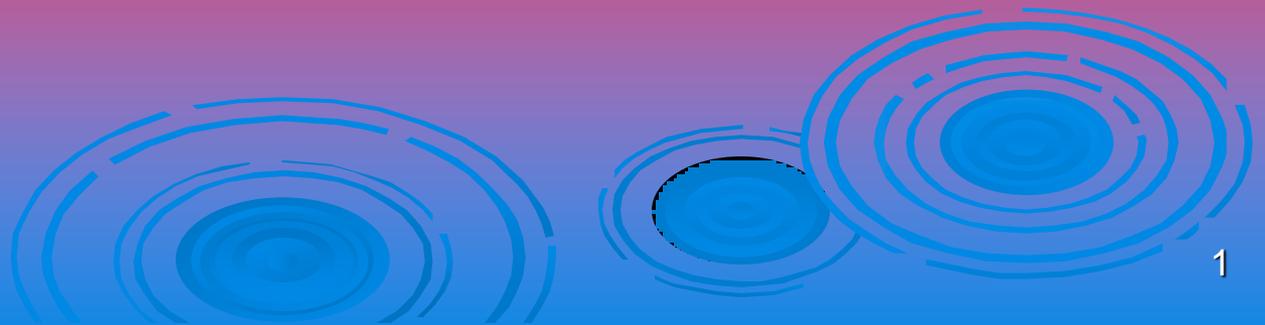# Classification
1ST CLASS BIOLOGY
PROF. MOHAMMED QAIS

COLLEGE OF SCIENCE

A. Intro to Classification

➤ **Organizing** is a very good way of keeping up with all of your belongings. When you are organized, you are more than likely to find whatever you are looking for, thus saving time, money and energy!

➤ Scientists believe in this strategy as well and therefore organize too.

➤ One tool they rely upon is **classification**.

➤ **Classification** is the grouping of organisms based upon their similarities.

B. Aristotle's System

➢ **Taxonomy** is the branch of science that groups or names organisms based on studies of their different characteristics.

➢ **Aristotle** was the first scientist who attempted to classify organisms. He developed a system that classified organisms as either **plants or animals**. He then **subdivided the plant group into 3 smaller groups: shrubs, herbs, and trees**.

➢ The **animals were subdivided into groups according to when they lived or spent a great deal of time: on land, water or in the air**.

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B. Aristotle's System

➢ Although this was a good attempt on Aristotle's part, it simply was not accurate enough in classifying to relate true species.

➢ **For example, all animals that traveled by air were thought to have been related. That meant that birds, bees, and bats were classified together and thought to be related! We know today, this is not true!**

B. Aristotle's System

➢ In fact, birds, bees, and bats have little in common besides the ability to fly.

➢ As time passed, more species were discovered & some **did not fit easily into Aristotle's system of classification**. Therefore, it became a great need for his system to be replaced!

C. Linnaeus's System

- **Carolus Linnaeus**, a Swedish Botanist **developed a wonderful method of classifying organisms properly**. His system was based upon classifying organisms according to organism's physical and structural similarities.

- For example, he might use the similarities in flower parts as a basis for classifying flowering plants.

C. Linnaeus's System

➤ In all, Linnaeus's System became the foundational way for today's modern classification systems.

D. Two Names For A Species

➢ Modern Classification systems use a two-word naming system called **Binomial Nomenclature** developed by Linnaeus to identify species.

➢ In this system, the first word identifies the genus name of the organism.

➢ A **genus** (plural form = genera) consists of a group of similar species. **FIRST NAME**

➢ **The SECOND NAME, the descriptive word, often times describe a characteristic of the organism, immediately follows the genus name.**

D. Two Names For A Species

➢ Thus, the scientific name of each species = the genus name, followed by the descriptive name.

➢ For example: the scientific name of modern humans is ***Homo sapien***.

➢ ******Note, the genus name always begins with a capital letter, but the descriptive (second) name always begins with a lower case letter. Both names are always *italicized* or <u>underlined</u>. This is true ALL THE TIME!!!!**

➢ Modern humans are in the genus, ***"Homo."*** And one characteristic of humans is that they are very bright, or wise. The descriptive word ***"sapien"*** means wise. Both the genus name & descriptive name is in **Latin form**.

D. Two Names For A Species

➢ **Latin** is the language of scientific names which is still used today because the language is no longer used in society for conversation. Therefore, it does not change.

