**Unit 2: Taxonomy**  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Objectives

By the end of the lesson you should be able to:

* State the levels of classification and the man who created the classification system
* Describe the 3 domains and the 4 kingdoms
* Discuss the relatedness of organisms based on their classification

Recall:

1) Life is both similar and diverse

2) Evolution helps us understand who is related to who

*BUT….How do we organize and make sense of all these different life forms?*

**Taxonomy**

* The solution to this problem is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Based upon Carl Linneaus’ system of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

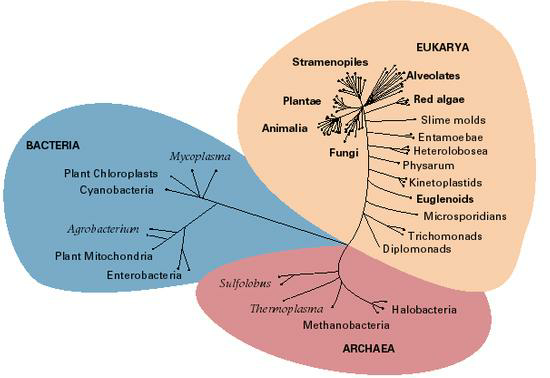
(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

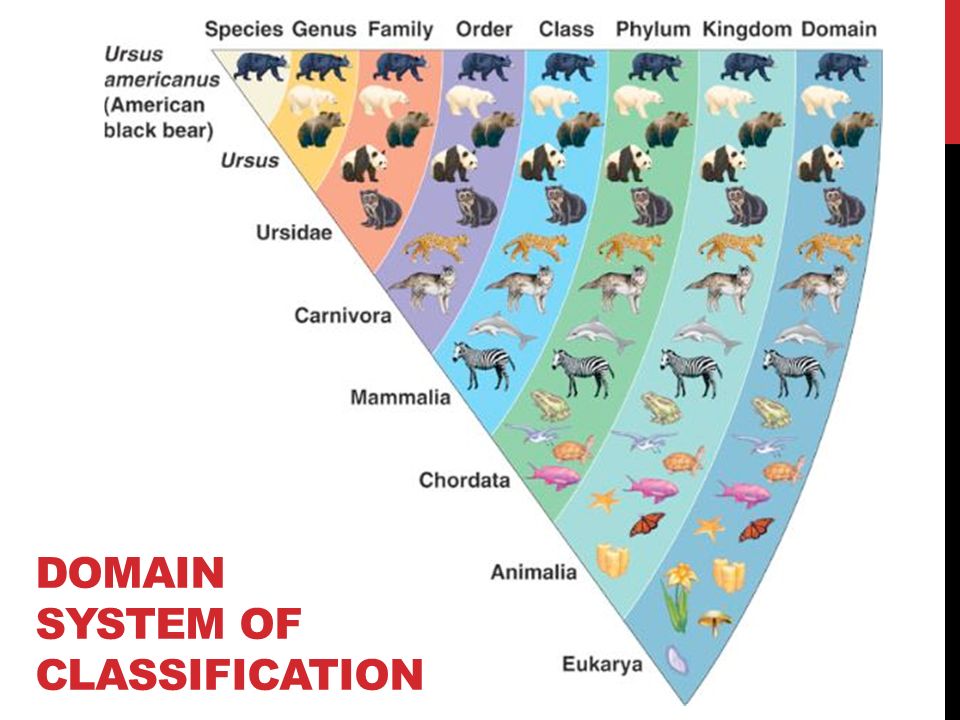
Classification Problem

* Any classification system is artificial and based upon the relationships that seem important to the person classifying. This is called Personal Bias.

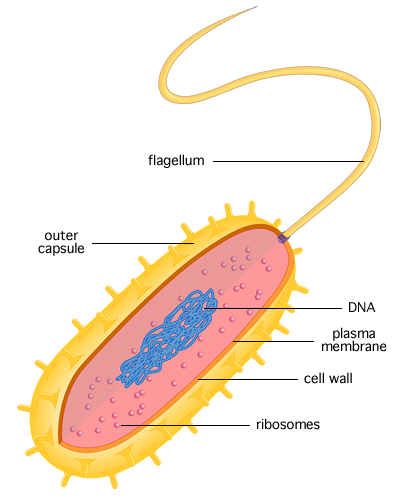
**Classifications**

* The first question in taxonomy is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* There used to be only 2 kingdoms: plants and animals.
* Now, the latest classification system employs a “super category” called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Domains**



**Domain Archaea**

* This includes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* ****They include forms of bacteria today that live in the most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ such as hot springs and sulfur pools.
* Also includes:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Characteristics**:

