

COLLEGE OF SCIENCES

university of nevada, las vegas

FALL 2006



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Professor in Hot Water After Receiving NSF Grant

Assistant biology professor Brian P. Hedlund is poised to help Nevadans better understand water chemistry and conservation through a \$842,000 Early Career Development Award from the National Science Foundation.

Hedlund's five-year research project, "Linking Novel Thermophiles with Ecosystem Function: Study of a Model Spring in Nevada," will focus on thermophiles, which are microorganisms that thrive in temperatures above 113 degrees and are found in hot springs. Thermophiles are not easy to study because the extreme conditions that they need to survive are difficult to replicate in a laboratory.

Ron Yasbin, dean of the College of Sciences, said Hedlund's work in the classroom, the laboratory, and in the hot springs of Nevada will contribute to improving the quality of life in Nevada and the advancement of science.

"In receiving this highly competitive and coveted award, Brian promises to enhance our knowledge of the fragile Nevada environment for the benefit of all our citizens," Yasbin said. "His study of Nevada's hot springs promises to further both medical and commercial use of these life forms with implications for the detection of viruses and aspects of genetic engineering."



Brian Hedlund tests water for dissolved gases in Sandy's Spring in Gerlach, Nev. Above left: Hedlund speaks to Nevada high school teachers at Mono Lake, Calif. Above right: Hedlund and a group of students on a research trip in Surprise Valley, Calif.

Through this grant, Hedlund said he and his students can collaborate with faculty and students at other universities to better understand how life thrives in Nevada's boiling and near-boiling geothermal waters.

"I am thrilled that my research program is valued by the nation's scientific community in such a big way," Hedlund said. "People should be aware that UNLV professors are competing with and in some cases outshining the competition at the top universities in the country." ●

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

MESSAGE FROM THE DEAN



RONALD YASBIN
Dean, College of Sciences

The start of another academic year has arrived and the College of Sciences is proud to welcome the Class of 2010 to our campus.

The beginning of the fall semester also signals several new developments, including the creation of the School of Life Sciences, reflecting the evolution of the Biological Sciences Department to a multi-dimensional, interdisciplinary research program.

In addition, several important grants from the National Science Foundation and other agencies were awarded to our faculty, reflecting our growing reputation in the science community.

The construction of the Science and Engineering Building (SEB) is continuing and is expected to be complete next year. We are also installing four portable classrooms and laboratories, a project designed to ameliorate our space shortage pending the opening of the SEB.

The College of Sciences recently launched a revised and enhanced website (<http://sciences.unlv.edu/>). I hope you will bookmark it and visit often to read our electronic publications and keep up with our events and activities.

This semester, the college began offering two new courses. "Introduction to Scientific Study" is a one-credit course designed to improve the study skills of our students and prepare them for college life, including exposure to appropriate academic standards and ethics. It is being developed by physics professor John Farley and UNLV librarians.

The other new course, "Scientific Leadership and Training," was created for students who wish to receive academic credit for service as proctors, tutors, and undergraduate teaching assistants.

Course content will include lectures, seminars, and assignments relating to appropriate academic behavior, ethics, technical writing, and other instructional issues. This course, initiated at the request of many students who have served as proctors and tutors in the past, is designed to improve the academic performance and integrity of students across the college.

This issue of our newsletter highlights selected scholarships, fellowships, and other donations, and several of the donors whose generosity helps to change the lives of students.

Our faculty, myself included, is indebted to those of you who support our undergraduate and graduate students who will go on to be the leaders of tomorrow. The quality of our own teaching, research, and publications is directly linked to this support and we respect and value your philanthropy.

Please join me in recognizing and thanking our generous donors and are committed students and faculty. ●



Invent the future, leave a legacy. Charitable giving can play an important role in planning for your family's and your estate's future. Your gift through a charitable gift annuity, bequest, pooled income fund, or other means can have a meaningful impact on the College of Sciences.

Membership in the Dean's Associates Program. This gift club recognizes donors who give \$1,000 or more to support Dean Ronald Yasbin's vision for the college. Members will receive UNLV Magazine and invitations to campus and community events.

"How Can I Help the College of Sciences?"

For more information about giving to the College of Sciences, contact Nancy Strouse at (702) 895-2343 or nancy.strouse@unlv.edu.

