



1 Human Origins in Africa

TERMS & NAMES

- artifact
- culture
- hominid
- Paleolithic Age
- Neolithic Age
- technology
- *Homo sapiens*

MAIN IDEA

Fossil evidence shows that the earliest humans originated in Africa.

WHY IT MATTERS NOW

Early humans' discoveries helped them survive, grow in numbers, and spread across the globe.

SETTING THE STAGE What were the earliest humans like? Many people have asked themselves this question. Because there are no written records of prehistoric peoples, scientists have to piece together information about the past. Teams of scientists use a variety of research methods and techniques to learn more about how, where, and when early humans developed. Interestingly, recent discoveries provide the most knowledge about human origins and the way prehistoric people lived. Yet the picture of prehistory is still far from complete.

Scientists Search for Human Origins

Written documents provide a window to the distant past. For several thousand years, people have recorded information about their beliefs, activities, and important events. Prehistory, however, dates back to the time before the invention of writing—roughly 5,000 years ago. Without access to written records, scientists investigating the lives of prehistoric peoples face special challenges.

Scientists Discover Clues Specially trained scientists work like detectives to uncover the story of prehistoric peoples. Archaeologists are scientists who learn about early people by excavating and studying the traces of early settlements. An excavated site, called an archaeological dig, provides one of the richest sources of clues to the prehistoric way of life. Archaeologists sift through the dirt in a small plot of land. They analyze all existing evidence, such as bones and artifacts. Bones might reveal what the people looked like, how tall they were, and how long they lived. **Artifacts** are remains, such as tools, jewelry, and other human-made objects. These items might hint at how people dressed, what work they did, or how they worshiped.

Scientists called anthropologists study **culture**, or people's unique way of life. Anthropologists examine the artifacts at archaeological digs. From these, they re-create a picture of early people's cultural behavior, including customs, family life, and social relationships.

Other scientists, called paleontologists, study fossils—evidence of early life preserved in rocks. Human fossils often consist of small fragments of teeth, skulls, or other bones. Paleontologists use complex techniques to date ancient fossil remains and rocks. Archaeologists, anthropologists, paleontologists, and other scientists work as a team to make new discoveries about how prehistoric people lived.

Mary Leakey Finds Footprints In the mid-1970s, Mary Leakey, an archaeologist, led a scientific expedition to the region of Laetoli in Tanzania, an East African nation. There she and her team looked for new clues about human origins. In 1978, they made an amazing discovery. They found prehistoric footprints that resembled those of modern humans. These footprints were made by humanlike beings now called australopithecines (aw-STRAY-loh-PIHTH-ih-SYNZ). Humans and other creatures that walk

Vocabulary

excavating: uncovering by digging

THINK THROUGH HISTORY

A. Making

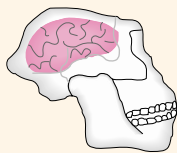
Inferences Why are scientists who study prehistory so important in providing knowledge about the distant past?



This artifact from around 200,000 B.C. is a hand ax made of flint. An all-purpose tool, the hand ax was probably a hunting weapon, chopper, scraper, and slicer.

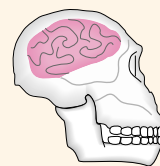


Hominid Development



Australopithecines

- 4 million to 1 million B.C.
- found in southern and eastern Africa
- brain size 500 cm³ (cubic centimeters)
- first humanlike creature to walk upright



Homo habilis

- 2.5 million to 1.5 million B.C.
- found in East Africa
- brain size 700 cm³
- first to make stone tools

4 million years ago

Australopithecines

3 million years ago

Homo habilis

HISTORY MAKERS



Mary Leakey
1913–1996

Born in London, England, Mary Leakey left a remarkable legacy in the fields of archaeology and anthropology. “She was one of the world’s great originals,” said a scientist who worked with the Leakey family on fossil hunts. Mary earned respect for her excavations and well-documented findings.

At 22, she made her first visit to East Africa. In her autobiography she reflected on her experiences there:

“I am lucky enough to have been involved for half a century with work, mostly in East Africa, that very much belongs to everyone, since it concerns the human origins that are common to the whole human race.”

upright, such as australopithecines, are called **hominids**. The Laetoli footprints provided striking evidence about the origins of humans:

A VOICE FROM THE PAST

What do these footprints tell us? First, . . . that at least 3,600,000 years ago, what I believe to be man’s direct ancestor walked fully upright with a . . . free-striding gait. Second, that the form of the foot was exactly the same as ours. . . . [The footprints produced] a kind of poignant time wrench. At one point, . . . she [the female hominid] stops, pauses, turns to the left to glance at some possible threat or irregularity, and then continues to the north. This motion, so intensely human, transcends time. . . .

