Cladograms

Evolutionary Classification

- Linnaeus group species into larger Taxa mainly according to visible similarities & differences
- Phylogeny: study of evolutionary relationships among organisms
- Biologist currently group organisms into categories the represent lines of evolutionary descent or phylogeny, not just physical similarities
- Evolutionary Classification: The strategy of grouping organisms is based on evolutionary history
- The higher the level of the taxon, the further back in time is the common ancestor of all the organisms in the taxon
- Organisms that appear very similar may not share a recent common ancestor

Classification Using Cladograms

- Many biologist currently use a method called cladistics analysis
    - Identifies & considers only new characteristics that arise as lineages evolve
- Derived Characteristics: characteristic's that appear in recent parts of a lineage but not older members
    - Can be used to construct a cladogram
- Cladogram: Diagram that shows the evolutionary relationships among a group of organisms
- Helps scientists understand how one lineage branched from one another in the course of evolution

DNA Evidence

- Genes of many organisms show important similarities @ the molecular level
- Similarities in DNA can be used to help determine classification & evolutionary relationships
- DNA Evidence: Shows evolutionary relationships of 2 species, the more recently they shared a common ancestor & the closer they are related in evolutionary terms
- The 2 more species have diverged from each other, the less similar their DNA would be
- Molecular Clock: Uses DNA comparisons to estimate the length of time that 2 species have been evolving independently
    - Relies on mutations to mark time
- Comparing sequences in 2 species shows how dissimilar the genes are & shows when they shared a common ancestor