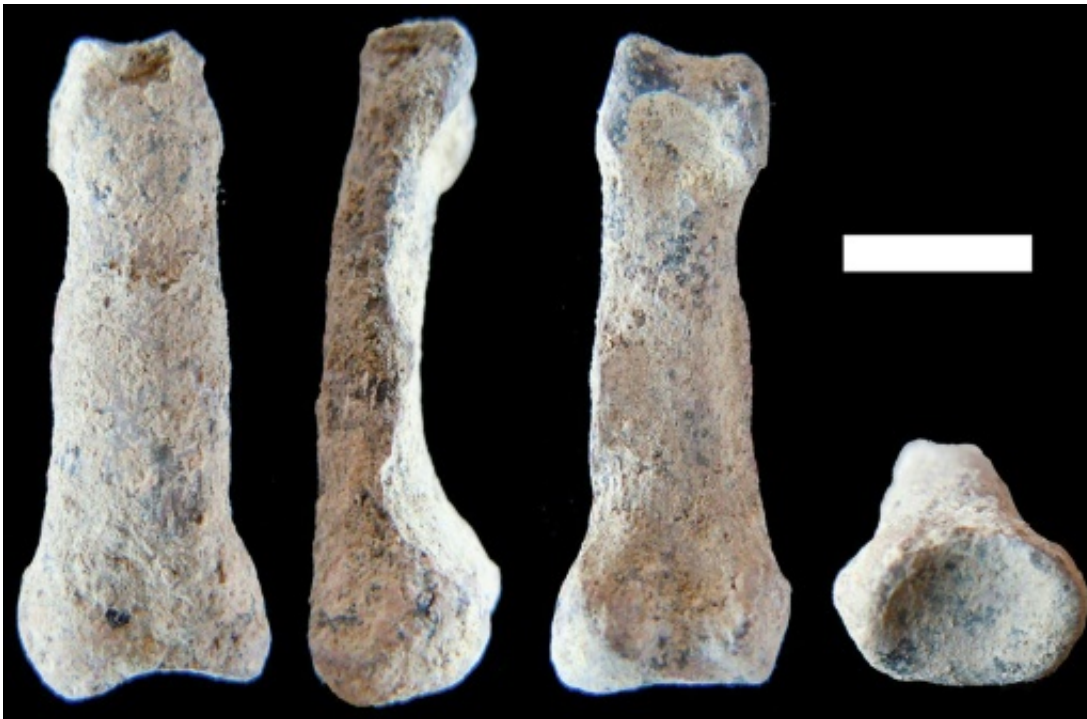


# Earliest 'modern' hand nearly two million years old

August 18 2015, by Marlowe Hood

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A picture released on August 18, 2015 by Nature Communications shows a OH 86 hominin manual proximal phalanx in (from L-R) dorsal, lateral, palmar (distal is top for each) and proximal views

A tiny, 1.85 million-year-old bone from the little finger of a human ancestor unearthed in East Africa has revealed the oldest "modern" hand ever found, scientists reported Tuesday.

The discovery of the pinkie bone pushes back in time a key step in the evolution of our forebear from tree-climbing foragers to tool-wielding hunters, the authors say.

It also hints at the existence of a larger, more human-like creature than others known to have lived at that time in the same region—one of the hotspots of human origin—in modern-day Tanzania.

The [hand](#) is one of the critical anatomical features distinguishing humans, and even a 3.6-centimetre (1.5-inch), two-million-year-old fragment can reveal a lot about body type and behaviour.

The shape of our forebears' hands was both a reflection of their stage of evolution, and a driver of that evolution, explained lead author Manuel Dominguez-Rodrigo, a researcher at the Institute of Evolution in Africa in Madrid.

"Our hand evolved to allow us a variety of grips and enough gripping power to allow us the widest range of manipulation observed in any primate," he said by email.

"It is this manipulation capability that interacted with our brains to develop our intelligence, mainly through the invention and use of tools."

What scientists call "modern human-like" hand anatomy has several defining characteristics.