Pledges through the Rebel Ring Phonathon. Next spring, students will phone our alumni and other friends to share College of Sciences news and ask for support of its programs.



Welcome, President Ashley

As UNLV welcomed students for the fall semester, another new face was working his way across campus – David B. Ashley, the university’s eighth president.

Ashley took over as president in July and since then has been touring the campus and meeting with community members to learn more about the university and how he can elevate its academic and research programs into greater prominence.

“Communication is important to me,” Ashley said. “I want to continue to listen, learn, and engage all in the process of further building UNLV’s research agenda and elevating its academic stature.”

“UNLV is a remarkable university,” Ashley continued. “What excited me about coming to UNLV, and what continues to excite me, is that dramatic institutional changes have been propelled by a research agenda.”

Ashley previously served as executive vice chancellor and provost at the University of California, Merced where he helped build its academic and research programs from the ground up. He was also the dean of engineering at the Ohio State University and has held various faculty and administrative positions at the University of California-Berkeley, the University of Texas at Austin, and Massachusetts Institute of Technology.

His professional experiences in civil engineering and construction management include working on the expansion of the Panama Canal, San Francisco-Oakland Bay Bridge, and the subway system in Taipei. ●

School of Life Sciences Launched

The Department of Biological Sciences has a new name – the School of Life Sciences. The Nevada System of Higher Education’s Academic Affairs Council approved the change, which went into effect July 1. The disciplines included in the School of Life Sciences are ecology; evolutionary biology; integrative physiology; cell, molecular, and microbiology; biomedical sciences; and analytical biology. The school will be a focal point for environmental, systematics, and evolutionary research and teaching, and support biomedical research useful for economic development throughout Southern Nevada. ●

NEW M.S. AND Ph.D. DEGREES IN ASTRONOMY

Teaching and research in astronomy and astrophysics at UNLV has grown at the speed of light in recent years, and that progress was rewarded recently when the Board of Regents approved M.S. and Ph.D. degrees in astronomy. The programs are set to launch in fall 2007.

UNLV now boasts one of the most productive and respected groups of astronomy and astrophysics experts in the nation. Among the core faculty at work in the area are: Steve Lepp, Ken Nagamine, Daniel Proga, George Rhee, Diane Piper-Smith, Bing Zhang.

The faculty is currently engaged in several exciting research projects:

- Rhee is delving into dark matter in the center of spiral galaxies
- Zhang is studying observational and theoretical studies of gamma-ray bursts and associated phenomena
- Proga is investigating numerical modeling of accretion onto black holes and related mass out-flows
- Lepp is studying the chemistry of dark molecular clouds

Graduate students at the masters and doctoral levels are involved in many aspects of this research, which faculty members fund by obtaining highly competitive grants from agencies such as the National Aeronautics and Space Administration and the National Science Foundation. Research results are routinely published in respected journals such as *Science*, *Nature*, and *Astrophysical Journal*.

For more information on these new programs, please contact Lepp at (702) 895-4455 or at lepp@physics.unlv.edu. ●

“Desert Survivors” Teaches Youth About the Mojave



Red spotted toads, burrowing owls, and even humans are considered “desert survivors” because they have learned to adapt to the Mojave.

Now, an educational outreach program called “Desert Survivors” aims to help fifth graders in the Clark County School District understand the desert and the creatures living in it.

Assistant biology professor Frank van Breukelen and colleagues in the School of Life Sciences (formerly the biosciences department) developed the program, which centers around a television show created in collaboration with UNLV TV and the school district.

Each episode focuses on a particular Mojave Desert organism. At least one special guest is featured who is an expert on the focal topic. Many of the experts have been UNLV professors, retired professors, and Ph.D. students as well

as park rangers and scientists unaffiliated with the university.

Local fourth and fifth graders are an important part of the program. The hosts of the television program, UNLV biology students Candice Rausch and Jennifer Utz, make presentations in local fifth grade classrooms. During their first year in 2005, they visited 11 schools to compile questions for the first four shows.

Students are encouraged to ask questions, and the shows are designed specifically to answer their questions and give background and critical information about the organisms.

Field footage is then collected to allow kids to take a look into the Mojave Desert like they have never seen it before.

