

Name:

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# CLASSIFICATION NOTES

# Chapter 18

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## How do we identify and name all living organisms?

- We use a classification system which is a way to organize all organisms into specific groups

### Common Name vs Scientific Name

What is wrong with using common names to classify organisms? different places use different names

Ground hog / woodchuck ; rollie pig / pill pig / potato bug ↳ too confusing

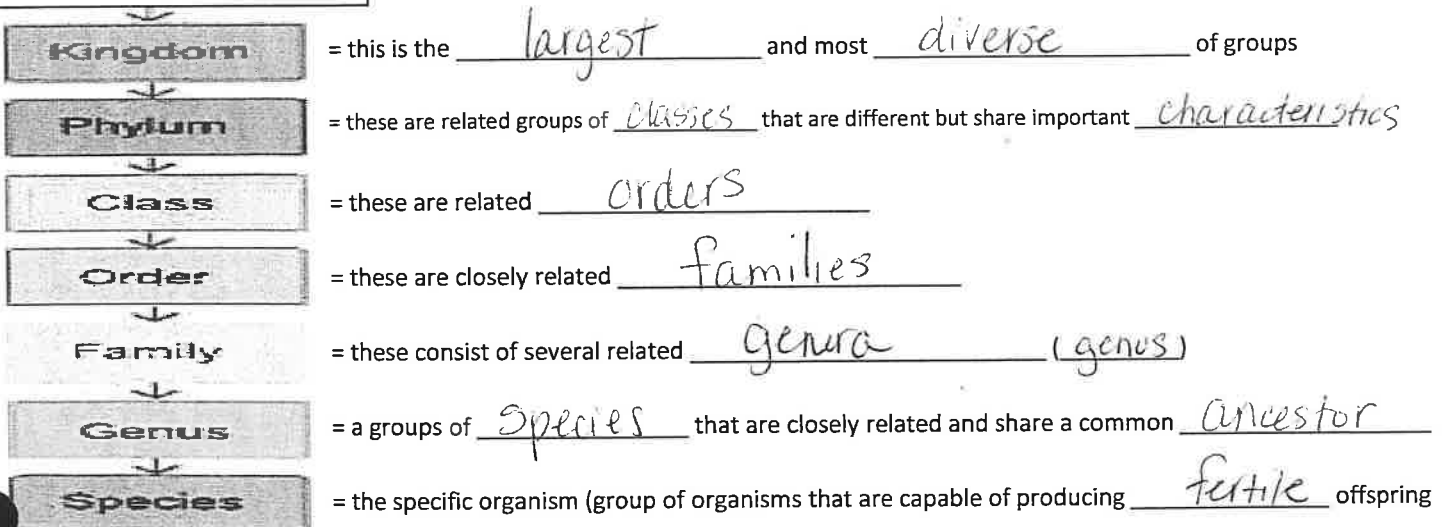
### Carolus Linnaeus

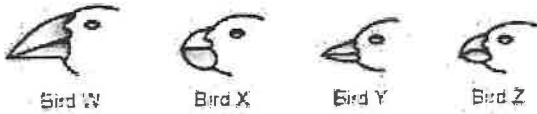
- First to develop a 2 word naming system called binomial nomenclature
- Each Species is assigned a 2 part scientific name
- The first word is the Genus of the organism
  - It must be capitalized
- The second word is the Species name of the organism
  - It must be lowercase
- The entire scientific name is underlined or italicized
- Why does every organism have a scientific name: so there is no confusion in naming of organisms
- Examples: Homo sapien , Quercus alba

Over time binomial nomenclature wasn't enough

- Scientists found that we must classify organisms into larger groups
- The goal of Systematics (classification) is to organize living things into groups that have biological meaning
  - These groups are called Taxa
  - This is a hierarchical classification system

### Taxonomic Categories





Dichotomous key: a key based on a series of choices between alternate characteristics

Dichotomous Key to Representative Birds	
1. a. The beak is relatively long and slender.....	Ceryle
b. The beak is relatively stout and heavy.....	go to 2
2. a. The bottom surface of the lower beak is flat and straight.....	Geopelia
b. The bottom surface of the lower beak is curved.....	go to 3
3. a. The lower edge of the upper beak has a distinct beard.....	Querquedula
b. The lower edge of the upper beak is mostly flat.....	Pelecanus

**Section 2 Modern Evolutionary Classification**

Phylogeny: the evolutionary history of a species

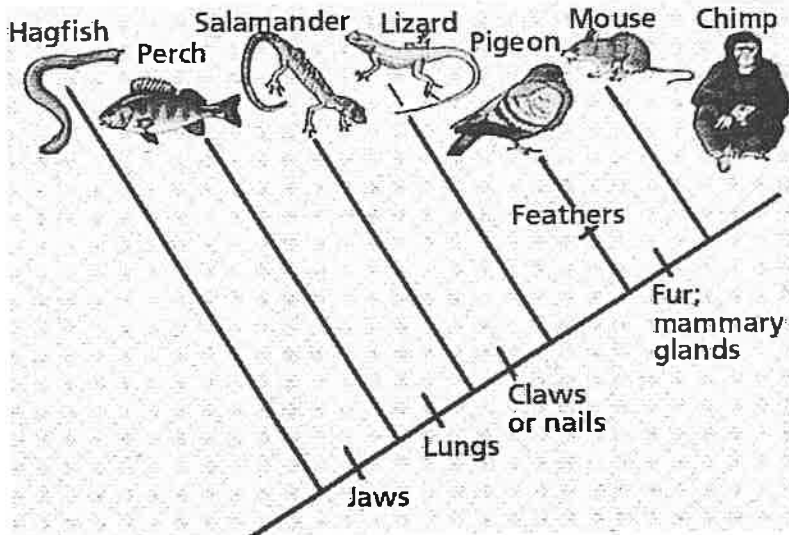
The goal of phylogenetics is to group species into larger categories that reflect lines of evolutionary descent rather than overall similarities and differences

Cladogram: this links groups of organisms by showing how evolutionary lines branched off from common ancestors

What is a node? point of common ancestor

↳ This demonstrates where derived characteristics began

AKA: phylogenetic tree



### Section 3 Building the Tree of Life

Linnaeus started with only 2 groups back in the 1700's: plants or animals

But over time different types of organisms were found and the classification system needed to be changed

~The Modern classification of all living organisms~

DOMAINS	Key Characteristics about each domain
DOMAIN BACTERIA	Kingdom Bacteria
DOMAIN ARCHEA	Kingdom Archaea
DOMAIN EUKARYA	Kingdom Protistia, Fungi, Plantae, Animalia

	Cell Type	Number of Cells	Cell walls	Nutrition	Mobility	Specific Example (not one in book)
KINGDOM BACTERIA	Prokaryote	uni	Yes	Autotroph Heterotroph	Yes	<u>E. coli</u>
KINGDOM ARCHAEA	Prokaryote	uni	Yes	Autotroph Heterotroph	Yes	methanogens thermophiles
KINGDOM PROTISTIA	Eukaryote	uni/ multi	Yes	Autotroph Heterotroph	Yes	amoeba euglena
KINGDOM FUNGI	Eukaryote	mostly multi	Yes	Heterotroph	No	mushroom yeast mold
KINGDOM PLANTAE	Eukaryote	multi	Yes	Autotroph	No	oak tree daisy
KINGDOM ANIMALIA	Eukaryote	multi	NO	Heterotroph	Yes	cat dog human

Viruses: a nucleic acid surrounded by a protein coat and is considered to be non-living and not part of the biological classification system