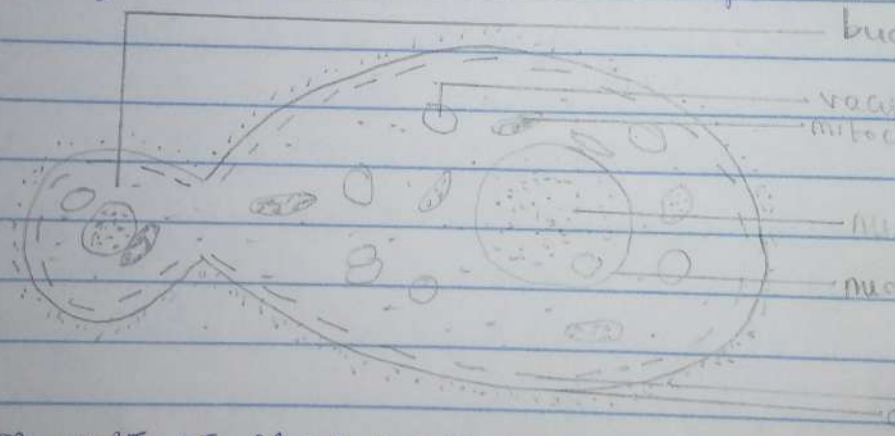
1. IMPORTANCE OF FUNGI TO MANKIND

i. Fungi e.g yeast (saccharomyces cerevisiae) are important in food industry
ii. Fungi are responsible for the mediation of decay of organic matter
iii. Fungi e.g mushrooms are eaten by many human societies.
iv. Fungi species such as penicillium notatum produce important antibiotics.

2. UNICELLULAR FORM OF FUNGI

The best known example of unicellular forms in fungi is the Brewer's yeast (bread yeast). It causes bread to rise by releasing $CO_2$ which gets trapped in the dough. The cell structure is very simple, though the organism is one of the more advanced fungal forms from the point of view of its spore-producing structures. The cell 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 process of plasmogamy and karyogamy. A diploid cell may undergo meiosis under certain conditions to produce 4 haploid spores - ascospores.




THE STRUCTURE OF BREAD YEAST UNDERGOING ASEXUAL REPRODUCTION (BUDDING)

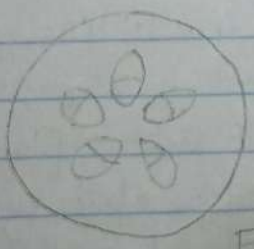
3. SEXUAL REPRODUCTION IN A TYPICAL FILAMENTOUS FORM OF FUNGI

- Occurs when two mating types of hyphae grow in the same medium.
- Chemical interaction in the two mating types of hyphae induces growth perpendicular to the hyphae in opposite directions.
- These growths are delimited by a wall such that many nuclei are isolated in what is called a gametangium.
- The two gametangia fuse and a zygote is formed.
- The nuclei in the zygote fuse in twos and undergo meiosis independently.
- The zygote germinates under favorable conditions to produce a fruiting which at maturity liberates the haploid spores.

4. HOW BRYOPHYTES ADAPT TO THEIR ENVIRONMENT

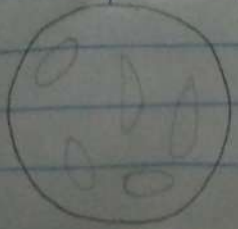
- They have definite structures for water and nutrient absorption from the soil.
- The aerial portion of the plant body being exposed to the atmosphere demands some modifications that prevents excessive loss of water through the body surface.
- Some other modifications that permit elimination of excess water from the plant body and not only exchange of gases between the internal parts of the plant and the atmosphere therefore openings are available on the aerial parts of the plant.

5. a. EUSTELES: The ~~eustelles~~ eusteles are conducting tissues in which the vascular bundles are discrete, concentric collateral bundles of xylem and phloem.



EUSTELE

b. ATACTOSTELE: It is a conducting tissue in which the vascular bundles are scattered. They can be found in grasses and many monocotyledonous plants.

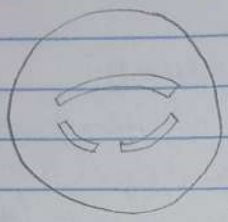


ATACTOSTELE

c. SIPHONOSTELE: The siphonostele is a type of stele that is found in more advanced vascular systems e.g stems of ferns and higher vascular plants. The stele is a cylinder enclosing a parenchymatous pith.

SIPHONOSTELE

d. DICTYOSTELE: The dictostele is a type in which the vascular supply to leaves associated with leaf gaps and conducting cylinder is a dissected one.



DICTYOSTELE

6. LIFE CYCLE OF A PRIMITIVE VASCULAR PLANT

An example of a primitive vascular plant is the psilotum. Three-lobed sporangia (each subtended by two scales) are borne on the vertical axes. The sporangium contains haploid spores and originates from diploid cells of the stem. Sporangium develops into a globose structure inside which sporogenous cells undergo meiosis to produce haploid spores. Spores after liberation germinate into cylindrical, dichotomously-branched gametophytes. Gametophytes are saprophytic, and often associated with certain filamentous fungi in mycorrhizal relationship and are hardly visible to the naked eye. At maturity, the terminal ends of the cylindrical branches bear the archegonia while the antheridia are borne as protuberances lower down on the branches. Sperms having many flagella are released when antheridia are ripe which swim into the archegonia and the resulting zygote subsequently develops into a sporophyte.