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**DEPARTMENT: MBBS**

**MATRIC NUMBER: 19/MHS01/121**

**COURSE: BIO102**

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| DIVISION | CLASS |
|  Thallophyta | Phycotinae (algae)Mycotinae (fungi) |
|  Bryophyta | Hepaticae (liverworts)Music (mosses) |
|  Pteridophyta | Psilotinate ( psilotum) Lycopodinae (lycopodium, Selaginella)Equisetinae (Horsetails)Filicinae (Ferns) |
|  Spermatophyta | Gymnospermae (gymnosperms)Angiospermae (Angiosperms) |
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2. IMPORTANCE OF ALGAE TO MAN:

* Serve as food for man
* Serve as thickening agent in ice cream and shampoo
* Serve as drugs to ward off diseases
* Different species of algar and carrageen are used for the preparation of various gels used in scientific research
* Brown algae yield alginic acid used for stabilizing emulsions and suspensions found in syrups, ice cream and paint.

3. DESCRIPTION OF UNICELLULAR FORM OF ALGAE:

 Chlamydomonas represents the unicellular and motile form of green algae.

 They are 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 eg nucleus, mitochondria, stigma, cup-shaped chloroplast, pyrenoid, etc

 The nucleus carries the genetic programme of the cell

 The stigma is for photoreception

 The mitochondria mediates the elaboration of energy molecules

 The manufactured sugar is processed into starch in the pyrenoid.

4. REPRODUCTION OF UNICELLULAR ALGAE:

 In Chlamydomonas, reproduction can either be vegetative or sexual.

 Vegetative reproduction results in production of daughter cells in which the amount and quality of genetic material in the nucleus of the mother cells is maintained in the daughter cells. The kind of cell division which maintains the quantity and quality of genetic material is called miotic divisions. It is responsible for increase in number of cells in unicellular organisms and for increase in size in multicellular organisms. 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. Increase in the population of cells in a colony is achieved by repeated mitotic divisions.

Sexual Reproduction: certain environmental conditions eg lack of nutrients or moisture may trigger the haploid daughter cells to undergo sexual reproduction. 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. In chlamydomonas, aggregaton of cells ina colony occurs under few conditions. These cells pair by their posterior ends. The pairing is said to be isogamous since the gametes are morphologically identical. The cytoplasm of the pairing cells fuse (plasmogamy) and the flagella are lost. The two nuclei fuse in a process called karyogamy so that the zygote is formed. The zygote secretes thick cell wall called a zygospore and may remain dormant in that state for sometime. After karyogamy sometimes, the zygote undergoes two cell divisions, the first cell divisiom restores the haploid condition by halfing the nuclear material in the two resulting nuclei while in the second division, each haploid nucleus undergoes a normal mitotic division. These two divisions are knows as meiosis. The four products of the meiosis are released as haploid zoospores.

5. DIFFERENTIATION BETWEEN THE TWO COLONIAL TYPES OF ALGAE:

 PANDORINA: usually occurs in water bloom. The colony consists of 16 cells attached to one another. Each cell has many features in common with chlamydomonas eg nucleus, pyrenoid etc. sexual reproduction is by anisogamous pairing.

Volvox: more complex form than pandorina. More cells in colony,numbers may run into thousands and connected with cytoplasmic strands that run through the cells.sexual reproduction is oogamous.

1. DESCRIPTION OF COMPLEX FORM OF ALGA:

FUCUS: a genus of brown algae whose species are often found on rocks in intertitdal zones of seashores. Body is flattened, dichotomously-branched thallus with a mid rib, vegetative apex, a reproductive apex at maturity and a multicellular disk with which it attaches to rock surface. Air bladders present which are believed to aid floating on water. Various species exist. They vary in size from a few centimeter to about 2 metres in length. They also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chambers on different plant bodies. Sexual reproduction is oogamous, sex cells are produced in conceptacles which have openings (ostioles) in the surface of the thallus. Apart from the antheridia and oogonia, sterile multicellular filaments (paraphyses) are also produced in the conceptacles which are dispersed among the antheridial and oogonial outgrowths and at the entrance into the conceptacles. The diploid zygote germinates into a new diploid Fucus plant making the diploid the dominant generation.