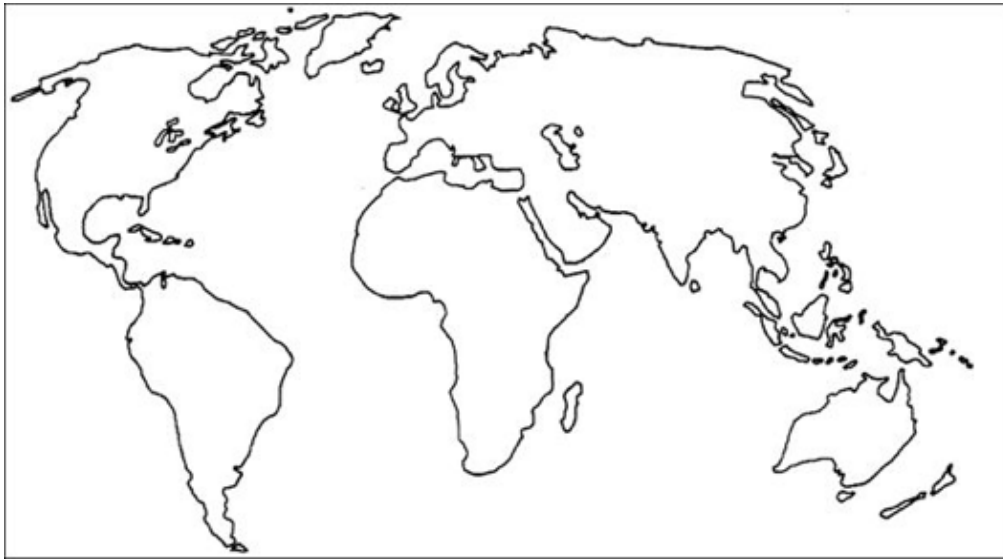


# Paleocene (66-56 mya)



## Environment

- Warm, tropical or subtropical and seasonality more wet-dry than hot-cold

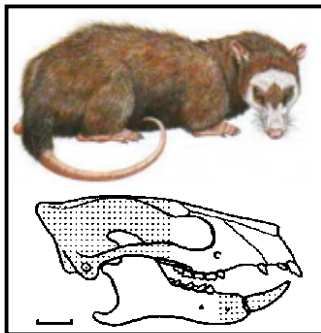
### Primates

### Features



Purgatorius

- 2.1.4.3
- Insectivorous
- Ankle bone a bit like primates
- Bit squirrel like in shape and size



Plesiadapiforms

- Claws
- 2.1.3.3 – rodent like
  - Low cusp molars
- Grasping ability
- Small brain
- No post orbital bar
- Insectivorous
- Questionable bulla



Carpoletes – type of Plesiadapiform

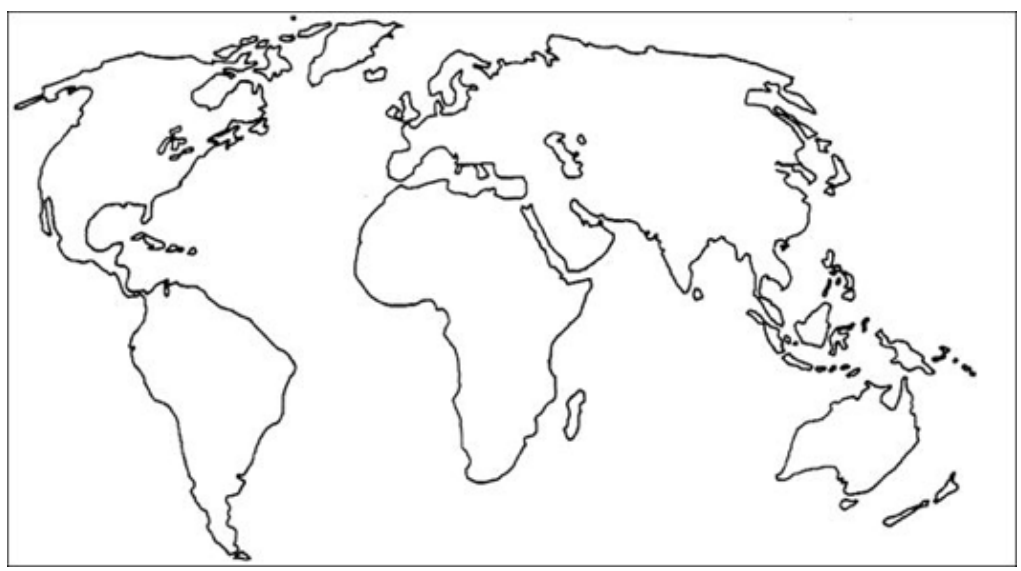
- Grasping hands & feet – opposable thumbs and big toes
- Nail on end of first digit
- NO Stereoscopic vision

