 2005, USC College publicly announced its largest-ever fund-raising initiative, Tradition & Innovation, with the ambitious goal of raising $400 million by 2010. Since the announcement, fund-raising has proceeded apace: The College received $46 million in gifts and pledges in the 2005-06 fiscal year, and $10.4 million in the first quarter of 2006-07. To date, the initiative has brought in almost $200 million in pledges and donations, nearly half its goal.

Said USC College Dean Peter Starr, “The initiative owes much of its success to the leadership of USC trustees and members of our College Board of Councilors. We’re very grateful — their support and guidance has been absolutely key to our efforts.” Pat Haden (B.A., English, ’75) has played a leading role in the fund-raising effort. A USC trustee and member of the College’s board, Haden serves as chair of the Tradition & Innovation steering committee. The Rhodes Scholar and former NFL quarterback has also supported the College initiative through personal donations and $20.06 — to the initiative.

“Most new graduates live on a tight budget, so we were especially appreciative of their generosity and interest in supporting their alma mater,” MacGillivray said. Kristy Hawley (B.A., international relations and communication, ’06) pledged her 2006 donation to the Center on Public Diplomacy, an interdisciplinary collaboration of the College’s School of International Relations and the USC Annenberg School for Communication.

“The center’s work is extremely important in a world dominated by global media messages and 30-second sound bites,” Hawley said. “Donating was one small way to contribute to a project that made an impact on my learning experience at USC.”

—Wayne Lewis

Knowledge Crews

Team Research Communities put undergrads on front lines of scholarship

A team of sophomores and juniors examines ancient artifacts for insight into how the exercise of power has changed since antiquity. Another team analyzes data from rock samples they collected in Yosemite last summer. Yet another group works with historical documents to chronicle the formation of communities in a number of Los Angeles locales.

The students may differ in interests and discipline, but they are all part of USC College’s new Team Research Communities (TRC) program. Launched in fall, TRC seeks to recast undergraduates as the producers, not just the consumers, of knowledge.

“The idea is that students in these classes have a chance to work with faculty at the cutting edge of their disciplines,” said Hilary Schor, dean of undergraduate programs in the College. “So the students are not only learning from the best, but trying out these ideas themselves, acquiring new skills and carrying out their own independent research.”

Schor leads the program first envisioned by Dean Peter Starr and Michael Quick, dean of research, to engage more undergraduates in research and build a larger student-scholar community.

“In academia, we’ve labored far too long under the assumption that undergraduates absorb knowledge, that professors produce knowledge,” Starr said. “For the past few years, many of us have been working hard to break this assumption down, on the grounds that, whatever your age, you only truly master a field when you actively engage with it.”

Geologist Lawford Anderson and Scott Paterson reach “Geologic Wonders of Joshua Tree and Yosemite,” one of the five, year-long TRC courses. As part of the class, they took an 11-person team to Yosemite this summer, where students spent two weeks doing field work. Back in the lab, students are analyzing rock samples they collected, and aim to create an accurate geologic map of an area that previously has received scant scientific attention.

“I hiked into Yosemite with very little prior knowledge in geology,” said Nicole Ball, a sociology major and art history minor in the course. “And I hiked out with an amazing wealth of information.”

In Lynn Swartz Dodd’s course continued on page 25
A New Kind of Literacy
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... the very nature of literacy has evolved dramatically in a short period of time. I'm proud that we've placed USC's intellectual community at the forefront of efforts to understand and guide these monumental changes."

Nickias called the program "a model for cross-disciplinary collaboration on the part of our cinema school and the College."

To support the effort, the College built two multimedia labs where students can work and check out equipment such as digital cameras, video cameras and sound-recording gear.

Inside the lab, the image covering 23-year-old senior Kirk Sullivan's computer screen depicted Britney Spears and Madonna during the 2003 MTV Video Music Awards. Sullivan said, grinning. "It's the moment before they embrace in a warm, passionate and loving kiss," Sullivan said.

"Is that love, or just a result of public relations people wanting to make money?" asked de Fren, a doctoral candidate who teaches the lab class with Jonathan Weil, a College graduate student in philosophy.

"Never underestimate the amount of respect that these two esteemed artists deserve," Sullivan replied.

"Either you're being sarcastic or you're very idealistic," de Fren said. "I'm not quite sure which."

"You have all semester to figure it out," Sullivan said, grinning.

"The lab was part of Ed McCann's philosophy class. McCann is among the six College professors participating in the pilot. He requires multimedia presentations for his course, "Love and Its Representations in Literature, Philosophy and Film," McCann's course explores key works — Homer's "The Iliad" and Dante's "The Divine Comedy" — that have shaped the European and American notion of love.

Olivia Everett, a 19-year-old junior majoring in cinema-television and history, took McCann's class last year as part of a smaller pilot. She said intertwining video, audio, graphics, animation and text makes a project multilayered.

"It's a whole new ballpark when using visual and sound representations," Everett said. "Images speak differently than words."

"While more laborious than term papers, the broader medium, she said, enables a student to develop a rational argument that also engages emotional and aesthetic sensibilities.

"You have to switch your brain from what you're used to doing, using words," Everett said. "It really does make you think in a different way."

Other courses this academic year include: "The Changing Pacific: Culture, History and Politics in the New South Seas," "Earthquakes," "Russian Thought and Civilization," and "The Ancient Near East." Most professors were chosen because they have long used multimedia in their classes; McCann was among a small group of professors that the IML first trained.

Under the auspices of the IML's early classes, students created non-linear projects. Most notably, a few years ago, a collaborative project on ancient Troy — an interactive 3-D model of the city made famous by Homer's account of the Trojan War — earned awards for the College undergraduate students and was featured in a "New York Times" article. Those early classes eventually became the model for the IML Honors Program.

The multimedia language of the screen is the current vernacular, so weaving it into general education was a natural progression, McCann said.

"The visual, he said, can be just as important in communicating ideas and information as text. Pondering an argument by skeptics that multimedia may replace text, he was, well, philosophical.

"Poets, rhetoricians and philosophers have argued about the true way to communicate since the days of Plato and Aristotle," McCann said.

Elizabeth M. Daley, dean of the School of Cinematic Arts and executive director of the IML, recalled her colleague, filmmaker George Lucas, who emphasized the importance of literacy in multiple forms of media. She credits Lucas — who said that given today's multimedia environment, college students versed in the language of the screen were not truly literate — as the inspiration behind creating the IML in 1998.

Lucas, a USC alumnus, shied away from taking too much credit.

"That's a bit like saying the Beatles invented the music of the '60s," said Lucas, who in September donated $175 million to the School of Cinematic Arts — the largest single gift in USC's history. "They were part of a huge cultural groundswell, or as John Lennon phrased it, 'We were flags on top of a ship that was moving.'"

Daley had envisioned that the teaching of multimedia literacy would eventually reach the entire undergraduate community.

"I've always felt that in order to institutionalize this and accept multimedia literacy as a 21st century vernacular, we would have to incorporate and disseminate it within the university," Daley said. "I'm just glad that the College has been courageous enough to jump in the water with us."

USC College Provost Peter Starr was first to take the plunge. As dean of undergraduate programs last year, Starr worked closely with faculty, the provost's office and other schools to establish the new program. Starr dismissed fears that a multimedia approach would somehow replace text. He elaborated on McCann's comment.

"Go way back to Plato and the fears that writing would replace memory, that writing was dangerous because people would no longer remember," Starr began. "Or a related fear, that writing would replace oral persuasion and dialogue. Well, it didn't happen that way. Writing came along and it became a technical tool that complements oral persuasion."

Starr said that the College remains "absolutely committed to affirming the importance of being able to communicate well in writing.

"These new technologies," he said, "are only going to enrich the traditional form of communication."

The courses, in fact, require considerable writing. Creativity is coupled with an equally rigorous interpretive component.

In addition to computer narratives, McCann's students analyze the images in written essays. What makes the image work? What attributes does it convey? Do you accept the attitudes or question them? What is the historical, cultural and social context of the image?

McCann wants his students to understand the power of the language...
of the screen, a language that most have been speaking since childhood.

“There is a misconception that students brought up in a multimedia-saturated world somehow are more sophisticated about it than older generations,” McCann said. “But what’s true is that they have never really stepped back and analyzed what they’ve been viewing all these years.”

Daley stressed the importance for students to analyze and deconstruct their projects. In the 21st century, the truly literate read, write and understand the language of the screen, she said, echoing Lucas.

“Multimedia literacy is not revolutionary,” Daley said. “It’s fundamentally evolutionary. It’s the way in which communication is moving.”

Lucas hoped that the teaching of multimedia would evolve “to a point when we talk about the literacy rate, it’s understood that means literacy in all forms of expression, not just text.”

Since its inception, the institute has trained more than 50 professors and 2,500 students to integrate multimedia into their teaching, learning and research. But until now, only honors students and those in select programs benefited.

The new program reaches out to all undergraduates. Enrolled students receive four credits for the core course and two more for the lab portion. In the lab course, two teaching assistants are on hand, from the College and the IML. In addition to teaching the philosophy behind multimedia, they train students to use tools such as PowerPoint, Flash Animation and wiki software.

Getting the academy to accept the language of multimedia as an equal to text has not been easy, Daley said. “You are asking people to make some pretty radical changes,” she said. “There has been suspicion in the academic community. The academy has embraced the visual. But we’ve been very slow to accept the fact that text, picture and sound constitute the current vernacular.”

Multimedia course instructor Charles Sammis, professor of earth sciences, was initially skeptical. “I did have reservations,” said Sammis, who has taught geology and earthquake courses at the College for 30 years. “Learning math and science isn’t easy,” said Sammis, emphasizing the value of working out equations on paper. “It’s hard to have a rigorous science course that’s project oriented. Students miss the experience of quantitative problem solving and the intuition that comes from working with numbers.”

In the end, Sammis realized that multimedia could enhance his course without diluting quantitative content. “I view it as a skill students can use,” said Sammis, who is among the seasoned faculty participating in the pilot program. “They can become more familiar with ways to present information. It’s motivational, certain-ly. It’s a way to develop enthusiasm for the sciences.”

Anne Balsamo, director of academic programs at the IML, said technology can be used as a launching base.

“We see technologies as a platform that students will use to explore their own ideas and explore their own voices,” said Balsamo, professor in interactive media in the School of Cinematic Arts and gender studies in the College.

James Dolan, associate professor of earth sciences who is also teaching a course in earthquakes as part of the pilot program, agreed. “I see multimedia as a powerful research tool for the sciences,” he said. Moreover, Dolan called earthquake sciences at USC “the poster child” of continued on page 6
A New Kind of Literacy
continued from page 5

multimedia student involvement. He pointed to the Southern California Earthquake Center (SCEC), based at the College, which each summer units undergraduates from USC and throughout the nation in an interdisci- plinary effort to develop cutting-edge software used in earthquake research. Dubbed SCEC-VD0 (Virtual Display of Objects), the software allows for three-dimensional viewing of earthquakes, faults and other seis- mic activities around the globe.

As more and more earth scientists use the free software, they request additional capabilities from the next summer’s team.

“Our intern’s conceptualized and developed a state-of-the-art visual- ization system that’s proving to be incredibly useful in earthquake sci- ence,” SCEC Director Tom Jordan said.

Inside a computer lab on campus, College student Kristy Akulliam showed a visitor some of the SCEC- VDO program’s features. When a 3-D digital model of a globe began rotating on her computer screen, Akulliam clicked on California. Red dots appeared at recently active fault lines. She clicked on a dot for details about magnitude, time, location, depth and waveforms.

“It’s similar to a MapQuest for earthquakes,” said Akulliam, a 21-year- old senior majoring in economics and English. “Except more sophisticated.”

Holly Willis, IML’s associate direc- tor of academic programs, said the SCEC-VD0 software tool is being used in the earthquake class. A pro- gram goal is for students to develop projects that ultimately will be viewed or utilized by others.

“We’re dealing with a different type of student now,” said Willis, who is coordinating the program with the College. “Students now can adapt to so many areas of media. It’s a different mindset. Students come in wanting to make an impact in the world. They’re already doing it in [Web sites such as] MySpace. They’re sharing music, shar- ing movies. They’re collaborating on content like Wikipedia. They want to do the same thing in their course work.”

Sonja Seetharaman, a 19, a biophysics major in her junior year, could relate.

“Your project might be put out on a Web site for everyone else to see,” said Seetharaman, an IML honors stu- dent. “It’s really nice to be able to broadcast what I’m learning and take all the new information that I’m excit- ed about, and get other people interested about it outside school.”

Her experiences with multimedia will help her get a job, she said.

“If you can tell somebody, ‘I learned how to convey information visually,’ that is really important in the job market today,” she said. “And it’s really important in school today.”

Steve Anderson, associate director of the IML honors program, put it this way: “We want our students to become technically empowered citi- zens. To be critical consumers and active producers of media.”

Judith Jackson Fossett, associate professor of English and American studies and ethnicity, said shaping an argument using images creates a dif- ferent kind of history.

“It creates a counter-history that one wouldn’t normally see,” said Jackson Fossett who next year will teach “American-African Popular Culture,” a multimedia class she has taught in a smaller pilot. From a previous class, a project called “Watermelon, Chicken & Gritz” illustrated the history of blackface comedy. The images and sounds chronicled racial stereotypes from the Amos ‘n’ Andy minstrel shows to Looney Tunes cartoons to more cur- rent shows such as “Good Times” and “The PJs.”

Images and sounds can effectively incite visceral reactions.

“These projects are providing a kind of historical, theoretical and ide- ological context to actually force the viewer to interrogate their own posi- tion,” Jackson Fossett said.

Balsamo said that multimedia liter- acy is reshaping the way people think.

“Students apply their knowledge, their skills, their creativities, their enthusiasms to questions that are going to vex us in the future and pro- voke all of us to ask more interesting and nuanced questions about the world and about our culture,” she said. “Questions we can’t even imagine to ask now.”

Lucas said the program “creates an environment where true collaboration can emerge.

“The program is a prime example of that process,” he said, “with USC building on the unique strengths of the College and the cinema school.”

He added that students in the pilot program are developing skills that will have immediate as well as life-long applications.

“In four years, this group will go out into the world and become the next generation of teachers, writers, politicians, artists, businessmen and [business]women,” Lucas said. “As they put their knowledge to use, they’ll inspire others.”

―Pamela J. Johnson

Visit www.usc.edu/college/arts/medialab for an interactive version of this article.

