Concrete canoe team shines as hosts and competitors

It was double duty for civil engineering students as they both hosted and competed in the American Society of Civil Engineers’ 25th Annual National Concrete Canoe Competition.

First, the University of Nevada, Reno was selected to host the June 14-16 competition. Then, the University’s concrete canoe team won the regional competition, hosted by UC Berkeley in March, qualifying them to compete at the national level for the seventh consecutive year.

The three-day competition began with 22 teams from top U.S. and Canada engineering schools reporting to the University’s historic Quad. At the conclusion of the competition’s academic events on campus and races at the Sparks Marina Lake, the University’s team had earned a fourth-place finish.

Student success in competitions shows entrepreneurship focus on campus

The University of Nevada, Reno has seen increasing student interest in entrepreneurship, a phenomenon not unique to Nevada. In a recent nationwide survey by the Kauffman Foundation, 54 percent of 18- to 34-year-olds said they wanted to start their own business or had already done so. State leaders are also looking to entrepreneurial efforts to help fuel the state’s economy.

“The University has the ability to enhance economic development in a variety of ways, and promoting student entrepreneurial efforts is just one way we aim to do that,” said College of Business Dean Greg Mosier.

The college began offering a minor in entrepreneurship a few years ago, which is open to students from any discipline. A student Entrepreneurship Club is also housed in the College of Business and is open to students across campus.

This spring, the College of Business held its inaugural Sontag Entrepreneurship Award competition, open to students from all disciplines. A team of physics students, Mining Environmental Technology and Services (METS), walked away with the $50,000 prize. Alumnus Rick Sontag ’66M.A. (physics) and his wife, Susan, funded the competition last September with a $1 million gift to the University. The METS team plans to develop, produce and market optical instruments to detect potentially harmful airborne particulates in mining workplaces, improving safety in the mining industry.

The University’s student entrepreneurial teams have fared well in state and regional entrepreneurship competitions as well. This year, 13 student teams from the University were among the 18 teams named as finalists in the statewide Donald W. Reynolds Governor’s Cup Collegiate Business Plan Competition, presented by Nevada’s Center for Entrepreneurship and Technology.

University student teams walked away with three awards. In the undergraduate category, Envirohaven took first place and Deep End took third place. Envirohaven also received the Lt. Governor’s Award, presented to the team that best employs clean, renewable or efficient energy technologies. Alan Fuchs, chair of the University’s Chemical and Materials Engineering Department, received one of only two Faculty Advisor Awards presented this year.

Three University teams were also among about 30 teams in the West that advanced to the final round of the First Look West (FLoW) Competition, one of six regional business plan competitions for clean energy sponsored by a $2 million Department of Energy program.

—Claudene Wharton ’86, ’99M.A.
Uplift tracked by scientists shows Sierra Nevada is on the rise

From Mt. Whitney, the highest peak in the United States at 14,000 feet in elevation, to the 10,000-foot peaks near Lake Tahoe, scientific evidence from the University shows the entire Sierra Nevada is rising at the relatively fast rate of 1 to 2 millimeters every year.

“The exciting thing is we can watch the range growing in real time,” said Bill Hammond, lead researcher on the multiyear project to track the rising range. “Using data from before 2000, we can see it with accuracy better than 1 millimeter per year. Perhaps even more amazing is that these minuscule changes are measured using satellites in space.”

The new research suggests the modern Sierra could be formed in less than 3 million years, which is relatively quick when compared to estimates using some geological techniques.

Hammond and his colleagues in the University’s Nevada Geodetic Laboratory and University of Glasgow use satellite-based GPS data and InSAR (space-based radar) data to calculate the movements to this unprecedented accuracy. The calculations show that the crust moves upward compared to Earth’s center of mass and compared to relatively stable eastern Nevada.

The data may help resolve an active debate regarding the age of the modern Sierra Nevada of California and Nevada in the western United States. The history of elevation is complex, exhibiting features of both ancient (40 to 60 million years) and relatively young (less than 3 million years) elevation. Hammond and colleagues are tracking the “young” elevation.

