

# Archaeologists, like Sherlock Holmes, depend on even tiniest of clues

Where a person is from says a lot about them. It influences their personality, behavior, and even how they speak.

For scientists, knowing where a person called home is a critical piece of information. So, how then, can that answer be uncovered when that person died thousands of years ago and left no record?

Sometimes it's the tiniest fragments — a broken tooth or sherd of pottery — that help archaeologists piece together an ancient story. In a Purdue lab, bioarchaeologist Michele Buzon is looking at the most minuscule traces of evidence — by studying chemical signatures on human remains — to answer 3,000-year-old questions about the origin and relations between the Egyptians and Nubians in the Nile Valley of Northern Sudan.

"As soon as you say the Nile Valley, people often think of King Tut and pharaohs," says Buzon, assistant professor of anthropology. "People have this idea from movies and TV that archaeologists are just



PHOTOS PROVIDED BY MICHELE BUZON

ABOVE: Michele Buzon (in trench) makes notes as her team works at an ancient burial site in current-day Sudan. RIGHT: Buzon turns to modern technology to aid with records and analysis.



treasure hunting. But archaeology is not about getting rich or the search for a precious artifact. It's learning about the human condition in the past to understand who we are today."

Buzon and her team have spent about 24 weeks during 2000, 2002 and 2005 excavating the site of Tombos in the Nile Valley region. Thanks to a National Geographic Society grant, she will return in 2010 to study a different time period.

Tombos is located north of the capital, Khartoum, where the research team begins each excavation season. After a 16-hour drive through the desert, Buzon and her colleagues reach the village of Tombos, where they rent a house from the family that watches the site when the archaeologists are not there. The team, which includes professors, graduate students, local workers and a representative from Sudan's antiquities department, works six days a week. While working in this Muslim country, the archaeologists respect local customs by keeping Friday as a day of rest and making sure the women dress modestly.

The site of Tombos was a colonial outpost for the Egyptians, who were ruling Nubians at the time of the Egyptian New Kingdom period, 1400-1070 B.C. During this era, the Egyptians were colonizing, and Buzon is interested in knowing how Egyptians administered Nubia. There are no books that document the government structure, and even burial sites may be misleading.

"The cemetery looks very Egyptian during this time period because Nubians are burying themselves like Egyptians," Buzon says. "They even adopted their religious practices, so it's hard to tell who they are just by looking at the burials."

The burials consist of an elite Egyptian-style pyramid with a funerary chapel and a middle-class cemetery.

After the 2005 excavation, Buzon returned with the human remains to conduct a chemical analysis. A College of Liberal Arts grant made it possible for Buzon to partner with Gabriel Bowen, assistant professor in the Department of Earth and Atmospheric Sciences, who is collaborating on the oxygen isotope analysis of human tooth enamel.

The ratio of isotopes will reveal whether water consumed by an individual is from local sources, which identifies where a person was living when the tooth enamel was forming. Differences in isotopes can indicate people are from different places.

"Unfortunately, Sudan does not have the facilities to house these specimens," Buzon says. "With permission from the Sudanese government, I've been able to organize these specimens in a collection that will be kept safe for additional study and will help us understand more about these cultures."

## Anthropology's new era at Purdue

Anthropology has a 55-year history at Purdue, and this fall marked the anthropology program's newest chapter when it became its own department in the College of Liberal Arts.

Archaeology is joined by three other anthropology areas: biological, cultural and linguistics.

"Operating as our own department allows us to offer more classes and a stronger curriculum in anthropology," says the inaugural department head, Ellen Gruenbaum, professor of anthropology. "People often think of archaeology and the study of ancient cultures when they hear about anthropol-

ogy, but the area is broader with studies in conservation, medicine and religion. Many of our students major in anthropology to prepare for attending medical school or careers in education or law."

Research takes some of the department's 15 professors and its 22 graduate students to a variety of places around the world such as Indonesia, Central Mexico, Alaska, the Middle East, Armenia, and Peru.

Purdue's anthropologists also study economic anthropology, medical anthropology, anthropology of religion and ecology of western gorillas in Africa.

## Purdue researchers selected for Howard Hughes Medical Institute teams

Three Purdue researchers are on teams that will study treatments for glaucoma and neurodegenerative disorders, such as Parkinson's disease, with support from the Howard Hughes Medical Institute.

Each of the eight teams receiving a Collaborative Innovation Award, a new HHMI program, is headed by a HHMI investigator.

Pedro Irazoqui, assistant pro-

fessor of biomedical engineering, and William Chappell, associate professor of electrical and computer engineering, will work on glaucoma research with HHMI investigator Simon John of the Jackson Laboratory.

They will work to develop an ultra-miniature, pressure-sensing device that can be implanted into the eyes of mice. Such a device

would permit scientists to monitor intraocular pressure around the clock to learn more about how glaucoma progresses.

Jean-Christophe Rochet, associate professor of medicinal chemistry and molecular pharmacology, is on a five-person team headed by Susan Lindquist of the Whitehead Institute for Biomedical Research. They will work toward finding

new, personalized treatments for neurodegenerative disorders such as Parkinson's disease.

Rochet's research probes how the buildup of misfolded proteins damages nerve cells.

HHMI plans to provide \$10 million a year for four years to the teams. Each team will receive between \$700,000 and \$1.4 million a year. More is at [www.hhmi.org](http://www.hhmi.org).