

2015

## Research Briefs

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## Invasive Flora: Unwelcome Visitors in Desert Parklands

NEW DATA FROM UNLV SCIENTISTS show that uncontrolled growth of invasive plants in Southern Nevada, California, and Arizona is threatening wildlife, degrading visitor experiences, and ratcheting up wildfire risks in some of the nation's most important federally protected lands.

In Mojave National Park, Death Valley National Park, and the Lake Mead National Recreational Area, the researchers found, foreign plants and grasses are crowding out native vegetation and harming the animals that eat it. When the plant invaders reach the end of the life cycles, they die, dry out, and become fuel for wildfires.

The research area examined by the scientists spanned nearly 6 million acres, some 23 percent of national parkland in the contiguous United States. Eighty-two percent of plots were found to harbor at least one invasive species.

"Many non-native plants were introduced to the United States over 100 years ago," says UNLV ecologist Scott Abella, the study's lead author. "Some plants were intentionally introduced for purposes such as feeding livestock. Other plants were inadvertently introduced, like 'stowaways' in seeds of agricultural crops. Some of the non-native plants in the national parks we studied may have even been introduced by Spanish missionaries in the 1500s."

Red brome, a.k.a, *Bromus rubens*, is a Mediterranean import that has become a particular problem in desert parks. This is chiefly because the tufted, bunch-grass species has been shown to alter wildfire patterns by increasing flames' spread and intensity. The UNLV study indicated that Red brome, which can leave dead stalks standing upright for as long as two years, infested some 60 percent of

the research plots examined.

"Several of the wildfires in the past 10 years around Las Vegas, including in Red Rock Canyon National Conservation Area, were partly fueled by [such] dead non-native plants," says Abella.

Beyond purely practical considerations, Abella adds, everyone who treasures national parks has a stake in controlling rogue plants.

"National parks occupy only 1.3 percent of the lower 48 states," he says. "In this small fraction of the United States, nature is supposed to be authentic — places where natural processes and native species predominate. Invasion by non-native species threatens the very ideal of national parks."

The study, published in June by the journal *Nature Conservation*, suggests park administrators can combat the problem by helping visitors understand the risk of inadvertently introducing invasive plant species, by streamlining ways for park visitors and staff to report infestations, and by dedicating more resources in general to the fight against invasive plant species.



## GRANT FUNDS NEW PUSH TO FIGHT PARKINSON'S, ALZHEIMER'S DISEASES

**THE CLEVELAND CLINIC'S LOU RUVO** Center for Brain Health and UNLV were recently awarded an \$11.1 million grant from the National Institutes of Health and National Institute of General Medical Sciences to fund a Center of Biomedical Research Excellence (COBRE).

The five-year award marks the first-ever COBRE grant in Southern Nevada. The new center will fund resources and research related to Parkinson's and Alzheimer's diseases.

"We are thrilled to be forming Southern Nevada's first Center of Biomedical Research Excellence in partnership with UNLV," says Dr. Jeffrey Cummings, Director of the Cleveland Clinic Lou Ruvo Center for Brain Health and principal investigator for the grant. "To be awarded such a competitive federal grant to tackle the medical mysteries behind such horrific diseases as Alzheimer's and Parkinson's is a testament to the caliber of the area's medical capabili-

ties and collaborative efforts with UNLV."

Three research initiatives will benefit from the grant funding. The first, led by UNLV psychology professor Jefferson Kinney, will assess novel models of Alzheimer's with particular attention to the role of the immune system. The second project, led by Cleveland Clinic Lou Ruvo Center for Brain Health's Dr. Ryan Walsh, will use neuroimaging and neuropsychology to advance understanding of Parkinson's, specifically cognitive impairment associated with the disease. The final project, led by Cleveland Clinic Lou Ruvo Center for Brain Health's Dr. Sarah Banks, will use neuropsychology, combined with cutting-edge imaging techniques, to understand commonalities between Alzheimer's and Parkinson's.

A clinical core to provide patients for the projects will be led by Cleveland Clinic Lou Ruvo Center for Brain Health's Dr. Kate Zhong. UNLV's Supercomputing Center, directed by Joseph Lombardo, will provide database and statistical support.

This COBRE grant is slated for five years, with approximately \$2 million to be awarded each year. The grant demonstrates the strong partnership between the center and UNLV, illustrating their mission to grow the scientific and medical landscape of Southern Nevada.