Some topics include microbes, bacteria, and archaera living in hot springs; rotifers, the tiny



Maureen Wruck Panzer (left) meets scholarship recipient and geoscience graduate student Tonia Arriola (third from left), along with Wanda Taylor, professor of geoscience and department chair, and Bill Brown, director of planning and communications for the College of Sciences.

Geoscience Department Hosts Premier Student Symposium

The UNLV Department of Geoscience held its first annual GeoSINposium April 21 - 22, 2006.

The symposium gave graduates and undergraduates an opportunity to present their original research and receive feedback from industry, civic, and government professionals as well as scholars. More than 20 students participated.

The term “GeoSINposium” is a turn of phrase suggested by its UNLV graduate student organizers. A number of outstanding geoscience programs host similar events, and the name “GeoSINposium” pays homage to the reputation of Las Vegas as “Sin City” while providing our geoscience meeting with a distinctive title.

The student-run event included presentations as well as a field trip to Lake Mead area on Earth Day, April 22.

Students presented research on topics such as soils, geomorphology, hydrogeology, paleontology, sedimentology, stratigraphy, geochemistry, and volcanology.

Donors who supported the event include: Dawn Arnold, Christine Bosselman, Geological Society of Nevada, Maureen Wruck Planning Consultants, Walter J. Slack, Kleinfelder, Inc. (Lisa Warren), Willard Lacy, Wende S. Lestelle, Pahrump Engineering, Inc., SAIC, and Michael C. Stojanoff. The Electron Microanalysis and Imaging Laboratory also contributed resources. ●

NEW SCIENCE FACULTY

Ernesto V. Abel-Santos, Ph.D., associate professor of chemistry, joins the department from the Albert Einstein College of Medicine. He received his Ph.D. in biology and biological sciences from Washington University School of Medicine and was a postdoctoral scholar at Penn State. His research interests include the production of cyclic peptide libraries *in vivo*; screening of biologically active compounds; the evolution of hybrid enzymes by transposon-mediated protein libraries; and the kinetics of leading and lagging strand DNA replication.

Kentaro Nagamine, Ph.D., assistant professor of physics, earned his Ph.D. in physics from Princeton University and was a postdoctoral fellow at UC San Diego and Harvard-Smithsonian Center for Astrophysics. His research interests include galaxy formation and evolution at $z=0-10$, numerical simulations of galaxy formation with hydrodynamics, and cosmic star formation history and stellar mass density. In particular, he works on numerical simulations of the universe and compares the simulated universe with current observations.

Dennis Bazylnski, Ph.D., associate professor of chemistry, received his Ph.D. in microbiology from the University of New Hampshire. He was a postdoctoral fellow at Brandeis University and the Woods Hole Oceanographic Institute. His major research interest involves biogeochemical cycling of inorganic and organic compounds by diverse types of bacteria in aquatic and terrestrial environments.



animals that along with other small creatures and plant matter make up plankton; and pupfish, which some biologists call “living fossils” because they represent a group of animals that lived on the earth many thousands of years ago.

When finished, the project will include 12 “Desert Survivor” television episodes which appear on UNLV TV, found on Cox Cable channels 70 or 71, a complete version of the Web site, <http://sciences.unlv.edu/desertsurvivors>, curricular guides to support each episode, and various supplemental teaching aids. Season two of the show is currently airing on UNLV TV.

The National Science Foundation is funding “Desert Survivors,” which is the outreach component of a five-year, \$750,000 grant awarded last year to van Breukelen.

In addition to the “Desert Survivors” project, van Breukelen and his students are using the grant to investigate the mechanisms used by golden-mantled ground squirrels to down-regulate processes associated with protein synthesis and degradation. A better understanding of hibernation at the cellular and molecular levels may have profound implications for designing therapies for cardiac dysfunction, muscle disuse atrophy, and kidney failure.