Technology + Teamwork
continued from page 1

Iraqi to certify purchases. Merchants trading grain for a few goats, for exam- ple, would ask the customer to roll out a cylinder seal, which held an individ- ual’s unique “signature.” Each signature was an intricate picture finely carved into a cylinder-shaped stone, such scenes as a figure of a man stab- bing a lion while the lion attacks a gazelle.

Dursting purchases, a cylinder was pressed like a rolling pin over wet clay — the equivalent of a signed receipt.

“You say cumbersome, but for them it was a revelation,” Zuckerman said. “Sure beats trying to keep every- thing in their heads.”

In this unique research collabora- tion between two univer- sities, students and their professors photographed 62 of the seals in a project that began last summer. The UIUC group trav- eled to Los Angeles and spent a week photographing the objects at USC.

This fall and spring, participants from the campuses 1,704 miles apart are analyzing the images and sharing their discoveries.

“I’m confident in students’ ability to play a major research role, especially when we give them powerful techno- logical tools,” said Zuckerman, whose collaboration also includes Lynn Swartz Dodd, curator of USC College’s Archaeological Research Collection.

Zuckerman is among six USC College professors participating in a pilot program, Multimedia in the Core, in which as many as 420 undergraduate students will take general education courses that involve multi- media authorship. The joint endeavor between USC College and the USC School of Cinematic Arts’ Institute for Multimedia Literacy is the first of its kind. (See Multimedia story, page 1.)

Students taking Zuckerman’s course, “The Ancient Near East,” are participating in the pilot program, although the professor has used advanced computer technology in his classroom for years.

“It’s nice to see that the world is catching up with us,” Zuckerman said with a grin.

His students are examining the seals with a level of detail only recent- ly possible. About 25 years ago, Zuckerman and his brother, Kenneth, developed the West Semitic Research Project (WSRP). Today, WSRP is the acknowledged world leader in advanced photographic and computer imaging of ancient objects and texts — particularly the famous Dead Sea Scrolls. They share the images through the online InScript fact data- base.

Sometimes dubbed the “Scroll Brothers,” the Zuckermans and their longtime colleague, Marilyn Lundberg, helped the students photograph the seals.

The conventional photograph- ic method would have been to roll each cylin- der over wet clay and photograph the impres- sion, but Bruce Zuckerman wanted stu- dents to analyze the actual surface of the seals.

So the entire surface of each cylin- der was photographed in one continuous, flat image.

Kenneth Zuckerman, Lundberg and industrial designer John Melzian developed the advanced photographic technique, which involves adapting panoramic digital cameras capable of taking pictures in 360 degrees.

But rather than rotating the camera around a seal, the camera remains sta- tionary while the seal is placed on a platform, which slowly revolves. The resulting detailed “roll-out” photo is in a digital form, so students may magnify and move the image around on a computer screen to aid in their research.

“We’ll have the students’ research work almost immediately available over the Web,” Bruce Zuckerman said. “This is an opportunity to show the world that this can be done.”

Zuckerman’s class differs slightly from the others in the multimedia pilot program. His is coupled with another program launched this year — the College’s Team Research Com-
munities (TRC). (See story, page 3.) The five TRC courses involve students and a professor collaborating on a yearlong original research project.

The cylinder seals, the focus of Zuckerman’s yearlong project, were borrowed from a collection at the William R. and Clarice V. Spurlock Museum at UIUC.

Zuckerman was visiting the Illinois museum when he saw the assortment of 1,700 cylinder seals. He knew that in the mid-1950s Edith Porada, the 20th century’s leading expert on cylinder seals, studied the collection and planned to publish her research. But the volumes never materialized.

“That’s when I hatched an idea,” Zuckerman said.

He enlisted the collaboration of Pitard, a friend since the mid-1970s when Zuckerman worked at the Semitic Museum at Harvard University and Pitard was a Harvard graduate student.

“We were looking for a good project for our students to sink their teeth into,” Zuckerman said. “The Spurlock cylinders turned out to be ideal.”

Pitard and the museum staff located Porada’s preliminary, unpublished research on the seals.

“It’s like having Albert Einstein’s notes on physics,” Zuckerman said. “It gave us a big leg up.”

The pair sought to work with Dodd, a visiting assistant professor of religion in the College. An expert on archaeology and ancient Near Eastern artifacts and texts, Dodd directs the TRC course.

After Zuckerman and Dodd obtained an Andrew W. Mellon Academic Mentoring Grant at USC, coupled with matching funds from UIUC, the project literally got rolling.

“This is the most complex research and teaching experiment I’ve ever tried to do,” Zuckerman said.

The perfect lab in which to set up the photographic equipment was located. Zuckerman and his crew borrowed space in Matt Gainer’s studio, already packed with cutting-edge imaging gear. Gainer, USC’s digital imaging director, has helped guide the project from the start.

“We wanted the project to move forward,” Marje Schuetze-Coburn, dean of USC Libraries, said of locating the space. “The work of this team of students will be saved for the long term. They’re creating the digital library here for future scholars.”

College Dean Peter Starr visited the lab when the seals were being photographed.

“We’ve always known that in certain fields — such as in mathematics or theoretical physics — people at the age of 18, 19 or 20 can do path-breaking work,” Starr said. “But we don’t generally think that people of that age in fields such as archaeology or ancient studies can do path-breaking research. Bruce and other professors are showing that they can.”

“For the first day and a half, our professional staff was doing all the primary work while the students looked on and took notes,” Lundberg added. “By the end of the second day, our roles had reversed.”

Inside the lab this summer, the enthusiasm was palpable. Kristin Butler, 22, squeezed an ancient seal between her gloved thumb and index finger, peered close and knotted her brow.

Studying fragments of an ancient clay tablet that made up the original “receipt,” the College junior and the other students could barely make out the etching of a lion’s head.

But when looking at a high-resolution digital image of the same object, every tiny detail was illuminated — including a few surprises.

“There’s the scribe’s fingerprint!” Zuckerman shouted.

In clear view on the computer screen was the loopy pattern of a fingerprint left by the Mesopotamian who handled the wet clay more than 3,000 years earlier.

“Send it to CSI and see if they can identify him!” Pitard joked.

Georgiana Nikias, a senior majoring in archaeology and English, was thrilled to be conducting original research on the seals. But the 22-year-old student was already an experienced researcher. Nikias, along with Butler and Hannah Marcuson, placed first in the 2006 Undergraduate Symposium for Scholarly and Creative Work in the humanities category for a project that examined a USG-sponsored excavation site in Israel.

“We hope to have our research on the cylinder seals published by the end of the school year,” Nikias said. Zuckerman expects that students will complete an online catalogue of the ancient seals by spring’s end.

“This will be the most Sophisticated catalogue of cylinder seals ever made,” Zuckerman said. “And our undergraduates will be leading the way.”

—Pamela J. Johnson
Learning in the Multimedia Age

One Lecture, To Go Please

USC on iTunes U will put professors on their students’ playlists

You see them everywhere at USC. Those trademark white iPod earphones have become as ubiquitous an accessory for students at USC as wearing the cardinal and gold.

But don’t assume that every plugged-in Trojan on campus is nodding along to the sounds of their favorite feel-good hits. They just might be brushing up for a midterm.

Many professors supplement classroom learning by offering students downloadable versions of their lectures as podcasts. Accessible using Apple’s iTunes software, podcasts are pre-recorded audio and, in some cases, video that users can subscribe to and automatically download to their computers, or mobile devices like iPods, as new lectures or episodes are published.

iTunes U

The university’s efforts to enhance the traditional classroom experience using technology will soon have a new online home — USC on iTunes U.

“The idea of this is that young people are using iTunes anyway,” said USC College chemist Charles McKenna. “With a couple of clicks, they can see what USC wants to show them.”

The iTunes U program is a free hosting service provided by Apple. It offers institutions of higher education a centralized “home” among its directory of podcasts, and provides an easier interface for faculty to add their lectures as podcasts. USC is one of the early adopters, joining peers such as Stanford, UC Berkeley and Duke as iTunes U participants.

McKenna first suggested the iTunes U partnership to the university’s administration late last fall. From there, plans were shepherded along thanks to a team effort coordinated by Sun-Pyung Ku, the university’s chief technology officer for enhanced learning and professor in the USC Marshall School of Business.

USC on iTunes U couldn’t have come to fruition without the work of many staff and faculty members, including the Faculty Advisory Committee for Technology-Enhanced Learning (of which McKenna is a member), the provost’s office, the general counsel’s office and Information Technology Services.

Ku feels that this large-scale effort will expand the reach of the university’s instruction.

Ku said, “With USC on iTunes U, essentially, we can extend teaching and learning beyond the classroom — anywhere, anytime.”

“We are all excited about the opportunities this new collaboration will provide,” said Gene Bickers, associate vice provost for undergraduate programs and a professor of physics in USC College. “Music and video downloads are a part of every undergraduate’s life, and iTunes U will enable us to bring the same technologies to bear in enhancing learning outside the classroom.”

Security of information is a top concern for USC’s team; much of the technical coordination involved in this project was to make sure the system is secure. Authentication for administrators, faculty and students logging in to USC on iTunes U will be handled by the university.

To facilitate professors’ podcasting efforts, the USC Center for Scholarly Technology has offered training and mobile kits with equipment for capturing lectures to interested faculty. In the past year a number of new multimedia classrooms have been built on campus, and USC now has more than 30 multimedia classrooms outfitted for video conferencing, distance learning and recording podcasts.

In addition to course lectures and other password-protected content restricted to enrolled students, USC on iTunes U provides the opportunity for a variety of podcasts available to the public. Admission information, alumni updates, cultural events and news eventually will be available at USC on iTunes U.

Faculty Feed

A Distinguished Fellow of USC’s Center for Excellence in Teaching, McKenna is a podcasting pioneer at the College, and his enthusiasm for using new technologies is difficult to overstated. He has used a number of distance learning technologies in his course CHEM 203, “AIDS Drug Discovery and Development,” which he has co-taught with Amy Barrios, assistant professor of chemistry.

Each lecture given live is also recorded for later posting on the class Web site, and everything from the submission of assignments to grading is done online via an interface created by McKenna and his colleagues.

“When we saw the iPod, we realized that we ourselves could create podcasts fairly easily,” said McKenna, a professor of chemistry and pharmaceutical sciences. “And since we were already putting both audio and video versions of every lecture on our Web site, last fall we decided to implement podcasting.”

According to McKenna, about 15 percent of last fall’s class, which numbered more than 300 students, had subscribed to the CHEM 203 podcasts by the end of the semester.

Other College professors are joining McKenna in producing podcasts. Audrey Li, professor of linguistics and East Asian languages and cultures, and Jane Iwamura, assistant professor of religion and American studies and ethnicity, will offer podcasts of course lectures via USC on iTunes U in the spring.

Professor Susan Forsburg, director of the molecular biology doctoral program, and her co-lecturers in BISC 502a began podcasting in fall 2006. Although she has some concerns with the technology, she’s found that students love it.

“We started off by running a trial,” Forsburg said, “and because of student enthusiasm, we decided to continue. Traditionally, we had little dictate cassette recorders in front of us blinking away. Podcasting gives us a way to make recordings accessible to all students.”

“I have been a big fan of audio lectures,” BISC 502a student Pritivijit Chellamuthu said. “The ‘profcast’ helps me refresh my memory about important ideas I might have forgotten from the lecture.

“With the advent of new technologies, we should really take full advantage,” he said.

The Future

As young adults become more and more “plugged-in,” lectures published as podcasts will go from being a novelty to an expectation, McKenna predicts.

“Many students’ reaction is, ‘Why haven’t you been doing this already?’” McKenna said. “To them it’s natural, it’s obvious.”

“That’s the future,” said William Tierney, Wilbur-Kieffer Professor of Higher Education at the USC Rossier School of Education and director of the Center for Higher Education Policy Analysis. “The future is that younger students are more comfortable with electronic media than even today’s students, and certainly faculty who are a generation older.

“So, really what we’re doing with technology is enabling different ways of learning, which is increasing the potential for learning rather than just transferring it from one medium to another.”

“The administration in the College has been very supportive of these efforts,” McKenna said. “They’ve had the foresight and been willing to experiment with new techniques, and to back that up with some resources. I think the students are the winners as a result.”

—Wayne Lewis
Putting Technology in Its Place — in the Classroom
Faculty harness technologies to enhance learning in the humanities

An hour into a lecture on notions of the origin of species, historian Philippa Levine instructs her students to take out their clickers. As students retrieve from their bags small, remote control-like devices, the following prompt appears on a large digital projection screen at the front of Taper Hall 101: “Given what you know of Linnaeus, do you think he’s: 1.) A monogenist; 2.) A polygenist; or 3.) I’m not sure I can answer that.”

Each student uses a clicker to register a response and within seconds, Professor Levine knows not only how well the 167 students in “The Evolution Debates” have absorbed the day’s material but also how readily they can draw connections between concepts. Given what they’ve learned about Linnaeus, monogenesis and polygenesis, 60 percent of Levine’s students think Linnaeus’ ideas are in keeping with monogenism — in other words, Linnaeus might have believed that human beings are descendants of a single pair of ancestors; 31 percent think his ideas are polygenist — these students find it likely that Linnaeus believed human beings to be descendants of multiple, independent pairs of ancestors; and 9 percent of the students in the course aren’t too sure to which camp the early 18th century botanist and pioneering taxonomist might have belonged had he not pre-dated the theories in question.

Otherwise wary of multiple-choice questions for tests and quizzes in humanities courses, Levine values the ways in which clickers help her informally assess student learning and rescue those who might be falling behind.

“It’s an opportunity to find out really, really fast whether you’re getting through to students,” Levine said of the clicker, or Personal Response System, technology. “Some students are shy. Clickers give them an opportunity to say what they think without saying it. They give students in big lectures a sort of comfort — and it’s fun for them. It’s almost like being on a game show.”

Levine is one of two College faculty recipients of funds provided by the Technology Enhanced Learning Initiative Program (TELIP) to nine USC faculty members. Through the program, USC’s Center for Scholarly Technology provides the consultation, training and equipment necessary to help faculty enhance student learning through new technologies.

In addition to clickers, Levine plans to implement a wiki in “The Evolution Debates” to help facilitate student collaboration and discussion. She hopes that wiki software — the same technology that powers the popular Wikipedia, an online encyclopedia that allows any visitor to add or edit content — will “be a good vehicle for controversial and delicate topics.” Levine plans to create pages for course readings, lectures and relevant controversies so that students may freely discuss their opinions on a given subject.