"This award cements UNLV's longtime research collaboration with the Cleveland Clinic Lou Ruvo Center for Brain Health and advances our shared mission to find answers to complex health issues affecting so many in our community and around the world," says Thomas Piechota, UNLV vice president for research and economic development.

## UNLV, TESLA MOTORS FORM RESEARCH PARTNERSHIP

**UNLV AND TESLA MOTORS HAVE FORMED** a research partnership that will draw on the expertise of university faculty to pursue advanced topics in battery manufacturing.

Nevada Gov. Brian Sandoval and officials from UNLV and Tesla formally announced



**ENERGIZING MOMENT** Nevada Governor Brian Sandoval looks on as UNLV President Len Jessup and Tesla Motors Vice President for Business Development Diarmuid O'Connell sign a five-year research partnership between the university and the electric car manufacturer.

the partnership during an Oct. 7 ceremony in UNLV's Science & Engineering Building.

"This is an exciting example of how public-private partnerships can benefit both the commercial and academic communities," says UNLV President Len Jessup, who spoke at the event. "Our faculty are performing high-caliber research and are enthusiastic about collaborating with a leader in the electrical vehicle manufacturing industry."

The initial phase of the five-year agreement between Tesla and the university includes two projects led by UNLV engineers and scientists to enhance manufacturing processes at Tesla's Northern Nevada Gigafactory.

A team of UNLV engineering researchers will focus on water recycling and treatment, and a separate team of chemists will work to improve recycling of metals from lithium ion batteries.

Plans for Tesla's Northern Nevada facility were first announced last fall. The collaboration, which could total \$1 million in funded projects over the next five years, provides opportunities for additional research as the partnership evolves.



**RESEARCH COLLABORATION** The Cleveland Clinic's Lou Ruvo Center for Brain Health and UNLV were recently awarded an \$11.1 million grant from the National Institutes of Health and National Institute of General Medical Sciences.

## UNLV RESEARCHERS PUBLISH FINDINGS ON POTENTIAL HIV CURE

RESEARCHERS AT UNLV'S NEVADA Institute of Personalized Medicine (NIPM) have engineered a new protein that they believe could lead to an HIV cure.

Published in the May issue of the peer-reviewed journal *PLoS ONE*, the researchers have discovered a protein that uses a newly developed gene-editing technique to rid the body's cells of the immunodeficiency virus before it has a chance to multiply and develop into AIDS.

A patent application has also been filed on the researchers' process, and testing on the protein, called HT-TALENs (short for HIV-targeted transcription activator-like effector nucleases), continues.

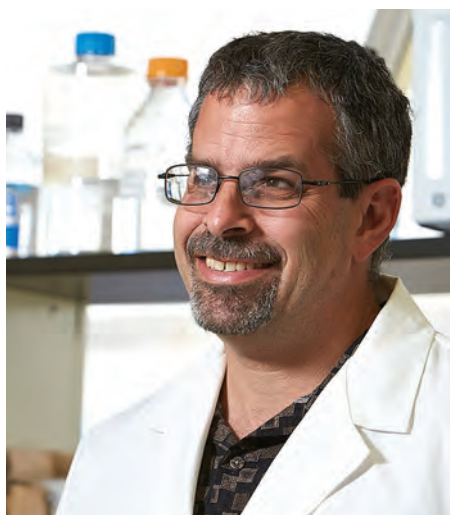
Humans infected with HIV have 1 million to 10 million cells harboring copies of HIV DNA. When HIV infects an individual, the virus inserts itself into DNA in cells and becomes part of those cells' permanent blueprint.

"Current drugs slow the virus from being produced, but they don't rid the body of the HIV DNA," says NIPM executive director and UNLV life sciences professor Martin Schiller. "You've got to get rid of or damage the harmful DNA to truly prevent the cells from creating the virus."

By altering a commonly used plant pathogen protein, Schiller's lab engineered the new HT-TALENs variation. The plan will be to introduce the protein into the body through a common cold virus injection, and the protein will adhere to the specific portions of HIV DNA and cut or damage it without touching any of the non-infected DNA around it. When the cell repairs the damage, the new copy won't contain functional HIV.

"This is a way we're getting at the root cause of AIDS, not going after a downstream event, but going after the actual DNA copy," Schiller says. "We are hopeful this will stop the virus replication in its tracks. We think it has the potential to be a cure."

So far, the researchers have produced re-



**BREAKTHROUGH DISCOVERY** UNLV researcher Martin Schiller has found a potential pathway to treat patients with HIV. His team's findings were published in the journal *PLoS ONE*.

sults only in the laboratory. They are awaiting patent approval and have started on the next phase of testing through a partnership with Brigham Young University. If that is successful, the scientists will move on to human trials.

