Dear Graduate Student,

Excellence, collegiality, and diversity: these are the three cornerstones of the university that Chancellor Gene Block identified in his inauguration address last month. These three little words express three big ideas, all of them with important implications for graduate education.

Diversity has always been a primary goal of the Graduate Division, as we seek out and administer government, foundation, and private funding that helps us to attract and support members of underrepresented communities and others who have no family history of postgraduate education. This is an especially important task at the graduate level because diversity among today’s graduate students is the only way to ensure increased diversity among the faculty of tomorrow.

Collegiality—which the new chancellor defines as a spirit of discovery and collaboration—is a strong feature of graduate education. This issue of the Graduate Quarterly includes a portrait of Professor Andrea Ghez’s research group in the Department of Physics and Astronomy, an enthusiastically cooperative and engaged group, centered around and embracing graduate students and postdoctoral fellows as well. While collaboration is institutionalized in the sciences, it has also been adopted informally in the humanities, as students gather to share insights about their professional readings, provide mutual feedback on papers and presentations, and give each other the personal support it takes to meet the challenges of a graduate career.

Excellence, of course, is the outcome to which we all aspire, as individuals and on behalf of our academic community. The chancellor correctly points out the degree to which UCLA’s excellence depends on its ability to attract the best students and faculty members—and this inevitably means finding the money to pay adequate salaries, provide student support, and offer housing alternatives in one of the nation’s most expensive neighborhoods. Private universities that compete with UCLA for research preeminence have an established track record in raising funds from private foundations and individuals. This is an arena where UCLA must strive to compete on a more equal footing.

More than four years ago now, the Graduate Division stepped forward to document the decline in financial support for UCLA graduate students and the consequences that could have, not only for UCLA or the UC, but for all of California, one of the world’s largest economies and a generator of many the extraordinary advances that have transformed society in the last few decades. We applaud the chancellor’s pledge to seek additional philanthropic support for graduate students in the face of this ongoing crisis.

It has been my pleasure to serve as Vice Chancellor of Graduate Studies with three previous chancellors, and I feel the surge of energy that always arrives with new leadership. The Graduate Division stands ready to assist the chancellor in the furtherance of all these goals so close to our hearts.

Claudia Mitchell-Kernan
Vice Chancellor Graduate Studies
Dean, Graduate Division
CONTENTS

Spring 2008

FEATURES

4 Black Holes
Professor Ghez’s research group in the Department of Physics & Astronomy explores the innermost regions of the Milky Way.

14 Chancellor Block
talks about graduate students and postdoctoral scholars.

PROFILES

16 Janet Cummings
Public Health

18 Adam Lunceford
Biochemistry

20 Darby Saxbe
Psychology

NEWS

22 Postdoctoral Scholars Honored

25 Graduate Student Accomplishments

ON THE COVER: Astronomy Professor Andrea Ghez’s research group. Back (left to right) Marshall Perrin, Leo Meyer. Middle (left to right) Jessica Lu, Quinn Konopacky, Dr. Ghez, Elise Furlan. Sitting (left to right): Tuan Do, Sylvana Yelda, Andrea Stolte. Missing: Betsy Mills
Black Holes

The I (1.43 microns) and K continuum (2.29 microns) two-color image of the central ~10.4 light years taken with the W. M. Keck II telescope. The galactic center is ~1 million times more crowded than the solar neighborhood. Studying the motions of these stars tells us a lot about the supermassive black hole at the center of the galaxy, which is indicated by the red arrow.
From the third-graders who talk to Tuan Do and Sylvana Yelda at UCLA’s planetarium to Jessica Lu’s orthodontist, everybody is curious about black holes. Of course, if they’ve been to the movies, they probably think they know quite a bit. In film, black holes are the malicious marauders of the universe, swaggering from galaxy to galaxy devouring whole planets as a snack before turning a star or two into dinner.

And if people haven’t worried about being sucked into a black hole, they’re wondering what’s on the other side. In Disney’s The Black Hole (1979), one character refers to the title player as “that long dark tunnel to nowhere” and another hopes to steer his spacecraft “straight into what might be the mind of God.”
The truth about black holes is perhaps less dramatic and certainly less menacing. Rather than sucking everything into them like some cosmic vacuum cleaner, Professor of Astronomy Andrea Ghez says, black holes “kind of mind their own business unless you get really, really close.” In fact, thousands of stars are safely orbiting the black hole at the center of the Milky Way, which Professor Ghez has been studying for more than a decade. And as it turns out, Tuan, Sylvana, and Jessica are good people to ask about black holes because they are part of her research team.

This is one case where the facts may be more fascinating than the fantasy.

Black holes are both enormously large and incredibly tiny. The black hole in the galactic center, for example, is millions of times the sun’s mass—and all in a superdense package that is infinitely small. Because of its density, however, it exerts a gravitational force so powerful that no light can escape from an area about 10 times the radius of the sun, the hole’s event horizon.

For a variety of reasons, it’s not likely that a spacecraft—manned or otherwise—will travel beyond that boundary and send back information about the other side. No light or other kinds of energy can escape from the black hole’s gravitational field, so the only way to learn about what’s inside is to study what’s outside intensively and with great precision, Professor Ghez says. Which is exactly the task that Professor Ghez and members of her research group have taken up. Still others are linked to that core group by similar interests and common tools.

The most important of these tools is the 10-meter Keck II telescope at the W. M. Keck Observatory on the summit of Mauna Kea on the island of Hawaii. The University of California, Cal Tech, and the National Aeronautic and Space Administration are the consortium operating the observatory, which gives UCLA an important edge in research about the galactic center.

Between us and it are clouds of dust, with particles about the same size as “the smog that obscures our line of sight in Los Angeles so you often can’t see that there are mountains nearby,” Professor Ghez explains. The galactic dust has the same effect. Seeing the center of the galaxy via direct light can’t be done with the clarity needed to distinguish individual objects. “One of the few wavelengths that penetrate all the dust is infrared,” she says, and the Keck telescope takes infrared images, which everyone in her group uses, regardless of what they’re looking at.

