

MinaWena

Educational Pack

Using replica skulls as a teaching aid

This kit contains the replica skulls of a human (*Homo sapiens*), *Australopithecus sediba* and a chimpanzee (*Pan troglodytes*). Compare the skulls carefully to find the evidence that humans share a common ancestor with chimpanzees.



<p>Chimpanzee (<i>Pan troglodytes</i>)</p> <p>The earliest chimp fossils are about 500 thousand years old. Chimps have been living in the tropical forests and savannas of Africa ever since. Today there are four subspecies of chimpanzee in Central and West Africa and one closely related species namely, the Pygmy Chimpanzee or Bonobo (<i>Pan paniscus</i>). These animals spend most of their time living in trees and moving about on all fours. The position of the foramen magnum (the opening where the spine enters the skull) towards the rear of the skull and the elongated pelvis are indications that these animals move about on all fours most of the time (quadrupedal). The long powerful arms, upturned clavicles, curved fingers and grasping feet with opposable big toes are adaptations for gripping branches in trees. Their large canine teeth are used for fighting other chimps and hunting, while their narrow, thin-walled molars are adaptations for eating a diet rich in soft fruit.</p> <p>The brain of chimps (relative to body size) is much smaller (average 350 cc), and has a different organisation compared to modern humans. The skull housing this smaller brain has a low forehead, a prominent pinch behind the eyes (postorbital constriction) and large eyebrow ridges.</p>					
<p>Australopithecus</p> <p>A number of species of <i>Australopithecus</i> lived in Africa between about 4.5 and 1.5 million years ago. One of the most recent and exciting <i>Australopithecus</i> discoveries was <i>Au. sediba</i>.</p> <p>The central position of the foramen magnum (the opening where the spine enters the skull) at the base of the skull and the bowl-shaped pelvis of these animals, indicate that they spent most of the time walking upright on two legs. The strong upper arms, the upturned angle of the clavicles, curved fingers and grasping feet all suggest that they spent time in trees. The smaller canines suggest that teeth did not play a large part in hunting or intraspecific aggression (fighting with members of the same species). The molars of <i>Australopithecus</i> species were generally broader than those of chimpanzees with a thick covering of enamel as an adaptation for grinding food that was coarser than soft fruit.</p> <p>The <i>Australopithecus</i> brain ranged between 375cc and 550cc. It was of a generally larger size with a more human organisation than that of chimpanzees. The skull housing this brain had smaller eyebrow ridges, with a smaller pinch or constriction behind the eyes and a higher forehead than chimps.</p>					
<p>Homo sapiens</p> <p>Modern humans originated in Africa about 200 thousand years ago, and have spread around the world becoming a dominant species. Despite the different appearances of humans around the globe there is only one modern human species, <i>Homo sapiens</i> (wise person).</p> <p>Humans are adapted to a life of walking upright (bipedal) on the ground where they eat a variety of food which is often cooked or processed in some way. Our upright walking position is indicated by a foramen magnum (where the spine enters the skull) positioned centrally in the base of the skull. Life on the ground is suggested by long, powerful legs with non-gripping feet that form sturdy platforms for walking. The shorter arms, horizontal clavicles, and non-curved fingers are not well adapted to gripping branches. The small canine teeth and the molars, with a thinner covering of enamel, are adaptations for eating more processed (cooked) food which does not need to be chewed for a long time.</p> <p>The skull is adapted to holding a large brain (average size 1300 cc) with small/non-existent eyebrow ridges, no postorbital constriction and a high vertical forehead.</p>					

