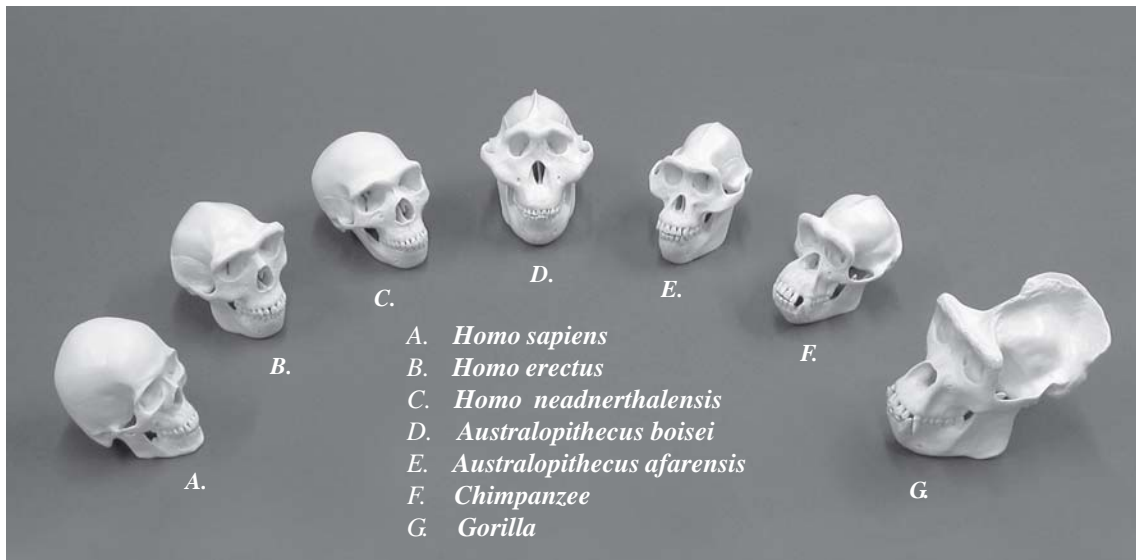


# Bone Clones® Half-Scale Series



Sculpted by anatomical sculptor Dr. Steve Wagner, and licensed exclusively to Bone Clones®, these marvelously detailed miniature skulls accurately represent the osteological anatomy of 7 primate skulls: Human, Gorilla, Chimpanzee and 4 early hominids. Made of our custom formulated, durable, resin and expertly finished, these extraordinary miniature skulls feature all the detail of the originals. Easily handled, and a convenient size for comparative study, our Bone Clones® Half Scale Series skulls display beautifully and are a great teaching aid.

Made in the U.S.A.

## **A. *Homo sapiens***

The modern human, *Homo sapiens* (“wise man”), may have evolved in Africa about 100,000 years ago. Migrations to Europe, Asia and the Americas followed. The Cro-Magnons of Europe are well-known early examples of anatomically modern humans. When compared to Neandertals (*Homo neanderthalensis*), modern humans have a more upright forehead, less protrusive jaws, smaller brow ridges and a slightly smaller cranial capacity. Additionally, the face is proportionally smaller leading to a smaller nose, crowded teeth, a weaker mandible, but a well developed chin. Modern *Homo sapiens* was predated by archaic *Homo sapiens* who lived as long ago as 600,000 years. The skull of archaic *H. sapiens* was far more robustly built than modern man. For study purposes, the half-scale modern human skull replica demonstrates some typical human skeletal problems: a deviated *septum* (the bony divider within the nose), an impacted *third molar* (wisdom tooth), and a missing tooth (with healed bone).

## **B. *Homo erectus***

When Dr. Eugene Dubois discovered the first *Homo erectus* fossils in Java in 1891, he named the species *Pithecanthropus erectus* (“the ape-man who walks upright”). The name was changed to *Homo erectus* (“upright man”) after scientists realized that *P. erectus* and some other similar finds were actually a type of early human. Many specimens are known at this time, 40 in Java alone. Many experts feel that the species originated in Africa approximately 2 million years ago as *Homo ergaster* (sometimes also called *H. erectus*), and dispersed in Asia – and possibly Europe – over the next millions years. Crude tools have been found in association with the remains of *H. erectus* and they may have also used fire. Adults were thick-boned with massive jaws and heavy brow ridges. Their brains were smaller than either Neandertal or modern man, but nearly twice as big as a large australopithecine. It is presumed by many scientists that *H. erectus* or *H. ergaster* was a direct ancestor to modern humans.

