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BID 102

Assignment

Plants according to Engelm's grouping of 1883.

Division	Class
Thallophyta	Phylobinae (Algae) Mycobinae (Fungi)
Embryophyta	Thalassobinae (Lichens) Musci (Mosses)
Psilidophyta	Psilobinae (Psilotum) Lycopodiinae (Lycopodium, Selaginella) Equisetinae (Horse tails)
Spermatophyta	Filicinae (Ferns) Gymnospermae (Gymnosperms) Angiospermae (Angiosperms)

Importance of Algae

Algae are important as food for fish.

It serves as food for people and livestock, thickening agents in ice cream and shampoo, drugs to ward off diseases.

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.

Bacteria, fungi and cell cultures are commonly grown in agar gels.

Indicators of environmental problems in aquatic ecosystems.

Molecular Form of Algae

Chlorophyllommas represents the unicellular and mobile forms of green algae. Found in stagnant water usually along with

other forms. Flagella are the structures for motility. 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 photosynthesis. The mucopolysaccharide that elaboration of energy molecules. Mucopolysaccharide sugar is processed into starch on the pyrenoid.

#### 4. Proliferation in Chlamydomonas

In Chlamydomonas, reproduction can either be vegetative (asexual) 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 cell is maintained in the daughter cell. Thus, if the amount of genetic material in the mother cell nucleus is  $n$ , the daughter cells also have a quantity of genetic material.

The kind of cell division which maintains the quantity and quality of genetic material is called mitotic 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 etched which liberate 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

Sexual reproduction involves union of sex cells (gametes). In Chlamydomonas, aggregation of cells (conjugation) in a colony occurs under favourable conditions. These cells pair by their posterior (flagellated) ends. This pairing is said to be isogamous because the pairing cells (gametes) are morphologically identical. The cytoplasm of the pairing cells fuse (karyogamy) and the flagella are lost. The two nuclei fuse (karyogamy).



This situation is essentially a fertilization process so that a zygote is formed. In other words, two cells each with a quantity of genetic (nuclear) material (ie haploid nuclear material) undergo karyogamy (fusion of nuclei) to produce a single cell with 2n (diploid) nuclear material. The zygote secretes thick cell wall called a zygospore and may remain dormant in that state for sometimes.

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| 5. | Nilai | Penduloran |
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1. Number of cells may run into thousands.
  - ii. Sexual reproduction is oogamous. It is achieved by anisogamous pairing.

6. Complex Form of Algae (Fucus)

A genus of brown algae whose species are often found on rocks in the intertidal zone of the sea shores. The plant body is flattened, dichotomously branched thallus with a midrib, a vegetative apex for 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 2 metres in length.