MARY LEAKEY, quoted in *National Geographic*

Johanson Discovers “Lucy” While Mary Leakey was working in East Africa, American anthropologist Donald Johanson and his team were also searching for fossils. They were exploring sites in Ethiopia, 1,000 miles to the north. In 1974, Johanson’s team made a remarkable find—an unusually complete skeleton of an adult female hominid. They nicknamed her “Lucy” after the Beatles song “Lucy in the Sky with Diamonds.” She had lived around 3.5 million years ago—the oldest hominid found to date.

Hominids in Motion Lucy and the hominids who left their footprints in East Africa were species of australopithecines. Walking upright helped them travel distances more easily. They were also able to spot threatening animals and carry food and children.

These early hominids had already developed the opposable thumb. This means that the tip of the thumb can cross the palm of the hand. The opposable thumb was crucial for tasks such as picking up small objects and making tools. (To see its importance, try picking up a coin with just the index and middle fingers. Imagine all the other things that cannot be done without the opposable thumb.)

THINK THROUGH HISTORY B. Drawing Conclusions

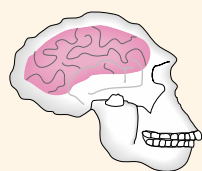
Why were the discoveries of hominid footprints and “Lucy” important?

Progress During the Old Stone Age

The invention of tools, mastery over fire, and the development of language are some of the most impressive achievements in human history. These occurred during the prehistoric period known as the Stone Age. It spanned an enormous length of time. The earlier and longer part of the Stone Age, called the Old Stone Age or **Paleolithic Age**, lasted from about 2.5 million to 8000 B.C. The oldest stone chopping tools date back to this era. The New Stone Age, or **Neolithic Age**, began about 8000 B.C. and ended as early as 3000 B.C. in some areas. People who lived during this second phase of the Stone Age learned to polish stone tools, make pottery, grow crops, and raise animals.

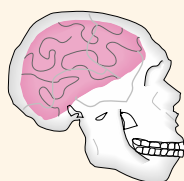
Much of the Paleolithic Age occurred during the period in the earth’s history known as the Ice Age. During this time, glaciers alternately advanced and retreated as many as 18 times. The last of these ice ages ended about 10,000 years ago. By the beginning of the Neolithic Age, glaciers had retreated to roughly the same area they now occupy.

Vocabulary
glaciers: huge masses of slowly moving ice



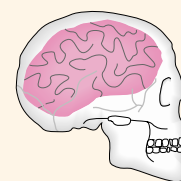
Homo erectus

- 1.6 million to 30,000 B.C.
- found in Africa, Asia, and Europe
- brain size 1,000 cm³



Neanderthal

- 200,000 to 30,000 B.C.
- found in Europe and Southwest Asia
- brain size 1,450 cm³
- first to have ritual burials



Cro-Magnon

- 40,000 to 8000 B.C.
- found in Europe
- brain size 1,400 cm³
- fully modern humans
- created art

2 million
years ago

Homo erectus

1 million years ago

Neanderthal

Cro-Magnon

Present

Homo Habilis: The First Toolmaker? Before the australopithecines eventually vanished, new hominids appeared in East Africa around 2.5 million years ago. In 1960, Mary Leakey and her husband, Louis, discovered a hominid fossil at Olduvai (OHL-duh-vay) Gorge in northern Tanzania. The Leakeys named the fossil *Homo habilis*, which means “man of skill.” Scientists jokingly called this hominid “Handy Man.” The Leakeys and other researchers found tools made of lava rock. They believed *Homo habilis* used these tools to cut meat and crack open bones. Modern archaeologists have shown that these stone blades could butcher elephant meat.

Homo Erectus Is More Intelligent About 1.6 million years ago, before *Homo habilis* left the scene, another species of hominids appeared in East Africa. This species is now known as *Homo erectus*, or “upright man.” Some anthropologists believe *Homo erectus* was a more intelligent and adaptable species than *Homo habilis*. *Homo erectus* people used intelligence to develop **technology**—ways of applying knowledge, tools, and inventions to meet their needs. Tools made the task of survival easier. These hominids gradually became skillful hunters and invented more sophisticated tools for digging, scraping, and cutting. They also eventually became the first hominids to migrate, or to move, from Africa. Fossils and stone tools show that bands of *Homo erectus* hunters settled in India, China, Southeast Asia, and Europe.

