OKORIE GLORY OLUWASEFUNMI **MEDICINE AND SURGERY**

19/MHS01/323 **BIO 102 ASSIGNMENT**

IMPORTANCES OF FUNGI TO MANKIND

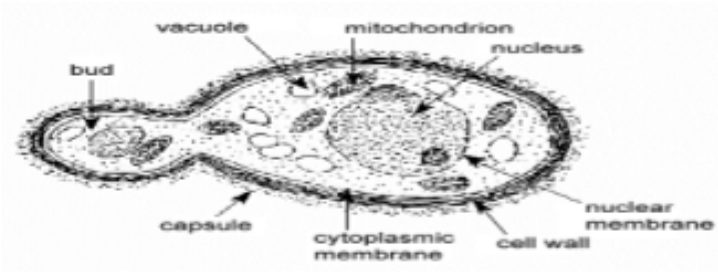
- They are responsible for the mediation of decay of organic matter.
- Fungi e.g. Yeast (Saccharomyces cerevisiae) is important in food industries.
- Mushrooms are eaten by many human societies.
- Penicillium notatum produce important antibiotics.
- Many fungi species mediate the spoilage of food, clothes and paper.
- Many are plant pathogens causing blights and smuts in cereals (Helminthosporium maydis and Ustilago zeac respiration).
- Some fungi are parasites to some certain horrible obnoxious pests e.g. houseflies, grasshoppers and therefore constitute important biological control agents in regard to such pests.
- Skin diseases e.g. ringworm and dermatitis are caused by fungal agents.

CELL STRUCTURE OF UNICELLULAR FUNGI

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. Yeast cells are found on exposed sugary fluids e.g. Palm wine and sugary fruits where fermentation processes are mediated.

Cell exists in diploid / haploid states. Under favourable environmental condition, 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 other.

Diploid cell arise from haploid cells by processes of plasmogamy and karyogamy (some kind of fertilization). A diploid cell may undergo meiosis under certain to produce 4 haploid spores- ascospores (contained in simple structure- an ascus).



The structure of Saccharomyces cerevisiae (yeast) undergoing asexual reproduction (budding)

SEXUAL REPRODUCTION IN FILAMENTOUS FORM OF FUNGI (RHIZOPUS)

This 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 a gametangium.

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

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

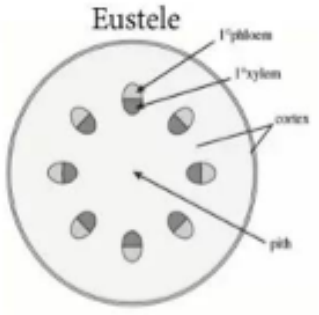
Sexual reproduction in Rhizopus stolonifer

ADAPTATION OF BRYOPHYTES TO THEIR ENVIRONMENT

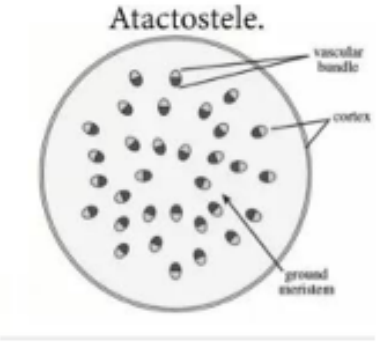
- They have definite structures for water and nutrient absorption from the soil; therefore the plant body is divided into two (an aerial portion and a subterranean portion). The subterranean portion is the rhizoid and is not a true root as the case of land plants that are advanced.
- The aerial portion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

DEFINITION AND ILLUSRATION OF TERMINOLOGIES

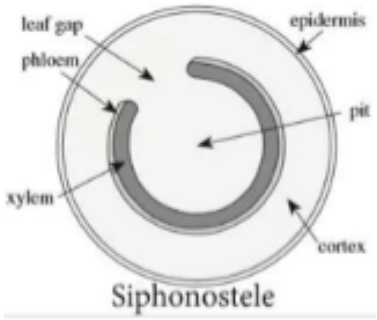
- Eustele: a stele typical of dicotyledonous plants that consists of vascular bundles of xylem and phloem strands with parenchymal cells between the bundles.