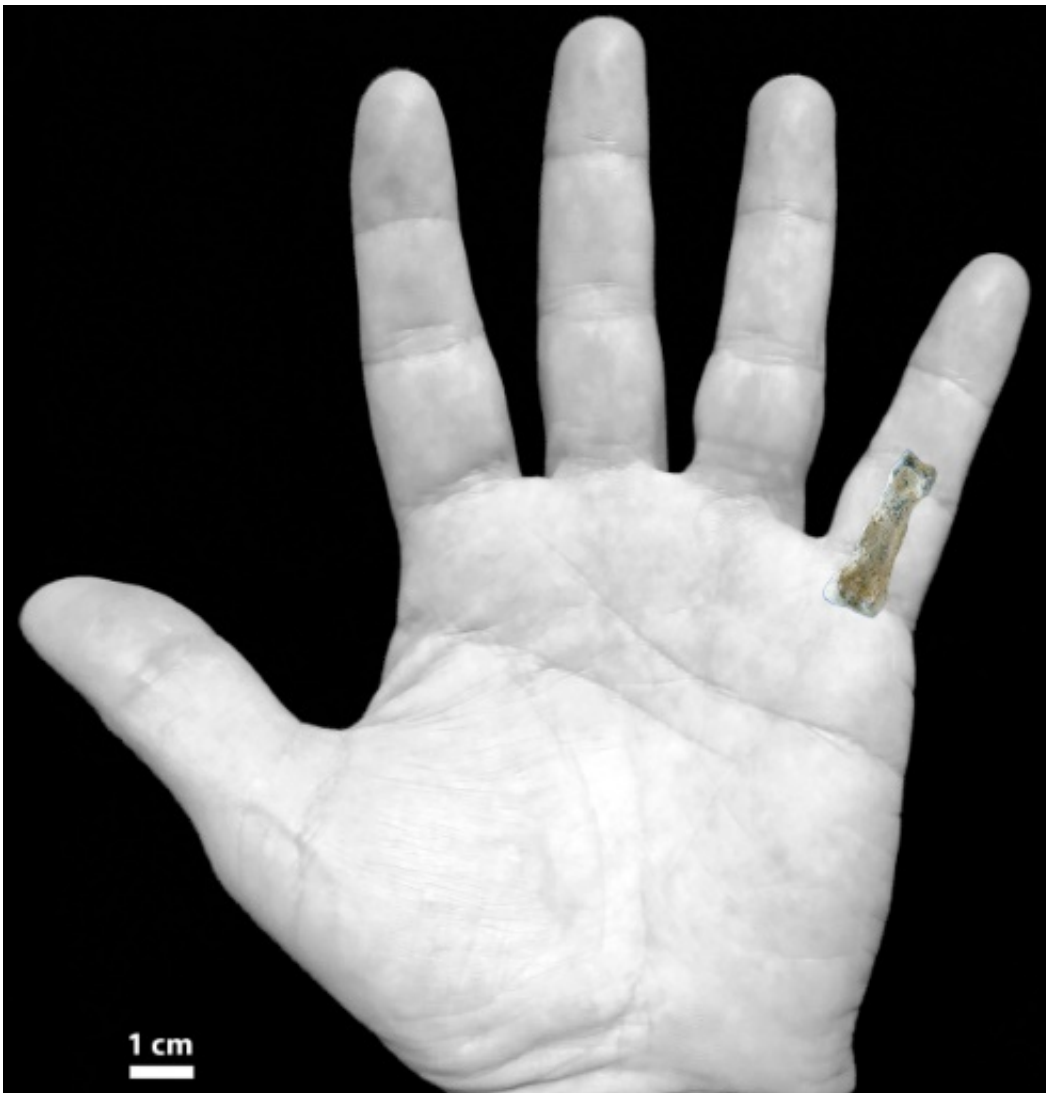
One is a longer thumb, allowing us to grip more precisely and to open our hands more fully.

Another is the straightening of our phalanges, the general name given to the three bones found in each finger. Curved phalanges were adapted for climbing trees and swinging from branches.

"A modern-like hand in the past would tell us when humans became fully terrestrial and when and how efficiently our ancestors used tools," Dominguez-Rodrigo said.

That transition happened in two main stages.

After the earliest hominins—which includes all members of the Homo genus—began walking on two legs some six million years ago, the hand evolved a longer thumb.



A picture released on August 18, 2015 by Nature Communications shows an OH 86 hominin phalanx overlaid on a modern human hand

But the fingers remained curved, suggesting that trees remained part of their habitat.

This "double locomotion"—on the ground, through the trees—remained the norm for another four million years.

## 'Discovery fills the gap'

As our ancestors—step two—abandoned their arboreal perches, their fingers began to straighten, opening the way for the creation and use of tools.

"Hands were freed from locomotion in trees so that they could become strictly specialised in manipulation," said Dominguez-Rodrigo. "This is where our discovery fills a gap."

The earliest confirmed stone tools date from about 2.6 million years ago.

The find, reported in *Nature Communications*, will fuel ongoing debate as to which of our distant relatives—*Homo habilis*? *Homo erectus*?—might have been the first to make stone implements and weapons.

"Our discovery not only shows that a creature"—dubbed OH 86—"with a modern-looking hand existed 1.85 million years ago, it also shows that OH 86 was bigger sized than any other prior and contemporary hominin," said Dominguez-Rodrigo.

Archeological evidence from the Olduvai Gorge in Tanzania, where the little finger bone was found, shows that size mattered.

Fossils reveal that [early human ancestors](#) hauled the carcasses of big animals, sometimes weighing hundreds of kilos.



A picture released on August 18, 2015 by Nature Communications shows people excavating the fossiliferous layer at PTK in the Olduvai Gorge, one of the most important paleoanthropological sites in the world

"I always had trouble understanding how Homo habilis—barely taller than one metre (three feet)—could efficiently hunt animals that big," Dominguez-Rodrigo said.

The existence of a bigger, more modern-looking hominin would help explain this puzzle.

Other experts not involved in the study agreed.

"It brings support to those who challenge the view that Homo habilis was the maker of the stone artifacts becoming abundant in layers of this time period," commented Jean-Jacques Hublin, director of the department of [human evolution](#) at the Max Planck Institute for Evolutionary Anthropology.

## **Slim evidence**

At the same time, Hublin and others challenged the broad conclusions reached on the basis of such slim evidence.

"One single bone from a pinkie finger does not imply a whole modern human-like skeleton," Hublin said by email.

Another leader in the field, Tracy L. Kivell of the School of Anthropology and Conservation at the University of Kent, was even more sceptical.

"This single bone tells us nothing about what the rest of the hand looked like, let alone what the rest of the skeleton looked like," she told AFP by mail.

"If recent, more complete hominin fossil discoveries have taught us anything, it's that strange combinations of more derived human-like

features and more primitive australopith-like features throughout the skeleton are likely the rule, rather than the exception, especially at this time period."

**More information:** *Nature Communications*, [DOI: 10.1038/ncomms8987](https://doi.org/10.1038/ncomms8987)

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