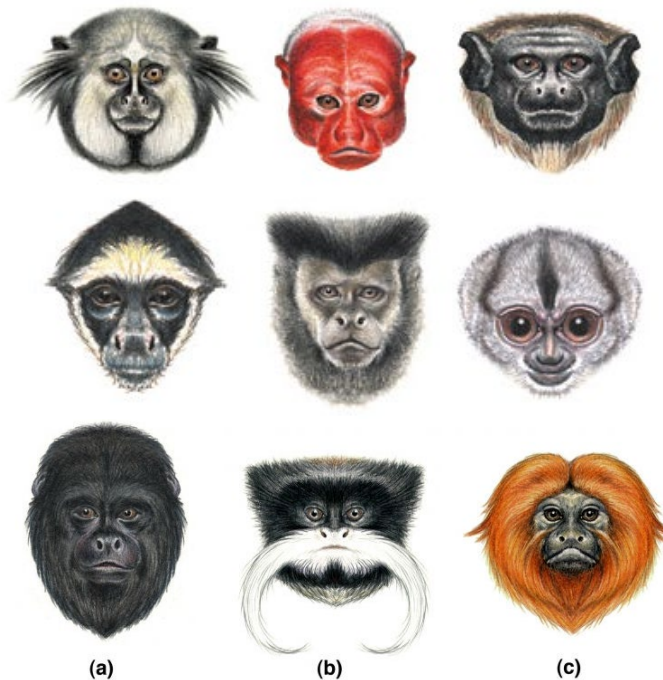


HEB 1330: Primate Social Behavior

September 15th 2020
Primate Diversity



Quiz 1

1. What is a spandrel (in an evolutionary context)? (1 point). Provide an example of a spandrel. (1 point)
2. Explain human lactation, using each of Tinbergen's four questions. (4 points)
3. The table below has information about food distribution and feeding competition for two different groups of Chacma baboons, the Laikipia group and the Drakensberg group. How would you expect female-female relationships to differ between the two groups, and why? (2 points)

Table 1 Ecological and social comparisons of Laikipia and Drakensberg baboons

	Laikipia	Drakensberg
ECOLOGY		
Predator density	High	Low
Percentage feeding time on clumped foods ^a	30.5%	0.9%
CONTEST COMPETITION		
Supplant rate per hour of feeding time ^b	1.80	0.05
Corrected for group size	0.0178	0.0028
Supplant rate per hour of observation time ^b	0.69	0.03
Corrected for group size	0.007	0.001

Overview

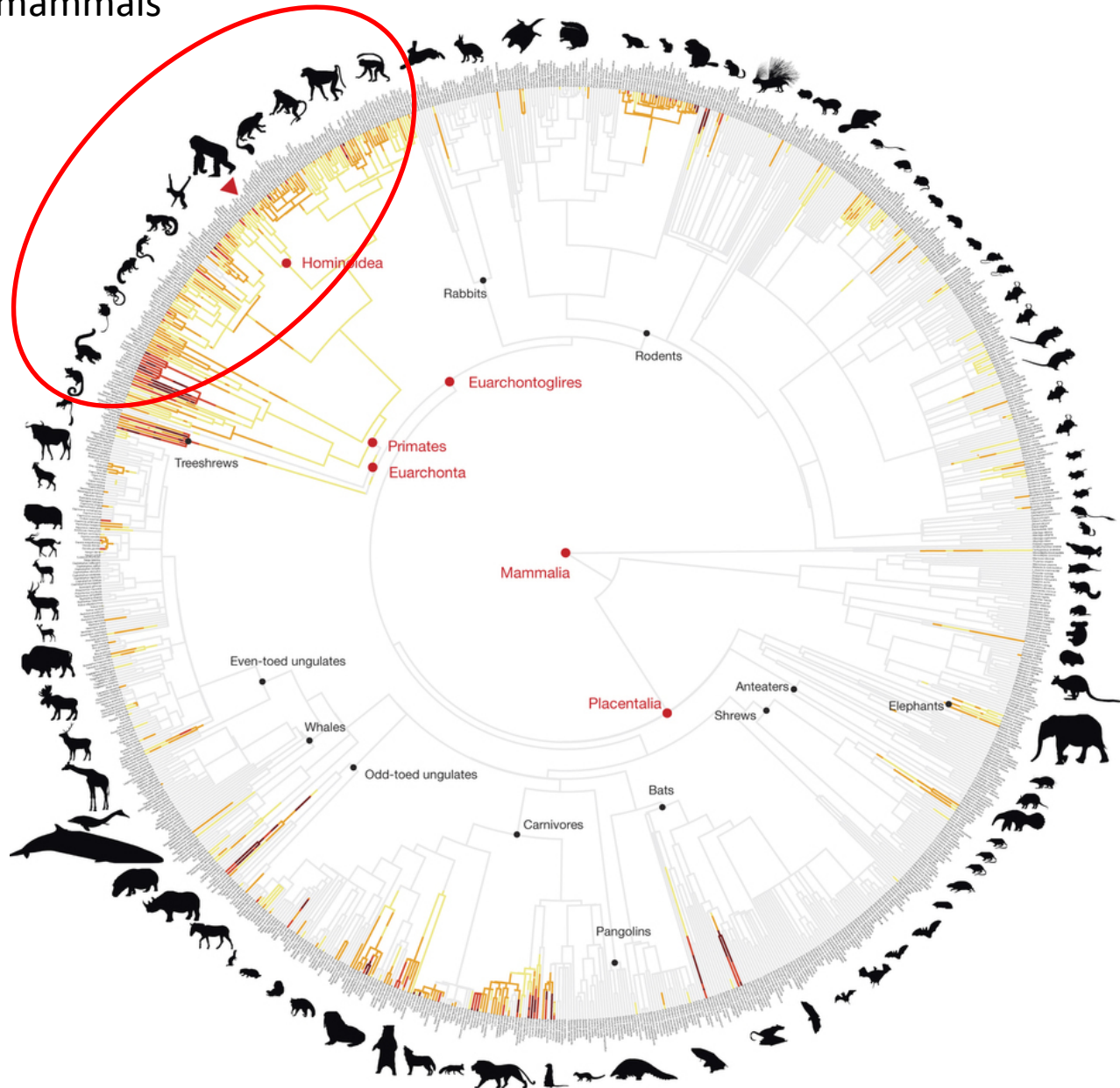
- 1) What is a Primate?
- 2) Basic Vocabulary
- 3) Brief Overview of Primate Groups



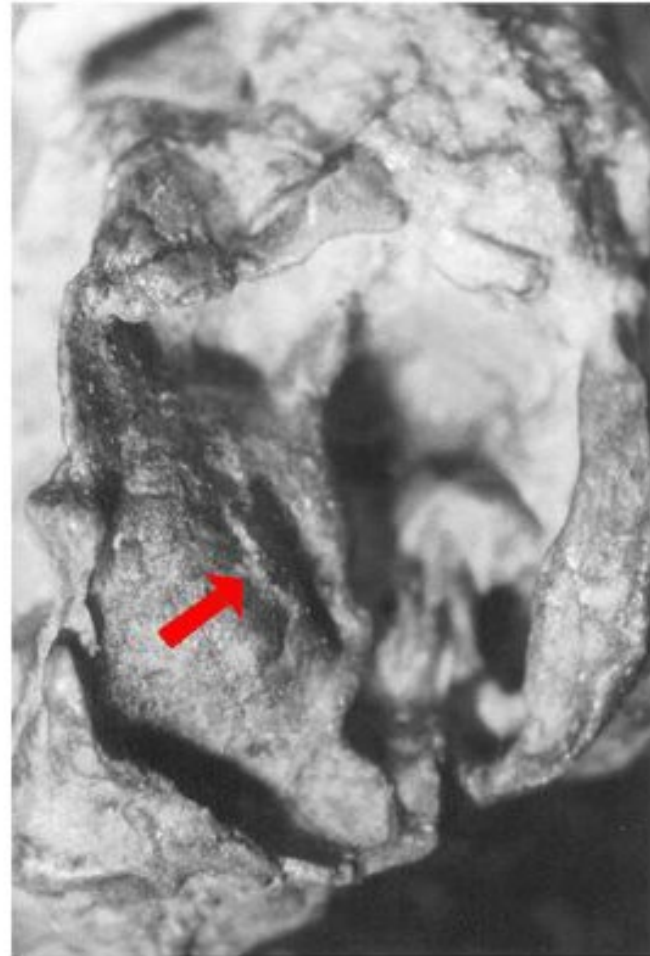
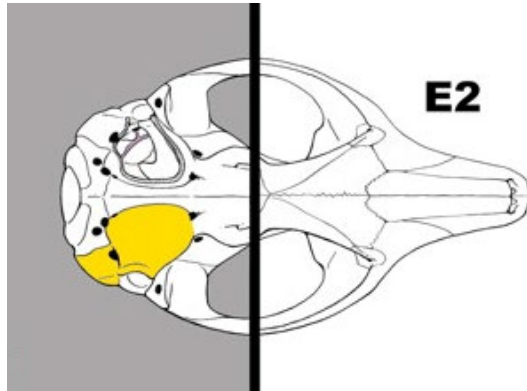
What is a primate?