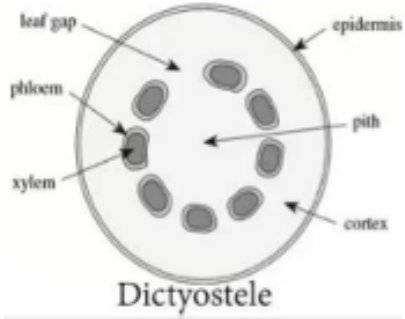
- Actactostele: a type of eustele, found in monocots, in which the vascular tissue in the stem exists as scattered bundles.



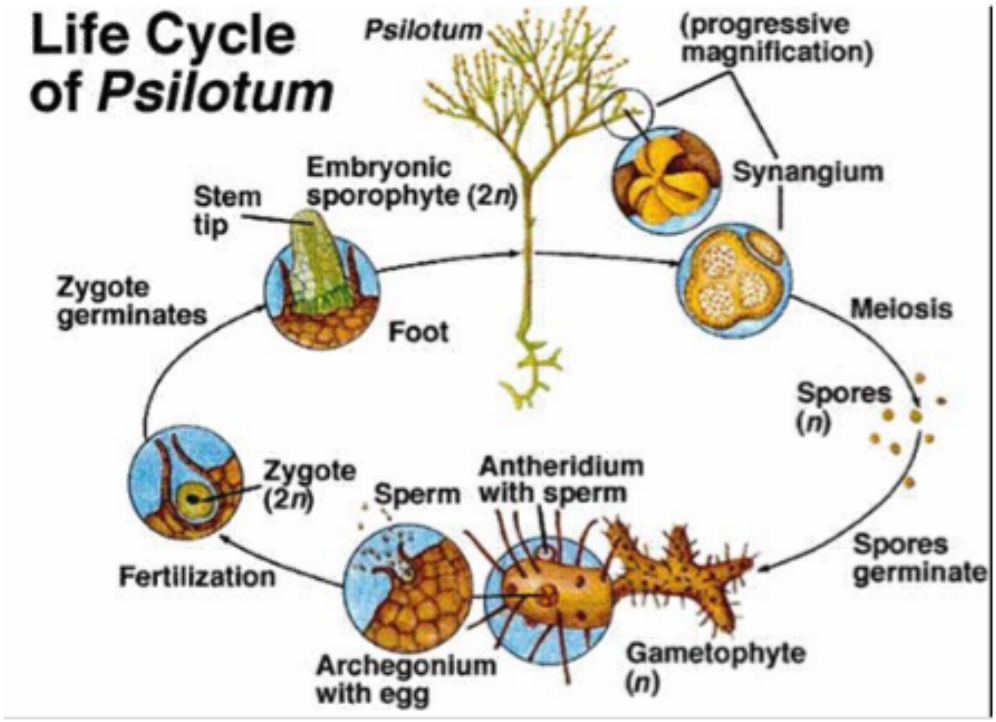
- Siphonostele: a stele in which the vascular tissue is in the form of a cylinder surrounding the pith, as in the stems of the most ferns and other seedless vascular plants.



- Dictyostele: a stele in which the vascular cylinder is broken up into a longitudinal series or network of vascular strands around a central pith (as in many ferns).



LIFE CYCLE OF A PRIMITIVE VASCULAR PLANT (PSILOTUM)



Whisk ferns in the genus Psilotum lack true roots but are anchored by creeping rhizomes. The stems have many branches with paired enations, which look like small leaves but have no vascular tissues. Above these enations, there are synangia formed by the fusion of three sporangia and which produce the spores. When mature, the synangia release yellow to whitish spores which develop into a gametophyte less than 2mm (0.08 in) long. The gametophyte lives underground as a saprophyte, sometimes in a mycorrhizal association.

When the gametophyte is mature, it produces both egg and sperm cells. The sperm cells swim using several flagella and when they reach an egg cell, they unite with it to form the young sporophyte. A mature sporophyte may grow to a height of 30cm or more but lacks true leaves. The stem has a core of thick- walled protostele in its centre surrounded by an endodermis which regulates the flow of water and nutrients. The surface of the stem is covered with stomata which allow gas exchange with the surroundings.

The gametophyte of Psilotum is unusual in that it branches dichotomously, lives underground and possesses vascular tissue. The nutrition of the gametophyte appears to be myco-heterotropic, assisted by endophytic fungi.