“...The Sierra Nevada uplift process is fairly unique on Earth and not well understood,” Hammond said. “Our data indicate that uplift is distributed along the entire length of the 400-mile-long range, between 35 and 40 degrees north latitude, that it is active, and that it could have generated the entire range in less than 3 million years, which is young compared to estimates based on some other techniques. It basically means that the latest pulse of uplift is still ongoing.”

Possibly contributing to the rapid uplift is the tectonic extension in Nevada and a response to flow in the mantle. Seismologists indicate the mountain range may have risen when a fragment of lower plate peeled off the bottom of the lithosphere allowing the “speedy” uplift, like a ship that has lost its keel. In comparison, other ranges, such as the Alps or Andes, are being formed in an entirely different process caused by contraction as two plates collide.

—Mike Wolterbeek ’02

GPS technology developed and implemented at the University of Nevada, Reno will be the centerpiece of a major test this year by NASA to pinpoint the location and magnitude of strong earthquakes.

“We invented the technique to predict tsunamis using GPS, and it will be used in real-time with a network of 500 reporting stations along the West Coast,” said Geoff Blewitt, professor in the University’s Nevada Bureau of Mines and Geology and director of the Nevada Geodetic Laboratory. “This is intended to see abrupt changes in GPS station positions, such as from a great earthquake, though we have recorded movements using GPS in a magnitude 5.0 earthquake—the smallest earthquake ever recorded by GPS.”

The software processes information from satellite-reporting stations, in real-time, to show changes in ground positions greater than 10 centimeters. “This allows us to see large, rapid ground motions that can then be used to predict tsunamis,” Blewitt said.

Better information from the GPS satellite orbits and next-day processing result in extremely accurate calculations as small as 1 centimeter. These small changes can be used to model earthquakes and stresses that could lead to further earthquakes.

The NASA monitoring-network project runs along the San Andreas Fault in California, and the Cascadia fault line that extends from northern California to Vancouver, Canada. Its development is supported by the National Science Foundation, the Department of Defense, NASA and the U.S. Geological Survey.

—Mike Wolterbeek ’02
Faces on the Quad

SHILPI GARG, University of Nevada School of Medicine Class of 2012, joined a 15-member team of physicians, surgeons, intensive care nurses and technicians as they traveled to Panama City for a week to perform catheterizations and cardiac surgical procedures on children. She is the first medical student selected for this opportunity offered by the Children’s Heart Center of Nevada. Garg, who speaks Spanish, will complete her pediatric residency at the University of California, San Francisco.

ANNA KOSTER, a senior majoring in chemistry and music, has been awarded a nationally competitive Barry M. Goldwater Scholarship. Koster is the University of Nevada, Reno’s third Goldwater Scholarship Award recipient in the past two years. She was also awarded a Pfizer-sponsored Division of Organic Chemistry Undergraduate Research Fellowship to help fund her research in organic chemical reactions, and will present her work at the pharmaceutical company’s headquarters in Connecticut this fall.

MATHEW NEBEN was awarded the 2012 Herz Medal for outstanding scholarship. The Herz Medal is the University’s oldest and most prestigious award, established in 1910 by brothers Richard, Carl and Otto Herz. It is presented annually during the spring commencement ceremony, and funding for the award is now provided by the University of Nevada, Reno Foundation and the Thelma B. and Thomas P. Hart Foundation. Neben, who earned a 4.0 GPA as an economics and finance major, was active in many co-curricular activities and was elected to the Associated Students of the University of Nevada Senate. Neben was inspired to succeed through the encouragement of fellow students and University faculty.

University Summer Session celebrates 100th anniversary

Summer 2012 marks a special milestone for the University of Nevada, Reno’s Summer Session Program. As it celebrates its 100th anniversary, today’s program is almost unrecognizable compared to the 1912 version. Summer Session was originally created to increase certificate standards of elementary teachers and increase their proficiency. At the time, 12 courses were offered, and 87 students were enrolled in the program. Now, the program offers more than 550 classes and attracts about 7,000 students annually.

“A large number of students in a variety of majors take advantage of the opportunity to take a class or classes in a condensed-time format,” said Kerri García, Summer Session executive director. “It’s very useful in helping students work toward timely graduation.”