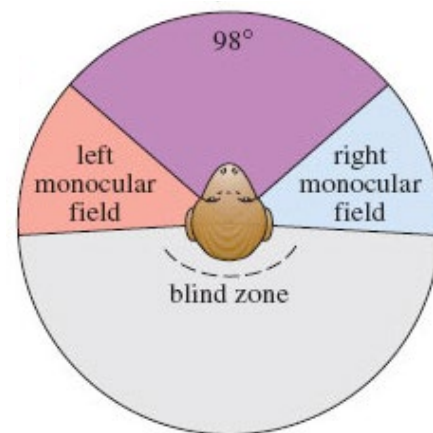
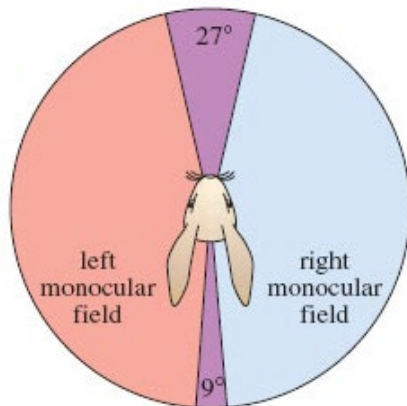
Primates are mammals



Primates have a Petrosal Bulla



Primates have an emphasis on vision rather than smell



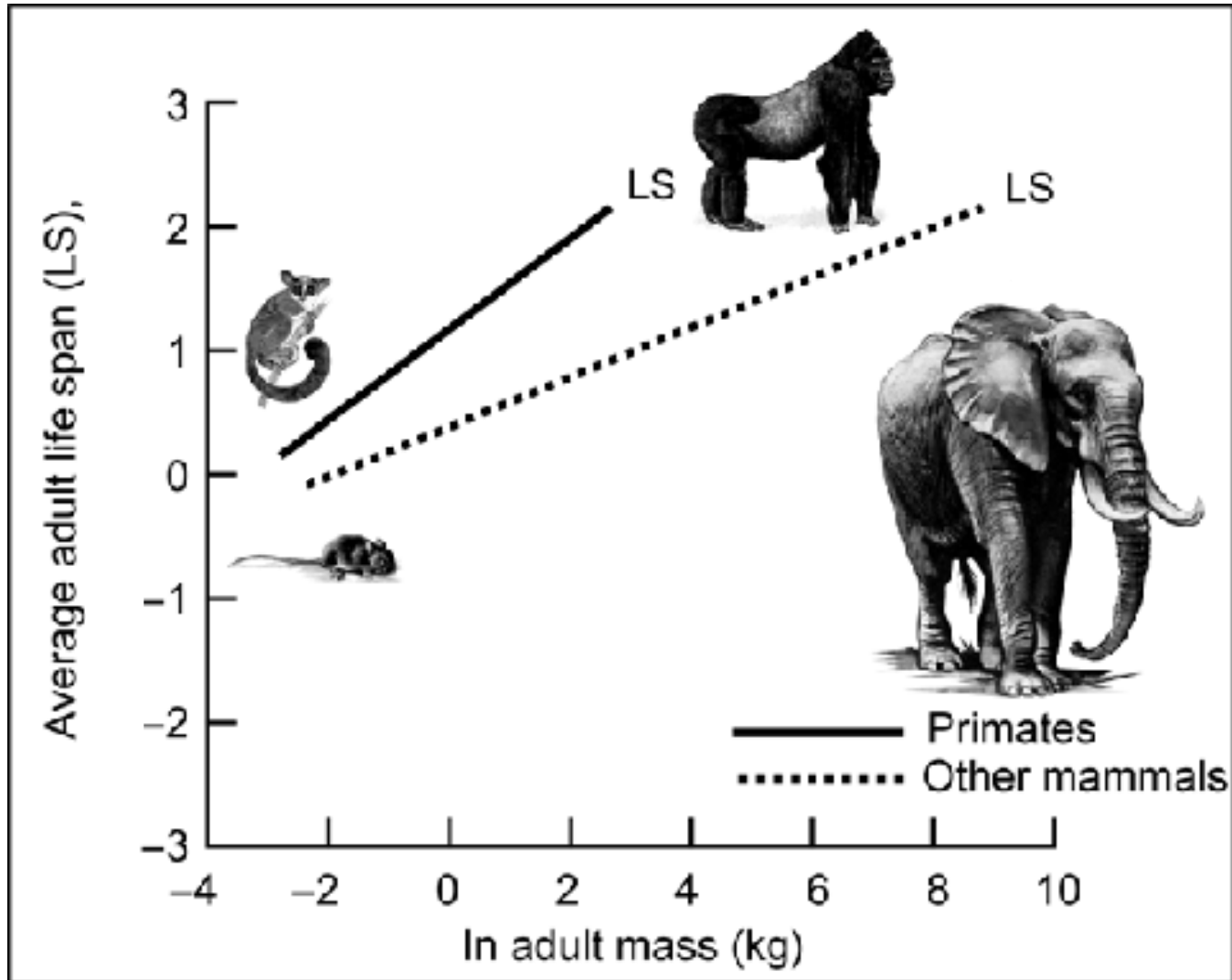
Primates have a generalized dentition



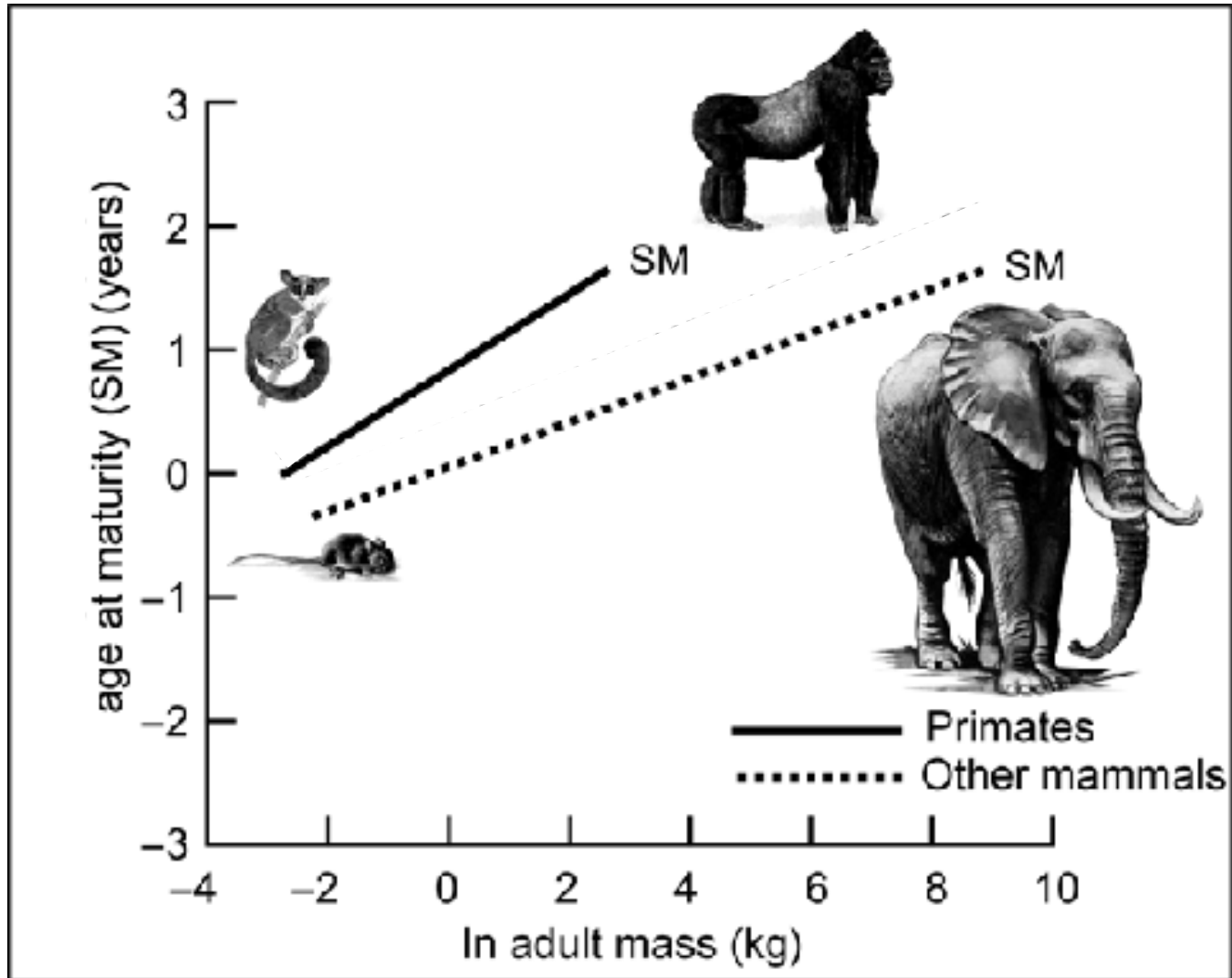
Primates have opposable thumbs and mostly nails instead of claws