➢ Although a scientific name gives information about the relationship of an organism & how it is classified, many organisms have common names just like you & your friends might have nicknames.

➢ Overall, Classifying organisms is a useful tool for scientists as well as others who work in the agriculture, forestry & medicine field.

E. How Living Things Are Classified

➢ Organisms are ranked in a "**Taxa**" according to have very broad (general) their characteristics are & how very specific the characteristics are.

➢ The broader the Taxa the more general its characteristics & the more species it contains.

➢ A **Taxa** is a further broken-down level of classification found within each kingdom.

➢ **Organisms that look alike & successfully interbreed belong to the same species.**

F. The 5 Kingdoms of Classification

➢ A **Kingdom** is the largest group in the Classification system It encompasses all the related species.
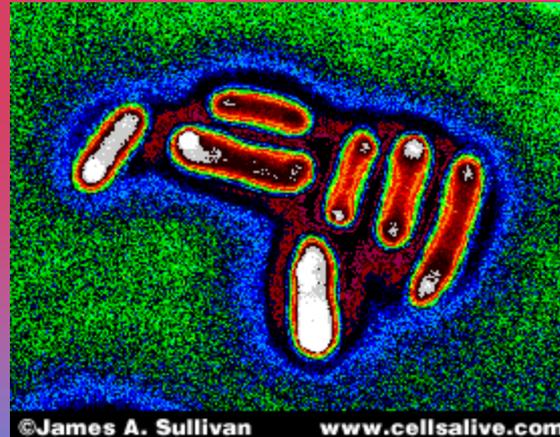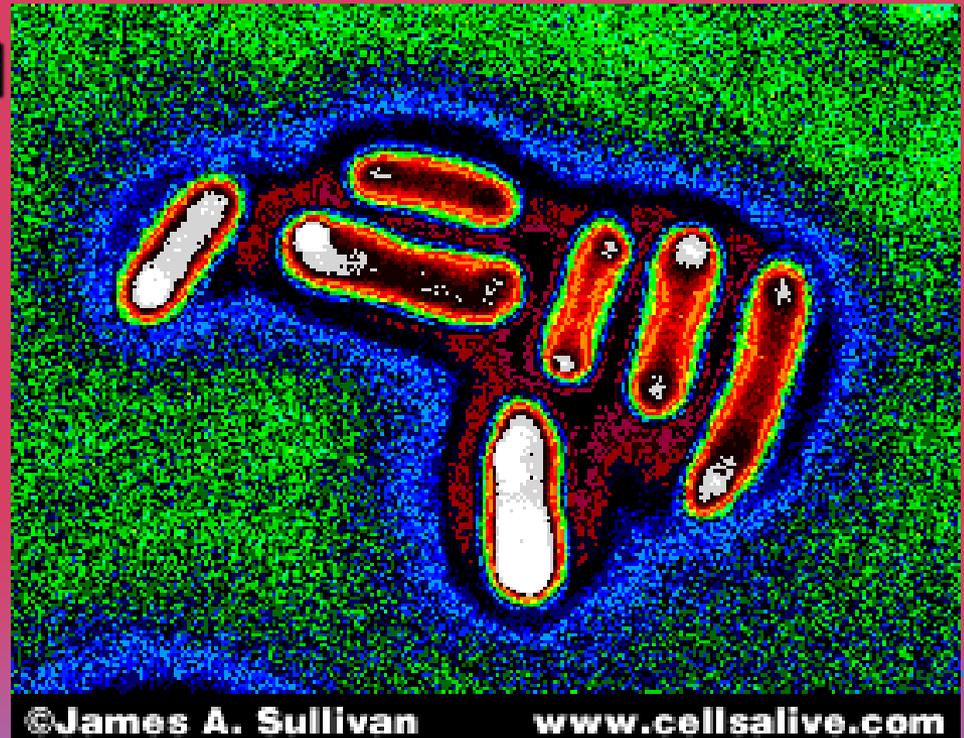
F. The 5 Kingdoms of Classification

➢ **In all, there are 5 Kingdoms of Life…**

1. **Monera**
2. **Protista**
3. **Fungi**
4. **Plantae**
5. **Animalia**

*** You can remember all 5 Kingdoms by the saying, **" Most People Forget Player-Hating Attitudes…"**
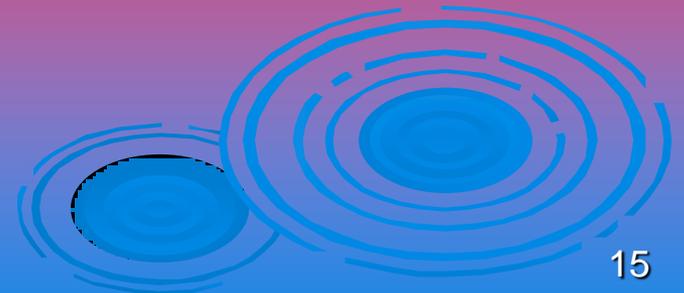
F. The 5 Kingdoms of Classification (Refer to Poster Chart Visual Aids)

➢ The Kingdom, **Monera** consists of all Bacteria.

