

## New hominid species discovered in South Africa

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*Benedicte Kurzen for The New York Times - Lee R. Berger, an American paleoanthropologist, with son Matthew and dog Tau, at the Malapa site where they discovered the new hominid species.*

Nine-year-old Matthew Berger dashed after his dog, Tau, into the high grass here one sunny morning, tripped over a log and stumbled onto a major archaeological discovery. Scientists announced Thursday that he had found the bones of a new hominid species that lived almost two million years ago during the fateful, still mysterious period spanning the emergence of the human family.

"Dad, I found a fossil!" Matthew said he cried out to his father, Lee R. Berger, an American paleoanthropologist, who had been searching for hominid bones just a hill and a half away for almost two decades. Fossil hunters have profitably scoured these rolling grasslands north of Johannesburg since the 1930s.

Matthew held the ancient remains of a 4-foot-2 boy who had been just a few years older than Matthew himself. Dr. Berger, with the Institute for Human Evolution at the University of the Witwatersrand in Johannesburg, and his fellow researchers have since found much more of the boy's skeleton, including his extraordinarily well-preserved skull, and three other individuals. South Africa's children will compete to name the boy.



*Benedicte Kurzen for The New York Times - The cranium of Australopithecus sediba from the Malapa site in South Africa.*

In a report being published Friday in the journal *Science*, Dr. Berger, 44, and a team of scientists said the fossils from the boy and a woman were a surprising and distinctive mixture

of primitive and advanced anatomy and thus qualified as a new species of hominid, the ancestors and other close relatives of humans. It has been named *Australopithecus sediba*.

The species *sediba*, which means fountain or wellspring in Sotho, strode upright on long legs, with human-shaped hips and pelvis, but still climbed through trees on apelike arms. It had the small teeth and more modern face of *Homo*, the genus that includes modern humans, but the relatively primitive feet and "tiny brain" of *Australopithecus*, Dr. Berger said.

Geologists estimated that the individuals lived 1.78 million to 1.95 million years ago, probably closer to the older date, when australopithecines and early species of *Homo* were contemporaries.

Dr. Berger's team said that the new species probably descended from *Australopithecus africanus*. At a teleconference on Wednesday, he described the species as a possible ancestor of *Homo erectus*, an immediate predecessor to *Homo sapiens*, or a close "side branch" that did not lead to modern humans.

Scientists not involved in the research are debating whether the bones belong to the *Homo* or *Australopithecus* genus, but most agree that the discovery of the skeletons at the Malapa site here in the Cradle of Humankind, a World Heritage site where dolomitic limestone caves contain fossils of ancient animals and hominids, is a major advance in the early fossil history of hominids.

"They are a fascinating mosaic of features," said Rick Potts, director of the Human Origins Program at the Smithsonian. "It reminds us of the combining and recombining of characteristics, the tinkering and experimentation, that go on in evolution."

Dr. Berger said the path to the discovery began over the Christmas holidays in 2007 when he began using Google Earth to map caves in the Cradle of Humankind. On a recent visit to his office, he rotated Google Earth images of the dun landscape on his desktop, showing how he spotted the shadows and distortions of the earth that gave clues to the location of caves, often topped with wild olive and white stinkwood trees.

On Aug. 15, 2008, when Matthew called his father to look at the bones he had found, Dr. Berger began cursing wildly as he neared his son. The boy mistook his father's profanity for anger. But from 15 feet, Dr. Berger, who had done his Ph.D. thesis on hominid shoulder bones, among them the clavicle, was astounded to see that his son had in his hands a clavicle with the unmistakable shape of a hominid.

"I couldn't believe it," Dr. Berger giddily recalled. "I took the rock, and I turned it" and "sticking out of the back of the rock was a mandible with a tooth, a canine, sticking out. And I almost died," he said, adding, "What are the odds?"

In March 2009 he found the remarkably intact cranium of the *sediba* boy whose clavicle Matthew had picked up. Donald C. Johanson, who found the famed 3.2-million-year-old Lucy skeleton in Ethiopia in 1973, described the skull as "a fabulous specimen."

In his lab last week, Dr. Berger took a fire-resistant case from a safe and reverently lifted the skull from its foam bed, revealing its startlingly delicate face.

"Beautiful, isn't it?" he said.

The scientists also found a profusion of animal fossils at the site — saber-toothed cats, mongooses, wild dogs, antelopes and hyenas, among others. Dr. Berger and Paul Dirks, a geologist at James Cook University in Queensland, Australia, hypothesized that the animals

might have been lured to the edge of a 100- to 150-foot funnel-shaped shaft into a deep cave, perhaps by the scent of water during a drought, then plunged to their deaths.

There is evidence that maggots and carrion beetles, but not carnivores, fed upon the rotting carcasses, leading the scientists to conclude that the carnivores, too, must have died from the fall. The first downpours of the rainy season may have swept the bodies into a pool of water rich with lime and sand — the ingredients of cement — that essentially froze them in place. Dr. Berger called the sediba fossils “a time machine” into evolutionary processes.

Researchers now think the split between apes and the hominid lineage occurred around seven million years ago in Africa. The sparse fossil record shows early hominid species already walking upright, but still relatively apelike. Small australopithecines, with bodies and brains not much bigger than those of modern chimpanzees, were widespread from 3.8 million to three million years ago, most famously *Australopithecus afarensis* like Lucy.

Just when changes leading to *Homo* were happening remains unclear in the fossil record. Hominids started shaping stone tools about 2.6 million years ago. Hominids identified as *Homo* appeared more than two million years ago, their direct ancestry anything but clear. The species *Australopithecus sediba* thus shared a time with *Homo habilis* and *Homo erectus*.

Ian Tattersall, a paleoanthropologist at the American Museum of Natural History in New York, supported the discovery team’s interpretation of the fossils as a previously unclassified species of advanced *Australopithecus* “with suggestions of *Homo*.”

But it is often a toss-up whether a fossil discovery will bring order or confusion to the family tree. William H. Kimbel, director of the Institute of Human Origins at Arizona State University, said the fossil remains were instead a species of early *Homo* with some cranial and skeletal material “seen otherwise only in *Homo*.”

As the taxonomic debate continues, so, too, does fossil hunting at the Malapa site. So far, the scientists exploring it have not even started digging, but have cleared it of rubble left by men mining for lime, probably about a century ago, and other debris. They keep finding more hominid bones that click together like pieces of jigsaw puzzles. Since submitting the paper to *Science* in November, they have found at least two more individuals, one an infant.

“Every time we sift anything or pick up a rock, it has something in it,” Dr. Berger said.

One recent afternoon, he and Matthew, now 11, clambered down into the small rocky pit that remains of the original deep-set cave, eroded over eons. Tau paced excitedly along the edge. Dr. Berger put his hands against the rock where he had found a woman’s skeleton, and the child’s skull just above her — the pair described in *Science*.

“There’s probably someone else in here,” he said.

He then went to a dirt road that miners had filled in with earth blasted from the cave. It was one of those chunks that Matthew probably found with the clavicle bone in it. Dr. Berger pointed to a hominid skeleton plainly visible in the road bed, now cleared of debris and fill. Two teeth lay right on the surface.

Dr. Berger, considering what may lie buried between the road and the cave, said: “If there’s this density, what could be there? Oh, my!”

**Fonte: New York Times, New York, Apr. 8<sup>th</sup> 2010, Science, online.**