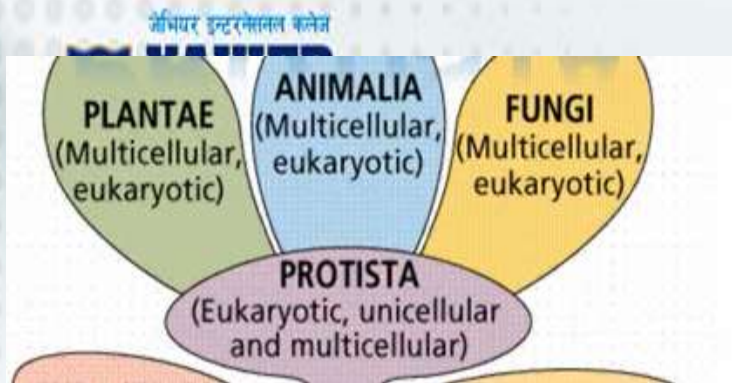
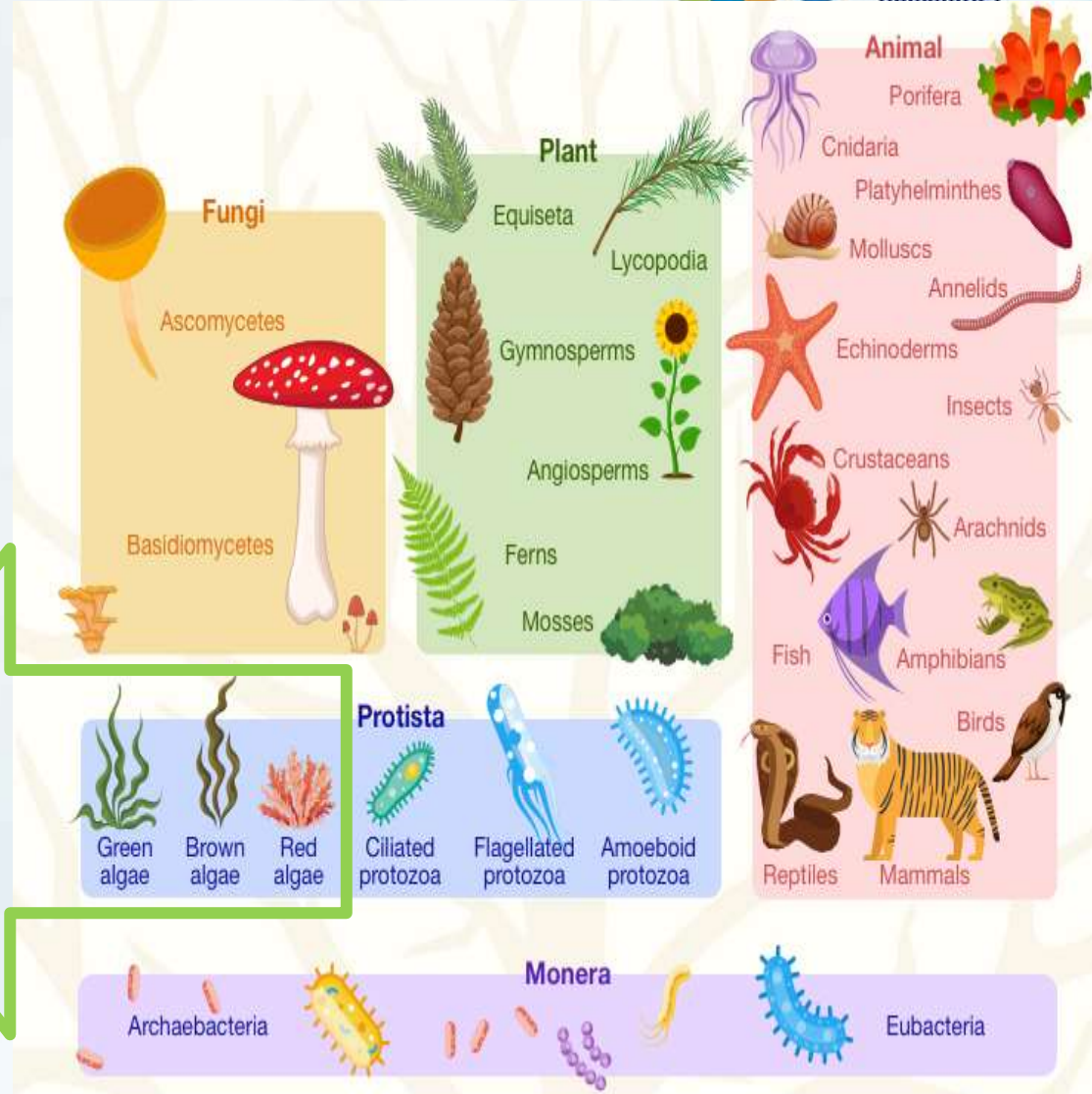