Kathi Inman Berens, a senior lecturer in the College’s Writing Program and a Fellow of the Center for Excellence in Teaching at USC, also received a TELIP grant this year. Inman Berens envisions technology facilitating online discussion and the presentation of multimedia texts in her sections of “Advanced Writing.”

Excited about the ways in which technology can impact learning, both Levine and Inman Berens are also thoughtful about the difficulties instructors face as they put technology to work for education. Inman Berens believes the student learning outcomes are ultimately worth the effort. She sees the inherent challenges in using technology in writing courses — distinguishing group from individual efforts, for example — as surmountable: “Faculty and students will collaboratively evolve a model of e-writing that meets the twin needs of technology-infused critical thinking and old-fashioned grades.”

Levine — who for a number of years has used Web-based software such as Turn It In, which helps prevent plagiarism by checking student submissions against both Web content and the work of peers — sees a danger in glorifying technology without also understanding the ways in which both faculty and students need to be critical of tools such as Google and Wikipedia that are now widely used in academic settings.

When it comes to research papers, Levine limits her students’ reliance on resources available only on the Web: “I encourage my students to be critical and force them to remember that the book and the peer-reviewed journal are still extant.”

Levine has also discovered some unexpected benefits to implementing technology in her courses. For example, she first began using Turn It In simply to curb the temptation to plagiarize, but soon found that because the software doesn’t distinguish between quoted and plagiarized material, it also can be used to assess just how much original thought went into writing a given paper.

Gene Bickers, professor of physics and the associate vice provost for undergraduate programs, remarked that Levine is among several College faculty members who have served as leaders in the use of innovative technology in classroom settings. “There are technological possibilities out there that faculty just don’t know about,” said Bickers. “One of the goals of TELIP is to provide information to faculty so that they know what software is available to them.”

For Levine, the clickers have proven nothing but useful to her class. The second she knows that 40 percent of her students don’t recognize Linnaeus’ ideas as monogenist, she can quickly review Linnaeus’ key taxonomic theories and see to it that none of her 167 students is left behind.

——Suzanne Menghraj

PHOTOS BY PHIL CHANNING

Students listen to Professor Philippa Levine lecture on the historical ideas that led to the theory of evolution. The lecture is punctuated by technology-enabled participation when students use clickers (pictured below) to check their comprehension of the material on the fly. The results guide Levine’s instruction.

Philippa Levine has found some technologies — such as the so-called clickers — extremely useful in her history course “The Evolution Debates.”
Bringing Up (Cyber)Baby

Innovative teaching tool is brainchild of psychologist Frank Manis

Meet Joseph. He turned 18 this summer. In the fall, this honor student will be attending a very selective university on a baseball scholarship. An ever-inquisitive child, he showed an early aptitude for math and science. He developed an interest in writing and art as a teen.

The road wasn’t easy, though. Throughout elementary school, teachers urged his family to medicate the easily distracted child. In his moody teen years, he and his father worked through issues of alcohol use, reckless driving and drug experimentation.

All in all, of course, Joseph has made his dad proud.

But you won’t be seeing Joseph on the collegiate baseball diamond or drowsily dragging himself across campus to early-morning classes.

Joseph exists only on a computer server at USC. He’s a “virtual child,” a product of an online educational tool created by USC College psychologist Frank Manis and programmer Mike Radford.

Manis recently published The Virtual Child (Prentice Hall, 2006), a text-based interactive simulation in which students play the role of a parent raising a child from birth to 18. He road-tested it with his Psychology 336 class over the past four years, incorporating feedback from his students.

“Basically it’s an all-in-one program,” Manis said. “By going through it, students can learn, ‘What does a typical 3-month-old do?’ Well, they laugh; they show more interest in the environment. The books don’t often say that.”

Descriptions of situations and life events alternate with screens that prompt for multiple-choice “parenting decisions.”

“The choices generally fall into three categories,” Manis said. “There’s the laissez-faire parent, the strict parent and the person who really wants to match his parenting to the child’s personality and needs.”

Manis smiled. “Most people who take my course choose the matching.”

Dealing with infant illness, potty-training, planning play time, the eventual teenage battle for the car keys — the virtual parent has many decisions to make.

For instance, at 18 months, future slugger Joseph begins to play make-believe with his toys and sometimes talks to himself.

The virtual parent may encourage Joseph to make the play more concrete by introducing blocks. Or he can join the child in his make-believe games. Another choice is to let him play on his own so as not to interfere with the development of his imagination. Or the parent may try to channel Joseph’s play away from talking to himself and make it more interactive.

Manis’ “baby” starts with a verbal intelligence. Each will differ in traits that form a predisposition toward a certain type of personality and level of intelligence. They are reading about the stuff in books, and what I wanted for them is to have what I have as a parent: to see a child from birth to 18 years. But they do it within one semester.”

—Frank Manis, professor of psychology, USC College

At certain milestones, The Virtual Child provides feedback and advice on a student’s choices via evaluations of the child’s development.

In Joseph’s case, at 21/2, he paid a visit to a child development specialist. The session yielded such comments as, “Joseph was pretty cooperative with the other kids but became somewhat aggressive over a favorite toy.” And, “Joseph is above average in solving problems with more than two steps, and grouping objects together in categories. The specialist recommended that you respond to Joseph’s interests.”

Along the way, a student/virtual parent is prompted with questions relating her child-rearing experience to the developmental theories she’ll read about and hear about in lectures.

The Virtual Child simulates something most undergraduates will not have experience with or access to — a growing child.

“College students don’t have a lot of contact with children,” said Manis, a father of three daughters who has taught developmental psychology at the College for 25 years. “They are reading about the stuff in books, and what I wanted for them is to have what I have as a parent: to see a child from birth to 18 years. But they do it within one semester.”

Typically, developmental psychology students are asked to observe children of different ages. The Virtual Child presents an innovative, more accessible alternative.

“It fills a need that I thought was always there,” Manis said. “We talk about research but the students don’t actually experience it directly. So it’s still book learning, abstract stuff. I thought, what better way to make it real than to actually say, ‘You raise the child.’”

A Virtual Child’s “baby” starts with certain randomly generated attributes that form a predisposition toward a certain type of personality and level of intelligence. Each will differ in traits such as activity level, friendliness and verbal intelligence.

“We can’t simulate a real child,” Manis said, “so we picked certain dimensions that we know about in research and that students will hear about in the textbook.

“The students’ parenting choices slowly, gradually affect the child.”

The Virtual Child reflects the current state of research about the elements that influence a child’s development. It’s a complex mixture of biology, child rearing and the influence of peers and culture as a whole.

“Text books should have less of the traditional stuff,” Manis said, “and more of the new dynamic stuff, which is how genes and environment interact. The old theories don’t work.”

So between nature, nurture and culture, none wins out as a primary influence in the development of a virtual child.

“I tried to strike a balance,” Manis explained. “That’s actually the way the field is going.”

“The field started as just mother-child. Now, we realize there are some kids who are more resilient. How do these kids in bad environments turn out fine? And then there are kids who

MANIS BY PHOTO PHIL CHANNING
Neuroscientists have proposed a simple explanation for the pleasure of grasping a new concept: The brain is getting its fix. 

The click of comprehension triggers a biochemical cascade that rewards the brain with a shot of natural opioid-like substances, said Irving Biederman of USC College. 

“While you’re trying to understand a difficult theorem, it’s not fun,” said Biederman, the Harold Dornsife Chair in Neurosciences and professor of psychology and computer science. “But once you get it, you just feel fabulous.”

The brain’s craving for a fix motivates humans to maximize the rate at which they absorb knowledge, he said. 

Biederman, a leading expert on how the brain processes images who has also explored why some images are considered more attractive than others, discusses his theory in an article, which is forthcoming in American Scientist, the art critic who serves as executive editor of the journal.

Biederman hypothesizes that knowledge addiction has strong evolutionary value because mate selection correlates closely with perceived intelligence. Only more pressing material needs, such as hunger, can suspend the quest for knowledge, he added.

The same mechanism is involved in the aesthetic experience, Biederman said, providing a neurological explanation for the pleasure we derive from art and music.

“This account may provide a plausible and very simple mechanism for aesthetic, perceptual and cognitive curiosity.”

Biederman’s theory was inspired by a 25-year-old, widely ignored finding that mu-opioid receptors — binding sites for natural opiates — increase in density along the ventral visual pathway, a part of the brain involved in image recognition and processing. 

The receptors are tightly packed in the areas of the pathway linked to comprehension and interpretation of images, but sparse in areas where visual stimuli first hit the cortex.

Biederman’s theory holds that the greater the novelty in the areas rich in opioid receptors, the greater the pleasure.

In previous work, he has used state-of-the-art brain scanning tools to view the human brain in action. In a series of functional magnetic resonance imaging (fMRI) trials with human volunteers exposed to a variety of images, Biederman and his research group found that strongly preferred images prompted the greatest brain activity in more complex areas of the ventral visual pathway. (The data from the studies are being submitted for publication.)

Biederman also found that repeated viewing of an attractive image lessened both the rating of pleasure and the activity in the opioid-rich areas. He explains this familiar experience by means of a neural-network model termed competitive learning.

In competitive learning (also known as neural Darwinism), the first presentation of an image activates many neurons, some intensely and a greater number only weakly. With repetition of the image, connections to the highly activated neurons become stronger. But these activated neurons inhibit their weakly activated neighbors, causing a net reduction in activity. This reduction in activity, Biederman’s research shows, parallels the decline in pleasure felt during repeated viewing.

“One advantage of competitive learning is that the inhibited neurons are now free to code for other stimuli patterns,” Biederman wrote. In effect, these neurons are attuned to process new information.

This preference for novel concepts also has evolutionary value, he added. “The system is essentially designed to maximize the rate at which you acquire new but interpretable information.”

Biederman believes his is the first study to present a neurological theory of aesthetic experience. “The theory, while currently tested only in the visual system, likely applies to other senses, Biederman said. “There is, for example, a mu-opioid receptor gradient in the auditory system of the macaque monkey. In macaques, the receptors are relatively sparse in the primary auditory cortex and dense in the secondary auditory cortex.”

The American Scientist article cited Stanford University research from the 1980s that further strengthens Biederman’s theory. The Stanford research showed that people who normally experience “chills” when listening to certain compositions do not have the same sensation while under the influence of naloxone, a mu-opioid blocker.

Biederman’s findings may also have applications in distant fields, such as the fine arts. For example, said Biederman, the art critic who loves modern art may have been saturated by the classics. “They’ve experienced all the Old Masters and they don’t want to see another one of those.”

—Wayne Lewis
Faculty Hiring Initiative Drawing to a Close
Successful effort brings USC College faculty to all-time high

Launched in 2002, the soon-to-be-completed Senior Faculty Hiring Initiative has enabled USC College to recruit a group of truly remarkable scholars — experts in more than one discipline, pioneers in emerging fields and leaders in the reshaping of established fields.

This year, the College welcomed 30 new senior and junior faculty members. Among these are seven scholars in marine genomics and biogeochemistry, whose expertise add to the College’s already considerable might in geobiology and computational biology. But the hiring push has also built new strengths in philosophy (the USC department is now ranked as one of the two best in the world in the area of philosophy of language), interdisciplinary visual studies and cognitive neuroscience, among other areas of study.

The addition of nearly 100 world-class senior faculty, as well as continued hiring at the junior level, has brought the College’s tenure-track faculty to an all-time high of 494.

“In growing our numbers, we have also grown more diverse, having made significant progress in the recruitment of women and minority faculty,” said Peter Starr, dean of USC College.

The College expects to announce its 100th hire in the spring.

Robert Campany
Professor of Religion
Ph.D., History of Religions, University of Chicago, 1988
From: Indiana University, Bloomington

Louis Goldstein
Professor of Linguistics
Ph.D., Linguistics, University of California, Los Angeles, 1977
From: Yale University, New Haven, Conn.

Douglas Greenberg
Professor of History
Ph.D., History, Cornell University, 1974
From: Survivors of the Shoah Visual History Foundation, Los Angeles

Robin D.G. Kelley
Professor of History and American Studies and Ethnicity
Ph.D., U.S. History, University of California, Los Angeles, 1987
From: Columbia University, New York

James Heft
The Alton M. Brooks Professor of Religion
Ph.D., Historical Theology, University of Toronto, 1977
From: University of Dayton, Dayton, Ohio

Manuel Pastor
Professor of Geography
Ph.D., Economics, University of Massachusetts Amherst, 1984
From: University of California, Santa Cruz

David Hutchins
Professor of Biological Sciences
Ph.D., Biology, University of California, Santa Cruz, 1994
From: University of Delaware, Newark

Sergio Sañudo-Wilhelmy
Professor of Biological Sciences
Ph.D., Earth Sciences (Geochemistry), University of California, Santa Cruz, 1993
From: Marine Sciences Research Center, State University of New York at Stony Brook

Andrew Simpson
Professor of Linguistics and East Asian Languages and Cultures
Ph.D., Linguistics, University of London, 1995
From: University of London, United Kingdom

Sherry Velasco
Professor of Spanish and Portuguese
Ph.D., Spanish Literature, University of California, Los Angeles, 1992
From: University of Kentucky, Lexington

Lin Chen
Associate Professor of Biological Sciences and Chemistry
Ph.D., Chemistry, Harvard University, 1994
From: University of Colorado, Boulder

James Moffett
Professor of Biological Sciences
Ph.D., Chemical Oceanography, University of Miami, 1986

Robin D.G. Kelley
Professor of History and American Studies and Ethnicity
Ph.D., U.S. History, University of California, Los Angeles, 1987
From: Columbia University, New York

Lin Chen
Associate Professor of Biological Sciences and Chemistry
Ph.D., Chemistry, Harvard University, 1994
From: University of Colorado, Boulder

Lin Chen
Andrew Curtis
Associate Professor of Geography
Ph.D., Geography, State University of New York at Buffalo, 1995
From: Louisiana State University, Baton Rouge

Katrina Edwards
Associate Professor of Biological Sciences
Ph.D., Geomicrobiology, University of Wisconsin-Madison, 1999

Denise Ferreira da Silva
Associate Professor of Sociology and American Studies and Ethnicity
Ph.D., Sociology, University of Pittsburgh, 1999
From: University of California, San Diego

Jason Fulman
Associate Professor of Mathematics
Ph.D., Mathematics, Harvard University, 1997
From: University of Pittsburgh, Pittsburgh, Pa.

John Heidelberg
Associate Professor of Biological Sciences
Ph.D., Marine Estuarine and Environmental Science, University of Maryland, College Park, 1997
From: The Institute for Genomic Research (TIGR), Rockville, Md.