According to anthropologists, *Homo erectus* was the first to use fire. Fire provided warmth in cold climates, cooked food, and frightened away attacking animals. A band of hunters may have carried torches to drive herds of animals into marshes in order to slaughter them. The control of fire also probably helped *Homo erectus* settle new lands.

Homo erectus might also have developed the beginnings of spoken language. Language, like technology, probably gave *Homo erectus* greater control over the environment and boosted chances for survival. The teamwork needed to plan hunts and cooperate in other tasks probably relied on language. *Homo erectus* might have named objects, places, animals, and plants and exchanged ideas.

THINK THROUGH HISTORY
C. Recognizing Effects How did *Homo erectus* use fire to control the environment?

Background
Thal (as in *Neanderthal*) is the German word for valley.

CONNECT to TODAY

Cheddar Man

In 1997, scientists at Oxford University tested samples of DNA from a Stone Age skeleton nicknamed “Cheddar Man.” This young hunter from around 7150 B.C. was found buried in the Cheddar Caves in England.

Scientists then compared the skeleton’s samples to samples from people whose families had lived in the area for generations. The results of the genetic tests surprised Adrian Targett, a 42-year-old history teacher who participated in the study. He discovered that Cheddar Man was his ancient relative. Cheddar Man’s and Targett’s DNA were nearly identical. Scientists believe that the DNA match also proves that Britain’s native population is descended from Stone Age humans.

The Dawn of Modern Humans

Many scientists believe *Homo erectus* eventually developed into ***Homo sapiens***—the species name for modern humans. *Homo sapiens* means “wise men.” While they physically resembled *Homo erectus*, *Homo sapiens* had much larger brains. Scientists have traditionally classified Neanderthals and Cro-Magnons as early groups of *Homo sapiens*. However, in 1997, DNA tests on a Neanderthal skeleton indicated that Neanderthals were not ancestors of modern humans. They were, however, affected by the arrival of Cro-Magnons, who may have competed with Neanderthals for land and food.

Neanderthals’ Way of Life In 1856, as quarry workers were digging for limestone in the Neander Valley in Germany, they spotted fossilized bone fragments. These were the remains of Neanderthals, whose bones were discovered elsewhere in



Early Human Migration, 1,600,000–10,000 B.C.



Fossil Hunters

Famous Finds

- **1960** At Olduvai Gorge, Louis Leakey finds 2 million-year-old stone tools.
- **1974** In Ethiopia, Donald Johanson finds “Lucy,” a 3.5 million-year-old hominid skeleton.
- **1978** At Laetoli, Mary Leakey finds 3.6-million-year-old hominid footprints.
- **1994** In Ethiopia, an international team of scientists finds 2.33 million-year-old hominid jaw.

GEOGRAPHY SKILLBUILDER: Interpreting Maps

- 1. Movement** To what continents did *Homo erectus* groups migrate after leaving Africa?
- 2. Human-Environment Interaction** What do the migration routes of *Homo sapiens* reveal about their survival skills and ability to adapt?

Europe and Southwest Asia. These people were powerfully built. They had heavy slanted brows, well-developed muscles, and thick bones. To many people, the name “Neanderthal” calls up the comic-strip image of a club-carrying caveman. However, archaeological discoveries reveal a more realistic picture of these early hominids, who lived between 200,000 and 30,000 years ago.

Evidence suggests that Neanderthals tried to explain and control their world. They developed religious beliefs and performed rituals. About 60,000 years ago, Neanderthals held a funeral for a man in Shanidar Cave, located in northeastern Iraq. Archaeologists theorize

that during the funeral, the Neanderthal’s family covered his body with flowers. The prehistoric funeral points to a belief in a world beyond the grave. Fossil hunter Richard Leakey, the son of Mary and Louis Leakey, wrote about the meaning of this Neanderthal burial:

A VOICE FROM THE PAST

The Shanidar events . . . speak clearly of a deep feeling for the spiritual quality of life. A concern for the fate of the human soul is universal in human societies today, and it was evidently a theme of Neanderthal society too. There is also reason to believe that the Neanderthals cared for the old and the sick of their group. A number of individuals buried at the Shanidar Cave, for instance, showed signs of injury during life, and in one case a man was severely crippled. . . . These people lived for a long time, although they needed constant support and care to do so.

