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DEPARTMENT: MBBS

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COURSE: BIO 102

1. IMPORTANCE OF FUNGI TO MANKIND

Fungi are important to human life in various ways

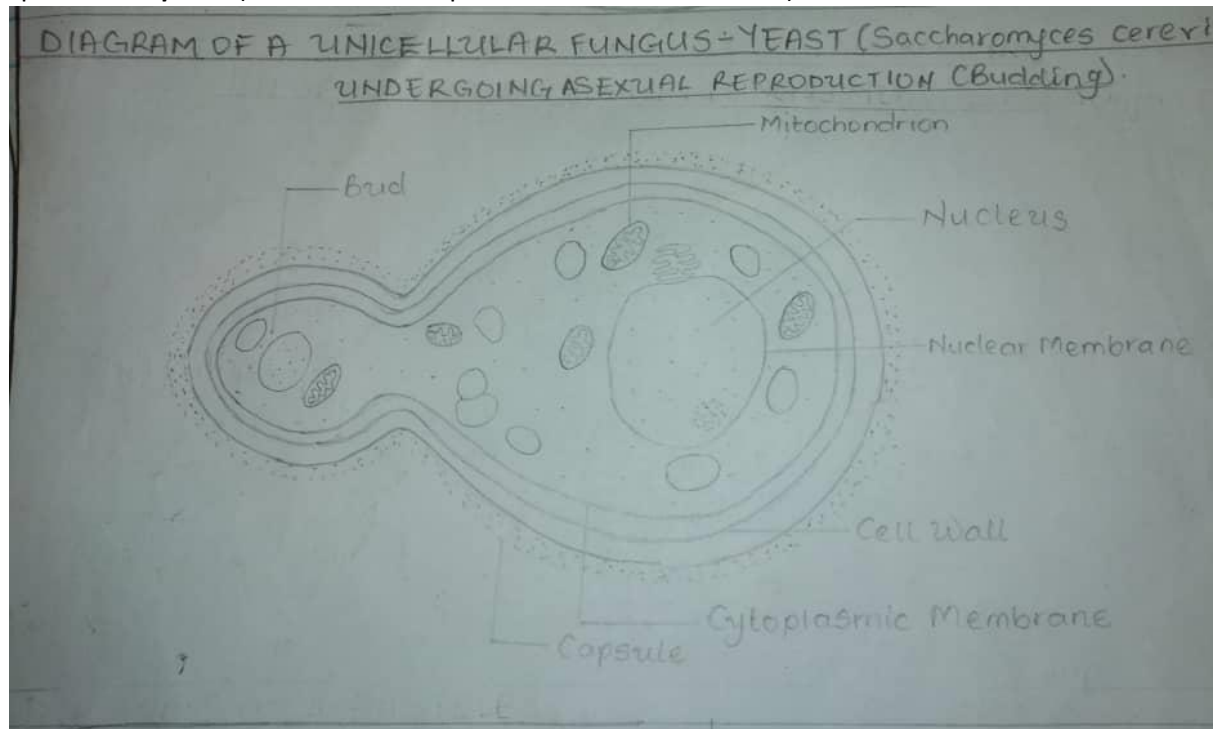
- **IN THE ECOSYSTEM:** are responsible for the mediation of decay of organic matter in the ecosystem, because of their saprophytic nature they are important decomposers in most ecosystem
- **FOR FOOD:** play an important role in the food industry that is Yeast (*Saccharomcyes cerevisiae*), Mushrooms are edible and used by man for food. Mushrooms, morels, chanterelles and truffles are considered as delicacies. Fungi are also agents of fermentation in the production of bread, cheeses, alcoholic beverages, and numerous other food preparations.
- **ECONOMIC IMPORTANCE:** Fungi species mediate the spoilage of wood, food, clothes and papers
- **AS ANIMAL PATHOGENS:** fungi help to control the population of damaging pests, in which they specifically attack only insects, leaving plants and man
- **IN THE HEALTH SYSTEM:** Secondary metabolites of fungi are used as medicines, such as antibiotics and anticoagulants.
- **FOR STUDY:** Fungi are model organisms for the study of eukaryotic genetics and metabolism.

