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DEPARTMENT: MEDICINE AND SURGERY

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1. Eichler's Grouping of 1883

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

2. Importance of Algae to Man

- The natural substance can be used as a food source, a fodder, in fish farming.
- It is also used as a fertilizer.
- It also plays a key role in alkaline reclaiming.
- It can be used as a soil binding agent, and is used in a variety of commercial products.
- They have high iodine content and can be used to prevent goitre.
- They are used in thickening agents in ice cream and shampoo.
- Seaweed are source of useful extracts used extensively in the textile, food, pharmaceutical and cosmetic industries.
- Brown algae yield alginic acid, used in stabilizing emulsions and suspensions.
- Agar from red algae, is used in the food industry to stabilize pie filling and preserve canned meat and fish.

3. Unicellular form of algae

Unicellular forms of algae are also called acellular algae as they function as complete living organisms. Unicellular forms are common in all the groups of algae except Rhodophyceae, Phaeophyceae and Charophyceae. The unicells

may be motile or non-motile. The motile unicells are either rhizopodial or flagellated. Chlamydomonas represent the unicellular and forms of green algae. They found in stagnant water. Flagella are the structures for mobility. The cell is bounded by a cellulose wall, contains organelles e.g. nucleus, mitochondria, stigma, 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. Manufactured sugar is processed into the pyrenoid.

4. Reproduction in Chlamydomonas

   Chlamydomonas possesses red eye spots for photosensitivity and reproduces both asexually and sexually. Chlamydomonas's asexual reproduction occurs by zoospores, by aplanospores, by hypnospores or by a palmella stage; sexual reproduction through isogamy, anisogamy or oogamy.

5. Differences between Pandorina and Volvox

PANDORINA	VOLVOX
Colony consists of 16 cells.	Colony consists of thousands of cells.
Each cell can form a new colony.	Not all cells can form colonies; only large posterior cells can form colonies.
Sexual reproduction is by anisogamous pairing.	Sexual reproduction is oogamous.

6. FUCUS

Fucus is a genus of brown algae found in the intertidal zones of rocky seashores almost throughout the world. The thallus is perennial with an irregular or disc-shaped holdfast or with haptera. The erect portion of the thallus is dichotomous or subpinnately branched, flattened and with a distinct midrib. Gas-filled pneumatocysts (air-vesicles) are present in pairs in some species, one on either side of the midrib. The erect portion of the thallus bears cryptostomata and caecostomata (sterile surface cavities). The base of the thallus is stipe-like due to abrasion of the tissue lateral to the midrib and it is attached to the rock by a holdfast. The gametangia develop in conceptacles embedded in receptacles in the apices of the final branches. They may be monoecious or dioecious.

These algae have a relatively simple life cycle and produce only one type of thallus which grows to a maximum size of 2 m. Fertile cavities, the conceptacles, containing the reproductive cells are immersed in the receptacles near the ends of the branches. After

meiosis oogonia and antheridia, the female and male reproductive organs, produce egg cells and sperm respectively that are released into the sea where fertilisation takes place. The resulting zygote develops directly into the diploid plant. This contrasts with the life cycle of the flowering plant, where the egg cells and sperm are produced by a haploid multicellular generation, albeit very strongly reduced, and the egg cells are fertilised within the ovules of the parent plant and then released as seeds