"It's going to take a number of years to develop, but I'm hopeful this approach should work. Our goal is to lead the way," he says.

The protein treatment's success would be a boon emotionally and financially for patients undergoing current HIV drug regimens, which can top \$15,000 a year.

Human tests would pair the new gene-editing protein therapy with current treatments. Similar proteins might also be useful in curing other illnesses, such as bird flu.

This project, one of several that Schiller's lab is currently pursuing, began about three years ago after a weekly meeting of his team focused on current research articles. One of them discussed the TALEN protein, derived from a wheat pathogen already widely used in the agriculture industry to genetically modify plants. Schiller and his team realized that it might be viable for use in HIV therapy with some modifications.

NIPM was established with a grant from the State of Nevada Knowledge Fund.

## STUDY LINKS FULL-DAY KINDERGARTEN TO HEALTH, TEST SCORE BENEFITS

FULL-DAY KINDERGARTEN PROVIDES opportunities for numerous health benefits to Nevada's youngest elementary school students, including improved nutrition education, physical activity, and access to school meals.

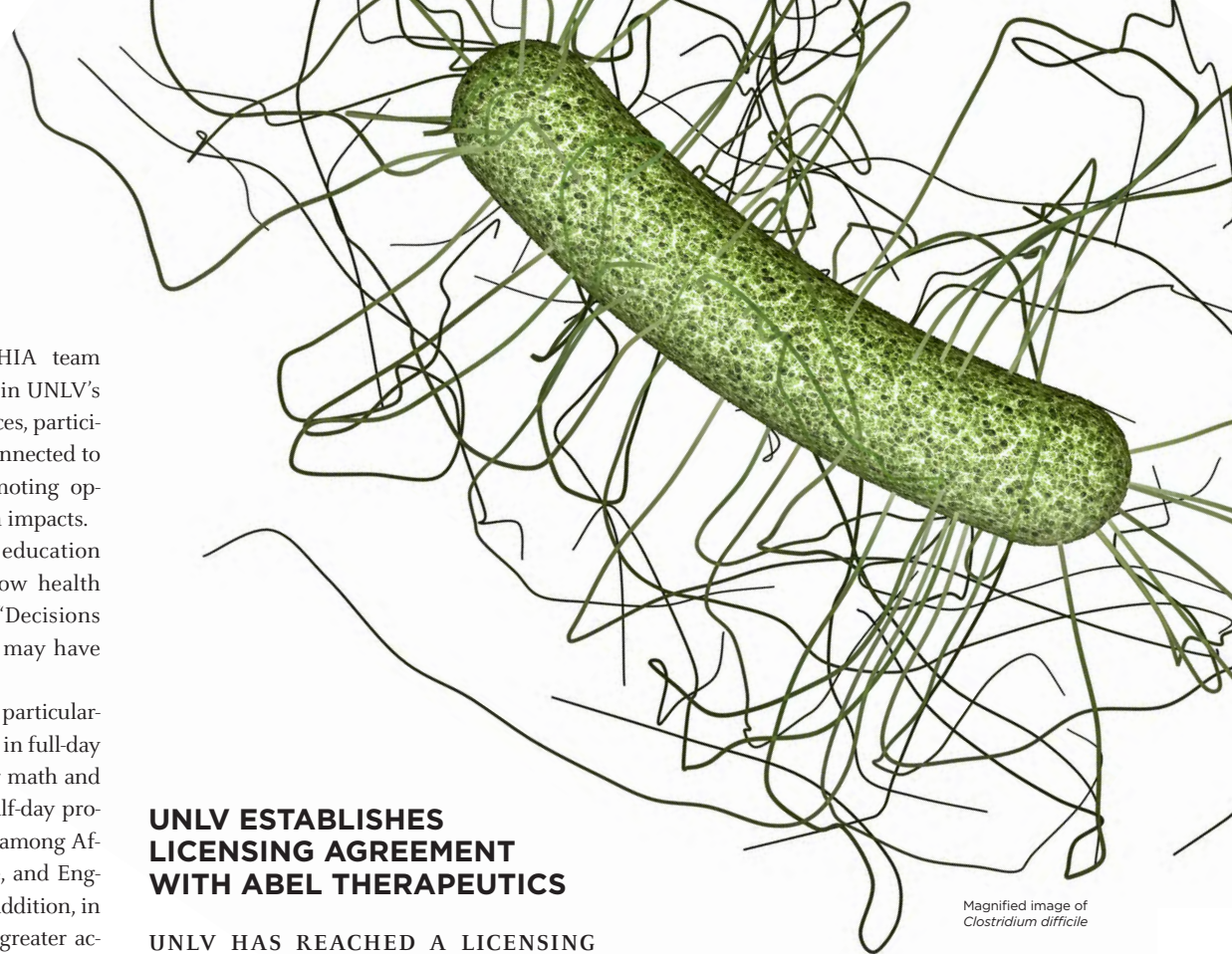
But, for students with certain qualities, full-day kindergarten is also a vehicle to improve elementary school math and reading test scores.

