

**A CHANCE
COLLABORATION
SHEDS LIGHT ON HOW
A HUMAN ANCESTOR
GOT AROUND**
BY RICH BARLOW

Walking Like a Cavewoman

They say that to understand another person, you must walk in her shoes. Jeremy DeSilva took that advice to the extreme, attempting to understand a prehistoric ancestor by walking in her feet.

It hurt: putting his foot down on its outer edge, then rolling it inward, step by excruciating step. “It is painful,” says DeSilva,



The skull of *Australopithecus sediba* has humanlike teeth and an ape-sized brain.

The backbones, along with the bones of the hip, knee, and foot, indicate that *A. sediba* walked on two legs.

The opposable thumb on the hand of *A. sediba* indicates that this species had a human-like grip.

The shoulder, along with the arm and aspects of the foot, indicates that *A. sediba* still climbed trees.

who ambulated (or, more scientifically, hyperpronated) around campus, and occasionally still does. He believes that's how *Australopithecus sediba* got around two million years ago, with an anatomy, unlike ours, suited to such a peculiar gait. The South African proto-person, a mixed bag of human and ape traits, could walk upright and also clamber up trees.

DeSilva, a College of Arts & Sci-

WEB EXTRA
Anthropologist
Jeremy DeSilva and
physical therapist
Kenneth Holt explain
how they unraveled
the mystery of how
a human ancestor
walked at [bu.edu/
bostonia](http://bu.edu/bostonia).

ences assistant
professor of
anthropology,
was lead writer on
one of six papers
published in
April 2013 in the
journal *Science*,
describing in
loving detail

how this hybrid hominid—a woman, four- to four-and-a-half-feet tall, whose skeletal remains were excavated in South Africa by a team led by paleoanthropologist Lee Berger of the University of the Witwatersrand—got around.

A coauthor, physical therapy specialist Kenneth Holt, a Sargent College associate professor, helped DeSilva deduce *A. sediba's* walk in a serendipitous collaboration that DeSilva says “doesn't happen enough” in science.

In 2011, Holt went to a talk that his one-time student DeSilva gave at BU about *A. sediba*, whose remains were discovered

in 2008, part of a momentous cache that included a pair of complete skeletons and partial remains of

at least three others. DeSilva, who was part of the select team that studied the fossils, confessed in his talk that he was stumped by the female creature's anatomy: it appeared she had the ability to walk and climb, but when he studied her oddly shaped foot and knee, he couldn't figure out exactly how she walked.

Two million years ago, a four-foot-six-inch woman could walk or climb trees with equal ease.

expertise in biomechanics. “He was able to predict anatomies,” such as *A. sediba's* knee shape, DeSilva says, “which he hadn't even seen yet.”

Working together, the two refined a theory of how the creature walked. In a field that frequently must generalize our ancestors' behavior, DeSilva says, the level of precision in figuring out the

“It was nothing like any early human I'd ever seen,” he says.

By the end of his talk, “I sort of threw my hands in the air and said, ‘If anyone has any ideas, that'd be great,’” he recalls. Holt approached him after the talk and asked if the specimen had a particular kind of pelvic bone. “I said yes. I hadn't even mentioned it in the talk. I said, ‘How did you know that?’” Holt started explaining his view of how the creature had walked, based on his



ANTHROPOLOGIST JEREMY DESILVA is part of a team invited to investigate the bones of *Australopithecus sediba*, found in a cave in South Africa in 2008.

gait of one of those ancestors marks a breakthrough.

“My guess is, 20, 30, even 100 years from now, this will remain one of the most important fossil sites ever discovered,” because of the number of individuals and their well-preserved remains, he says. He compares it to Lucy, the name given to the remains of an even older creature, *A. afarensis*, found in 1974 in Ethiopia.

“Lucy's our icon,” says DeSilva, but her remains are not as well preserved as *A. sediba's*.

As usual, many questions remain, such as whether *A. sediba* is a direct ancestor of modern humans. Answering them will require more excavation and clues from more fossils yet to be found at the site, says DeSilva, who plans to continue with the research. He hopes Holt will be part of the effort.

“I don't know if we could have done this without him,” he says. “I know we wouldn't have been able to formulate this hypothesis...as quickly as we did without him. He figured this out in an instant.”