Last time...

- What is the adaptive niche of the Hominids?
- What is the difference between calling this lineage hominid vs. hominin?
- What are the defining characteristics of the hominids?
- When did hominids first emerge?
- Why bipedalism and small canines?

Bipedalism

- What are the advantages and disadvantages of bipedalism?
- How does bipedalism change the skeleton?
- What are the various theories for the origin and adoption of bipedalism?
- Which is the most likely given what we now know about the origins of hominids?

Who did the hominids come from?

The Rift Valley

The First Hominids?

- *Sahelanthropus tchadensis* (7.0-6.0 MYA)
- *Orrorin tugenensis* (6.0 MYA)
- *Ardipithecus ramidus* (4.4 MYA) and *Ardipithecus kadabba* (5.8-5.2 MYA)

Sahelanthropus tchadensis

- 5.2-7 mya
- small canines
- thick enamel
- indications of bipedality

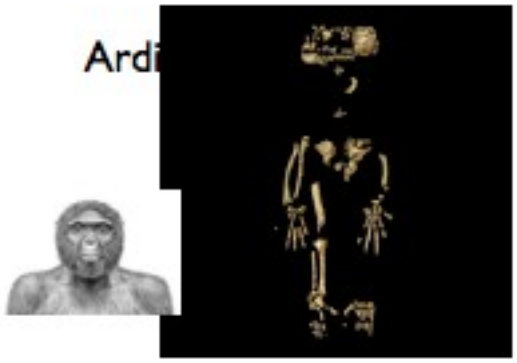
Orrorin tugenensis

Orrorin and *Pan*

Orrorin tugenensis

- Kenya
- 6 mya
- Humerus and femur suggest bipedalism
- Thick enamel
- Small teeth
- Large upper canines

Ardi



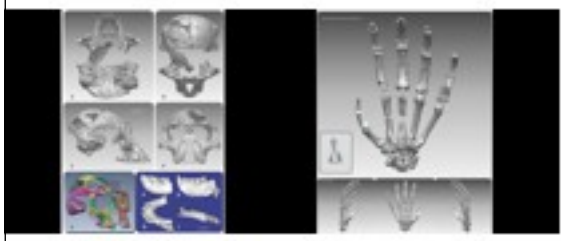
Ardipithecus ramidus and *Ardipithecus kadabba*

- *A. ramidus 4.4 my*
  A. kadabba 5.7-5.8 my
- *A. ramidus* has smaller canine than *A. kadabba*
- Anterior foramen magnum
- Non-weight bearing arm
- Grasping feet

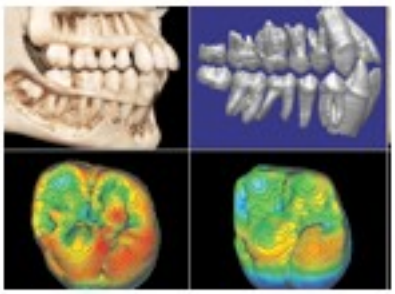
Ardipithecus ramidus

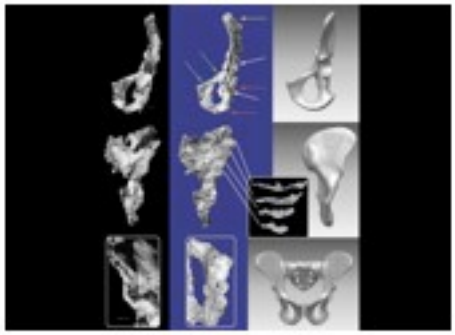
More *Ardipithecus*

Ardi bones



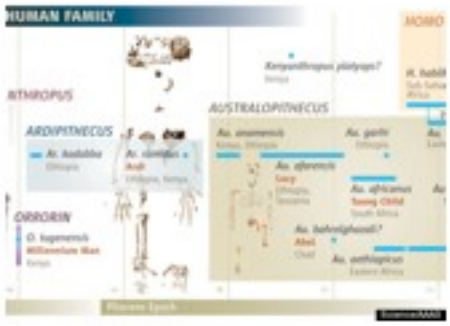
More Ardi





Ardipithecus reconstruction

Tree



Pliocene Hominids

Early

Australopithecus anamensis (4.2-3.9 mya)
Australopithecus afarensis (2.9-2.9 mya)
Kenyanthropus platyops (3.5 mya)
Australopithecus bahrelghazali (3.5-3.0 mya)