2. ILLUSTRATION ON THE CELL STRUCTURE OF A UNICELLULAR FUNGUS WITH A WELL LABELED DIAGRAM.

BREWER'S YEAST

- Brewer's yeast is one of the best known example of unicellular forms in fungi .
- It has a very simple cell structure even with its advancement in fungal forms from the point of view of its spore-producing structures.
- **Yeast cells** are found on exposed sugary fluids e.g. Palm wine, and sugary fruits where fermentation process is mediated.
- Cells exists in diploid/haploid states. Under favourable environmental conditions, in both states, they multiply rapidly by simple *mitotic* cell divisions;- budding involving nuclear division and division of the cytoplasm in such a way that one segment of the constricted cytoplasm is smaller than the others.
- Diploid cell arise from haploid cells by processes of *plasmogamy* and *karyogamy* (a kind of fertilization)

- A *diploid* cell may undergo meiosis under certain conditions to produce four(4) haploid spores-**ascospores** (contained in simple structure called an ascus).



3. SEXUAL REPRODUCTION IN A TYPICAL FILAMENTOUS FORM OF FUNGI (*Rhizopus stolonifera*)

Sexual reproduction occurs when two mating types of hyphae grow in the same medium. Chemical interaction in the two mating types of hyphae induces growths perpendicular to the hyphae in opposite directions. These growths are delimited by a wall such that many nuclei are isolated in what is called **gametangium**.

The two gametangia fuse (plasmogamy) and a zygote is formed which may undergo prolonged dormancy or resting stage. The nuclei in the zygotes fuse in twos and undergo meiosis independently.

The zygote germinates under favourable conditions to produce a fruiting which at maturity liberates haploid spores.

