

Introduction to Zoology & the Protozoans

- **Taxonomy** is the study of categorizing & organizing all living things, based on their similarities & differences.
- All living organisms are uniquely identified by name using a “taxonomic hierarchy”. This hierarchy groups organisms together, the largest group the “Domain” down to the smallest group the “species”.
 - **Domains** are groups that have little in common.
 - **Species** are groups that have the most in common and can successfully mate.

Taxonomic Hierarchy:

Domain –
Kingdom –
Phylum –
Class –
Order –
Family –
Genus –
Species –
Common Name

- All living organisms, from bacteria to humans (*Homo sapiens*) have a defining characteristic in common. Which, is we must be made out of cells. (FYI, this is a piece of the cell theory!)
- There are 2 Main Types of cells found in all living organisms: (1 & 2 are now used as Domains in taxonomy)
 1. Eukaryotic Cell (with nucleus)
 2. Prokaryotic Cell (without nucleus) *only found in Monerans*

→ 5 Kingdoms for all living things:

- **Monera** (bacteria & blue-green algae)
- **Protista** (protozoa & protophyta)
- **Fungi** (Yeasts, mushrooms, slime molds, etc.)
- **Metaphyta** (plantae or plant)
- **Metazoa** (animalia or animal)

This Course will focus on Kingdoms Protista & Metazoa(Animal).

Kingdom - Protista

Taxonomy of protozoans (slides)

Domain – Eukaryote

Kingdom – Protista

Phylum – Euglenozoa

Genus – *Euglena*

Species – *viridis*

Common Name = euglena

Domain – Eukaryote

Kingdom – Protista

Phylum – Kinetoplastida

Genus – *Trypanosoma*

Species – *gambiense*

Common Name = trypanosome

Domain – Eukaryote

Kingdom – Protista

Phylum – Rhizopoda

Genus – *Amoeba*

Species – *proteus*

Common Name = Amoeba

Domain – Eukaryote

Kingdom – Protista

Phylum – Ciliophora

Genus – *Paramecium*

Species – *caudatum*

Common Name = paramecium

Protozoan Characteristics:

- **Habitat - All aquatic environments.**
- **Coelom – Not applicable.**
- **Symmetry / Body Plan – Acellular mode of existence.**
- **Cellular Organization - Unicellular with organelles.**
 - **Cell membrane**
 - **Nucleus**
 - **Vacuole**
 - **Mitochondria**
 - **Ribosome**

○ **Types of Reproduction:**

1. Asexual -

a. Binary Fission (*mitosis*)

c. Budding

2. Sexual -

a. Conjugation (*gamete exchange*).

○ **Digestion:** 2 main types/ways of obtaining nutrition.

1. Autotrophic - (photosynthesis, chloroplasts)

2. Heterotrophic – (must eat or consume food to survive)

- Include, **Phagocytosis** (*engulf food through forming a food vacuole*)
and **Saprophytic** (*absorb nutrition across cell membrane*)

○ **Circulation:** The organisms use cytoplasm & osmotic pressure to move nutrients & oxygen around.

○ **Nervous system** – no centralized nervous system, but organisms have simple sensory devices like eyespot

○ **Key characteristics / special adaptations / unique feature**

▪ **3 Modes of Locomotion:**

1. Pseudopodia (move by streaming cytoplasm)

2. Flagella (move by whip like tail beating)

3. Cilia (move by many small hair like structures beating together)