



UNLV

Innovation

The Research Magazine of the University of Nevada, Las Vegas

SUSTAINABILITY RESEARCH

Exploring the Future
of Our Region

ON A MISSION

Engineering Team
Seeks to Save
Soldiers' Lives

INVESTING IN DISCOVERY

President's Research
Award Fuels Innovation

A New Home for
the Greenspun
College of
Urban Affairs

Graduate Education and Research at UNLV

How This Vital Partnership
Benefits Students
and the Community

Geoscience
Doctoral Student
Robyn Howley

Research, Identity, and the Future of UNLV



Dr. David B. Ashley
UNLV President



Dr. Neal J. Smatresk
Executive Vice President
and Provost

As many of you know, UNLV celebrated its 50th anniversary this year with a variety of activities designed to honor the university's past and present. While we have embraced this celebration with enthusiasm, we have also initiated an activity that is very much focused on our future. A strategic planning process, titled "Focus: 50-100," is a manifestation of our desire to address the challenges we will face in the second half-century of our existence—and to identify the abundant opportunities we expect to encounter during this time.

Central to this planning process has been a dedicated effort to better define our identity and values with special emphasis on two of our primary missions—education and research. While education is probably the most visible and time-honored of our missions—and is perhaps the best understood—it is important to note that research is equally significant in shaping our identity. Research enhances the national reputation of the university, aids in recruiting the best and brightest students, and enriches the community and state in many ways. It is an activity that seeks to create new knowledge, and thus informs and improves teaching and generally expands the boundaries of education.

For these reasons, the advancement of research is an extremely high priority for UNLV, and we will continue to seek ways to engender even greater achievement in this area. As our strategic planning process progresses, we will have the opportunity to guide the enhancement of research to benefit our students and the university, as well as the community, state, region, and beyond. We hope you share our commitment to this effort and join us in promoting the value of UNLV research.

Dr. David B. Ashley, UNLV President

Dr. Neal J. Smatresk, Executive Vice President and Provost



Dr. Ron Smith
Vice President for
Research and Dean
of the Graduate College

Learning More About Our Innovative Research

We are pleased to bring you another issue of *UNLV Innovation*, the university's annual research magazine. This issue contains a wonderful selection of stories representing the outstanding scholarly and creative activity being pursued at UNLV. You will find an abundance of interesting material here, including overviews of faculty-authored books on wide-ranging topics, an article on new initiatives aimed at advancing sustainability, and updates on UNLV's success in building research and graduate education.

We believe in the value of sharing these and other stories about the fine work being performed by UNLV faculty and students. We also seek to provide context for our institutional commitment to research and creative activity. Hence, we present the following articles in an effort to enhance understanding of these critically important endeavors. Please enjoy this publication, and thank you for your interest in UNLV.

Dr. Ron Smith, Vice President for Research and Dean of the Graduate College



ON THE COVER:
UNLV doctoral student Robyn Howley. Story on page 10. Photographed by Geri Kodey

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Features

18 | A VERY GOOD YEAR

UNLV life sciences faculty had great success last year in acquiring competitive grant funding to conduct their research.

22 | FOCUS ON SUSTAINABILITY

UNLV is supporting research and outreach activities designed to enhance environmental, economic, and social/cultural sustainability.

26 | ON A MISSION

Engineering researchers are developing new vehicle technologies to help save soldiers' lives.

30 | SILVER STATE SCHOLARS

The Harry Reid Silver State Research Award honors the university's most respected faculty scholars and highlights the best in Nevada research.

34 | INVESTING IN RESEARCH

The President's Research Award has spawned fascinating research projects, encouraged acquisition of grant funding, and promoted collaboration.



Departments

2 | ON CAMPUS

A successful public-private partnership has led to the creation of the soon-to-be-completed Greenspun Hall.

6 | BOOKS

UNLV faculty authors shed light on a number of topics.

10 | ENHANCING RESEARCH

Why is graduate education so critical to UNLV's research enterprise?

14 | PROGRESS REPORT

UNLV's graduate-level creative writing programs are named among the best in the country.

38 | PERSPECTIVE

Unexpected praise arrives from the National Science Foundation.

40 | RESEARCH REPORT

Learn about the status of research at UNLV.

Building the Future



Greenspun Hall will centralize departments in the College of Urban Affairs and pave the way for high-tech collaborative research.

By Laurie Fruth

Drive down Maryland Parkway and you'll be hard pressed to miss the massive construction site on the corner of University Road. Although the building is still a few months away from a grand opening, students and faculty in the Greenspun College of Urban Affairs are already making plans for the day when they can set foot in Greenspun Hall, their long-awaited new home on the UNLV campus.

When it opens this fall, the new building will be the fifth largest academic facility on campus. It will provide office, laboratory, and classroom space for the departments of criminal justice, environmental studies, communication studies, and public administration, as well as the School of Social Work and Hank Greenspun School of Journalism and Media Studies.

Centralizing college faculty and staff in one location on campus is expected to enhance networking and research collaboration.

"This will be the first time most of our schools and departments have lived under the same roof," explains Martha Watson, dean of the Greenspun College of Urban Affairs. "Having everyone together will lead to conversations among faculty, and these conversations may stimulate new ideas for collaborative research and innovative teaching."

Criminal justice chair Joel Lieberman agrees, adding that Greenspun Hall will enable faculty members to work more closely with graduate and

Artist's rendering of Greenspun Hall

undergraduate students involved in faculty research projects.

“Our department has several research laboratories spread out across the campus,” he says. “In Greenspun Hall, all of our labs will be in one place, including our Center for the Analysis of Crime Statistics. Our new facilities will be far more suitable for conducting research and working with students.”

Space and facilities to conduct research are also important to Lee Bernick, chair of the department of public administration.

“Greenspun Hall will give us the space we need for students to work in groups,” Bernick says. “We also plan to take advantage of the auditorium to host national scholars in public forums.”

In addition to offices for faculty, staff, and graduate students, Greenspun Hall will house the college’s advising center, a debate squad room, high-tech laboratories, conference rooms, smart classrooms, a technologically sophisticated auditorium, and media facilities for KUNV radio and UNLV TV.

“We planned our part of the new building to include digital, high-definition media facilities that we’ll use to engage students in conducting research,” says Ardyth Sohn, director of the Greenspun School of Journalism and Media Studies. “We’ll be exploring the limits of new technologies, testing media products at various stages of development, and looking for ways to bridge the gap between traditional and emerging media.”

The Planning Process

The idea of Greenspun Hall began to take shape many years ago when Las Vegas Sun publisher Brian Greenspun sat down with his family to discuss how they could contribute to UNLV. “We came up with the idea of the Hank Greenspun School

of Journalism to honor my father’s legacy. But we knew at the time that the school would be just the first step,” Greenspun says. The late Hank Greenspun was the founder and publisher of the Las Vegas Sun newspaper.

A few years later, the family presented UNLV with a second gift to establish the Greenspun College of Urban Affairs; it was then that talks began in earnest about the possibility of creating a building for the college. These discussions eventually led to the donation of a third gift from the Greenspun Family Foundation to build Greenspun Hall.

In June 2005, legislators approved the use of additional dollars from the state to help fund the building, establishing a successful public-private partnership that university administrators hope to establish with future donors.

At the groundbreaking ceremony for Greenspun Hall in early 2007, Brian Greenspun described the gift to UNLV as the “latest step on our journey to build a better community.”

“We didn’t want to compromise on the design of the building,” he says. “So when we were told that what we wanted wasn’t possible, we added more money to make it possible. The important thing is that we create a space for learning, for research, and for experimentation.”

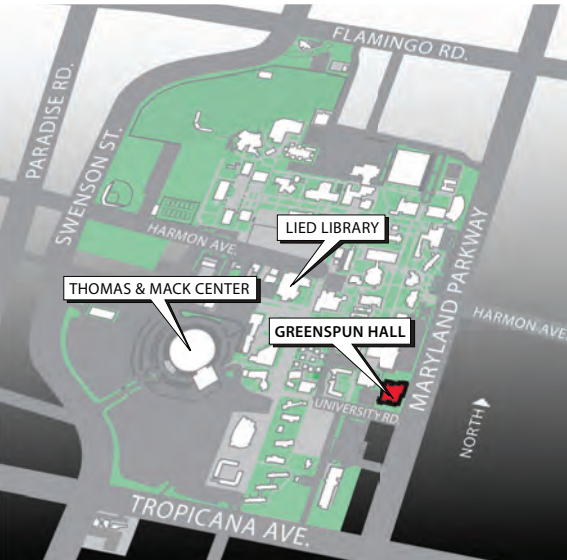
To ensure that the new building would meet the growing needs of the College of Urban Affairs, the university hired a planning consultant to interview all of the potential users of the building.

“The purpose of these interviews was to determine what kinds of spaces people would need, not just now, but five years from now,” Watson says. “We then took this information to representatives of the architectural firm. They took our needs and translated them into the design of the building.”

One important design goal for Greenspun Hall was to obtain a Leadership in Energy and Environmental Design (LEED) certification. LEED certification points are awarded to buildings on the basis of energy and water savings, indoor-air quality, and the use of sustainable building materials. Greenspun Hall will be eligible to apply for gold LEED status three years after completion. If awarded, Greenspun Hall will join approximately 350 other buildings in the United States that have earned this distinction.

To this end, architects designed the building to include a louvered canopy to shade the courtyard, reduce the solar gain on the building façade, and support a large photovoltaic array. Once the building opens, this array will produce about 30 percent of the power required to run the building. Representatives from the design firm are hopeful that the canopy, a special system for heating and cooling, extensive desert landscaping, and the use of energy-saving interior and exterior materials will qualify the building for LEED gold status.

“And that will certainly be a selling point for students interested in studying environmental science,” says David



MAP: DAVE MELTON; PHOTOGRAPH: R. MARSH STARKS



One important design goal for Greenspun Hall was to obtain a Leadership in Energy and Environmental Design (LEED) certification.

Hassenzahl, chair of the environmental studies department, which will also move into the facility.

Another important design goal for the building was to maximize its prominent location on the corner of Maryland Parkway and University Road. Designers suggested and university representatives approved a 125-foot tower bearing UNLV’s name at the southern boundary of the property. It is intended to bring attention to one of several entrances to the campus.

Watson says she is pleased with the design of the building and is looking forward to moving the college into the space.

“Greenspun Hall is aesthetically pleasing with exterior and interior colors specially selected to evoke a sense of the desert. It’s student-focused, with plenty of informal and formal areas for students to congregate, study, or work with state-of-the-art equipment. But, most importantly, it’s a permanent home for the wonderful faculty and students of the Greenspun College of Urban Affairs.”

Greenspun Hall Fast Facts

PROJECT COST:
\$90 million

SIZE: 122,000 square feet

ARCHITECTURE FIRM:
HKS Architects, Inc. in association with Robert A.M. Stern Architects

CONTRACTOR:
Clark Construction Group, LLC, Las Vegas

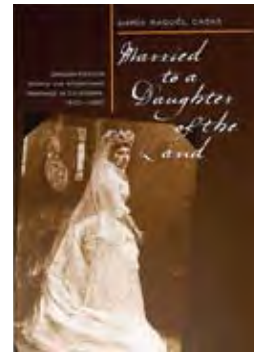
COMPLETION DATE:
Construction, June 2008;
Media Facility, April 2009

SPECIAL FEATURES:

- 190-seat auditorium designed for video, radio, and Internet production and equipped with a system to collect audience feedback
- High-definition media facilities for KUNV FM radio and UNLV TV; student newsrooms; and a technical operations center supporting a large-storage area network
- High-tech convergence laboratory for the Greenspun School of Journalism and Media Studies
- Specialized labs for criminal justice and the Center for Statistical Analysis
- Debate squad room for communication studies
- Chilled-beam heating and cooling system
- Photovoltaic array for energy conservation



UNLV history professor María Raqué Casás



***Married to a Daughter of the Land: Spanish-Mexican Women and Interethnic Marriage in California, 1820-1880* by María Raqué Casás. University of Nevada Press, 2007.**

INTEREST IN HER heritage led UNLV history professor María Raqué Casás to research the subject of her recent book on Mexican/EuroAmerican intermarriage in colonial California.

“When I began my graduate career I knew that I wanted to study gender and specifically Chicana history,” Casás says. “Because I am a Mexican-American, I was drawn to women in interethnic marriages, and my family strengthened my interest because three of my siblings intermarried. What I was discussing wasn’t just an academic, intellectual exercise but a very personal one.”

Casás approached her research with thought-provoking memories from her upbringing in a Mexican-American family in the San Joaquin Valley. As a child, she was not only aware of interethnic marriages but also of how gender bias affected perceptions of these relationships.

