

"LUCY"

Australopithecus afarensis

A spectacular find

When Lucy's skeleton was found in 1974, it was the most complete and best-preserved early hominid ever found. Scientists knew nothing about this species before Lucy. With a partial skeleton—nearly 40% complete—they could tell a lot about her and how her species lived.

Many bones tell a more complete story

From Lucy's arm and finger bones, scientists could tell that she spent time in the trees. The lengths of her arm and leg bones were more like those of chimps; however, her foot was not chimp-like. Her spine, pelvis, knee, and foot bones showed that she walked upright on two legs, more like today's humans. She was a mosaic of ape and human traits—a member of a unique species.

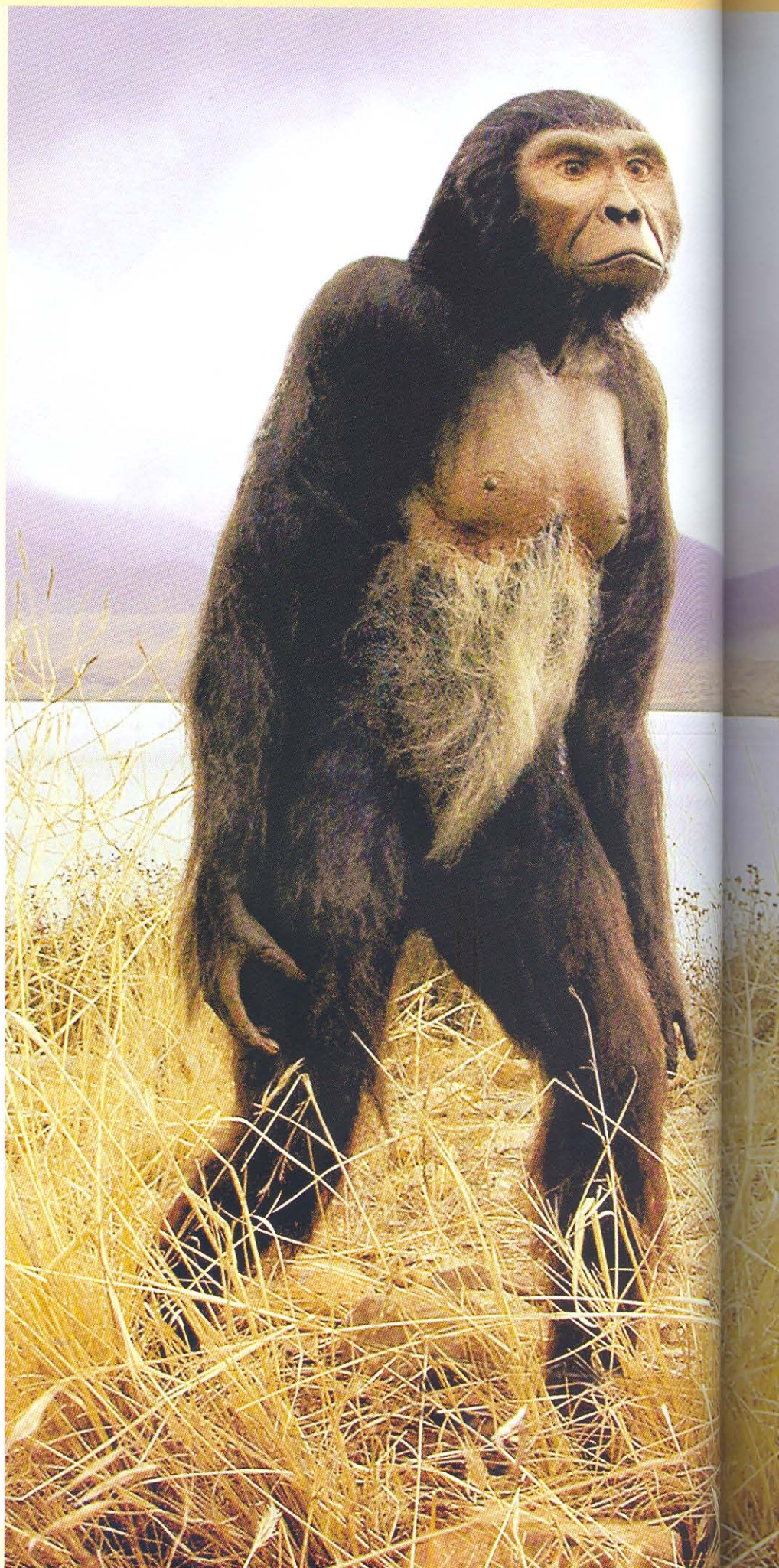
Lucy's name

Her nickname came from the Beatles song *Lucy in the Sky with Diamonds*, which was playing at the researchers' camp when they returned with the fossil. Lucy's Ethiopian name is *Dinquinesh*, which means "wonderful thing."

"Lucy" reconstruction

Artist: William Munns

Lucy was a full-grown adult about 3 feet 6 inches tall, weighing about 60 pounds. Her small size indicated that she was female (males were larger). She spent some time in trees, but on the ground she walked on two legs.



5

TIMESTONE

Australopithecus afarensis

Sculptural replica of fossil partial skeleton
Australopithecus afarensis—"Lucy"
Found in Hadar, Ethiopia,
in 1974 by Donald Johanson and his team
Age: 3.2 million years

This is the earliest hominid species for which we have a large sample of fossils. The fossil bones provide strong evidence of a primate that walked on two legs.

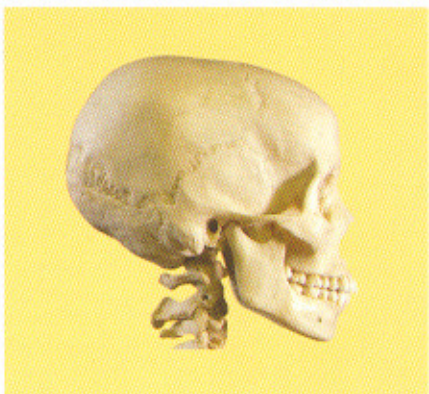
This australopithecine had many ape-like features. Its teeth and molars were large and its cranial capacity (indicating brain size) was small—about the size of a softball. However, the position of the foramen magnum and the shape of the pelvis, knee, and thigh bones showed that this species walked on two legs. Bipedal walking was our hominid ancestors' first step toward becoming human.