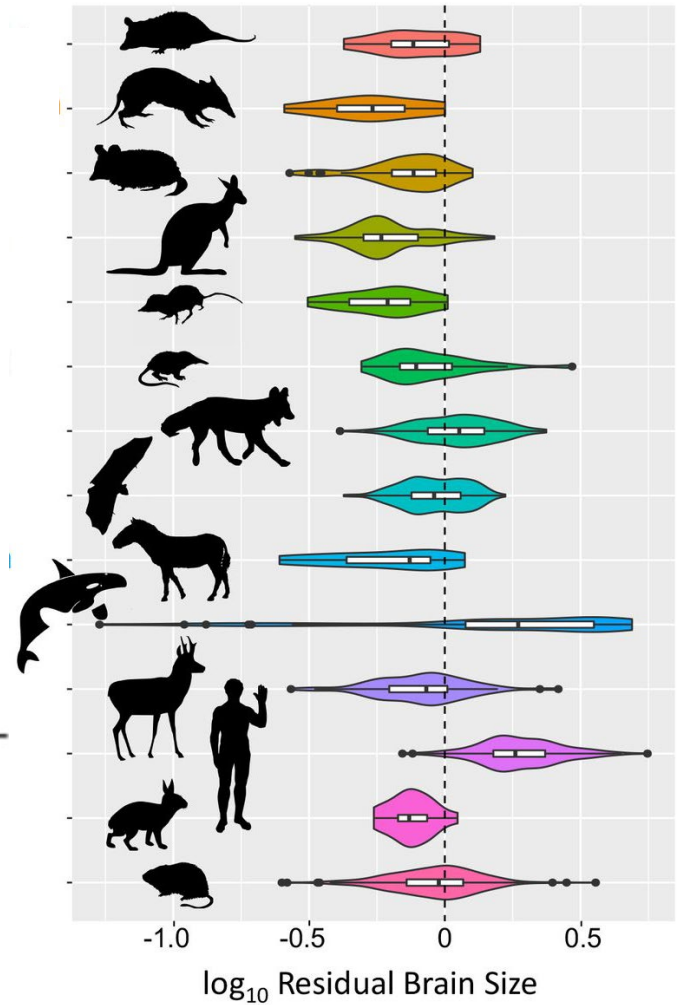
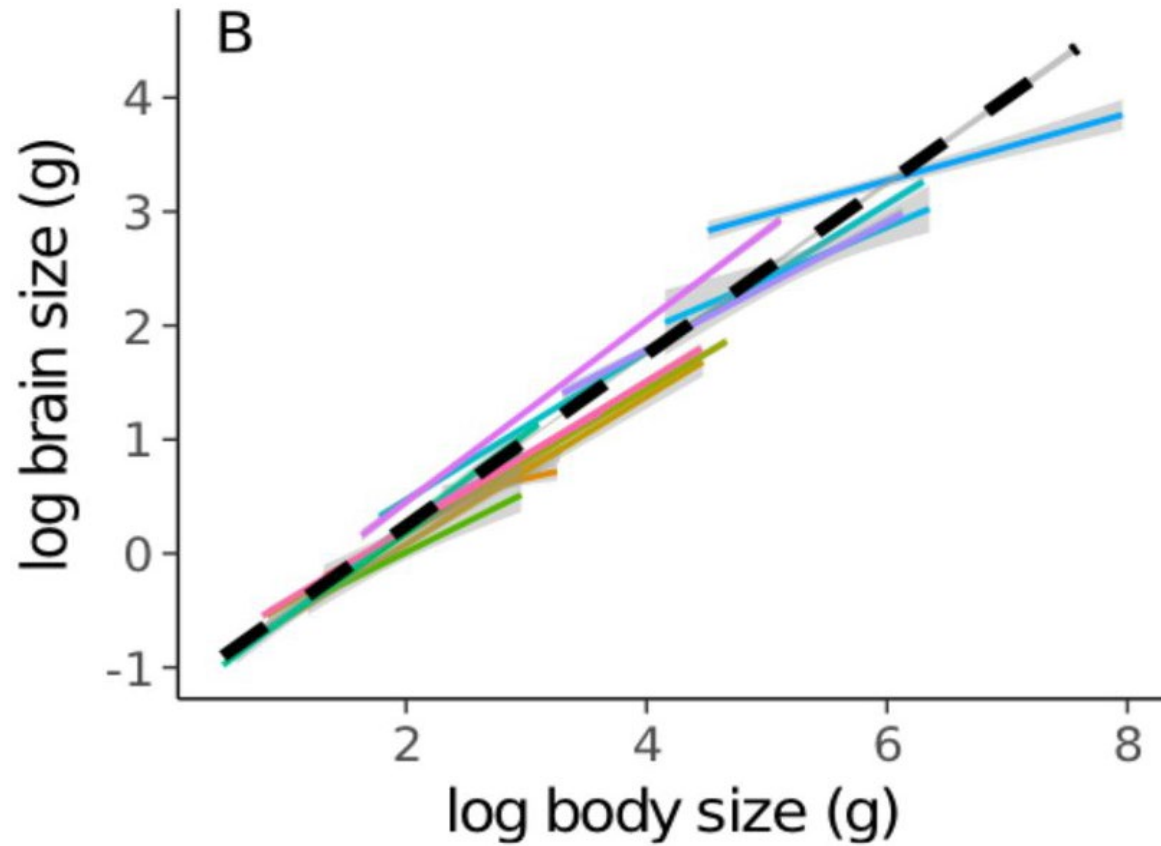
Primates have increased life spans