“When a Chicano or Mexican man married outside his ethnic group, there was little comment or questioning of his motives or identity issues,” Casás says. “But when a Chicana or Mexicana married outside her ethnic group, especially to a Euro-American, she was described in mostly negative terms.”

A woman was seen as “trying to become white,” Casás says, and this made her a “cultural traitor.” At the same time, however, Casás recalls hearing comments suggesting that “marrying someone ‘lighter’ was preferable to marrying someone ‘darker.’” Even in her youth, she

perceived the contradiction; as a young historian, she was determined to better understand the origins of the attitudes.

When she began her research, Casás found such themes born out in history books, discovering that women who married Euro-Americans were often written out of much Mexican-American history largely because they were considered supporters of the conquerors.

“However, my work shows that it was never that simplistic,” Casás says, explaining that these women naturally chose their spouses according to their personal needs and desires. “The book helps explain the logic behind these unions so that the human relationships are at the forefront.”

In her book, which is the first major scholarly treatment on the subject, Casás explores a number of stories of Chicanas who married EuroAmericans in California in the mid-1800s. She discusses how such unions contributed to the multicultural development of California society, addressing such issues as class, race, and identity.

The end result is a book that depicts Spanish-Mexican women’s lives during an important era in California history and that shows how these women “negotiated the precarious boundaries of gender and race.”

Casás says that one of the goals of her research was to provide greater context for these interethnic marriages.

“Too often people see intermarriage as a recent social phenomenon with only contemporary consequence,” Casás says. “I hope my work will help people examine intermarriage in the past and understand how persistent and constant it has been in human history.”

***Willing Suspension of Disbelief: Poetic Faith in Film* by Anthony J. Ferri. Lexington Books, 2007.**

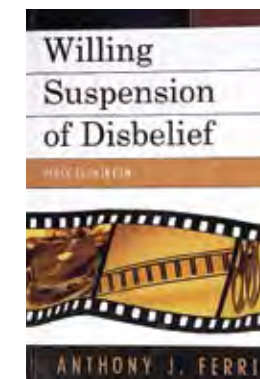
IN HIS FIRST book on film, Anthony J. Ferri, associate professor in the Hank Greenspun School of Journalism and Media Studies, seeks to explain the origin and application of the notion of willing suspension of disbelief to film viewing.

Ferri explores a variety of critical and empirical perspectives devoted to shedding light on the phrase, which was coined by English poet, critic, and essayist Samuel Taylor Coleridge in 1817.

“People have used the phrase ‘willing suspension of disbelief’ without knowing its author or origins,” Ferri notes. “I had heard the phrase used widely, mostly by film theorists and filmmakers, but I had no idea where it came from – like most people, I suspect. So I researched it and found that little scholarly study had been conducted on the subject relative to film.”

Coleridge, perhaps best known for the poem “Rime of the Ancient Mariner,” first used the phrase in his *Biographia Literaria*.

“I began to think about why a 19th century poet’s phrase would be used to explain what happens in a film theater,”



says Ferri, who notes the concept is robust enough to apply to all artistic works, including poetry, film, and even nonfiction. “It is testament to the durability of the phrase that it applies to film—a medium that hadn’t even been invented when the phrase was introduced.”

Ferri became interested in how the idea could be applied in contemporary media, particularly film.

“As I read more by and about Coleridge, it was clear that he was interested in audience cognition and perception – even though there was no ‘science’ on these subjects at the time,” he says.

Ferri, who has researched audience perception in other media-viewing contexts, chronicles Coleridge’s life and describes the thinking that led the poet to introduce the concept. He goes on to trace contemporary usage and notes that the “staying power of the phrase shows how intrigued we are by what happens when we view a film.”

Ferri identifies a common theme in the theories on the film-viewing experience, suggesting that viewers who become absorbed in a film are transported in a way that engages their “emotions and very sense of reality for the moment.”

He applies the notion of transport to a number of films and discusses what elements lull the viewer into this state. He goes on to assert that the suspension of disbelief is, in fact, a measurable reaction to a film – a contention born out in his 1999 study of local movie theater patrons.

In it, he surveyed audience members to gauge the degree to which “they lost themselves” in the movie they had viewed. He notes that the study confirmed what could be called

In Print

UNLV faculty authors shed light on Chicana history, willing suspension of disbelief, Ghandi’s gurus, and more.

By Barbara Cloud
Photography by R. Marsh Starks

conventional wisdom about the film-viewing experience: Those who were most willing to suspend disbelief were more likely to feel the characters in the film were real and that the storyline was believable.

Ferri, who studied film-making in college, views this work as a baseline study and hopes to continue researching the subject. He is interested in pursuing several related projects, among them, one in which he would partner with neuroimaging researchers to determine what physiological changes occur in the brain when willing suspension of disbelief occurs.

“There is much more to understand about this concept,” Ferri says. “This amazing 19th century poet gave us a brilliant idea to explore. I hope to contribute to a wider understanding of its contemporary uses.”

***Gandhi’s Teachers: Rajchandra Ravjibhai Mehta* by Satish Sharma**
Gujarat Vidyapith, 2005.

IN HIS AUTOBIOGRAPHY, Mahatma Gandhi names four figures who influenced his life and philosophy—Leo Tolstoy, John Ruskin, Henry David Thoreau, and Rajchandra Ravjibhai Mehta.

All four are subjects of interest to UNLV social work professor Satish Sharma, who has undertaken an effort to write a series of books on them, devoting a volume to each.

The first to be published is *Gandhi’s Teachers: Rajchandra Ravjibhai Mehta*, a largely biographical work that also provides description of the guru-disciple relationship between the primary subject and Gandhi.

Sharma says he chose to focus on Rajchandra after observing what seemed to be a contradiction in Gandhi’s autobiography: Gandhi calls Rajchandra his principal guru, yet devotes only two and a half pages to discussion of him.

“This lack of information about Rajchandra bothered me, and I decided to explore more about him,” Sharma recalls.



Social work professor
Satish Sharma

Sharma, a graduate of Panjab University in India, made four trips to his homeland to research Rajchandra, visiting libraries and research institutes in Ahmedabad.

“I talked to the people who had heard about Rajchandra and followed his teachings, and I visited the places established in his honor,” he says.

In *Rajchandra* Sharma describes the life of the saint-philosopher who practiced Jainism, an Indian religion and philosophy that originated in about the 6th century B.C. as a protest against certain Hindu practices of the period, such as animal sacrifice. Sharma devotes a chapter to discussion of Jainism, in which he explains that Jains abjure injury to all living creatures and believe that the monastic life offers the path to perfection of man’s nature.

Sharma provides biographical details of Rajchandra’s life, follows his commitment to his religion, and offers accounts of his relationship with Gandhi. Sharma offers a chapter and an appendix in the book containing the religious and philosophical questions Gandhi advanced to Rajchandra and the latter’s replies. Finally, Sharma also includes two of Rajchandra’s works, *Philosophy of Six Padas* and *Atma-Siddhi*, with commentaries.

Sharma acknowledges that Gandhi’s other three gurus may have achieved greater fame than Rajchandra but says he is their equal in terms of ability to inspire.

“The challenge of this work excited me so much that it motivated me to

research Gandhi’s other teachers as well, resulting in the idea of the series,” he says.

Sharma’s volume on Tolstoy is nearly ready for publication, and he continues work on the Ruskin and Thoreau manuscripts.

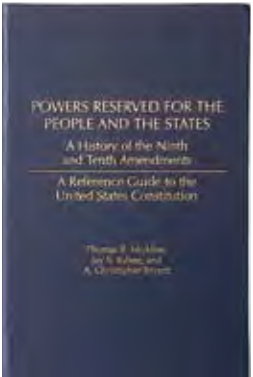
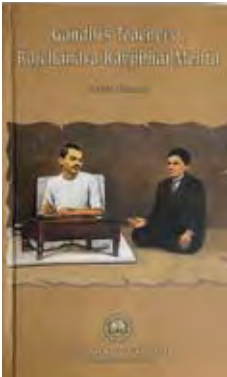
***Powers Reserved for the People and the States: A History of the Ninth and Tenth Amendments* by Thomas B. McAfee, Jay S. Bybee, and A. Christopher Bryant.**
Praeger, 2006.

THE DEBATE AMONG the framers of the U.S. Constitution regarding the addition of the Bill of Rights – in particular, the final two amendments – is at the core of the discussion of *Powers Reserved for the People and the States*.

The Ninth and Tenth Amendments are the basis for William S. Boyd School of Law professor Thomas B. McAfee’s analysis of the powers of the federal government versus those reserved for the states and/or the people.

In *Powers Reserved*, part of a series of reference guides to the constitution, McAfee has joined with two former UNLV colleagues – Jay S. Bybee, now a judge on the U.S. Circuit Court of Appeals for the Ninth District, and A. Christopher Bryant, now a professor at the University of Cincinnati College of Law – in examining the last two amendments in the Bill of Rights.

As the title of the book indicates, the Ninth and Tenth Amendments were designed to address the issues of powers retained by the states and by the



people. The Ninth Amendment reads, “The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.” The Tenth Amendment reads, “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”

McAfee, one of the founding faculty members at the Boyd School of Law and adviser to the *Nevada Law Journal*, specializes in constitutional law and American legal history. This is his second book on constitutional history, and he has published numerous articles about the protection of rights and the Constitution.

The latest book offers an overview of the two amendments and their impact on law over the last two and quarter centuries. McAfee, whose previous articles about the amendments led to the invitation to write this volume for the series, discusses the drafting of the two amendments and examines how the amendments impacted the Civil War and Reconstruction. He also discusses the Ninth Amendment and substantive due process as modern phenomena. His colleagues cover the prelude to the Constitution, as well as the way early Congresses and courts worked with the amendments and developments regarding the amendments in the 20th Century.

McAfee says one of the objectives of the authors in writing the book was to refute those who have tried to use the Ninth Amendment “as a discovery of ‘new’ and ‘additional’ rights limitations beyond those already found in the Bill of Rights.”

“In addition, the book should serve to help us understand how it is that the Tenth Amendment has not done much

to preserve ‘states’ rights’ by restricting the federal government to the powers enumerated,” McAfee says. “We’ve construed federal powers so broadly now, that the Tenth Amendment of itself can do little to help.”

Since completing *Powers Reserved*, McAfee has continued to explore one of the themes in the book in a journal article. Additionally, he and fellow UNLV law professor Chris Blakesley are coauthoring an article about the war powers of Congress.

***Human Goodness: Pragmatic Variations on Platonic Themes* by Paul Schollmeier.**
Cambridge University Press, 2006.

SEEKERS OF SELF-KNOWLEDGE, this book is for you. In his exploration of what some would consider an indefinable topic, philosophy professor Paul Schollmeier examines the classical Greek concept of happiness, along with its implications for individual freedoms, obligations, and virtues.

Schollmeier, who joined the UNLV faculty in 1989, prepares his reader for the ambiguities that such a discussion can produce; in his preface, he writes, “I must offer you a word of caution at the very outset: Any success in an endeavor of this alluring sort [exploring self-knowledge] is at best rather elusive, and whatever success one might actually claim could quite possibly be illusive.”

Schollmeier, who holds a Ph.D. from the University of Chicago, calls the book “merely an experiment in the analysis of ideas about human goodness.” He says he has taken a concept of happiness “gleaned from the ancients” in order to

“see what the consequences might be if we were to take it seriously as a principle of moral philosophy.”

In other words, what could happiness tell us about ourselves, our autonomy, our obligations, and our circumstances, not to mention our virtue?

Schollmeier, who has been exploring this subject for more than a decade, traces his approach to American philosophers William James and John Dewey, who, in turn, refer back to Socrates, Plato, and Aristotle.

James and Dewey subscribed to a philosophical movement developed in the late 19th century called pragmatism, which holds that practical consequences are integral elements of both meaning and truth.

“We can employ the American pragmatic method to advance the ancient Greek concept of happiness,” Schollmeier contends. “We can use the method to define empirically activities worthy of pursuit for themselves. That is, happiness on my account does not take one ideal form, as has been traditionally thought, but many empirical forms.”

“My purpose,” Schollmeier says, “is to revive the ancient Greek concept of happiness, which is to perform an action for its own sake. This concept has been much neglected in our moral discourse both inside and outside the academy. But we clearly do recognize it in our daily lives.”

Schollmeier continues to research the Greek concept of happiness and also plans a book on political theory and its relationship to the concept. In the meantime, he has authored a paper on Plato’s concept of causality and has started one on Aristotle’s theory of comedy.



Enhancing Graduate Education, Advancing Research

Doctoral student Robyn Howley's adventure-filled field work was critical to her dissertation on how the changing levels of ancient seas contributed to rock formations in the West.

