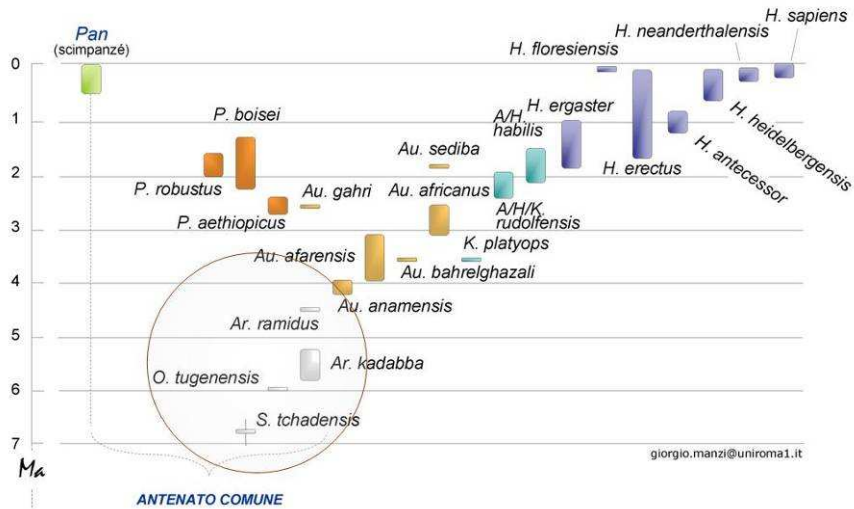
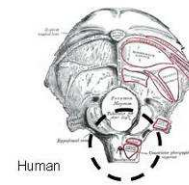


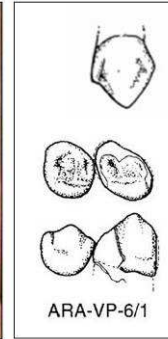
## Primi ominini ...?



## AUSTRALOPITHECUS ramidus ...



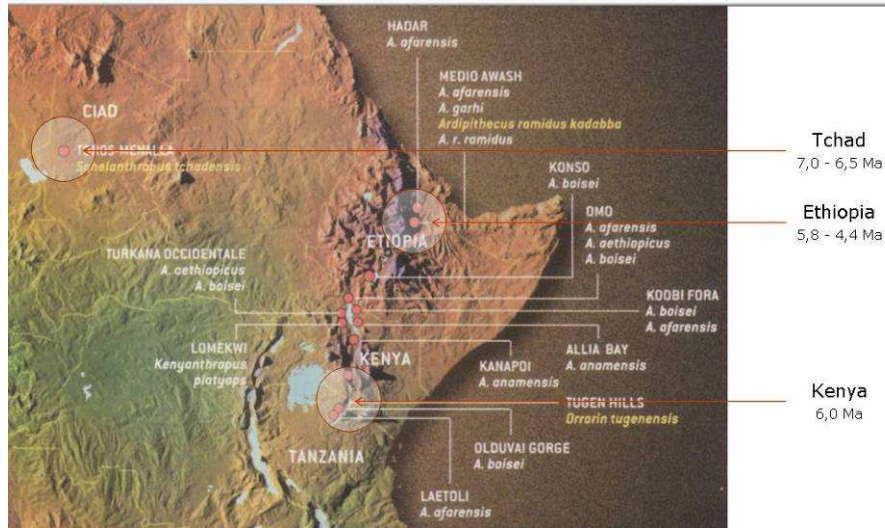
Short basioccipital  
Evidence of bipedalism...?



