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DEPARTMENT: MEDICINE AND SURGERY

COURSE: BIO 102{GENERAL BIOLOGY II}

ASSIGNMENT

1. CLASSIFICATION OF PLANTS BASED ON EICHLER'S GROUPING IN 1883

DIVISION	CLASS
THALLOPHYTA	Phycotinae {algae} Mycotinae {fungi}
BRYOPHYTA	Hepaticae
PTERIDOPHYTA	Psilotinate {psilotum} Lycopodinae {lycopodium, selaginella} Equisetinae(horsetails) Filicinae {ferns}
SPERMATOPHYTA	Gymnospermae {gymnosperms} Angiospermae {angiosperms}

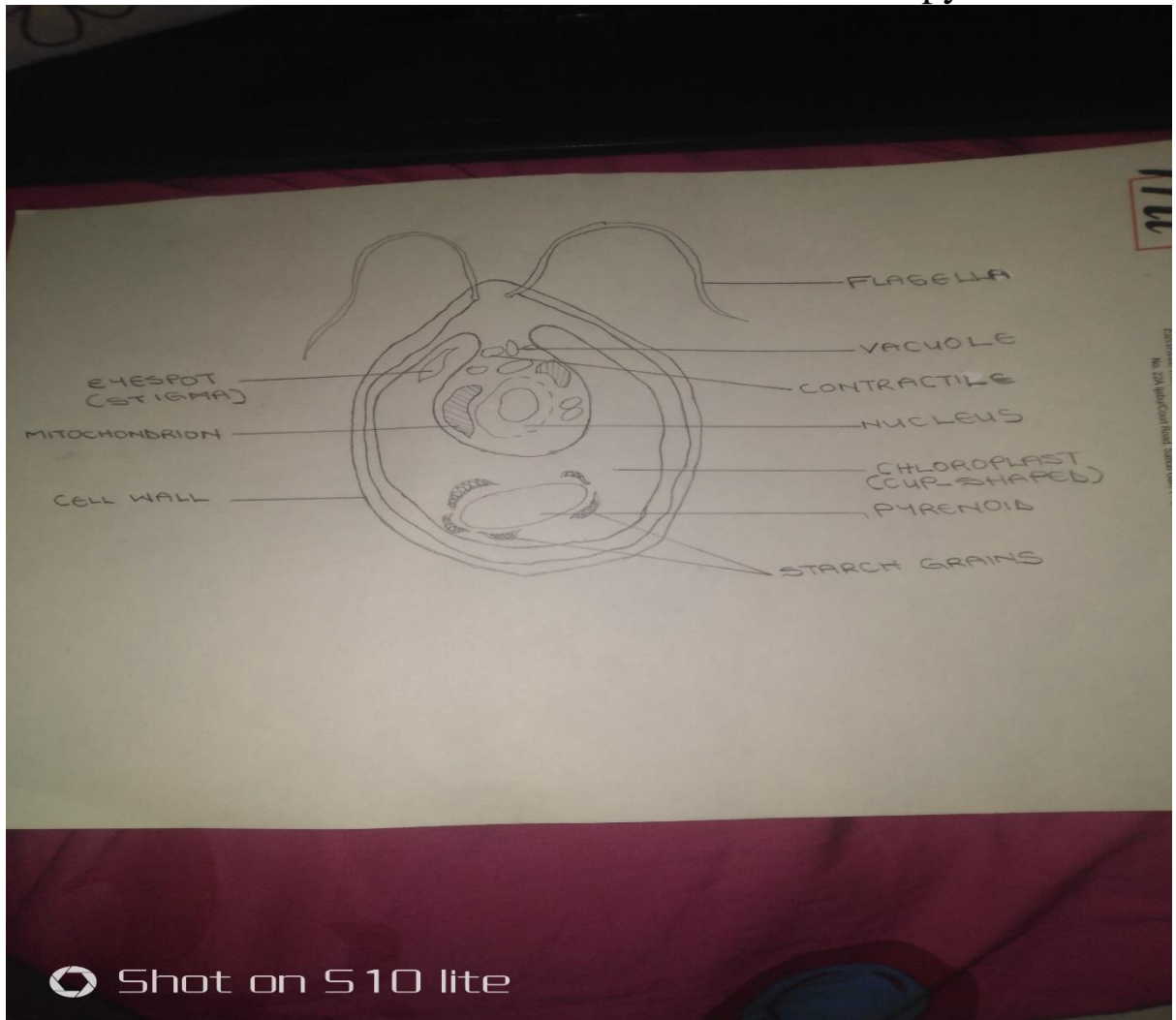
2. IMPORTANCE OF ALGAE TO MAN

- I.** Algae is harvested for food and cosmetics in the far East.
- II.** Algae is used as a thickening agent in ice cream and shampoo, drugs to ward off diseases.
- III.** Algae contains high protein content and high concentrations of minerals hence are very nutritious.
- IV.** Algae also has high iodine content therefore prevent goitre.
- V.** It can also be used in making fertilizer.
- VI.** It can also be used as a fodder in fish farming.

VII. Algae can also be used for the reclamation of alkaline land.

3. DESCRIPTION OF A UNICELLULAR FORM OF ALGAE

Clamydomonas represents the unicellular and motile forms of green algae. It is usually found in stagnant water usually along with other forms. Their structures of mobility are the flagella. The cell is bounded by a cellulose cell wall; contains organelles e.g. nucleus, mitochondria, stigma {eyespot}, cup-shaped chloroplast, pyrenoid etc. The clamydomonas uses the stigma for photoreception. The mitochondria mediate the elaboration of energy molecules. Manufactured food is processed into starch on the pyrenoid.



4. REPRODUCTION IN CLAMYDOMONAS {UNICELLULAR ALGAE}

Reproduction in *Chlamydomonas* can either be vegetative (asexual) or sexual.

Asexually, vegetative reproduction results in production of daughter cells in which the amount and quality of genetic material in the nucleus of the mother cell is maintained in the daughter cell. Thus, if the amount of genetic material in the mother cell is n , the daughter cells also have n quantity of genetic material. This kind of cell division is known as mitotic cell division. In *Chlamydomonas*, a cell about to divide loses its flagella. The cell undergoes mitotic division resulting to two nuclei. Cell walls are elaborated which delimit cytoplasm around each nucleus.