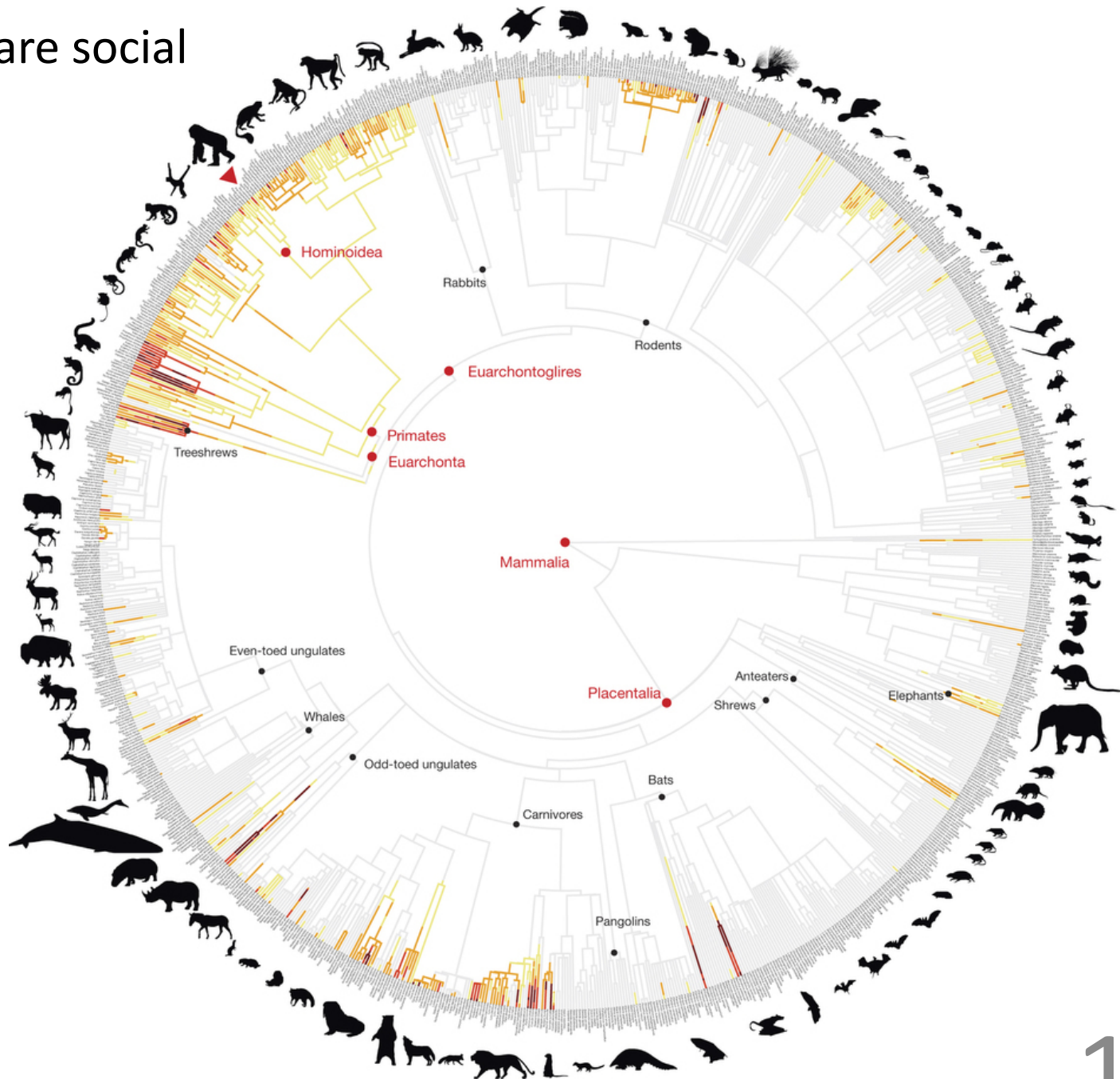
Primates have slow development



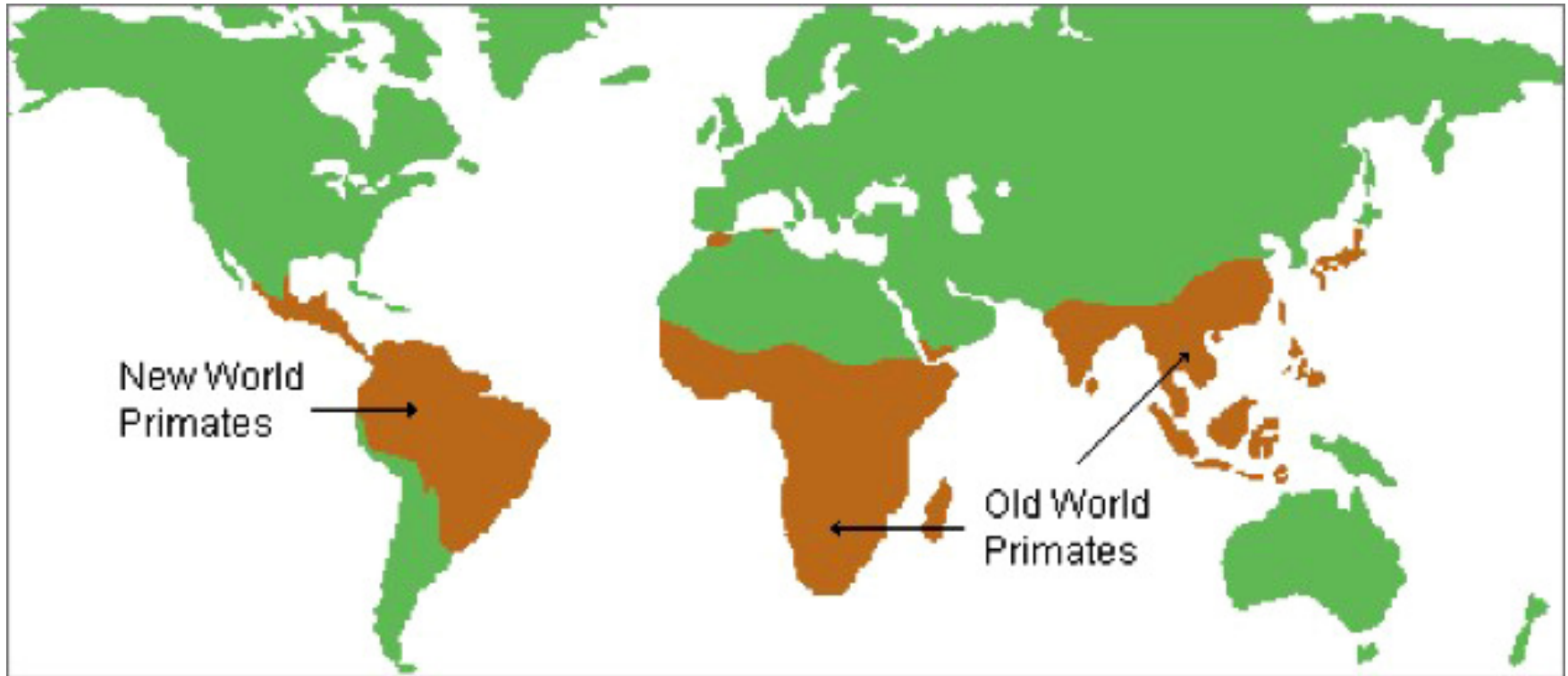
Primates have big brains



Primates are social

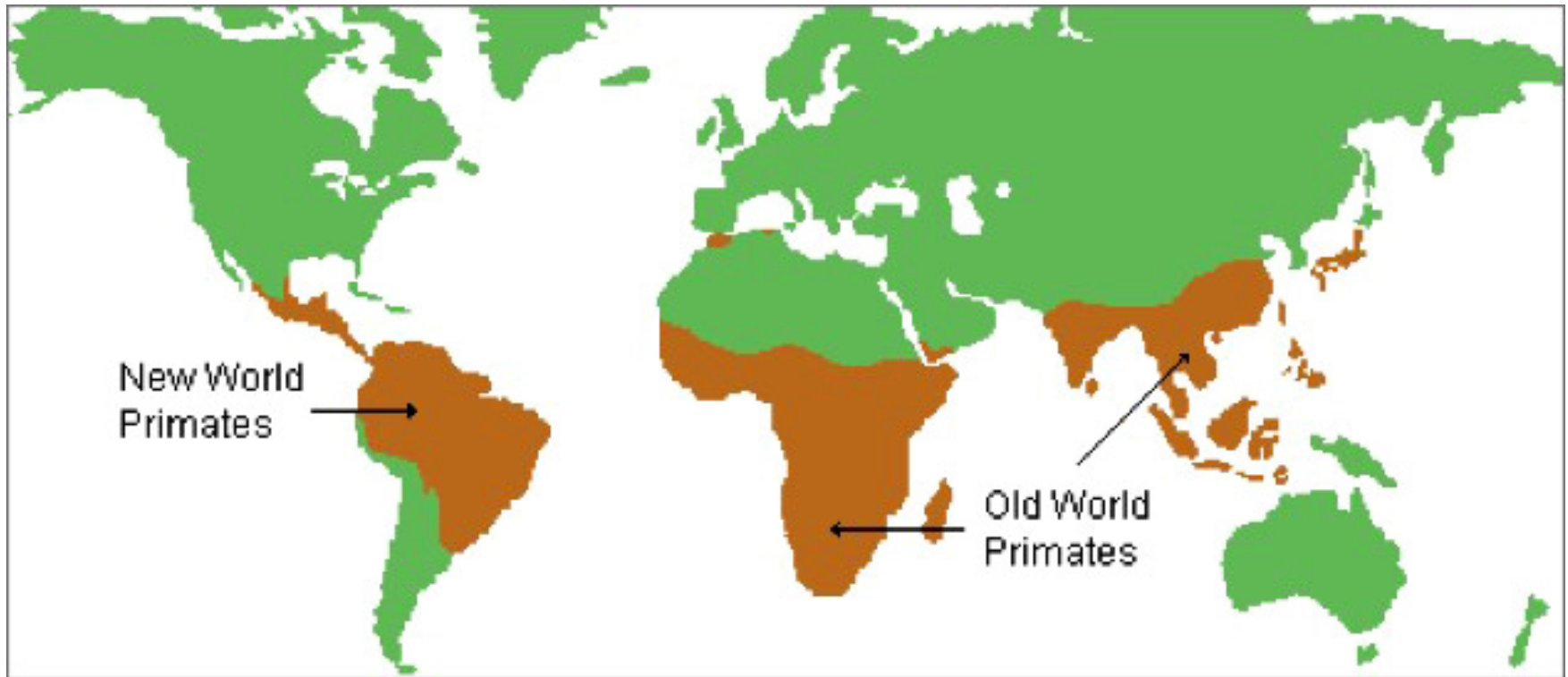


Where do primates live?



- ~685 species and subspecies of primates
- Primates are found in Africa, Asia, South / Central America in tropical regions (mostly forests)

Where do non-human primates live?



- ~685 species and subspecies of primates
- Primates are found in Africa, Asia, South / Central America in tropical regions (mostly forests)

Overview

1) What is a Primate?

2) Basic Vocabulary

3) Brief Overview of Primate Groups



Primate Diversity

- Some vocabulary:

Activity Patterns:

Nocturnal: active mostly at night

Diurnal: active mostly during the day

Cathemeral: active at random times of day



Primate Diversity

- Some more vocabulary:

Diet:

Frugivore: eats mostly fruit

Folivore: eats mostly leaves

Insectivore: eats mostly insects

Gummivore: eats mostly gum/sap

Omnivore: eats almost anything

Social Organization

- Some characteristics of social organization:

Gregarious (i.e. sociable)

Philopatry: remaining in group of birth (male, female or both disperse)