These results are from a recent health impact assessment (HIA) conducted by UNLV's School of Community Health Sciences and its partners. It was compiled with community input and utilized publicly available data, as well as information obtained from school districts across Nevada and existing literature.

The study offers recommendations to decision-makers and the community regarding the benefits of full-day kindergarten. They include the importance of implementing evidence-informed, school-based nutrition education and physical activity requirements early on, which is shown to influence positive eating habits and health into adolescence.







Magnified image of *Clostridium difficile*

According to Max Gakh, an HIA team member and an assistant professor in UNLV's School of Community Health Sciences, participation in full-day kindergarten is connected to healthy behaviors and health-promoting opportunities that may have long-term impacts.

"As Nevada considers its K-12 education system, it's important to think how health fits into the picture," says Gakh. "Decisions made about full-day kindergarten may have health effects, too."

Researchers found evidence that, particularly in the short term, certain children in full-day kindergarten tend to achieve higher math and reading test scores than those in half-day programs. This appears especially true among African-American, Latino, low-income, and English-language learning students. In addition, in many cases, full-day students have greater access to regular meals, which is also associated with positive academic performance.

For close to a decade, Nevada has offered full-day kindergarten at some of its schools through a mix of free and tuition-based programs. At the time of the study, about 87 percent of Nevada public school students enrolled in kindergarten were estimated to have access to either publicly funded or tuition-based full-day programs. Nevada lawmakers voted in the recent legislative session to fund the expansion of full-day kindergarten offerings statewide.

HIAs are gaining in popularity nationally and around the world as a way for public health researchers and practitioners to connect with other sectors and communities to explore the health impacts of public policy decisions. A webinar on the Nevada full-day kindergarten HIA is available at [www.youtube.com/watch?v=teui7sNAEAg&feature=youtu.be](http://www.youtube.com/watch?v=teui7sNAEAg&feature=youtu.be).

The HIA was made possible by a grant from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, dedicated to promoting the use of health impact assessments in the U.S.

More information and a searchable map of HIA activity in the United States are available at [www.healthimpactproject.org](http://www.healthimpactproject.org).

## UNLV ESTABLISHES LICENSING AGREEMENT WITH ABEL THERAPEUTICS

UNLV HAS REACHED A LICENSING agreement with Abel Therapeutics, a start-up company that seeks to commercialize the discoveries of biochemistry professor Ernesto Abel-Santos. The company is researching, developing, and commercializing a novel compound designed to prevent *Clostridium difficile* (C. diff) infections.

This serious, sometimes fatal infection is often contracted in hospitals, surgery centers, and other health-care facilities. It is considered one of the fastest-growing epidemics in the U.S.

Abel-Santos, who is a company co-founder, is currently conducting additional research on the team's findings. He and his team recently received a five-year, \$3.25 million award from the National Institutes of Health to develop a more potent and stable drug to prevent C. diff infections. The grant is an R01, or Research Project Grant, which is considered one of the agency's most competitive awards.

C. diff is a bacterium that forms spores that can stay in the environment or body for extended periods. Under the right conditions, these spores can germinate in patients' gastrointestinal tract, producing toxins that cause severe abdominal pain and uncontrollable diarrhea. Abel-Santos' compound is designed to prevent the spores from germinating.

"The university has pursued a patent for this discovery through the U.S. Patent and Trade-

mark Office, and we are very enthusiastic about this start-up company," said Zachary Miles, associate vice president for economic development.

