CLASSIFICATION

OF LIVING THINGS

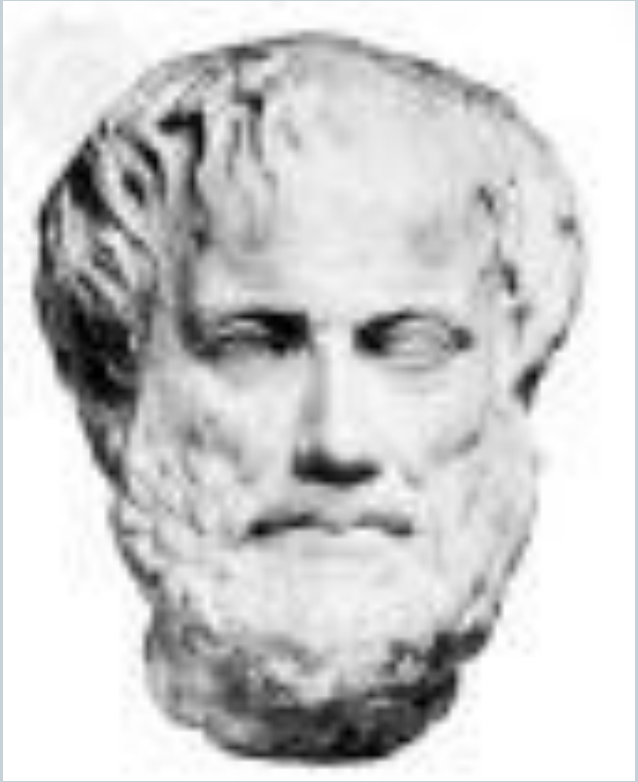
Classification:

- The grouping of organisms based on similarities
- Allows us to study relationships between species
- Helps us assign names to organisms
- Taxonomy = a branch of Biology that groups and names organisms based in different characteristics.

Aristotle (384-322BC)

- He classified organisms into two categories:

- ***Plants***
  - **Herbs**
  - **Shrubs**
  - **Trees**
- ***Animals***
  - **Land**
  - **Water**
  - **Air**



Carolus Linnaeus (1707-1778)

Born Carl von Linne, but renamed himself with a *scientific name.*

- Devised a system for grouping and giving names to all organisms.
- Used physical and structural characteristics to classify organisms.
- Subdivided into smaller and more specific groups
- Chose Latin as the language for assigning the names.

Binomial Nomenclature

(The Linnaean system of naming

- Two name ("binomial") naming system Example: *Homo sapiens*
- First name is the ***genus*** (Ex. *Homo)*
  - Group of similar species
  - Capitalized
- Second name is the ***species*** (Ex. *sapiens)*
  - Descriptive name
  - Lower case

Example

***Acer rubrum* (Red maple)**

- *Acer* = genus including all maple trees
- *rubrum* = red

- Always italicize or underline scientific names
- Names are always in Latin (genus can be abbreviated example below)

Acer rubrum or Acer rubrum

A. rubrum A. rubrum

Taxonomic System

taxa.

Kingdom - largest, most general group

Phylum

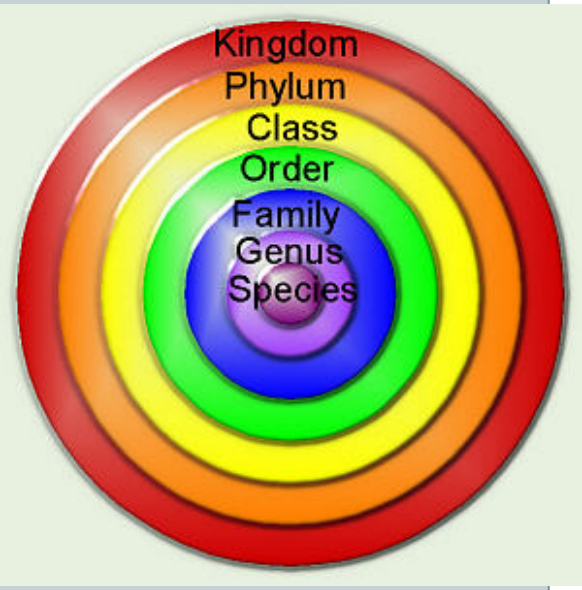
Class

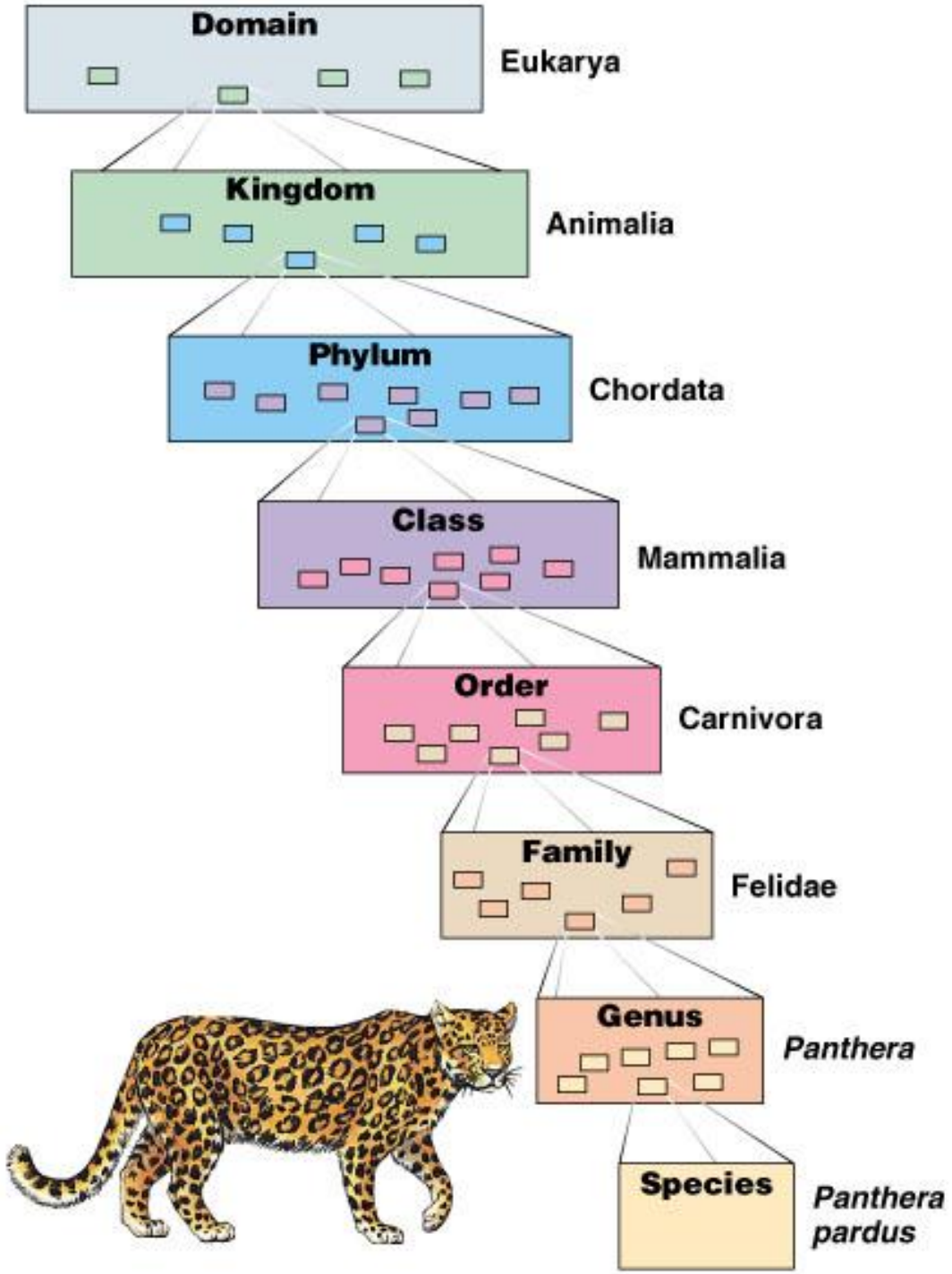
Order

Family

Genus

Species - smallest, most specific group




Domain
Eukarya
Kingdom
Animalia
Phylum
Chordata
Class
Mammalia
Order
Carnivora
Family
Felidae
Genus
Panthera
Species
Panthera pardus

