

Tutorial 01c

Study Unit 3

Thanks for your involvement in making this group an interactive one. If you are yet to participate, Please do.

*As it has been mentioned in my welcome address that all the tutorials will be based on what the Lecturer has designed. Even though, I tried (and will try in subsequent ones) to simplify the module for the purpose of your understanding, I would like to say that **IT IS NOT EXHAUSTIVE IN ITSELF**. Hence, onus lies on you to study and study to ensure maximum achievement. To this effect, only highlight excerpt are presented here. This also will cut across all tutorials that I would be pasting on myunisa.*

Most eukaryotes are unicellular. Examples of Eukaryotes are protist, plants, animals and fungi. The domain is Eukarya.

- Eukaryote: Nucleus bounded membranes
- Diversity of mode of feeding:
 - ✓ photo autotrophs contains chloroplasts
 - ✓ Heterotroph-absorbing organic molecules or ingesting larger molecules
 - ✓ Mixotrophs- combines photosynthesis and heterotrophic nutrition together.

- **reproduction**
 - ✓ Asexually:
 - ✓ Sexually: meiosis and fertilization

Protists motility

- use of flagellum or cilia
- Use of undulating part of plasma membrane

Diagram of Euglena and components with their function

- | | |
|----------------------------|--|
| ➤ Flagellum-short and long | ➤ Eyespot |
| ➤ Contractile vacuole | ➤ Light detector |
| ➤ Nucleus | ➤ pellicle-protein bands beneath plasma membrane |
| ➤ Chloroplast | |
| ➤ Plasma membrane | |

Major clades and group	Key characteristics	Example
Euglenozoa Euglenophyta	-presence of a rod with either spiral or crystalline structure in side of each flagellum.	Euglena
Alveolata Dinoflagellata	Has membrane bounded sac called alveoli -contains carotenoid pigment some produce toxin -Most pigment is plastid -Spiral movement in water because of flagellum in groove	 Pfiesteria
Stramenopila Oomycota Bacillariophyta Chrysophyta Phaeophyta	Flagellum has hair-like projections. Hairy flagellum is paired with smooth short ones. Multinucleated filament but with cell wall made of cellulose Most are unicellular, few are colonial. Have yellow and brown carotenoid Both flagella attached near one end of cell Multicellular, cell wall of cellulose and gel forming polysaccharides which prevent drying when exposed.	 Water molds Pinnularia Dinobryon Laminaria
Rhodophyta Red algae	Has pigment called phycoerythrin masking the green chlorophyll. It can absorb blue and green light	Porphyra
Chlorophyta Green algae	-Has pigment like chloroplast -Forms colonies or filament -Formation of true multicellular bodies by cell division and differentiation -Repeated nuclei cell division with no cytoplasmic division	Chlamydomonas
Amoebozoa Myxogastriada Dictyostelida	Cell separated by individual plasma membrane. It is haploid organism except for the zygote	Physarum Dictyostelium

Study life cycle of **chlamydomonas**

Some golden algae are **mixotrophs** which means they can absorb organic compounds or ingest food particles including living cells by phagocytosis.

Syngamy is fusion of gametes which results in formation of zygote. This occurs in sexual reproduction.

Alternation of generation means the life cycle where haploid gamete alternates with zygote which is diploid

Laminaria an example of Phaeophyta has two generations:

- **Heteromorphic:** the sporophytes and gametophytes are structurally different
- **Isomorphic:** the sporophyte and gametophytes looks similar but differ in chromosome number

Differences between sexual and asexual	
Asexual reproduction	Sexual reproduction
Cell fission- one cell breaking into two or more	Syngamy and conjugation occurs
Mitotic cell division	Meiotic cell division occurs
Results into haploid cell	Results into diploid cell
Cell is called gamete	Cell is called zygote
It has n chromosomes	Has 2n chromosomes