RICHARD E. LEAKEY, *The Making of Mankind*

THINK THROUGH HISTORY

D. Comparing
How were Neanderthals similar to people today?



Neanderthals were also resourceful. They survived harsh Ice Age winters by living in caves or temporary shelters made of wood and animal skins. Animal bones found with fossils of Neanderthals indicate their ability to hunt in subarctic regions of Europe. To cut up and skin their prey, Neanderthals fashioned stone blades, scrapers, and other tools.

The Neanderthals survived for some 170,000 years and then vanished about 30,000 years ago. Their disappearance remains a mystery.

Cro-Magnons Emerge About 40,000 years ago, a group of prehistoric humans called Cro-Magnons appeared. Their skeletal remains show that they are identical to modern humans.

Unlike the Neanderthals, Cro-Magnons planned their hunts. They studied animals' habits and stalked their prey. Evidently, Cro-Magnons' superior hunting strategies allowed them to survive more easily. This may have caused Cro-Magnon populations to grow at a slightly faster rate and eventually replace the Neanderthals. Cro-Magnons' advanced skill in spoken language may also have helped them to plan more difficult projects. This cooperation perhaps gave them an edge over the Neanderthals.

THINK THROUGH HISTORY

E. Contrasting

Why did Cro-Magnons have a better chance of survival than Neanderthals?

Recent Findings Add New Knowledge The story of human origins is constantly changing with new discoveries. Reports of such findings continue to update when and where various species of hominids are believed to have originated. In 1994, two fossil hunters in Ethiopia found a 2.33 million-year-old jaw. It was the oldest fossil belonging to the species that includes modern humans. They also unearthed stone tools at the same site. This find suggests that the first toolmakers emerged earlier than previously thought.

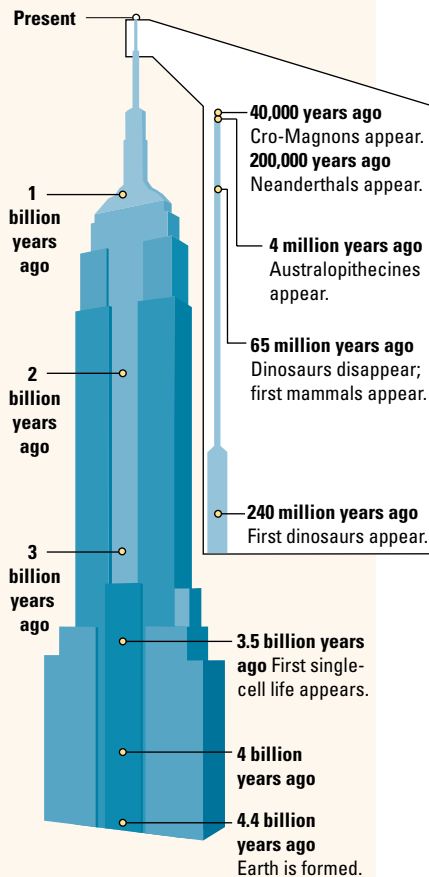
In 1996, a team of researchers from Canada and the United States, including a high school student from New York, dated a Neanderthal bone flute. They believe it is between 43,000 and 82,000 years old. This discovery hints at a previously unknown talent of the Neanderthals—their gift of musical expression.

Each new scientific discovery helps add further details to the still sketchy picture of human prehistory. As time progressed, early humans' skills and tools for surviving and adapting to their environment became more sophisticated. These technological advances would help launch a revolution in the way people lived.

SPOTLIGHT ON

Time Line of Planet Earth

Imagine the 102 stories of the Empire State Building as a scale for a time line of the earth's history. Each story represents about 40 million years. Modern human beings have existed for just a tiny percentage of the life of this planet.



Section 1 Assessment

1. TERMS & NAMES

Identify

- artifact
- culture
- hominid
- Paleolithic Age
- Neolithic Age
- technology
- *Homo sapiens*

2. TAKING NOTES

Create a chart like the one below, showing the advances, discoveries, and inventions of hominids.

Australo-pithecines	<i>Homo erectus</i>	Neanderthals	Cro-Magnons

3. SYNTHESIZING

How do recent findings keep revising knowledge of the prehistoric past?

THINK ABOUT

- modern scientific methods
- the way various species of hominids are classified
- dates relating to hominids

4. ANALYZING THEMES

Interaction with Environment

Which of the following skills—toolmaking, the use of fire, or the development of language—do you think gave hominids the most control over their environment? Why?

THINK ABOUT

- the kinds of tools early humans developed
- the various uses of fire
- the benefits of language