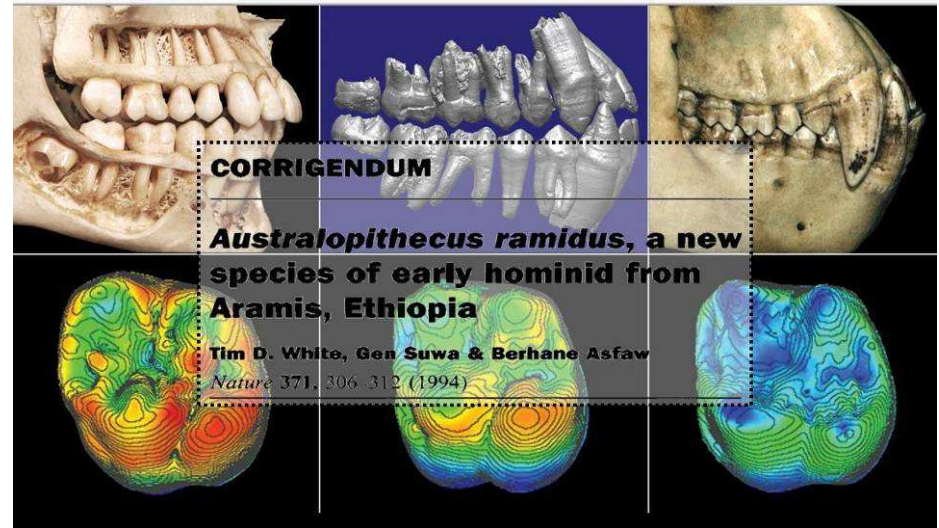
Aramis  
Middle Awash  
4.4 Ma  
(1994)



## Africa orientale



## ... A R D I pithecus ramidus



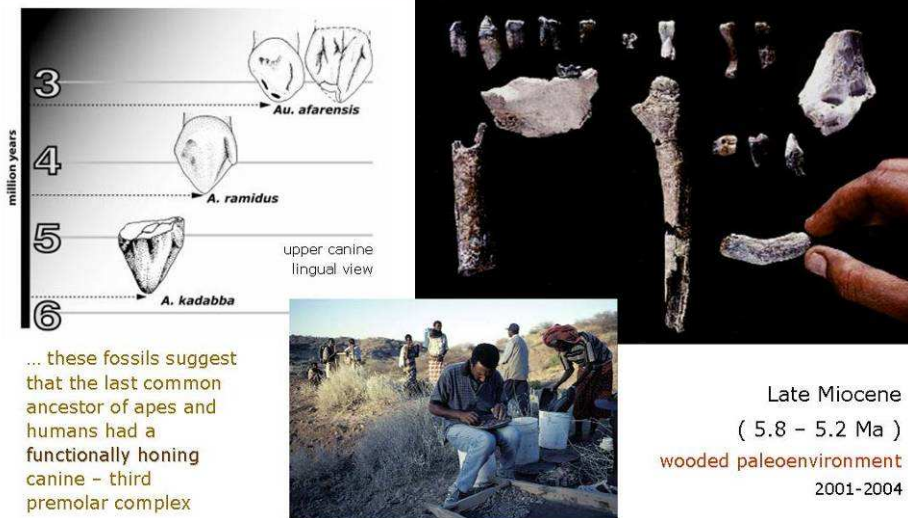
CORRIGENDUM

**Australopithecus ramidus, a new species of early hominid from Aramis, Ethiopia**

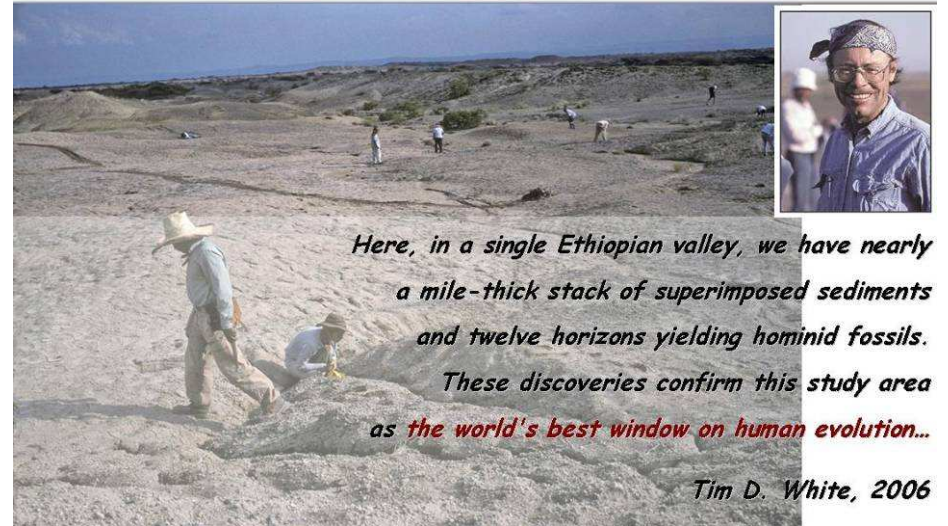
Tim D. White, Gen Suwa & Berhane Asfaw  
*Nature* 371, 306-312 (1994)