4. ADAPTATION OF BRYOPHYTES TO THEIR HABITAT(LAND)

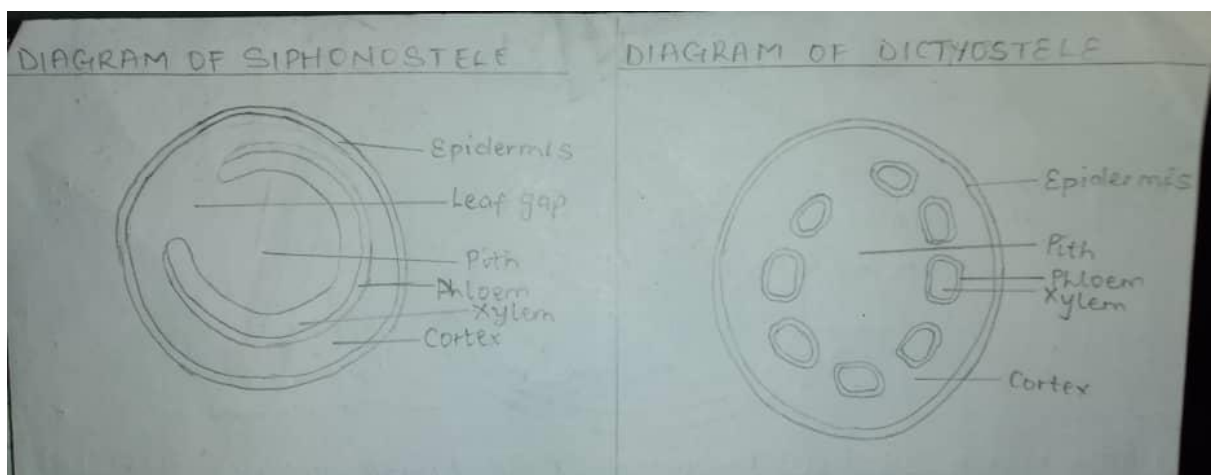
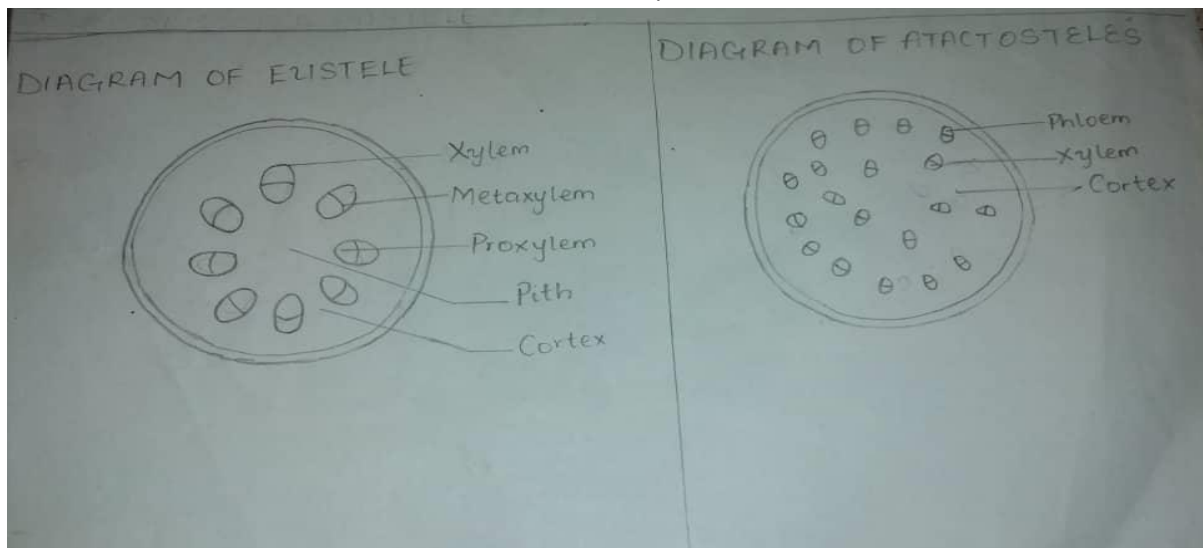
Bryophytes, collective term applied to approximately 22,000 species of small plants that are usually in moist areas on soil, tree trunks, and rocks. Below are the ways in which bryophytes adapt to land habitat;

- **BRYOPHYTES** have definite structures for water absorption from the soil; therefore the plant body is divided into two (an aerial portion and a subterranean portion). The subterranean portion is the rhizoid and is not a true root as the case of land plants that are advanced.
- The aerial portion of **BRYOPHYTES** being exposed to the atmosphere demands some modifications that prevents excessive loss of water through the body surface(i.e dessication).

- In **BRYOPHTES** there are some other modifications that permit elimination of excess water from the plant body and not only exchange of gasses between the internal parts of the plant and the atmosphere therefore openings are available on the aerial parts of the plant.

5. ILLUSTRATION ON THE FOLLOWING TERMINOLOGIES

- Eusteles
 - Atactostele
 - Siphonostele
 - Dictyostele
- EUSTELES:** A stele typical of old dicotyledonous plants that consists of vascular bundles of xylem and phloem strands with parenchyma cells between the bundles. Also, the vascular bundles are discrete, concentric collateral bundles of xylem and phloem.
 - A TACTOSTELES:** A type of eustele, found in monocots, in which the vascular tissue in the stem exists as scattered bundles.
 - SIPHONOSTELE:** A stele in which the vascular tissue is in the form of a cylinder surrounding the pith, as in the stems of most ferns and other seedless vascular plants.
 - DICTYOSTELE:** A stele in which the vascular cylinder is broken up into a longitudinal series or network of vascular strands around a central path.



6. ILLUSTRATION ON THE LIFE CYCLE OF A PRIMITIVE VASCULAR PLANT (PSILOTUM)

Psilotum is a very primitive vascular plant; the species represent some of the most primitive vascular plants.