Group structure: solitary, pair-bonded, multi-male/multi-female, fission-fusion

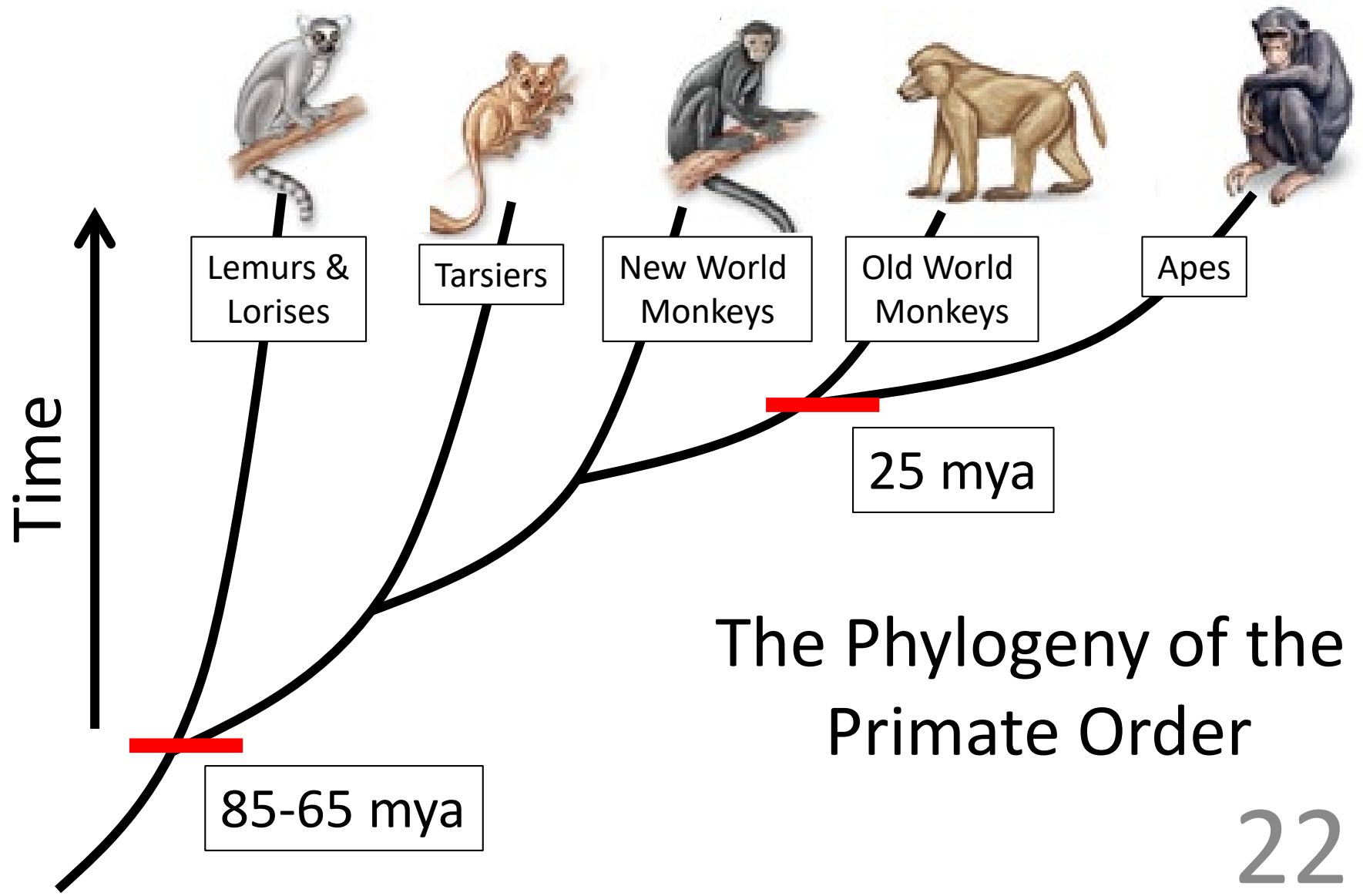


Overview

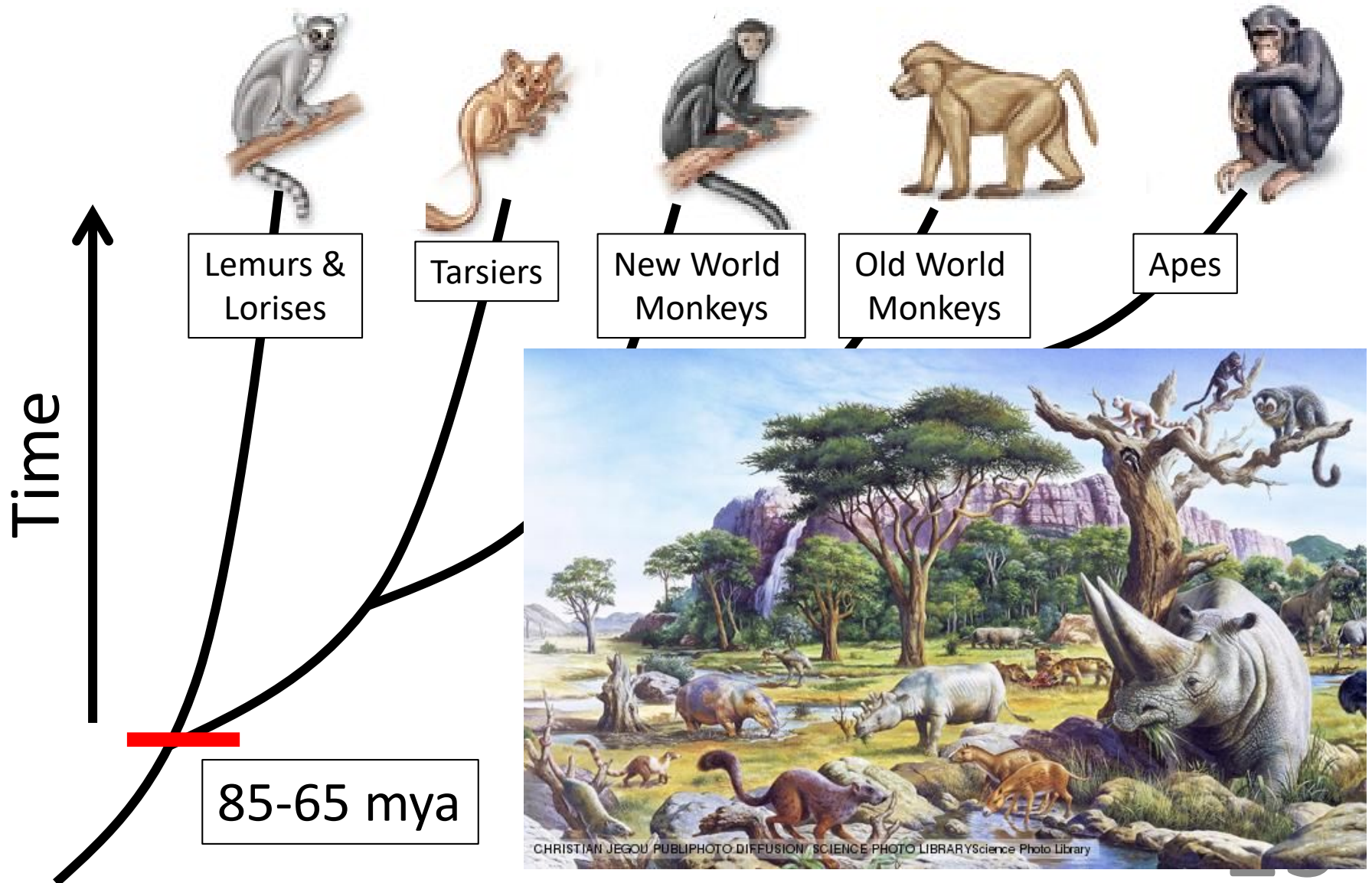
- 1) What is a Primate?
- 2) Basic Vocabulary
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Primate Diversity



Primate Diversity



Strepsirhini



Lemurs &
Lorises

Haplorhini



Tarsiers



New World
Monkeys



Old World
Monkeys



Apes

Suborder

Strepsirhini

retain primitive features



Wet curved noses
Longer snouts

Haplorhini

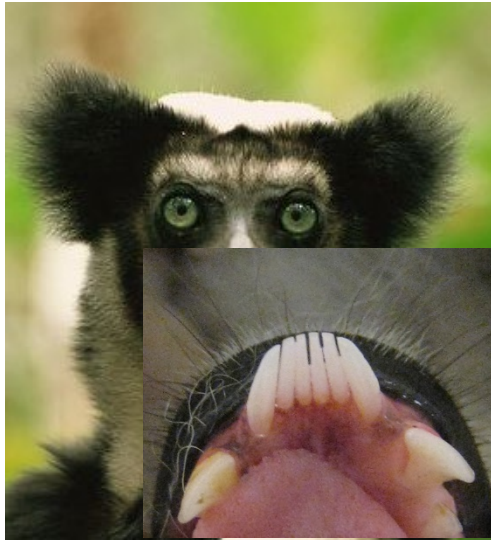


Dry, simple noses
Color vision

Suborder

Strepsirhini

retain primitive features



Wet curved noses

Longer snouts

Tooth comb

Haplorhini



Dry, simple noses

Color vision

Suborder

Strepsirrhines have a *tapetum lucidum*:
reflective layer behind the retina



Strepsirhini

retain primitive features



Wet curved noses

Longer snouts

No color vision

Tooth comb

Tapetum lucidum

Haplorhini



Dry, simple noses

Color vision

Vascularization to brain and of placenta

Complete orbital closure

Suborder

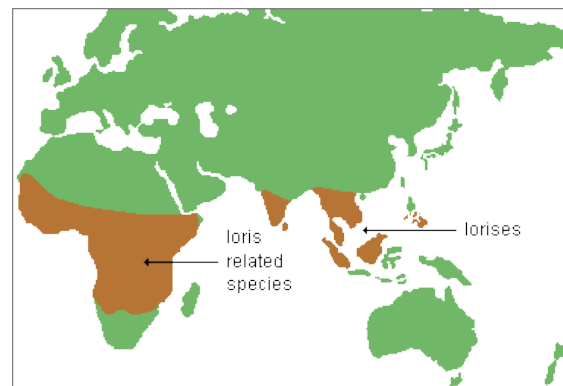
Strepsirhini

Lemurs



infraorder

Loris and Galagos



infraorder

Strepsirhini

Lemurs



Nocturnal or Diurnal
Solitary & Gregarious
Arboreal & Terrestrial
Mainly frugivorous

Loris and Galagos



Nocturnal
Often Solitary
Arboreal
Feed on fruit, gum & insects

Strepsirhini



Lemurs &
Lorises

Haplorhini



Tarsiers



New World
Monkeys



Old World
Monkeys



Apes

Suborder

Strepsirhini

retain primitive features



Wet curved noses

Longer snouts

Tooth comb

Tapetum lucidum

Haplorhini



Dry, simple noses

Color vision

Vascularization to brain and of placenta

Complete orbital closure

Suborder

Haplorhini

Tarsier

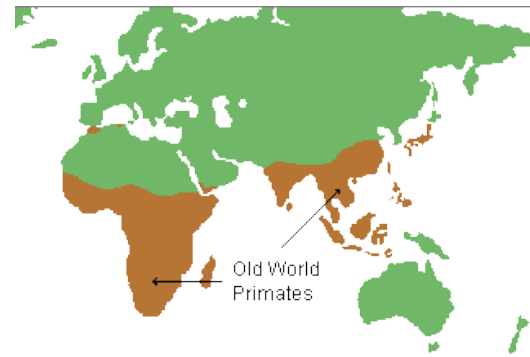
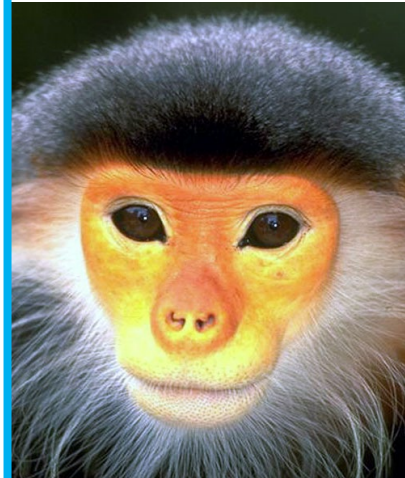


