Department of Anthropology assistant professor Sarah Cowie, assisted by archeology field school student Patrick Burtt (far left) and project heritage specialist Chris LeBlanc, oversees an excavation at the historic Stewart Indian School in Carson City, Nev.
Monster goldfish, stolen Shakespeare texts, cars that run on hydrogen … research findings at the University of Nevada, Reno could play muse to hundreds of plot lines.

At the heart of it all is a strong desire, shared by Nevada’s faculty, to make the world a better place.

Nevada has been at the forefront of research, scholarship and artistic endeavors for more than a century. The science of snow surveying was pioneered by Nevada classics professor James Church (the namesake of Church Fine Arts) in the early 20th century. Today, Nevada researchers excel on an international level in fields as varied as renewable energy, earthquake engineering and environmental literature.

The University has more than 60 research centers and facilities, and dozens of state-of-the-art laboratories. The institution’s research enterprise includes one of the most sophisticated large-scale structures laboratories in the country and the Nevada Terawatt Facility, which houses the most powerful laser on a college campus.

With more than $80 million in sponsored research awards in 2011, a figure roughly double that of UNLV, the University is the leading research enterprise in the Nevada System of Higher Education.

“The University holds a unique position in the state’s educational system,” says Kevin Carman, executive vice president and provost. “As a Tier 1 respected research and teaching university, we are committed to intellectual leadership and excellence in teaching and research and to engaging students in all aspects of our mission. As a Land Grant institution, the University has a specific obligation to translate basic research into practical applications that serve the needs of Nevada citizens and to communicate these discoveries to the entire world.”

“In fostering such translational research, Nevada will continue to be a catalyst for intellectual, social and technological change.”

—Kevin Carman, University executive vice president and provost

Long-term effects cost society dearly in treasure and tragedy,” he said.

Buxton says the fact that this happens in our modern world is, in a word, “unacceptable.”

“The problem of premature delivery is a devastating human problem that takes its toll both in lives and dollars,” says Buxton, a 2013 Foundation Professor and recipient of the 2008 Outstanding Researcher Award. “We hope to contribute to an understanding of the onset of labor in order to help eliminate the problem of premature delivery.”

Thomas Kozel, a professor and researcher at the University of Nevada School of Medicine for more than 40 years, is one of the leading researchers in the study of cryptococcal meningitis, a life-threatening fungal infection in AIDS patients.

At the core of Kozel’s work is the hope to bring diagnostic testing to resource-limited environments like Africa, which could translate to more people seeking and receiving the medical treatment they need.

“About 80 percent of people in sub-Saharan Africa have no access to modern medical facilities,” says Kozel, recipient of the 2012 Outstanding Researcher and 1984 Foundation Professor awards. “When they are sick, they may walk many miles for medical care, then they’re sent back to their village to wait for the test results. By the time they’re supposed to return to the medical center, the infection may be untreatable.”

Cryptococcal meningitis kills more than
500,000 people with HIV/AIDS each year in sub-Saharan Africa alone, more than the number of deaths attributed to tuberculosis. The diagnostic test developed in a collaboration between the Kozel laboratory and Immuno-Mycologics, a private sector partner, was recently cleared by the FDA and is recommended for use by the World Health Organization. The Centers for Disease Control estimates that use of the test can save 50,000 to 100,000 lives each year.

Driving the future

College of Engineering professor Dhanesh Chandra may have the clean-energy solution to gasoline-powered cars.

Chandra, a 2013 Foundation Professor known for his work on X-ray diffraction and hydrogen storage, is working on an ambitious project to pave the way for cars to run solely on hydrogen cells.

When he joined the University’s faculty in 1987, there was little in the way of modern crystallographic laboratory equipment on campus. From the ground up, Chandra built a well-respected laboratory utilizing thermodynamic and crystallographic modeling to guide his research. He has completed several projects for federal government agencies, including the U.S. Department of Energy, Los Alamos National Laboratory and the U.S. Department of Defense.

Heady stuff, but Chandra just shrugs and smiles, and proudly shows a visitor another giant piece of laboratory equipment he built piece-by-piece for a U.S. Department of Energy Metal Hydride Center of Excellence project to test the effect of impurities in hydrogen gas on the performance of hydrides.

“This is what I do,” Chandra smiles. “I love my work, I love to teach.”

For the past 29 years at Nevada, Faramarz Gordaninejad has had a major role in the advancement and expansion of the University’s Department of Mechanical Engineering. This year, the department was ranked 103 in the nation by U.S. News & World Report.

Gordaninejad, recipient of the 2012 Regents’ Researcher Award and a 2000 Foundation Professor, has become one of the world’s leading experts in the field of smart fluids and flexible solids, which can change properties in milli-
seconds in a magnetic field. Such materials are used in cars to increase safety and comfort.

“The main effort has been on fundamental understanding of smart materials’ behavior and the development of smart systems, which can control damping and stiffness properties of a variety of land vehicles, mechanical systems and structures to reduce shock and vibration, and increase safety,” he says.

All the world’s a lab

One of the world’s most renowned Shakespeare and early modern drama scholars, who has been tapped to work with actors Dame Judi Dench and Sir Ian McKellen, is here at Nevada, at the disposal of students at the College of Liberal Arts.

