Name: MGBEZE BLESSING EBELECHUKWU

Matric no: 19/mhs01/244

Department: MBBS

College: MHS

Course code: BIO 102

1. DIVISION CLASS

Thallophyta Phycotinae (Algae)

Mycotinae (Fungi)

Bryophyta Hepaticae (Liverworts)

Musci (mosses)

Pteridophyta Psilotinate (psilotum)

Lycopodinae (Lycopodium, Selaginella)

Equisetinae (Horse tails)

Filicinae (Ferns)

1. (i). Algae serves as food for people and livestock, thickening agents in ice cream and shampoo

(ii). They serve as drugs to ward off diseases

(iii). Certain species of algae are harvested for food and cosmetic

(iv). Algae have high iodine content therefore prevent goiter

(v). Algae are nutritious because of their high concentration of minerals, trace elements and vitamins

(vi). Brown algae yield Alginic acid which is used to stabilize emulsions and suspension found in products such as syrup, ice cream, paint

(vii). Different species of red algae provide agar and carrageen used in the preparation of various gels used in scientific research

(viii). Agar is used in the food industry to stabilize pie fillings and preserve canned meat and fish

1. Chlamydomonas is a unicellular form of algae which represent the unicellular and motile forms of green algae, it is found in stagnant water usually along with other forms. The cell of chlamydomonas is bounded by a cellulose cell which contains organelles such as nucleus, mitochondria, stigma(eyespot), cup shaped chloroplast and pyrenoid. The nucleus carries genetic programme of the cell, the stigma for reception. Manufactured sugar is processed into starch on the pyrenoid, the mitochondria mediate the elaboration of energy molecules
2. Reproduction in chlamydomonas is either by vegetative or sexual reproduction

(i). Vegetative reproduction: This kind of reproduction results in the production of daughter cells in which the amount and quality of the genetic material in the nucleus of the mother cell is maintained in the daughter cells. Thus, if the number of genetic material in the mother cell nucleus is n, the daughter cell also has n quality of the genetic material. The kind of cell division maintains the quality and quantity of genetic material is called mitotic divisions. In chlamydomonas, a cell about to divide loses its flagella, the cell undergoes mitotic division leading to two nuclei, the cell walls are elaborate which delimit he cytoplasm around each nucleus e.g. two daughter cells(zoospores) are released and increase in the production of the cells in a colony is achieved by repeated mitotic divisions

(ii). Sexual reproduction: It is due to environmental conditions such as lack of nutrients or moisture that triggers the haploid daughter cells to undergo the process, the haploid daughter cells form gametes, instead of spores this gamete have two mating strains which are structurally similar and are positive and negative strains. Opposite mating strains fuse in a process called isogamy to form a diploid zygote and contains a set of chromosomes, after a period of dormancy the zygote undergoes meiosis the cell division that reduces genetic content of a cell by half this cell division produces four genetically unique haploid cells that will eventually mature. Sexual reproduction involves the union of the sex cells and aggregation of cells in a colony occurs under unfavorable conditions, these cells pair by their posterior end morphologically identical. The flagella are lost and the cytoplasm of the pairing cells fuse (Plasmogamy). The two nuclei fuse (Karyogamy) then fertilization occurs so that the zygote is formed. The two cells with genetic material undergo karyogamy produce a single cell with a nuclear material, the zygote secretes thick cell wall called a zygospore may remain dormant in the state sometimes , after karyogamy sometimes the zygote undergoes two successive division the first one restores the haploid condition by halving the nuclear material in the two resulting(reduction division) while the second division each haploid nucleus undergoes a normal mitotic division .Both results in four cells and with n quality nuclear material known as meiosis and the four product are released as haploid zoospores.

1. The colonial forms of the algae are Pandorina and Volvox

(i). Pandorina: They are found in water blooms and the colony consists of 16 cells attached to one another each of them has feature such as nucleus, large chloroplast, pyrenoid, flagella, stigma. It has two form of reproduction vegetative and sexual reproduction, in vegetative there are 4 successive divisions of the 16 cells in the colony therefore producing daughter cells thus the colony within a colony is analogous to the mythology of the pandorina’s box and that is where the name is derieved from “Pandorina”. Sexual reproduction is achieved by anisogamous when conditions are favourable then the single cell in the colonies assume genetic functions and pair by their flagella ends. Plasmogamy and Karyogamy occur which is followed by meiosis the colony may be unisexual in some specie or bisexual.

(ii). Volvox: It shows more complex form than Pandorina and the cells are more in the colony may run into thousands they are connected with cytoplasmic strands that run throughout the life of the cell but not all cells form colony, but the larger ones at the posterior end are the only ones that divide to form new colonies. Other cells remain vegetative throughout the life of the colony here sexual reproduction is oogamous, sperms are formed by repeated division of cells in the colony to form motile sperm platelets containing many sperms. The platelets move to the egg colonies where fertilization occurs the colonies may either by unisexual or bisexual. Volvox is concluded to be evolutionarily more advanced than Pandorina with the departures between than especially as the cells show greater level of differenciation and specialisation

1. Fucus is a genus of brown algae species are often found in intertidal zones of the sea shores, the plant body is flattened, dichotomously-branched thallus with a midrib, a vegetative apex, a reproductive and a multicellular disk with which plant is attached to rock surface. The plant body has air bladders which is believed to aid plant to float on water various species of focus exist; vary in size form a few centimeters to about 2metres in length they also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chamber on different plant bodies. Sexual reproduction is oogamous, sex cells are produced in the conceptacles which have openings(ostioles) on the surface of the thallus. In the male conceptacles, one of the diploid cells from outgrowth of the wall of the conceptacles undergo meiosis, the meiotic product undergoes mitotic division to produce antheridium having 64 cells of which each cells of which each cell develops into a biflagellate sperm that swims out of the conceptacle through the ostiole. In the female conceptacle, similar to the situation in the male conceptacle, leads to the production of an 8 celled oogonium – each becomes an egg which is the female sex cell. Motile sperm cell from the antheridium move through the ostiole into the female conceptacles where the eggs are fertilized and diploid zygote are produced, apart from the antheridial and oogonia ,sterile multicellular filaments are also produced in the conceptacles which are dispersed among the antheridial and oogonial outgrowths. And at the entrance into the conceptacles, the diploid zygote germinates into a new diploid fucus plant making the diploid the dominant generation.