“It’s a lot of fun to go observing, although it’s not like we’re putting our eyes at an eyepiece,” Jessica says. “We’re not even...
At the heart of the Milky Way, young stars (bluish-white in color) have been discovered by Professor Ghez and her research group and others. These stars pose a “paradox of youth” since the central black hole (Sgr A*) makes this region inhospitable to the formation of young stars.

next to the telescope,” which is at an altitude of 14,000 feet, where you might “get kind of loopy.” Rather, researchers sit in a center at the base of the mountain, where the infrared pictures from the telescope are fed to their computer screens. If they want a different view, they can communicate with someone who’s actually at the telescope. Lately, they can get the same images on computers in a darkened room on the third floor of the Physics and Astronomy Building, postdoctoral fellow Andrea Stolte says, “which is very unfortunate for me because I love Hawaii.”

The data from the Keck telescope show—with the finest detail presently available—the densest clustering of stars at the galactic center. To single out specific items, members of the Ghez group have collaborated in developing a variety of techniques for enhancing their images. One of them, adaptive optics, reduces the effects of the atmosphere on the faraway objects they want to see. Trying to distinguish a single object in the galactic center, Professor Ghez explains, “is like trying to see a pebble on a beach in Los Angeles—when you’re in New York City.” Moreover, in the same way that a stream distorts the shape of pebbles at its bottom, Earth’s atmosphere “distorts our images of astronomical sources, so we have to correct for those,” she says. Adaptive optics and some other strategies accomplish this goal.
With these tools, Professor Ghez’s team has come up with some big news for the scientific world:

- Demonstrated the existence of a supermassive black hole (1998)
- Discovered that young stars exist right next to the black hole, generating what is now referred to as “the paradox of youth” (2003)
- Took the first clear picture of the center of the Milky Way (2005)
- Determined the orbits of massive young stars located close to the black hole, providing new insights about that mysterious object (Jessica Lu, 2006)
- Using the same technology to look at the Arches star cluster near the galactic center, found that it was moving far faster than current science can easily explain (Andrea Stolte, 2007)

More publications lie ahead. Tuan Do is working on a paper that discusses an apparent flickering around the black hole, and Sylvana Yelda is using the motions of stars in the galactic center to probe what other unseen mass might be there. Quinn Konopacky, who jokingly calls herself “the black sheep of the group” because her interests lie away from the galactic center, nevertheless uses the Keck telescope and adaptive optics to study binary stars in various parts of the galaxy. So while she has her own set of data, she uses similar methods.

The group gathers once a week at meetings organized by Dr. Stolte to talk about their various projects and to share papers about current research in the field. The group also offers a helping hand as needed. When she started, Jessica says, she relied on older graduate students and postdoctoral fellows “to help me learn the ropes. How do I write programs to analyze the data? How do I even look at the images we see?” Now she and Quinn, as the senior graduate students, “return the favor.” Quinn points out that “learning to mentor younger students is useful in future careers.”

“It’s important to be able to do a good job. Teaching” Classes for non-majors, for example, may include “people who will make policy in the future. You want them to have a good impression of astronomy.”

- Quinn Konopacky

Members of the research group have a keen interest in teaching, including developing new, more interactive ways to teach science. “It’s important to be able to do a good job,” Quinn says. Classes for non-majors, for example, may include “people who will make policy in the future. You want them to have a good impression of astronomy.”

It would be hard not to have a good impression of this research group. Besides their scientific achievements, they seem to be having fun. As Sylvana puts it, “This field is so difficult and it takes up so much of your time, you have to love what you do. Grad students are very happy in this department.” What follows is a series of short research profiles.

**Other Members of the Team:**

**Betsy Mills**, first-year graduate student: Studying on a large scale what might trigger star formation at the galactic center.

**Elise Furlan**, postdoctoral scholar: Using an infrared space telescope to investigate how disks around stars evolve.

**Leo Meyer**, postdoctoral scholar: Looking at the flow of gases into the black hole.

**Marshall Perrin**, postdoctoral scholar: Examining how the disks around young stars transition from dust to planets.

**Joerg-Uwe Pott**, postdoctoral scholar: Uses a method that combines the light from both Keck telescopes to study the galactic center.
The center of the galaxy is a hostile neighborhood: it’s incredibly crowded with stars, and there’s a monstrous black hole right in the middle, all of this creating intense gravitational tides. Yet, in spite of all these forces, a group of stars called the Arches cluster not only survives, Andrea Stolte says, but also is “zooming along at high speed”—230 kilometers per second—on a “very strange orbit.”

The study of the Arches cluster and another nearby group called the Quintuplet cluster is the focus of Dr. Stolte’s work as a postdoctoral fellow at UCLA. She’s interested in how the cluster formed in this dangerous environment and why it’s moving so fast—it’s “an amazing puzzle to work on,” she says. “What I love is riddles.”

Dr. Stolte studied physics at the Max Planck Institute of Astronomy in Heidelberg, Germany, “because I wanted to understand how things come about, how processes in nature work.” Now the riddle she wants to solve is “how can you make a cluster of stars” in the extreme environment of the galactic center. “Do you need extremity to bring forth extreme objects?” she wonders.

The work “makes my stay here very rewarding,” Dr. Stolte says. Next, she’s heading for a long-term postdoctoral assignment at the University of Cologne, near her hometown of Dusseldorf, Germany. As she begins to work with her own graduate students, Dr. Stolte hopes to foster the same kind of open and equitable research environment she’s experienced at UCLA. Although astronomy departments everywhere have offered gender-neutral opportunities in recent years, Dr. Stolte says, “As a woman in science, I have never ever felt so equal and so well supported as I do here at UCLA.”
If you think the planets revolve around the sun, you’ve only got half the story. “You barely notice it, but the sun moves, too,” orbiting the planets, Quinn Konopacky says. The mutual orbiting that interests her, however, is the quite obvious dance of binary stars. Examining their orbits is important “because the mass of stars can be estimated by watching how they move, and mass is important because it tells how stars will evolve,” she says, adding with tongue-in-cheek: “It’s hard to measure mass any other way because they don’t make scales big enough to measure stars,” to say nothing of the transportation problem.

Quinn’s advantage over the galactic center group is that the stars she watches are all over the sky. Whereas the galactic center is only visible from Hawaii for a couple of months each year, the temporal window when she can go star-gazing is a lot bigger. Most of the stars she looks at are brown dwarfs, “something between a star and a planet,” too massive to be one and too small to be the other. Brown dwarfs can’t be seen with the naked eye but show up in infrared photography because they have warmth. Knowledge about them is “a stepping stone to get from what we understand about stars to having more understanding about planets,” Quinn says.