What happens next: Carpoletes 1st primate? Or direct ancestor too primates? Hypotheses for why primates: 1) Arboreal Hypothesis - defining primate characteristics are those associated with life in trees – grasping hands and feet, binocular vision, greater intelligence Problem – lots of mammals arboreal and do not have suite of primate characteristics. 2) Visual Predation Hypothesis 1st primates specialized in preying on insects & other small creatures – hunting them in tree branches or forest undergrowth – binocular vision & grasping hands would have really helped with this Problem – does not address the high level of fruit consumption we see today 3) Angiosperm Hypothesis Hypothesized that the suit of primate features were mostly adaptations for eating fruit & other foods made available with radiation of modern groups of flowering plants *Lots of potential insectivorous ancestors to primates*

# Eocene (56-34 mya)

## Environment

- Very warm, dense tropical forests



### Primates

### Features



Omomyids  
- Teilhardina  
- Archicebus

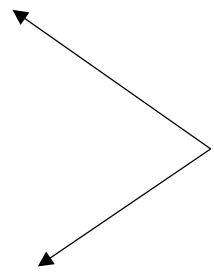
- Small
- Insectivorous
- Short snout
- Tarsier-like
- Nocturnal



Adapids  
- Notharctus

- Larger
- Frugivorous/Folivorous
- Long snout
- Lemur-like
- Diurnal

- Larger brains
- Nails not claws
- Opposable 1<sup>st</sup> toe (hallux)
- Post orbital bar
- Greater reliance on vision
- 2.1.3.3

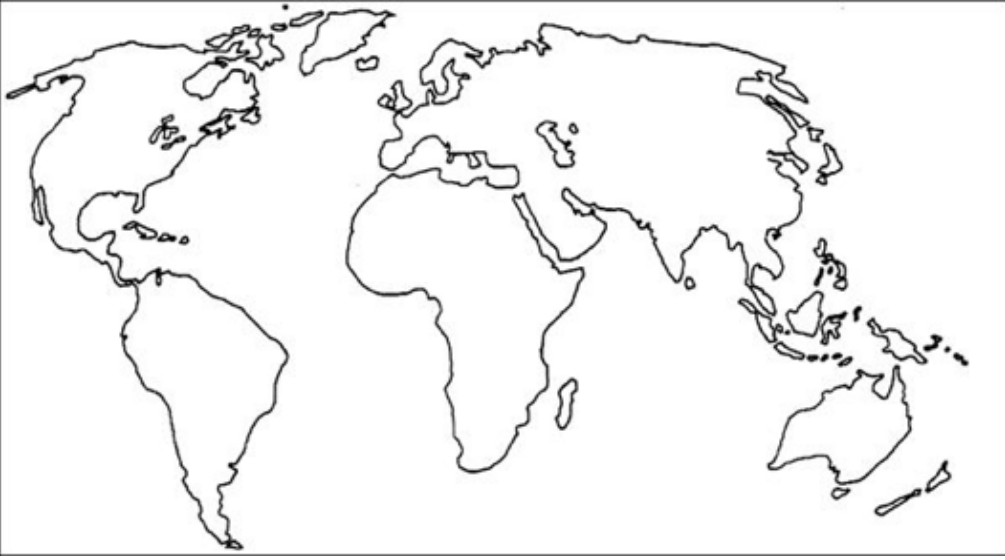


**What happens next:** 1) adapids = strepsirhines and omomyids to haplorhines?

2) Or Adapids to streps & haps and omomyids to tarsiers?