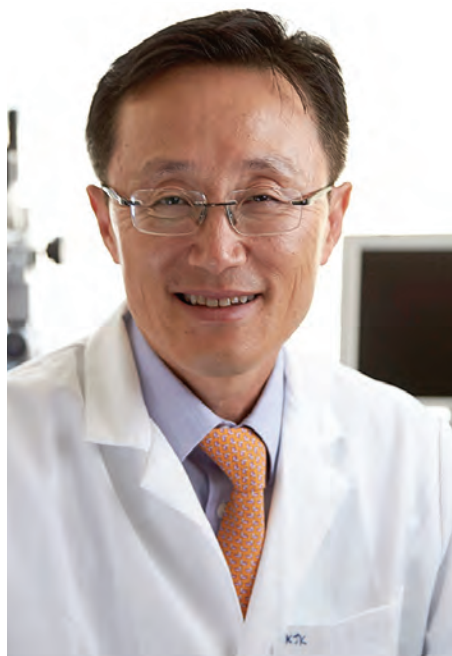
He noted that Abel-Santos worked with the College of Business' entrepreneurship students, who developed a business plan for his company. The team recently won second place at the Southern Nevada Business Plan Competition.

## UNLV-LED TEAM RECEIVES GRANT TO DEVELOP 'MUSCLES' IN ROBOTS

A UNLV-LED RESEARCH TEAM HAS received a \$3.8 million grant from the National Science Foundation to create advanced artificial muscles for use in soft robotics that could one day help millions of people with disabilities.

Soft robotics is an emerging field in which the components of a robot are made of pliable materials. UNLV engineering professor Kwang Kim and partner researchers from UNLV, Korea, and Japan are developing new polymer-metal composites to improve the function and lower the cost of artificial muscles.

If successful, the artificial muscles developed will advance the robotics industry and could also be used in medical diagnostics and



**HEAVY LIFTING** UNLV researcher Kwang Kim and his team have received a grant to study artificial muscles in robots.

tools or for invasive surgical systems.

Kim, a pioneer in artificial muscle research, will work closely with UNLV engineering colleague and renowned robotics expert Paul Oh.

“The development of artificial muscles will benefit understanding of methods and functions that mimic biology and could be applied in many fields of engineering and science in connection with soft robotics,” Kim says.

Students will also benefit from the grant through these partnerships with international collaborators, who will provide them with sophisticated skills in cutting-edge soft robotics technologies, Kim adds.

The grant was awarded through the National Science Foundation’s “Partnerships for International Research and Education” (PIRE) program, designed to strengthen scientific collaboration between U.S. and international researchers. The UNLV project is one of 17 funded through PIRE’s latest round of awards.

“By linking together researchers from around the world, PIRE allows us to leverage U.S. dollars and improve scientific outcomes,” says Rebecca Keisler of NSF’s Office of Inter-

national Science and Engineering. “These rich partnerships will tackle some of today’s most pressing research questions.”

International collaborators on the UNLV-led project include researchers from South Korea (Il-Kwon Oh, of the Korea Advanced Institute of Science and Technology) and Japan (Kinji Asaka, of the National Institute of Advanced Industrial Science and Technology). Other U.S. collaborators include Kam Leang, of the University of Utah; Chulsung Bae, of the Rensselaer Polytechnic Institute; and Maurizio Porfiri, of the Polytechnic Institute of New York University.

## SURVEY SHOWS MIXED OPINIONS ON POLICE BODY CAMERAS

**REQUIRING POLICE TO USE “ON-OFFICER** video recording systems,” or body cameras, would likely improve transparency and public trust, but granting media access to the cameras’ video footage could infringe on privacy rights, according to a new UNLV study.

The study reports results of an online national survey, conducted in May 2015 by a research team in UNLV’s department of criminal justice. A total of 635 people age 18 or older across the U.S. responded. The respondents were primarily male, white, and over 30 years old.

Overall support for police body cameras was very high, but opinions varied on how body cameras might affect relationships between the police and the community. Also, support for the technology varied based on the type of activity that police perform.

Respondents were less optimistic that cameras would improve relationships between police and citizens — particularly relationships between police and minority citizens.

William Sousa, director of the Center for Crime and Justice Policy at UNLV’s Greenspun College of Urban Affairs, says the survey was conducted within a year of several controversial cases involving police and citizen interactions that resulted in death. A heightened awareness of current events and a fed-

eral push for body cameras provide context to the public’s opinion in the report.