Although “Desert Survivors” is supported by a grant, outside funding is still needed for the purchase and maintenance of off-road vehicles necessary to accomplish this desert research. If you are interested in assisting with this project, please contact Bill Brown at: william.brown@unlv.edu; (702) 895-2079. ●

An Indoor Oasis

A variety of new plants

on display in the atrium of the Juanita Greer White Life Sciences Building were given as a gift to the School of Life Sciences by the Jerry Lodge Charitable Foundation. Robert Clark, trustee of the foundation, is an ardent supporter of UNLV. The plants are enjoyed by the many students, faculty, staff, and guests who visit the building’s classrooms, offices, and laboratories each day. ●



The atrium is a popular meeting and study place for faculty and students, and we invite all campus visitors to stop by and enjoy our new additions.

INVENT THE FUTURE

Students Benefit from Nurse's Generosity

Linfa R. Wright was a registered nurse who lived in Las Vegas for 36 years. After her death in August 2001, the Linfa R. Wright Endowed Scholarship Fund was established to provide financial support for UNLV juniors and seniors who are pursuing careers in the medical field.

Wright Scholarship recipients for the 2006-2007 academic year are Charles Calvo, Christopher Mercado, Tiffany Samuels, and Anthony Quinn.

Calvo is grateful for the Wright Scholarship, which he said "eases the struggle of trying to work enough to pay for school but also still have enough time to dedicate to my studies." Calvo is interested in surgery and emergency medicine, but is well aware that acceptance to medical school is only the first step in this process.

Mercado, who also has a Millennium Scholarship and other honors program awards, plans to attend medical school next fall. His goal is to open his own practice and improve health care in the country at the patient-physician level.

Quinn hopes to attend the University of Nevada School of Medicine in Reno and become an anesthesiologist. While he completes his biology degree, he said the Wright Scholarship will allow him to complete a research project, shadow physicians at University Medical Center, and volunteer with the Nevada Childhood Cancer Foundation.

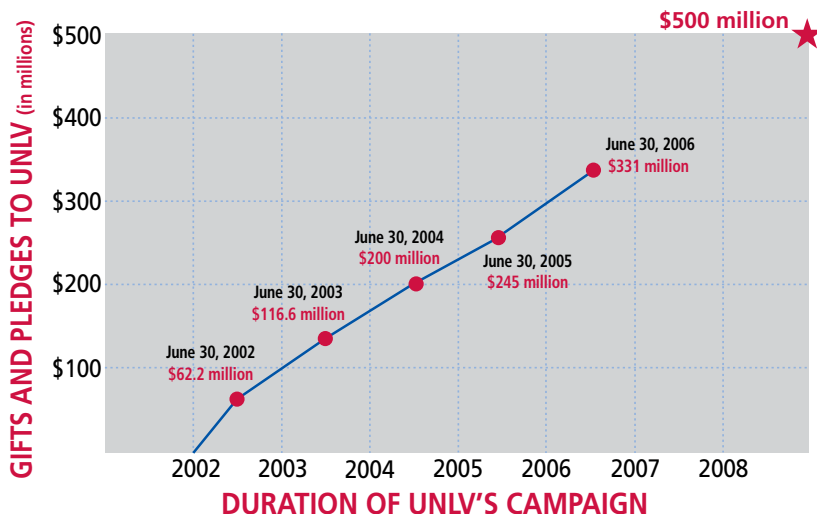
He credits his success at UNLV not only to financial assistance, but also "the essential student support I receive from programs like the Ronald McNair Program, the Center for Academic Enrichment and Outreach, and from my pre-health advisor Dr. Joseph Nika."

Samuels plans to graduate from UNLV with a biology degree, earn a Doctor of Osteopathic Medicine degree, and pursue a career in pediatrics.

Recipients of the scholarship must be physical or natural sciences majors and maintain a minimum 3.5 grade point average. Students must also be members of the Association of Pre-Health Professionals in the College of Sciences, a student organization that engages UNLV undergraduates with health educators and professionals. ●

DIVISION OF SCIENCES CAMPAIGN FUNDING PRIORITIES

- Science and Engineering Building
- Math and Science Education Building
- Center for Urban Agriculture and Water Conservation
- **Undergraduate scholarships**
- Graduate student fellowships
- Endowed chairs and professorships



Invent the Future is UNLV's first comprehensive effort to secure the promises of tomorrow through a \$500 million fundraising initiative. With your help, private funding for students, faculty, research, facilities, and programs will map a course for Las Vegas' next decade.



A Scientific Summer

Crystal Carr, who grew up on a Navajo reservation, attends Dine College in Tsaile, Ariz., the first tribally-controlled college in the country.