The relationship between research and graduate education is considered of tremendous value to both faculty and students. Why are the two so mutually beneficial?

By Suzan DiBella
Photography by Geri Kodey

First, there was the freezing rain, followed by three weeks of extreme heat with intermittent high winds. Then there were encounters with an assortment of bugs, as well as myriad challenges presented by confusing maps and unreliable Jeep trails. There were sheer cliffs to scale by day and just the eerie silence of the desert at night.

And, of course, there were no showers, cell service, or bathrooms.

These were just a few of the tribulations geoscience doctoral student Robyn Howley braved last summer while camping in the high desert of Western Utah to conduct her dissertation field work.

Despite the discomforts and the small torments of the month-long expedition, she's the first to say that she'd do it again in a heartbeat—all in the name of research.

"Every morning, my research assistant and I would get up, put on all our gear, and go out to the rock formations," she says. "We would spend the days identifying rock layers, taking measurements, and collecting samples. I loved it."

Howley's field work was part of her dissertation research, which was designed to determine how the changing levels of ancient seas in the area contributed to rock formations. The evidence of sea life in these rock outcroppings—either in the form of fossils or traces of tiny burrows made by long-dead, minute creatures—provided her with mountains of information that she is still analyzing.

"Conducting research has been such a wonderful experience," says Howley, who is now writing her dissertation based, in part, on her month in the desert. "The skills I acquired and the hands-on learning I gained in the field combined perfectly with my classroom preparation. Together, they enabled me to think critically and create new knowledge, which is really the point of conducting research."

While Howley's research experience may be a bit more adventure-filled than that of many graduate students, it is

typical in many ways, according to Ron Smith, UNLV’s vice president for research and dean of the Graduate College. He notes that graduate school offers students the opportunity to become intensely focused on a given area of study and to begin down the path of becoming a scholar in that field.

“When students enter graduate school, they are really moving into a more sophisticated realm of learning, where they are not only examining other scholars’ work but also exploring new ideas of their own,” Smith says. “They base these novel ideas on earlier research and scholarly thought but then expand upon them with studies and projects that they themselves conduct. The goal, of course, is to create new knowledge, building on the foundation of those scholars who have gone before.”

This academic experience is designed to generate not only innovative ideas, but also to produce new scholars and professionals who have a fresh perspective on their disciplines, says Kate Hausbeck, senior associate dean of the UNLV Graduate College.

“These students are tomorrow’s leaders who will enhance the quality of life in our community,” Hausbeck says. “These are the people who will teach our children, help us stay healthy, solve our environmental problems, address our social issues, and run our government entities.”

And research, both Smith and Hausbeck agree, is the integral activity that drives the advanced education of graduate students and contributes in innumerable ways to the academic success and prestige of the institution.

Working with Faculty

The pairing of research and graduate study is a valued tradition in academe, according to Hausbeck, an associate professor of sociology who has mentored several graduate students.

“It’s a mutually beneficial arrangement,” she says. “When faculty conduct their research, they receive critical assistance from graduate students. Research is very often conducted in teams, and graduate students are vital members of the research teams. This occurs at all major research institutions the world over, and as research grows at UNLV, this activity will continue to be supported and enhanced.”

She adds that graduate students, in turn, gain experience discovering how to apply classroom learning to real-world research scenarios.

“In the Graduate College, we believe that faculty mentorship is critically important to student success,” Hausbeck says. “With the constructive guidance of faculty, graduate students design their research projects, collect data, and disseminate

their findings at conferences and in scholarly publications. This is great experience for graduate student scholars and it benefits the university and community at the same time.”

This emphasis on mentorship is a source of pride with UNLV faculty, who consider the opportunity for student involvement in research an excellent recruitment tool to attract the best and brightest to the more than 75 master’s degree and 36 doctoral/professional programs offered at UNLV, Hausbeck notes.

Graduate Assistantships and Fellowships

Faculty are also able to offer graduate students positions as graduate assistants, enabling them to earn stipends working in campus laboratories and classrooms to provide research and/or teaching support to faculty.

“Graduate assistantships play a critical role in the university setting,” Hausbeck says. “Graduate assistants provide indispensable support to UNLV faculty, aiding with research and augmenting classroom learning. Additionally, the GAs themselves benefit from the experience. Serving in this capacity provides them with valuable professional development, enhances their learning, and helps defray the expense of graduate education.”

Because graduate students value this experience, Hausbeck says, UNLV’s ability to offer competitive compensation packages to graduate assistants is important to the recruitment of the most talented and qualified prospective graduate students.

Graduate fellowships are likewise critical to the advancement of graduate education, Hausbeck says. “They provide the support students need to finalize their research and complete their doctoral dissertations.” (See related story “What Are Graduate Fellowships?”)

Assistantships and fellowships both support graduate education and advance the university’s research agenda; this, in turn, enhances institutional reputation in the higher education community and beyond, says Smith.

“In order to continue building UNLV’s reputation as a nationally recognized research university, support of graduate education is vital,” Smith says. “Through support of our strong, highly regarded graduate programs, we can have a significant impact on the success of research at our institution.”

Supporting Graduate Student Research

To Howley, one of two recipients of the 2007-08 UNLV President’s Graduate Research Fellowship, the financial support she has received through the fellowship has had a tremendous impact on her ability to finalize her dissertation.



Graduate College Senior Associate Dean Kate Hausbeck notes that research is an activity integral to graduate education and contributes in innumerable ways to the academic success and prestige of a university.

“It’s the dream of all researchers to be able to focus entirely on their research,” says Howley, whose dissertation will help scientists learn more about patterns of hydrocarbon deposits, how to locate them, and what techniques are best used to do so.

“Like most graduate students, for the past three years I’ve had to balance research, classes, teaching, and service activities. I was so pleased to receive support this year—it has allowed me to spend more time synthesizing data I collected in the field, critically examining results, and formulating new ideas and hypotheses. I’ve been able to work through the most difficult portions of my Ph.D. dissertation.”

Howley, who expects to graduate in December 2008, plans to coauthor a scholarly publication with her dissertation advisor, UNLV geoscience professor Ganqing Jiang, on her research. After all, she notes, one of the central goals of research is to disseminate one’s findings, which builds on the collective body of knowledge in a given field of study.

“As a graduate student, I feel extremely fortunate to have the opportunity to share my research with the top scientists in my discipline,” Howley says. “It’s very rewarding to know I can make a contribution to my field of study.”

What Are Graduate Fellowships?

Graduate fellowships will play an increasingly important role at UNLV as research and graduate education continue to progress, according to Kate Hausbeck, senior associate dean of the Graduate College.

“Writing a doctoral dissertation is a full-time endeavor,” Hausbeck says. “The President’s Graduate Research Fellowship Program provides advanced doctoral students the financial assistance they need to complete their research and write their dissertations—pivotal requirements for earning the doctoral degree. This kind of support enables doctoral students to focus on their degrees rather than having their progress slowed or delayed due to financial pressures to pursue outside employment.”

The President’s Graduate Research Fellowship will allow students such as this year’s recipients, Jonathan Foster and Robyn Howley, to focus solely on their research and professional development, Hausbeck notes.

Foster, a doctoral student in the history department, is conducting a comparative examination of stigmatized cities from the late nineteenth through the twentieth century. His dissertation explores anti-urban bias and regional stereotypes throughout U.S. history.

Howley, a doctoral student in geoscience, is researching the relationships between rock formations and global sea-level changes with the goal of using this information to help identify hydrocarbon reservoirs.

“Given the rigor of doctoral-level work, advanced doctoral students have little time to make ends meet as they finalize their research and write their dissertations,” Hausbeck says. “These fellowships allow them to focus on the ‘finish line’ of doctoral work—the dissertation.”

The President’s Graduate Research Fellowships support doctoral students much in the way scholarships benefit undergraduates. Up to four awards are given annually, each offering a fellowship package including a stipend, tuition (up to 12 credits), fees, and health benefits totaling \$24,000. Funding is currently provided by the UNLV Foundation and the Franklin Koch Living Trust.

“These fellowships benefit not only the graduate students who receive them,” she adds. “They also enable our doctoral students to conduct valuable research that can impact the quality of life in the community and advance the reputation of the university. They are truly a wonderful way of supporting both the students and the research endeavor at the same time.”

How Can You Help? If you are interested in helping a graduate student by supporting research fellowships, please call UNLV Foundation Director of Scholarship & Tribute Giving Deborah Young at (702) 895-2818.



“The skills I acquired and the hands-on learning I gained in the field combined perfectly with my classroom preparation,” says Robyn Howley. “Together, they enabled me to think critically and create new knowledge, which is really the point of conducting research.”

HAUSBECK PHOTOGRAPH: R. MARSH STARKS

The Write Track



The *Atlantic Monthly* ranks UNLV's graduate-level creative writing programs among best in the nation

By Barbara Cloud
Photography by R. Marsh Starks



Master of fine arts
program director
Claudia Keelan
and English
department
interim chair
Douglas Unger

It was an email of just a few lines, but it spoke volumes of good news to Doug Unger. One of the founders of UNLV's master of fine arts in creative writing program, Unger was serving as interim English department chair last summer when he received an unexpected email from a fact checker at *The Atlantic Monthly*. The email asked him to confirm information for an upcoming *Atlantic* article recognizing UNLV's graduate-level creative writing programs as among the best in the nation.

"It was wonderful news," says Unger. "To have this publication—one of the most sophisticated magazines in the literary world—acknowledge our creative writing programs was truly confirmation of our success."

The article, titled "Where Great Writers Are Made," appeared in August and named UNLV's master of fine arts (MFA) program in creative writing as one of the five most innovative in the country and the doctoral program as one of the overall best of its kind.

The article praised the UNLV master of fine arts program for its emphasis on global literature and its unique partnership with the Peace Corps, which encourages students to spend two years abroad with the Corps as part of their programs. They

also must translate a major work of literature.

The Peace Corps partnership has created a lot of buzz in the literary world, according to the article’s author, Edward J. Delaney. Though he hadn’t heard much about the UNLV program before he began his research, Delaney says the program was mentioned “again and again” as he interviewed some 350 program directors, professors, students, and graduates across the country to gather information for the article.

The MFA in creative writing was approved by the Board of Regents in 1997. It includes emphases in both prose and poetry and is taught by a well-published faculty, including poets Claudia Keelan and Donald Revell, novelists Richard Wiley and Unger, and MacArthur Fellow Dave Hickey. Several internationally renowned visiting authors also contribute to the program. Nobel laureate Wole Soyinka has participated, as has novelist, translator, and poet Pablo Medina, who has served as visiting professor for the last two academic years. The program has also sponsored visits and readings by award-winning guest authors such as John Irving, Tobias Wolf, George Saunders, Doug Powell, Paul Hoover, and many others.

UNLV’s English department has a strong history of

supporting creative writing as an area of study. Novelists and poets have long served on the department’s faculty, and graduate students have produced a variety of works of fiction through the years. But it wasn’t until the 1990s that the faculty formalized these interests and created the master of fine arts in creative writing.

English professor Chris Hudgins, former department chair and now interim dean of the College of Liberal Arts, recalls that when he came to UNLV in 1976 the faculty included many published writers, including poets James Hazen and A. Wilber Stevens, as well as novelist John Irsfeld.

“These faculty members formed a foundation of strength in this area, which contributed to our decision to propose an MFA in creative writing,” Hudgins says. “Several of our master’s students had written ‘creative theses’ for their final projects, and several others completed collections of short stories under these founding faculty.”

Hudgins says the department faculty realized that the first step toward establishing an exceptional MFA program was to build the faculty with well-respected authors. In 1990, they hired novelist Richard Wiley, who had won the prestigious PEN Faulkner

Award for his novel *Soldiers in Hiding* and was a graduate of the prestigious MFA program at the University of Iowa.

In 1991, the department hired Unger, another Iowa MFA graduate and a finalist for the Pulitzer Prize in literature, who says that he left a tenured position with the department of English at Syracuse University to come to UNLV because of the opportunity to develop a new and innovative MFA program.

Both Wiley, who now serves as the assistant director of UNLV’s respected Black Mountain Institute, and Unger, who continues to chair the UNLV English department, have received the Board of Regents Award for Creative Activities.

“Our program developed as a result of Chris, Richard, and I sitting down and blue-skying about what an MFA program should be,” Unger recalls. “Our contention was that for UNLV to build a program that would put the school on the map, it would have to have a unique emphasis.”

Unger and Wiley were kindred spirits on the subject of the importance of international experience; both had spent time abroad and incorporated their experiences into their writing, and they felt strongly that living abroad could invaluablely enrich a writer’s work. Thus, the idea for the partnership with the Peace Corps was born, and the development of the program was under way.