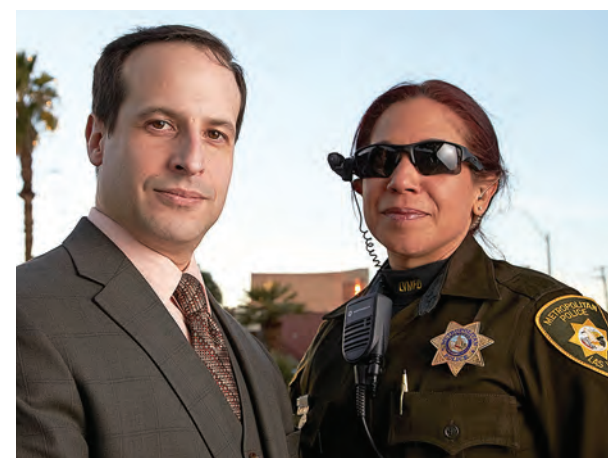
“The relationship between police and citizens — and police and minority citizens — is far more complex than can be solved by a particular type of technology,” Sousa says. “For the most part, people are more skeptical of the technology’s ability to improve relationships, even though much of the federal push has stemmed from racial tensions resulting from recent cases involving police and citizens.”

While the results showed respondents generally agreed that cameras would result in more police respect toward citizens, fewer incidents of police misconduct, and more effective information gathering by police, some 40 percent worried that victims of crimes and witnesses might be apprehensive about cooperating with police knowing their statement would be recorded. Only 36 percent of respondents told researchers they believed body cameras would help reduce racial tension between police and citizens.

Sousa says more research is needed to help city, county, and state governments develop policies and procedures and consider privacy implications.

“The survey points to the idea that a lot of people are not aware of the consequences

KIM, SOUSA: R. MARSH STARKS; MARTI: AARON MAYES



**FOCUS ON BODY CAMERAS** Angela Suarez, an officer with the Las Vegas Metropolitan Police Department, with William Sousa, director of the UNLV Center for Crime and Justice Policy.



related to privacy or trust between officers and citizens,” Sousa says.

“For example, will people be more reluctant to talk with officers knowing their conversations will always be recorded? Would police officers and public safety officials agree to turn off cameras upon a citizen’s request?”

Sousa says the public perceives that police officers are involved in more high-profile incidents, but responding to serious crime is a small part of what they do, and using force is an even smaller part of managing serious crime. Cameras may be relevant for those cases.

“If a citizen truly believes the officer did not do his or her job properly, there’s a way to challenge the issue,” Sousa says. “It could protect citizens from misconduct and excessive force, and it could protect officers from false complaints made by citizens. It has the potential to protect officers and citizens and encourage transparency.”

Collaborating with Sousa on the study were criminal justice professor Terance Mithel and public affairs doctoral student Mari Sakiyama. The team is conducting more advanced statistical analyses in preparation for a presentation to the Western Society of Criminology; they will incorporate the analyses and feedback from the presentation into a scholarly journal submission.

## UNLV DOCTORAL STUDENT ATTENDS MEETING OF NOBEL LAUREATES

EARLIER THIS YEAR, ENVIRONMENTAL engineering doctoral student Erica Marti was one of 55 students from the United States selected to attend the annual Lindau Nobel Laureate Meeting in southern Germany.

During the week-long event, she engaged with some of the world’s greatest minds in medicine, physics, and chemistry.

“We are so proud of Erica’s accomplishments and the prestige she has brought to our college,” says Rama Venkat, dean of UNLV’s Howard R. Hughes College of Engineering. “We are thrilled to have one of our students



**NOBEL CAUSE** UNLV environmental engineering doctoral student Erica Marti was one of 55 students from the United States invited to attend the annual Lindau Nobel Laureate Meeting in Germany.

learn from the world’s most compelling scholars and scientists.”

Marti was asked to attend the event after successfully navigating a competitive national and international selection process. About 200 academies of science, universities, foundations, and research institutions from more than 50 countries played an active part in vetting the young scholars. Oak Ridge Associated Universities, a Tennessee-based consortium of major doctoral-granting academic institutions, sponsored Marti’s application. Some 650 graduate and post-graduate students worldwide were chosen to attend.

In addition to the standard program at the meeting, Marti was selected to participate in a master class, “A 21st Century Career in Research,” with Brian Schmidt, a physicist who received the Nobel Prize in 2011 for findings related to the accelerating expansion of the universe.

“It was a real honor to attend and meet scientists from all over the world,” Marti says. “The Nobel laureates were friendly and generous

with their time. They shared their inspiring stories about achieving groundbreaking discoveries despite failures along the way, which is a testament to persistence in research and a vital lesson for all young scientists to learn.”

Since 1951, Nobel laureates have convened each year in Lindau to have open and informal meetings with students and young researchers. During the event, laureates and students exchange ideas, discuss projects and build international networks. Student participants hail from 88 countries. This year’s meeting was held from June 28 to July 3.