—Megan Akers, Class of 2013

Another record-breaking commencement

The University of Nevada, Reno’s historic Quadrangle was once again the setting for two Commencement ceremonies, one for advanced-degree recipients and one for baccalaureate-degree recipients. The University conferred 2,215 degrees and certificates, nearly a 10 percent increase over the prior year and representing the largest number of graduation applicants in the University’s history.

Between the Winter 2011 and Spring 2012 Commencement ceremonies, the University awarded a total of 3,762 degrees. The number of baccalaureate degrees awarded by the University has increased 59 percent over the past 10 years.

—Natalie Savidge ’04
Pseudoscorpions exhibit effect of antibiotics

Male pseudoscorpions treated with the antibiotic tetracycline suffer significantly reduced sperm viability and pass on this toxic effect to their untreated sons. In a paper published in *Scientific Reports*, University of Nevada, Reno biologists suggest a similar effect could occur in humans and other species.

“Tetracycline has a significant detrimental effect on male reproductive function and sperm viability of pseudoscorpions—reducing viability by up to 25 percent—and now we know that effect is passed on to the next generation,” said David Zeh, chair of the Department of Biology in the College of Science.

In the article, lead author and assistant biology professor Jeanne Zeh surmises that tetracycline may induce epigenetic changes in male reproductive tissues that may be passed to sons—changes that do not alter the sequence of DNA, but rather alter the way genes are expressed.

Despite more than six decades of therapeutic and agricultural use that has resulted in the evolution of widespread bacterial resistance, tetracycline is still commonly used as an additive in animal feed and as an accessible antimicrobial therapy in developing countries.

The research involved University undergraduate and graduate students and was part of a project funded by the National Science Foundation, which is investigating factors contributing to low male fertility.

—Mike Wolterbeek '02

Biologist Jeanne Zeh examines a pseudoscorpion using a microscope operated by graduate student Melvin Bonilla.

Summer Session 2012 presents

Summer Concerts and Watermelon on the Quad!

Voted one of *Reno Gazette-Journal*’s “Best Family Outings” — free Watermelon Wednesday concerts on the Quad are fun for all ages. Bring a blanket and a picnic dinner and join us from 6-8 p.m. on these Wednesdays:

- **July 11**: Tim Snider and Sound Society
- **July 18**: Disney (Reno Municipal Band)
- **July 25**: JellyBread
- **Aug. 1**: Whitney Myer Band
- **Aug. 8**: HomeMade Jam
- **Aug. 15**: Tim Snider and Sound Society

Food will be available for purchase. For more information visit www.summersession.unr.edu.

Shine with us this summer!

Concerts are presented by Summer Session in partnership with the College of Business Alumni Association, Nevada Football Alumni Association, Cheer, Dance and Mascot Alumni Chapter, Honors Alumni Chapter, Fallon Alumni Chapter and Young Alumni Chapter.

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Research discovery signals new hope for patients with congenital muscular dystrophy

The nation’s leading scientists and clinicians exploring treatment breakthroughs for congenital muscular dystrophy convened this spring at the University’s Center for Molecular Medicine, where research by Dean Burkin has led to a potential therapy.

Burkin, a University of Nevada School of Medicine pharmacological researcher and faculty member, presented his work on a naturally occurring protein showing promise as a therapy for muscular dystrophy. Initially shown to be an important finding for Duchenne muscular dystrophy, the most common form of muscular dystrophy, Burkin’s continued research, recently published in the American Journal of Pathology, shows the protein to be an effective therapy for congenital muscular dystrophy in mice. The University has licensed the protein to a biotech company working to develop a human version of the protein for further testing and clinical trials.

Congenital muscular dystrophy is a rare group of diseases that causes muscle weakness at birth. The first national conference on congenital muscular dystrophy was held in Atlanta in 2009 and took a broad look at the science and therapeutic options being explored at that time. Since then, findings have led the scientific community to center its work on the myomatrix, which is the junction between muscle and the extracellular matrix.

“The singular focus of our conference (on the myomatrix) marks a step ahead since the last meeting,” Burkin said of the conference, which received grant funding from the National Institutes of Health and the support of three NIH research institutes. “It’s possible that if we discover a common pathway or mechanism, we might be able to treat the diseases with a single drug,” he added.

—Jane Tors ’82

Pharmacological researcher Dean Burkin is working with a biotech company through a licensing agreement to develop a therapy for muscular dystrophy.