Gracile

Australopithecus garhi (2.5 mya)
Australopithecus africanus (3.5-<2.0 mya)
Australopithecus sediba ~2.0 mya

Robust

Australopithecus (P.) aethiopicus (2.7-2.5 mya)
Australopithecus (P.) boisei (2.3-1.2 mya)
Australopithecus (P.) robustus (2.0-1.5 mya)

Early Australopithecines

- Bipedal
- Small canines and incisors
- Non-sectorial premolar
- large face
- Short snout
- Relatively small brain ~420 cc
- large degree of sexual dimorphism
- chimp-like diet

Australopithecus anamensis

Australopithecus anamensis

- 4.2-3.9 mya
- Thickened tibia
- Primitive dentition
- Maybe same as *A. afarensis*?
- Forested environment

A. aforensis

A. afarensis

Laetoli Footprints

Australopithecus afarensis

- 3.9-2.9 mya
- Short, broad pelvis
- tilted femurs
- In-line big toe
- Sagittal crest
- Sexually dimorphic
- Small bodied
- Small brain

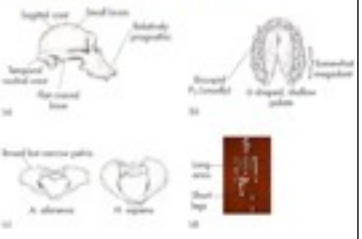


TABLE 11.2 Comparisons of *A. afarensis*, Great Ape, and Modern Humans

	Cranial Capacity (cc)	Sexual Dimorphism (Males X Percent Heavier)
A. afarensis	450	56%
Chimpanzee	400	15%
Gorilla	500	50%
Orangutan	400	Nearly 100%
Early genus *Homo*	600	63%
Modern human	1,400	15%

Australopithecus bahrelghazali

- 3.5-3.0 mya
- Western africa - Chad
- Same as *A. afarensis*?

Kenyanthropus platyops

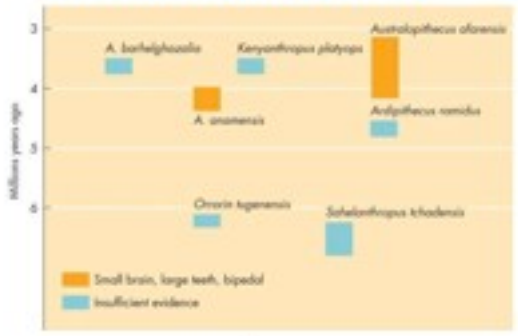
Kenyanthropus lateral

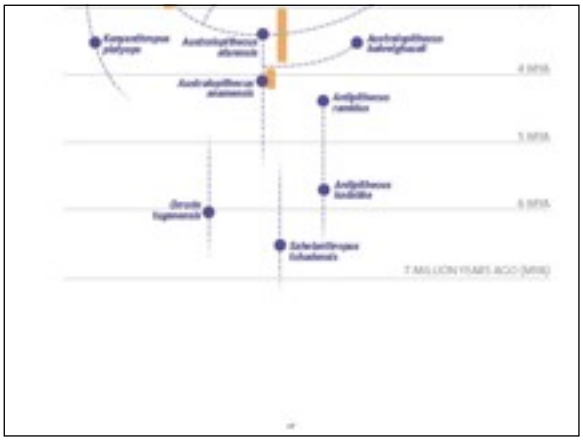
A. afarensis and *K. platyops*

Kenyanthropus platyops

- 3.5 mya
- Flat face
- Small molars
- *Australopithecus*? Even *A. afarensis*?

Evolutionary Relationships




Kenyanthropus platyops
Australopithecus afarensis
Australopithecus bahrelghazali
4 MYA
Australopithecus anamensis
Ardipithecus ramidus
5 MYA
Ardipithecus kadabba
6 MYA
Orrorin tugenensis
Sahelanthropus tchadensis
7 MILLION YEARS AGO (MYA)