Homo Naledi, a Human Ancestor, Is Found in a South African Cave

By JOHN NOBLE WILFORD  SEPT. 10, 2015

Acting on a tip from spelunkers two years ago, scientists in South Africa discovered what the cavers had only dimly glimpsed through a crack in a limestone wall deep in the Rising Star cave: lots and lots of old bones.

The remains covered the earthen floor beyond the narrow opening. This was, the scientists concluded, a large, dark chamber for the dead of a previously unidentified species of the early human lineage — Homo naledi.

The new hominin species was announced on Thursday by an international team of more than 60 scientists led by Lee R. Berger, an American paleoanthropologist who is a professor of human evolution studies at the University of the Witwatersrand in Johannesburg. The species name, H. naledi, refers to the cave where the bones lay undisturbed for so long; “naledi” means “star” in the local Sesotho language.

In two papers published this week in the open-access journal eLife, the researchers said that the more than 1,550 fossil elements documenting the discovery constituted the largest sample for any hominin species in a single African site, and one of the largest anywhere in the world. Further, the scientists said, that sample is probably a small fraction of the fossils yet to be recovered from the chamber. So far the team has recovered parts of at least 15 individuals.
“With almost every bone in the body represented multiple times, Homo naledi is already practically the best-known fossil member of our lineage,” Dr. Berger said.

Besides introducing a new member of the prehuman family, the discovery suggests that some early hominins intentionally deposited bodies of their dead in a remote and largely inaccessible cave chamber, a behavior previously considered limited to modern humans. Some of the scientists referred to the practice as a ritualized treatment of their dead, but by “ritual” they said they meant a deliberate and repeated practice, not necessarily a kind of religious rite.

“It’s very, very fascinating,” said Ian Tattersall, an authority on human evolution at the American Museum of Natural History in New York, who was not involved in the research. “No question there’s at least one new species here,” he added, “but there may be debate over the Homo designation, though the species is quite different from anything else we have seen.”

A colleague of Dr. Tattersall’s at the museum, Eric Delson, who also is a professor at Lehman College of the City University of New York, was also impressed, saying, “Berger does it again!”

Dr. Delson was referring to Dr. Berger’s previous headline discovery, published in 2010, also involving cave deposits at the Cradle of Humankind site, 30 miles northwest of Johannesburg. He found many fewer fossils that time, but enough to conclude he was looking at a new species, which he named Australopithecus sediba. Geologists said the individuals lived 1.78 million to 1.95 million years ago, when australopithecines and early species of Homo were contemporaries.

Researchers analyzing the H. naledi fossils have not yet nailed down their age, which is difficult to measure because of the muddled chamber sediments and the absence of other fauna remains nearby. Some of its primitive anatomy, like a brain no larger than an average orange, Dr. Berger said, indicated that
the species evolved near or at the root of the Homo genus, meaning it must be in excess of 2.5 million to 2.8 million years old. Geologists think the cave is no older than three million years.

The field work and two years of analysis for Dr. Berger’s latest discovery were supported by the University of the Witwatersrand, the National Geographic Society and the South African Department of Science and Technology/National Research Foundation. In addition to the journal articles, the findings will be featured in the October issue of National Geographic Magazine and in a two-hour NOVA/National Geographic documentary to air Wednesday on PBS.

Scientists on the discovery team and those not involved in the research noted the mosaic of contrasting anatomical features, including more modern-looking jaws and teeth and feet, that warrant the hominin’s placement as a species in the genus Homo, not Australopithecus, the genus that includes the famous Lucy species that lived 3.2 million years ago. The hands of the newly discovered specimens reminded some scientists of the earliest previously identified specimens of Homo habilis, who were apparently among the first toolmakers.

At a news conference on Wednesday, John Hawks of the University of Wisconsin, Madison, a senior author of the paper describing the new species, said it was “unlike any other species seen before,” noting that a small skull with a brain one-third the size of modern human braincases was perched atop a very slender body. An average H. naledi was about five feet tall and weighed almost 100 pounds, he said.

Tracy Kivell of the University of Kent, in England, an associate of Dr. Berger’s team, was struck by H. naledi’s “extremely curved fingers, more curved than almost any other species of early hominin, which clearly demonstrates climbing capabilities.”

William Harcourt-Smith of Lehman College of the City University of New
York, a researcher at the American Museum of Natural History, led the analysis of the feet of the new species, which he said are “virtually indistinguishable from those of modern humans.” These feet, combined with its long legs, suggest that H. naledi was well suited for upright long-distance walking, Dr. Harcourt-Smith said.

In an accompanying commentary in the journal, Chris Stringer, a paleoanthropologist at the Natural History Museum in London, found overall similarities between the new species and fossils from Dmanisi, in the former Soviet republic of Georgia, dated to about 1.8 million years ago. The Georgian specimens are usually assigned to an early variety of Homo erectus.

**Correction: September 10, 2015**

An earlier picture with this article was published in error, and the accompanying caption misidentified the fossil reconstructions it showed. The model skull in the photograph was of Australopithecus africanus; the model hand was of Australopithecus sediba. The models did not represent the newly discovered Homo naledi species.