

Last class

- What species of hominid are found in the early Pliocene?
- Where are they found?
- What are their distinguishing anatomical characteristics?
- How do the Australopithecines differ from the possible hominids?

Taxonomy

- Superfamily: Hominoidea
 - Family: Hominidae
 - Subfamily: Homininae
 - Tribe: Australopithecini

Cast of Characters

Orrorin tugenensis
Sahelanthropus tchadensis
Ardipithecus kadabba
Ardipithecus ramidus

Australopithecus anamensis
Australopithecus afarensis
Kenyanthropus platyops
Australopithecus bahrelghazali

Australopithecines

- What are the common characteristics of the early Australopithecines?
- How do the species differ from one another?
- When does each fall in time and space?
- What are the possible phylogenies of these species?

Australopithecus afarensis

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

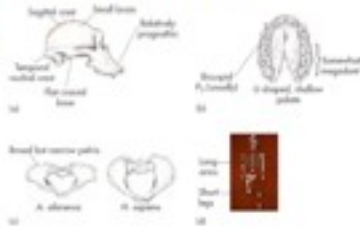


TABLE 11.2 Comparisons of *A. afarensis*, Great Apes, and Modern Humans

	Cranial Capacity (cc)	Sexual Dimorphism (Males X Percent Heavier)
<i>A. afarensis</i>	450	56%
Chimpanzee	400	15%
Gorilla	500	50%
Orangutan	400	Nearly 100%
Early genus Homo	600	43%
Modern human	1,400	15%

Australopithecus bahrelghazali

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



Kenyanthropus platyops



Kenyanthropus lateral



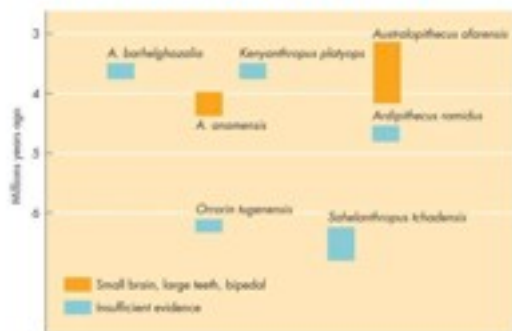
A. afarensis and K. platyops



Kenyanthropus platyops

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

Evolutionary Relationships

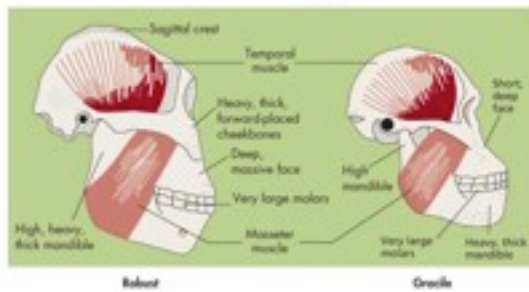


The Robust Australopithecines

- AKA *Paranthropus*
- Hard object feeding
 - Sagittal crest
 - Large cheek teeth
 - Flared zygomatic arch
 - Dished Face
 - Extreme postorbital constriction
- Woodland and open woodland habitat



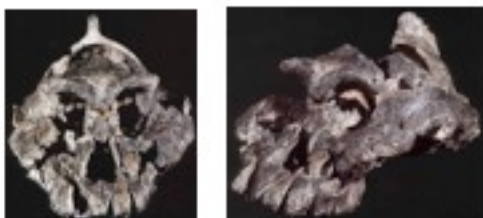
Robust and gracile



Kenyanthropus - robust?



Australopithecus aethiopicus 2.7-2.3 mya



Australopithecus boisei

2.3-1.3 mya



Australopithecus robustus

2-1 mya



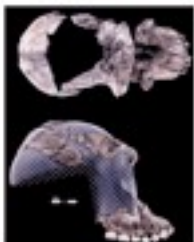
Gracile Australopithecines

- Slight brain size increase
- Rounded Vault
- No crests
- Less projecting face
- Bipedal anatomy
- 3.5-2.0 mya