Jia Grace Lu
Associate Professor of Physics and Astronomy
Ph.D., Applied Physics, Harvard University, 1997
From: University of California, Irvine

Jace Ross
Assistant Professor of Philosophy
Ph.D., Philosophy, Rutgers University, 2006
From: University of California, Berkeley, 1997
From: University of Wisconsin-Madison

Maarten van Delden
Associate Professor of Spanish and Portuguese
Ph.D., Comparative Literature, Columbia University, 1990
From: Rice University, Houston

Paolo Zanardi
Associate Professor of Physics and Astronomy
Ph.D., Physics, Universita di Roma, 1995
From: Institute for Scientific Interchange, Turin, Italy

Liang Chen
Assistant Professor of Biological Sciences
Ph.D., Molecular, Cellular and Developmental Biology, Yale University, 2006
From: University of California, Irvine

Nayuta Yamashita
Assistant Professor of Anthropology
Ph.D., Anthropology, Northwestern University, 1996
From: Keck School of Medicine of USC
Nano Know-How
Physicist probes the nanoworld to make a better chemical sensor

 Devices for detecting dangerous substances can literally be lifesavers, in situations ranging from soldiers on the battlefield to luggage screeners at airports.

Yet chemical sensors now available for such tasks have their drawbacks. For instance, they aren't always sensitive enough to detect tiny amounts of a hazardous chemical. And once exposed, it can take hours until they are ready to sense again.

But research from the nanoworld, where individual molecules become scientific tools for inventing miraculous micro-gadgets, is revealing new and better ways to recognize malicious chemicals.

At the heart of novel detection devices now on the drawing board are threads of metal oxide small enough to fit through the eye of a needle too small to see. These “nanowires” are measured in billions of a meter, or nanometers. A typical nanowire is about 50 nanometers wide — you could fit 20,000 of them side to side within the eye of a full-sized needle.

Making such nanowires and embedding them in delicate electronic circuitry occupies the creative energy of Jiia Grace Lu, one of three new scientists to join the USC College physics and astronomy department this year. The others are cosmologist Elena Pierpaoli and Paolo Zanardi, who studies quantum information sciences.

Lu’s interest in physics was ignited in childhood; she grew up in China in a family populated by physicists, including her grandfather, father and several uncles.

“Usually, they don’t encourage girls to do hard science, but I was fascinated by physics,” said Lu, associate professor of physics and astronomy. She knew she wanted to be a scientist even before entering college and astronomy. She came to the U.S. at 14 for high school, and received undergraduate degrees in physics and electrical engineering from Washington University in St. Louis.

She earned her physics doctorate at Harvard and most recently has pursued her nanoworld explorations at the University of California, Irvine.

Lu’s work on nanowires has focused on zinc oxide, which offers particularly attractive properties for nanosensing and other devices. Zinc oxide nanowires can be used in a type of transistor that responds to the presence of various gases with exquisite precision, thus acting as a powerful chemical sensor.

Transistors are important components of electronic circuits, controlling the flow of information by regulating the transmission of electric current. In transistors made with a zinc oxide nanowire, the presence of foreign substances alters the wire’s ability to conduct the current. Nitrogen dioxide gas, for instance, will reduce how much current the wire conducts, whereas carbon monoxide will increase it. Different substances increase or decrease the current by different degrees, so specific chemicals can be identified by how much they affect the flow of current.

Zinc oxide also can be used as a sensing material when in the form of a thin film. But the nanowire structure studied by Lu has several advantages over film sensors, mostly due to its larger surface-to-volume ratio. A small dose of nitrogen dioxide gas on a thin film might diminish the transmission of electric current. In transistors made with a zinc oxide nanowire, the presence of foreign substances alters the wire’s ability to conduct the current. Nitrogen dioxide gas, for instance, will reduce how much current the wire conducts, whereas carbon monoxide will increase it.

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Zinc oxide also can be used as a sensing material when in the form of a thin film. But the nanowire structure studied by Lu has several advantages over film sensors, mostly due to its larger surface-to-volume ratio. A small dose of nitrogen dioxide gas on a thin film might diminish the current by only 2 percent, much harder to measure than the 50 percent decrease observed in a zinc oxide nanowire.

Nanowires also can be more quickly reset to begin sensing again. For films, elaborate methods are needed to cleanse the surface, requiring from half an hour to many hours. With nanowires, a voltage signal to the transistor drives away the chemical, restoring the original sensing condition in a matter of minutes. (The precise amount of time needed to refresh the sensor can also be used to help determine the identity of the chemical being detected.)

So far, Lu and her group have focused on ways of making the zinc oxide nanowires and demonstrating their sensing effectiveness in principle. In the next few years, she hopes to see laboratory versions of working devices, each containing several sensing units to create a sort of “electronic nose” for sniffing out a wide range of nasty chemicals, including nerve gas and various explosives. Several sensing units can then be embedded in electronic circuitry with computing power to analyze the patterns in the transistor signals corresponding to various gases.

“We’re working on how we can distinguish gases in a complex environment, not just a mixture of two gases,” Lu said. “Ultimately, we want to develop an ultra-sensitive and highly selective chemical sensing system that mimics the mammalian olfactory system.”

Battlefield soldiers could carry this kind of “electronic nose” in a cell phone-sized device to detect toxic chemicals rapidly and, because it could be quickly refreshed for reuse, repeatedly.

Of course, the sensors and computing elements in such devices require electrical power, and once again nanowires can help. In transistors, the wires just lay flat, but Lu is investigating other configurations in which the zinc oxide wires stand vertically in an array that can serve as a tiny battery, rechargeable by solar power. The battery would be small enough to integrate on a single chip with the sensing unit and computing circuitry.

Besides sensing toxic substances, zinc oxide nanodevices could have many other uses — in logic gates for computer circuits, for instance, or as solar-electric cells or as photosensors.

Lu’s plans include making even smaller nanowires — only a few nanometers across — from metals and semiconducting materials. Smaller wires would operate in the realm where the rules of quantum physics take control. Experiments with such wires will build the know-how essential for future applications in ultra-fast electronics and quantum computers.

Eventually, Lu’s work may even lead to a better understanding of the nanoworld itself, paving the way for even more useful nanoinventions in the decades to come.

—Tom Siegfried
The Politics of Follicles and Culture of Coifs
How hair styles shape African-American women’s sense of themselves

L’Année Terrible
Exploring the origins and legacy of the Paris Commune

Faculty Books
Religion Professor Ronald Hock opened a coffee table-sized art book to a reproduction of "The Last Supper" by Leonardo da Vinci. Hock pointed to the figure at the right hand of Jesus in the 15th century painting, based on John's gospel in which Jesus announces that one of his 12 disciples would betray him.

The New Testament scholar doesn't buy author Dan Brown's argument in his bestseller, The Da Vinci Code, that the person at the place signifying the most beloved disciple is Mary Magdalene, and not John.

"The iconography of John is always a young, beardless youth," Hock said recently inside his USC College office. "When you look at the da Vinci picture of "The Last Supper," all the other disciples have beards, and the like. It's John who's to the right of Jesus. He looks a little feminine, but that's only because he's a youth."

Hock has strong opinions about many issues swirling about the historical Jesus — the subject of a wave of recent books, television programs, plays and films, including director Ron Howard's big-budget thriller based on Brown's novel.

An expert on the topic, Hock has appeared on public television programs about Jesus' life. But lately, he has turned his attention to Jesus' mother, Mary. In his book, The Banned Book of Mary: How Her Story Was Suppressed by the Church and Hidden in Art for Centuries (Ulysses Press, 2004), the author explores the history of Mary, including the Christian belief of her virgin birth.

USC College Bible scholar Ron Hock mined the little-known, long-banned text Infancy Gospel of James for insights into the life of Mary for his new book.

Hock said the document was the basis of many masterpieces by Renaissance artists such as Giotto di Bondone, Raphael and Robert Campin.

"It's a lovely story," Hock said. "I appreciate the way it influenced Orthodox Christianity, directly. How it influenced Latin Christianity, indirectly, and how we can still see its influence in manger scenes and Christmas cards. We still unknowingly now pick up traits and details that go back, not to Matthew, Mark, Luke or John, but eventually to the Infancy Gospel of James."

While the New Testament chronicles Jesus, beginning with Mary and Joseph, the Infancy Gospel describes a childless couple whose prayers are answered when Anne delivers Mary. The overjoyed couple vow to dedicate their child to God. At 3, Mary is presented to the priests in the Temple in Jerusalem, where she is raised.

At 12, the high priest summons the widowers of Israel and tells each to bring a staff. One will take Mary as a wife. On the staff of one widower, Joseph, an old man with grown sons, a dove appears. He is chosen. Joseph protests, arguing that he is too old, but agrees after he is allowed to be Mary's legal guardian, rather than husband.

While Joseph is out of town building houses, an angel tells Mary that she will have a divine child and is to name him Jesus. Upon finding Mary pregnant, Joseph resolves to leave her, but an angel informs him that Mary has conceived by the Holy Spirit.

In the Infancy Gospel, Joseph and Mary stop en route to Bethlehem, where a census has been ordered. Mary delivers a son — not in a stable but in a cave. Deviating from the New Testament, this document says two midwives visit the cave. After one midwife claims a virgin has given birth, the other is skeptical. But when she tries to examine Mary, her hand begins to burn. A voice tells her to pick up the baby. When she does, the midwife's hand is healed.

The Infancy Gospel further contradicts the traditional story. Rather than Joseph leading Mary and the baby into Egypt to escape King Herod's soldiers, Mary is the hero. It says Mary wrapped the child in swaddling clothes and hid him in a manger in Bethlehem. The church shunned this gospel where a census has been ordered. Mary delivers a son — not in a stable but in a cave. Deviating from the New Testament, this document says two midwives visit the cave. After one midwife claims a virgin has given birth, the other is skeptical. But when she tries to examine Mary, her hand begins to burn. A voice tells her to pick up the baby. When she does, the midwife's hand is healed.

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The church shunned this gospel because of one man, Eusebius Sophronius Hieronymus, known today as Saint Jerome, the patron saint of librarians and translators. Jerome was assigned to create the Latin Vulgate Bible in 382 AD.

Jerome had several problems with the Infancy Gospel. First, it clashed with Luke 2:7, which says Mary gave birth to her first son and wrapped him in swaddling clothes. There was no mention of midwives in Luke. Also, the Infancy Gospel has Jesus performing his first miracle as a newborn. That conflicted with John's gospel, which says Jesus' first miracle was turning water into wine.

But Jerome's real problem was the way in which the Infancy Gospel explained the mention of Jesus' "brothers" in the canonical gospels. The references to Jesus' brothers in many of the gospels suggest Mary was not a perpetual virgin. Jerome wouldn't have that.

"The issue of the day was what was the greatest form of Christian piety, is it normal marriage or is it celibacy?" Hock said. "Jerome was on the side of celibacy. He wanted Mary to be the role model for that form of piety."

Jerome explained that when Mark and Matthew spoke of Jesus' brothers and sisters, they really meant cousins. Jerome didn't like the Infancy Gospel explanation that the brothers were Joseph's sons from a previous marriage. So, the Infancy Gospel was pushed aside.

Despite the Western church's prohibition, manuscripts survived. In the seventh century, during the rise of Islam, many Christians fled Jerusalem for Rome. They brought with them their love and traditions surrounding Mary, which dovetailed with the Roman interest in Mary as a celibate figure. The Infancy Gospel of James reemerged. But longer, more detailed versions changed, among other things, the birthplace to a manger and the attendance of an ox and a donkey.

Hock said that Joseph is most likely Jesus' biological father. But little else is clear about key points such as the birth of Jesus.

"The truth is we don't know the circumstances of Jesus' birth," Hock said. "If Paul was right and it was an ordinary birth, he was probably born at home in Nazareth, with Joseph and Mary and family in attendance."

—Pamela J. Johnson
New Book, New Role for Outspoken Scholar

Middle East expert takes reins of USC College School of International Relations

From legislation for border walls and ID cards in the U.S. to riots in Paris, the subject of immigration recently has stirred much public passion and debate in the Americas and Europe. In contrast, little attention has been devoted to emigration from Arab states.

That’s where Laurie Brand comes in.

The new director of USC College School of International Relations breaks ground with her book, *Citizens Abroad: Emigration and the State in the Middle East and North Africa* (Cambridge University Press, 2006) — a work which is pioneering in its treatment of the role of Middle Eastern states in the processes of emigration within and outside the region.

Brand traces the book’s origin to her surprise at discovering that a number of Middle Eastern states were establishing government ministries charged with managing relations with citizens and their descendants residing beyond their borders. In *Citizens Abroad*, she looks at state efforts by Morocco, Tunisia, Lebanon and Jordan.

“I became very interested in the question of why, at a particular point in time, a state decides to establish or expand its ties with its nationals abroad,” Brand said.

“This leads to a number of other questions,” she continued. “What implications are there for the content of citizenship when a state has increasing numbers of its citizens or their descendants living abroad? How do states relate to these people? Do they continue to have a claim over them? What does that mean both in law and students — something she sees as central to an education in her field.

She also will be working closely with her predecessor, Steve Lamy, and the new director of the Center for International Studies, Patrick James, who recently were awarded a prestigious Luce Foundation grant to develop programs on religion and international relations.

Said Brand, “Questions of the relationship between religion and politics are key not just in the part of the world that I study but clearly in the United States and in other parts of the world. I think examining these issues will be very exciting for faculty and students.”

Raised in Cincinnati, Brand cultivated what has become a lifelong interest in languages that led her to major in French at Georgetown University. Because the program required students to take Arabic, as well as Hebrew.

While continuing her scholarly work, Brand has taken on different kinds of project — one that she expects will take up a good portion of her time over the next few years.

In her new role as IR director, her first goal will be to recruit new faculty.

“We have among our faculty some very distinguished people,” Brand said. “And a major in international relations is increasingly attractive to students, so we’ve had a surge in interest over the last few years. For us to continue to be a vibrant and active faculty, we need reinforcements. And we’re excited because we’ve had a number of potential colleagues out for visits.”

She also wants to work with her colleagues to develop more overseas studies opportunities for IR students — something she sees as central to an education in her field.

Brand offers no apologies for her political activities.

“I reject entirely the suggestion that those of us who criticize U.S. militarism are anti-American,” Brand said. “There’s nothing in my understanding of the Constitution or in civics to suggest that being a loyal citizen means being silent. We have to have a freer exchange of ideas.”

Nor does Brand believe in using the professor’s lectern as a soapbox to push a given agenda upon students. She’s got a different idea of how faculty and students should interact.