She wants to pursue a career in mathematics and physics education, but her college lacks strong research capabilities.

As a result of a grant awarded to UNLV from the National Science Foundation, Carr and nine other undergraduates from colleges and universities spent the summer at UNLV working with faculty on advanced physics research.

"My ion beam research was a great experience for learning physics and for expanding my view of the world," Carr said. "At UNLV I've had the opportunity to meet exciting students and faculty from all walks of life."

Professors John Farley and Andrew Cornelius secured the NSF's Research Experience for Undergraduates grant, which permits 10 undergraduates, recruited nationally, to participate in research projects at UNLV each summer through 2008.



Professor John Farley and student **Crystal Carr** in UNLV's physics lab.

Another grant, the Undergraduate Research Opportunity Program of the NSF's Experimental Program to Stimulate Competitive Research, including 15 from UNLV, to assist faculty with research.

Michael Pravica, assistant professor of physics, participated in the program.

"I find myself energized by the enthusiasm and dedication of our students," he said. "My teaching and research benefits greatly from my involvement in this program."

UNLV research scientists, such as Professor Malcolm Nicol, who directs the High Pressure Science and Engineering Center, also support additional UNLV undergraduates on their individual grant projects.

In total, some 35 UNLV undergraduates were engaged in research projects this summer, which not only supplements their education, but also enhances the quality of research conducted on campus. ●

Help UNLV Celebrate its 50th Anniversary

As UNLV's 50th anniversary approaches, officials are asking employees, alumni, students, and other friends to scour their homes and offices for memorabilia to be included in next fall's anniversary exhibit at the Barrick Museum.

The temporary exhibit will be the biggest the museum has hosted and it will chronicle UNLV since the opening of its first building, Maude Frazier Hall, in 1957. The exhibit will focus on campus life and the changing makeup of the student body, academic development, and architectural changes.

"The exhibit will celebrate all the people who have been part of the Rebel family for 50 years," said Schyler Richards, chair of the anniversary committee. "UNLV's history is so much more than the buildings we've built and the programs we've added. We hope the people who have lived UNLV's history will share



their memorabilia and, more important, the stories behind their pieces."

Items can be brought to the museum and the Tam Alumni Center during homecoming week. Organizers are most interested in uniforms, megaphones, beanies, homecoming sashes, correspondence and university documents, programs, posters, tickets, student election paraphernalia, and personal snapshots. ●

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Beal Savings Bank Serves as Title Sponsor for Fair

Beal Savings Bank, a new Las Vegas-based financial institution, will serve as the title sponsor for the eighth annual Southern Nevada Regional Science and Engineering Fair next year.

"Our founder and president, Andy Beal, has a deep, well-known passion for science and mathematics, and our sister bank in Texas, Beal Bank, has long been a sponsor of the Dallas Regional Science and Engineering Fair," said Craig Singer, senior vice president of Beal Nevada Service Corporation.

"As a new Las Vegas-based bank, we're proud to continue that tradition by sponsoring the Southern Nevada Science and Engineering Fair to both support and give back to our community," Singer said.

Ron Yasbin, dean of the UNLV College of Sciences, praised Beal Savings Bank for stepping forward

and making a commitment to science and math education.

"UNLV is honored to collaborate with Beal Savings Bank in this important endeavor," he said. "The College of Sciences is committed to working with Beal Savings Bank, the Clark County School District, and private schools in the region to engage our youth in scientific inquiry and to build a regional science fair that is second to none."

The 2007 Beal Savings Bank Southern Nevada Regional Science and Engineering Fair will take place March 28-30, 2007. Entries will be accepted from Nevada middle and high school students. For more information, please visit the fair's website: <http://www.unlv.edu/centers/cos-advising/Sci&Eng/Main/index.htm> or call (702) 895-2077. ●

WE WANT TO HEAR FROM YOU! SEND US YOUR PERSONAL AND CAREER UPDATES.

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Your News _____

Please fax or mail this form to: Nancy Strouse, College of Sciences, 4505 Maryland Parkway, Box 454001, Las Vegas, NV 89154-4001. Fsx: (702) 895-1010

COLLEGE OF SCIENCES

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