3) Or adapids to streps omomyids to tarsiers and something else to haps?

# Eocene (56-34 mya)



## Environment

- Very warm, dense tropical forests

### Primates

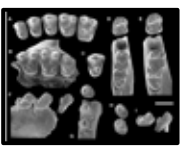
### Features



Archecebus – possible basal anthropoid



Eosimias – possible basal anthropoid

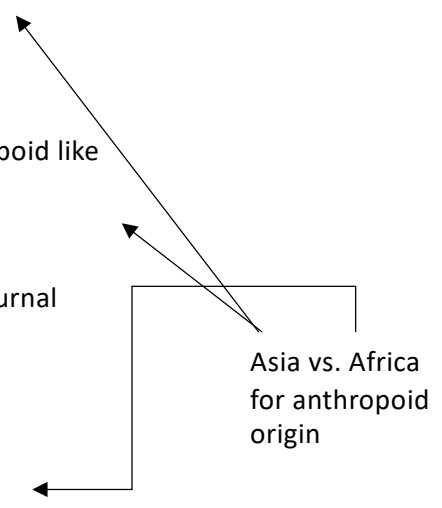


Biretia – possible basal anthropoid

- Emerged very close to the split between haplorhines and strepsirhines
- Ankle bones resemble that of monkeys – did lots of leaping
- Very small – like palm of hand size
- Diurnal
- Insectivorous, 2.1.3.3

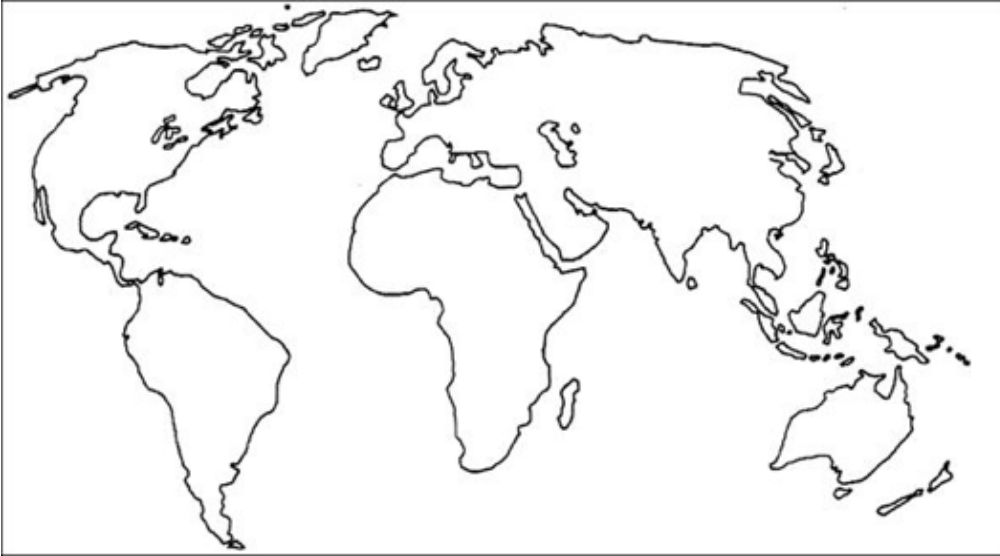
- Tarsal, calcaneus very anthropoid like
- Moved in trees like monkeys
- Snout very monkey like
- Insects and nectar, 2.1.3.3
- Some diurnal and some nocturnal

- Bicuspid premolars, 2.1.3.3
- Small body & large eyes
- Nocturnal
- Fruit and/or gums



**What happens next:** these are all possible basal anthropoids and two competing hypotheses: 1) anthropoids originated in Asia and migrate to Africa or 2) Anthropoids originated in Africa

