

ST.XAVIER'S SCHOOL

Belguma

Purulia

Subject- Biology

Phase- II

Date-20/05/20

Chapter 2- Classification of Plants

Class-VII

Subject Coordinator- Ms. Benazir Kamal

Instructions to the students

1. You have been provided with the study material relevant to the chapter for your better understanding. Use it as reference along with you textbook.
 2. The diagrams provided are for your clarity .You can either use them or the ones provided in your books.
 3. Solve the exercise's multiple choice questions and short answer questions (1 & 4) in your textbook. Question no. 2&3 from short answer questions and the long answer questions to be answered in the notebook.
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Classification

The system of grouping living forms on the basis of similarities and differences.

Advantages of Classification

[Refer to page no.17 in your textbook]

Classification of the living world

❖ **Two Kingdom Classification**

- Given by **Linnaeus**, who divided the living organisms into two kingdoms-**Plant Kingdom** and **Animal Kingdom**.
- It was later criticized as it failed to classify some organisms like Bacteria and *Euglena* which possess characters of both plants and animals.

❖ Five kingdom Classification

R.H.Whittaker(1969) advocated a five kingdom system of Classification based on the following criteria:-

1. Complexity of Cell (Prokaryotes/Eukaryotes).
2. Cellularity (Unicellular/Multicellular).
3. Mode of Nutrition (Autotrophic/heterotrophic).

[Refer to the flowchart on Page no.18]

Kingdom Monera

Characteristics

- ❖ Unicellular, microscopic and prokaryotic organisms that lack a well-defined nucleus and membrane bound organelles.
- ❖ They are both autotrophic (photosynthetic or chemosynthetic) and heterotrophic (parasitic or saprophytic). Bacteria occur everywhere and they are microscopic in nature.
- ❖ Example- Mycoplasma, Bacteria, Actinomycetes.

[Discussed in the video in details]

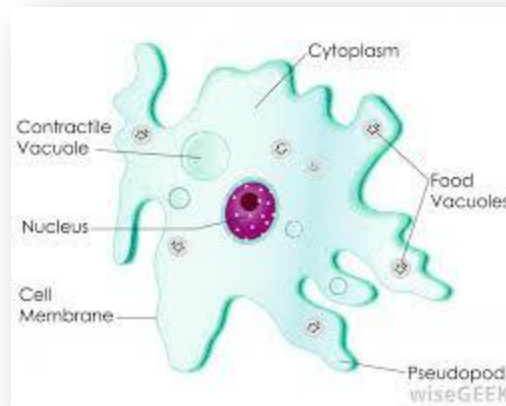
Kingdom Protista

Characteristics

- ❖ Unicellular and eukaryotic organisms.
- ❖ Mode of nutrition is heterotrophic.
- ❖ Example-*Amoeba, Paramecium, Plasmodium*.

AMOEBA

- It is a unicellular, microscopic eukaryotic organism.
- Most of them are free living but some are parasitic. It is found in stagnant water other than ponds and ditches.



Amoeba

- **Movement**

Amoeboid movement. It is a crawling-like type of movement accomplished by protrusion of cytoplasm of the cell involving the formation of **pseudopodia** ("false-feet"). Outwardly, pseudopodial locomotion appears to be the extension of a part of the body that anchors itself and then pulls the remainder of the body forward.

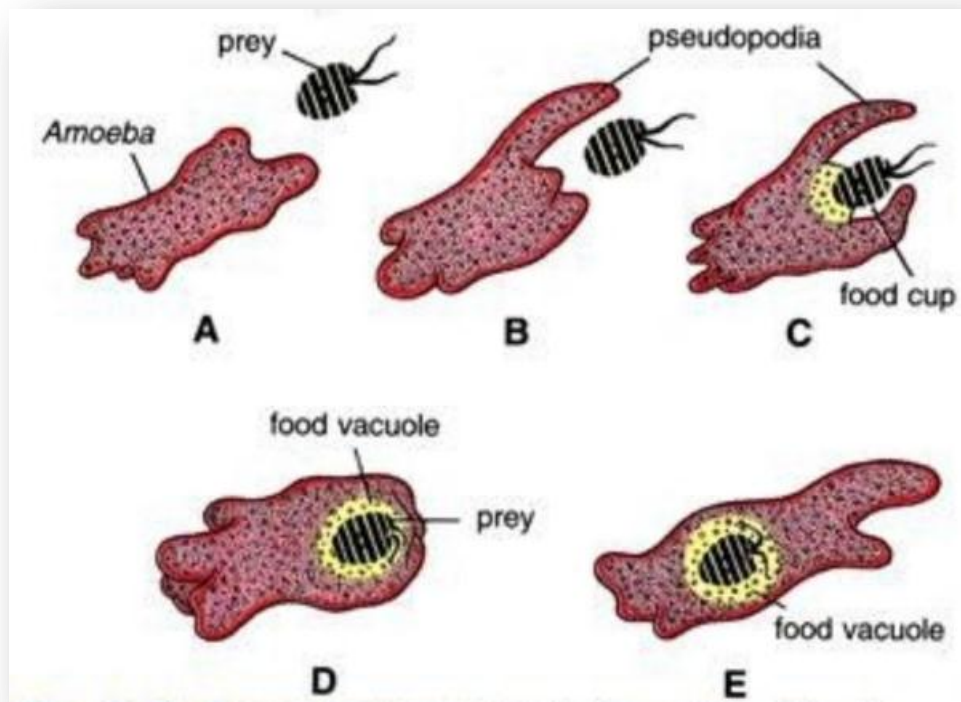
Locomotion in *Amoeba*

https://www.youtube.com/watch?time_continue=5&v=03RSkpvYpU&feature=emb_logo

[Click on the link given for video on related topic]

- **Nutrition**

Amoeba engulfs its prey by a process called "phagocytosis". As the amoeba moves towards its prey, its pseudopods reach out, surround, and engulf the food inside the cell membrane of *Amoeba* by forming a food vacuole. Then the digestive enzymes are released into the vacuole to break down the food in small nutrient molecules for *Amoeba* to utilize for growth.



***Amoeba* phagocytosis:** the pseudopods first surround and bring the food particle close to the *Amoeba*. Then a part of the cell membrane opens to allow the particle to move into the cell and into a food vacuole where it is digested by enzymes.

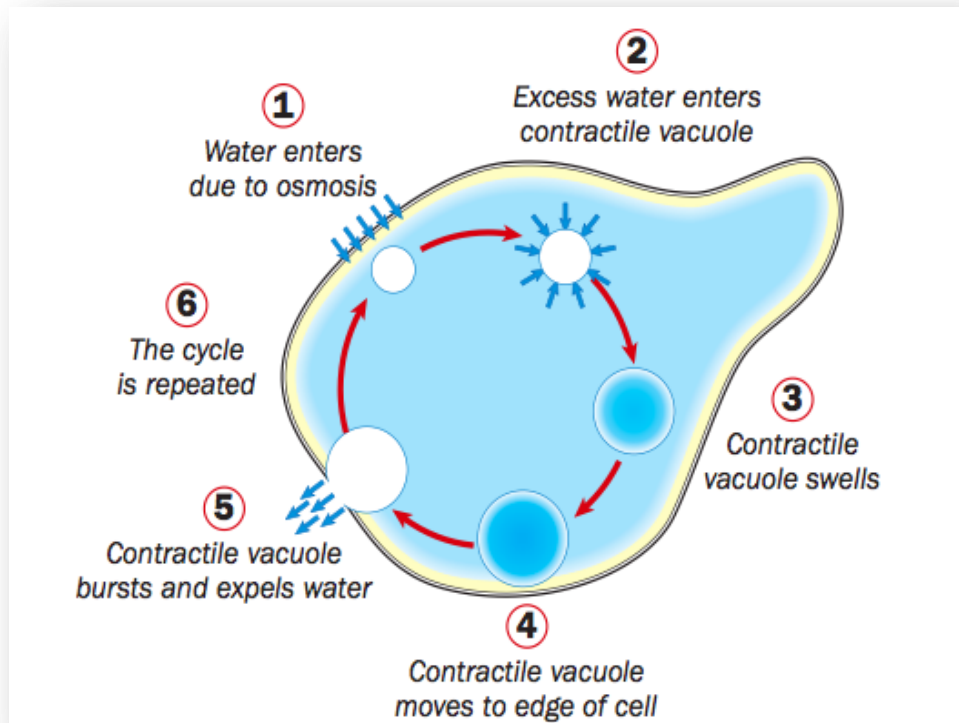
Nutrition in *Amoeba*

<https://www.youtube.com/watch?v=mv6Ehv06mXY>

[Click on the link given for video on related topic]

- **Excretion**

- i. Ammonia along with other nitrogenous wastes is given out directly through the cell surface by diffusion.
- ii. Contractile vacuole serves as a reservoir to store excess water inside the cells. Ammonia is soluble in water. Once the water is close to its limit, the contractile vacuole moves and fuses with plasma membrane to expel water and dissolved ammonia along with it.



The process of removal of excess water using Contractile vacuole in *Amoeba*.

- **Respiration**

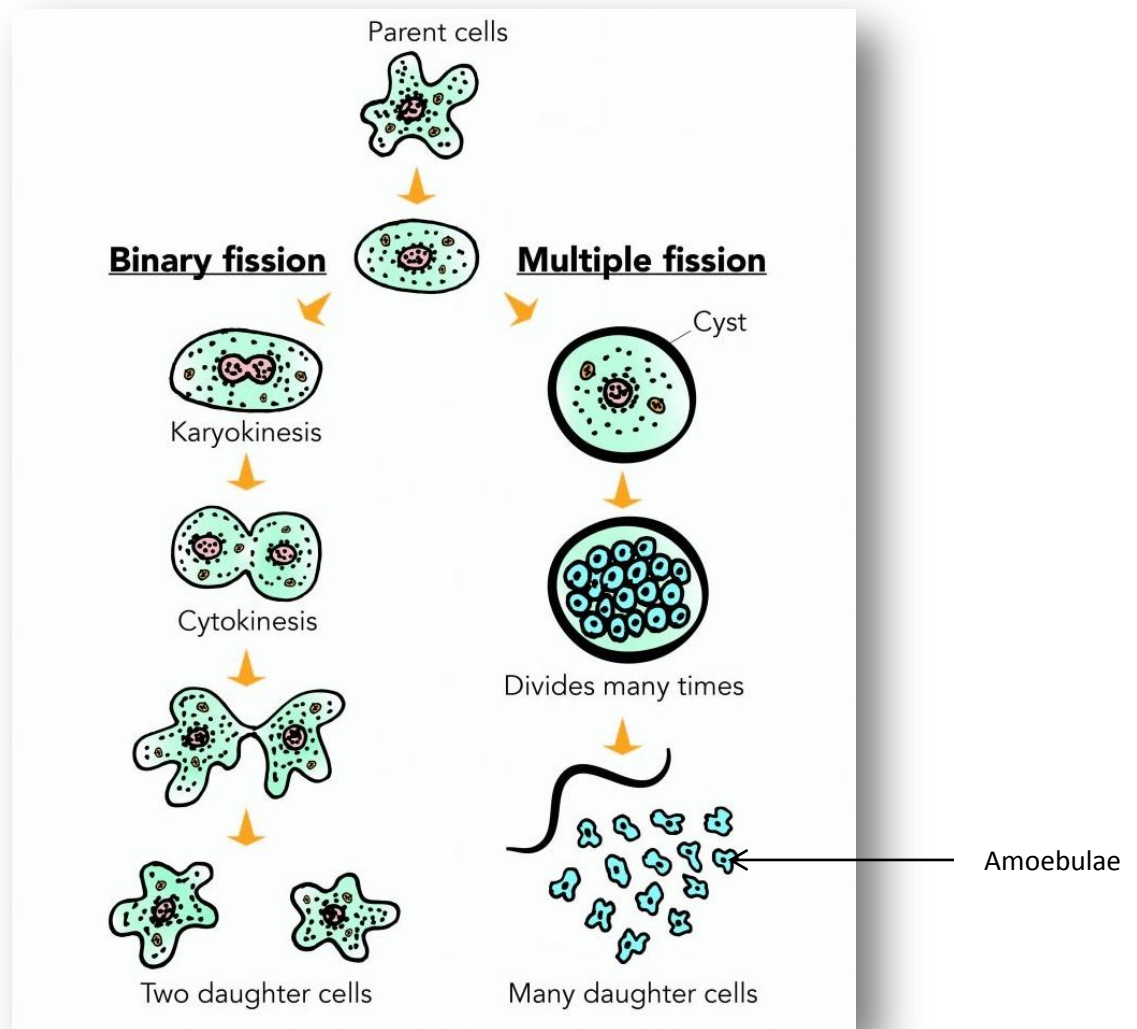
In *Amoeba* exchange of gases occur through the cell membrane. Oxygen from the surrounding water diffuses into the cytoplasm and carbon oxide from the body of the *Amoeba* diffuses out into the surrounding water.

- **Reproduction**

In **Binary fission**, the *Amoeba* divides into two after reaching a point where it has fully grown. In this process, the nucleus divides first (karyokinesis) and then the cytoplasm and cell membrane (cytokinesis) forming two small identical daughter cells. After splitting the parent cell do not exist and two new organisms are formed.

In **Multiple fission**, parent cell splits to form many new organisms. This happens when cyst is formed around a unicellular organism. Inside this cyst the nucleus of an organism breaks in many smaller nuclei surrounded by cytoplasm (amoebulae).

When the favourable conditions come, the cyst breaks and the many daughter cells inside it are released.



Kingdom Fungi

Characteristics

- ❖ They are unicellular and multicellular or filamentous eukaryotic organisms.
- ❖ Heterotrophic with absorptive type of nutrition. Its either saprophytic or parasitic.
- ❖ The filamentous fungi comprise of slender, long thread-like constructions called hyphae. The network of hyphae is called mycelium. Erect and mature hyphae are called **Sporangiophores** and bear rounded bodies at their tip known as **sporangium**.

- ❖ The Sporangium contains spores. These spores when released in air and land on suitable growth medium grow into new mycelium.
- ❖ Respiration mainly aerobic.
- ❖ Example- Yeast, Rhizopus, Mucor.

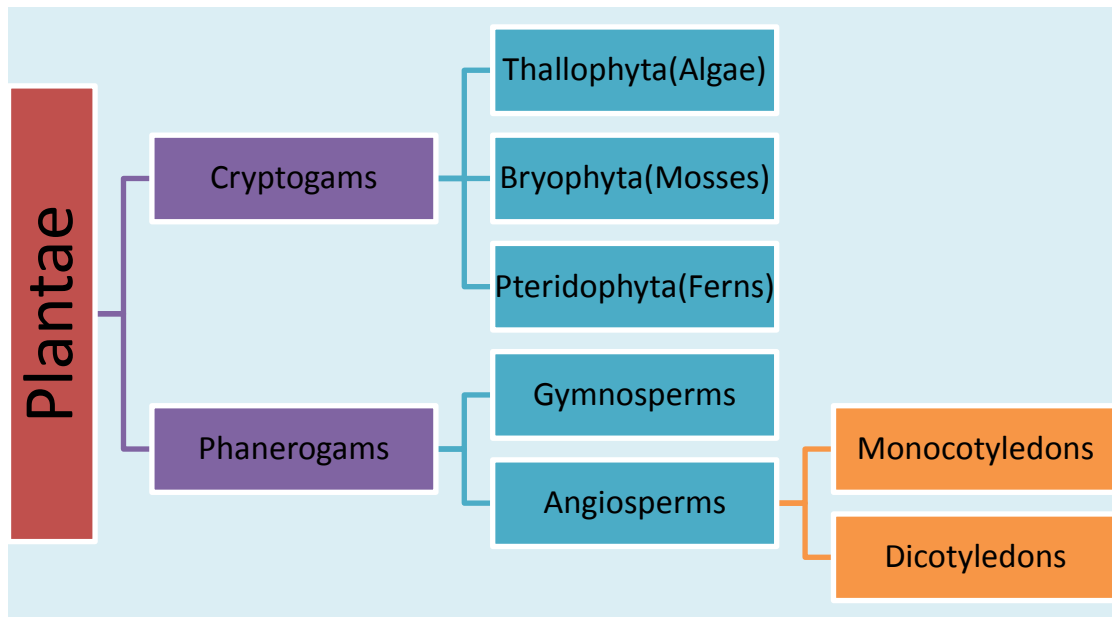
[Refer to Page no.24-25 for details on Useful Fungi and harmful Fungi]

Kingdom Plantae

Characteristics

- ❖ Second largest kingdom with 250000 species.
- ❖ Multicellular, eukaryotic organisms whose cells have cell wall.
- ❖ Characterized by the presence of plastids-Chloroplast which contain **chlorophyll**(the pigment which help them to perform photosynthesis).
- ❖ They are termed as **producers** as they provide food and oxygen to all other living organisms.

Classification of Plant Kingdom



Thallophyta (Algae)

- Aquatic in habitat.
- Body is not differentiated into stem, leaves and roots.
- May be unicellular or multicellular
- Usually green due to presence of chlorophyll. Few are red and brown in colour.
- Examples-Spirogyra, Ulva , etc.

Bryophyta (Mosses)

- Moist and damp habitat.
- Body is differentiated into stem and leaves but no roots. Thread like structures called rhizoids are present which adhere to surfaces and absorb water.
- They need water to reproduce and complete their life cycle- Amphibians of the Plant Kingdom.

Pteridophyta (Ferns)

- Body is differentiated into stems, leaves and roots.
- Do not produce flowers and seeds instead bear spores on their undersurface which later scatter and develop into new plants.

Gymnosperms

- Bear seeds but no fruits. Seeds are thin, naked and not enclosed in fruits instead inside cones.
- Most of them are evergreen.
- Example- Pine, Spruce, Fir.

Angiosperms

- Bear flowers, fruits and seeds. Seeds are enclosed in fruits.
- Seeds develop inside ovary which later grows into fruit.
- Characterised by the presence of Cotyledons or seed leaves
- On the basis of the cotyledon numbers they are divided into Monocotyledons and Dicotyledons.

Exercises -Long answer questions (to be done in notebook)

Find the answers for questions

(Q1) At Page no.21. (Q 2) At Page no.19. (Q3) i) At page no.26. ii) At Page no.21 (Q4) At page no. 23. (Q5) At page no. 19-21 & 25 (Q6) At page no. 21 (Q7) At page no.29. (Q8) At page no. 23.

Assignments (to be done in the notebook)

1. Define Classification. Why is the purpose of classification?
2. What were the anomalies in the two kingdom classification?
3. Draw the diagram of a bacterial cell, Amoeba.
4. Using diagrams explain the feeding mechanism of Amoeba.
5. Write in brief the mode of nutrition in Fungi.
6. Name the organisms that is used for
 - i) Curdling of milk.
 - ii) Producing Acetic acid
 - iii) Preparing Antibiotic.
 - iv) Ripening of Cheese.

Project Work

On a chart paper or in your exercise notebook, draw the different types of plant and animal tissues (Chapter-1) in a flowchart.

Instructions:-

- The different types of tissues must be drawn by hand. Please do not use printouts.
- Please do not use too many colours.
- You can take help from the internet.