Infraorder

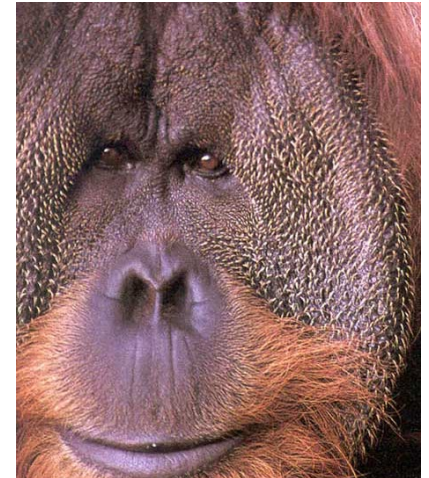
New world monkey



Old world monkey

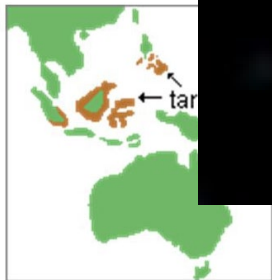


Apes



Haplorhini

Tarsier(Tarsiiformes)



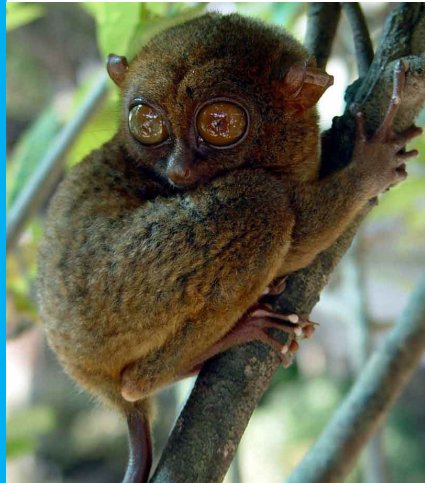
small vertebrate
air-bonded

Haplorhini

Platyrrhini

Catarrhini

Tarsier

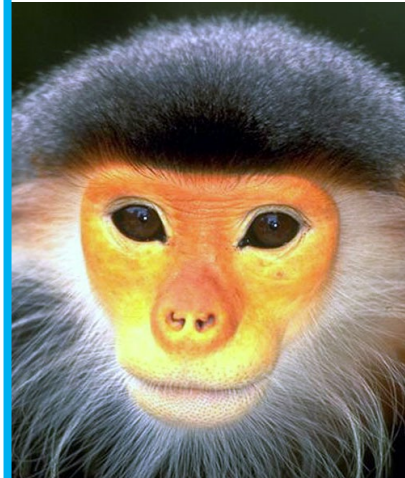


Infraorder

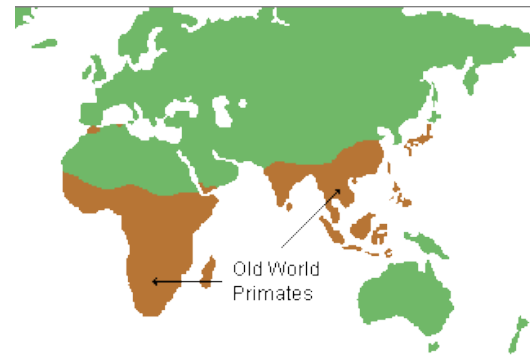
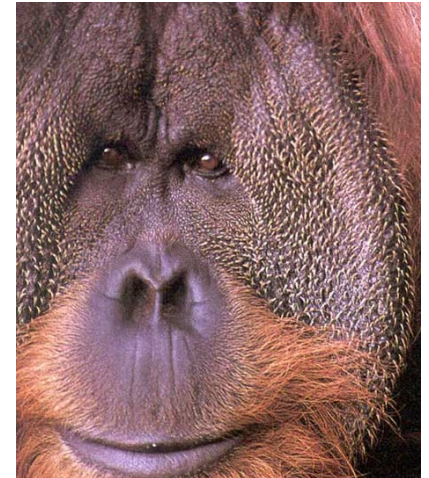
New world monkeys



Old world monkeys



Apes



New world monkeys (Platyrrhini)

Atelidae

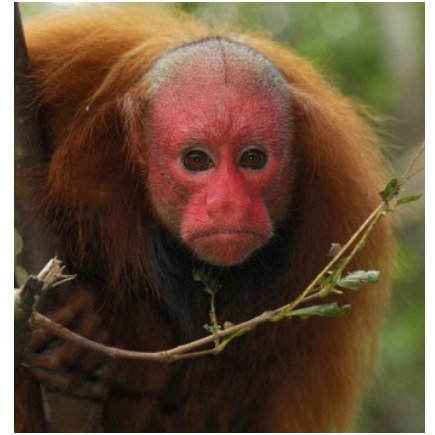


Family

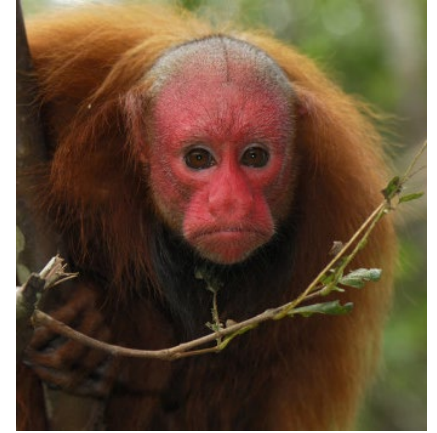
Cebidae



Pitheciidae



Platyrrhini

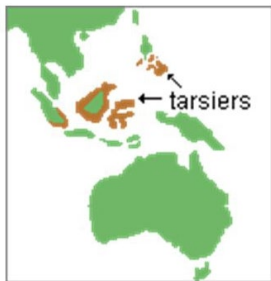


All diurnal except for *Aotus* (Owl monkey)

Arboreal (almost exclusively)

Haplorhini

Tarsier



Infraorder

Platyrrhini

New world monkeys

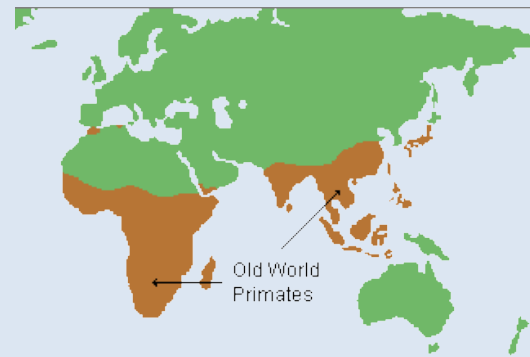
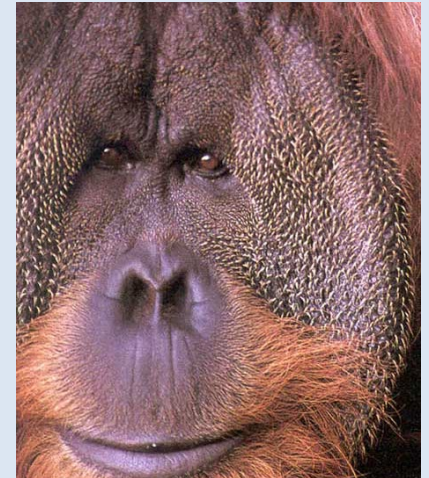


Catarrhini

Old world monkeys

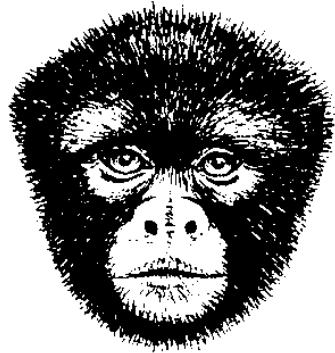


Apes

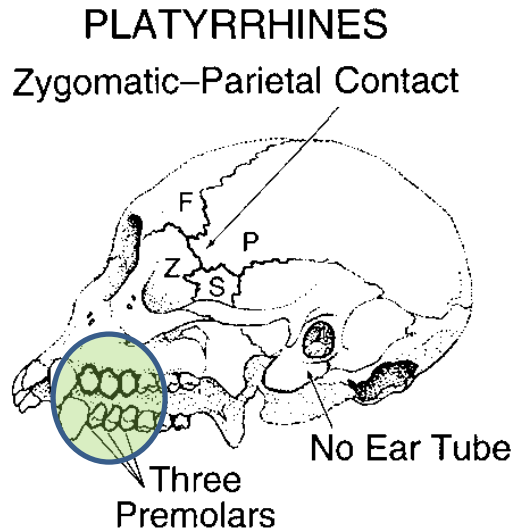


Platyrrhini vs. Catarrhini

New World Monkeys Platyrrhines

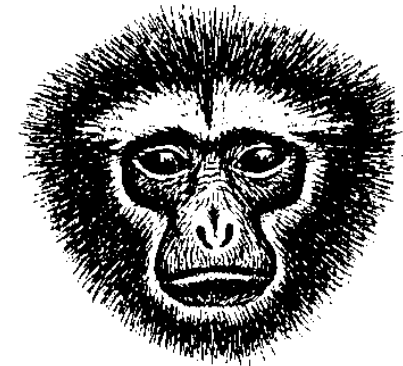
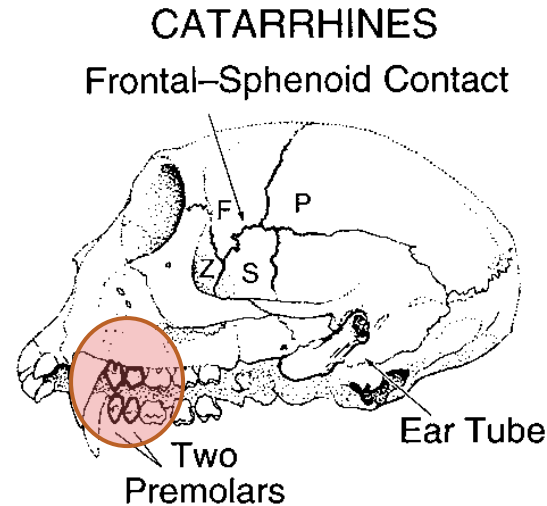


Broad Nostrils



Dental Formula
2.1.3.3.