# Kingdom Protista



The term **protista**, meaning the **first of all or primordial** (existing at or from the beginning of time; primeval).

Plant like Protists



What is a protist?  
 a) Animal b) Plant  
 c) Fungi d) none

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# Introduction



Giant Kelp

Usually unicellular, few multicellular like **largest protist giant kelp** in the world

- Eukaryotic organisms whose cells have a nucleus enclosed within a nuclear membrane.

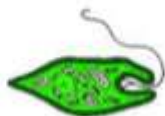
microscopic organisms.

They are classified into 3 different major groups. They are as follows:

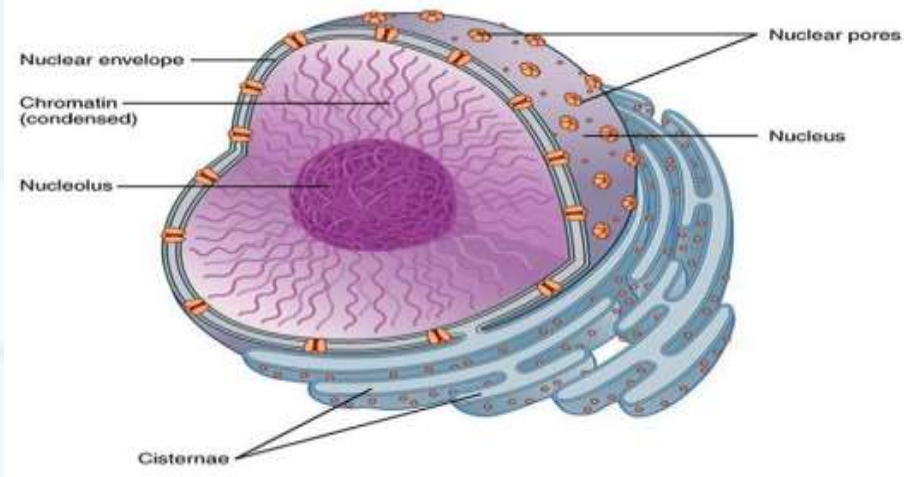
• **Animal-like**



• **Plant-like**



• **Fungus-like**



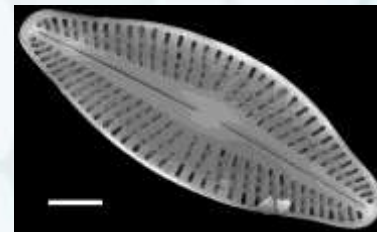
- Protozoan protists (animal like)
- Photosynthetic Protists (plant like)
- Slime molds (fungus like)

Idea: Make mnemonics  
for example **PSP**.

