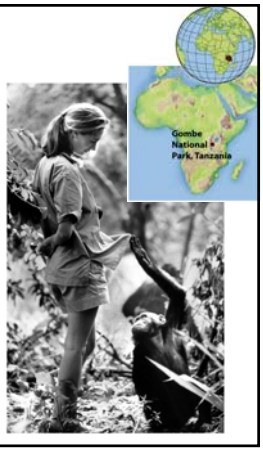
Chapter 7: The Primates

PRIMATOLOGY

- **Primatology**
- **Terrestrial** (origin of bipedality)
- Great apes ("cousins," not ancestors) of particular concern

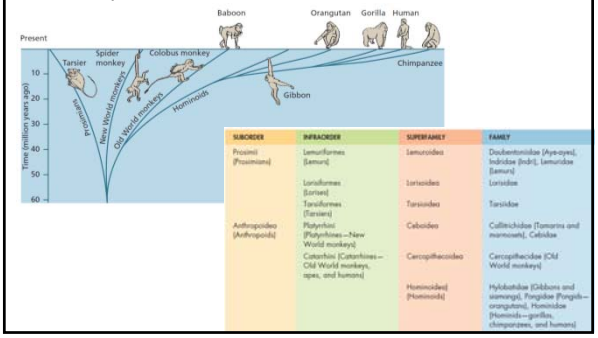


1. OUR PLACE AMONG PRIMATES

- Similarities between humans and apes evident in anatomy, brain structure, genetics, and biochemistry
  - **Taxonomy**

TAXON	SCIENTIFIC (LATIN) NAME	COMMON (ENGLISH) NAME
Kingdom	Animalia	Animals
Phylum	Chordata	Chordates
Subphylum	Vertebrata	Vertebrates
Class	Mammalia	Mammals
Infraclass	Eutheria	Eutherians
Order	Primates	Primates
Suborder	Anthropoidea	Anthropoids
Infraorder	Catarrhini	Catarrhines
Superfamily	Hominoidea	Hominoids
Family	Hominidae	Hominids
Tribe	Hominini	Hominins
Genus	*Homo*	Humans
Species	*Homo sapiens*	Recent humans
Subspecies	*Homo sapiens sapiens*	Anatomically modern humans

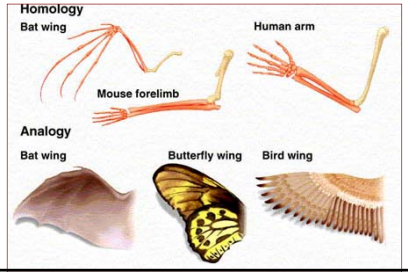
- Phylogeny: genetic relatedness based on common ancestry
- Superfamily Hominoidea (hominoids): contains humans and apes



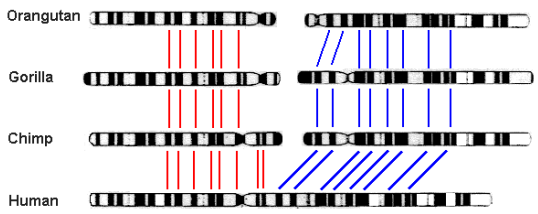
- Tribe Hominini (hominins) – modern humans and erect walking proto humans (ancestors and "cousins")

2. HOMOLOGIES AND ANALOGIES

- **Homologies**: similarities from common ancestry
  - Parallel evolution
- **Analogies**: similar adaptations
  - **Convergent evolution**



- biochemical homologies between apes and humans confer a common ancestry

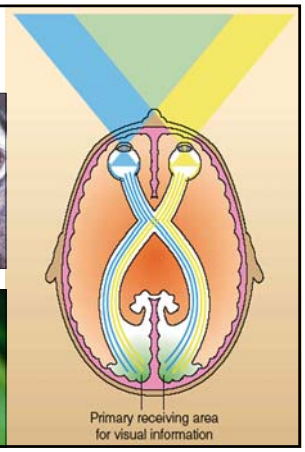


3. PRIMATE TENDENCIES

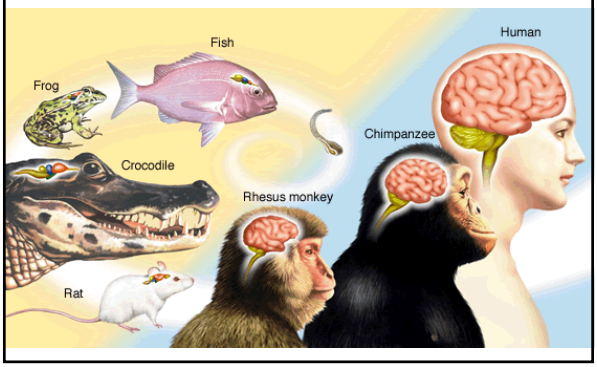
- Primate variation reflects adaptions to diverse ecological niches
  - Modern primates share homologies reflecting a common **arboreal** (living in trees) heritage
- Grasping: **opposable thumbs** can touch all other fingers
  - Adaptation of hominins to **bipedal** locomotion: two-footed, upright locomotion

- Shift from smell to sight
- Hand, rather than nose, is main touch organ

- Color, depth perception

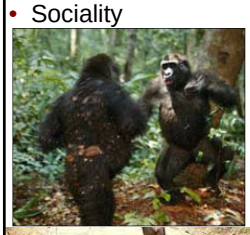


- Increased brain complexity



- Parental investment in single offspring

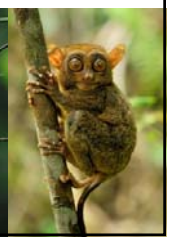
- Sociality



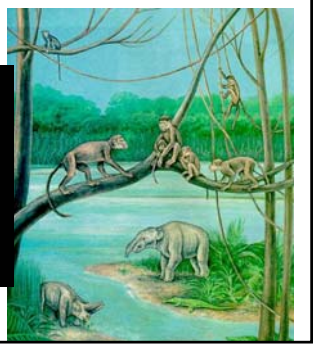

4. PROSIMIANS

- Primate order has two suborders:
  - **Anthropoids**: monkeys, apes, and humans
    Prosimians: lemurs, lorises, and tarsiers





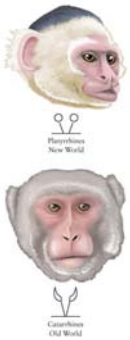
- Early history of primates limited to prosimian-like animals known through the fossil record
- The first anthropoids appeared more than 40 million years ago

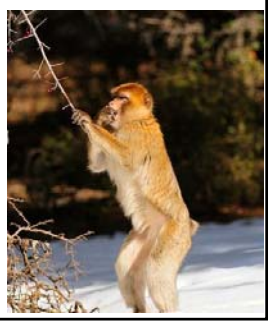
- Surviving prosimians (Africa and Asia) are mostly nocturnal.
  -They do not compete with anthropoids
  - Lemurs
  - Tarsiers
  - Lorises

5. MONKEYS

- All anthropoids share resemblances that can be considered trends in primate evolution
  - Anthropoid suborder has two infraorders:
    - Platyrrhines: sideways nostrils, New World monkeys
    - Catarrhines: downward nostrils, Old World monkeys, hominoids

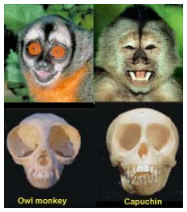


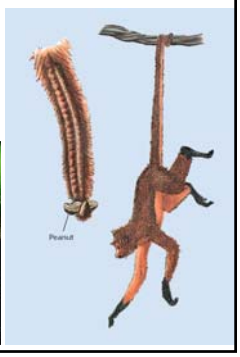
- All New World monkeys, and many Old World ones, are arboreal
  - Monkeys move differently from apes and humans- arms and legs move parallel to each other
  - All monkeys have tails



NEW WORLD MONKEYS

- Live in the forests of Central and South America
  - Some have prehensile, or grasping, tails
  - With one exception, all monkeys, apes, and humans are diurnal





OLD WORLD MONKEYS

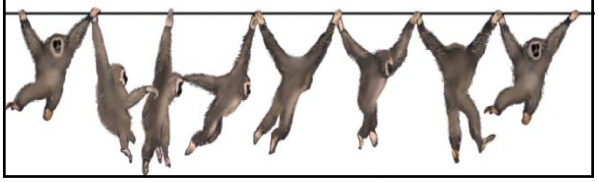
- Terrestrial and arboreal
  - Differences:
    - Size: arboreal monkeys smaller than terrestrial ones
    - **Sexual dimorphism**:
      - Seen in terrestrial monkeys, but little differentiation exists among arboreal monkeys

APES

- Old World monkeys have separate superfamily (Cercopithecoidea)
- Humans and apes make up hominoid superfamily (Hominoidea)
  - Subdivided into families:
    - Great apes: orangutans, gorillas, chimpanzees
    - Lesser (smaller) apes: gibbons, siamangs
    - The third African ape: humans

APES

- Live in forest and woodlands
  - Light and agile **gibbons** are completely arboreal
    - Skilled **brachiation**: hand-over-hand movement through the trees
  - Heavier gorillas, chimpanzees, and adult male orangutans spend considerable time on the ground
    - Ape behavior and anatomy reveal past and present adaptation to arboreal life



GIBBONS

- Smallest of the apes
  - Spend most of their time just below the forest canopy
  - Use arms as balance when they occasionally walk erect
  - Tend to live in *primary groups* composed of permanently bonded males and females and their preadolescent offspring

The Limb Ratio of the Arboreal Gibbon and Terrestrial *Homo*