She hopes to “figure out how to modify models” to apply what she learns to planets.

Quinn has been interested in astronomy since she was a little girl. The posters in her bedroom depicted galactic stars, not pop stars, and she would sneak books out of her parents’ library “to read about Neptune’s density and stuff like that.” While she was getting her undergraduate degree in astrophysics at UCLA, she started studying binary stars using adaptive optics, and the similar technology connected her to Professor Ghez, who offered her a graduate student position.
HERE'S A MYSTERIOUS flickering around the black hole that has captured Tuan Do's attention. Following basic theory, clouds of gas in the center of the galaxy are funneled into the black hole as if it were a big drain. “The gas heats up as it gets closer to the black hole,” Tuan says, “and the heating is what we see as a flicker.”

This flickering is dim compared to neighboring stars, and until recently, the telescopes and technology weren’t up to the job of monitoring it. However, the Keck telescope has been able to observe emissions from the black hole for more than three years now, so “if gas flowing into the black hole glows, we should be able to figure out what the gas flow is like,” Tuan says.

Other researchers on the same quest have hypothesized that the gas around the black hole forms a big orbiting ball. If this were true, then it should be possible to observe a regular repetition of the flickering as the gas orbits, and some astronomers thought they observed a 20-minute period, supporting the notion of an orbiting gas cloud and suggesting that the black hole might be spinning. Tuan, however, was unable to make the same observation, which raises questions about the earlier finding.

This research will be part of his dissertation, along with a study of old stars as you approach the galactic center. Because stars become less dense as they age—5 billion years from now, the sun will engulf earth’s present orbit—“it’s easy for the gravity of the black hole and other stars to strip away the gas,” Tuan explains, and eventually the old star is gone. If he could map out the decline in the population of old stars as you approach the center of the galaxy, he says, “we would learn something about the history of stars.”

Tuan was always interested in science and became focused on astronomy as an undergraduate at UC Berkeley because “doing an observation, and seeing how everything worked, trying to get the result myself” appealed to him.

A false color image of the center of our galaxy taken by the Keck telescope. The arrow points to the infrared light emitted by material falling into the supermassive black hole (named Sgr A*). The infrared light from the black hole is redder than the stars around it (in white) and has been observed to “flicker.” The origin of this variability in the infrared is one of the topics being investigated by the galactic center group at UCLA.
Since she came to UCLA in 2003, Jessica Lu has had her eye on the very young, very large stars near the center of the Milky Way. She was looking so closely, in fact, that she was able to discover a few new stars and write about it in the paper required of second-year students in astronomy.

Her next paper, which was presented to the annual meeting of the American Astronomical Society, reported the first information about the orbits of some of those massive young stars. How were these stars able to develop in the extremely inhospitable neighborhood of the galactic center, crowded with stars and orbiting around a supermassive black hole? Jessica is hoping that the orbits can tell her something about the stars’ origins.

Based on their observations, other researchers have speculated that the stars formed out of gas clouds and that their orbits fall on two perpendicular planes—as if two of Saturn’s rings were at right angles. This seems unlikely, given the risk of collision if stars were on intersecting orbits. Jessica drew orbits of individual stars by using measurements that the group has made of the stars’ positions over the last decade or so. While one set of stars had orbits on a similar plane, “we couldn’t find the second disk,” she says. Instead the other stars seemed to travel in a variety of orbits, many of them quite eccentric rather than circular.

One possible explanation is that these stars are the remains of a cluster that spiraled in from farther out in the galaxy, drawn by gravitational forces and shredded as it neared the traffic jam in the Milky Way’s center. More likely, Jessica says, the ones in eccentric orbits formed out of a gas cloud but have been drawn away from the center, perhaps by another, still-undiscovered black hole.

Considering her fascination with astronomy, it’s interesting that she once contemplated another kind of stardom, pursuing a career as a ballet dancer at Houston’s performing arts high school. As she got closer to graduation, however, she had to choose between college and dance. College—specifically, a degree in physics at MIT—won hands down. After three years as a software engineer, she headed back to graduate school: “I wanted to go into a field where people really loved what they did,” she says, and at UCLA, she found an adviser and colleagues who do.
Sylvana Yelda: Choosing Astronomy

Sylvana Yelda took a bit of a side trip on her way to graduate studies in astronomy. At the University of Michigan, she got interested in neuroscience, acquired that degree, and even started graduate studies at the University of South Florida before she realized she’d be happier studying stars. Back at the University of Michigan to get the courses she would need for graduate work in the new field, she heard a speech by Professor Andrea Ghez and was sold. “When I saw that talk, I thought I’m going to go work with her,” Sylvana says. “She was very excited about her work, and it made me even more interested in the topic.” It didn’t hurt either that UCLA’s astrophysics program is highly regarded or that studying here meant gaining access to the Keck telescope.

At the end of her second year, Sylvana is completing the required coursework and working on her research paper. She’s using the stars at the galactic center to estimate what else might be lurking unseen near the central supermassive black hole. While Professor Ghez used individual star orbits closest to the galaxy’s center to discover the black hole, Sylvana is using “the whole sample of stars in the central region of the galaxy” to more broadly explore the possibility of additional dark mass.

There are also a couple of different ways to do the math, she explains. Researchers can measure the motion of the stars to the left and right but not possible motion toward and away from Earth. The mass estimators fill this gap in different ways, so Sylvana is testing a few to see how results compare.

For her dissertation research, she will probably move on to a different subject—perhaps binary stars—but she’ll continue to look at the galactic center. “We don’t really know if the stars in the galactic center are binary systems,” she says. “It’s hard to tell in such a crowded region so far away.” Binaries are an essential ingredient in determining how stellar systems, which are closer to Earth, behave. “It is likely that understanding binaries will solve a few of the mysteries about the stars in the more extreme environment near a black hole.”

As for her choice of astronomy, she’s “very happy with my decision.”

