

Lecturer studies unlikely find inside T. rex bone

by Kat Pecora - Friday, October 29, 2010

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The last thing Joseph Peterson expected to find inside a 70-million-year-old dinosaur bone was soft tissue.

Peterson, who recently finished his Ph.D. with emphasis in vertebrate paleontology at Northern Illinois University and currently is a visiting lecturer at the University of Wisconsin Oshkosh, became interested in what preserves prehistoric bones while attending graduate school.

It has long been thought that when an organism dies, all that is left are the mineralized parts. However, a 2005 publication focused on the presence of soft tissue found inside of a *Tyrannosaurus rex* bone. One theory was that a microbial slime that had gotten into the bones and produced the tissue-like structure.

The authors of that publication, however, compared the protein in the dinosaur tissue to modern animals and found that they matched the proteins of chickens and crocodiles. The results suggested the tissue was likely real and not a bacterial slime, after all.

“It changes everything we thought about fossilization,” Peterson said. “My question started developing as ‘how is this happening?’”

Peterson said he didn’t believe in the bacterial slime hypothesis and decided to perform some experiments on how the bacteria form and the impact it has on the bones.

“Bacteria are responsible for the decomposition of remains, but in cases like we’re seeing with these bones, they can also result in the preservation of small amounts of exquisitely preserved tissue,” Peterson said.

Peterson’s findings — recently published in *PLOS One*, an international, peer-reviewed online journal — contribute to a changing view of fossilization in paleontology. “Influence of Microbial Biofilms on the Preservation of Primary Soft Tissue in Fossil and Extant Archosaurs” further explores the preservation of soft tissue inside dinosaur bones.

A small irony

While dinosaurs often are viewed as huge creatures that were killed by large occurrences, such as comets or other dinosaurs, that was not always the case.

“There’s this dramatic image we have with the whole dinosaur monster image, and to think that bacteria, the tiniest living things on the planet, are actually responsible for not only their demise, but also their preservation,” Peterson said. “It’s ironic.”

Since 2005, Peterson has been through many museum collections to process the bones for soft tissue. He said that small parts of the bones are destroyed during the process, but the benefits are worthwhile.

“We’re getting original, biological materials from an animal that has been dead for more than 65 million years,” Peterson said. “So it’s really kind of staggering what we can find.”

Peterson’s findings lend new insight into understanding the relationships between extinct and living animals and how fossils are preserved. The article can be read at

www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0013334.

Hollywood inspirations

Peterson’s passion for paleontology began at a young age with an interest in dinosaurs. His interest increased with the release of the “Jurassic Park” movies.

“They’re real-life monsters,” Peterson said. “And then when the movie came out, I went and saw it four times in the theater. I was a little dinosaur nerd.”

Peterson read about how the movie was filmed and found that the film used real paleontologists. He said he found the real-life science more interesting than the movie itself.

“I started reading everything I could about dinosaurs and boring family members by reciting everything I had read,” Peterson said.

Peterson contacted paleontologists whose books he had read and set up phone interviews. He was invited to travel to Wyoming by paleontologist Robert T. Bakker, who was one of the technical advisers in the “Jurassic Park” movies.

Peterson worked with Bakker for a number of years throughout high school and later became affiliated with the Burpee Museum, a natural history museum in Rockford, Ill.

In 2001, Peterson traveled with others from the museum to southeastern Montana.

“We were just trying to find any dinosaur bones that we could bring back to the museum so kids could actually hold a dinosaur bone,” Peterson said. “And we ended up finding the world’s most complete juvenile T. rex, which was a shock.”

Student/faculty research

New to UWO this semester, Peterson teaches courses in the evolution of Earth and paleontology as well as environmental geology labs. He said that he enjoys teaching and is also establishing research projects with students.

“I think it’s very important for students to get involved in research and get involved beyond just going to class,” Peterson said.

Peterson, a visiting lecturer, was brought to UW Oshkosh for a one-year position, though he hopes to stay with the University.