

Early Primate Evolution Summary

In the **Cretaceous** primates emerge **65 mya**

- Climate still good
- Continents joined
- Flowering plants
- Explosion of insects - first primates likely ate insects and fruits
- Pointy molars for insect eating
- Became arboreal to get the insects and fruit.

= Grasping digits, stereoscopic vision, larger brain for muscle co-ordination.

Early primate evolution is likely linked to a major dietary shift.

Primate Evolution Summary

Palaeocene Primates

65 – 56.5 mya

- Geography and climate still the same
 - Best fossils come from NA and Western Europe = land bridge
 - Small primates
 - Ate insects, fruit and vegetal material
 - Have long snouts, good sense of smell and sharp claws, but are classified as primates because of their premolars and molars and the possibility of a bone in the inner ear.
- = Archaic primates, similar to the **Prosimians**

Most Palaeocene primates died out before or during the Eocene.

Primate Evolution Summary

Eocene Primates

56.5 – 34 mya

- Climate the same, but land bridge broken around 50 mya.
- Eocene primates were the first real primates (could be called lower primates)
- **Eocene prosimians** appear on both sides of the land bridge and likely have an ancestor in Africa in the early Palaeocene
- Have grasping hands, nails on most digits, and a reduced snout
- Best known are the ***Adapid*** and the ***Omomyoidea***
- **Eocene anthropoids** are well represented and come out of the *Omomyoidea*
- Have the primate dental formula.

Possibly that the drop in temp and precipitation caused the punctuated divergence of the higher primates.

Primate Evolution Summary

Eocene Primates

56.5 – 34 mya

Amphipithecus mogaungensis is the most famous because it is clearly a higher primate = deep mandible throughout, fused mandible, molar crowns are flatter - no longer designed for insects, but for fruits and other vegetal material.

Fayum, Egypt is the most famous site for this period.

Primate Evolution Summary

Oligocene Primates

34 – 23.5 mya

- Climate cooled and became drier
- Many species became extinct
- Prosimians become more limited to nocturnal niches
- Anthropoids are best represented in Fayum, but are well spread now
- Arboreal

Aegyptopithecus is the most famous. It has a mixture of advanced and primitive features.

Oligocene anthropoids appear in SA as well, but there were no early primates there.

Primate Evolution Summary

Miocene Primates

23.5 – 5.2 mya

Early Miocene

- Continents basically in their present position
- Climate cooler and drier
- Movement between Africa and Eurasia now (16 mya)
- Very few fossils between 31 and 22 mya
- **Hominoid** divergence estimated between 25-20 mya
- Monkeys are firmly established in the New world and leave our story
- ***Proconsul*** is the main genus of the early Miocene fossils and is probably an ancestor to orang-utans, gorillas and chimps.

In the early Miocene hominoids occupied many areas. In the late Miocene and early Pliocene, however, the monkeys take over and hominoids begin to decline = linked with the change in climate.

Primate Evolution Summary

Miocene Primates

23.5 – 5.2 mya

Middle and Late Miocene

- Climate even colder and drier and more seasonal
- Tropical forests = woodlands = fruit was patchier than leaves = monkeys are happier than hominoids
- Fossils are from Africa, but they are also in Eurasia (actually better here). Hominoids lived in the broad-leaved forest stretching across the southern parts of Eurasia.

Kenyapithecus (16-14 mya) is suggested to be allied to apes and humans.

Dryopithecus*, *Pliopithecus*, *Ouranopithecus*, *Sivapithecus*, *Gigantopithecus*, *Lufengpithecus* and *Oreopithecus are the main genera.

Primate Evolution Summary

Miocene Primates

23.5 – 5.2 mya

***Dryopithecus* (14-8 mya)**

- Central and Western Europe
- Climate change likely caused its extinction
- Similar to Proconsul but with an ape body
- It is the oldest known hominoid that could swing and had an upright posture
- Likely the ancestor of *Pan*, *Pongo*, *Gorilla* and *Homo*

***Pliopithecus* (early extinction)**

***Ouranopithecus* (11-9 mya)**

- Thick enamel which is similar to *Sivapithecus*
- Lived in the open woodlands, not forests

Primate Evolution Summary

Miocene Primates

23.5 – 5.2 mya

***Sivapithecus* (split around 12 mya)**

- Most robust mandible and larger teeth
- Lived in an open woodland
- Teeth wear and morphology suggest a soft fruit diet.
- Shows sexual dimorphism. ***Ramapithecus*** is the female of the genus.

*The tooth morphology (thick enamel) suggested a Hominid connection but recent studies put it as the ancestor of **Pongo**.*

***Kenyapithecus* (16-14 mya)**

- African origins
- Possible link to the Hominids

Hominid Phylogeny