This image was taken with the Laser Guide Star Adaptive Optics system at the W. M. Keck Observatory in the L’-band (3.8 microns) and is ~1.3 light years across. It shows the many stars as well as the hot ionized gas distributed throughout the galactic center.
EVERY COUPLE OF WEEKS, three graduate students, five postdoctoral fellows, and a handful of undergraduates have an experience that might make them the envy of more senior members of the UCLA community, to say nothing of Southern California power brokers. They take a meeting with Gene Block, who was inaugurated as UCLA’s ninth chief executive in May.

When the circadian neurobiology research group gathers at 9:00 a.m., it may be “first thing” Friday for most of the members, but chances are Chancellor Block has already been on the job for an hour or so, handling his administrative responsibilities. And, breaking the dress code of jeans and lab coats, he’s usually wearing a suit and tie so he can rush off to more formal venues when the 90-minute session combining research presentations and discussion comes to an end.

“The really fun part of being at a university is the teaching and research,” Chancellor Block said in a recent interview about his new administrative role at UCLA. “I’ve been selfish in trying to keep all three things going in my career.”

Almost as soon as he took UCLA’s top post, Block got in touch with Christopher Colwell, professor of psychiatry and biobehavioral science at UCLA and one of his former postdoctoral fellows at the University of Virginia. “We had stayed in touch and continued to collaborate over the years,” Professor Colwell says, and both do research on circadian rhythms and biological clocks. As a result, “it was a very easy and natural
fit” for the new chancellor and his research team—two postdoctoral fellows, working under a National Institutes of Health grant—to join the circadian neurobiology lab. Block is studying the effects of aging on the brain cells that make up what is colloquially referred to as a biological clock and the impact this has on sleep cycles.

Professor Colwell points out that his old mentor “has a long history of working in the field of circadian rhythms and a huge store of knowledge,” so his presence is “a great intellectual bonus” for members of the research team. In addition, “we’re probably thinking more broadly about problems outside of our immediate research in the larger community,” Professor Colwell says. For example, Chancellor Block has pointed out the potential social impact of their research on the diabetes-like endocrine symptoms of sleep deprivation. With the rapidly increasing number of people all over the Pacific Rim who have symptoms of Type II diabetes, their future work could make a significant contribution “to the health of a lot of people in Los Angeles,” Colwell says.

Chancellor Block is also teaching a first-year seminar on circadian rhythms, with Andrew Vosko, a graduate student in the circadian neurobiology group, as his teaching assistant—one who has taken over administrative chores and the occasional lecture when Professor Block is busy attending to his primary job of being chancellor.

Although he may know only a handful of graduate students and postdoctoral fellows by first name, Chancellor Block has the interests of the entire graduate and postdoctoral community close to his heart as he begins his term of office.

In his view, improving financial support for graduate students is one of the most important contributions he can make as chancellor, so that UCLA “can remain competitive with the private universities that pull out all the stops to attract the best students.” Under his leadership, the development office is looking at some “very specially sculpted fund-raising campaigns” that would provide money for graduate student fellowships.

He’s also trying to put together plans for expanding the amount of university housing, for both graduate students and faculty. “We have to deal with the issue that it’s too expensive to live in our community,” he says.

“Postdocs are so important to a university, and they often get ignored, particularly those who come with their own financial support.”

The Chancellor is impressed with the size and contributions of UCLA’s postdoctoral community. “Postdocs are so important to a university, and they often get ignored, particularly those who come with their own financial support,” he says. UCLA’s Graduate Division has taken administrative responsibility for improving the conditions of postdoctoral fellows, and the new Society for Postdoctoral Scholars ensures that they have a voice. As a result, postdoctoral fellows, who “are a substantial part of the research team at UCLA,” Chancellor Block says, are also “part of the fabric of the university.” And he has a special affection for graduate students.

Unlike postdoctoral fellows, who have settled on a career path, graduate students “are still in flux about where they’re going,” he says. “They may have friends at medical school or law school, places that are linked to very clear career trajectories, whereas doctoral students are going off into what might seem like the great unknown, given the volatile situation in academia.” That uncertainty and the soul-searching that goes with it make the postgraduate years “a time of tremendous intellectual excitement” for graduate students, the chancellor says. “They’re challenging to be around.”

Block was a graduate student in psychology at the University of Oregon, then returned to Stanford University, where he had been an undergraduate, to do a postdoctoral fellowship with two men he calls “grand cru teachers.” Colin Pittendrigh, called the father of biological timing, “often got standing ovations from students when he talked about evolution,” Chancellor Block says, and Donald Kennedy went on the become Stanford’s president, providing a road map for his own career.

“From them, I developed an appreciation for the idea that you can be both a great teacher and a great researcher,” Chancellor Block says—and the chancellor of major research university at the same time.
Talk to anybody on the street, and they have a gripe about the health care system,” says graduate student Janet Cummings, but issues related to mental health have a particularly troubled niche. While there’s “a huge chasm between scientific advances” and what most people actually get in terms of regular medical care, she says, “the chasm is even bigger” in mental health.

What’s worse, the cost of not treating may be higher. Compared to physical illnesses, mental health conditions often arrive at a younger age and thus “can have a lifetime of consequences,” Janet says, and not just for the individuals but for society, which often feels the impact in terms of poverty and social instability.

Janet Cummings
Public Health
Yet, people who suffer from mental health problems may not get—or even seek—the care they need. The cost is one obstacle: health insurance reimbursements for mental health care often fall in the 50% range, compared to 70% or 80% reimbursement for treatment of physical maladies. Perhaps of more significance is the continuing social stigma related to mental health problems and their treatment, “still one of the biggest barriers to people getting help.” While “it’s very difficult to measure stigma,” Janet hopes that her doctoral research may provide some first steps.

A considerable body of work has examined how an individual’s income, socioeconomic standing, race, and ethnicity affect the decision to use mental health services and the outcomes for those who pursue care. But “very few researchers have looked at attributes of the community and whether where someone lives affects getting the services he or she needs,” Janet says. One element of this might be the hard-to-measure impact of stigma: whether community attitudes play a role. Since stigma resists measurement, Janet will take care to measure other community factors that may be related to stigma.

The National Longitudinal Survey of Adolescent Health provides detailed descriptions of the school-centered areas where data is collected, and it also includes measures of depressive symptoms, suicidal thoughts, substance abuse, and delinquency among youth between 11 and 19 years old during the first period of data collection. Using the individual data, Janet can identify students who might have benefited from mental health services, as well as those who got them. Then she can look at characteristics of the schools and communities where they lived.

Her preliminary findings explore the relationship between community socioeconomic status (measured by median household income) and whether adolescents received services in clinic settings outside of school. The big question: Is a deciding factor in whether or not someone gets care the level of resources of the community or the cultural attitudes of a community? An early answer: “I found an income effect that was independent of the racial and ethnic composition of the community,” Janet says. In communities with more resources, adolescents “were more likely to use counseling services in a clinical setting.”

A related hypothesis: In locations with fewer resources, what is the relative importance of school-based mental health services?

Janet recently defended her proposal and is now beginning the hard work of analysis and writing. Her defense provided a good example of what makes Janet special, her adviser, Professor Ninez Ponce, says. “The prepared portion of course, was seamless,” she says, “but the questions and answers part was pretty tough, and it demonstrated why she’s going to be a star. The way that she answered questions in a nondefensive and thoughtful way was very impressive.” Janet’s extensive work in statistics has made her “methodologically one of the very best of our students,” Professor Ponce says, “and she’s a deep thinker. Now she’s challenged in applying all those research skills in solving the mental health research questions.”

Janet’s road to her mental health specialization began as an undergraduate at the University of North Carolina at Chapel Hill, where she was an economics major with an interest in health-related issues. After graduation, she worked for RTI International, a think tank, in a group focused on the economics of mental health and substance abuse.

Having found a research focus, Janet decided to get a PhD in Public Health so that she could develop her own area of expertise and carve out her own niche. “She was attracted to UCLA by its high-ranking School of Public Health and the range of high-caliber researchers not only there but also at the Semel Institute for Neuroscience and Human Behavior. “I thought there would be opportunities to work on different projects,” she says, and she found plenty of them.

As a research assistant for Dr. Susan Ettner in the Department of General Internal Medicine, Janet conducted a literature review and coauthored a book chapter entitled, “Mental Health Services and Policy Issues,” a useful assignment for a new graduate student looking to get grounded in the field. Then, she worked with Dr. Bowen Chung to help develop depression-related outreach events at the Pan African Film Festival, where she collected survey data for the Semel Institute’s Health Services Research Center. This study explored the impact of several interventions designed to address the stigma surrounding depression in the African American community. Finally, as a research assistant to Dr. Carol Aneshensel of the Department of Community Health Sciences, she studied community-level socioeconomic effects on depression, cognition, and physical health among the elderly. It was only a couple of small steps from there to her own dissertation research.

After obtaining her PhD, Janet hopes to widen her current research project, using other datasets for adolescents or expanding her focus to young adults. “Looking at how community and context affect health services and health behaviors is a burgeoning field,” Janet says, and one where she promises to make an important contribution.
Adam Lunceford was doing his first rotation as a graduate student in biochemistry at UCLA when his preparations for presenting his research were interrupted by the birth of his third child. Some of his student colleagues went with him to the hospital to see his wife, Aurelia, and even brought presents. By the time he gets his PhD—he hopes this June—children numbers four, five, and six will also be on hand to help him celebrate.
Next, the two noted that the bacteria lack appetite didn’t vary by bacteria. Adam monitored consumption. It turned the senior member of the research team, with postdoctoral fellow, Ryoichi Saiki, as ate less, resulting in longer life. Working the bacteria lacking coenzyme Q—and so thought, intake can prolong life. Perhaps, Adam well-established that restricting food longer,” Adam says.

Of course, time isn’t the only demand a family makes. Adam’s financial support as a graduate student researcher and low-cost student housing provide only the basics of a balanced family budget. Members of the Church of Jesus Christ of Latter-Day Saints have also helped. For example, a woman who works for an investment firm that often holds luncheons and dinners may get together the leftover food and “drop it off with us, and we’ll have dinner for two or three days,” he says. His parents provided their old car when Adam’s died en route to UCLA. Nevertheless, “it’s not been an easy road,” Adam acknowledges, so when he told Aurelia about his plans for the next career step, it’s understandable that “she had to think about it for awhile.” Adam came to UCLA from a job at Abbott Laboratories in Chicago with a nice salary: “Life was pretty plush.” He took an academic leave to pursue his PhD and expand his career options, but he had planned to return. Since 2003, however, there have been layoffs, not only at Abbott, but all over the biotech industry. As a newly minted PhD, Adam thought, he would be “a little fish in a big ocean, and it would be pretty tough swimming.”

In addition, he’s always been interested in “how you take science from the bench and generate a product or service that really impacts human life.” Being a patent attorney would help him use his doctoral expertise to help translate scientific discoveries into products. As a result, Adam proposed seeking a law degree, adding three years onto his PhD and expand his career options, but he had planned to return. Since 2003, however, there have been layoffs, not only at Abbott, but all over the biotech industry.

For Adam, then, family has been intertwined with graduate studies in ways that most graduate students haven’t experienced—and might not even want to imagine. When Adam returns to his family apartment in UCLA student housing, he helps “getting the kids into pajamas, giving them a drink of water before they go to bed, and tucking them in with hugs and kisses.” He also reads bedtime stories, some of which have been passed along by his graduate adviser, Catherine Clarke, along with toys and DVDs her own two daughters have outgrown. Professor Clarke “has the best books,” Adam says.

She also has an area of research that Adam has found fascinating since his first visit to Los Angeles during the application and recruitment process. Working with “this little nematode”—a tiny worm to non-scientists—Professor Clarke is looking at how diet influences aging. In the case of \textit{C. elegans}, lunch is bacteria smeared on an agar plate. Clarke and a colleague discovered that “if you feed them a particular type of bacteria that lacks a molecule called coenzyme Q, these worms live significantly longer,” Adam says.

What wasn’t clear was why. It’s rather well-established that restricting food intake can prolong life. Perhaps, Adam thought, \textit{C. elegans} didn’t like the taste of the bacteria lacking coenzyme Q—and so ate less, resulting in longer life. Working with postdoctoral fellow, Ryoichi Saiki, as the senior member of the research team, Adam monitored consumption. It turned out that appetite didn’t vary by bacteria. Next, the two noted that the bacteria lacking coenzyme Q “can’t respire aerobically, can’t process oxygen the usual way,” Adam says, but instead “rely on fermentative types of metabolism.” Choosing another bacteria—one that had coenzyme Q but didn’t have normal respiration—they got informative results: “Sure enough,” Adam says, “when we fed worms these fermentative bacteria, the worms had a significant lifespan extension, almost as dramatic as the coenzyme Q group.” Moreover, the worms not only lived longer, they remained active and healthy.

