

# MIZZOU

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## Around the Columns

### Boning up

Footprints are handy clues to tracking a creature's whereabouts, but foot bones can lead across continents, species and epochs.

Carol Ward, professor of pathology and anatomical science in the School of Medicine, is a primary researcher on a team of scientists studying a 3-million-year-old bone unearthed in Ethiopia's Hadar region in 2000. The team's findings indicate that human ancestors walked exclusively on the ground much earlier than previously thought.



Carol Ward leads a team that is studying this ancient human foot bone from Ethiopia. It has provided clues about early human locomotion. Photo courtesy of Carol Ward and Elizabeth Harmon

The fossil — a fourth metatarsal bone from the left foot of a female hominid, *Australopithecus afarensis* — sat mostly untouched in the National Museum of Ethiopia until 2008. It is from the same species and region as the famous “Lucy” discovery in 1974, the most complete fossil skeleton of its time period.

The structure of the bone indicates an arched foot, meaning this hominid walked and was not an intermediate compromise between tree-climbing apes and ground-walking humans.

“There have been questions about whether Lucy was a fully committed terrestrial animal like us,” Ward says, describing a hypothetical prehistoric mother carrying a baby on foot instead of swinging from the trees. “We hadn’t found a lot of bones from the foot, so we didn’t know if she had a flexible foot [capable of grasping like an ape’s]. It tells us a lot about natural selection acting on these animals for their survival and reproductive success.”

Ward’s research team — which includes William Kimbel and Donald Johanson of Arizona State University — published the study in the February 2011 issue of *Science*. Thanks to volcanic activity in east Africa, which helps to preserve and accurately date human remains throughout the millennia, the group has more than 370 fossils to study from the Hadar region.

“It would be nice if we had the rest of the foot,” says Ward, who hopes to join the paleontological search in Kenya soon. “We’re getting a better idea of when this evolutionary window of bipedality appeared, but we need more fossils.”

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