With the support of then-UNLV President Carol C. Harter, the Board of Regents approved the program in April 1997, and the first three students enrolled in the fall of that year. The Peace Corps partnership was implemented a year later.

“Since then, the international emphasis has distinguished our program,” says Unger, adding that it produces a kind of writing that “looks out from America to the world,” offering a more expansive perspective. “A few programs out there are now imitating us, which is the proof that it is working.”

In addition to the MFA program, the English department established a creative writing track as a part of its Ph.D. program in 2001. (The English doctorate was one of UNLV’s earliest; it was established in 1987.) Doctoral students in the creative writing track meet the same requirements as other Ph.D. students, but each submits a creative dissertation, usually a book-length collection of stories or poems or a novel. Two students, one in poetry and one in fiction, are admitted each year.

These students receive doctoral fellowships, which provide them with funding to facilitate the completion of their dissertations. This fellowship program was created with the support of local gaming executive Glenn Schaeffer, an alumnus of the Iowa Writer’s Workshop. Schaeffer also funded the Elias Ghanem Chair, which has brought internationally renowned writers such as Soyinka and Derek Wolcott, both

Nobel laureates in literature, to campus to teach and work with students. (The Rogers Fellowships in English are also offered to students completing scholarly dissertations.)

The Schaeffer fellowships are vital to the program because they enable students to concentrate on their writing, says English professor Claudia Keelan, who directs the MFA program.

“We’ve been very lucky to have private funding for these fellowships,” says Keelan, adding that these positions are the mainstay of creative writing programs. “The students who have received fellowships have already started exceptional careers simply because they were funded at a level that made them free to think almost entirely about their own work.”

The fellowships also serve as an important recruitment tool for the English department, enabling faculty to attract the best students. This, in turn, makes UNLV competitive with the finest institutions across the country.

Accolades such as those found in the *Atlantic* article also boost recruitment, Keelan and Unger agree. They note that applications to the MFA program have quadrupled since the article’s publication, and they hope for more as the accolades continue to roll in. Unger recently received word that *Poets & Writers*, a respected trade magazine, listed UNLV’s MFA program as one of nine distinctive programs in the country in its Nov./Dec. issue.

To Unger, this is yet another form of affirmation indicating that the program has arrived, bringing with it recognition and praise for the whole institution.

“What we are seeing is that literary studies at UNLV are beginning to take a place on the national stage,” he says. “And we couldn’t be more delighted about it.”



The *Atlantic Monthly* named UNLV’s master of fine arts program in creative writing one of the five most innovative in the country and the doctoral program as one of the overall best of its kind.

Images provided courtesy The *Atlantic*

Penning Success

Graduates and students of UNLV’s creative writing program are publishing regularly and garnering numerous awards. Some recent examples of their accomplishments are listed below.

Recent Publications—Poetry

Meredith Stewart “Jesus’ Shadow,” “New Heaven New Earth,” and “The Christmas Truce,” published in *Rock & Sling*

Leo Jilk “Clepsydra” and “Forestcaped Shore” in *Notre Dame Review*

Mani Rao “The Sky is Fitted Linen...” in *Contemporary Voices of the Eastern World: An Anthology of Poems*; “Epitaph” and “Calling” in *Zoland Poetry*; numerous poems in *Give the Sea Change and It Shall Change: An Anthology of Indian Poetry in English*

Joshua Kryah “The Lark, the Spur”

in *Pleiades*; six poems from *Closen* in *The Iowa Review*; two poems from *Closen* in *Shenandoah*; four poems from *Holy Ghost People* in *Slope*

Peter Golub Russian translations in *Ashville Poetry Review*, *Absinthe: New European Writing*, *Caketrain*, *Cimarron Review*, *Circumference*, *St. Petersburg Review*, *Rhino*

Recent Publications—Fiction

R.D.T. Byrd “The Deep End” in *Folio*

Joe Cameron “Yama’s Embrace” in *Texts’ Bones* and “The Last Moments of Nawaf Alhazmi” in *Heavy Glow*

Flash Fiction Anthology

Juan Martinez “Divers” in *West Branch*; “Souvenirs from Ganymede” in *River Teeth*; “The Coca-Cola Executive in the Zapatoca Outhouse” in *Conjunctions*; “The Spooky Japanese Girl is There for You” and “The Lead Singer is Distracting Me” in *McSweeney’s*

Matt Swetnam “In the Walrus Colony” in *Portland Review*

Short stories by **Jaq Greenspon**, **Bliss Esposito**, and **Vu Tran** in *Las Vegas Noir*

Honors and Awards

Vu Tran 2007 O. Henry Award for “The gift of years”

Chris Arigo Transcontinental Poetry Prize for *Lit interim*

Sasha Steenson Alberta Award for Poetry for *A Magic Book*

Joshua Kryah Third Coast Poetry Prize Finalist for “Numen”; finalist for the Glasgow Prize for Emerging Writers for *Glean*

Megan Merchant Honorable mention in *Kaliopé Poetry* for “Ways to worship”

Maile Chapman *Best American Fantasy Writing* 2007 for “Bit Forgive”

It Was a Very Good Year

UNLV life sciences researchers brought in more than \$7 million last year to study topics ranging from the life span of honeybees to global climate change.

By Gian Galassi
Photography by R. Marsh Starks and Aaron Mayes

As with any great team—be it in sports or in the laboratory—success is rarely a product of happenstance. So it was no accident when, in the span of just three months last year, several research teams in UNLV’s School of Life Sciences (SOLS) were awarded sizable grants from some of the nation’s most respected funding agencies.

Seven teams were notified last summer that they would receive more than \$3 million in grant funding. All told, in 2007 faculty in the school received nine grants totaling more than \$7 million from the National Science Foundation (NSF), the National Institutes of Health (NIH), and other agencies, resulting in the single most productive funding year in the school’s history.

“We couldn’t be more proud of the faculty,” says Carl Reiber, associate dean of the College of Sciences and former director of the SOLS. “The school’s recent success makes evident the importance of building a team of researchers who has not only a strong and complementary range of expertise but also a chemistry that allows them to build on each other’s strengths.”

He adds that the school has worked arduously in the last several years to develop the research and personnel infrastructure required to produce this achievement.

The initial groundwork for the accomplishment, Reiber says, was laid six years ago when he and other colleagues from the then-biological sciences department received a grant from the NSF Experimental Program to Stimulate Competitive Research (EPSCoR). The grant was awarded to help UNLV build the technical infrastructure required to support the advancement of life sciences research.

Those funds, along with a grant from the Nevada IDeA Networks for Biomedical Research Excellence (INBRE) program, helped build a genomics lab, imaging facilities, and bioinformatics program. All of these additions proved integral to the school’s ability to attract and retain a corps of active faculty researchers, who set about acquiring competitive grant funding with vigor.

Still, given the enormous competition for prestigious federal grants, their success was quite an achievement, according to Dennis Bazylinski, the current director of the SOLS.

“The sheer number of proposals submitted to these agen-

Life sciences faculty, including Michelle Elekonich (seen here with post-doctoral scholar Jason Williams), received substantial grant funding from some of the nation’s most prestigious funding agencies last year.



cies by faculty throughout the country each year is staggering,” Bazylinski says. “To have so many UNLV faculty members receive this level of funding in such a short time frame is remarkable.”

* * *

But, to College of Sciences Dean Ron Yasbin, this kind of achievement seemed just a matter of time. When he joined the college as dean in 2003, he saw momentum building in the promising team of researchers in the biological sciences. In the following years, he worked to foster that momentum and to demonstrate to peer institutions and funding agencies that UNLV was now staffed, prepared, and ready to compete for a larger share of federal research dollars. This strategy, which included bringing representatives from the NSF and NIH to tour UNLV’s facilities and to meet with the faculty and staff, seems to have paid off.

“Word got back to NSF and NIH that we were hiring great researchers out of labs at some of the best research institutions in the world,” Yasbin recalls.

He adds that the faculty’s recent accomplishments serve as a bellwether for the school, which now must deal with the in-

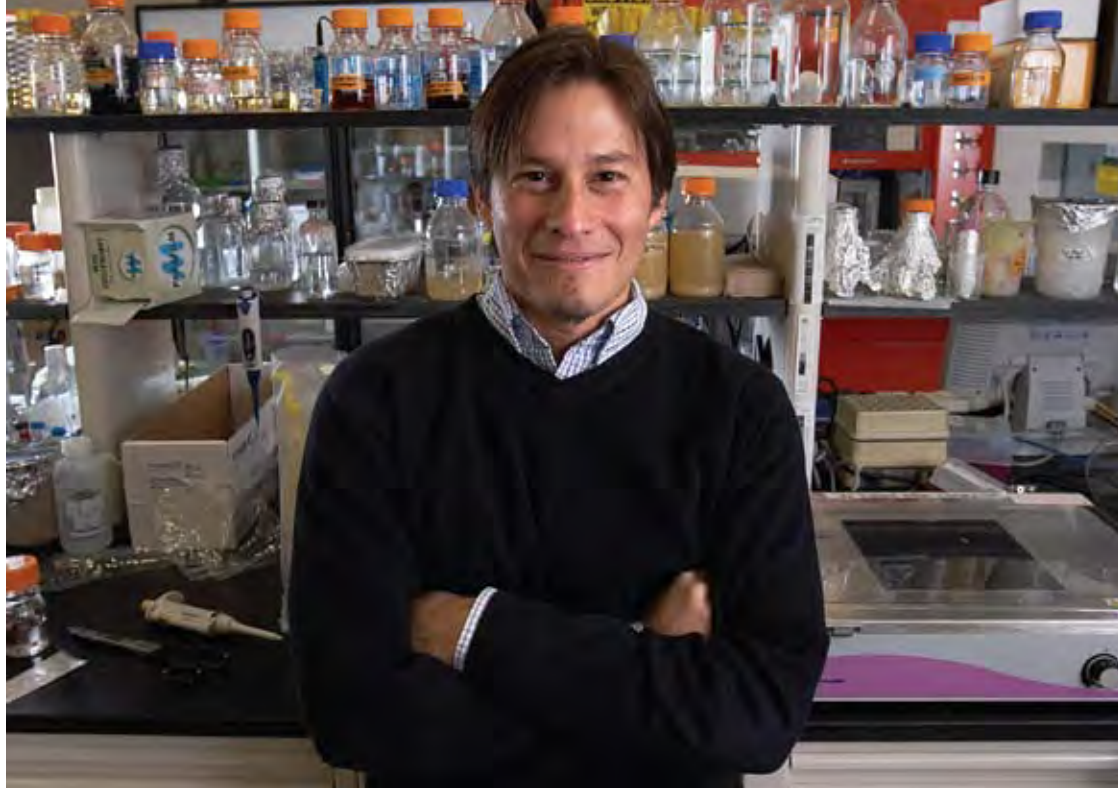
evitable consequences of success: namely, warding off the deep pockets of older, more established institutions seeking to recruit UNLV faculty.

“You know you’re succeeding when other highly reputable institutions start trying to steal your faculty away. And that is definitely starting to happen here,” says Yasbin.

In many ways, says Bazylinski, this new challenge signals the next stage in the school’s evolution, which includes promoting its solid reputation for research by building on its accomplishments and continuing to attract the best and brightest faculty and students.

In order to achieve this, he notes, the school will seek to leverage its many assets, among which UNLV’s new Science and Engineering Building may be counted. The state-of-the-art research facility will open soon, providing laboratory space to a number of life sciences faculty members pursuing multidisciplinary research.

Additionally, the school is working to capitalize on UNLV’s unique status as the only research university in the Mojave Desert. It has developed areas of emphasis that focus on un-



Left: Life sciences professor Eduardo Robleto studies whether certain cellular mechanisms in bacteria enhance genetic diversity. Below: Elekonich examines aging theory by manipulating the timing, intensity, and duration of foraging behavior in honeybees.

derstanding environmental stresses in arid regions, the ecology of life forms and communities in Nevada, and the potential dangers that exist to human and animal populations because of dramatic changes to our desert region.

The school is also advancing research through the appointment of postdoctoral scholars, who provide valuable assistance to faculty in the laboratory while gaining research experience. One such life sciences postdoctoral scholar is Jason Williams, who received a prestigious fellowship from the NIH—one of the most competitive awards available. For Williams, who conducts research on honeybees with life sciences professor Michelle Elekonich, the postdoctoral appointment has been a wonderful opportunity.

“My UNLV postdoc experience and this prestigious NIH fellowship have provided me with some very beneficial experience,” Williams says. “They have expanded my professional options tremendously and will allow me to be more selective in choosing my career path.”

Williams’ appointment at UNLV also speaks well of the university, according to Elekonich.

