**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?*

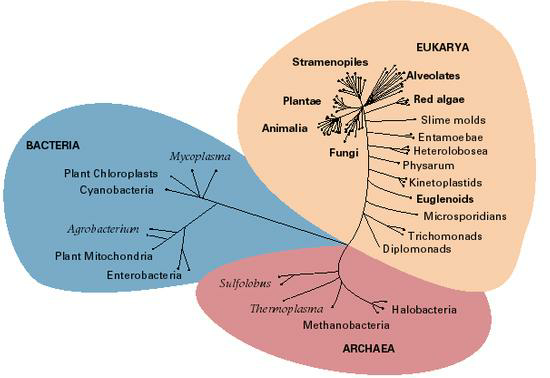
**Taxonomy**

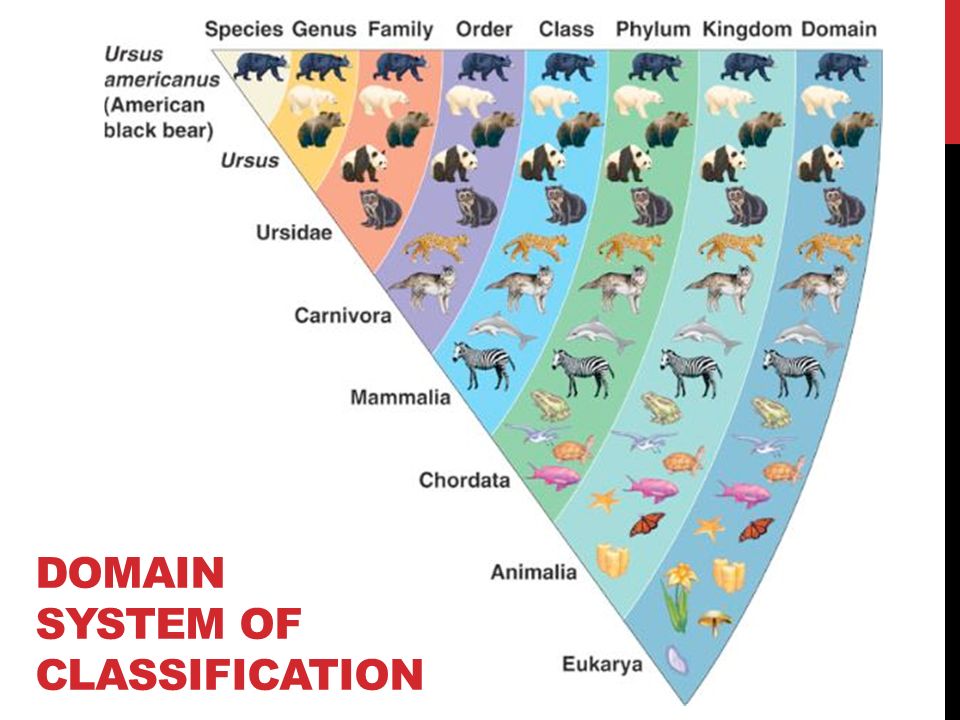
* The solution to this problem is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - the study of naming and classifying organisms
* Based upon Carl Linneaus’ system of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(name in 2 parts, based on Latin words)

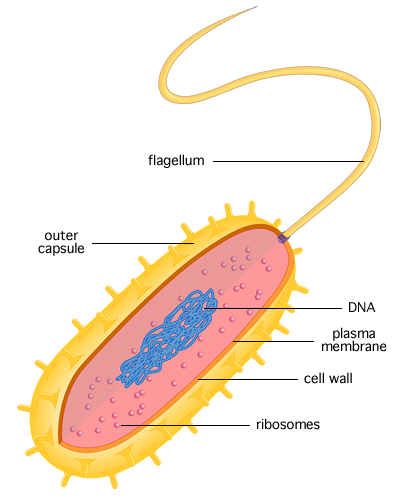
**Classifications**

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

**Domains**



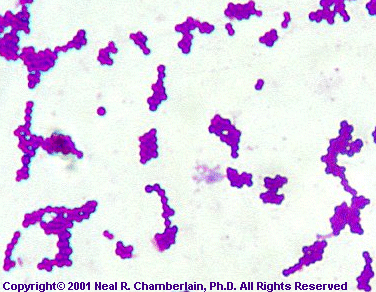
**Domain Archaea**

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

**Characteristics**:

* Type of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Number of cells:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (microscopic)
* Mode of nutrition: some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, some heterotrophic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cell structures: have a **cell wall** but lacking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Oxygen use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* \_\_\_\_\_\_\_\_\_\_\_ unique to Archaea
* Live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Domain Bacteria**

