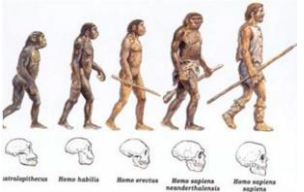
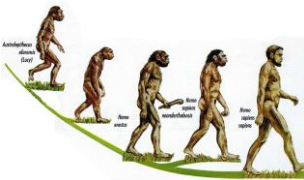
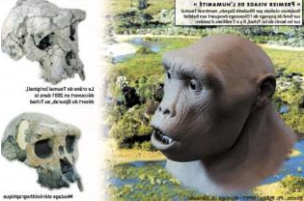
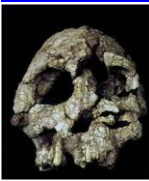




Learning Objectives & Answers – Background knowledge on our primitive self

Episode	Learning Objective	Answers	Images
<p>1. Becoming Human - Episode 1 - First Steps Homo Sapiens</p>	<p>A) When, Where and Why did Homo-sapiens first began?</p> <p>B) Who were the known bipedal Austral Opitecus Afarensis-half human and half chimpanzee? Name the supportive evidences.</p> <p>C) State the reasons for walking on 2 feet (bipedal).</p>	<p>A) - The first step to Homo-sapiens was 6 million years ago. - Africa, Ethiopia where the land was rich with rain forest and lakes. - Since the climate changed, the forest disappeared and left with tall grass.</p> <p>B1) - A 6 million year old fossil skull named Tumai, discovered by Dr. Michele Brunet showed a receding back skull, an indication of a creature that walked up right. - Also in 2000, paleoanthropologists working in Kenya found the teeth and two thigh bones of the six-million-year-old Orrorin tugenensis. The shape of the thigh bones confirms Orrorin was bipedal.</p> <p>http://www.smithsonianmag.com/science-nature/becoming-human-the-evolution-of-walking-upright-13837658/</p> <p>B2) The fossilized skeletons of Salem (3.3million yrs ago) and Lucy (3.2 million) Supportive evidences: -The ends of shin bones indicate similarity to human anatomy. - The pelvic bones of Lucy were different from a chimp; waist up was chimp, but waist down was human. - Salem's shoulder blade was damaged because of excessive use. Their kind has evolved to the human like shoulder which is not made for swinging from tree to tree. Hence, their shoulder blades were worn out (chipped) from climbing and swinging from tree to tree.</p> <p>C) According to Dan Lieberman, expert on bipedalism:</p>	<p>Human Evolution</p>   <p>Tumai 6 million yrs old</p>  <p>Orrorin tugenensis</p>  <p>Brain size</p>

D) State the differences between development of the apes and human childhood?

E) How the scientist correlate the development of the brain to climate change?

F) State the significant change in the brain?

G) What is the significance for the discovery of Lucy?

H) What did scientists use to prove the violent swing of climate change?

–Ability to stand up over tall grass to look out for enemies (dangerous predators) and landscapes
- Stand up to cool off more efficiently with less sun on their backs and exposed front to breeze
- Free up hands for carrying tools, baby.
- Save energy walking on two legs compare to 4

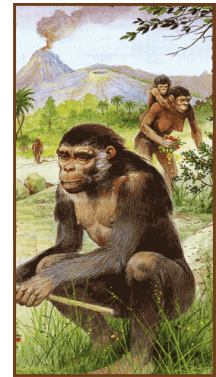
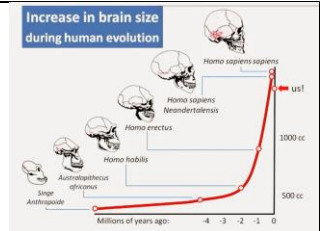
D) - Apes childhood is much shorter for faster maturity; brain development matured by age 3
- Human's childhood is slower; brain development matured by age 20 to adapt to complex society.

E) - Before Africa dried up, the brain size was a flat liner
- Due to violent climate change in Africa, Homo Habilis developed a larger brain and innovative stone tools emerged.
- Selam and Lucy's kind died out while Homo Habilis (better problem solver) survived.

F) The neuro cortex (thinking part) became bigger.

G) Because of Lucy (Lucy (3.2 million years old), scientists developed the molecular clock by comparing the DNA with others like Turkana Boy (1.6 million years old) and Salem (3.3million years ago) and be able to estimate the evolutionary changes of prehistoric ancestors.

H) By studying the layers of rock and sediment in Africa above and below ground, i.e., volcanic ash deposits, different kinds of Diatoms and layers of dust in the deep sea sediment from the ocean core. These studies indicated the time when the African plane was flooded with ocean water and also the timing of the violent swing of the climate change loosing the forests.

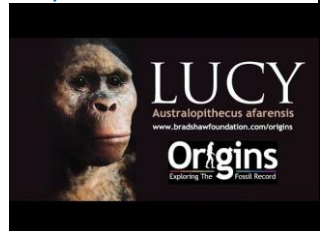


Orrorin tugenensis

Salem 3.3 million yrs old



Lucy 3.2 Yrs old



1. Homo sapiens - The Birth of Humanity (NOVA Full Documentary) <https://www.youtube.com/watch?v=pzmZjO1RDOQ>
2. PBS Nova ✓ Becoming Human - Episode 1: First Steps Homo Sapiens https://www.youtube.com/watch?v=nD9qtU_jdRA
3. <http://efossils.org/book/fossil-evidence-bipedalism>
4. <http://humanorigins.si.edu/evidence/human-evolution-timeline-interactive>