Sexually, certain environmental conditions e.g. lack of nutrients or moisture may trigger the haploid cells to undergo this form of reproduction. Instead of forming spores, these haploid cells form gametes that have two different mating strains. These opposite mating strains fuse via *ISOGAMY* to form a diploid zygote, containing two sets of chromosomes. After a period of dormancy, these zygotes undergo meiosis. This cell division produces four genetically unique haploid cells that grow into mature cells.

5. DIFFERENCES BETWEEN THE TWO COLONIAL FORMS OF ALGAE.

The two colonial forms of algae are *Pandorina* and *Volvox*; *Pandorina* is a colony usually found in water bloom. The colony consists of 16 cells attached to one another. Each cell has many attributes in common with *Chlamydomonas*. In this colony, sexual reproduction is achieved by *anisogamous* pairing. **While**, *Volvox* is also a colony that shows more complex forms than *Pandorina*. There are more cells in this colony, number may run into thousands and are connected with cytoplasmic strands that run through the cells. Sexual reproduction in this colony is *oogamous*.

6. DESCRIPTION OF A FUCUS { COMPLEX FORM OF ALGAE }

Fucus known by the common names: **bladder rack, black tang, rock weed, sea oak, cut weed rock wrack** is a genus of green brown algae whose species are often found on rocks in the

intertidal zones the sea shores. It usually has a life span of four years. They feature bladder-like floats {pneumatocysts}, disk-shaped holdfasts for clinging to rocks and mucilage-covered blades that resist desiccation and temperature changes. This plant body is flattened, dichotomously-branched thallus with a midrib, a vegetative apex, a reproductive apex at maturity and a multicellular disk with which plant is attached to rock surface. The plant body also has air bladders which is believed to aid the plant to float on the water. There are various species of focus that exist. They vary in size and also vary in terms of whether the sex cells are found in the same sexual chamber or different sexual chambers on different plant bodies. It is a dioecious organism. Sexual reproduction here is *oogamous*, sex cells are produced in conceptacles which have openings on the surface of the thallus.