“This award reflects Jason’s ability, creativity, and promise as a researcher,” Elekonich says. “It also signifies that the NIH believes UNLV can train outstanding biomedical researchers, which speaks volumes about our growing prominence as a research university.”

* * *

With the success the school has experienced of late, Bazylinski acknowledges, comes distinction but also a desire to continue the trend. Looking to the future, he sees even greater potential. The faculty who have acquired grant funding serve as excellent role models to junior faculty, who in turn stand ready in the on-deck circle, conducting their research and preparing their own grant proposals.

And, he notes, all of them remain committed to the out-

come grant funding is intended to yield—quality scholarship.

“We will see a number of excellent scholarly publications grow out of this funding,” he says, “as well as increased opportunity for our students to learn alongside the faculty in our laboratories. That is, after all, what grant funding seeks to build – an environment that nurtures scholars, both faculty and students, who are creating new knowledge through research.”



Grant Funding At Work

Below are several of the grant-funded projects currently under way in UNLV’s School of Life Sciences.

Allen Gibbs

\$950,000, National Science Foundation

Assistant professor Allen Gibbs is collaborating with William Etges, professor of biological sciences at the University of Arkansas, to study how certain environmental stresses—such as extreme temperatures, lack of water, and noxious chemicals produced by cacti—affect the genetic responses of desert fruit flies in the laboratory and in the wild. The results will be integrated with physiological and biochemical studies to identify which genes are activated to allow the insect to survive in harsh environmental conditions. The findings are expected to produce knowledge critical to understanding how other species will respond to the conditions predicted by global climate change models.

Eduardo Robleto

\$222,000, National Institutes of Health

Assistant professor Eduardo Robleto is studying whether certain cellular mechanisms in bacteria enhance the generation of genetic diversity, including both beneficial and harmful mutations. The study may also provide insight into the generation of cancer as well as cell aging and growth in conditions of stress. The research is crucial to the understanding of evolutionary processes and may someday lead to strategies that could regulate cancers and other developmental diseases.

Michelle Elekonich and Steve Roberts

\$667,000, National Science Foundation

Associate professors Michelle Elekonich and Steve Roberts are testing models of aging theory by manipulating the timing, intensity, and duration of foraging behavior in honeybees—the most metabolically intense behavior in the animal kingdom. They seek to further understand how foraging behavior affects honeybee flight performance, muscle function, cellular damage, anti-aging mechanisms, and overall lifespan. The project marks the first time researchers will



attempt to study these traits in free-living animals in their natural habitats.

Jeff Shen

\$295,000, U.S. Department of Agriculture

Associate professor Jeff Shen is working on a three-year project to determine how the plant hormone Gibberellin works to regulate the growth and development of rice, one of the world’s most important food crops and a significant source material used in biofuel production. The knowledge gained from this study will make it possible to manipulate grain quality, to alleviate major seed crop losses due to pre-harvest sprouting, and help increase biomass production. All of these developments are expected to enhance economic opportunities for agricultural producers as well as improve the protection and safety of the nation’s agriculture and food supply.

Deborah Hoshizaki and Allen Gibbs

\$518,846, National Science Foundation

Associate professor Deborah Hoshizaki and Gibbs are collaborating on a three-year study to examine how the fruit fly regulates its internal environment during metamorphosis. The goal of the research is to understand the role that fat cells play in regulating pupal development. The study will test the hypotheses that fat cells respond to the metabolic needs of the pupa and that these cells monitor and regulate the release of energy through signaling from hormones.

Stan Smith

\$488,774, U.S. Department of Energy

Distinguished professor Stan Smith, who also serves as associate vice president for research, is wrapping up a 10-year study that will provide an examination of how an arid ecosystem, the Mojave Desert, will respond to the elevated carbon dioxide levels expected to occur by mid-century. The global scientific community is very interested in the outcome of this research because approximately 40 percent of the Earth’s terrestrial surface is arid or semiarid, and more land is undergoing desertification each year.

Scott Abella and Stan Smith

\$179,000, U.S. Department of the Interior

Assistant research professor Scott Abella and Smith are working to identify native vegetation that will help improve the restoration of arid lands following uncontrolled wildfires. Currently, the scars of post-burn landscapes often remain visible as efforts to re-establish native vegetation fail, leaving non-native grasses to grow and serve as fuel for the next lightning- or human-sparked wildfire. The researchers are collaborating with scientists from the Lake Mead National Recreation Area and the Las Vegas field office of the Bureau of Land Management on the project.

Sustainability: Focusing on Quality of Life



Blue Moon
Acrylic on canvas
by James B. Pink
Professor Emeritus
UNLV Art Department

UNLV introduces initiatives supporting research and outreach designed to help the community, state, and region address issues most critical to sustaining and enhancing quality of life.

By Suzan DiBella
Artwork by Jim Pink
Photography by R. Marsh Starks

If you think Las Vegas is growing fast now, just give it a few years: The metropolitan area is expected to accommodate four million inhabitants by 2036.

Given the myriad challenges presented by a current population of half that number, daunting questions cascade from the mention of this statistic: Will there be enough water? What sources of energy will be tapped to meet the needs of the population? How will we manage transportation? Air pollution? Crime? Health issues? Education?

In summary, how will the community sustain so many people?

A number of initiatives are being launched at UNLV to begin addressing these and other questions associated with the issue of sustainability in Southern Nevada.

The goal of this endeavor is for UNLV to lead the charge in bringing relevant issues to the fore, networking with the community, and researching solutions to achieve a more sustainable future for the area, according to Ron Smith, the

Urban Sustainability

vice president for research and Graduate College dean.

“UNLV will play a major role in achieving a sustainable Las Vegas community with all its interrelated dimensions, including environmental, economic, and social/cultural sustainability,” says Smith, who also serves as the founding executive director of the new Office of Urban Sustainability Initiatives.

“We view this initiative as one that is of vital importance to our students, faculty, and the entire community. What we achieve with these initiatives today will have a lasting impact on the quality of life of future generations in Southern Nevada.”

To launch the effort, UNLV sponsored a sustainability conference, bringing together government and business leaders, faculty, and other experts in the field to discuss wide-ranging issues. More than 400 people attended the fall conference, which involved more than 60 presenters.

Titled “Shaping the Future of Southern Nevada: Economic, Environmental, and Social Sustainability,” the conference included panel discussions on environmental sustainability, health challenges, economic growth and diversification, youth and aged populations, community development and architecture, and service learning.

“A variety of topics were discussed, all through the lens of sustainability,” says Smith. “The conference was a wonderful success, and planning is under way for similar events in the future.”

Smith plans to reach out to the community and region in other ways as well with lectures, publications, and seminars, and eventually new courses and degree programs focusing on sustainability may be developed. He hopes to form a consortium with other universities in the West examining these issues and to establish a local community advisory group.

Smith has also hired engineering professor Thomas Piechota as director of sustainability and multidisciplinary research to form research teams, promote collaboration, and seek out grant funding sources.

According to Smith, the over-arching goal of all of these initiatives is to help build a sustainable Las Vegas, surrounding region, and state of Nevada. This effort includes three major areas of focus: protecting the physical environment (environmental sustainability), building the area's economy without jeopardizing the health of the ecosystem (economic sustainability), and promoting a supportive social/cultural way of life for all citizens (social and cultural sustainability).

These three areas represent a wide variety of issues and encompass a broad array of disciplines. More than 160 UNLV faculty members from virtually all academic fields have identified sustainability as an interest and/or have pursued sustainability-oriented research. In an effort to begin addressing the nature of this research, UNLV Innovation asked three faculty members whose work represents the aforementioned areas to discuss sustainability and how their commitment to it has driven their research.

Environmental Sustainability

**Dale Devitt, professor of life sciences and
director of the Center for Urban Horticulture and Water
Conservation**

Life sciences professor Dale Devitt researches subjects that are perhaps most traditionally associated with sustainability, particularly in the desert Southwest: water supply, water quality, and efficiency of water use.

With expertise in urban ecology/ecosystems, including vegetation, soils, and irrigation systems, he offers valuable insight on environmental sustainability issues.

“Sustainability in community growth as it relates to water and the environment must be a societal goal,” Devitt says. “How this goal is defined must be based not only on our desires and wishes but also on a commitment to future generations that resources will also be available to sustain quality of life. However, such quality of life must not be maintained at the expense of the ecosystems that are also intricately linked to these same resources.”

Developing a sustainable community requires that all citizens take an active role in redefining how we live and use natural resources, Devitt says, adding that education and research are vital to this change.

Devitt, who teaches courses on water management and arid zone soils, conducts research on a number of water issues, including how re-use water (treated sewage effluent) can be employed for irrigation purposes, particularly at golf courses. He also works closely with the Southern Nevada Water Authority to evaluate plans for use of water from northern counties to enhance Southern Nevada's water supply. Additionally, he researches the effectiveness of satellite irrigation controllers in watering residential landscaping.

“Science and technology provide hope that we can still make significant reductions in our water usage,” he says, adding that UNLV is actively contributing to this effort.



Economic Sustainability

Keith Schwer, economics professor and director
of the Center for Business and Economic Research

Too often economic realities are overlooked in discussions of sustainability, according to Keith Schwer, and that's exactly why he has joined the dialogue.

Schwer has conducted extensive research on economic impact, modeling, and feasibility of a variety of activities regarding sustainability in Nevada, from the development of renewable energy industries to storage of nuclear waste. He has also studied such issues as the social cost of gambling and high school drop-out rates.

Through the Center for Business and Economic Research, he and his staff gather and analyze information on a variety of issues that can help government officials, business leaders, and the public make more informed decisions to ensure a sustainable future for the state.

“Economic matters are all too often excluded in analysis of many of these issues,” says Schwer, a widely recognized authority on the economy of Las Vegas and Nevada.

To Schwer, sustainability involves much more than the environment; though he considers it important, he views many other issues to be critical as well, including health, poverty, safety, education, juvenile justice, and many others. His center's many projects—such as the annual Las Vegas Perspective survey, the Southern Nevada Economic Outlook project, and the Kids Count Data Book—all seek to shed light on a variety of economic factors that shape the quality of life in the community.

"It's vital for UNLV to conduct the research necessary to guide policy decisions if we are to enhance our community for future generations," Schwer says.

Social and Cultural Sustainability

Cynthia Carruthers, associate professor of tourism and convention administration

Cynthia Carruthers focuses on social factors that contribute to a community's sustainability.

“Social sustainability is first and foremost about building capacity,” Carruthers says. “The building of community capacity is the identification, cultivation, and mobilization of the human resources in a community so that it can thrive, not just survive.”

Strong sustainable communities develop their assets to realize their dreams and to deal with challenges, she says, adding that the greatest asset of a community is its youth.

“A sustainable community requires committed, empowered, caring, well-educated youth to ensure its future,” she says. “For youth to acquire these qualities, they need to receive essential assets from their communities.”

For this reason, one of Carruthers' research interests is after-school youth development programs. She has examined the impact of an after-school program that was designed to enhance the developmental skills and abilities of young girls who had been involved with the juvenile justice system. She has also investigated the developmental impact of a multi-agency after-school program for inner city urban youth, focusing on the processes that had the most and least successful impact on the youths.

“Social sustainability requires that members of a community, including youth-serving agencies, work together cooperatively to advance the social good, for and with our youth,” Carruthers says. “There is no greater road to social sustainability than the cultivation and mobilization of this community asset.”



Saving Soldiers' Lives

Engineering professor Brendan O'Toole and his team are driven to find ways to protect soldiers through the innovative use of research and technology.

By Tony Allen
Photography by Geri Kodey

UNLV engineering professor Brendan O'Toole and his team conduct research on U.S. Army vehicles with the goal of maximizing crew survivability and electronics reliability.

It's an all-too-common headline in newspapers across the nation: "U.S. Soldier Killed in Roadside Blast." Such tragic news reports cause many here at home to sadly shake their heads and turn the page. But, for Brendan O'Toole, these reports serve as added motivation to return to his laboratory. The UNLV engineering professor is determined to find ways to help eliminate, or at least diminish the frequency of, such heartbreaking headlines. O'Toole and a team of researchers from the Howard R. Hughes College of Engineering consider it their mission to develop new vehicle technologies that may one day protect soldiers from deadly roadside explosions. Tucked in the recesses of the engineering building, the team—composed of 10 faculty members, five research professionals, and nine graduate students—is finalizing research in the fifth and final year of a \$6.5 million grant from the U.S. Army Research Laboratory (ARL).

“In recent years, the Army has begun looking more closely at how to develop future combat systems that are not only more mobile and technologically advanced, but that also maximize crew survivability and electronics reliability,” says O’Toole, who serves as principal investigator on the grant.