# Oligocene (34-23 mya) – old world



## Environment

- Mass extinctions
- Rapid global cooling
- New primate diversity but geographically isolated

## Primates

## Features



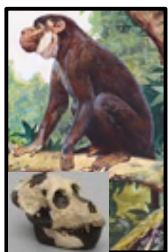
Oligopithecids

- Earliest anthropoid of the time
- 2.1.2.3
- Probably folivorous/insectivorous diet based on molars
- Big olfactory bulb and unfused mandibular symphysis making it a bit more prosimian
- Auditory bulla similar to platyrrhines



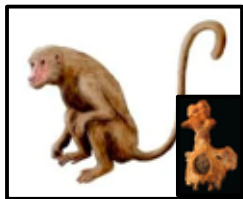
Parapithecids

- 2.1.3.3/0.1.3.3
- Sister group to catarrhines
- Smaller olfactory bulbs compared to Oligopithecids & closer to modern anthropoids
- Folivorous



Propithecids

- Aegyptopithecus big one here & sexually dimorphic
- 2.1.2.3
- Fore&hind limbs of similar size – arboreal quadrupeds
- Smaller brains than modern catarrhines
- Sagittal crest
- Auditory bulla similar to platyrrhines
- frugivorous

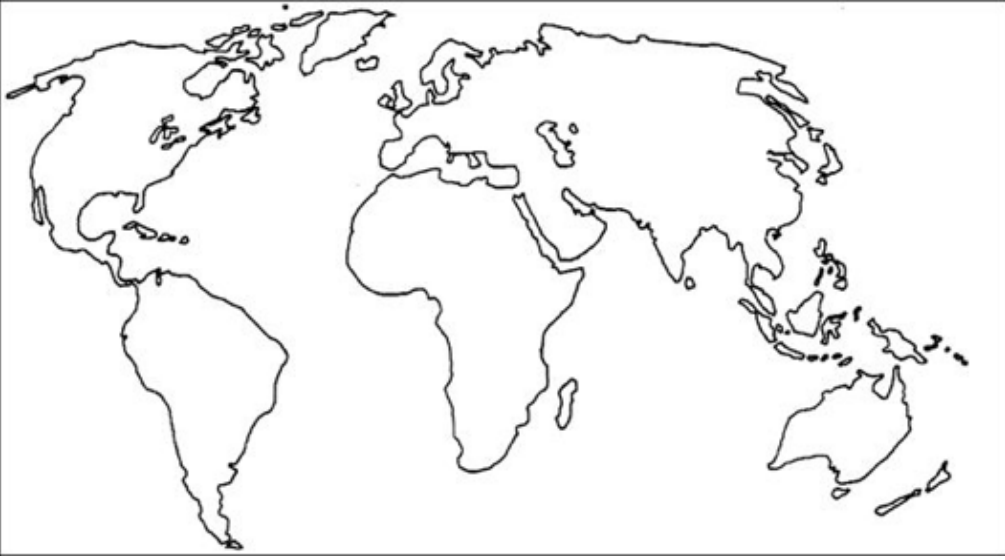


Saadanius

- Bony tube in inner ear which modern catarrhines have
- Arboreal quadruped
- 2.1.2.3
- Frugivorous

**What happens next:** Propithecids and Saadanius seem like best options (currently) for catarrhine ancestry. Now...head into new world

# Oligocene (34-23 mya) – new world



## Environment

- Mass extinctions
- Rapid global cooling
- New primate diversity but geographically isolated

### Primates

### Features



Perupithecus

- 2.1.3.3
- About the size of a squirrel
- Likely insectivorous
- Arboreal quadruped
- Perhaps oldest platyrrhine



Branisella

- 2.1.3.3
- Upper molars have 4 cusps which is very similar to other new world monkeys
- Frugivorous
- Better climber

**What happens next:** hypotheses for NWM: 1) Migration from N. America and then evolving 2) Migrate from Africa across Atlantic 3) Migrate from Africa through Antarctica 4) Platyrrhines and Catarrhines originated independently

