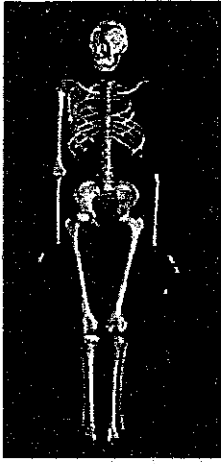


Homo erectus



Transparency 2.2F In this transparency we see an epoxy resin cast of the skeleton of a 12-year-old *Homo erectus* boy who lived about 1.6 million years ago. The original skeleton measures 5 feet 6 inches tall, and it was found on the shore of Lake Turkana in Kenya. In the cast shown here, green material fills in areas that did not fossilize, such as the eye sockets, and white material fills in areas where the original bones were damaged.

What do you see here? Why do you think parts of this skeleton are different colors, such as green and white? Which parts of this skeleton would provide paleoanthropologists with the most information about this hominid's abilities? This hominid is sometimes referred to as "Upright Man." Why do you think it has this nickname?

Overview *Homo erectus*, given the nickname Upright Man by some early archeologists, was so named because of its fully upright, or erect, stance. Fossil evidence suggests that *erectus* lived from about 1.8 million years ago to about 200,000 years ago, and coexisted with australopithecines for as long as 700,000 years. People have found *erectus* fossils and tools in Asia, Africa, and Europe. Since archeologists have not found hominid remains earlier than *erectus* outside of Africa, they believe that *erectus* was the first hominid to leave Africa for other areas of the world. Some scientists believe that *Homo erectus* migrated from Africa earlier than 1.5 million years ago, as the last australopithecines were disappearing.

Fossil Discoveries In 1890, a Dutch physician named Eugene Dubois went to the island of Java and began to search for fossils along the banks of the Solo River. At that time, Dubois worked for the Royal Dutch East Indies Army and oversaw the work of Dutch prisoners. In 1891, the prisoners unearthed the top of a skull with a low, sloping forehead and heavy ridges over the eyes. The convicts later unearthed a complete, humanlike thighbone, or femur, about 50 feet upstream from the skull. In 1894, Dubois announced that the skull and thighbone belonged to the same ancient individual. He named the species *Pithecanthropus erectus*, or Upright Ape-Man, which was later renamed *Homo erectus*. Dubois and others eventually found the remains of about 40 other individuals with the same characteristics. These fossils, sometimes referred to collectively as Java Man, make up one third of the total collection of *Homo erectus* fossils.

Another *erectus* discovery occurred in the 1920s. On a hill named Zhoukoudian (or Dragon Bone Hill) near Beijing, China, archeologists found another set of important *Homo erectus* fossils. Peking Man, as these fossils are sometimes called after Beijing's original name, make up another third of the world's *Homo erectus* fossil collection. Although the original bones were lost during World War II, scientists still study casts of them.

Finally, in August 1984, an archeologist named Kamoya Kimeu discovered a nearly complete *erectus* skeleton on the shore of Lake Turkana in Kenya. At that time, Kimeu was leading a fossil-hunting team known as the Hominid Gang. One day, Kimeu noticed a dark brown piece of skull bone the size of a matchbook. The team unearthed many pieces of the skull, which dated back 1.6 million years. After five years of digging and sifting dirt, the team unearthed a nearly complete skeleton of an adolescent *Homo erectus* boy, including rarely preserved ribs, shoulder blades, and pelvic bones. Some paleoanthropologists argue that Turkana Boy, as the skeleton is sometimes called, belongs to an earlier species than *erectus*. Many others, however, consider it one of the oldest and most complete examples of *Homo erectus*.

Appearance Even some of the oldest *erectus* skulls have features that are similar to those of modern humans. For instance, *erectus*'s skull and forehead were comparatively round and smooth. In addition, *erectus*'s skull encased a brain that was much larger (about 900 to 1100 cubic centimeters) than those of any earlier species. But other skull features indicate that *erectus* was still very different from modern humans. *Erectus* possessed a prominent, single brow ridge above the eyes and a thicker, longer, lower skull that was sharply angled in back. *Erectus* also had a protruding jaw, large back teeth, and no chin.

Homo erectus has been called "the first really big hominid." Fossils indicate that *erectus* was tall, thin, and barrel-chested, with thicker bones and possibly greater strength than modern humans. Some scientists estimate that *erectus* males might have been taller than four fifths of modern human men. *Erectus*'s spines and other anatomical features enabled them to walk fully upright. The shape and placement of their pelvis and thighbones made them even more efficient walkers and runners than modern humans.

The combination of *erectus*'s larger brain and narrow pelvis caused a problem: female *erectus* would have had a more difficult time giving birth to larger-brained babies. Some scientists think *erectus* shared a modern human adaptation to the big brain/narrow pelvis problem. While other animals species' brains grow to almost their full capacity while in the womb, human babies experience a greater brain-growth percentage after they are born. For example, a chimp brain doubles in size after birth, but a human brain triples in size. As a consequence, human babies are born relatively helpless and demand a long period of intensive parenting.



Transparency 2.2G In this transparency we see an artist's rendition of a *Homo erectus* group engaged in daily activities.

What do you see here? What different kinds of activities are the men and women doing? What kinds of tools are they using? How are these hominids using fire to improve the quality of their lives? Which aspects of this image do you think the artist had to guess about when creating it?

Capabilities and Skills Soon after the evolution of *Homo erectus*, stone tools became more complex. As early as 1.4 million years ago, *erectus* began to shape sturdy, pear-shaped hand axes from pieces of hard stone such as flint. These axes were part of what scientists call the Acheulian stone-tool industry, named for an *erectus* site in St. Acheul, France. *Erectus* made the same dozen or so stone tools everywhere they migrated, over many centuries. Though archeologists have found no arrowheads, darts, or other tools identified with hunting, some believe that the patterns of wear on *erectus*'s teeth and tools indicate that *erectus* ate more meat than earlier hominids. *Erectus* may have also been scavengers, like other early hominids.

Erectus was likely the first hominid to control fire. Archeologists have found burned animal bones at *erectus* sites, which suggests that *erectus* used fire to cook their meat. This innovation increased the meat's nutritional value. Fire also was an important tool for survival in cooler climates. *Erectus* also used fire to protect themselves from predators.

Some paleoanthropologists believe that small groups of *erectus* moved frequently from one campsite to another, according to the season and the availability of food. A *Homo erectus* campsite on the Mediterranean coast of France has given researchers many clues about how at least one *erectus* group lived. From the evidence uncovered there, scientists believe *erectus* built a cluster of oval huts by covering upright posts with tree branches weighed down with stones. In the center of each hut, they kept a fire burning. Faint traces left in the soil suggest that the occupants of these huts sat and slept on animal skins, used wooden bowls, and may have decorated their bodies with a yellow pigment known as ocher, perhaps as part of a ritual. From bones and other remains, archeologists know *erectus* ate red deer, elephant, rhinoceros, goat, boar, and oysters.