O’Toole’s interest in this area was piqued by more than a year of research he conducted at the ARL in Aberdeen, Maryland, starting in 2000. While there, he introduced Army researchers to the capabilities of UNLV’s College of Engineering, developing a relationship that would soon bring the ARL to UNLV with a plan.

“There was, at that time, no university research being conducted with the ARL on improving the reliability of electronics used in Army equipment under extreme conditions,” O’Toole says. “Our faculty expertise provided a perfect match for their needs.”

Later, the war in Iraq caused the Army to also begin examining how improved vehicle structural design could reduce the rising casualties caused by improvised explosive devices, or IEDs. The Army’s needs soon translated into multiple research projects and considerable grant funding for UNLV engineering faculty.

In all, the Soldier’s Objective Future Force Electronics Reliability and Survivability (Soldier FERST) grant consists of 14 individual tasks that range from improving vehicle seat and frame designs to developing electronic component testing mechanisms and concepts.

The project is funded by the largest grant UNLV has ever received from the Army. While it has been successful on a number of fronts—producing nearly 70 journal and conference papers, 20 master’s theses, and eight doctoral dissertations—perhaps its greatest impact is yet to come.

“Our successful five-year working relationship with the ARL has resulted not only in additional projects with the Army, but also in partnerships on related projects with private companies and universities throughout the nation,” says Eric Sandgren, dean of the College of Engineering. “We have demonstrated that we have the expertise and facilities to attract and obtain top-notch competitive grants and government contracts.” The magnitude of the project also spurred the formation of the Center for Materials and Structures, which formally houses the Army project and related work from faculty in engineering, physics, and chemistry.

“If you look at all the projects individually, we’re doing great



Mechanical engineering professor Georg Mauer conducts research on vibration testing in an effort to better understand real-life environmental stresses on electronic components in Army equipment.

work,” O’Toole says. “When you put them all together, we have a phenomenal group of faculty and excellent research facilities. Because of that, we’ve been able attract new research and fund an impressive team of graduate students.”

Among the most notable projects funded by the grant is one involving mechanical engineering professors Brian Landsberger and Douglas Reynolds. The two are working to design a vehicle seat system that protects occupants from extreme shock acceleration transmitted through a vehicle during a roadside blast.

Current seat systems include a rigid frame mounted to the floor of the vehicle cab. This design provides little or no protection from the vertical forces produced by a blast. The system designed by Landsberger and Reynolds utilizes a wire rope spring and air bladder cushion to allow for limited vertical motion and, therefore, less force on the spine.

“The seat can be the critical component that saves a crew member’s life,” says Landsberger. “Even with good vehicle shape, size, armor, and frame design, the cab movement during a blast subjects a rigid-seat occupant to unacceptable forces. But these forces can be diminished to acceptable levels with the improved seat.”

The UNLV seat design is one of four—and the only one from a university—to be accepted for blast testing by the Army this spring. Data from this test will be used to confirm lab test results and guide the Army’s selection of seat designs for further development and production.

“Whichever seat concept the Army chooses, our research and development accomplishments have helped enhance understanding of different methods of crew member protection, and that’s very rewarding,” says Landsberger.

O’Toole concurs.

“It’s exciting to consider that each and every project has produced something positive,” he says. “We’re doing research here at UNLV that will one day help the Army develop devices that will save people’s lives. It doesn’t get any better than that.”

Soldier FERST incorporates the work of researchers from the departments of mechanical, electrical and computer, and civil and environmental engineering. All in all, nearly 50 faculty members, research professionals, and graduate students have worked on the Army project over the course of the last five years. Among the projects under way are the following:

Joint Design for Shock Mitigation in Vehicles

Brendan O’Toole and Mohamed Trabia, Mechanical Engineering

Combat vehicles are exposed to great risk, and ballistic shock from the area of impact to locations of critical components can result in reduced effectiveness of a vehicle. This project focuses on designing armor joints that attenuate the shock across the vehicle while maintaining structural integrity.

Joint Design for Shock Mitigation in Projectiles

Mohamed Trabia and Brendan O’Toole, Mechanical Engineering; Samaan Ladkany, Civil & Environmental Engineering

Current developments in artillery shells include electronic sensors and controls for on-board systems that improve range, accuracy, and overall performance. However, in some cases, high frequency accelerations during launch conditions cause failures in electronic circuit boards. This project seeks to reduce vibration on electronic components mounted inside the projectile.

In Bore Recorder

Peter Stubberud, Electrical Engineering

Munitions systems testing relies on the ability of electronic systems to record and log very precise data. The goal of this project is to design and fabricate a recorder that fits within a 16mm cylinder by reducing the size of current sensors and conditioning components and combining them into a single integrated unit. The combination will not only reduce the recorder’s volume; it will increase electrical efficiency and improve battery power consumption.

Design and Evaluation of Multi-Axis Shaker Concepts

Georg Mauer, Mechanical Engineering

Electronic components in Army equipment are often subjected to stresses from multiple directions, yet most mechanisms used in vibration testing utilize a single source. Through this project, a six-axis shaker system has been developed to more accurately model the stresses of a real-life environment. The success of this project may lead to future grants to develop a larger version of the prototype with a greater payload capacity.



O’Toole and mechanical engineering professor Mohamed Trabia (not pictured) are working to design vehicle armor joints that better absorb ballistic shock while maintaining structural integrity.

VEHICLES PROVIDED COURTESY U.S. ARMY

Sterling Reputation

The Harry Reid Silver State Research Award honors UNLV's most respected faculty scholars, whose work exemplifies the best in Nevada research.

By Polly Bates
Photography by R. Marsh Starks

They may study two very different subjects, but geology professor Eugene Smith and psychology professor Christopher Kearney share at least two qualities in common: Both are committed to scholarship, and both recently received UNLV's most prestigious research honor, the Harry Reid Silver State Research Award.

The two faculty members join a small, elite group of UNLV professors who have won the annual award, which was created in 2001 and named in honor of the U.S. senator who has been a strong supporter of the university. The award was designed to recognize research that is not only highly regarded but is also responsive to the needs of the community and state.

Smith and Kearney, who received the honor in 2006 and 2007 respectively, recently described the research that earned them this important distinction.

Eugene Smith, Professor of Geoscience

Eugene Smith has dedicated his 27-year career at UNLV to determining how volcanoes develop, not only at the surface but deep within the Earth's mantle.

"Many of the mountains around Las Vegas were created in part by volcanic activity," he says, "so you really have to understand volcanoes to understand how the Earth and its crust were formed."

Since 1986, Smith has been conducting a volcanic hazard study of the proposed nuclear waste repository at Yucca Mountain. Funded by the Nevada Agency for Nuclear Projects and Clark County, this project aims to establish the size and activity of the volcanic field near Yucca Mountain and estimate the probability and location of future eruptions. The Department of Energy must consider the repository site's

safety over a million-year period.

"The chances you can predict a geologic event one million years in the future are almost zero; the chances a new eruption will occur are probably 100 percent," says Smith. "The question is, will that eruption intersect the repository?"

One challenge of this work is the lack of available data on the number of volcanoes in the area and the number of eruptions that have occurred. "In order to predict future volcanic activity, you have to have some idea of what has happened in the past," Smith says.

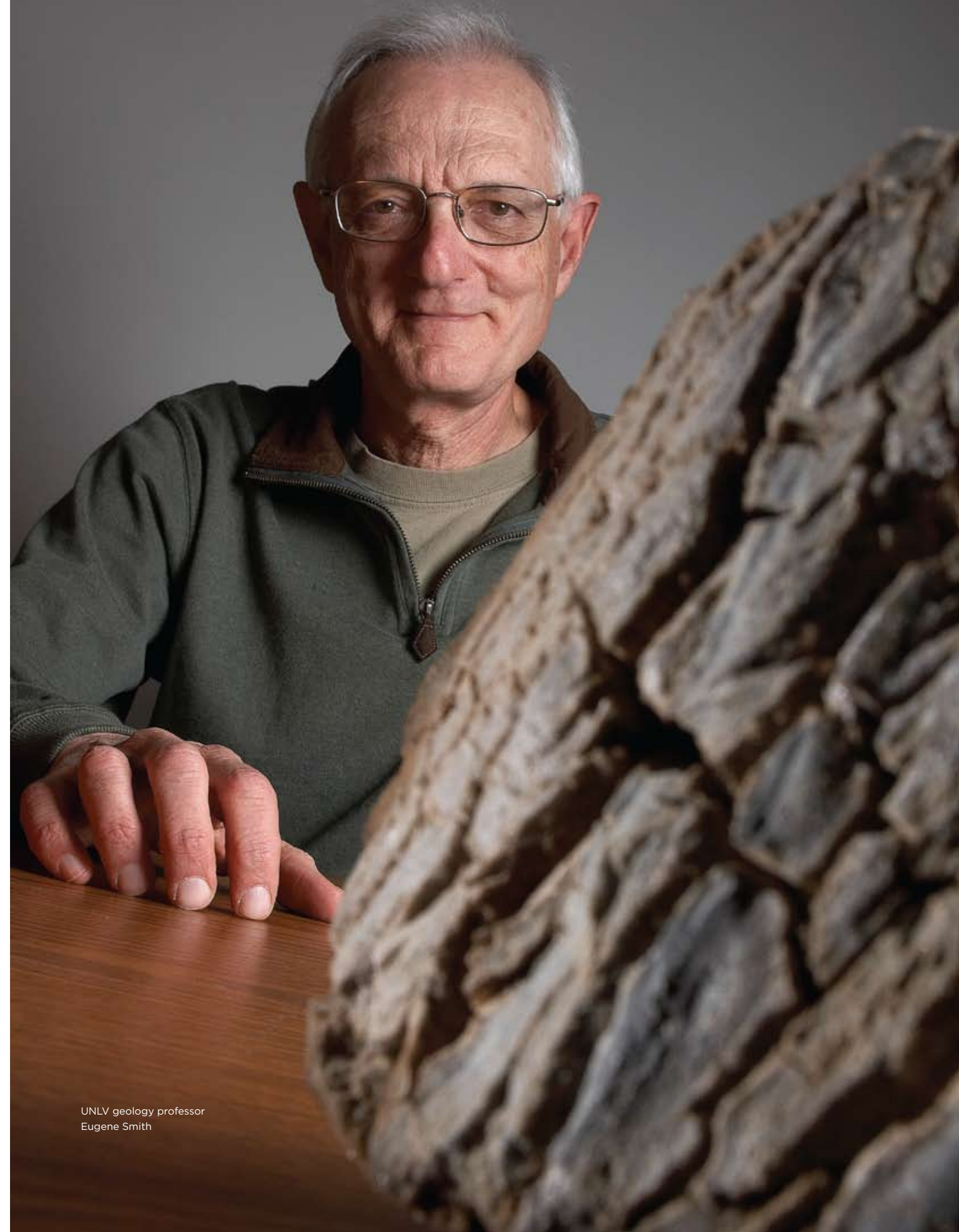
To better understand past volcanic eruptions in the area, he and his graduate students have been studying different locations with similar volcanism, or volcanic activity, in southwestern Utah, Mexico, California, central Nevada, and Yellowstone National Park. Their research suggests that the volcanic field encompassing Yucca Mountain might extend to Death Valley National Park, so the number of volcanoes might be as much as 10 times higher than previously estimated.

Currently, Smith is collaborating with scientists at Boston University and Johns Hopkins University to test the accuracy of his predictive model.

In addition to his Yucca Mountain work, Smith has pursued several other areas of research.

For the U.S. Navy, he investigated whether the Naval Air Weapons Station at China Lake—which relies on geothermal power plants for much of its electricity—could generate additional power from an area south of the station.

Additionally, with a Bureau of Land Management grant, Smith, doctoral student Denise Honn, and undergraduate geology major Racheal Johnsen are mapping the geology of Sloan Canyon National Conservation Area, just south of Henderson. They are seeking to determine the location and ages of volcanoes and how they have erupted and have affected the current



UNLV geology professor
Eugene Smith



Psychology professor
Christopher Kearney

landscape. One of the uses of this information will be to develop displays for a future visitors center at Sloan Canyon.

Another volcano that was broken apart by a fault near Lake Mead has given Smith, Honn, and Johnsen a rare opportunity to examine an entire exposed volcanic system.

“It’s like being able to drill a hole down and figure out what the different rock types are and their history,” he says. But instead of undertaking costly drilling, Smith can readily compile a detailed picture of the upper 20 kilometers of the Earth’s surface, delving into how the crust formed, the causes of volcanism, and how geological activity deep in the Earth affects volcanoes.

Smith’s research interests also extend beyond our world to include exploration of other planets’ geology. Currently, he and doctoral student Audrey Rager are working to identify ejecta material—material that has been thrown out of a crater—on Mars that has turned to fluid. With this information, they plan to map the areas of the planet that contain water, which will be helpful for any future landing probes or bases.