Australopithecus gahri

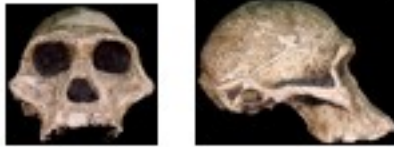
2.5 mya



Taung



Australopithecus africanus
3-2.4 mya



Reconstruction

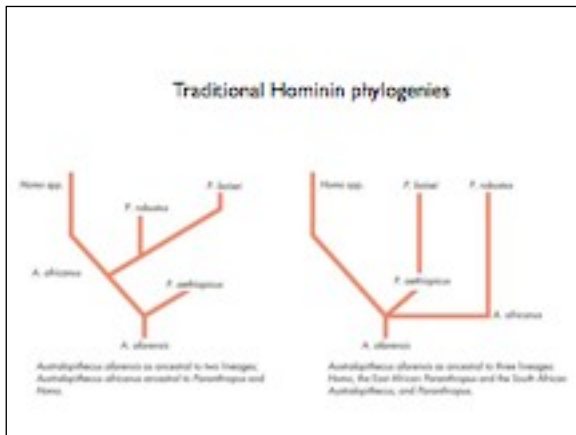
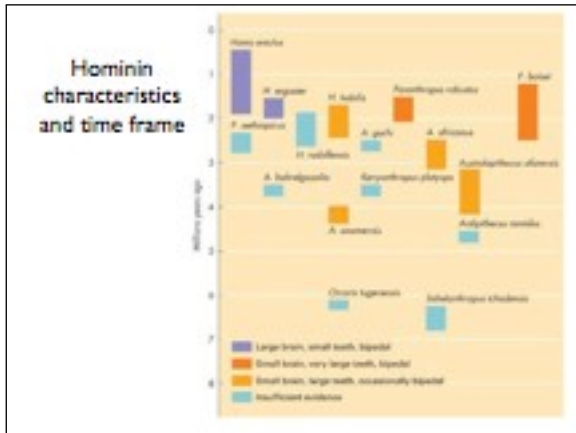


Australopithecus sediba

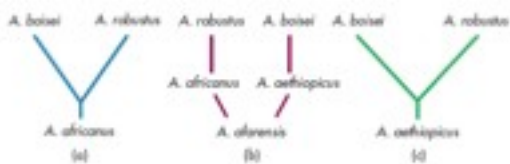
- dates to right around 1.9 mya - no older than that
- brain size (95% adult size) ~ 420 cc
- maximum height 1.3 m
- smaller teeth and cheekbones than *A. africanus*
- longer legs and pelvic changes more like *Homo*

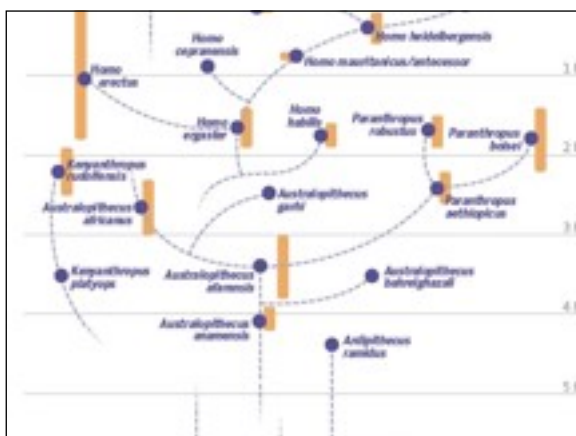
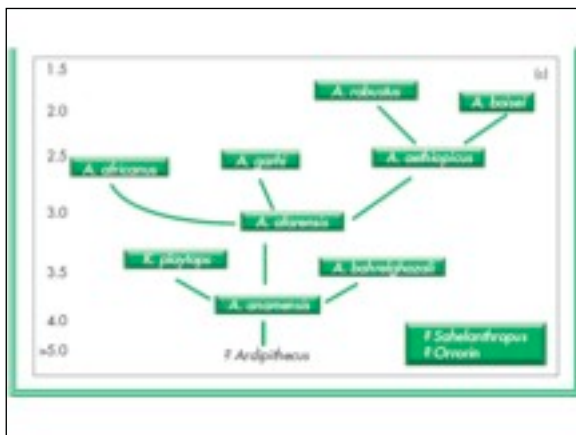
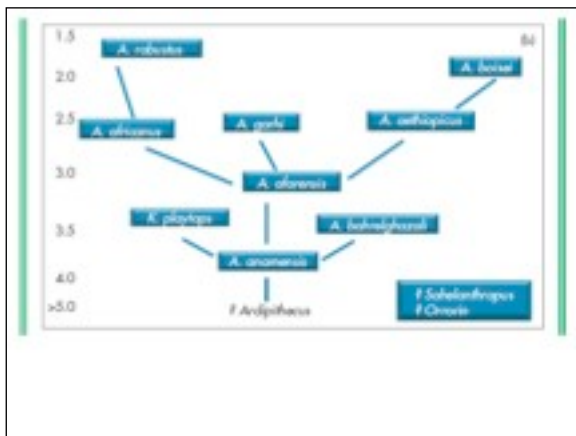
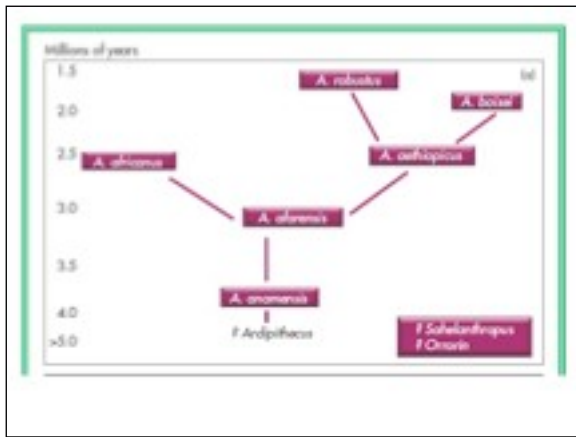
Brain and body sizes