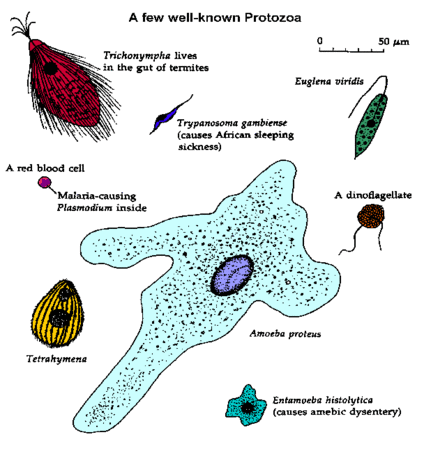
* Includes one Kingdom: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* They include most of the bacteria that we are familiar with such as *E. coli* (gut bacteria).

**Characteristics**:

* Type of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Number of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (microscopic)
* Mode of nutrition: some autotrophic, some heterotrophic
* Cell structures: cell **walls** contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Oxygen use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* DNA unique to Eubacteria
* Live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (almost everywhere!)

**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 kingdoms**:

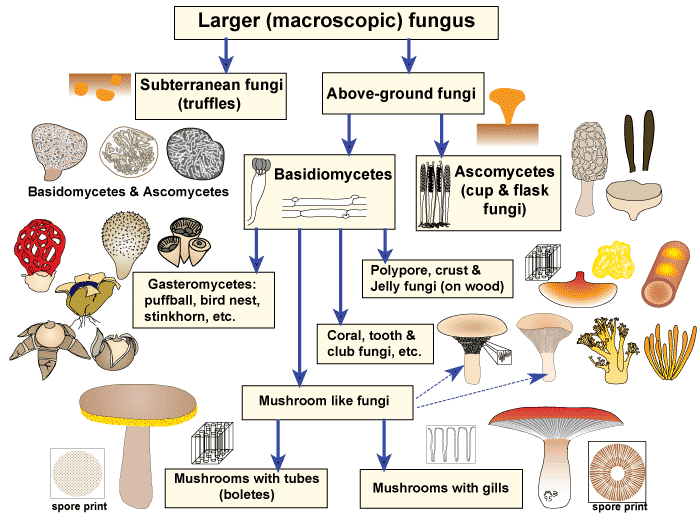
**Kingdom 1: Protista**

* Type of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Number of cells: mostly\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_some colonial,

some multicellular

* Mode of nutrition: some autotrophic, some heterotrophic
* Cell structures: may have cell walls of \_\_\_\_\_\_\_\_\_\_\_\_\_ or may

have chloroplasts

* \_\_\_\_\_\_\_\_\_\_
*  “Catch-all” or "Junk Drawer" of the Kingdoms

**Kingdom 2: Fungi**

* Cell type: eukaryotic
* Number of cells: mostly multicellular, some unicellular

(such as yeast)

* Mode of nutrition: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cell structures: cell **walls** made of \_\_\_\_\_\_\_\_\_\_\_\_\_
* Non-motile
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Kingdom 3: Plantae**

* Type of cells: eukaryotic
* Number of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mode of nutrition: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cell structures: have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and cell **walls**

made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* ****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Asexual and sexual reproduction

**Kingdom 4: Animalia**

* Type of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Number of cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mode of nutrition: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cell structures: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or chloroplasts
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Sexual and asexual reproduction
* Largest group is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = 70% of all animals

**Conclusion**

* Taxonomy shows us where a species\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Let’s use humans, chimpanzees, house cats, and maple trees as examples to illustrate this:

**Examples of Taxonomic Classification**

**Humans Chimps House Cats Maple Trees**

**Domain** Eukarya Eukarya Eukarya Eukarya

**Kingdom** Animalia Animalia Animalia Plantae

**Phylum** Chordata Chordata Chordata Tracheophyta

**Class** Mammalia Mammalia Mammalia Angiospermidea

**Order** Primata Primata Carnivora Sapindales

**Family** Hominidia Hominidia Felidia Aceridea

**Genus** *Homo Pan Felis Acer*

**Species** *sapiens trogolodytes 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? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Can You …**

* …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?