Catarrhines



Narrow Nostrils

Dental Formula
2.1.2.3.

Exercise

- Access the links provided in todays lecture material “LIST OF LINKS TO SKULLS.docx”
- Attribute each skull to a primate infraorder

Catarrhines

Old world monkeys (Cercopithecoidea)



All diurnal
Arboreal or terrestrial
Social systems & diet vary between species

Apes (Hominoidea)



Superfamily

Catarrhines

Old world monkeys (Cercopithecoidea)

Colobines



Cercopithecines



All diurnal
Arboreal or terrestrial
Social systems & diet vary between species

Apes (Hominoidea)



Superfamily

Catarrhines

Old world monkeys (Cercopithecoidea)

Colobines



Cercopithecines



All diurnal
Arboreal or terrestrial
Social systems & diet vary between species

Apes Loris (Hominoidea)



Superfamily

Apes

Lesser apes

(17 species of gibbons and siamang, south east asia)

Pairs (monogamous breeding units) plus 1-2 offspring

Pairs defend food territory

Key social relationship: **male-female bond**



Orangutan



Mostly solitary
Females mutually tolerant if meet
at fruit-tree
Key social relationship: **big males
mutually intolerant**



Three species, all very similar.
Confined to Indonesia (Sumatra
and Borneo)

Gorilla



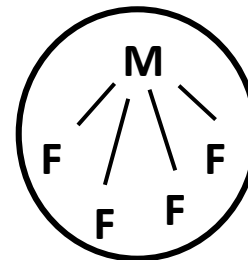
Groups mostly 5-10; but up to 50

Adults: often 1 male + 2-3 females; but up to 7 males

Key social relationship: **each female bonded to silverback male**



Typical sociogram for a group of 1 male and 4 females. Note lack of bonds among females!



2 species,
Western and Eastern Gorilla

Bonobos



Bonobos (central Africa)

Communities mostly 30-70;

Adults: 4-30 females; 2-15 males

Key social relationship: **coalitionary support among all females and mother-son support**



Bonobos

<https://www.youtube.com/watch?v=-Sr1KI2OXuk>

Chimpanzees

Communities mostly 30-70; but up to 200

Adults: 7-35 females; 7-25 males

Key social relationship: **alliances among males**

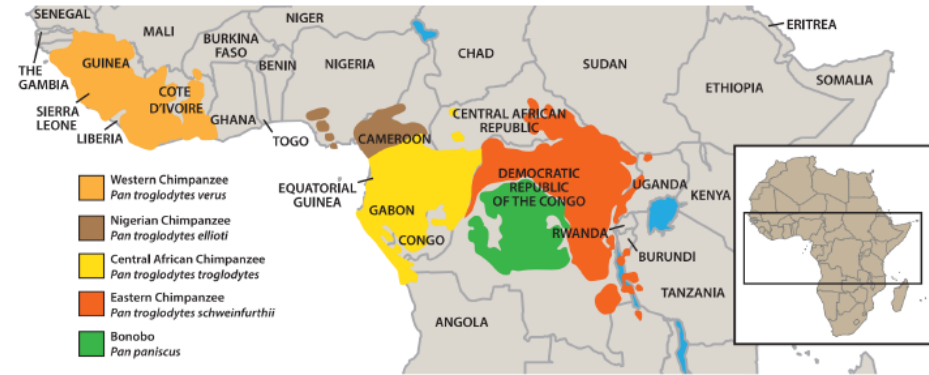
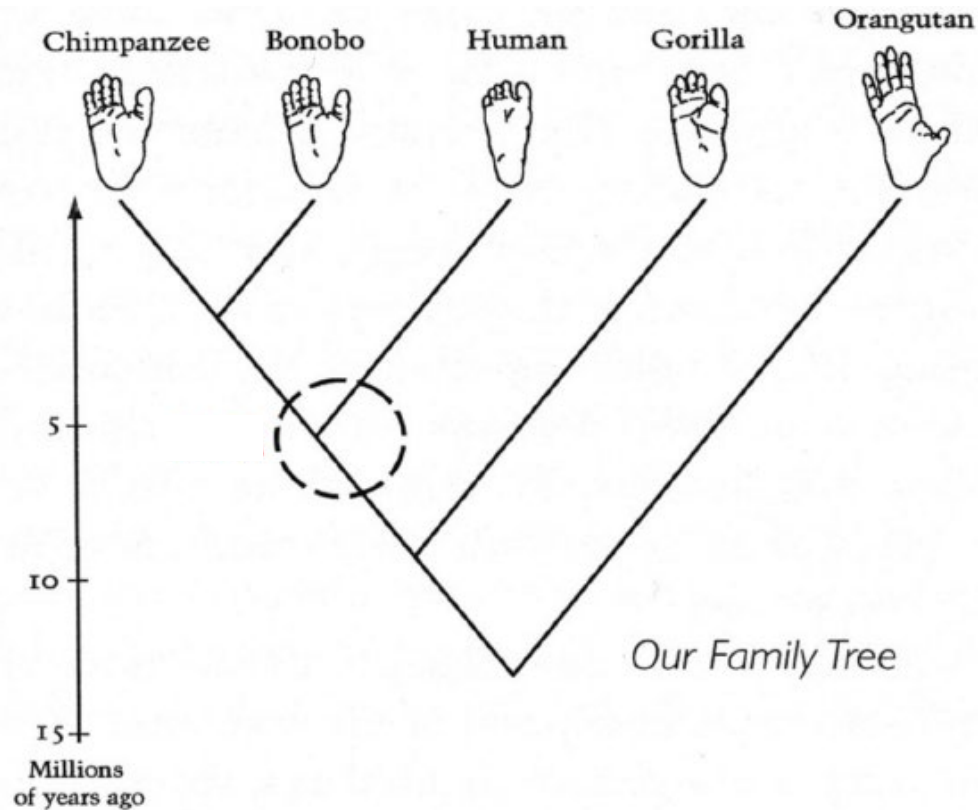


FIGURE 1. Distribution of the genus *Pan* and its species and subspecies. Courtesy of the Jane Goodall Institute of Canada; modified from JGIC (2007).



