

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.

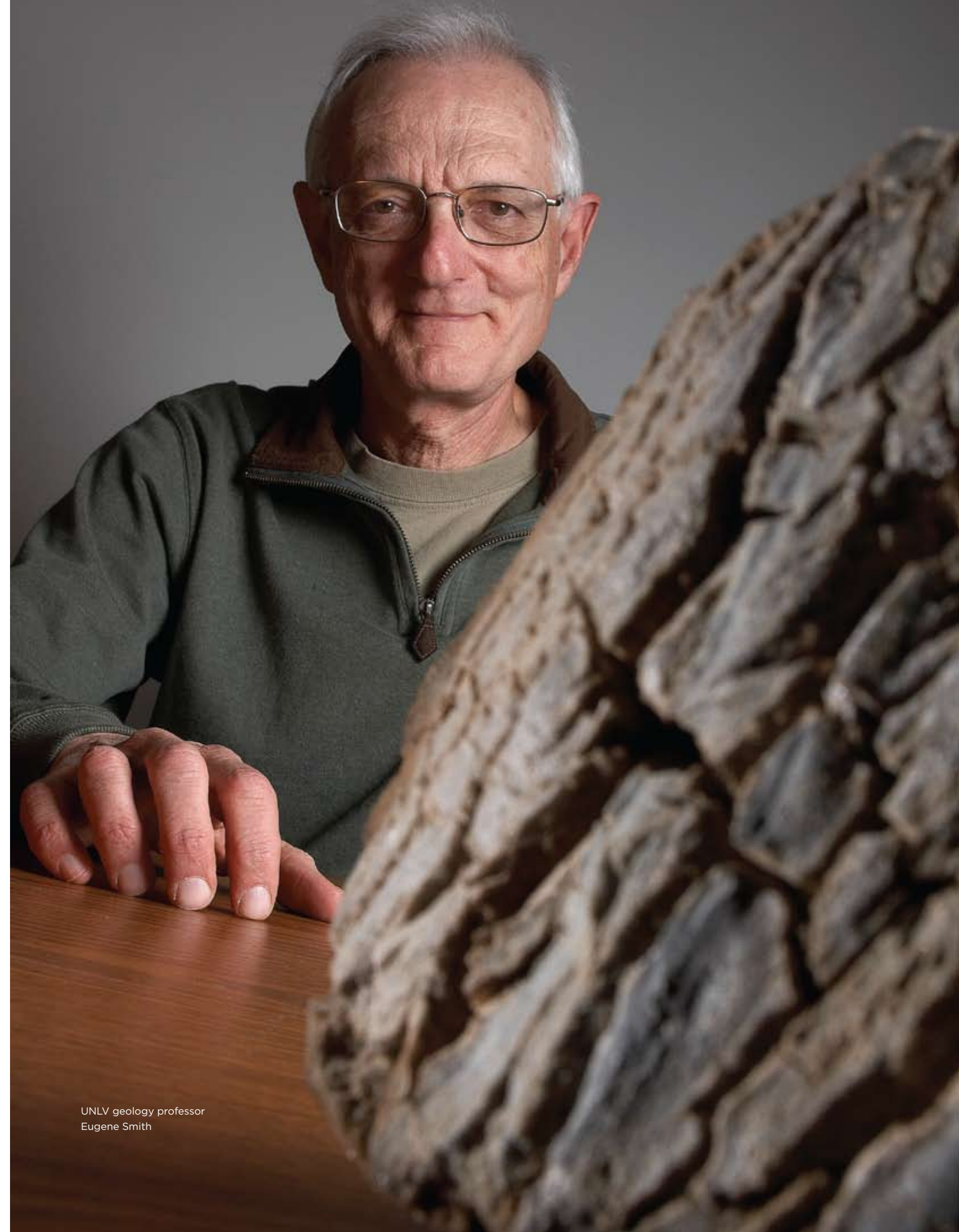
To better understand past volcanic eruptions in the area, he and his graduate students have been studying different locations with similar volcanism, or volcanic activity, in southwestern Utah, Mexico, California, central Nevada, and Yellowstone National Park. Their research suggests that the volcanic 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.