“I don’t think indoctrination serves anybody’s purpose, whether it’s indoctrination of center, right or left,” she said. “While all professors have their own points of view, the idea is to get kids to think about issues, to read a variety of points of view and to discuss them in class. A lot of us are really anxious to get students to use and further develop their critical faculties.

“That’s what this is all about, no matter what the course of study — teach them to think for themselves.”

—Wayne Lewis


A How-To for International Commerce
In Negotiating Trade: Developing Countries in the WTO and NAFTA (Cambridge University Press, 2006), John Oded, professor of international relations, sheds light on three aspects of trade negotiations between governments: the strategies developing countries use; coalition formation; and how they learn and influence other participants’ beliefs. The book should appeal to readers interested in negotiation, international political economy, trade, development, global governance or international law. Developing country negotiators and those who train them may find practical insights on how to avoid pitfalls and improve negotiating skills.

Practical Advice to Combat a Social Blight
Despite the decline in nationwide crime, membership in street gangs continues to increase, writes Malcolm Klein, professor emeritus of sociology, and his co-author, Cheryl Masson, in Street Gang Patterns and Policies (Oxford University Press, 2006). In an attempt to dispel commonly held misconceptions about street gangs, they explain gang proliferation, the risk factors in communities that lead to gang formation and why adolescents join. They then examine current prevention and intervention methods — which they declare ineffective — and offer tips for practitioners on how to intervene and control gangs.

Getting Domestic — and Civic — with the Great Teacher
D. Brendan Nagle, professor emeritus of history, explores Aristotle’s analysis of the relationship between the ancient Greek household and the state in The Household as the Foundation of Aristotelian Polity (Cambridge University Press, 2006). Nagle presents Aristotle’s ideas that the household provided great economic, political and social resources contributing to the success of the city, while the state offered its households a chance to thrive. He offers a fresh look at Aristotle’s political philosophy by detailing the historical context within which the philosopher worked.

Tools for Workplace Change
Employees tend to resist changes in the workplace, writes Jerald Jellison, professor of psychology, in Managing the Dynamics of Change: The Fastest Path to Creating an Engaged and Productive Workforce (McGraw-Hill, 2006). Jellison contends that leaders can make the change process much less taxing on employees by taking into account their emotional needs. A former consultant to Fortune 500 companies, Jellison examines the five stages of the change process and introduces his techniques to help employers guide employees to accept workplace changes quickly and effectively.

Weighing Nature and Nurture
Why do some people develop psychiatric and substance use disorders and others don’t — despite their similar family backgrounds and life experiences? In Genes, Environment and Psychopathology: Understanding the Causes of Psychiatric and Substance Use Disorders (Guilford Press, 2006), Carol Prescott, professor of psychology, and her co-author, Kenneth Kendler, present the findings of Virginia adult Twin Study. They offer tips for practitioners on how to intervene and control gangs.

Performance and Community
In 2005 Performance in America: Contemporary U.S. Culture and the Performing Arts (Duke University Press, 2005), performance studies scholar David Román demonstrates the vital importance of the performing arts to contemporary U.S. culture. Román, professor of English and American studies and ethnography, looks at a series of specific performances mounted between 1994 and 2004, and challenges the belief that theater, dance and live music are marginal art forms in the U.S. He describes the pivotal role that the performing arts play in local, regional and national communities, emphasizing the power of live performance to create a dialogue between artists and audiences.

Historical View of Visual Culture
The 19th century saw the growth of new visual forms such as photography and cinema, and the development of the modern city and consumer societies. In The Nineteenth-Century Visual Culture Reader (Routledge, 2004), Vanessa Schwartz, associate professor of history, and her co-editor, Jeannene Przybylski, bring together key writings on visual culture. Among the 38 essays introduced by the editors, are “Baby’s Picture Is Always ‘Treasured’” (some once thought such photos were “stupid”) and “Molding Emancipation” (how patriotic artwork dealt with this momentous event).
Grant supports development of bacteria-powered fuel cells

What’s cleaner than coal, as renewable as solar energy and as ingenious as any of the cutting-edge alternative energy sources now being proposed for cars? The answer is microbe power, and if a USC team’s efforts to harness its electrical punch succeed, it may one day find uses in applications both big and small.

Imagine a sewage treatment plant that uses its own waste to power itself, incidentally producing less sludge destined for landfills. Or perhaps an insect-like flying machine that can refuel itself by grazing off the land. In the ocean, hundreds or thousands of fish-like units might form an environmental sensor network that monitors pollution or blooms of poisonous algae.

Geobiologist Kenneth Nealson leads a USC College-based effort to develop bacteria-powered fuel cells that could act as remote, portable power supplies for a multitude of purposes, ranging from remote sensors to tiny insect-like surveillance drones for use in combat zones.

In 2006, the U.S. Air Force Office of Scientific Research awarded Nealson and his team a $4.5 million Multidisciplinary University Research Initiative (MUR) grant to take the microbial fuel cell from great idea to usable power source. This has allowed the USC consortium to launch a major effort into understanding just how these microbial machines work.

Of course, the bacteria at the heart of the USC microbial fuel cell aren’t just any bugs. It’s Shewanella oneidensis MR-1, a microbe whose extraordinary abilities have kept Nealson enraptured for 17 years and counting. First discovered by Nealson, S. oneidensis MR-1 is a kind of microbial superhero. In addition to generating electricity, MR-1 and its relatives can “breathe” metal, clean up toxic residue in water and even keep brass, iron, copper and aluminum corrosion free.

Original work with this unique microbe, funded by the Department of Energy, revealed many of its interesting and potentially useful properties, and led to the initiation of the microbial fuel cell investigations.

One of the most exciting things about the project is that the microbes can use such a wide variety of fuels — ordinary milk would work, but so would honey or a dead fish — to create the current flow. MR-1 have been successfully fed 75 different types of carbon-containing compounds.

In a rare occurrence, the project team is made up almost entirely of USC scientists. “Almost anywhere else,” Nealson said, “I would have to go thousands of miles to find all the different kinds of expertise we need for this. Here, it’s all within 200 meters.”

Engineering with Bacteria

Orianna Bretschger, out of college for five years with a growing resume in software and data analysis, wasn’t planning on going back to school. But after starting work on missile guidance software and facial recognition systems, the Arizona native figured out what she really wanted to do — be part of the effort to develop an alternative source of power.

“I thought, ‘What are the major problems we’re facing as a society?’ Energy and running out of fuel resources was one that really interested me. I wanted to find ways to improve the alternative energy sources, and I got into fuel cells,” she said.

That led her to USC, where chemists at the Loker Hydrocarbon Research Institute in the College had developed a promising new type of fuel cell that runs on liquid methanol, not hydrogen. She discovered scientists at the USC Viterbi School of Engineering working on other innovative green technologies. Impressed, she applied for and was accepted into the Viterbi School’s Ph.D. program in materials science.

For the past three years she’s worked with electrochemist Florian Mansfeld, whose previous collaboration with Nealson led to the discovery that MR-1 could protect metals from corrosion caused by other bacteria.

“Kicking Up Power

In another joint project, Mansfeld’s lab built a simple battery with two different kinds of metal in a liquid medium, electrons flowing through a wire from one metal to the other — the setup used in elementary physics classes. Without MR-1, the battery runs for a few days, and then runs down. But when researchers added MR-1 to this setup, creating a bacterial battery, the power steadily increased during the 90-day experiment. Much like what happens chemically in a regular battery, bacteria in fuel cells can strip electrons from organic material and produce an electric current.

Bretschger, 28, jumped at the chance to get involved in their next project: the microbial fuel cell. The physics-trained engineering student has spent most of the last year at her bench in Nealson’s bacteria-laden lab.

She builds the prototype microbial fuel cells and has done much of the hands-on work to optimize them.

Kicking Up Power

The first prototypes worked, but produced electricity very weakly, generating only a few micromamps of current.

“For the applications we’re talking about, we needed to increase that as much as a thousand-fold,” Nealson said.

Thanks to the team’s use of a combination of approaches, they have already made progress in kicking up energy production. The group now has systems that work in the milliamp range — about enough electricity to power a digital watch or a refrigerator light bulb.

Chemist G.K. Surya Prakash and his graduate student Federico Viva played a critical role in improving the microbial fuel cell’s efficiency.

Prakash, the Olah Nobel Laureate Chair in Hydrocarbon Chemistry in USC College and a member of the MURI team, is the co-inventor of the highly efficient liquid-methanol fuel cell developed at the Loker Institute.

This chemical fuel cell has found its way into laptop computers and a commercial, portable power generator.

Bretschger brought the microbial fuel cell prototype to Prakash’s team, which added a better membrane and assembly that houses the membrane and electrodes (the anode and the cathode) in the fuel cell. With the new parts, the fuel cell produced about 100 times more power. “We’re also experimenting with a number of newer designs for the microbial fuel cells, which we expect will increase the power and efficiency even more,” Prakash said.

continued on page 20
Right now, Nealson said, understanding just how these bacteria interact with the fuel cell anode to produce useful electric energy is the major challenge. Once this is understood, he expects that upping the electrical output of the fuel cells should be a straightforward bioengineering problem.

**Power Genes and Live Wires**

Nealson leads the search for biological and genetic solutions to the challenge.

In 2002, Nealson identified genes thought to be responsible for electrical production in MR-1. His team is following up by comparing the power output of the original MR-1 bug with strains they’ve genetically altered in an attempt to home in on the genes most important to power output. Nealson hopes that by understanding the biological mechanisms involved in the microbes’ electrical current production, he will be able to genetically engineer an MR-1 strain that will produce hundreds to thousands times the amount of energy of its forebears.

In another tack, the team has seen some rise in power output from changing the bacterial growth conditions in the fuel cell device. In their earliest studies, the MR-1 were grown in a liquid medium. But when the bacteria were allowed to grow onto the solid anode surface for four days, they formed a pinkish, slimy coating on the fuel cell’s electrode and generated more electricity. The slime is known by scientists as a biofilm—a complex, organized and highly interactive bacterial community.

A 2006 paper by Yuri Gotthel of the J. Craig Venter Institute in San Diego and co-authored by Nealson suggested a reason for the increase in power. The Proceedings of the National Academy of Sciences report revealed a network of nanowires linking the bacteria in a kind of electrical grid. Nealson speculates that the network of nanowires, actually bacterial filaments called pili, offers a more efficient pathway for electrons traveling to the anode and thus a stronger current.

**Listening to Bacteria**

A microbiologist fluent in the language of genetics, Steven Finkel, assistant professor of biological sciences in the College, is focused on finding a way. We need to listen to the bugs.”

Nealson, could produce an electrical current. Kim was the first to study microbial fuel cells who provided the original prototype for the USC team’s device, began studying mixed microbial communities in fuel cells while director of the Microbial Ecology Fuel Cell group at the Korean Institute of Science and Technology in Seoul. Now a visiting scientist at USC and a co-investigator on the MURI grant, Kim was the first to show that MR-1, sent to him by Nealson, could produce an electrical current.

“One we have an optimal cell, the engineers will start looking at how to make this a thousand times bigger or a thousand times smaller,” Finkel said.

In fact, Bretschger recently began working with the team in aerospace and mechanical engineer Paul Ronney’s lab, hoping to set up microbial fuel cells. Ronney, an astronaut and world authority on micro-scale power generation, will use techniques developed for his research on combustion with conventional fuels to understand the dynamics of the microbes living in the fuel cell.

Given more food, bacteria multiply. More bacteria eat more food, potentially producing more electricity in a feedback loop not unlike that created in a fire: more fuel creates more heat which sets fire to more fuel creating a larger, hotter fire. Ronney and fellow mechanical engineer Hai Wong, both of the Viterbi School of Engineering and co-investigators on the MURI project, will use data collected from the prototypes to build a mathematical model that will predict an optimal design for the microbial fuel cell.

“It is the modeling component that makes this multidisciplinary team uniquely suited to solving this question,” Nealson said.

Bretschger noted that working with the interdisciplinary team, which also includes geochemist Andreas Luttge of Rice University, provides an unparalleled perspective onto a scientific problem. “We have the big picture of what’s going on, as well as all of the details — the microbiology, genetics, electrochemistry, microscopy — all of it,” she said.

---Eva Emerson (with reporting by Eric Mankin)
Richard Thompson named to elite board that shapes U.S. science policy

In June, President George W. Bush nominated prominent USC College neuroscientist Richard Thompson to the National Science Board.

In August, the U.S. Senate confirmed Thompson’s appointment to what may be the most influential science policy group in the country. The 24-member board directs the National Science Foundation and advises the president and Congress on policy issues related to science research and education. Thompson, who underwent an exhaustive, six-month security screening process, is one of only five members from west of the Rockies.

“It’s a very great honor to have been appointed to the National Science Board,” said Thompson, the William M. Keck Chair in Biological Sciences and professor of psychology and biological sciences. “It is an extremely important job because the board plays a key role in establishing science policy in the United States.”

Dick Thompson will serve on the National Science Board until 2012.

Thompson, a behavioral neuroscientist, has spent nearly a half-century studying the physical basis of memory, specifically the memory involved in classical conditioning, a fundamental form of learning.

Made famous by Russian psychologist Ivan Pavlov with his salivating dog experiments, classical conditioning theory showed that animals can be taught to anticipate a reward. In 2002, Thompson became the first to identify and map the neural circuits involved in classical conditioning.

More generally, Thompson and others have shown that the brain saves a memory by strengthening the synapses, or connections between neurons. Neurons also create new synapses during the learning process, which Thompson defines as the creation of memory. His work has also looked at the effects of behavioral stress, estrogen and aging on learning.

“The USC community was immensely proud to have learned of Richard Thompson’s nomination to the National Science Board,” said C.L. Max Nikias, USC’s provost and senior vice president for academic affairs. “As an exemplar of USC’s approach to aggressively exploring new scientific frontiers, Professor Thompson will make invaluable contributions. He brings the perspective of a top neuroscientist who understands how cutting-edge science can best serve our nation’s immediate and long-term interests.”

Thompson served as director of the USC neuroscience program from 1989 to 2001, and is now the senior scientific advisor to the College’s Neuroscience Research Institute. The author of a number of books and 440 research papers, his laboratory has had continuous federal research grant support since 1959, with current funding guaranteed through 2011. He is a member of three elite scientific societies: the National Academy of Sciences, the American Academy of Arts & Sciences and the American Philosophical Society.

—Carl Marziali

Kevin Starr Honored by White House

University Professor awarded National Humanities Medal

USC University Professor Kevin Starr was awarded the prestigious 2006 National Humanities Medal at a Nov. 9 ceremony at the White House.

Considered to be the nation’s leading expert on California history, Starr was credited for his lifetime of work chronicling the state as a scholar, journalist and historian.

“Kevin Starr is California’s living archive, and he is also one of this nation’s greatest treasures,” USC President Steven B. Sample said. “He has distinguished himself as a gifted writer, professor and historian whose vibrant and penetrating examination of the Golden State — and those who have shaped it — is unparalleled.”

President Bush and the first lady Laura Bush presented the award to Starr and other distinguished scholars in an Oval Office ceremony. Starr was accompanied by his wife Sheila, their daughter Marian Imperatore and USC Provost C. L. Max Nikias.

“I am very grateful for this honor,” said Starr, who has taught at USC for 18 years and is a professor of history in the College. “And I also want to thank USC. I share this humanities medal with USC.”

The National Humanities Medal, first awarded in 1989 as the Charles Frankel Prize, honors individuals and organizations whose work has deepened the nation’s understanding of the humanities, broadened citizens’ engagement with the humanities or helped preserve and expand America’s access to important humanities resources.

Starr served for 10 years as California state librarian emeritus. He is now an ongoing fellow of the Commonwealth Club of California and long-term interests.

A fourth-generation San Franciscan, Starr graduated from the University of California in 1962 and went on to earn a master’s degree in history and a Ph.D. in philosophy from Harvard as well as a Master of Library Science from U.C. Berkeley.

—Irich Belman and Pamela J. Johnson
Legal Leanings

Generations of USC College graduates find satisfaction, success in law careers

Inside Judge Dickran M. Tevrizian Jr.’s chambers, a single brick from the oldest public high school in Southern California held down papers on his desk.

Rescued from the rubble that was once Los Angeles High School after the 1971 Sylmar earthquake, the old, chipped brick represents the senior federal judge’s devotion and ties to the City of Angels, where he was born and has lived his entire 66 years.

After Tevrizian graduated from Los Angeles High School, his father — a market owner who as a teen emigrated from Armenia — offered his oldest child some advice: “Son, you can go to any college you want, as long as it’s USC.”

On a wall, amid framed honors and awards, Tevrizian’s 1962 bachelor’s degree from USC College hung next to his law degree from the USC Gould School of Law. The distinguished judge, who will retire in early 2007, is among many USC College graduates to pursue a career in law.

Tevrizian majored in finance and accounting, graduating cum laude before attending law school. He comes from a family of USC graduates, including his wife, Geraldine, whom he met at 16 during an Armenian community church picnic. “My dad owned a market in the West Adams District, close to the USC campus,” said Tevrizian, seated in his chambers at the Roybal Federal Building, downtown Los Angeles. “So USC was always drilled into my head.”

The first Armenian-American appointed to the U.S. federal bench, Tevrizian helped to create the College’s USC Institute of Armenian Studies. He is also establishing a scholarship for inner-city and minority youths wishing to attend USC law school.

“I think everybody has an obligation to give back to their university, especially if you’ve been somewhat successful,” he said. “So, now it’s payback time.”

His success was reflected in the framed photos scattered around his chambers. There were photos of him shaking hands with presidents, including Ronald Reagan, who as a governor appointed him to the Los Angeles Municipal Court in 1972. Then 31, Tevrizian was one of the youngest persons ever appointed to the judiciary. In 1989, President Reagan appointed him to federal court.

Tevrizian recalled when a young Reagan frequented his father’s market — where Tevrizian began working at age 12, sorting Coke and Pepsi deposit bottles — after the store moved to Crenshaw Boulevard. “He was a man’s man,” Tevrizian said of Reagan. “A real gentleman.”

His fierce loyalty to the USC football team is legendary. Unless he was sick or away on business, he has been at every home game since 1958. His fraternity buddies from the Beta Theta Pi remain his closest friends.

USC undergraduates, he said, “are going to have the best four years of their lives.”

An Early Start

About 14 miles west of the Roybal Federal Building, Lauralee M. Gooch gazed out her 16th-floor window to bustling Century City below and the Santa Monica Mountains.

In 2002, Gooch graduated from USC College magna cum laude with a bachelor’s in political science and English. Three years later, she graduated from Stanford Law School. She now practices corporate law at Sheppard, Mullin, Richter & Hampton.

Born and reared in Boulder, Colo., Gooch, 25, was on an early intellectual fast track. At 17, she was accepted to the USC Resident Honors Program, and was college bound.

She felt at home in the collaborative atmosphere, where people are trying to reach the same goal,” Gooch said.

She sat at home in the College’s Thematic Option Program, USC’s general education honors program. “Everyone around you is so driven and so interested in the material,” Gooch said. “The professors who teach these classes are just amazing, top-flight professors.”

Between her visits with her fiancé in Texas and time at the law firm, where she recently was part of a team that closed a billion-dollar aerospace merger deal, she’s lucky if she can squeeze in a movie or dinner with a friend. “Frankly,” she said, “I don’t have a lot of leisure time as of late.”

Quest for Knowledge

Back in downtown L.A., Brandon L. Paradise sipped a cup of half-decaf, half-regular coffee inside the high-rise building where he works as an associate.

Paradise, 27, recently moved here from New York, where he practiced law at Wachtell, Lipton, Rosen & Katz. After passing the New York State bar examination, he’s awaiting his California bar exam results while practicing law at Sidley Austin LLP.

“L.A. is my home,” he said of returning to the city where in 2001 he received a bachelor’s in philosophy and economics, earning a 4.0 GPA in both majors. Three years later, he graduated from Yale Law School.

continued on next page

This is the first in a series of articles about the wide variety of careers pursued by the alumni of USC College.
How Paradise arrived at one of the world’s largest practices defending and prosecuting business litigation has something to do with an electric fire in his boyhood home and the writings of Plato.

Living with his mother in an apartment in Rancho Cucamonga, he was jolted awake one night by blinding heat.

“I awoke with flames on my mattress,” Paradise said. “It nearly killed me.”

Paradise, who was then 15, and his mother, a furniture saleswoman, moved to Chino, where he took advanced classes. Although identified as gifted, he had never fully focused on academics until that sophomore year. About that time, while watching the Trojan marching band perform on television, Paradise thought about attending USC.

“I was thinking to myself that a school like that just may be out of reach for me,” he said.

But in his new high school, away from his buddies, Paradise hunkered down and quickly excelled. At 16, he decided to leave his mother’s home and move in with a cousin in Fullerton, where he believed the superior school system would better position him to attend a major university. He aced his senior year.

“I applied to a number of colleges and got into all of them,” Paradise said. He decided to fulfill his dream and attend USC.

He attributes his gumption to

“I actually thought to myself that a school like that just may be out of reach for the other boys,” said Paradise.

At the time, financing was a real problem and the chances of getting into college weren’t so great,” the 80-year-old retired municipal court judge said. “But I did. And my adopted mother worked and I worked. I made 40 cents an hour working at Bullock’s [department store].”

Ernest Gaillard Jr.

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About that time, while watching the Trojan marching band perform on television, Paradise thought about attending USC.

“I was thinking to myself that a school like that just may be out of reach for me,” he said.

But in his new high school, away from his buddies, Paradise hunkered down and quickly excelled. At 16, he decided to leave his mother’s home and move in with a cousin in Fullerton, where he believed the superior school system would better position him to attend a major university. He aced his senior year.

“I applied to a number of colleges and got into all of them,” Paradise said. He decided to fulfill his dream and attend USC.

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Ernest Gaillard Jr.
Lessons of Hope

USC College alumna follows humanitarian calling

n fifth grade, Hector Martinez struggled each time his teacher called on him to read aloud. The chubby 9-year-old with a mass of curly black hair stuttered and confused his d’s with his b’s. Roxanne Aga, then a sophomore reading tutor through USC College’s Joint Educational Project, was paired with Hector, a Vermont Elementary School student.

Nine years later, Martinez has lost his baby fat and stutter. But he still has Aga, now 28 and a third-year medical student at UC Davis.

Throughout the years, Aga has taken Martinez to museums and theme parks, introduced him to literature and gotten to know his parents, El Salvadoran immigrants. Aga communicates in Spanish with Martinez’s mother, who doesn’t speak English.

Aga preserved her roots. “I want to be about making a difference in the world,” she said. “Making a difference like Roxanne does, one person at a time.”

Neuroscientist William McClure, a professor of biological sciences in the College, was an adviser for Aga, who in 2000 earned her bachelor’s degree in psychobiology.

McClure recalled when, as a junior, Aga went on a summer scientific expedition to the island of Dominica in the West Indies, a mission sponsored by Helen Bing of the Helen McClure Foundation.

“She came back a changed woman,” McClure said. “After that, she wanted to go on to do something that provided medical aid to impoverished countries, where it’s hell on Earth for all the people who need health care.”

Aga went on to earn her master’s in public health at Tulane University in New Orleans. In 2001, she decided to study tuberculosis meningitis among Afghan refugees in Pakistan. She did so, in part, to “connect with my roots.” Her father, a motel manager, migrated from Pakistan.

Her mother migrated from France, and growing up, Aga preserved that part of her family heritage by becoming fluent in French. As a result of scholarships, she attended a private French school in West L.A. through 12th grade.

Aga’s experiences in Karachi, Pakistan, marked a defining moment in her life. The trigger was a 3-year-old girl who had such severe meningitis she suffered from convulsions and remained in a semi-coma. “She left an impact on me that I can’t even describe,” Aga said. “I wasn’t even in medical school yet, but I would go see her in the hospital every day and every night.”

She could sense the young child’s will to live.

Roxanne Aga is a gem,” McClure said. “I saw that same light of hope,” she said. “In a way, she felt the same when she met Martinez. I knew he was different than the other kids. I couldn’t let that go.”

After Pakistan, Aga studied tuberculosis at the Louis Pasteur Institute in Guadeloupe, and then among the homeless in San Francisco with Stanford University.

“Roxanne Aga is a gem,” McClure said. “I have no doubt that this world is a better place with her in it. I take such pride in helping to train her. But I did nothing in helping her become a humanitarian. She had that when she walked through the door.”

Aga refused to consider that she helps change lives, such as in the case of Martinez.

“It’s completely the opposite,” Aga said. “He’s changed my life. He’s the one who’s been a gift to me.”

As a doctor, she wants to continue working with underserved communities and in developing countries.

“I’ll see where it takes me,” she said. “But I’ll tell you one thing; I never want to lose that local connection; I want to work wherever I can have a direct impact on people’s lives.”

This past summer, her medical quest took her to Geneva, where she interned for two months with the World Health Organization in the Department of HIV/AIDS. Aga was among a dozen medical and public health students selected as a 2006 Global Health Fellow.

Upon her return to the U.S., Aga said she valued learning how health policy is developed on a global scale. “But also to see how it translates to a single mother of three who’s living with HIV and shunned from her community because of her diagnosis,” she said.

—Pamela J. Johnson
by exploring the lives of 14 key Palestinian and Jewish leaders. David Huyle is a publisher of the quarterly journal Vision and president of Vision Media Productions, which has made several award-winning documentaries on Middle East history, archaeology and religion.

Recruiting a Diverse Workforce

Jeannine Raymond (Ph.D., statistics and research methodology, ’83) was appointed assistant vice chancellor for human resources at the University of California, Berkeley. With more than 22 years of management experience in public higher education, first in academic affairs and then in administration, Raymond will lead several staff initiatives to recruit and maintain a highly qualified and diverse workforce.

Leadership Training

Victor David Cota (B.A., sociology, ’98, M.B.A., ’05) is one of the eight Hispanic university students from across the country selected to participate in the 2006 Ford Motor Co. Congressional Hispanic Leadership Institute’s leadership program in Washington, D.C. The program provides internships in the legislative or executive branch of the federal government, giving students firsthand experience in public policy and the chance to interact with appointed and elected officials.

Excellence in Healthcare

Jay Westbrook (B.S., biology, ’80), M.S., R.N., CHPN, has served as the clinical director for the Palliative Care and Bereavement Service at the Valley Presbyterian Hospital in Van Nuys, Calif, since the program began in January 2002. Under his direction, the Palliative Care and Bereavement Service received two national awards in 2006. The first was for “Excellence in Healthcare and Aging” from the American Society on Aging and the Pfizer Medical Humanities Initiative. The second honor, awarded by the National Committee to Preserve Social Security and Medicare, was for the program’s “Excellence in Service to Seniors.”

Memorable Research Paper

Kimberly M. Christian (Ph.D., neuroscience, ’04) received the 2006 Brenda A. Milner award from the American Psychological Association at its annual meeting in New Orleans in August. The award is given to the most outstanding paper in behavioral neuroscience or comparative psychology authored by a scholar within five years of completing their doctoral degree. Christian, now a postdoctoral fellow at the National Institute of Mental Health, published the award-winning paper, “Long-term Storage of an Associative Memory Trace in the Cerebellum,” in the April 2005 issue of Behavioral Neuroscience. She co-authored the paper, which provided new evidence of the importance of the cerebellum in certain types of memory, with mentor Richard Thompson, W.M. Keck Chair of Biological Sciences and professor of psychology in the College.

Patrick Seamans

French and German. His Ph.D. advisor, Robert Kaplan, professor emeritus of linguistics, and history professor Paul Knoll, who served on two of his academic committees, remain good friends. Steve Lamy, professor of international relations, remembered Seamans as a fearless debater. “He just jumped in,” Lamy said. “He wasn’t afraid to argue his point if he didn’t think someone was right. He was one of the best students in class.” Seamans was born premature in 1952, in a military hospital in Germany. He weighed four pounds. At 2 days old, the infant developed a fever. Doctors gave him streptomycin — an antibiotic that would be banned a year later for causing deafness. “So the same antibiotic that saved my life,” Seamans said, “also left me profoundly deaf.” —Pamela J. Johnson

Other TRC courses are historian Bill Deverell’s “Searching for Community in Los Angeles,” political scientist Jeffrey Sellar’s L.A.-focused “Inequality and Governance in U.S. Metropolitan Areas,” and archaeologist Anne Porter’s “Community and Tradition, Past and Present.” The format gives students the chance to “step up and take initiative,” said Danielle Gard, a classics major in Porter’s course. Her classmate Eduardo Castellon agreed: “It gives us autonomy but within arm’s length of a supportive group.” —Kaitlin Solimine
Acclaimed author Salvador Plascencia continues his education in literature

**Building People Out of Paper**

It's there that a character named Smiley pulls at a rough spot in the papier-mâché sky and climbs into the author's bedroom. *The People of Paper* tells the story of the heartbroken Federico de la Fe and his war against the all-seeing power that he blames for life's indig-nities, including his wife's departure. The character takes on the author. Having quedled his creations' coup, the flesh-and-blood Plascencia is safe and his war against the all-seeing mind continues.