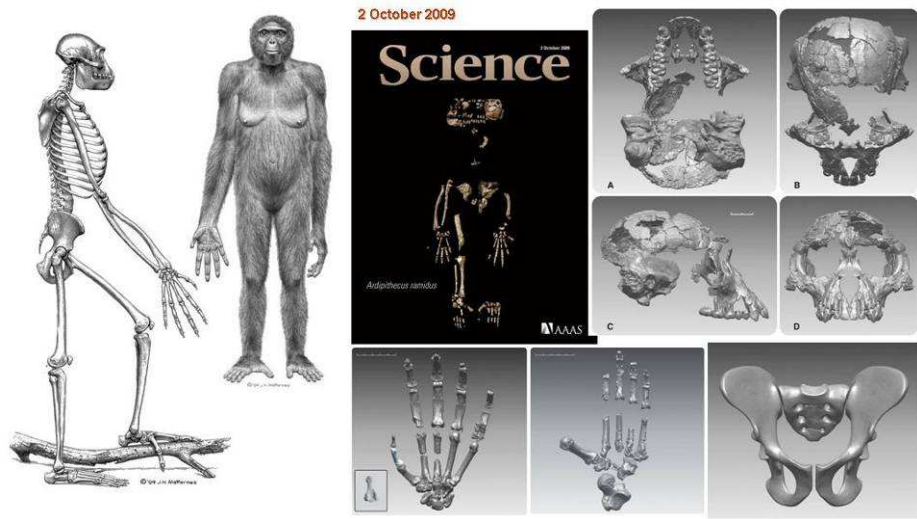
## Ardipithecus (ramidus) kadabba



## Middle Awash, Ethiopia



## 2009: "Ardi"



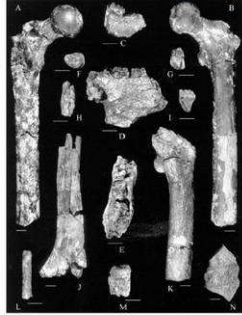
## Middle Awash, Ethiopia

- ✓ A total of 246 hominid specimens, from 12 separate superimposed stratigraphic horizons (sampling the last six million years):
  - *Homo sapiens (sapiens)*: 80 ka anatomically modern cranial vault and Middle Stone Age at Aduma (AJPA 2004)
  - *Homo sapiens (idaltu)*: 160 ka three crania of anatomically near-modern humans at Herto (Nature 2003)
  - *Homo erectus* / "archaic *H. sapiens*": 600 ka incomplete cranium from the Upper Bodo Beds with perimortem cutmarks, associated to postcranial remains and Acheulean (JHE 1996)
  - *Homo erectus*: 1 Ma calvarium and three thighbones with Acheulean at Bouri-Daka (Nature 2002)
  - *Australopithecus garhi*: 2.5 Ma partial cranium and other postcranial bones in the same strata with evidence of butchery of large animals at Bouri-Hata (Science 1999)
  - *Australopithecus afarensis*: 3.4 Ma teeth, jaws and limb bones at Maka (Nature 1984, 1993)
  - *Ardipithecus ramidus*: 4.4 Ma species now represented by dozens of specimens, including a partial skeleton from a woodland setting at Aramis (Nature 1994)
  - *Ardipithecus kadabba*: 5.7 Ma hominid that is like to those found in Chad and Kenya from similar time horizons, found on the western escarpment of the Middle Awash (Nature 2001; Science 2004)
- ✓ Hominid fossils and stone tools are accompanied by > 16.000 animal remains.



