Classification

Binomial Nomenclature:

- Gives an organism of a specific species a two part name:
  - Genus species EX)Homo sapien EX)Quercus alba
  - Rules:
    1. First letter of Genus Capitalized, everything else lower case
    2. Italicized if in print, underlined if hand written

Taxonomy – Identifying, Naming and Classifying based on natural relationships

- Group of organisms are called a Taxon (pl. TAXA)
- Eight (8) Taxa – listed from least specific to most specific
  1. Domain (Bacteria, Archaea, Eukarya)
  2. Kingdom (Eubacteria, Archaeabacteria, Protista, Fungi, Plantae, Animalia)
  3. Phylum (Bacteria, Animals, Protists) or Division (Fungi or Plants)
  4. Class
  5. Order
  6. Family
  7. Genus
  8. Species

Three ways to group organisms:

1. **Typological** – Aristotle and Linnaeus

- Separation based on physical Characteristics
- Limited due to variation in species EX)Human Races or Butterfly Spots

2. **Biological** – Dobzhansky and Mayr 1930s

- species is a group of organisms that can breed with each other and produce fertile offspring
- most often used but has limitations EX)Dogs and Wolves and Asexual Reproducers

3. **Phylogenetic** – 1940s

- A species is a cluster of organisms that is distinct from other clusters and shows evidence of a pattern of ancestry and descent.
- Limited because not all ancestry is known

Create a Phylogenetic Tree (Cladogram) for the Main Branches of life: (p497)

Kingdom Characteristics

Domain	Bacteria	Archaea	Eukarya			
Kingdom						
Example						
Cell Type						
Cell Walls						
Number of Cells (uni/multi)						
Energy Acquisition (Auto/Hetero)						
Habitat						