How do you determine relationships amongst organisms?

What are homologous and analogous structures?

Which are more useful for determining relationships? Why?
Similarity between organisms

• What are the different forces that can create similarities between organisms?
• Why do some similarities indicate relationship while others do not?
• Which indicate a shared evolutionary past?
• What are primitive and derived characteristics?

• Why are shared-derived characteristics most useful in determining relationships?

• What is the principle of parsimony and how does this apply to determining the relationships amongst organisms?
Humans

• How are humans classified?
• Why are we classified in this way?
Mammals

• What characteristics define mammals?
• What are these characteristics an adaptation for?
We share traits with the Primates
We share traits with the Primates

- Primates share a set of traits due to a shared early adaptation
- Arboreal Adaptation - adapted to living in the trees
- Due to a shared ancestry
Traits of Primates

• Emphasis on vision
  • binocular or stereoscopic vision
  • forward facing eyes
  • postorbital bar or post orbital closure
Visual Traits

Forward-facing Eyes

Post orbital bar
Limbs and locomotion

- Erect posture
- Generalized Skeleton
- Retention of clavicle
- Grasping hands with opposability
- Nails instead of claws
Skeletons
Primate Hands
Humans?
Diet

• Generalized dentition

• Tendency towards omnivory
Primate teeth

Pan trogloditus
Australopithecus afarensis
Homo sapiens
Senses, brain and behavior

• emphasis on vision

• decreased snout and olfactory areas

• larger and more complex brain
Senses, brain and behavior

- longer gestation, infancy, life span
- more k-selected (tend towards single offspring)
- greater dependency on learned behavior
- more social
Primate trends

- Arboreal adaptations
- Dietary plasticity
- Behavioral complexity