*Sahelanthropus tchadensis*

2000  
6,0 Ma



# Millennium man

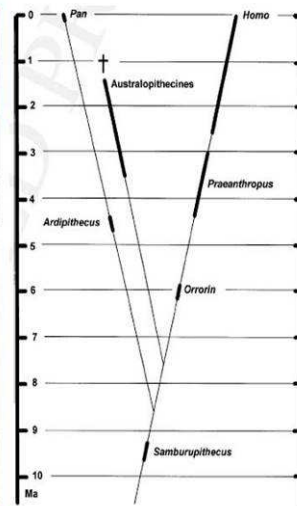
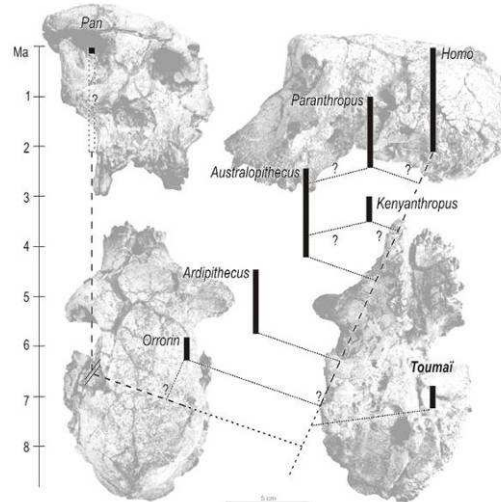
[illegible]

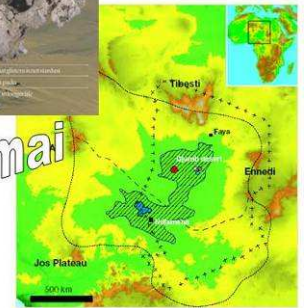
Figure 1 shows a human femur with a large, irregular, brownish, and textured lesion on its shaft, representing a bone tumor. The lesion is located on the middle section of the bone, extending vertically. The surrounding bone tissue appears normal in color and texture.

Ma 7

2002  
6,5 – 7,0 Ma



# Toumai



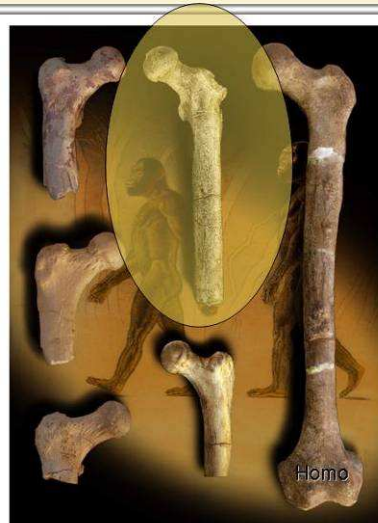
*Sahelanthropus* (la ricostruzione)

*Science*, 2008 Mar 21; 319 (5870): 1662-5.

### ***Orrorin tugenensis* femoral morphology and the evolution of hominin bipedalism**

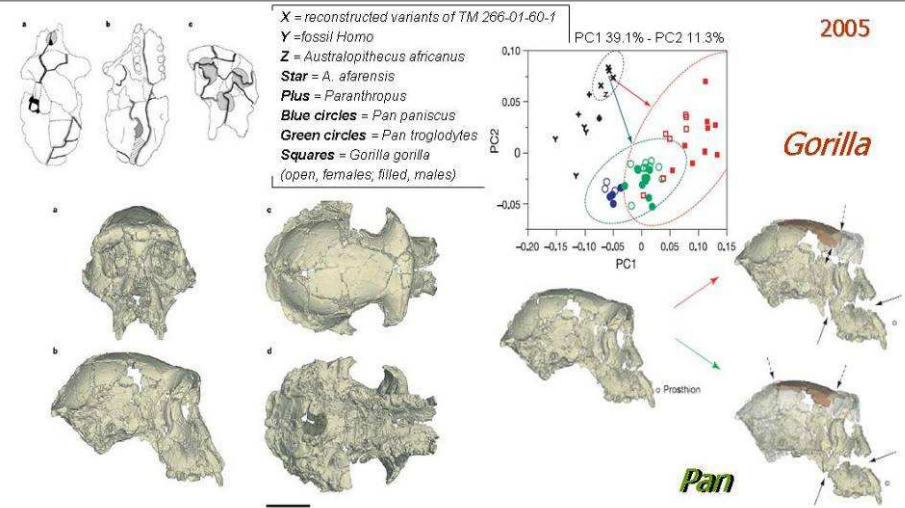
Richmond B.G. &amp; Jungers W.L.