D K P C O F G S

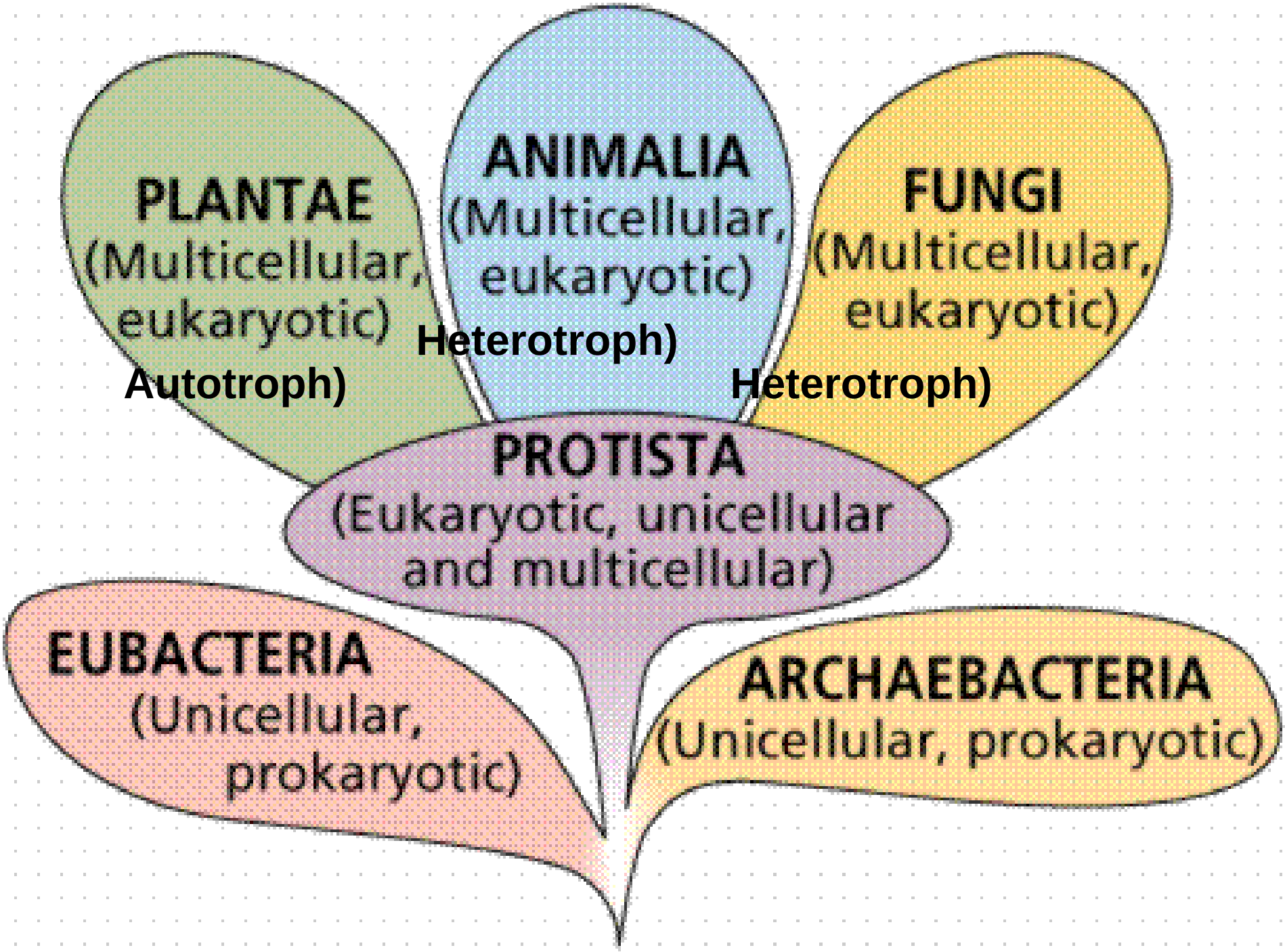
- It helps to come up with a sentence using the first letter of each **taxon** (group) to help you remember them. For example-
- Deprived King Philip Came Over For Great Spaghetti
- Danish Kings Play Cards On Fat Green Stools.
- Dead Kings Prefer Cheese on Fine Green Spinach

- *What's yours?????*

Some scientists use a 3 domain system. Domains can BIGGER than kingdoms and are based on RNA relatedness

Domains	Kingdoms
Bacteria	**Eubacteria**
Archaea	**Archaebacteria**
Eukarya	**Protista** **Fungi** **Plantae** **Animalia**

formerly "**Monera**"


PLANTAE
(Multicellular, eukaryotic)
Autotroph)
ANIMALIA
(Multicellular, eukaryotic)
Heterotroph)
FUNGI
(Multicellular, eukaryotic)
Heterotroph)
PROTISTA
(Eukaryotic, unicellular and multicellular)
EUBACTERIA
(Unicellular, prokaryotic)
ARCHAEBACTERIA
(Unicellular, prokaryotic)


Plantae
Animalia
Protista
Fungi
Eubacteria
Archaebacteria

How **are taxonomic relationships determined?**

Bases for modern classification

- Structural similarities
- Potential to mate
- Geographical distribution
- Chromosomes - # and structure
- Biochemistry – DNA base sequence
- **Evolutionary relationship in the fossil record --- *phylogeny***

Dichotomous Key

- Chart of paired statements used to identify an organism; two part questions usually labeled a and b
- ALWAYS start at question 1 and proceed until you identify the specific organism's name
- Follow the directions at the end of the a or b statement that best describes the organism you are attempting to identify

DICHOTOMOUS KEY EXAMPLE

1A	Object has only straight lines, go to 2
1B	Object has curved line, go to 4
2A	Color is blue-- Azul calamus
2B	Color is not blue, go to 3
3A	Object has four equal sides--Quadratis rufus
3B	Opposite sides of object are equal--Rectangulo crudus
4A	Object has one continuous curving line, go to 5
4B	Object has curved and straight lines--Azul undo
5A	Object is red--Ovalado rufus
5B	Object is green--Orbis crudus