NAME: IFEANYI-OBI ADAEZE CLARE

DEPT: MBBS

MATRIC NO.: 19/MHS01/193

COURSE: BIO-102

1) A system of plant taxonomy, the Eichler system was the first phylogenic (phyletic) or evolutionary system. He gave system of classification for the whole plant kingdom. Eichler classified the plant kingdom into two sub-kingdom. They are Cryptogamae and Phanerogamae. A] Cyptogamae are flowerless and seedless plants. They are simple and flowerless plants like algae, mosses and ferns which do not produce flowers, fruits and seeds. Cryptogams are considered as lower plants.
   B] Phanerogamme are seed bearing plants. So they are also known as spermatophytes. They are higher plants. The plant body is differentiated into roots, stem and leaves with well developed vascular system. Examples are angiosperms and gymnosperms.

2) Importance of Algae to man
   - ❖ It serves as food for people
   - ❖ The red algae provide agar and carrageen used for the preparation of various gels used for scientific research
   - ❖ It's contains high iodine content which prevents goiter
   - ❖ It serves as thickening agents in ice cream and shampoo
   - ❖ Alginic acid from the brown algae is used to stabilize emulsions and suspensions.

3) Paramecium is a unicellular organism with a shape resembling the sole of a shoe. It ranges from 50 to 300um in size which varies from species to species. It is mostly found in a freshwater environment.

It is a single-celled eukaryote belonging to kingdom Protista and is a well-known genus of ciliate protozoa.

As well, it belongs to the phylum Ciliophora. Its whole body is covered with small hair-like filaments called the cilia which helps in locomotion. There is also a deep oral groove containing not so clear oral cilia. The main function of this cilia is to help both in locomotion as well as dragging the food to its oral cavity. Paramecium can be classified into the following phylum and sub-phylum based on their certain characteristics.

- **Phylum** Protozoa

- **Sub-Phylum** Ciliophora
- **Class** Ciliates
- **Order** Hymenostomatida
- **Genus** *Paramecium*
- **Species** *Caudatum*

Being a well-known ciliate protozoan, paramecium exhibits a high-level cellular differentiation containing several complex organelles performing a specific function to make its survival possible.

Besides a highly specialized structure, it also has a complex reproductive activity. Out of the 10 total species of Paramecium, the most common two are *P.aurelia* and *P.caudatum*. *P. caudatum* is a microscopic, unicellular protozoan. Its size ranges from 170 to 290um or up to 300 to 350um. Surprisingly, paramecium is visible to the naked eye and has an elongated slipper like shape, that's the reason it's also referred to as a slipper animalcule.

The posterior end of the body is pointed, thick and cone-like while the anterior part is broad and blunt. The widest part of the body is below the middle. The body of a paramecium is asymmetrical. It has a well-defined ventral or oral surface and has a convex aboral or dorsal body surface.

4) **Reproduction**

Just like all the other ciliates, paramecium also consists of one or more diploid micronuclei and a polypoid macronucleus hence containing a dual nuclear apparatus.

The function of the micronucleus is to maintain the genetic stability and making sure that the desirable genes are passed to the next generation. It is also called the germline or generative nucleus.

The macronucleus plays a role in non-reproductive cell functions including the expression of genes needed for the everyday functioning of the cell.

Paramecium reproduces asexually through binary fusion. The micronuclei during reproduction undergo mitosis while the macronuclei divide through amitosis. Each new cell, in the end, contains a copy of macronuclei and micronuclei after the cell undergoes a transverse division. Reproduction through binary fission may occur spontaneously.

It may also undergo autogamy (self-fertilization) under certain conditions. It may also follow a sexual reproduction process in which there is an exchange of genetic material because of mating between two paramecia who are compatible for mating through a temporary fusion.

There is a meiotic division of the micronuclei during the conjugation which results in haploid gametes and is further passed on from cell to cell. The old macronuclei are

destroyed and formation of a diploid micronuclei takes place when gametes of two organisms fuse together.

Paramecium reproduces through conjugation and autogamy when conditions are not favorable and there is a scarcity of food.

5) Differences between two types of colonial forms of Algae

Pandorina	Volvox
Sexual reproduction is anisogamous	Sexual reproduction is oogamus
Unicellular motile thallus	Multicellular motile thallus
It's a genus of green algae	It's complex form of pandorina

6) **Seaweed**, or **macroalgae**, refers to several species of macroscopic, multicellular, marine algae. The term includes some types of *Rhodophyta* (red), *Phaeophyta* (brown) and *Chlorophyta* (green) macroalgae. Seaweed species such as kelps provide essential nursery habitat for fisheries and other marine species and thus protect food sources; other species, such as planktonic algae, play a vital role in capturing carbon, producing up to 90% of Earth's oxygen. Understanding these roles offers principles for conservation and sustainable use. Mechanical dredging of kelp, for instance, destroys the resource and dependent fisheries.