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DEPARTMENT: MEDICINE AND SURGERY

MATRIC NUMBER: 19/MHS01/373

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| 1. DIVISION | CLASS |
| Thallophyta | Phycotinae (Algae) Mycotinae (Fungi) |
| Bryophyta | Hepaticae (Liverworts) Musci (Mosses) |
| Pteridophyta | Psilotinate (Psilotum) Lycopodinae (Lycopodium, Selaginella) Equisetinae (Horsetails) Filicinae (Ferns) |
| Spermatophyta | Gymnospermae (Gymnosperms) Angiospermae (Angiosperms) |

COURSE CODE: BIO 102

COURSE TITLE: PLANT AND ANIMAL DIVERSITY

1. EICHLER’S GROUPING OF 1883
2. IMPORTANCE OF ALGAE TO MAN

* Algae are important as food for fish
* It serves as food for people and livestock
* It serves as thickening agent in ice-cream and shampoo
* Algae have high iodine content therefore prevent goitre
* Seaweeds are source of three chemical extracts used extensively in the food, pharmaceutical, textile and cosmetic industries
* Brown algae yield Alginic acid which is used to stabilize emulsions and suspensions; found in products such as syrup, ice cream and paint

1. UNICELLULAR FORM OF ALGAE(CHLAMYDOMONAS)

Chlamydomonas represents the unicellular and motile forms of green algae. It is usually found in stagnant water along with other forms. Flagella are the structures for mobility. The cell is bounded by a cellulose cell wall; contains organelles e.g. nucleus, mitochondria, stigma(eyespot), cup-shaped chloroplast, pyrenoid, etc. The nucleus carries the genetic programme of the cell. The stigma is for photoreception. The mitochondria mediate the elaboration of energy molecules. Manufactures sugar is processed into starch on the pyrenoid.

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

Vegetative reproduction results in production of daughter cells in which the amount and quality of genetic materials in the nucleus of the mother cell is maintained in the daughter cells. This kind of cell division is known as mitosis. In Chlamydomonas, a cell about to divide loses its flagella. The cell undergoes mitotic division leading to two nuclei, cell walls are elaborated which delimit cytoplasm around each nucleus i.e. two daughter cells(zoospores) are released. Increase in the population of cells in a colony is achieved by repeated mitotic divisions.

SEXUAL REPRODUCTION: Cert ain environmental conditions e.g. lack of nutrients or moisture may trigger the haploid daughter cells to undergo sexual reproduction. Instead of forming into spores, the haploid daughter cells form gametes that have two different mating strains which are structurally similar and are positive and negative strains. Opposite mating strains fuse in a process called isogamy to form a diploid zygote which contains two sets of chromosomes. After a period of dormancy, the zygote undergoes meiosis, a type of cell division that reduces the genetic content of a cell by half. This cell division (i.e. meiosis) produces four genetically unique haploid cells that eventually grow into mature cells.

1. The two colonial forms of algae are Pandorina and volvox

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| PANDORINA | VOLVOX |
| * Colony consists of 16 cells attached to one another * Each cell is capable of undergoing mitosis 4 successive times to form its own colony of 16 cells * Cells here show less levels of differentiation and specialization than in volvox | * There are more cells in the colony, number may run into thousands and connected with cytoplasmic strands that run through the cells * Not all cells form new colonies; but the larger cells at the posterior ends(gonidia) are the only ones that divide to form new colonies. Other cells remain vegetative throughout the life of the colony * Cells here show greater level of differentiation and specialisation than in Pandorina |

1. COMPLEX FORM OF ALGA(FUCUS)

Fucus is a genus of brown algae whose species are often found on rocks in the intertidal zones of the sea shores. The plant body is flattened, dichotomously-branched thallus with a midrib, a vegetative apex, a reproductive apex at maturity and a multicellular disk (hold fast) 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. Various species of fucus exist; vary in size from a few centimetres to about 2metres in length.