Eric Rasmussen, a 2013 Foundation Professor, specializes in the areas of scholarly editing, bibliography and textual criticism. Rasmussen co-edited "The Royal Shakespeare Company Complete Works of Shakespeare," now the standard text for Shakespeare studies and dramatic productions. He has garnered numerous grants and fellowships, including nearly a million dollars in awards from the National Endowment for the Humanities for his research on the New Variorum Hamlet project.

One of his projects, which culminated in the book, The Shakespeare Thefts: In Search of the First Folios, follows Rasmussen and his graduate assistants as they traveled the world in search of playwright William Shakespeare’s missing texts.

“This University has been very supportive of my work, my research and my travel,” Rasmussen says. “I really think Nevada is one of the better-kept secrets.”

The field work of Gary Haynes, a 2012 Foundation Professor and former chair of the Department of Anthropology, continues annually in southern Africa, where he has been carrying out actualistic studies of elephants for three decades. His work has encompassed three major research themes:

Christine Ngai Ryan, staff researcher at the University’s Aquatic Ecosystems Laboratory, holds large bass collected from Lake Tahoe. Warm water invasive fish species are invading the lake as a result of changes in near-shore habitat, impacting the native ecology of the lake.

Gautam named vice president for research and innovation

Mridul Gautam has been named vice president for research and innovation for the University of Nevada, Reno. He comes to Nevada from West Virginia University in Morgantown, W. Va., where he serves as associate vice president for research and vice president of the West Virginia University Research Corporation.

“Universities are about opportunity and the University of Nevada, Reno is ripe for further development of business and industry partnerships,” said Gautam, who will start with the University on Oct. 1. “We will work toward creating an enabling atmosphere on campus where we become a portal, ready to connect industry with the right office or faculty member.”

During Gautam’s tenure in research administration, WVU has achieved increases in research and sponsored project funding. A champion of faculty development, Gautam created programs and workshops to prepare candidates for membership on national committees and candidacy for National Science Foundation Faculty Early Career Development Awards and other major multi-institutional and multidisciplinary awards.

Gautam will take over the role from Marsha Read ’68, ’69M.S. who has served in the dual roles of vice president for research and dean of the Graduate School since 2008. Read, who received the University’s 2013 Distinguished Service Award, will continue as dean of the Graduate School and looks forward to supporting the transition with Gautam.

—Jane Tors ’82
the relative effects of humans and climate upon large mammal species during the late Ice Age; the initial population of North America over 13,000 years ago; and the prehistory of the largest national park in Zimbabwe. He is closely collaborating with African scientists to learn more about the changing Pleistocene-Holocene paleoenvironments of northwestern Zimbabwe and the complexities of human prehistory in that part of the continent.

“My research is all about how humans shape what we think of as wilderness in North America and Africa,” Haynes says. “I am especially interested in the discontinuous cycles of colonization, abandonment and recolonization in Africa and Asia that eventually led to the settlement of Australia and the Americas.”

Haynes has received multiple research grants from the National Science Foundation, the National Geographic Society, the Fulbright Scholar Program, the Wenner-Gren Foundation for Anthropological Research and The Leakey Foundation, among others.

He has authored several books about all aspects of his work, including two from Cambridge University Press and more than 100 journal articles about his research.

Department of Anthropology assistant professor Sarah Cowie is leading an archeological excavation this summer at the historic Stewart Indian School in Carson City, which was open 1890 to 1980. The project is partnership with the Nevada Indian Commission and the Washoe Tribal Historic Preservation Office, and students in the archeology field school earn six University credits. The excavations could yield important information about the school’s early history and provide interpretive information and historical artifacts for the future Stewart Indian School Cultural Center.

“One of the main goals with the project is to combine teaching and research with collaborative work with local Native American tribes and organizations,” says Cowie, who recently received the prestigious John L. Cotter Award from the Society for Historical Archaeology. “We also hope the project will give back to native communities in educating the public about Native American history in Nevada, as well as the contributions of native peoples today.”
Discoveries in our own backyard

Research by University faculty and the California Department of Fish and Wildlife has shown the Tahoe Keys, on the lake’s south shore, is the primary spawning area for non-native, warm-water fish, including monster-sized goldfish.

“In Lake Tahoe, since 1960, there has been a tenfold decline in native fishes, but what we also know is that these recent invaders could further depress the native population through competition and predation,” says Sudeep Chandra, a freshwater scientist in the Department of Natural Resources and Environmental Science and director of the University’s Aquatic Ecosystems Analysis Laboratory.

Another component of the project is tagging the fish as a means to monitor them.

“We are trying to determine the extent to which these fish are moving into the main part of the lake and when and where they might be moving,” says Chandra, 2010 recipient of the American Fisheries Society California-Nevada Chapter Award of Excellence.

Peter Goin, 1996 Foundation Professor and chair of the Department of Art, takes photographs at Lake Tahoe’s Emerald Bay. Goin is documenting the changing face of Lake Tahoe through the lens of a camera and compiling the results. The Lake Tahoe archive will include historical views spanning from the 19th century to Goin’s interpretations of the Tahoe landscape.

“The Lake Tahoe archive will include historical views spanning from the 19th century to Goin’s interpretations of the Tahoe landscape. The archive will embrace decades of work by many Nevada researchers who recognize that the study of this sensitive lake must continue today and into the future, Goin says.

“What more can we ask of our professors—research scholars and creative artists—than to explore the world nearby, the spectacular and significant Lake Tahoe, amidst the bioregion in which we live?”

—Peter Goin, 1996 Foundation Professor and chair of the Department of Art