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1. Classify plants according to Eichler's grouping of 1883

Division	Class
a) Thallophyta	Phycotinae (Algae), Mycotinae (Fungi)
b) Bryophyta	Hepatiticae (Liverworts), Musci (Mosses)
c) Pteridophyta	Psilotitinae (Psilotum), Lycopodiitinae, Equisetitinae, Filicites
d) Spermatophyta	Gymnospermae, Angiospermae

2. They serve as food for people, thickening agents in ice cream and shampoo, and drugs to ward off diseases

ii Algae have high iodine content therefore prevents goitre

iii Brown algae yields Alginate acid which is used to stabilize emulsions and suspensions, found in products like syrup, ice cream and paint.

Different species of red algae provide agar and carrageenan used for the preparation of various gels used in scientific research.

iv) Algae has been used for centuries, especially Asian countries, for their reported powers to cure and prevent illness e.g cough, gall stones, goitre, hypertension and diarrhoea.

v) Algae has been surveyed for anticancer compounds with several cyanobacteria appearing to contain promising candidates.

3) CHLAMYDOMONAS

i) Chlamydomonas represents the unicellular and motile forms of green algae.

Found in stagnant water, usually along with other green algae.

ii) Flagella are the structures for motility.

iii) The cell is bounded by cellulose cell wall, contains organelles e.g nucleus

mitochondria, stigma (eyespot), cup-shaped chloroplast, pyrenoid, etc.

- iv) The nucleus carries the genetic program of the cell.
- v) The stigma is for photoreception.
- vi) The mitochondria mediate the elaboration of energy molecules.
- vii) Manufactured sugar is processed <sup>into</sup> starch on the pyrenoid.

4) *Chlamydomonas* undergoes vegetative and sexual reproduction.

i) **VEGETATIVE REPRODUCTION:** The cell about to divide loses its flagella then ~~div~~ 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 division.

ii) **SEXUAL REPRODUCTION:** Instead of forming into spores, the haploid daughter cells form gametes that two different mating strains which are structurally similar and are positive and negative strains. Opposite mating strains fuse in a process called **ISOGAMY** 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.

5) PANDORINA

Volvox

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|--|---|
| i) The colony consists of 16 cells attached to one another | The number of cells in the colony may run into thousands and connected with the cytoplasmic strands that run through the cells. |
| ii) Sexual reproduction is Anisogamous.                    | Sexual reproduction is oogamous.  |
| iii) All the cells form new colonies                       | Not all the cells form new colonies.  |

## 6) Fucus

i) A genus of brown algae whose species are often found on rocks in the intertidal zone of the sea shores.

ii) The plant body is flattened, dichotomously-branched thallus with a mid rib, a vegetative apex, a reproductive apex at maturity, a multicellular stalk (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

centimeters to about 2 metres in length.