Marti’s doctoral work at UNLV involves water and wastewater treatment with an emphasis on chemicals used to disinfect drinking water. Such treatments are often used to kill pathogens in water but can create byproducts that are harmful to humans. Marti is investigating methods for preventing the formation of these harmful byproducts as well as ways to safely remove them.

The journey to Lindau wasn’t Marti’s only recent trip abroad. With a grant from the National Science Foundation, Marti spent a summer in Australia examining disinfection byproducts. She is also the recipient of a \$25,000 UNLV Presidential Research Scholarship, the most prestigious award given to graduate students.

Marti, a former Las Vegas high school chemistry teacher with a master's degree in education, is currently an intern at the Southern Nevada Water Authority. Her doctoral advisor, Jacimaria Batista, is an engineering professor and noted expert in wastewater treatment.

## ENDANGERED FISH SPECIES ESCHEWS OXYGEN

THE DESERT PUPFISH, AN ENDANGERED aquatic species found only in the desert Southwest, often swim for exceptionally long stretches without oxygen – even when oxygen is readily available, two UNLV life scientists have found.

Frank van Breukelen, an associate professor of life sciences, and Stanley Hillyard, a professor of biomedical sciences, made the discovery after undertaking a more general investigation of the fishes' energy needs. They admit the result surprised them, especially since there didn't appear to be any compelling environmental reason for the pupfish to forego oxygen.

"The pupfish's extended time not consuming oxygen made no sense since oxygen is so much more efficient, and these pupfish live in an incredibly energy-deprived environment," says van Breukelen. "Some of the pupfish were able to go without breathing oxygen for up to



**INDICATOR SPECIES** The tiny and endangered desert pupfish lives in remote springs within Death Valley National Park. UNLV researchers are studying the fish to understand how — and why — they often go hours without oxygen.

five hours with only a couple of brief interruptions of oxygen use."

Hillyard and van Breukelen describe this behavior as "paradoxical anaerobism," that is, oxygen deprivation for no apparent reason. The longest totally oxygen-free period the scientists observed was an astounding 149 minutes, says van Breukelen. The feat is all the more perplexing given that when the pupfishes' gills did get back into action, there was no sign of heavy breathing.

"What we didn't see is compensatory oxygen consumption. The fish aren't simply holding their breath; instead they are producing some ethanol, and we think that ethanol closes down a channel in the mitochondria, where they use oxygen."

Why do these two-inch fish, found only in warm springs and spring outflows near Death Valley, go for such long stretches of time without consuming oxygen?

To better understand, researchers looked at the historical climate conditions of the area. Some 10,000 years ago, they say, the desert Southwest was not a desert. There were numerous lakes in the region, and Death Valley was filled with cool (68 degrees Fahrenheit) water close to 300 feet deep. As the lakes dried out, the pupfish ended up in the area's warm springs, which can be up to 95 degrees.

"The question is whether the pupfish adapted to live in those warm springs because, after all, they spent all of their previous evolutionary history in cooler waters and there hasn't been much time to evolve," says van Breukelen.

Ventilation in fish is driven by oxygen levels. When the oxygen level is high and fish produce ethanol, it closes off the mitochondria, the structures often described as the "powerhouse of the cell." Since the cells are not consuming

## NEW OFFICE TO SUPPORT UNDERGRADUATE RESEARCH

Few undergraduate experiences are more rewarding for students, both personally and professionally, than those working side by side with faculty members engaged in groundbreaking scientific and scholarly investigations. To help more students gain such hands-on experience in real-world research — along with the mentoring relationships that result from these experiences — UNLV has established an Office of Undergraduate Research and Scholarship, designed to coordinate and stimulate undergraduate participation in research, scholarship, and creative activities at UNLV.

The office aims to accomplish a variety of goals, officials say. Among these will be centralizing data gathering and communication on undergraduate research initiatives; using undergraduate research to boost recruitment of high-caliber high-school students; forming partnerships with NSHE institutions; and developing appropriate undergraduate-related research infrastructure.

The office will also coordinate efforts to train faculty mentors; will raise and manage funds; will work to attract a diverse cross-section of students; will coordinate efforts for long-term student career preparation (including graduate student recruitment) and, finally, will organize university-wide undergraduate research symposia to showcase findings related to undergraduate researchers' findings. For more information email [our@unlv.edu](mailto:our@unlv.edu).



the oxygen coming in, there is little need to increase ventilation; hence, anaerobism occurs.