“What’s really exciting,” Adam says, “is that it’s difficult to alter genetic pathways in people, but you can alter the environment.” His research might be a start toward finding “things you can eat that might have an influence on how you age,” he says. The results are being published now in a series of papers and in Adam’s dissertation; he expects to finish his PhD in June.

How has Adam managed all this while being the father to a large family? “He makes the most of his time in the lab by being very hard working,” his adviser, Professor Clarke, says, “and he has a knack for getting quite a bit done despite having somewhat limited hours. He makes a sincere effort to do his very best at whatever it is he puts his mind to accomplish—and this has enabled him to excel in all aspects of our graduate program.”

Of course, time isn’t the only demand a family makes. Adam’s financial support as a graduate student researcher and low-cost student housing provide only the basics of a balanced family budget. Members of the Church of Jesus Christ of Latter-Day Saints have also helped. For example, a woman who

“What’s really exciting is that it’s difficult to alter genetic pathways in people, but you can alter the environment.”
At least for some Los Angeles women, a messy house may be even more stressful than a bad marriage. That’s one conclusion graduate student in clinical psychology Darby Saxbe has drawn from the voluminous data gathered by the Center for the Everyday Lives of Families (CELF). The center identified 32 middle-class, dual earner households in Los Angeles, then followed members around for three days with video cameras, did interviews, and had them fill out surveys. Oh, and yes, they asked participants to provide four saliva samples every day.
Women who described their houses as being more messy or chaotic showed more stress...

Darby’s research is based on spit—or rather on the hormone cortisol, which is found in spit. In her master’s thesis, Darby compared men’s and women’s cortisol profiles to questionnaires they had completed about their marital happiness. While there was no linkage for men, women with the preferred cortisol profile—high right after getting up in the morning, then dropping off steeply—were more likely to report marital satisfaction on the questionnaire. Those with relatively even levels of cortisol across the day—a condition that has been associated with stress—were also reporting unhappy marriages.

The chemistry looks like this. As people wake up in the morning, high levels of cortisol show that the body may be “mustering its resources to tackle the stresses of the day,” Darby says, but the body shouldn’t stay in that highly activated phase. These results were reported in *Health Psychology*.

Darby’s dissertation builds on that research to see if the cortisol profiles of partners are similar to each other. She found that moods and cortisol levels were more similar in unhappy couples. She concluded that “marital satisfaction may buffer spouses from their partners’ negative mood or stress state.”

Darby’s “clutter” study used camcorder tours that family members were asked to give of their houses at the beginning of the study. Women who described their houses as being more messy or chaotic showed more stress, based on the cortisol results, and “the effect remained significant even when we controlled for marital dissatisfaction,” Darby says. Those who used words referring to nature—talking about their backyards, for example—had better cortisol profiles, meaning less stress. Darby is still at work on a piece that will relate cortisol results to the number and kinds of chores family members do around the house.

As she describes it, Darby took “a bit of winding path” to her present occupation. As an undergraduate at Yale University, she was headed for a career as an English professor—until she took a course on Freud as literature. Reading his case studies, she saw “this amazing narrative, this incredible puzzle” relating symptoms to earlier life events. “It was like reading a mystery novel,” she says. Darby “had always had in the back of my mind” a possible career in psychotherapy, and she ended up accumulating enough psychology credits for a double major with English.

Then she decided to take some time away from the academy. Darby joined some friends who were developing a website to help college graduates find careers in small companies or nonprofits, then worked for another website that provided support and networking for journalists. After the attacks of September 11, 2001, she thought back to her original plans for graduate school and an academic career: “I thought maybe I should do this sooner rather than later,” she says. “It was time to move forward.”

Darby used her Web savvy to find Rena Repetti at UCLA, where the Center for Everyday Lives of Families study was just getting under way. While other universities had seen Darby’s postgraduate digressions as a liability, “Rena saw them as a strength,” Darby says. “She saw me as someone who was more interdisciplinary and who was interested in different types of methods. We really clicked.”

During an initial year supported by an Edwin W. Pauley Fellowship, Darby applied for and obtained a National Science Foundation fellowship covering her next three years. As she writes her dissertation, she has support from a Chancellor’s Dissertation Year Fellowship, an American Psychological Association award, and the Charles E. and Sue K. Young award.

While all that financial support relieved her of the need to teach, Darby nevertheless did a couple of turns as a teaching assistant and participated in the Psychology Department’s summertime Quality of Education Teacher Training Program. It provides an opportunity for select graduate students to create and deliver their own course—in Darby’s case, introductory psychology.

With a small class size of 20, Darby made extensive use of student discussions. To make sure they were ready to talk about what they had read—and to get students into class on time—she gave a quiz first thing in every class session. “I thought they were going to hate it,” she says, but a midterm survey showed that “pretty much everybody said they preferred doing little quizzes to a couple of big exams.”

Her teaching mentor, Professor Carlos Grijalva, says the interactive exercises she developed “kept her students engaged and excited about learning and won their admiration and respect.” Some of her suggestions may become part of the standard psychology curriculum, he says. “Her enthusiasm and dedication to teaching are contagious, and I know that she is well on her way to becoming an award-winning scholar and teacher.”

First, she must complete a full-time year-long internship required of clinical psychology students, in her case, at the Veteran’s Administration Hospital in Sepulveda, which has a family therapy program. Although many students in clinical psychology choose a practice career, however, Darby is hoping to find an academic position.

She’d also like to stay in Southern California, where she and her husband, who works in the music business, have recently bought a house. Darby declined to say whether saliva sampling is part of the household routine, but she acknowledged that her husband “has a sense of humor about the idea that there’s going to be a lot of talking about the relationship.” She tells him it’s good for his health.
ONLY SIX PEOPLE may have left the reception with prizes in hand, but UCLA’s entire postdoctoral community—well represented by the 22 nominated fellows—received tributes at this year’s ceremony to present the Chancellor’s Awards for Postdoctoral Research.

