Classification



Classification (taxonomy): arrangement of organisms into orderly groups based on their similarities

Taxonomists: scientists that identify and name organisms

Early Methods of Taxonomy

Aristotle's System

- Aristotle is believed to be the first taxonomist
- He classified living things first as plants or animals, it looks something like:

Aristotle's system

- Animal
 - Bloodless (Invertebrates)
 - Land
 - Water
 - Air
 - Blodded (Vertebrates)
 - Land
 - Water
 - Air
- Plant
 - Herbs
 - Shrubs
 - Trees

Criticisms of Aristotle's System

- Aristotle's system was good for categorizing, but did not account for evolutionary relationships
- · Some organisms did not fit well into this system

John Ray's System

- · Was a botanist
- First person to use Latin for naming
- The names were very long as specific

Linnaeus's System

- Linnaeus was a Swedish naturalist who lived from 1707–1778
- He broadened Aristotle's System and formalized it into a scientific system
- His system also focused on an organism's structure
- His system was the **first formal system** of taxonomic organization
- Developed the modern day naming system, the two-name system (Genus & species)
- Also known as the Father of Taxomony
- Developed Binomial Nomenclature, which differed from Aristotle's system

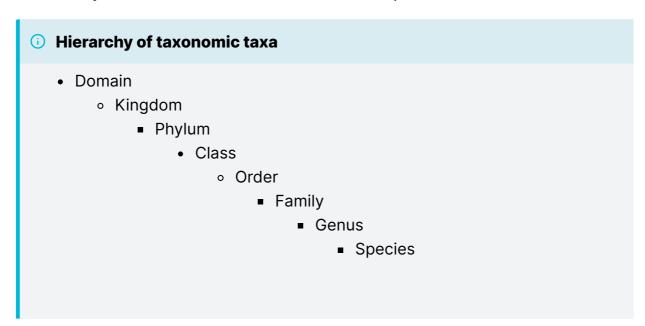
Binomial Nomenclature

- Two-name system, Genus and species
- Uses Latin because it is an old, unchanging language
- · Always italicized or underlined
- · Genus is capitalized, but not species
- Names are made to a central organization to prevent duplicate names

Classification Groups



A hierarchy of taxa exists from broadest to most specific



Can be remembered with the phrase:

Dumb King Phillip Came Over For Gooseberry Soup!

Modern Taxonomic Groups help represent

- Homologous Structures
- Embryo development
- · Molecular similarity in
 - DNA
 - RNA
 - Amino Acids
 - Proteins



Def

Cladograms: Diagram showing how organisms are related based on shared, derived characteristics such as feathers, hair, or scales

Dichotomous Keying: All characteristics are dichotomous (have two options) Ex:

- Dark
 - Big
 - Circular
 - Non-circular
 - Small
 - Circular
 - Non-circular
- Light
 - Big
 - Circular
 - Non-circular
 - Small
 - Circular
 - Non-circular

Every division is dichotomous

Taxa



Categories

- Archaea
 - Archaebacteria
- Bacteria
 - Eubacteria
- Eukarya
 - Protista
 - Fungi
 - Plantae
 - Animalia

a

Can be remembered with the phrase:

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Archaea

- No nucleus
- No Membrane bound organelles

Archaebacteria

- Probably the first alive things
- · Lives in very harsh environments

Bacteria

- No nucleus
- No Membrane bound organelles

Eubacteria

- May cause disease
- · Found in all non-harsh environments
- · Important decomposers for the environment
- Commercially used to produce cheese, yoghur, etc.

Eukarya

- Yes nucleus
- Yes Membrane bound organelles

Protista

- Ex:
 - Protozoans

- Algae
- · Mostly Unicellular
- Could be autotrophic or heterotrophic
- Aquatic

Fungi

- Ex:
 - Mushroom
 - Yeasts
- Multicellular except yeast
- Absorptive heterotroph
- · Cell walls made of chitin

Plantae

- Multicellular Plants
- Autotrophic
- Absorbs sunlight
- · Cell walls made of cellulose

Plantae

- Multicellular Plants
- Autotrophic
- · Absorbs sunlight
- · Cell walls made of cellulose

Animalia

- Multicellular Animals
- Ingestive heterotrophs
- Feed on plants or animals