Sculptural replica of fossil skull
(based on a composite of three males)
Australopithecus afarensis
Fossils found in Hadar, Ethiopia,
in 1976 by Donald Johanson
and his team
Age: 3 million years

BIPEDALISM

Walking upright: A major first step



The skeleton holds the clues

To determine bipedalism, scientists look for key skeletal features:

- A basin-shaped pelvis which acts like a bowl to hold the viscera
- An S-shaped spine which balances the trunk above the legs
- Changes in the hip and knee joints which allow us to balance on one foot at a time
- An alignment of the big toe with the other toes which gives the foot more push-off power during striding
- A central location of the foramen magnum at the base of the skull which indicates the spinal cord enters the skull from a vertical position



From four legs to two

The chimpanzee's foramen magnum is near the back of the skull. The spine extends horizontally and requires four legs for support. This is in contrast to the human skull with a foramen magnum directly beneath the base.

LAETOLI FOOTPRINTS

The tracks of early hominids

About 3.7 million years ago a volcano spread ash over the ground near what is now Tanzania in Africa. Then, rain fell. Before the wet ash hardened, three hominids crossed the ash, leaving their footprints behind. The long track of footprints, discovered in 1978, has been attributed to *Australopithecus afarensis*, but other hominids such as *Kenyanthropus platyops* lived at the same time.

A key step in human evolution

From fossil bones scientists knew that hominids had been walking upright by 4.4 million years ago. The discovery of the Laetoli footprints showed scientists how hominids walked millions of years ago. The footprints show a strong heel strike followed by a transfer of weight forward and over the ball of the foot, ending with the toes, a step very much like that of a modern human.

*Cast of fossil footprints of
Australopithecus afarensis
Found in Laetoli, Tanzania
in 1978 by Mary Leakey and her team
Age: 3.7 million years*