“As postdoctoral scholars, you are setting the course for entirely new fields of study,” Chancellor Gene Block told the gathering. “You have a tremendous impact on the research we generate. In many cases, your scholarship will improve the quality of life in our communities and our world. So your work is at the core of UCLA’s mission.”

Public research universities, he pointed out, are charged with generating scholarship that contributes to the wider society. “You are doing that every day,” he said. “We’re privileged that UCLA is the place where you are pursuing discovery.”

Vice Chancellor Claudia Mitchell-Kernan described postdoctoral scholars as a fulcrum linking students and faculty in the UCLA community. “As vice chancellor of graduate studies, I’m particularly cognizant of your educational role,” she said. “You are often the troubleshooter people go to for help, and you provide excellent feedback on proposals, experiments, papers, and presentations. Your dedication and self-motivation provide extraordinary models for graduate students.”

The areas of study of this year’s nominees for the Chancellor’s Award, which carries a $5,000 prize, ranged alphabetically from Anthropology to Surgical Oncology. Well represented were the departments of psychology, chemistry and biochemistry, along with the David Geffen School of Medicine and the Henry Samueli School of Engineering and Applied Science.
The research projects of the six winners are described here, and the other nominees are listed in the accompanying box.

**Grégoire Courtine**  
Departments of Neurobiology and Physiological Science

Dr. Courtine’s wide-ranging research program aims to help people recover from spinal cord injury. He showed that mice can regain function via new intraspinal connections that relay brain information beyond the lesion to neurons controlling leg muscles. He also combined electrical spinal cord stimulation and pharmacological interventions to return once-paralyzed rats to robust and weight-bearing locomotion. Then, he examined the safety and potential of nerve growth factors to promote functional recovery.

**Tracy R. Daniels**  
Division of Surgical Oncology

Working in cancer immunotherapy, Dr. Daniels demonstrated that a novel protein can make a two-pronged attack against tumor cells by delivering toxins and by directly causing cell destruction. Dr. Daniels is also at work in the new area of allergo-oncology, helping to develop and characterize antibodies to teach the body’s immune system that cancer cells are foreign and should be destroyed. Other antibodies resulting from her research offer a potential new treatment for prostate cancer.

**Nate Kornell**  
Department of Psychology

Dr. Kornell’s research on unsupervised learning suggests that people underestimate the amount they can learn by studying, and they engage in study techniques that actually hinder learning. For example, students using flashcards to study may put aside the ones they think they know, but doing so can impair learning. His work has shown that distributing several study events instead of massing them together promotes learning. He is also collaborating on an ambitious attempt to improve computer-based science education in public schools.

**Claude Legault**  
Department of Chemistry and Biochemistry

Dr. Legault’s work at UCLA accelerates the prediction of synthetic routes to novel pharmaceutical agents. He discovered the factors that govern the regioselectivity of
Graduate Quarterly  Spring 2008

Nominees

Timothy Bredy, Department of Psychiatry and Biobehavioral Sciences, for research on the development, persistence, and extinction of long-term fear memories.

Steven M. Claypool, Department of Chemistry and Biochemistry, for research on Barth syndrome (BTHS), an X-linked disease that is characterized by disorders of the heart and skeleton.

Martin Culjat, for helping to build the UCLA Center for Advanced Surgical and Interventional Technology (CASIT) and for improvements to surgical robotics and the use of prosthetic limbs.

Jérôme Darbon, Department of Mathematics, for developing fast algorithms that may revolutionize the way the numerical community looks at nonlinear elliptic equations.

William R. Dichtel, Department of Chemistry and Biochemistry, for developing a highly efficient method to form mechanical bonds, leading to a simple system for controlled release of therapeutic agents.

Liutao Du, Department of Pathology and Laboratory Medicine, for research on the genetics and therapy of Ataxia-teleangiectasia (A-T) disease, a progressive and fatal childhood disorder.

Arne Ekstrom, Department of Psychiatry and Biobehavioral Sciences, for combining fMRI and neural recordings of the human hippocampus to clarify what kinds of activity the imaging reflects.

Carissa Grace Fonseca, Department of Radiology and Medicine, for work on a trial using MRIs to define which patients with heart failure can benefit from implantable cardiac defibrillators.

Peter Langfelder, Department of Biostatistics and Human Genetics, for developing novel statistical and computational methods for the analysis of gene expression data.

Qian Lu, UCLA Pediatric Pain Program, for identifying factors that predispose children with cancer to adverse psychological and physical outcomes.

Yuanbing Mao, Department of Chemical and Biomedical Engineering, for reducing functionally improved optical materials down to nano dimensions in size and shape.

Arunkumar Natarajan, Department of Chemistry and Biochemistry, for using light-induced photochemical processes to make specialty chemicals according to green chemistry principles.

Tara Peris, Department of Psychiatry and Biobehavioral Sciences, for research on aspects of the home environment that may influence childhood obsessive-compulsive disorder.

Fang Wei, Department of Mechanical and Aerospace Engineering, for developing a novel enzyme-amplification strategy to detect cancer-related proteins in saliva.

Andreas Wilke, Department of Anthropology, for research linking the decision mechanisms used by animals foraging for food to those used by people searching for physical objects or information in memory.

Jixun Zhan, Department of Chemical and Biomolecular Engineering, for work directed toward biosynthesizing a new generation of bioactive derivatives through biomolecular engineering.

Philip T. Liu
Division of Dermatology

Dr. Liu has established that humans require vitamin D to generate the antimicrobial peptides that kill intracellular pathogens. People of African descent, who suffer a high incidence of certain infections, also are deficient in vitamin D and thus in this important antimicrobial pathway. Laboratory experiments suggest that their immune response can be restored by vitamin D supplements. His plan is to apply what he has learned about vitamin D and the immune response to the study of cancer.

Daniel Roy Solli
Department of Electrical Engineering

Dr. Solli has learned how to study the giant rogue waves that appear from time to time on the open seas, but in a laboratory setting without a single drop of water. Through experimentation, he discovered optical rogue waves, brief pulses of intense light that propagate through optical fiber. He was able to observe these optical rogues and measure their statistical properties showing their similarity to their oceanic cousins. Moreover, he has detected what appears to be a triggering mechanism, so that he can create optical rogue waves.
Graduate Student Accomplishments

FEATURED ACCOMPLISHMENT

ART

Joy M. Holland: “Out-of-the-Way,” a public art installation, is part of the UCLA M.F.A. exhibition series at the UCLA Broad Art Center. M.F.A. candidate Joy Holland transforms the floor of a vast outdoor seating area and walkway with intricate, handmade concrete floor tiles. For years, Holland has recycled salvaged wood and other debris to create floors in galleries and public spaces. While at UCLA, she developed a process that uses tree-landscaping waste and scrap wood to cast evocative concrete floor tiles. The project will be installed for the entire spring quarter.