Photosynthetic protists (plant like)  
It includes unicellular eukaryotic algae  
called protistan algae. Photosynthetic  
algae are of 3 different phyla:



**Dinoflagellates**



**Diatoms**

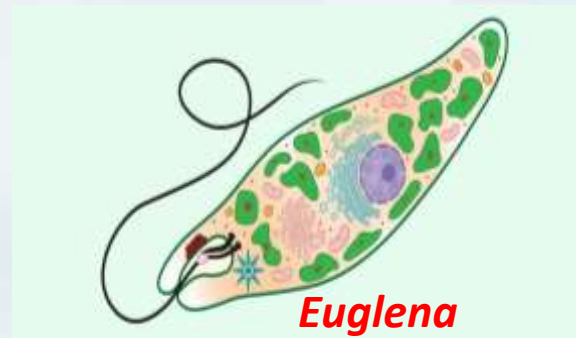


**Golden brown algae**

- **Pyrrophyta: Pyrrhos** means flames like. It includes dinoflagellates

**Chrysophyta:** It includes diatoms and golden brown algae

- **Euglenophyta:** It includes euglena like flagellates.



Mnemonic : **CPE**

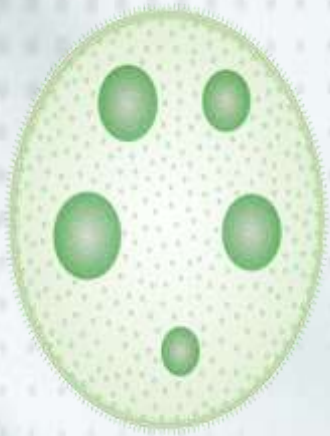
# Slime molds (Consumer decomposer fungi)

- The protist which have character of both fungi (they feed on decaying leaves) and animals (they can move from one place another).
- **Move with the help of flagella, pseudopods, or cilia.**
- They are also termed as protistan fungi.
- They include about 500 species.



# Protozoa (Animal like)

## Different species of Protozoa



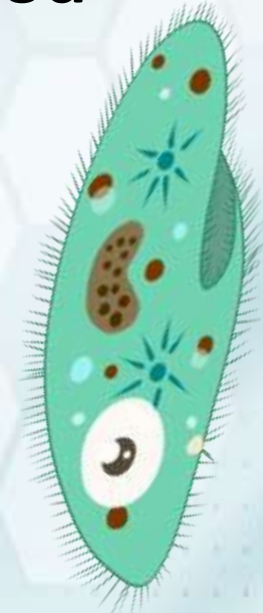
*Volvox*



*Entamoeba*



*Giardia*



*Paramecium*

- It is diverse group of organisms which consists of about 50,000 species. It is regarded as phylum protozoa.
- Protozoa are **acellular** or **unicellular** microscopic organism

# General characteristics of phylum protozoa

**Habit (Form of living):** Most of them are free living (*Euglena*, *Volvox*, *Amoeba* and *Paramecium*) whereas some are parasitic (*Entamoeba*, *Plasmodium*, etc.) and few are saprophytes or commensals. Majority of protozoan are solitary but some like *Volvox* and *Proterospongia* are colonial.