For Smith, the Harry Reid Silver State Research Award is a particularly significant honor in his long career.

“It is very rewarding to be recognized for work that will

positively affect the lives of people living in Nevada and the surrounding area,” he says.

Smith received his bachelor’s degree from Wayne State University and his master’s and doctorate in geology from the University of New Mexico.

Since 1986, he has brought UNLV more than \$2.25 million in research funding. The author of more than 70 journal articles, Smith has directed the work of 30 graduate students and five post-doctoral fellows on projects in volcanology and related fields. He also serves as associate editor of the *Geological Society of America Bulletin*.

Christopher Kearney, Professor of Psychology

Christopher Kearney seeks to help families through his research on children and adolescents who refuse to go to school.

The director of clinical training for UNLV’s psychology department, Kearney has developed a model for classifying, assessing, and treating this debilitating problem.

“Instead of a one-size-fits-all treatment, we subtype the population, look at the main reason they’re refusing to go to school, and assign a prescriptive treatment based on that

condition,” Kearney says.

He notes that children and adolescents stop attending school for a variety of reasons. Some crave parental attention, some fall prey to the lure of outside activities. For some children, routine school activities—riding the school bus, taking a test, undressing in the locker room for gym class, or even just sitting in the cafeteria—cause incapacitating anxiety that produces school refusal behavior.

Adding to the complexity of the situation, many children and adolescents who won’t go to school show a range of changing symptoms, from depression and headaches to tantrums and aggression.

Kearney’s comprehensive model has helped bring consensus to a field that, over the years, has drawn researchers from criminal justice, social work, psychology, education, law, and nursing. He has published guidelines for dealing with youth with school refusal behavior; these guidelines are aimed at parents, clinicians, and school-based social workers and guidance counselors.

Shortly after joining UNLV in 1990, Kearney established the on-campus Child School Refusal and Anxiety Disorders Clinic—the only such clinic in the West—which treats about 30 children annually, ranging in age from 5 to 16. Under Kearney’s supervision, doctoral students work with children and their parents, guiding use of parental rewards and punishments, anxiety reduction techniques, and cognitive therapy to ease the children back into school “one hour or one period at a time.”

In a typical case, the goal of the research-based clinic is to return a child to full-time school attendance and to greatly reduce his or her distress.

“We teach them that avoidance is not the appropriate response to the difficulty,” says Kearney. “Mastering the problem—mastering anxiety—is the appropriate goal.”

Related to his work in school refusal behavior, Kearney has researched anxiety disorders in children and adolescents. Considered the number one mental disorder in that age group, anxiety is also the most under-reported and under-treated problem in youths.

“It’s not a behavior that’s disruptive to other people,” says Kearney. “Teachers focus all their attention on the kid who’s running around the room, throwing spitballs, being aggressive, yelling. The kids who are depressed, who are worried or shy or anxious, kind of go by the wayside.”

Kearney has also investigated selective mutism, a condition in which a child can speak but is either unwilling or unable to in a public situation; separation anxiety; and social anxiety, including its association with perfectionism.

“It’s essentially the desire to be perfect so they can avoid negative judgments from other people,” says Kearney. “It can get to an extreme level where a child catastrophizes even minor

mistakes. We’ve had kids say, ‘If I make a mistake on that math worksheet, I’m going to get kicked out of school.’”

By synthesizing various clinical perspectives, Kearney has developed effective assessment and treatment protocols for this challenging population.

As an outgrowth of his interest in anxiety disorders, Kearney began studying post-traumatic stress disorder (PTSD) among youths at Child Haven, the local facility for maltreated children. According to Kearney, about 30 percent of all maltreated children develop PTSD. He has conducted several assessment studies, measuring levels of depression, anxiety, and anger, and investigated the role of depression as a gateway for the development of post-traumatic stress disorder in these youths.

One of his most striking findings is that the rate of development of PTSD varies among races and ethnic groups, with African-Americans, in particular, having a lower rate.

“We suspect that if you identify as African-American, then you may have a support group among other African-American kids with whom you can share your experiences,” says Kearney. “And the more that you discuss your traumatic experiences, the less likely you are to develop PTSD.”

What drives Kearney’s work is the belief that “research can dramatically affect the lives of people with psychological difficulties and improve our functioning as a progressive society.”

Because it acknowledges his entire body of research, the Harry Reid Silver State Research Award is particularly meaningful to Kearney.

“But I also think it’s a testament to my graduate students, who have worked very hard with me,” he says, “and a testament to my colleagues in the psychology department, who have given me the autonomy and resources to conduct my research.”

The author of nine books and more than 80 book chapters and journal articles, Kearney frequently conducts workshops for professional groups and school districts throughout the country. In addition to the Harry Reid award, Kearney has received UNLV’s William Morris Award for Scholarship, the Barrick Scholar Award, and the Barrick Distinguished Scholar Award.

Kearney received his bachelor’s from the State University of New York (SUNY) at Binghamton and his master’s and doctorate in clinical psychology from SUNY Albany. He has directed the work of 14 graduate students, in addition to the 11 doctoral students he currently oversees.

Kearney served for three years as associate editor of *Behavior Therapy* and currently serves as an editorial review board member for that journal, as well as the *Journal of Abnormal Child Psychology*, *Journal of Anxiety Disorders*, *Journal of Clinical Child and Adolescent Psychology*, and others.



Investment in Research

Designed to encourage faculty collaboration and acquisition of external grant funding, the President's Research Award has also sparked intriguing research projects on subjects ranging from nanotechnology to volcanoes.

By Tony Allen
Photography by Geri Kodey,
Aaron Mayes and R. Marsh Starks

Nursing professor Barbara St. Pierre Schneider and her team are conducting research that may lead to new therapies to expedite muscle recovery and reduce rehabilitation time after injury.

But her project—which focuses on how microscopic immune cells called macrophages contribute to muscle injury repair—might not be under way today had it not been for a UNLV initiative introduced to encourage collaborative research projects.

“I was relatively new to the university when I conceived the idea for this project,” says St. Pierre Schneider. “It was a wonderful idea, but I didn’t have a research team or the funding to pursue it at the time.”

Soon after, she learned of the availability of the President's Research Award (PRA), a source of internal funding being offered to support collaborative research teams and encourage the acquisition of external grants. As news of the award program spread, St. Pierre Schneider found others who shared her interest; they applied for and received one of 11 PRAs awarded last spring.

The PRA is one of several initiatives established by UNLV President David Ashley to promote research, scholarship, and creative activity.

“We have created several internal awards programs and allocated additional travel funds to support these endeavors,” Ashley says. “Through the President's Research Award, we are seeking to encourage collaborative projects that have a strong likelihood of

realizing competitive grant funding. The acquisition of such funding will enable faculty to advance their research further and will benefit the university in many ways.”

For St. Pierre Schneider and her collaborators—public health professor Sheniz Moonie and Patricia Bray-Ward from the Division of Research and Graduate Studies—the \$50,000 they received through the PRA program has provided the extra impetus they needed to take their project to the next level.

St. Pierre Schneider and her team are already using their PRA to gather preliminary data to support two grant proposals they plan to submit to federal agencies.

Ten other UNLV research teams received funding up to \$50,000 and are using their funding similarly: to seek competitive grants that will enable them to pursue their research further. Their projects are described below.

Development of Carbon Nanotube Pipettes for Single-Cell Surgery

Shizhi Qian, Mechanical Engineering
Yingtao Jiang, Electrical and Computer Engineering
Biswajit Das, Electrical and Computer Engineering
Marcos Cheney, Health Physics
Deborah Keil, Clinical Lab Sciences

This team of UNLV researchers is working to develop carbon nanotube pipettes (CNPs)—molecular-scale tubes of carbon, ranging in size from a fraction of a nanometer to several hundred nanometers. These tubes are expected to be used for precise injection of proteins,

From left, faculty members Barbara St. Pierre Schneider, Bo Bernhard, Ramona Brinson, John Mercer, Helen Wing, Stephen Roberts, and Shizhi Qian are among the first-year recipients of the President's Research Award.

peptides, and genetic materials into individual living cells.

The project focuses on the study of human breast cancer cells, particularly if and how CNPs can target and deliver medication to specific cells. Future applications for CNP-based devices include advanced drug screening, chemical and biological sensors, and increased ability to analyze cells and protein structures.

Exploring the Dynamics of Volcanic Eruptions

Adam Simon, Geoscience
Eugene Smith, Geoscience
Rod Metcalf, Geoscience

This team, along with researchers from UCLA and Virginia Tech, is comparing data from an active volcano in the Kamchatka Peninsula of Russia—the most volcanically active region on Earth—with field and chemical data from an exposed, extinct volcano in the Lake Mead region of Nevada and Arizona.

Comparing the two systems will provide data needed to build a comprehensive eruption model. A model

of this kind is critical to providing early warnings for people living in volcanically active areas, understanding geothermal energy potential, and exploring the relationship between magma composition and metal-rich ore deposits.

Co-occurring Disorders Among Juvenile Delinquents: Service Planning for Youth Suffering with Mental Disturbances and Substance Dependence

Ramona Brinson, Social Work
Maryann Overcamp-Martini, Social Work
An-Pyng Sun, Social Work
Larry Ashley, Counselor Education
Jesse Brinson, Counselor Education
Brad Donohue, Psychology
Mary Berkheiser, Law
Kate Kruse, Law
Randall Shelden, Criminal Justice

School of Social Work professor Ramona Brinson leads an interdisciplinary university and community partnership that seeks to identify and study the needs of juvenile delinquents who suffer from both behavioral health and substance abuse disorders.

The two-year project focuses on delinquent youth involved in the county’s juvenile justice system and will include a needs assessment of the population and related service providers in the county, a design of a community-based intervention to address the clinical needs uncovered by the needs assessment, and the implementation and testing of a pilot intervention program.

Effects of Activity on Aging, Longevity, and Muscle Function

Michelle Elekonich, Life Sciences
Stephen Roberts, Life Sciences

This team hopes to unlock the secrets of stress and aging in humans by studying an unlikely source—the honeybee.

The honeybee is an ideal model to study for a variety of reasons—it has a fully sequenced genome; its behavior, muscle performance, and decay can be independently manipulated; as many as 40,000 related individuals in a hive allow for accurate sampling; and the social complexity of honeybee cohorts rivals that of humans.

By comparing the effects of age versus behavior and muscle performance in bee colonies, this research team hopes to shed light on how age, gene expression, and functional capacity interact with behavior to affect the age-related decay of functional performance and lifespan.

Toward an Understanding of Problem Gambling and Other Behavioral Health Issues Among Rural and Urban Multiracial/Multiethnic Populations

Bo Bernhard, Hotel Management and Sociology

Emerging research indicates that multiracial communities and populations are in greater danger than their single-race counterparts of developing such detrimental health problems as underage drinking, depression, and gambling addiction.

UNLV professor Bo Bernhard and



“Through the President’s Research Award, we are seeking to encourage collaborative projects that have a strong likelihood of realizing competitive grant funding,” says David Ashley. “The acquisition of such funding will enable faculty to advance their research further and will benefit the university in many ways.”

faculty from Harvard, the Cambridge Health Alliance, and the University of Michigan are examining the interaction of racial identity and these health issues. They will study both urban and rural populations in an effort to determine why such disparities exist along racial and community lines in the Southwest United States.

Identifying and Reducing Lead Exposure Associated with the Use of Traditional Practices in Southern Nevada Hispanic Communities

Shawn Gerstenberger, Environmental and Occupational Health
Maria Casas, History
Anne Rothweiler, Environmental and Occupational Health

This team is using the resources of the Nevada Center for Environmental and Health Surveillance at UNLV to identify and help to remediate practices contributing to lead exposure in Nevada’s rapidly growing Hispanic community.

By obtaining community-specific information on the major sources of lead exposure in the Hispanic community, Gerstenberger and his team will aid public health officials in the development of culturally appropriate education and prevention strategies.

A User-Centric Metadata Creation Interface for Preserving the Nation’s Ecological Data

Fatma Nasoz, Informatics
Renee Bryce, Computer Science
Craig Palmer, Harry Reid Center for Environmental Studies

For agencies working to preserve our nation’s diminishing ecological resources, maintaining accurate and high quality scientific data is critical

to advancing their cause. This team is working to streamline ecological data collection by improving how people access scientific metadata, or the information about data being collected.

The researchers will analyze existing tools and develop software that improves the frequency and quality of data gathered by minimizing user confusion through tutorials and common language. The resulting software will significantly impact accessibility and use of natural resource data by scientists, policymakers, and the public.

