

Amadedon OritseTseye Precious

Pharmacy

Biology 102

Assignment answers

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1. A system of plant taxonomy, the Eichler system was the first phylogenetic or evolutionary system. The system was based on dividing the plant kingdom into those plants with concealed reproductive organs (non-floral), the Cryptogamae. And those with visible reproductive organs (floral), the Phanerogamae.

Cryptogamae

Cryptogamae is a plant that reproduces by spores, without flowers or seeds. Cryptogamae means hidden reproduction, referring to the fact that no seed is produced.

They are simple and flowerless plants like

algae, mosses and ferns which do not produce flowers, fruits and seeds. Cryptogams are considered as lower plants.

Phanerogamae

The spermatophytes also known as phanerogamae comprises of those plants that produces seeds, hence the alternative name is 'seed plants'. They are a subset of embryophytes or land plants .

2. Algae are of many importance to man, some of them includes;

- Algae have been in use as human food for centuries in various parts of the world
- The large brown and red algae are used as organic fertilizers , especially on land close to sea.
- Algae is used as a source of agar in production of jellies
- Algae is used in production of minerals
- Algae is used in production of medicines

- Algae is used in manufacturing iodine.

3. Unicellular form of algae are also called a cellular algae as they function as complete living organisms . Unicellular algae are plant like autotrophs and contain chlorophyll . They include groups that have both multicellular and unicellular species.

They consist of a single cell. They are Eukaryotes.

4. The sexual reproductive processes of three representative freshwater

green algae are reviewed. The *Chlamydomonas reinhardtii* is

a heterothallic

species having two mating types: mating type plus and

mating type

minus, which are controlled by a single complex mating type

locus

(MT+ and MT-).

The differentiation of respective gametes is triggered

by nitrogen starvation. The sexual adhesion between the

gametes

is mediated by sex-specific agglutinin molecules on their

flagella

membranes. Then, the intracellular camp level is elevated,

triggering

dramatic alterations in the cell. Cell fusion is initiated by an

adhesive

interaction between the mt+ and mt-

mating structures, followed by

localized membrane fusion. Two proteins (FUS1 and

GCS1/HAP2)

are known to be an essential for the membrane fusion reaction. The

Volvox carteri is a dioecious species and is composed of only two cell

types, 2000–4000 biflagellate Chlamydomonas-like somatic cells and

16 reproductive cells (gonidia). Sexual reproduction is initiated by a

mutation-like switch, which leads to the formation of the first sexual

male colony. The sex-inducing pheromone is produced and released

by this sexual male colony and acts on the asexual gonidia of both

sexes. It alters their developmental pathway such that sexual forms

(egg- or sperm-bearing forms) are produced in the next generation.

Sexual reproduction of heterothallic *Closterium peracerosum-strigosum-*

littorale complex is controlled by two multifunctional sex pheromones,

PR-IP and PR-IP Inducer that independently promote multiple steps

In conjugation at the appropriate times through different induction

mechanisms. Conjugation processes of the homothallic strain are

also controlled by pheromone(s) orthologous to the heterothallic

sex pheromone. In addition, it is suggested that the division of one

vegetative cell into two sister gametangial cells during conjugation

processes is a segregative process capable of producing complementary

mating types in homothallic strains.

5. In colonial form of algae we have volvox and synura

Difference between Volvox and Synura

A. Reproduction is both

sexual and asexual

A. Reproduction is sexual

B. Spherical colonies of up to 50

,000 cells.

B. Few cells in Colonies

6. Spirogyra is a filamentous charophyte green alga of the order Zygnematales, named for

the helical or spiral arrangement of the chloroplasts that is characteristic of the genus. It is

commonly found in freshwater habitats, and there are more than 400 species of spirogyra in the world.