**Habitat:** They live in **freshwater** (Salt-less), **marine water** (Sea water) or damp soil

**Body shape:** The shape of body is variable. For e.g. irregular in *Amoeba*, **slipper** shaped in *Paramecium*

**Symmetry:** Their body is mostly asymmetrical except *Giardia* which have symmetrical body.

## Glossary

**Free living:** living not as a parasite or attached to a substrate

**Parasitic:** Living in others body

**Saprophytes:** lives on dead or decaying organic matter.

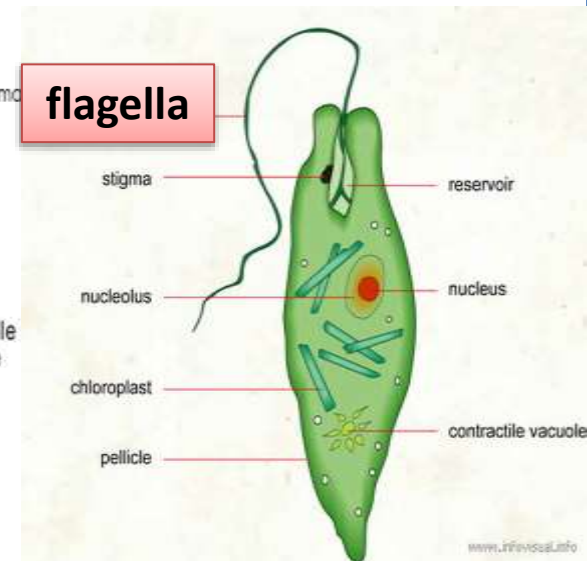
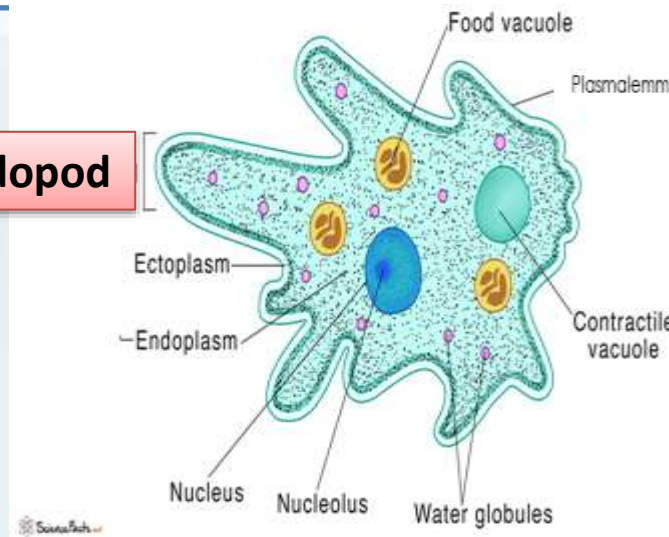
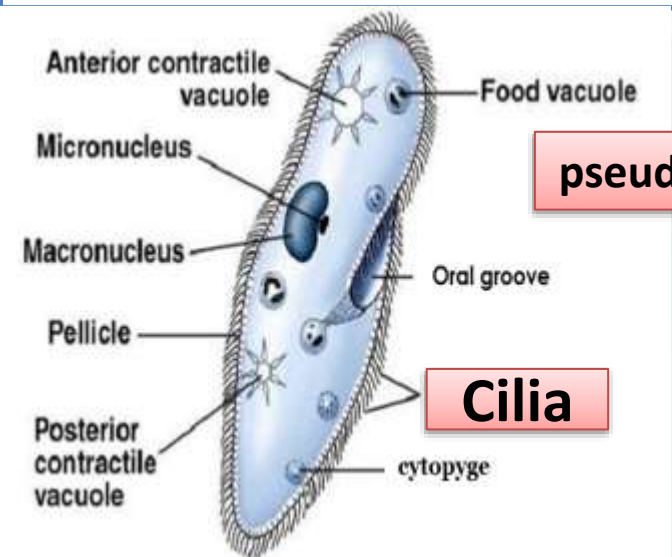
**Commensals:** an association between two organisms in which one benefits and the other derives neither benefit nor harm

**Body organization:** They show **protoplasmic grade** of body organization with outer clear and transparent ectoplasm and inner granular and semi fluid inner endoplasm.

**Body covering:** The body is either naked or bounded by plasmalemma or definite layer called pellicle.

**Locomotion:** It takes place by finger like **pseudopodia** (*Amoeba*), hair like **cilia** (*Paramecium*), whip like **flagella** (*Euglena*). In some protozoans, locomotory organ is absent (*Plasmodium*)

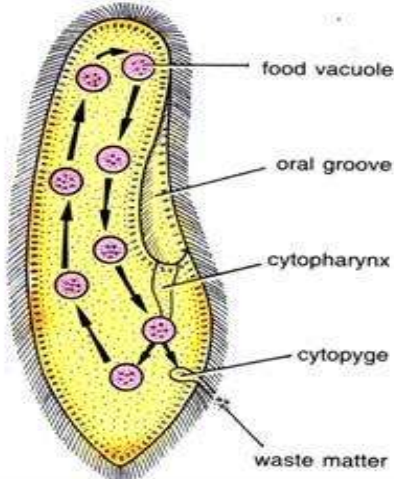
**Nucleus:** The number of nuclei vary from 1 to several. Some species like *Paramecium* shows **nuclear dimorphism**.