Retro Locomotion as a Fall Prevention Strategy for the Elderly

John Mercer, Kinesiology
Janet Dufek, Kinesiology
Dick Tandy, Kinesiology
Jean Henry, Health Promotion

This group of researchers is studying novel approaches to preventing falls of the elderly with particular focus on how retro, or backward, locomotion training can be used as an intervention strategy. They hope to enhance stability and subsequently improve balance and overall walking confidence in elderly subjects.

The research team will conduct a baseline study of gait characteristics in both young and elderly subjects as part of the study.

Support for Graduate Projects Focusing on Microbial Interaction with Plant and Animal Cells

Helen Wing, Life Sciences
Ernesto Abel-Santos, Chemistry
Eduardo Robleto, Life Sciences

This team is studying microbial interactions within plant and animal cells to better understand and help combat the effects of various pathogens. They are studying *Shigella flexneri*, a

common agent of dysentery; human macrophages response to *Bacillus* spores; and *Pseudomonas fluorescens*, a common bacterium found in soil.

Using enhanced equipment at the Nevada Center for Biological Imaging (NCBI), housed at UNLV, the researchers hope to make important contributions to the fields of medicine, veterinary science, and agriculture.

Microbial Fuel Cell: Convert Waste into Electricity

Jian Ma, Mechanical Engineering
Shizhi Qian, Mechanical Engineering
Yingtao Jiang, Electrical Engineering

This team, in collaboration with the Desert Research Institute, is seeking to develop microbial fuel cells that will convert waste products into continuous electricity. The group recently constructed a prototype of this technology, which utilizes kitchen waste, used newspapers, and sewage to generate electricity.

The proposed technology has potential for large-scale application in sewage treatment plants and landfills, which could use waste products to power their own operations and reduce sludge destined for landfills. It could also be deployed at remote sites to generate power for myriad purposes.

The second-year recipients of the President’s Research Awards will begin their research later this summer. To learn more about the recently named recipients and their projects, visit the PRA program website at http://research.unlv.edu/services_grants/president-research.html.



Researchers Fatma Nasoz (right), Renee Bryce, and Craig Palmer are utilizing their President’s Research Award to study the collection and use of ecological data.

When unsolicited praise for UNLV's research and graduate programs arrives, it's good news for both the university and the community

By Suzan DiBella

Over the summer, two prestigious national publications reported two distinctly different accomplishments in specific areas at UNLV. Both reports placed UNLV in the top five institutions nationally in these areas. Both were also unexpected and, therefore, all the sweeter.

First, *The Atlantic Monthly* acknowledged UNLV's master of fine arts program in creative writing as one of the five most innovative in the country and the doctoral program as one of the overall best of its kind. This wonderful recognition

is discussed extensively in "The Write Track" on page 14 of this issue, so readers will be referred there to learn more about it. To clarify, however, it should be noted that these two graduate programs support creative activity, which is to arts and letters programs what research is to the sciences.

The second acknowledgement came in the form of an article in *Science* magazine, which discussed a National Science Foundation study on scholarly publication productivity in the U.S. in the sciences and engineering. Although the article largely focused on (and lamented) the overall flat rate of science and engineering journal article output in the U.S., it also noted that UNLV ranked fourth among the top 200 universities across the country in terms

of growth in number of such publications.

The article indicated a 99 percent increase in UNLV publications from 1992-2001, signifying that the number of UNLV science and engineering journal articles nearly doubled over that decade. This was the fourth largest percentage increase in the nation.

This good news was greeted with enthusiasm by the two deans whose colleges are responsible for the increase. They noted that publication productivity in their colleges has continued to climb in recent years, as have amounts of external funding, number of graduate students and programs, and other variables used to benchmark scholarly activity.

For example, in 2001—the end of the period studied by the NSF—UNLV’s College of Sciences received nearly \$6.2 million in total sponsored program funding. Last fiscal year, the college received approximately \$18 million. Similarly, the Howard R. Hughes College of Engineering received \$5.2 million in sponsored program funding in 2001, compared with \$14.8 million in 2007.

Likewise, the number of graduate students in science and engineering has grown steadily in recent years. Since 2001, the number of science and engineering graduate students has grown to nearly 500, having increased by 48 percent in the sciences and 53 percent in engineering. Graduate programs have also grown significantly in the last several years, now comprising more than half of all UNLV programs. As noted in another article in this publication (“Enhancing Graduate Education, Advancing Research” on page 10), excellent graduate programs and students are an integral part of the research endeavor.

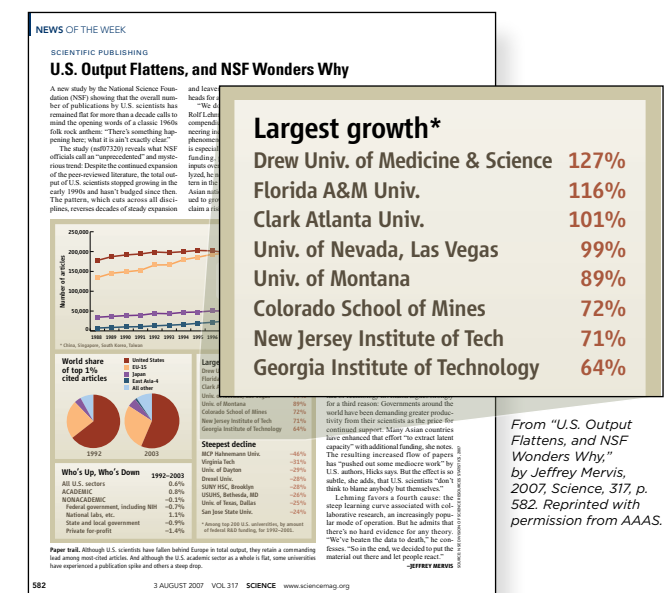
Admittedly, there are major public universities with more established research enterprises than that of UNLV. However, considering our institution's relative youth and rapid improvement in recent years, we are making impressive progress, and this progress is no accident.

The colleges of sciences and engineering, like other UNLV colleges and support units, have worked strategically to enhance research and, with it, the university's academic reputation. The university has hired and retained respected faculty committed to high quality research and creative activity. It has recruited the best and brightest students and encouraged their involvement in research. It has built infrastructure and acquired equipment needed to support faculty and student scholarship, and it has assisted faculty in their pursuit of grant funding. These actions are the

key ingredients necessary to create an academic environment capable of producing the kind of growth in publications that was noted in the NSF study—and that also, in turn, builds the reputation of UNLV.

There are many performance indicators that help us assess the success of our institution, but it is achievement in research that advances our standing in higher education most dramatically. As we have reiterated over time, research success is a leading indicator of the sophistication of a university; many believe it is the yardstick by which academic credibility is measured. UNLV continues to gain respect throughout the country because its research is highly regarded. Thus, if the university seeks to gain even greater stature within the academic community, supporting research is the way to go about it. Academic credibility is, after all, the cornerstone of any university's reputation.

The mentions of UNLV in *The Atlantic* and *Science* are certainly a pleasure for us to report; external validation always is. For this, we thank and congratulate the programs that brought us this praise. These points of pride are especially significant because they represent achievement in research and graduate studies—areas that are critical to UNLV’s future—and provide added momentum in our progress as a nationally recognized research institution.



From "U.S. Output
Flattens, and NSF
Wonders Why,"
by Jeffrey Mervis,
2007, *Science*, 317, p.
582. Reprinted with
permission from AAAS.

Science recently reported that a National Science Foundation study ranked UNLV fourth among the top 200 universities across the country in terms of growth in number of science and engineering publications.

UNLV Highlights

Sponsored program funding serves as one indication of research growth and sophistication



UNLV is a doctoral-degree-granting institution with more than 28,000 students, more than 7,000 of whom are graduate/professional students. The university is ranked in the category of “high research activity” by the Carnegie Foundation for the Advancement of Teaching. Nearly 120 graduate degree programs are offered, including 36 doctoral and professional degrees. UNLV offers a broad range of respected academic programs and is increasingly recognized as a premier metropolitan research university.

AWARDS

In FY2007, UNLV received approximately \$106.8 million in external award funding with nearly \$74.8 million supporting research, including significant support from a number of federal agencies:

- Department of Energy: \$20.4 million
- Department of Education: \$17 million
- Department of Interior: \$10.9 million
- Department of Defense: \$3.7 million
- National Science Foundation: \$3.2 million

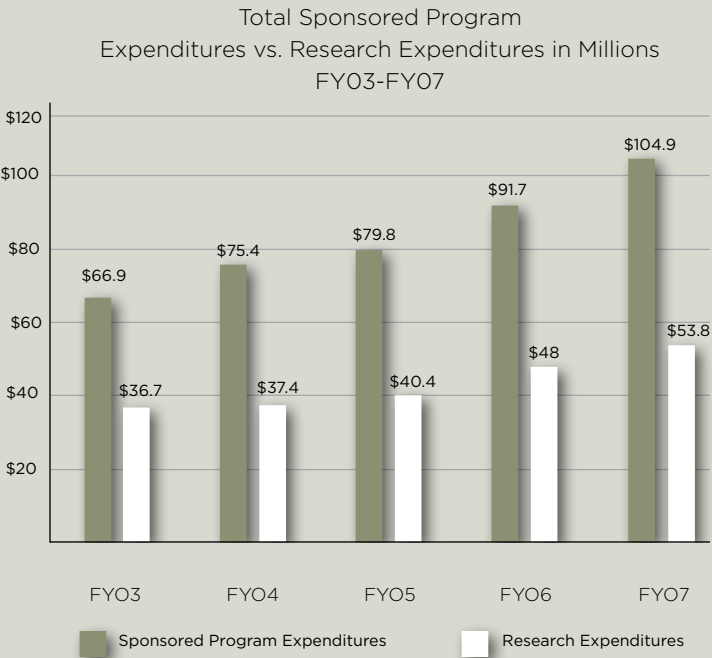
- Top Five Academic Areas Receiving Research-Related Award Funding in FY2007
- Research and Graduate Studies: \$18.9 million
 - Sciences: \$18 million
 - Engineering: \$14.8 million
 - Harry Reid Center for Environmental Studies: \$13.9 million
 - Education: \$5.8 million

- Award Funding By Sponsor Type in FY2007
- Federal: \$70.1 million
 - Federal Pass Through: \$30.8 million
 - State: \$3 million
 - Local: \$1.9 million
 - Foundation/Corporate: \$1 million

EXPENDITURES

Research expenditure data—the amount of funding expended for the purpose of research—is the gold standard for measurement of research activity in higher education. It indicates the amount of external funding spent by faculty and staff to conduct research; hence, it accurately reflects the productivity of funded researchers. Sponsored program expenditure data reflects activity on all types of sponsored program projects, including those dedicated to instruction or public service, as well as research. Hence, research expenditures are a subset of total sponsored program expenditures.

As the graph below indicates, UNLV faculty and staff expended \$104.9 million in sponsored program funding in FY2007, including \$53.8 million in research expenditures. This represents a 14 percent increase in sponsored program funding over FY2006 and a 12 percent increase in research funding over the same period.



Science and Engineering Building to Open in 2008

UNLV’s Science and Engineering Building is scheduled to open this year, providing a sophisticated new facility for interdisciplinary research and education on campus.

The building will house research clusters of faculty who focus on such areas as materials science, nanotechnology, entertainment engineering, integrative physiology, and alternative and renewable energy.

Located off Cottage Grove Avenue just north of the Thomas T. Beam Engineering Complex, the building will contain more than 200,000 square feet of laboratories, classrooms, offices, and integrated research spaces. The building is expected to obtain Leadership in Energy and Environmental Design (LEED) certification, which indicates that a building meets environmentally responsible and sustainable design, construction, and operation standards.

More than a dozen core laboratories will be programmed into the building, including the National Supercomputing Center for Energy and the Environment, a Geographic Information Systems Laboratory, the Imaging and Electron Microscopy Center, and the Nanotechnology Center.

The building will also house the “Solutions Room,” a state-of-the-art visualization facility that will support collaboration among researchers, decision makers, business leaders, and members of the public. It will facilitate discovery of transformative solutions based on visualization using 3-D immersion, interactive modeling, and high-definition video.

1961

First science labs spark discoveries

1989

Supercomputer expands brainpower

2008

New building brings great minds together

UNLV is **celebrating 50 years**. Our research efforts began in a few modest labs in the Lilly Fong Geoscience Building. As our faculty's pursuit of knowledge expanded, so did our facilities – notably with the National Supercomputing Center for Energy and the Environment, which addresses a wide range of national scientific challenges. Today, our evolution continues with the new Science and Engineering Building, a facility that will bring together diverse disciplines, from fine arts to engineering, and more. Because in today's interconnected world, bringing great minds together is how you move science forward.



Visit <http://celebrating50.unlv.edu>
for more information on anniversary events.



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