# Bone Clones<sup>®</sup> Half-Scale Series

## C. *Homo neanderthalensis*

Whether you call *Homo neanderthalensis* (*H. sapiens neanderthalensis* is also used) a Neanderthal or a Neandertal (both spellings exist), you are describing a group of ancient people who lived in Europe and the Near East around 120,000 to 30,000 years ago. The name comes from the Neander Valley in Germany where the first specimen was found – and is properly pronounced in German with a hard “t” regardless of which spelling you prefer. Neandertals lived during the period known as the Middle Paleolithic. Their technology was more advanced than earlier cultures and they were able to work stone tools into various sophisticated forms. Interestingly, there is very little evidence of bone tool fabrication even though Neandertals were evidently very successful hunters. Neandertal skulls show great variation, but the classic Neandertal had a large, long head with a bigger brain than modern man. Prominent brow ridges and a projecting face were common. Why the Neandertals disappeared is not known.

## D. *Australopithecus boisei*

Nicknamed Nutcracker Man or Zinj, *Australopithecus boisei* was discovered by Dr. Mary Leakey in 1959 at Olduvai Gorge, Tanzania. Mary’s husband, Louis Leakey, named the specimen *Zinjanthropus boisei* (Zinj= eastern, anthropus = man, and boisei referring to Charles Boise, a financial backer of the Leakey’s research) and proclaimed it to be a direct ancestor of the modern human line. Over the years, careful analysis of this hyper-robust hominid suggested that it represented an interesting australopithecine variant but was not our direct ancestor. Zinj had huge jaws and large molars (up to four times larger than modern human teeth). These massive teeth, muscle attachments and jaws helped Zinj grind its vegetarian diet of tough plant stalks, seeds and fibers. *A. boisei* lived from around 1.2 – 2.3 million years ago. The restoration is based on Mary’s find, OH 5, combined with a mandible from a different site called Peninj that happens to fit the OH 5 skull pretty well.

## E. *Australopithecus afarensis*

*Australopithecus afarensis* (“southern ape of Afar”) first appeared approximately 4 million years ago (mya) in the area that is now East Africa and disappeared around 3 mya. They stood upright, but did not walk with quite the same gait as modern humans. Their brain was slightly larger than that of the chimpanzee. *A. afarensis* had an apelike face with a low forehead, brow ridge, a flat nose and no chin (the chin is only developed in modern humans). The incisor teeth were rather apelike, but the canines were smaller than most apes. Fossil teeth suggest that the *A. afarensis* diet included fibrous fruits, plants and seeds. Some scientists believe that *A. afarensis* or a close relative may have been the direct ancestor to our human line (genus *Homo*). Over 200 specimens of *A. afarensis* have been recovered from Hadar, Ethiopia, alone – making it perhaps the best understood early hominid.

## F. *Chimpanzee*

The chimpanzee fossil record is poor, but DNA evidence suggests that humans and chimpanzees shared a common ancestor around 6 million years ago (mya). Though this split was long ago, chimpanzees (*Pan troglodytes*) are thought to be our closest living relatives. When compared to modern humans, the skull of the chimpanzee has massive jaws with large canine teeth, a protrusive face that extends well in front of the eyes, thinly enameled molars and a U-shaped dental arch (an identifying trait of the great apes). The brain is small compared to humans, but is relatively large when compared to other apes and monkeys. Muscle attachments for neck and jaw muscles are very well developed, adding to the chimpanzee’s great strength. The position of the foramen magnum (the hole through which the spinal cord passes) places the skull in front of the spine rather than balanced on top of the spinal column as seen in humans. This fits the typical stance of a chimp, and demonstrates how we can tell about the stance of an animal from its skull

## G. *Gorilla*

The gorilla (*Gorilla gorilla*) is the largest living representative of the great apes, though there are larger apes in the fossil record. Like all great apes, the fossil record is poor for gorillas. These magnificent animals are now isolated to dense forests in central Africa and can be separated into lowland and mountain populations. Strong sexual dimorphism is seen in gorillas, with males weighing up to 400 lbs and females weighing 200 lbs. Adult males have massive heads with immense bony ridges used for the attachment of strong jaw muscles. The brain case is much smaller than the apparent size of the head. The teeth of the gorilla have a U-shaped tooth row (thought to be an identifying trait of the great apes), large spoon-shaped incisors, large canines, large molars and a gap between the upper incisors and canines. The large canines might suggest carnivorous diet, but actually represent tools for sexual display and effective defensive weapons. The gorilla’s diet consists of leaves, shoots and other vegetable material.