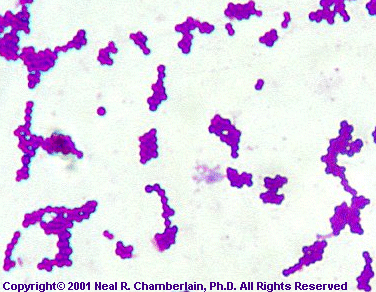
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and microscopic
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Some autotrophic (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), some heterotrophic (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Have a cell wall but lacking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* DNA unique to Archaea
* Live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Domain Bacteria**

* Includes most of the prokaryotes and all the bacteria ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

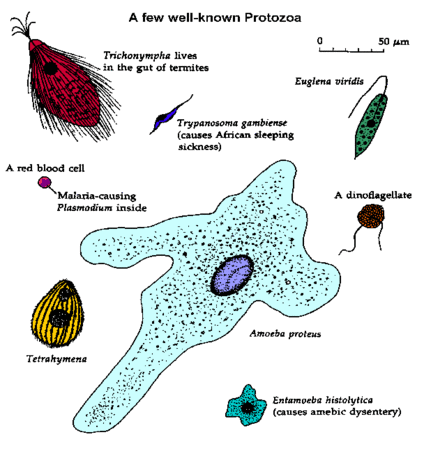
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) that we are familiar with.

**Characteristics**:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Single celled and microscopic
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Cell walls \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some autotrophic, some heterotrophic
* DNA unique to Eubacteria
* Live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Domain Eukarya**

* This is a huge domain that includes all the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms.
* In this domain, we will see and use the more conventional 7 levels of classification.

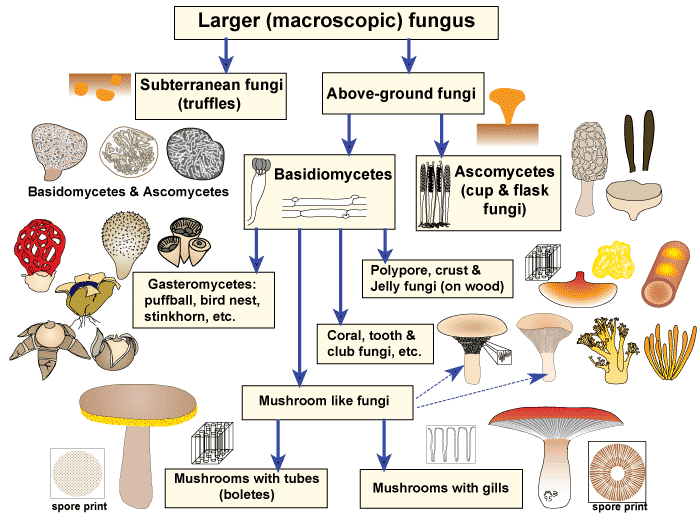
We divide domain Eukarya into four \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

**Kingdom 1: Protista**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_some colonial,

some multicellular

* \_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* May have cell walls of cellulose or may have chloroplasts
* “Catch-all” or "Junk Drawer" of the Kingdoms

**Kingdom 2: Fungi**

* Eukaryotic cells
* Mostly multicellular, some unicellular (such as yeast)
* Non-motile
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cell walls made of chitin
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Kingdom 3: Plantae**

* Eukaryotic cells
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Have chloroplasts and cell walls made of cellulose
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Asexual and sexual reproduction

**Kingdom 4: Animalia**

* Eukaryotic cells
* Multicellular
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Largest group is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = 70% of all animals
* No cell walls or chloroplasts
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Sexual and asexual reproduction

**Conclusion**

* Taxonomy shows us where a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Let’s use humans, the house cat, lions, and a maple tree as examples to illustrate this:

**Examples of Taxonomic Classification**

**Human House Cat Maple Tree**

**Domain** Eukarya Eukarya Eukarya

**Kingdom** Animalia Animalia Plantae

**Phylum** Chordata Chordata Tracheophyta

**Class** Mammalia Mammalia Angiospermidea

**Order** Primata Carnivora Sapindales

**Family** Hominidia Felidae Aceridea

**Genus** *Homo Felis Acer*

**Species** *sapiens catus rubrum*

* We use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ name to identify organisms.

Ex. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notice that the Genus is capitalized, and the species is not. The name should be in *italics* if typed or underlined if printed.

**House Cat Lion**

**Domain** Eukarya Eukarya

**Kingdom** Animalia Animalia

**Phylum** Chordata Chordata

**Class** Mammalia Mammalia

**Order** Carnivora Carnivora

**Family** Felidae Pantherinae

**Genus** *Felis Panthera*

**Species** *catus leo*

How do we identify lions? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_