**Higher Learning**

What brings a young author to the English department's graduate program? "Aimee Bender and T.C. Boyle are here, so that was pretty exciting," Plascencia said. "I love living in L.A., so it helped that USC is close to home. And also, I wanted to be schooled as a literature student in an advanced program." "It just lined up — the Ph.D. program was perfect for me." Plascencia's mentors at USC also attest to this ideal fit.

"Sal is a writer with a vision. He came to us fully formed," said Boyle, renowned novelist and Distinguished Professor of English. "There is a deep and wildly original myth-making in Sal's work — *People of Paper* is an accomplished and distinctive work of art that creates a new universe for readers, much in the way of García Márquez's *Cien Años de Soledad*.

"Sal brings a really fresh, smart sensibility to the program," said Aimee Bender, English assistant professor and author of last year's story collection *Willful Creatures* ( Doubleday, 2005). "In workshop, he often said something no one else had addressed about language. His work rejuvenated everyone with its lively risks and balance of emotion and imagination."

Plascencia has earned more than his share of noteworthy accolades over the years, including a 1996 Award in Fiction from the National Foundation for Advancement of the Arts and the very first fiction award from the Paul and Daisy Soros Fellowship for New Americans. Born in Mexico and raised in El Monte, Calif., Plascencia did his undergraduate work at Whittier College and received his M.F.A. from Syracuse University in New York, where he completed his first novel.

*I Wrote What I Loved*

Plascencia's use of bold, self-con-scious devices associated with experimental fiction has headlined much of the critical response to *The People of Paper*. The novel's narration quickly and deftly switches perspectives among a large cast of characters. A typical chapter may give voice to the omniscient narrator, a precocious little girl with a taste for limes, her lovelorn father and even the digital brain of a mechanical turtle. On more than one occasion, characters pause to contemplate the reader.

Along the way, two characters develop the ability to mask their thoughts from the author, covering segments of text in black. Elsewhere, when a romantic rival of Plascencia-the-character is mentioned, the name is literally cut out of the page. Plascencia isn't necessarily comfortable being tagged as a postmodern maverick, though. By mentioning writers such as Kurt Vonnegut and *This is Not a Novel* author Robert Markson, Plascencia places his work into a literary tradi-tion that dates to the middle of the 20th century.

"It was the people I read," Plascencia said. "At that point, I knew more about experimental literature than traditional literature, so I wrote what I loved — or I tried to mimic what I loved."

*The People of Paper* also plays with genre.

The book is rife with elements of myth and fantasy. Much of the book is set in a version of El Monte reimagined to replace its suburban and retail/industrial landscape with fields of flowers and strawberries. The cast includes an origami woman who leaves paper-cuts on her para-mour's bodies and a living saint hiding behind a wrestler's mask. A particularly gushing review has described the author as a "savior of magical realism," a genre associated with Latin American authors wherein the supernatural coexists with the everyday world.

Plascencia acknowledges this influence, but also credits what he's learned from his own family's storytelling.

"It's not literally the stories," Plascencia said, "but the modality. The community story where every-one is affected, with elements of witchcraft and religion and how they integrated with everyday life."

"Of course, there were certainly little details that I stole and kind of updated."

And then there's the presence of the author as a character in the book, a nod to the ever-popular, and increasingly controversial, memoir.

"It was playing on everybody's obsession with memoir and reality — what's real and what's not," Plascencia said. "I don't agree with this idea that reality must align with the written experience. I think ultimately if the word's good enough, it can withstand the lie."

"We're not reporters, we're fiction writers."

**The Heart of the Matter**

Of course, all the tricks of style, narrative and typography in *The People of Paper* could have fallen flat. But the novel displays the essential elements that make literature work: strong storytelling and real heart. It deals with essential human themes: the loss of love, the search for meaning, and questions of identi-ty and authenticity.

There's beauty. There's ugliness, not least in the book's portrayal of its author in the wounded-animal throes of heartbreak. There's humor. And there's sadness — strands of it shoot-ing through every character.

"The sadness became a commodi-ty," Plascencia said. "I was anxious about it, but that anxiety didn't enter the story itself until one of the later drafts. Once the anxiety was there, it all came together for me. It was my own private anxiety, but I commodi-fied that too."

After selling out a series of small print runs with highly regarded inde-pendent publisher McSweeney’s, *The People of Paper* saw wider release as a paperback in November via Harvest, an imprint of educational publisher Harcourt.

This fall, Plascencia was on leave from the university to concentrate on his dissertation, a hybrid analytic and creative work. He spent his days burning through books by authors from Boyle to John Fante, examining their treatment of Latino characters. He's also fomenting an idea for his next novel, which he may or may not integrate into his USC dissertation. Plascencia offered a cryptic synops-is: "It's a book about three newly discovered oceans."

—Wayne Lewis
The Mind’s Map Maker
Award funds work on ultimate animal brain atlas

By his own calculation, USC College neuroscientist Larry Swanson has spent the last 29 years working to create a detailed map of the brain, one that reveals the complex wiring that underlies some of the most fundamental animal behaviors.

Thanks to a new merit-based award, Swanson will be able to continue his long pursuit of the ultimate brain atlas into the near future.

Swanson has received the Senator Jacob Javits Award in the Neurosciences for the second time in his career. The prestigious award from the National Institute of Neurological Disorders and Stroke (NINDS) provides up to seven years of research funding.

“The Javits Award recognizes extraordinary research that has the potential to better thousands of lives,” said Story Landis, NINDS director, in the announcement of the six 2006 winners.

Investigators cannot apply for the Javits Award — NINDS staff and members of an advisory council select nominees from the pool of grant applicants, based on past productivity and innovation.

In selecting him, NINDS called Swanson one of the nation’s leading neuroanatomists, whose earlier work has challenged old concepts of brain organization.

The award will allow Swanson and his team to not only continue their research into the neural networks that mediate motivated behaviors — the “basic drives” that control behavior in relation to hunger and thirst, defense, and reproduction and parenting in animals — but also to explore new directions.

“It’s a very long-term project to figure out the wiring diagram of the brain,” said Swanson, the Milo Don and Lucille Appelman Professor of Biological Sciences.

“We’re basically down to the hardest part now — the lateral hypothalamus, which is the densest and most interconnected part of the brain. It’s an anatomical area, but its effects are somewhat diffuse. People understand everything that’s around it, but little about the lateral hypothalamus itself.

The lateral hypothalamus makes up less than 1 percent of the brain by weight. But, Swanson said, “we believe this area deals with some of the most complex and important functions of the brain — the emotions, attention, appetite, other drives. It’s just so small physically and so big functionally, it’s been very hard to figure out.”

After five years of study, his team has identified almost 30 distinct subparts, and has discovered functions of at least two of these. One appears important in flight or fight behaviors and another in eating and drinking.

“In the last few years, everything has finally started to open up” in this area of the brain, he said.

The Javits Award is especially gratifying, Swanson noted, because winners are selected by “the hardest critics in the world — anonymous reviewers.”

—Eva Emerson

Coupled Chairs

In fall, psychology professors Antonio and Hanna Damasio were installed as the David Dornsife Chair in Neuroscience and Dana Dornsife Chair in Neuroscience, respectively. A $5 million gift from Dana and David Dornsife, a USC trustee, established the endowed chairs.

“Antonio and I are a working science couple. Dana and David are a working philanthropy couple. I think this is a perfect symmetry,” said Hanna Damasio, a brain-imaging pioneer who directs the Dornsife Imaging Center. “It is an honor to be associated with them through these chairs.”

Antonio Damasio, who has reshaped scientific understanding of emotions, memory, language and decision-making, leads the USC Brain and Creativity Institute.

The Dornsifes’ earlier $8 million gift established the Dornsife Cognitive Neuroscience Imaging Center, which helped lure the Damasios to USC.

“Professors spend years raising funds to conduct their research while trying to earn tenure, all with the ultimate goal of appointment to an endowed chair,” Dana Dornsife said.

“The gift was pivotal coming just as we began the Tradition & Innovation Initiative,” said Dean Peter Starr. “The Dornsifes’ generosity helped build our momentum.”

—Kirsten Hodgkin

Neuroscientist Tapped for Endowed Chair

Zhong-Lin Lu, co-director of the Dana and David Dornsife Cognitive Neuroscience Imaging Center, has been named the William M. Keck Chair in Cognitive Neuroscience in USC College. The chair, which is endowed by the W.M. Keck Foundation and awarded for a five-year term, honors Lu’s remarkable achievements in studies of how the human brain works.

A professor of psychology and biomedical engineering, Lu studied physics before turning to neuroscience. Through Lu’s study of the neural activities that underlie disorders like dyslexia and ambylopia — as well as the brain processes that govern commonplace activities like vision, decision-making and learning — he has illuminated not only how the brain handles information, but also how these processes might improve through training and practice.

“Zhong-Lin is both an exceptional cognitive scientist and an exceptional teacher,” said Hanna Damasio, the Dana Dornsife Chair in Cognitive Neuroscience. “The fact that he is also a physicist makes him an outstanding asset to USC.”

Irving Biederman, a professor of psychology and computer science who formerly held the Keck Chair, took one of Lu’s graduate seminars on functional magnetic resonance imaging. Biederman, the Harold Dornsife Chair in Neuroscience, praised his colleague’s world-class research on motion perception and computational models of attention, his important role in the creation of the Dornsife Center and his excellent teaching.

“Zhong-Lin did a great job,” Biederman said. “In a single semester, he was able to take students with no background in neuroimaging and teach them the principles of physics and neuroscience that underlie the methodology by which one designs and interprets experiments. By the end of the semester Zhong-Lin’s students were able to conduct neuroimaging experiments themselves.”

—Suzanne Menghray
Exploring Khan’s Legacy on Women’s Lives
Mellon Fellowship supports study of how Mongol conquest changed China

Bettrine Birge was in ninth grade when her grandmother asked if any of the grandchildren could accompany her on a trip to Asia.
None of the older grandchildren could make it. But Bettine, a math whiz who had never traveled, eagerly volunteered. That long-ago sojourn through Japan, Hong Kong, Taiwan and Singapore profoundly impressed the youth, now an associate professor of East Asian languages and cultures, and history at USC College.

Birge wrote Women, Property, and Confucian Reaction in Sung and Yuan China (960-1368) (Cambridge University Press, 2002), and has shed new light on the alarming treatment of women in China — and how foreign rule became the catalyst.

For the next two years, Birge will step up her research by mastering the Mongolian language and following the route of the Genghis Khan conquest into China, studying archaeological excavations along the way. USC College has been awarded an Andrew W. Mellon Foundation New Directions Fellowship, to be used by Birge for her work. The $208,000 award will help her to further dispel myths in the communist state, where the trafficking and sale of women as brides or into prostitution, and female infanticide are commonplace, according to Birge.

“My research puts a different perspective on prevailing belief systems regarding women,” Birge said inside her office, examining a decorated, tiny silk shoe once worn by a Chinese woman during the agonizing, now-banned tradition of foot-binding.

“Many practices are not Chinese traditions as professed to be,” she said. “So, it’s no longer a valid argument for maintaining such inequality.”

A USC College scholar since 1990, Birge’s research centers on the Mongol invasion of China in the 13th century. Western and Chinese scholars have long believed that the Mongol conquest had no lasting effect on Chinese culture or social structure.

“On the contrary,” Birge said, “the Mongol invasion fomented profound changes across Chinese society.”

Specifically, the Mongol occupation drastically transformed China’s marriage and property laws pertaining to women. Prior to the Mongol-Yüan dynasty, women’s rights had been improving, moving away from Confucian ideals, Birge said.

But women’s financial and personal autonomy was dramatically altered during the Mongol rule. Birge said: “The emergence of the cult of widow chastity, thought to represent traditional Chinese Confucian values,” Birge said, “actually owed much to the foreign occupation.”

Social attitudes toward women deteriorated and extended into later dynasties, she said.

“In the 13th and early 14th centuries, issues of marriage, incest, property control, personal autonomy, control of reproduction and rights of widows entered a contested sphere of conflicting values,” Birge said. “These conflicts are seen in legal challenges and court battles leading to long-term changes in the law.”

In addition to funding her field research, the fellowship has allowed Birge to expand her expertise beyond traditional Sinology. Birge, who speaks and writes fluent Chinese, Japanese and French, and commands good German, is now studying the Mongolian language — classical and modern. She also has learned more about visual culture and archaeology.

All of these areas are key to Birge’s research on the Mongolian empire. Many of the source materials she will use are in the Mongolian language, mostly in epigraphs. Visual culture was an important part of Mongol rule. And recent archaeological finds are changing the perception of the Mongol empire.

“With additional training, I’ll be in a position to include visual materials in my analysis,” Birge said. “And I’ll be able to incorporate fully into my research the new perspectives archaeology offers.”

Birge earned her bachelor’s degree in East Asian studies and Chinese history from Princeton University, where she also met a student who would become her husband, Peter Lee, now a China business consultant. She received her master’s degree in European history from Cambridge University and a Ph.D. in East Asian languages and cultures from Columbia University.

She has two new books in the works. One addresses gender, ethnicity and status under the Mongol rule as seen in the legal arena. The other will explore the wider social implications of the legal cases, incorporating analyses of textual and visual materials.

While conducting research in China and Mongolia this summer, Birge found time to celebrate the 800th anniversary of the founding of the Mongolian state with its president, Nambaryn Enkhbayar.

Birge’s husband and their 8-year-old son, Henry, met her in Mongolia. Henry, whom Birge affectionately nicknamed Adventure Boy, was no stranger to exotic trips. When he was 5, he journeyed through the back roads of Western China by bus with his mother and her colleagues.

The dirt roads were so rugged and bumpy that the bus shook violently during the 16-hour daily rides across the countryside.

“It was an extremely grueling trip,” Birge recalled. “Henry was the only one who didn’t get sick.”

—Pamela J. Johnson
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Faculty News

New Directions

Xiaobing Tang, professor of East Asian languages and cultures, is spending the 2006-07 academic year in Japan, thanks to a Social Science Research Council Japan Society for the Promotion of Science Postdoctoral Fellowship. During the fellowship, she plans to complete a book on nun-narratives in medieval Japan (tentatively titled Days of Song and Prayer: Hokkeji and the Reincarnation of Female Monasticism in Medieval Japan). She also plans to start a new project on Buddhist and Christian evangeline in contemporary Asia.