# Oligocene (34-23 mya) – old world



## Environment

- Mass extinctions
- Rapid global cooling
- New primate diversity but geographically isolated

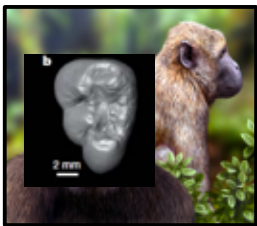
### Primates

### Features



Rukwapithecus

- Stem hominoid?
- hominoid looking molars – multiple cusps
- 2.1.2.3
- Fruit and leaves



Nsungwepithecus

- Stem cercopithecoid?
- Cercopithecoid looking molars - bilophodont
- 2.1.2.3
- Fruit and leaves

**What happens next:** hypotheses hypotheses for apes – migrate to Africa from Eurasia or modern apes only evolved from fossil African apes

# Miocene (23-5 mya) - Europe



## Environment

### Primates

### Features



Dryopithecus



- Likely terrestrial quadruped when on ground but on flat hands, not knuckles
- But was suspensory in trees (like orangs) – and likely spent most of its times there
- Fruit and soft leaves – thin tooth enamel
- Y-5 molar pattern
- ~ 25lbs



Oreopithecus

- 66-77 lbs
- Short snout
- Shearing crests on molars so likely folivorous
- Robust lower face with big muscle attachments – so heavy mastication ability
- Suspensory arborealism – broad thorax, short trunk, super long arms, long slender digits, highly mobile joints
- Interesting foot and ankle anatomy that have some suggesting possible bipedal ability (loads on medial aspect of foot and toes toes more in line with 1<sup>st</sup> and 2<sup>nd</sup> metatarsals. Also had a lumbar curve – but unlikely habitual bipedalism
- DEAD END

What happens next:

# Miocene (23-5 mya) - Asia



## Environment

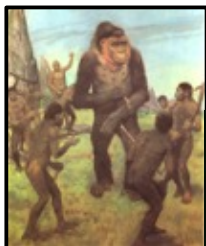
### Primates



Sivapithecus



Khoratpithecus



Gigantopithecus



### Features

- Basically the size of a modern orang and had a very orang face
- But postcranial anatomy suggests it spent most of time on ground but some times in trees – so a lot like chimps
- Likely tough food diet of grasses and seeds
- Though one species that was more arboreal and ate more fruit

- Crinkled molars & broad flat front incisors like oranges
- Frugivorous

- Body weight estimates of 660lbs – based on mandible and teeth
- Likely seeds, nuts, fruits, leaves and stems
- Given size must have been on ground

What happens next:



# Miocene (23-5 mya) - Africa



## Environment

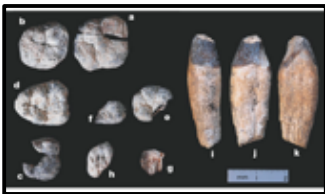
### Primates

### Features



Proconsulids

- Lots of similarities with Oligocene catarrhines from Fayum
- About the size of a male chimp (110lbs)
- Various species found in a range of habitats – woodlands to tropics
- Y-5 molars
- Frugivorous
- Rigid wrists and elbows – likely quadrupeds – modern apes much more mobile wrists



Chororapithecus

- Teeth very similar to gorillas – some say direct ancestor to gorillas
- High fiber plants
- Older than many of the Eurasian apes (other than Dryopithecus) throwing doubt on the idea African apes descended from Eurasian apes

What happens next: will hit on some next unit that are possible hominins or hominin ancestors

# Miocene (23-5 mya) - Africa

## Environment



### Primates



Victoriapithecus

- Old world monkey for sure
- Bilophodont cusps
- Sexual dimorphisms based on canines
- About 15lbs
- Folivorous
- Likely terrestrial quadruped



Theropithecus

- Actually Pliocene (5-2.5mya)
- Terrestrial quadruped but highly manipulative hands
- High sexual dimorphism
- Tough vegetation and nuts



What happens next: