Biology
Notes: Organizing Life's Diversity

What is the relationship between classification and taxonomy?

- **Classification** is the grouping of objects or information based on similarities.
- **Taxonomy** is the branch of biology that groups and names organisms based on studies of their different characteristics.

- Aristotle (384-322 BC) - The Greek philosopher who developed the first widely accepted system of biological classification. Based his classifications on physical similarities. He grouped organisms into two main categories: plants and animals. He further divided plants by height into herbs, shrubs, and trees. Animals were divided by the areas in which they lived: land, air, and water. Using his method of classification, a bird, bat, and mosquito would be in the same group.

- Carols Linneaus (1707-1778) - Built off of Aristotle's ideas and developed a method of classification based on physical AND structural similarities of organisms.

  - Binomial nomenclature - The modern classification system that uses a two-word naming system. The first word is the **genus** which identifies the similarities of a species. The second word further classifies the specific characteristics of species.

  - In using binomial nomenclature ttwo rules must be followed:
    1. The first letter of the genus must be capitalized and the first word of the species must be lower case.
    2. The genus and species must be written in italics or underlined.

Example: HOMO SAPIENS
Homo - the genus *sapien* - "wise"

- Seven levels of taxonomic organization:

  -Kingdom: grouping of similar phylla or divisions.
  -Phylum: grouping of similar classses.
  -Class: grouping of similar orderss.
  -Order: grouping of similar familiies.
  -Family: grouping of similar genuss.
  -Genus: grouping of similar speciees.
  -Species: group of organisms that can interbreed and produce fertile offspring in nature.

Kingdom	Prokaryotic/ Eukaryotic	Unicellular/ Multicellular	Autotroph/ Heterotroph	Example
Animals	Eukaryotic	Multicellular	Heterotroph	Mammals
Plants	Eukaryotic	Multicellular	Autotroph	Flowers

Fungi	Eukaryotic	Multicellular	Both	Mushrooms
Protists	Eukaryotic	Multi & Unicellular	Both	Paramecian
Archaebacteria	Prokaryotic	Unicellular	Heterotroph	Methanogen
Eubacteria	Prokaryotic	Unicellular	Both	*E. Coli*

Evolution and Classification

- phylogeny:
- cladistics:
- cladogram

Example of a phylogentic tree: