

# This skull may provide a new link between Neanderthals and modern humans

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Clara Amit / Israel Antiquities Authority

It's history frozen in time: an expansive cave in Northern Israel where early humans lived for thousands of years, locked away and preserved after its entrance collapsed some 30,000 years ago. It's in this time capsule of human evolution that researchers say they've found a partial skull that serves as a "connecting link" between ancient and modern humans — "the first direct fossil

evidence that modern humans inhabited the Levantine corridor" about 55,000 years ago.

The origin story of *Homo sapiens* is told piecewise through archaeological finds and scientific analysis, all of which amounts to us using that data to try and connect the dots. At a point in that timeline, between 40,000 and 60,000 years ago, anatomically modern humans (AMH) from Africa expanded across Europe and Asia. Until now, however, fossil evidence has been scarce.

"It's an important puzzle in the big story of human evolution," says Israel Hershkovitz, the Professor in the Department of Anatomy and Anthropology, Sackler Faculty of Medicine at Tel Aviv University, who's

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leading up the excavation team that discovered this skull fragment dubbed "Manot 1." The findings, [published this week by \*Nature\*](#), provides insight into that migration. Detailed analysis of the skull fragment's physical characteristics (e.g. shape and form) link it to both African and European fossils. For example, it shares a number of similarities to the Mladeč 1 skull, which was found in a cave within Czech Republic's borders and is believed to be around 35,000 years old. Manot 1's age has been estimated at 55,000 years using uranium-thorium dating.

Excavation of the Manot cave first began in 2010, after it was found by accident — or more accurately, by a bulldozer that was making a trench for a nearby village's sewer line and wound up opening the cave's proverbial chimney. "I was there when the cave was found... We went down 25 meters [82 feet], and we realized this was a prehistoric cave — a beautiful, beautiful cave," says Hershkovitz. "The fascinating thing about Manot site is that once it was left by prehistoric man, nobody ever entered the cave. It's as if somebody left his

house and never came back, and after 30- or 40-thousand years, someone else is opening the door and seeing everything as it were more than 30-thousand years ago."



*Photo Credit: Israel Hershkovitz, Ofer Marder & Omry Barzilai*

This accidental find may upend what's known as the assimilation model, or partial replacement model. According to this model, modern humans originated from Africa but then evolved through interbreeding with European Neanderthals. It's estimated that human DNA today has between 2 and 4 percent Neanderthal genes, so it's not a question of *if* interbreeding occurred, but *when* and *where*.

The Manot skull shares some physical characteristics with Neanderthals and could suggest this interbreeding happened in the Levantine corridor instead of Europe. Without genetic testing, however, the morphological comparisons are just speculative. Hershkovitz does note, however, that we can now place the Manot cave occupants within 40 kilometers of areas where Neanderthals were known to exist around the same time. "We are suggesting we don't need the assimilation model to explain the morphology of the Upper Paleolithic populations in Europe because they look very much like Manot skull."

## ***"WE HOPE TO FIND MORE HUMAN REMAINS."***

Hershkovitz and his team plan to keep working at the site at least until 2020 ("it all depends on budget," he notes), and there's a strong chance we'll learn even more about the origin of our species. "Manot cave is one of the largest prehistoric caves ever found in the world — not just in Israel," he said. "It's not a rock shelter; it's a real cave with a huge central chamber and many side chambers, occupied for thousands of years. We just start excavating it, and we've just scratched the upper archaeological layer."

"The potential is great," he said. "We hope to find more human remains."

- SOURCE: [Nature](#)