<i>Sahelanthropus</i>		~350cc
<i>A. afarensis</i>	29 kg f / 45 kg m	~375-550
<i>A. africanus</i>	30 kg f / 40 kg m	~530
<i>A. aethiopicus</i>		~415
<i>A. sediba</i>		~420
<i>A. boisei</i>	34 kg f / 49 kg m	~530 cc
<i>A. robustus</i>	32 kg f / 40 kg m	~590 cc
<i>Homo habilis</i>	32 kg f / 52 kg m	500-800 cc



Phylogenies?







A. afarensis?



Australopithecus africanus

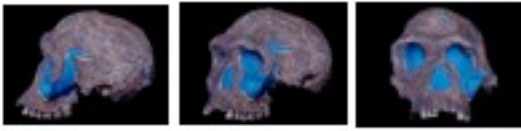


Robust *Australopithecus*!

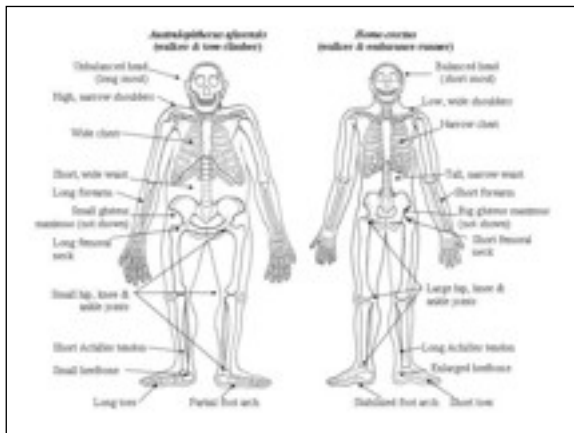
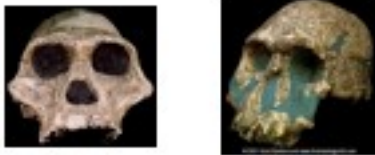
Defining *Homo*

- Rasmussen: Primate genus containing species of relatively small-toothed, big-brained, stone-tool-making hominids
- Walker: relatively large brain cases, completely modern limb proportions, and relatively small teeth
- Wolpoff: expanded cranial capacity, reduced canine size, precision grip

Homo habilis



Australopithecus v. Homo habilis



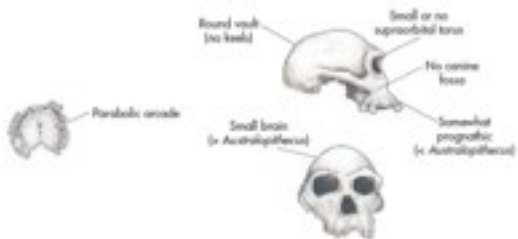
Homo

- brain size greater than 500 cc
- smaller, less prognathic face
- smaller teeth than the australopithecines
- more efficient bipedalism

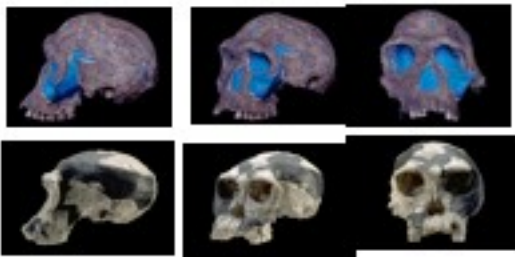
Homo species

- *Homo habilis*
- *Homo erectus*
- *Homo rudolfensis*
- *Homo ergaster*
- *Homo floresiensis*
- *Homo heidelbergensis*
- *Homo rhodesiensis*
- *Homo antecessor*
- *Homo neandertalensis*
- *Homo sapiens*

Homo habilis



Homo habilis



Homo rudolfensis



Homo rudolfensis

- *Homo habilis* or something different?
- larger body than *H. habilis*
- larger brain than *H. habilis*
 - but smaller EQ
- bigger teeth than *H. habilis*

Savanna-Woodland



Olduwan Chopper