Unfortunately for the fish, going without oxygen is not without side effects. Researchers discovered damage to some of the pupfish that was similar to the effects of chronic alcoholism.

"There is a protein that is normally expressed in smooth muscle called alpha actin," says van Breukelen. "Much like what we'd find in an alcoholic's liver, we find this smooth muscle actin being expressed in the fish's liver."

This can negatively affect lifespan, he adds. The desert pupfish typically lives only six to nine months. Related species in cooler environments, on the other hand, often survive a couple of years.

Van Breukelen and Hillyard's study was published in the April 15 issue of *Journal of the Federation of American Societies for Experimental Biology*.

## **\$500,000 IN FACULTY OPPORTUNITY AWARDS PROVIDE SEED FUNDING**

RESEARCH PROJECTS FROM 20 UNLV faculty members have been selected to receive approximately \$500,000 in Faculty Opportunity Awards, university officials announced earlier this year.

The Faculty Opportunity Awards program, inaugurated in 2012, is designed to support faculty research that shows potential for continued external funding. It also aims to provide the financial support investigators need to complete significant scholarly and creative works.

This year, faculty scientists and scholars submitted 44 proposals in three categories: Individual Investigator Awards, Collaborative Interdisciplinary Research Awards, and the Innovation Technology Award. Faculty-led panels reviewed the proposals and made funding recommendations, while a selection panel that included members of the CoRE Council and the Research Council offered additional input. Thomas Piechota, vice president for research and economic development, then made final award recommendations to UNLV President

Len Jessup.

Of the proposals selected, 12 were Individual Investigator Awards, a category that included awards for such faculty members as Jaeyun Moon, an assistant professor of mechanical engineering who specializes in advanced materials for energy applications; Arya Udry, an assistant professor of geosciences who is exploring volcanic activity on distant planets; and Jennifer Grim, a celebrated flute soloist and assistant professor of music who is exploring how flutes were played in Baroque-period performances.

Seven awardees were named in the Collaborative Interdisciplinary Research – Emerging Areas Seed Grants area. Among the groups selected was one including faculty members David Hatchett, Clemens Heske, Paul Forster, Balakrishnan Naduvalath, and Laszlo Nemeth, all from UNLV's department of chemistry and biochemistry. The team is developing electrochemical processes that could advance efforts to convert CO<sub>2</sub> into liquid fuels, a quest with energy generation and carbon-reduction implications that was recently called "one of the most important contemporary energy and environmental challenges."

Jun Yong Kang, an assistant professor of organic chemistry, received the Innovation Technology Award funding. His work involves synthesizing a chemical compound, Gamma-aminophosphonate, that has shown promise as a therapeutic agent.

The Collaborative Interdisciplinary Research Awards – Center Of Excellence Challenge Grant went to Kwang Kim and Paul Oh in the Department of Mechanical Engineering for their "Center for Excellence in Consumer Robotics."

## **CENTER FOR GAMING REGULATION ESTABLISHED AT UNLV**

UNLV HAS ESTABLISHED A NEW International Center for Gaming Regulation, a state-supported partnership between UNLV's International Gaming Institute (IGI) and the university's William S. Boyd School of Law.

The center is poised to fill the gaps in understanding of global gaming regulation.

The center will be a research and teaching "point of convergence" for governments seeking to implement best practices, says UNLV's Bo Bernhard, IGI's executive director. Research fellows at the center will target inefficiencies and inconsistencies in gaming law and regulation, while advocating, when appropriate, for policy changes using center-developed education programs.

Earlier this year, Nevada Gov. Brian Sandoval signed an appropriations bill committing an annual allocation of \$500,000 to the center. Corporate sponsors from the global gaming industry have also offered support, pledging more than \$1 million in donations.

Bernhard says that the center has been given a charge to become a global leader in the area of gaming regulation. "This center will answer that call, and the state's financial commitment is a resounding endorsement of our efforts," he says.

Dan Hamilton, dean of UNLV's Boyd School of Law, adds that combining the resources and expertise of the law school, IGI, and government and industry partners will result in the development of best practices "to help those navigating the complex landscape of gaming regulation."

Mark Lipparelli, a Nevada state senator and former Nevada Gaming Control Board chairman, and Anthony Cabot, one of the world's foremost experts in gaming law and policy, will serve as special advisors to the center.

The IGI is one of a growing number of UNLV centers of research excellence, according to Thomas Piechota, vice president for research and economic development.