Fossil femora discovered in Kenya and attributed to *Orrorin tugenensis*, at 6 million years ago, purportedly provide the earliest postcranial evidence of hominin bipedalism, but their functional and phylogenetic affinities are controversial. We show that the *O. tugenensis* femur differs from those of apes and *Homo* and most strongly resembles those of *Australopithecus* and *Paranthropus*, indicating that *O. tugenensis* was bipedal but is not more closely related to *Homo* than to *Australopithecus*. Femoral morphology indicates that *O. tugenensis* shared distinctive hip biomechanics with australopiths, suggesting that this complex evolved early in human evolution and persisted for almost 4 million years until modifications of the hip appeared in the late Pliocene in early *Homo*.

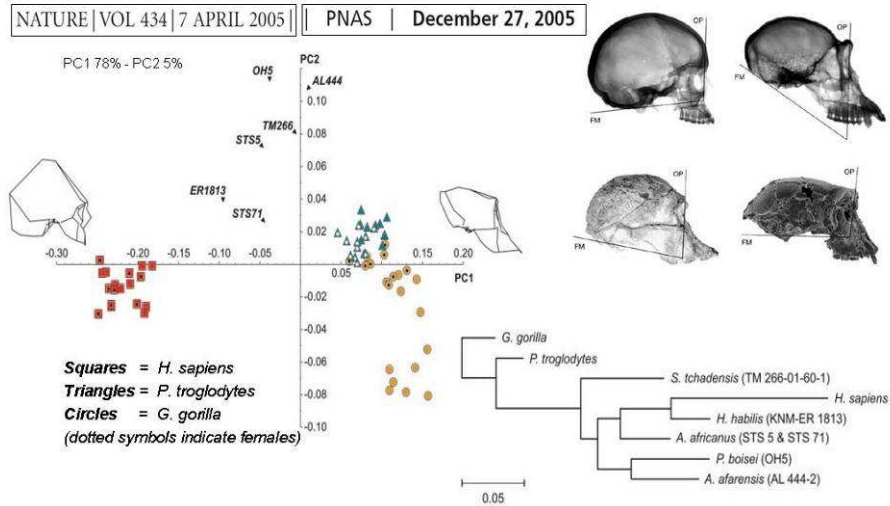


*Sahelanthropus* (la ricostruzione)

2005

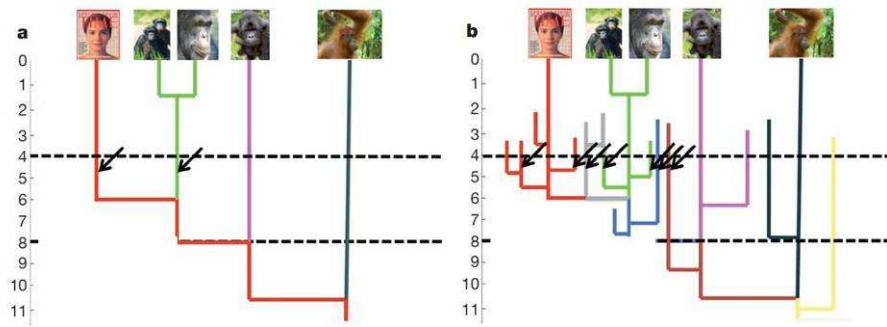


## Sahelanthropus (affinità fenetiche)



## Dove nella filogenesi ...?

B. Wood &amp; T. Harrison (Nature 479), 2011

FRECCE – Ipotesi di posizione filogenetica di *Ardipithecus ramidus* (4,4 Ma)

... fra le tante antropomorfe  
del tardo Miocene