Phylogeny of the great apes



Bonobo
Pan paniscus

Female



Average
74 lbs
4.2 feet tall

Male



Average
100 lbs
4.3 feet tall

Chimpanzee
Pan troglodytes

Male

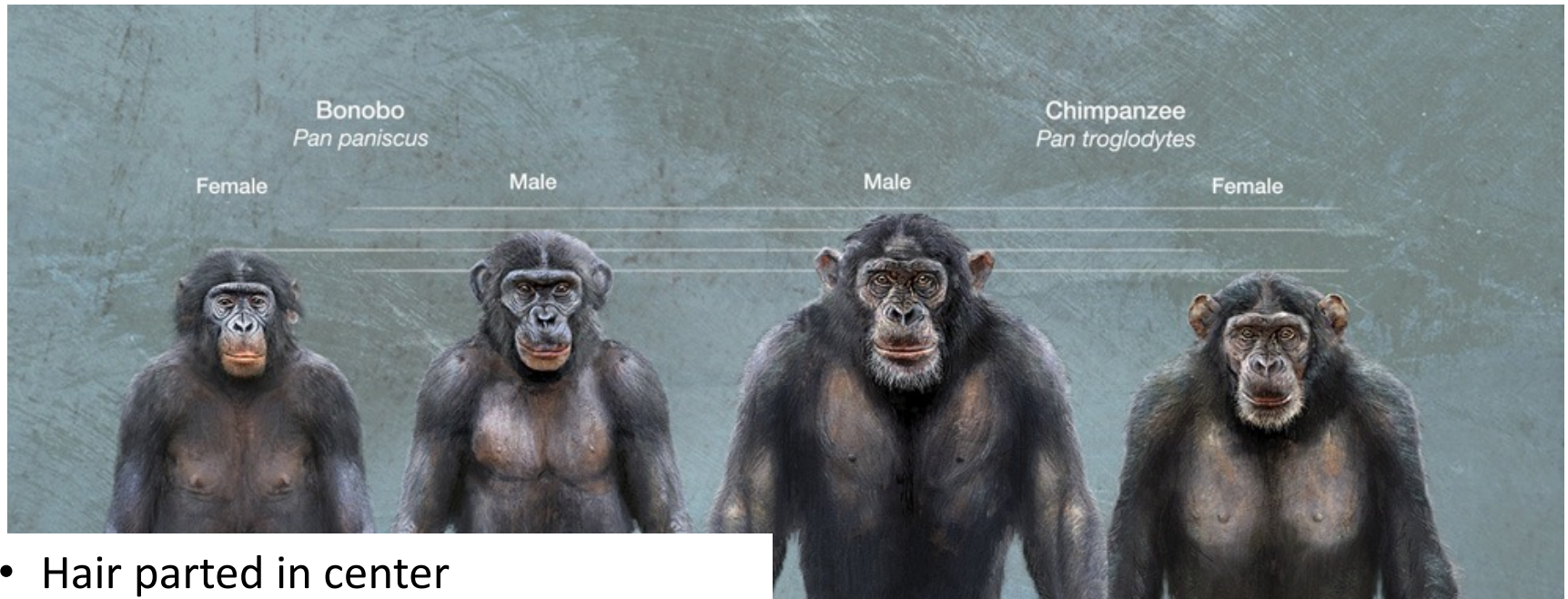


Average
132 lbs
4.4 feet tall

Female



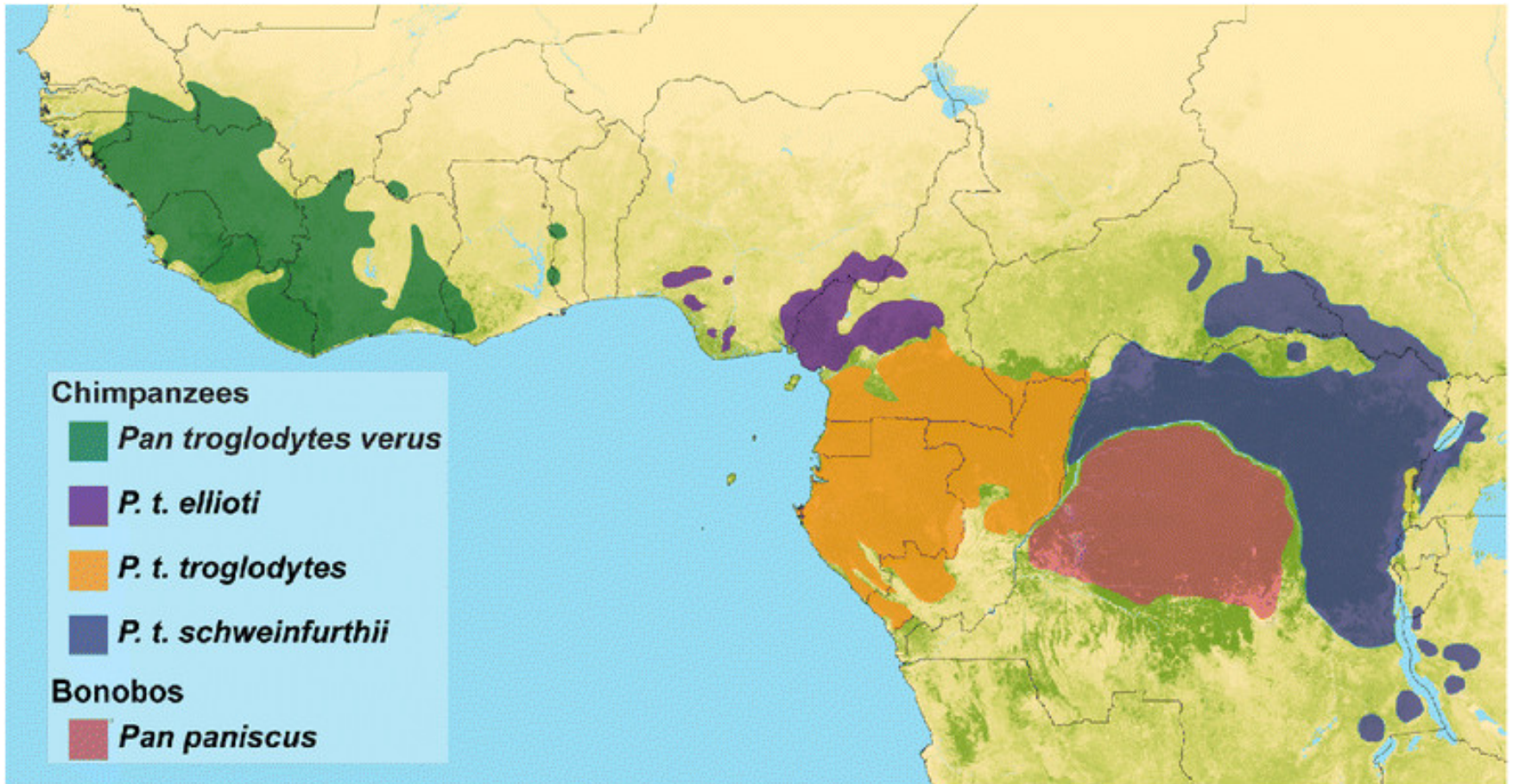
Average
93 lbs
4.1 feet tall



- Hair parted in center
- Pink lips
- Rarely bald
- Dark faces (even babies)
- Rarely piloerect
- Webbed toes more common

- Lighter faces (esp babies)
- Fur goes gray
- Sometimes balding
- Often piloerect

Genus *Pan*



Know your Pan!

What are the latin names for chimpanzee and bonobo?

Know your Pan!



1) **paniscus** or **trogloodytes**?

Know your Pan!



2) **paniscus** or **troglodytes**?

Know your Pan!



3) *paniscus* or *troglydytes*?

Know your Pan!



4) *paniscus* or *troglodytes*?

Know your Pan!



5) *paniscus* or *troglodytes*?

Know your Pan!



6) **paniscus** or **troglodytes**?

Know your Pan!



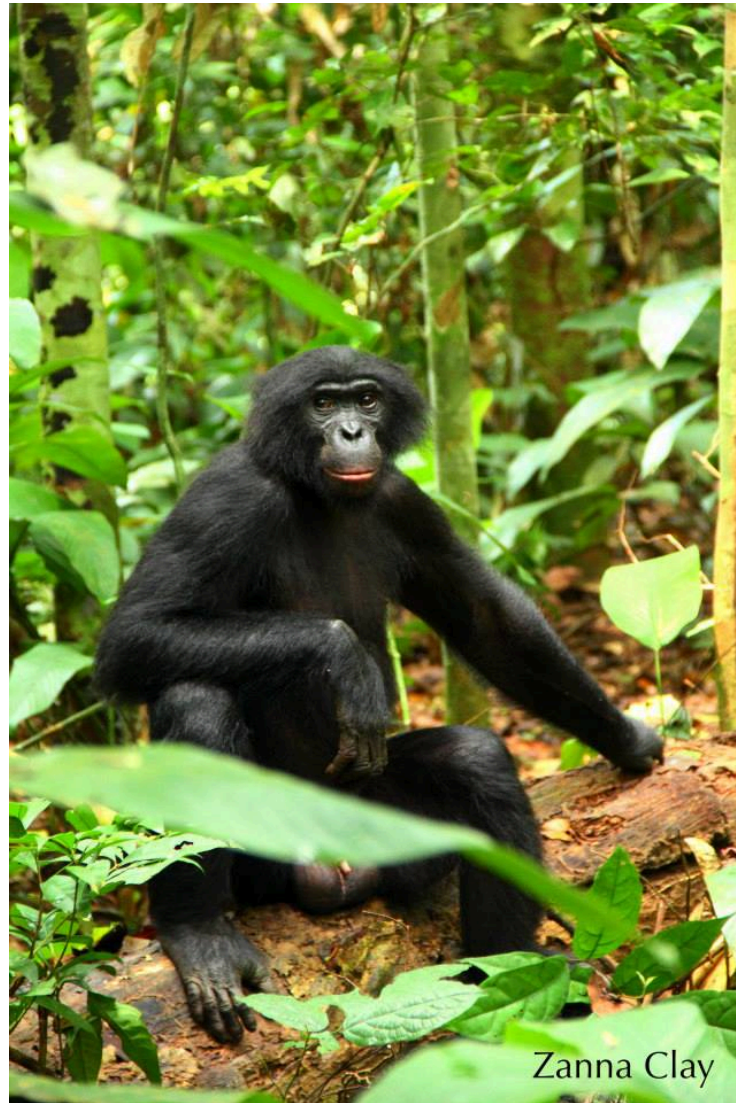
7) *paniscus* or *troglodytes*?

Know your Pan!



8) *paniscus* or *troglydytes*?

Know your Pan!



9) **paniscus** or **trogodytes**?

Know your Pan!



10) **paniscus** or **trogodytes**?

Species paper (4-5 pages)

- Select a primate species and choose a specific aspect of their social behavior (read some background literature on this behavior and the species). Elaborate how natural or sexual selection could have favored the evolution of this trait in your species and try to extend what we might learn about the evolution of a similar trait in humans.

1st Group exercise

- Choose a species that somehow attracts your attention. You will watch a short video giving some general background or just showing an aspect of a given primate behaviors and read a short summary of certain behavioral aspects of a given species
- Discuss in the group what we can learn in respect to the evolution of certain human behavior from studying this species. How would you design your study in order to figure out an answer?
- Please copy your answer (including the species, the behavior, the relevance for humans, and the basic study design) directly into the following google document:
- https://docs.google.com/document/d/1w1ITqjxib0_D9MXJPSF4x9JPrXXtF3hrF2ZE4Lv2kkg/edit?usp=sharing
- (answers should not exceed 250 characters (excl space))

List of species

- Ring-tailed lemur
- Brown Capuchin
- Golden lion tamarin
- Chacma Baboon
- Golden snub-nosed monkey
- Lar gibbon

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