On the Move

Archeologist Anne Porter's research into the way people lived and governed themselves in the Near East 5,000 years ago is receiving much attention. Recently in Lyon, France, she spoke on the relationship between chronology, social collapse and the emergence of the Amorites. Porter, an assistant professor of religion, art history and classics, has been invited to give lectures on death and burial practices at Eberhard Karls University of Tübingen, La Sapienza University in Rome and Stanford University, as well as at the Los Angeles Biblical Archaeology Society and the California Museum of Ancient Art.

Quality of Life

Philippa Levine, professor of history, has been awarded a grant from the Janice Ahishakiye and his Rwandan orphanorganization for a prestigious international prize, Ahishakiye's story and determined to be used to rebuild homes that were destroyed in the 1994 genocide.

Robert Bau, professor of chemistry, has been elected president of the American Crystallographic Association (ACA). The ACA works to promote interactions among scientists who study matter at the atomic level. Bau formerly served as vice president of the association.

Starr Named to National Library Board

The U.S. Senate recently confirmed the presidential nomination of historian Kevin Starr to serve on the National Museum and Library Services Board. The 24-member board advises the Institute of Museum and Library Services, an independent agency that is the primary source of federal support for the nation's museums and libraries. Starr, a University Professor who is state librarian emeritus of California, is one of five new members appointed and will serve on the board through 2009. Starr was also recently elected to chair the USC Libraries Committee, a permanently sitting faculty advisory council.

Innovative USC College Professors

USC College professors earned five of 11 awards presented at the USC Fund for Innovative Undergraduate Teaching. The fund, administered by the USC Provost's Office and the Center for Excellence in Teaching (CET), received 21 proposals, each of which reflected "the desire to stay in touch with how students learn and what they need to succeed," CET Director Danielle Mihram said. Award-winning USC College faculty members were:

Jack Feinberg, professor of physics and electrical engineering, for "Physics of Art and Medicine," a variant of an introductory physics course that helps students discover the principles of physics through experiments in both medicine and art.

Albert Herrera and William McClure, professors of biological sciences, to pilot a redesign of "General Biology: Cell Biology and Physiology" — a class of over 300 students. In the redesigned course, the professors will replace large lectures with videotaped presentations of the basic course material, and lead smaller groups of students in expanded discussion sections.

Philippa Levine, professor of history, for "The Evolution Debates." Students in the course participate in staged discussions recreating earlier arguments in the controversial old debate. Levine has also incorporated wikis and other technologies into the course.

Megan O’Neill, assistant professor of art history, for "History of World Arts in Los Angeles." Instead of students viewing slides of art, this survey of global artistic traditions takes students to objects and buildings in Los Angeles.

Mathematicians


Scholar, Citizen, Scientist

The Gerontological Society of America has bestowed its prestigious Donald P. Kent Award upon Margaret Gatz, professor of psychiatry at UCLA, for "Gerontological Research: From Theory to Practice: The Model of Successful Aging and the Challenges of Global Aging."
Psychologist John Horn, 77, Dies

John L. Horn, a psychology professor at USC College, died on Aug. 18. He was 77.

Horn was best known for his groundbreaking work in the field of psychometrics, the measurement of human cognitive ability. The research of Horn and his well-known mentor, Raymond B. Cattell, led to the revamping of the field’s paradigms.

The Cattell-Horn theory of multiple intelligences, developed and validated in a series of studies begun in 1966, postulated distinct types of intelligence — dubbed crystallized intelligence (or acquired knowledge) and fluid intelligence (or problem-solving skill). This theory has been described as the most empirically grounded theory of cognitive ability and now is widely accepted.

Horn’s diverse research interests included the impacts of alcohol use and abuse, cognitive ability over the human lifespan and research methodology. In recent years, Horn had focused on identifying how lifestyle relates to changes in cognitive ability. He collaborated on numerous studies with his wife, Penelope Trickett, a professor in the USC School of Social Work.

He was elected a Fellow of the American Association for the Advancement of Science in 1969. In 1992, the Society of Multivariate Experimental Psychology recognized Horn with its Lifetime Achievement Award.

Horn displayed a strong social conscience and commitment to serving his community, dedicating time throughout his career to efforts to help those suffering from alcohol and drug addiction.

“In many ways, John was a tower of strength, physically, mentally, emotionally and spiritually, and he used his powers to help other people,” said Jack McArdle, a USC psychology professor and former student of Horn’s.

Horn received his baccalaureate degree from the University of Denver, where he studied psychology, mathematics and chemistry, graduating Phi Beta Kappa. He went on to earn his Ph.D. from the University of Illinois at Urbana-Champaign in 1963.

Horn returned to the University of Denver as a faculty member, where he taught, won many honors and conducted his innovative research until 1986, when he joined the faculty at USC College. At the time of his death, Horn was still active in research and had plans for a pair of books on research methods.

Horn is survived by his wife, four children, two stepchildren, five grandchildren and sister. In lieu of flowers, memorial contributions may be made to the John L. Horn Foundation at the San Pedro and Peninsula YMCA.

—Wayne Lewis

Continued from page 15

In La Débâcle, Zola meticulously details the disarray of a French army ill-prepared to endure the struggles of the war. Levasseur, repeated-
**Obituaries**

**Doris Tennant Westcott.** 96, (B.A., physical education, ’30) died May 16. Westcott was USC’s first Helen of Troy. With a master’s in education from USC, she became a pioneering principal of Compton High School in 1953, one of the first women to hold such a position. She hired the district’s first African-American teacher in the 1960s. Her marriage to former USC football player Jack Westcott ended in divorce. Tennant Westcott funded several scholarships at USC, and was honored at a campus memorial service in September.

**Mary Carter Frontis.** 91, (B.A., history, ’35) died May 8. Orphaned at age 15, Frontis graduated from high school at 16, completed her B.A. at 20 and earned a master’s in education from USC by 21. Frontis married and taught third grade in San Diego. An active member of her community, she received a 20-year service award from Meals on Wheels, among other honors. She is survived by a son, two daughters, seven grandchildren and four great-grandchildren.

**Milton G. Rector.** 88, (B.A., sociology, ’40) died June 24. The former president and CEO of the National Council on Crime and Delinquency, Rector was a recognized leader in criminal justice, serving on many federal, state and local commissions. He was appointed by presidents Eisenhower, Kennedy, Johnson and Nixon to a post in the ‘United Nations’ Social Defense Section. Rector also served in the Navy in WWII and later in the Naval Reserves, retiring with the rank of commander. He is survived by his daughter, son, two grandchildren and two great-grandchildren.

**Anne Murphy.** 80, (B.A., sociology, ’47) died June 22. Murphy worked as a social worker and a reporter before raising her family. She worked at the Rancho Santa Fe library from 1974 until 2004. She is survived by her husband, Sylvester; and four sons, 10 grandchildren and three great-grandchildren.

**Donald R. Belmont.** 86, (B.A., political science, ’50) died May 8 in Bellingham, Wash. After graduating high school in Ingleswood, Calif., Belmont worked as a clerk for the Federal Bureau of Investigation, and eventually became a special agent, working in Texas, Louisiana and California. He served in the U.S. Army Air Corps in WWII, before completing his degree at USC. After leaving the FBI, he ran a private investigation firm. He is survived by his wife of 63 years, Ann; and two daughters and four grandchildren.

**Charles Whitesell.** 76, (B.P., psychology, ’58) died Aug. 9 from complications of leukemia. Whitesell graduated from the USC School of Law in 1961. An attorney, he served as president of the Westwood and Glendale Bar Associations and the Glendale Unified School District. He is survived by his wife, Ginger, daughter, Catherine Petrasos; sons Charles II and Stephen; and mother, brother and five grandchildren.

**Forest W. Young.** 65, (Ph.D., psychology, ’67) died April 9 in Pittsburgh, Penn. After earning his doctorate from USC, Young joined the faculty at the University of North Carolina-Chapel Hill, where he was an emeritus professor of quantitative psychology at the time of his death. A leader in psychometrics, Young developed software for statistical analysis and data visualization such as the visual statistics program ViSta. He authored or co-authored five books, including last year’s *Visual Statistics: Seeing Data with Dynamic Interactive Graphs*. Young is survived by his wife, Patricia; his son, Matthew; his mother, Betti Primer; and four stepchildren, five great-grandchildren and two sisters.

**L.M. “Bill” Stephenson.** 63, who taught organic chemistry at USC from 1978 to 1983, died Aug. 26 in Philadelphia. Prior to his illness, he was the vice provost for research and graduate policy at Drexel University. Under his direction, Drexel’s funding for sponsored research grew to more than $100 million. Stephenson earned his Ph.D. in chemistry from Caltech in 1968, and went on to hold positions in academia, government and industry. At USC, he was a founding member of the Loker Hydrocarbon Research Institute. He is survived by his wife, Mary Jo Grdina; and daughter, sister and aunt.

**Horace P. Bowser, Jr.** 47, (B.A., mathematics, ’83) died June 7, in Austin, Texas. A software engineer for 20 years, Bowser earned numerous awards and patents during his career. Most recently, he worked at Advanced Micro Devices. Bowser was a passionate leader of his local reggae music community. He is survived by his fiancée, Darlene Jackson; son, Bryan; and mother, father and sister.

**Paul Napolitano,** 65, (Ph.D., sociology, ’65) died May 8 in Los Angeles. He worked at the Naval Reserves, retiring with the rank of major. He is survived by his wife, Ginger; daughter, sister and aunt.

**Wayne Raskind,** 88, (B.A., sociology, ’40) died June 24. Orphaned at age 15, Frontis graduated from high school at 16, completed her B.A. at 20 and earned a master’s in education from USC by 21. Frontis married and taught third grade in San Diego. An active member of her community, she received a 20-year service award from Meals on Wheels, among other honors. She is survived by a son, two daughters, seven grandchildren and four great-grandchildren.

**Young Men, Big Dreams**

continued from page 33

School English teacher and one of several local instructors and coaches recruited for the program, challenged the students: “So, does anyone here think they’re going to be a pro player?”

“Thirteen-year-old Antonio Loggins raised his hand and declared: ‘I’m gonna be a pro.’ It isn’t just Antonio’s imposing frame that gives him confidence. Echoing many participants, the eighth grader at Audubon Middle School has overcome plenty of adversity in his short life.

Antonio was 7 when his grandparent, who were raising him, died. His aunt, Rita Loggins, a single mother with three children, took in Antonio and his older sister. But the family has struggled. Loggins worries about Antonio getting caught up in neighborhood violence. The program seemed an enriching way for her nephew to spend part of his summer, she said.

“I’m loving it,” Loggins said. “I’ve never seen Antonio so excited about going to school.”

Loggins said she had a heart-to-heart with Antonio after his schoolmate, Devin Brown, was shot and killed. “This program gives Antonio focus,” she said. “And it gives him more strong male role models.”

On Crowell Field, Cornell Ward, regional director of the NFL’s Junior Player Development program, instruct-ed the youths. Ward said he witnessed a tremendous turnaround in the students.

“It was a testament to the great job the teachers were doing in the classroom,” said Ward, who is also head coach at Los Angeles Southwest College. “One student who didn’t follow instructions in his classroom wasn’t allowed to play football. It was a real awakening for him.”

Brothers Jesus Garcia, 13, and Huiles Garcia, 12, said they were surprised at the emphasis on academics.

“Coming here really opens your eyes,” Jesus said. “Playing football is not just all the glory that you see on TV. It’s work, study, work, study, work, study.”

“I learned how to set short-term as well as long-term goals,” he added. “Short-term, I want to go to high school and finish high school. Long term, I want to get a college education.”

Before the closing event, Tamma Anderson, JEP executive director and Denise Woods, NFL Impact Program manager, gifted-wraped the duffle bags, T-shirts and shorts each partici-pant received.

“They started out wearing a façade, acting tougher than they really were,” Woods said. “They ended up loosening up and just being kids.”

Anderson said a highlight of the inspirational speeches by former NFL players.

“The guest speakers really hit home about how important it is to take your studies seriously,” Anderson said. “One talked about how he was cut [from the team], but he didn’t have his bachelor’s degree. He told the students that they can take away your privilege to play football. But no one can take away your education.”

—Pamela J. Johnson

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Although exhausted after her graveyard shift, Judy Jefferson was determined to attend the closing ceremonies of the National Football League’s Impact Program at USC. “Sure I’m tired, but how could I miss this? I’m here to support my son,” Jefferson said of 11-year-old Joseph Jefferson, an Audubon Middle School seventh grader.

Joseph was one of nearly 100 youths participating in a pilot summer program sponsored by USC College’s Joint Educational Project (JEP) and the NFL. The three-week day camp for inner-city youths combined lessons in character building, academics and football. It ended July 28 with a ceremony that included awards, prizes and a visit from USC football head coach Pete Carroll.

“You kids are real special,” Carroll told the students during the closing ceremony. “You’ve made it through this program. You’re kind of like Trojans now; you’re in our blood.”

Riki Ellison, a USC College alumnus and former linebacker for the San Francisco 49ers and Oakland Raiders who organized the camp with JEP, said he envisioned expanding to all 32 NFL-affiliated cities. “This went beyond my expectations,” Ellison said. “The boys were engaged. We hope to double our efforts here at USC next summer.”

During the ceremony, Ellison encouraged the youths. “Make your dreams come true,” he urged. “Make society a better place.”

USC was an ideal choice for the pilot, Ellison said, because of its expansive community-service infrastructure. The USC Educational Opportunity Programs Center identifies local, low-income, minority youths who are prospective college candidates. The center’s Talent Search program then tracks selected students from sixth grade through high school. Counselors help prepare the students for college.

Most students were identified through USC Talent Search — but not all.

Wayne Lewis, an Audubon teacher, contacted JEP when he learned about the camp and “begged his school in.” The school underwent a tragedy last year when 13-year-old Devin Brown was gunned down by a police officer. Lewis believed the program would instill confidence in students shattered by the death.

Judy Jefferson’s son, Joseph, was encouraged. “I’m probably going to go into the NFL,” Joseph said nonchalantly. “Then I’ll retire from the NFL and become a police officer.”

Standing in front of a chalkboard, former NFL player Reggie Grant warned students about the odds of making it into pro football. “To make it in the NFL, you have to be the best of the best,” the former cornerback for the New York Jets said in a booming voice. “Not just in football but in academics, in character. You have to have the heart.”

After emphasizing the rigorous school work that goes along with the glory, Grant, now a South Gate High School teacher, continued on page 31.