Floor with Heat Channels (detail) Concrete, cast from tree waste and scrap wood

ARCHAEOLOGY


ARCHITECTURE & URBAN DESIGN


ART HISTORY

Rebecca S. Hall: (Panelist) “Changing Expressions, Steadfast Merit in the Banners of Northwestern Laos.” Association for Asian Studies meeting, Atlanta, GA, April, 2008.


ANTHROPOLOGY


APPLIED LINGUISTICS & TESL


ART

Joy M. Holland: “Out-of-the-Way,” a public art installation, is part of the UCLA M.F.A. exhibition series at the UCLA Broad Art Center. M.F.A. candidate Joy Holland transforms the floor of a vast outdoor seating area and walkway with intricate, handmade concrete floor tiles. For years, Holland has recycled salvaged wood and other debris to create floors in galleries and public spaces. While at UCLA, she developed a process that uses tree-landscaping waste and scrap wood to cast evocative concrete floor tiles. The project will be installed for the entire spring quarter.
Jennifer L. Sternad: [1] (Producer) “PUBLICo TRANSITorio | TRANSITory PUBLICs, 8-day public conference with artists, activists, and architects from throughout Latin America & the U.S.” [2] (Moderator) “No Borders!” National Arts & Media Alliance (NAMAC), Austin, TX, October, 2007.

ASIAN LANGUAGES & CULTURES


BIOSTATISTICS


CHEMISTRY & BIOCHEMISTRY


CIVIL ENGINEERING


COMMUNITY HEALTH SCIENCES


Fariborz M. Tehrani: (Co-presenter) “Macro-Element Modeling of Steel Fiber-Reinforced Concrete.” Presented at the American Concrete Institute Spring 2008 Convention, Los Angeles, CA, March, 2008.


Erica A. Shehane: (First author) “HIV Prevention and Risks in Drug Treatment Centers in Guatemala City and San Salvador.” Presented at the Global Health Education Consortium Annual Conference, Sacramento, CA, April, 2008.

COMPARATIVE LITERATURE


COMPUTER SCIENCE


ECOLOGY & EVOLUTIONARY BIOLOGY


ECONOMICS


EDUCATION


Liglia E. Toutant: Chair and presenter of the Internationalization of Higher Education panel, “Internationalization at a West Coast University in a Global Context International Graduate Student
**ELECTRICAL ENGINEERING**


**ENGLISH**


**ENVIRONMENTAL SCIENCE & ENGINEERING**


**FILM, TV, & DIGITAL MEDIA**


**FRENCH & FRANCOPHONE STUDIES**


**GEOGRAPHY**


**HEALTH SERVICES**


**HISTORY**


Xochitl M. Flores-Marcial: (Panelist) “Testamento Zapoteco: La historia dentro de la tradicion escrita del lenguaje indigena.” Presented at the Colloquio Maria Teresa Fernandez de Miranda: Las lenguas otomangues y nahuasquenes ante el siglo XXI, Oaxaca de Juarez, Oaxaca, Mexico, April, 2008.


HUMAN GENETICS


INFORMATION STUDIES


ITALIAN


LINGUISTICS


MOLECULAR CELLULAR & INTEGRATIVE PHYSIOLOGY


MUSIC


MOLECULAR BIOLOGY


MANAGEMENT


MUSIC


NEAR EASTERN LANGUAGES & CULTURES

NEUROSCIENCE
Angela M. Rizk-Jackson: (First author) “Classification analysis of rapid event-related fMRI studies.” Organization for Human Brain Mapping, Melbourne, Australia, June, 2008.

NURSING

ORAL BIOLOGY

PHYSICS & ASTRONOMY

PHYSIOLOGICAL SCIENCE

PSYCHOLOGY


PUBLIC POLICY

SOCIAL WELFARE
Joya F. Golden: (Co-author) “Improving HIV screening and receipt of results by nurse-initiated...
streamlined counseling and rapid testing.” Published in the Journal of General Internal Medicine, June, 2008.

Rachel L. Kaplan: (Co-presenter) “Gender Differences in Attitudes among College Students toward Mandatory Pre-Marital HIV Testing for Men in Four Arab Countries.” Presented at the Midwest Sociological Society Annual Meeting, St. Louis, MO, March, 2008.


SOCIOLGY


THEATER

David Gorshein: (Panelist) “What’s Bent in The Bubble?” Queering the Stage panel, paper: Comparative Drama Conference, Los Angeles, CA, March, 2008.


URBAN PLANNING


Linda C. Samuels: “Film and Photo: The Road and the City in Pop Culture.” Presented at the ACSA National Conference, Houston, TX, March, 2008.

WOMEN’S STUDIES

Kimberly S. Twargo: (Panelist) “Dancing Around DV: Dance Therapy and Domestic Violence in America and Indonesia.” Presented at the School of Pacific and Asian Studies Graduate Student Conference, University of Hawaii at Manoa, HI, March, 2008.

WORLD ARTS AND CULTURES

Tiff Graham: (Panelist) “Religion and the Small Town Festival.” Presented at the American Folklife Society Annual Meeting, Quebec City, Quebec, Canada, October, 2007.


Help Your Department!
Submit an Accomplishment to the Graduate Quarterly
Have you made a presentation, published an article or premiered your original work recently? Help your department advertise its achievements to the university and beyond.
Submit your accomplishments online at: www.gdnet.ucla.edu/assis/accomplishments
The goal of the UCLA Graduate Students Association (GSA) is to enrich the experience of all graduate and professional students at UCLA. Their programs include student government, campus committees, Melnitz Movies, Grad Bar, community service, the Sustainable Resource Center, the Graduate Student Resource Center, the Graduate Writing Center, and more. For more information about the organization, and how you can get involved and connect with other grad students, join their group on Facebook, stop by Kerckhoff 316, or visit http://gsa.asucla.ucla.edu