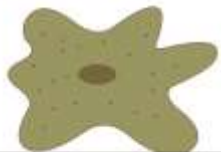
**Paramecium**  
16/11/2022

**Amoeba**

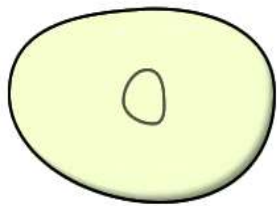
**Euglena**



**Cyclosis in *Paramecium***



**Holozoic nutrition**



**Binary fission**

16/11/2022

- ❑ **Nutrition:** It may be **holozoic, holophytic, saprophytic or parasitic.**
- ❑ **Digestion:** It is **intracellular** which occurs inside food vacuoles. **Cyclosis** helps in circulation of food
- ❑ **Respiration:** It takes place by general body surface through **diffusion.**
- ❑ **Excretion:** It takes place by general body surface mostly **ammonotelic** (excrete nitrogenous waste in the form of ammonia).
- ❑ **Osmoregulation:** It takes place through **contractile vacuoles.**
- ❑ **Reproduction: Asexual** reproduction takes place by **fission, budding** etc. **Sexual reproduction** takes place by **conjugation or syngamy.**

## Terminologies

**Holozoic:** the internalization (ingestion) and internal processing of liquids or solid food particles.

**Holophytic:** organisms that produces its own food through photosynthesis

**Intracellular:** takes place within the **cytoplasm** of the organism and also without a digestive tract

**Cyclosis :** Streaming of cytoplasm inside a living cell

**Diffusion:** movement of a substance from an area of high concentration to an area of low concentration.

**Osmoregulation :** physiological processes that maintain a fixed concentration of cell membrane-impermeable molecules and ions

Phylum Protozoa is classified into 4 different classes on the basis of **locomotory** organ.

## 1: Rhizopoda

2: Ciliata      3: Flagellata      4: Sporozoa

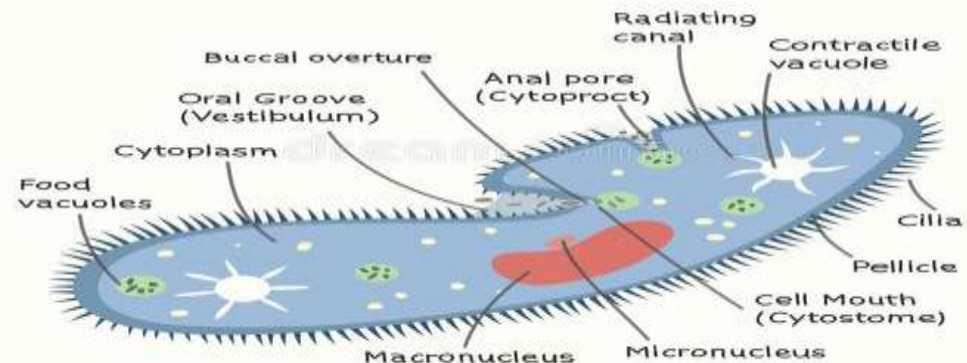
### **Class 1: Rhizopoda/ Sarcodina/ amoeboids**

- Locomotory organelle is pseudopodia (Temporary arm)
- Body is irregular in shape covered with plasmalemma
- They are free living or parasitic
- Nutrition is holozoic or saprozoic

## Class 2: Ciliata

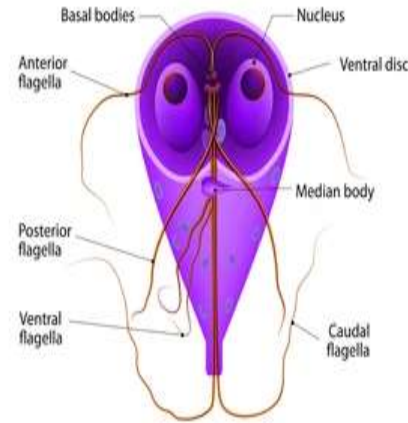
- Locomotory organelle is hair like **cilia**, body is fixed in shape covered with **pellicle**
- They are free living or parasitic, presence of **dimorphic nucleus** and one or more contractile vacuole
- Vorticella, Dileptus, Stentor, Lacrymaria

### Paramecium



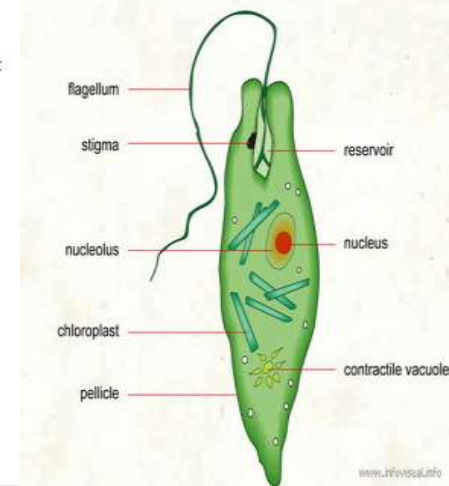
## Class 3 Flagellata/Zoomastigophora

- Locomotory organelle is **flagella**
- Body is fixed in shape covered with **pellicle**
- They are **autotrophic, heterotrophic** or both
- They are free living or parasitic



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*Giardia*

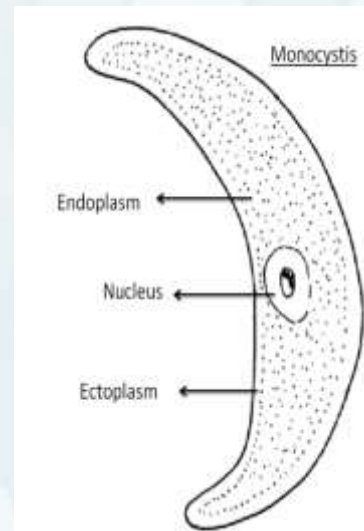


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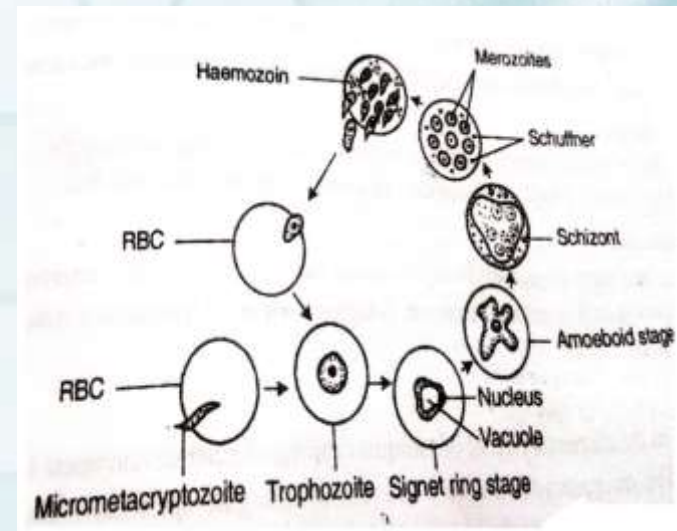
*Euglena*

## Class 4 Sporozoa

- Locomotory organelle is **absent**
- Asexual reproduction takes place by spores.
- They are **endoparasites**
- Contractile vacuole is absent



*monocystis*



*Plasmodium vivax*

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**Any questions?**



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**Thank you**