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COURSE: BIOLOGY (BIO 102)

Assignment

* Classification of plants according to Eichler’s grouping

A.W. Eichler classified plants into 2 kingdoms namely;

1. CRYPTOGAMAE – flowerless and seedless plants and also lower plants

a. Algae e.g. Chollera, volvox, clamydomonas

b. bryophyta- Hepaticae e.g. liverworts, Anthocerotae e.g. hornworts, Musci e.g. mosses

c. pteridophta- psilopsida e.g. psilotum, lycopsida e.g. selaginella, sphenosida e.g. equisetum, pteridopsida e.g. pteris

2. PHANEROGAMAE- seed bearing flowers with advanced vascular system

a. gymnosperm – cycadosida e.g. cycas, coniferopsida e.g. pinus, gnetopsida e.g. gnetum

b. angiosperm – dicotyledon e.g. pea, monocotyledon e.g. maize

* Importance of algae to man

1. They capture more suns energy and produce oxygen for respiration.
2. They are rich in vitamins and minerals.
3. They are used for making medicine.
4. They are used in the manufacturing industries.
5. They form the foundation for most aquatic food webs.
6. Algae is the main defense against diseases spread by human waste.
7. They serve as food for some parts of the world like Ireland and Japan.

* Unicellular form of algae

Diatoms

Diatoms are biological **producers**, meaning they produce energy in the form of sugar from sunlight. This gets energy into our world so the rest of us can eat it.

Diatoms exist as single cells, although some of them flock together in colonies that create some really pretty forms. Diatoms have two distinct shapes: a few (centric diatoms) are radially symmetric, while most (pennate diatoms) are broadly bilaterally symmetric.You can find diatoms in colonies that are shaped like filaments or ribbons, in zigzag shapes, in fan shapes, or even in the shape of stars. Each individual cell is covered in a hardened frustule made from silica. This frustule gives each cell a particular shape:Diatoms first showed up in the fossil record right around the Jurassic period, so dinosaurs and diatoms hung out together long before we were around to study them.

* Reproduction in diatoms

Diatoms reproduce asexually by cell division to produce two daugther cells by mitosis; each daughter cell receives one valve and it is reproduced by ***furrowing***. The cell has vesicles that increase the deposition of silica creating a new valve girdle band. When the diatom cell size is less than half of the original size, normally its size can be recovered by sexual reproduction "max, sexual reproduction stimulated".

**Sexual Reproduction.**

Vegetative cells are diploid, and gametes are the only haploid stages. Sexual reproduction differs in centric and pennates diatoms. Centric diatoms undergo meiosis to form eggs and sperm. **Oogonial** cells usually produces one egg, which may be released into the water or retained. Size decreases as mitosis proceeds. This provides a timing mechanism between sexual reproduction.Centric, antheridial cells meiosis produces 4 sperms or more per cell. Oogonial cells "eggs", 1 per cell can be released from cell or retained in the frustule.Penate are cells not flagellate, gametangial cells pair in muscilage, and each cell undergoes meiosis.In some diatom, vegetative enlargement occurs by release of the protoplast from its surrounding frustule, enlargement, and formation of a new frustule.

* Differences between colonial forms of algae

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| volvox | synura |
| 1. can be seen with a microscope | Can be seen by using phase contrast |
| 2. the colonies are spherical | The colonies are globular |
| 3. reproduction is both sexual and asexual | Reproduction is sexual only |
| 4. they do not have spines | They have long spines |

* A complex form of algae

Spyrogyra

Kingdom: plantae

Division: charophyta

Class: zygnemtophyceae

Order: zygnematales

Family: zygnemataceae

Genus spirogyra

Species: porticalis *..* There are over 400 species