➢ Examples of Bacteria include: **Cyan bacteria, Staphylococcus aureus, & Escherichia coli**. This picture is of E. coli.

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F. The 5 Kingdoms of Classification (Refer to Poster Chart Visual Aids)

➢ The Kingdom, **Protista** consists of simple eukaryotes (multi-cellular organisms).

➢ Examples within this Kingdom include the **majority of molds such as Saprolegnia (Water mold), Dictyostelium diccoideum (Slime Mold).**

F. The 5 Kingdoms of Classification (Refer to Poster Chart Visual Aids)

➢ The Kingdom, **<u>Fungi</u>** consists of fungus & yeasts members.

➢ Examples of different types of fungus include: **Saccharomyces cerevisiae (Yeast) & Amanita muscaria (Fly Agaric).**

F. The 5 Kingdoms of Classification (Refer to Poster Chart Visual Aids)

➢ The Kingdom, **Plantae** houses all the plant members.

➢ Examples of plants include **wheat, flowers, corn, moss, ferns, oak trees, etc.**

# F. The 5 Kingdoms of Classification (Refer to Poster Chart Visual Aids)

➢ The last Kingdom, **Animalia** consists of Humans and ALL animals. **This includes insects, mammals, reptiles, birds, amphibians, etc.**


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E. How Living Things Are Classified

➤ Each living species can only belong to one Kingdom. They can not belong to more than one, EVER!

➤ Now, within each Kingdom, species are further subdivided or "broken down" into several other categories. **For each Kingdom, there are 6 levels of further classifications called "TAXA."**

➤ **The Six "Taxa" from Largest Taxa to Smallest**

1. Phylum
2. Class
3. Order
4. Family
5. Genus
6. Species
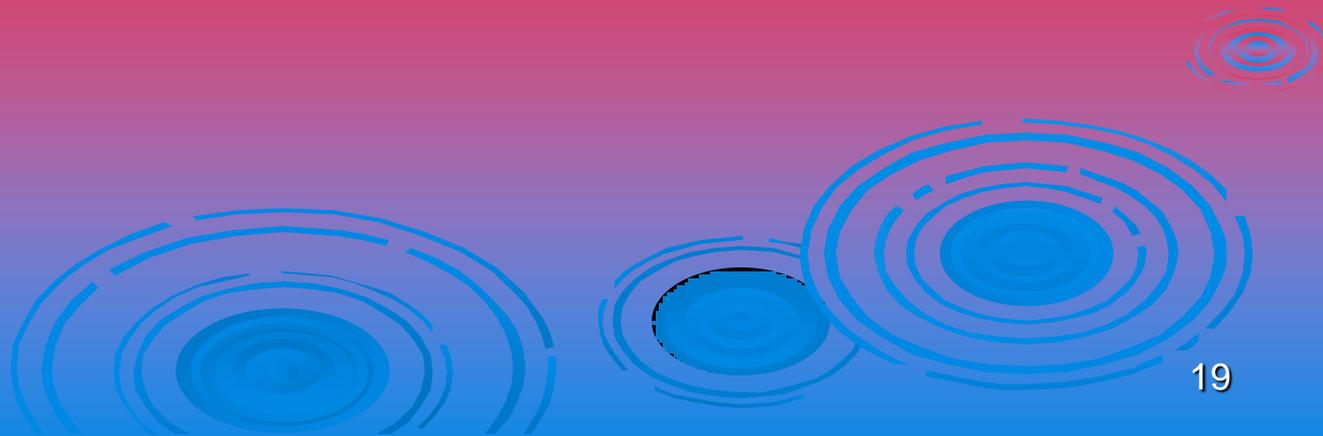
G. Remember The Kingdom

➢ Remember, a **Kingdom** is the largest group in the Classification system. It encompasses all the related species. These related species are then further subdivided into the other 6 Taxa (groups) according to similarities.
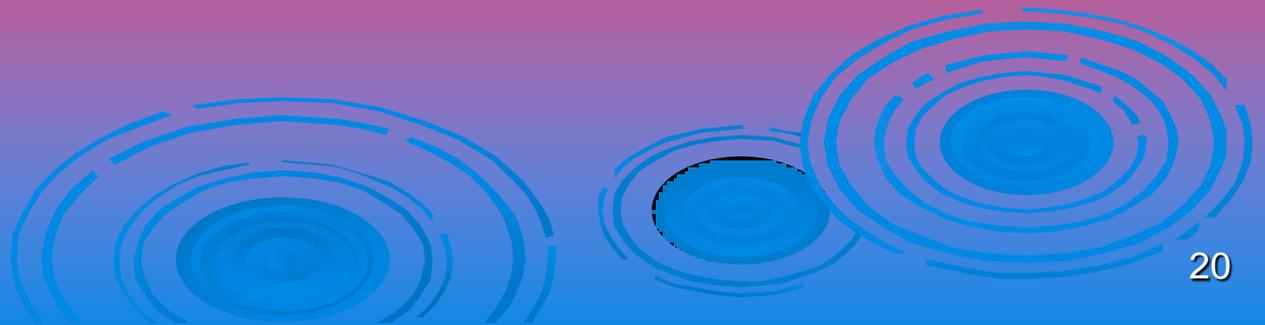
H. Six Taxa of all Kingdoms

➢ **Phylum**: is a Taxa or "group" of similar **classes**. **The exception is in the Kingdom "Plantae."** In this kingdom, the classes are called **divisions** instead of phylums. **This group is the largest of the 6 taxa.**

H. Six Taxa of all Kingdoms

➢ **Class**: A class is a group of similar "**Orders**." We will discuss what an "Order" is on the next slide. The "Class" is the second largest of the Taxa after Phylum.

➢ For example: **the feline Bobcats and lynxes belong to the same Order called Carnivora**. This means that these animals are meat eaters too. Carnivores all have similar teeth arrangements and thus, belong to the **Class Mammalia**.

H. Six Taxa of all Kingdoms

➢ **Order**: is a taxon or "group" of similar families.

H. Six Taxa of all Kingdoms

➢ **Family**: is a group of similar genera. It is also the fourth largest taxon in the biological classification system.

➢ **For example**: the animals cats, bobcats, lynxes & lions all belong to the group Felidae.
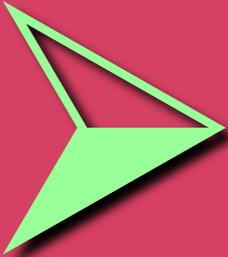
H. Six Taxa of all Kingdoms

➤ Again, A **genus** is a group of similar species.

➤ For example: **Humans belong to the genus: Homo sapien**.
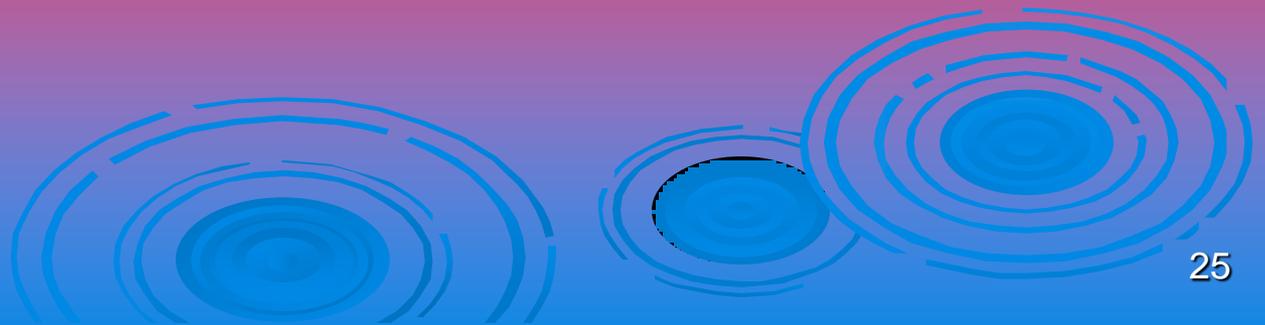
H. Six Taxa of all Kingdoms

➢ **Species**, as you learned in Chapter 15, is a group of organisms in a population that can interbreed and produce fertile offspring.

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