

Omoragbon Osafure Favour

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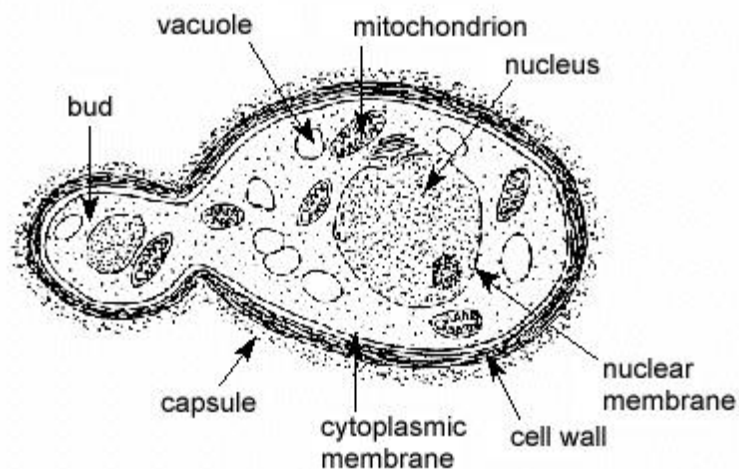
Medicine and surgery

Question

1. How are fungi important to mankind?

- Fungi acts as natural decomposers of organic matter in the environment. They help recycle nutrients therefore acting as a major player in most nutrient cycles
- Fungi also plays a very important role in medicine and medical research as some antibiotics like penicillin are gotten from fungi as well as the fact that they can be genetically engineered to produce some human hormones like insulin.
- Fungi also serves as a direct source of food for humans like mushrooms.
- Fungi act as important research tools in the study of many biological processes
- Fungi are also important in many human households and industrial processes mainly the making of bread, wine and beer.

2. Illustrate the cell structure of a unicellular fungus with a well labeled diagram.



- This is a diagram of the structure of the yeast cell. *Saccharomyces cerevisiae* it is ovoid or round in shape containing membrane bound organelles. It is also known as bakers yeast. Here it is shown in a budding position which is it's form of asexual reproduction.

3. Outline the sexual reproduction in a typical filamentous form of fungi.

- Sexual reproduction in filamentous forms of fungi occurs when two different mating strains of hyphae growing the same medium.
- Chemical interaction in the two mating types of hyphae induces growth perpendicular to the hyphae in opposite directions till they touch . These growths are delimited by a wall. Many nuclei are isolated in what is called a gametangium(plural gametangia).
- The two gametangia fuse in a process called plasmogamy and a zygote is formed which may undergo a prolonged dormancy or resting stage.
- The nuclei in the zygote fuse in twos and undergo independent meiosis.the zygote germinates when conditions become favourable and then matures to liberate haploid spores which would mature into their adult forms.
- The sexual reproduction in filamentous fungi can be simply broken down into three stages: plasmogamy, karyogamy and meiosis.

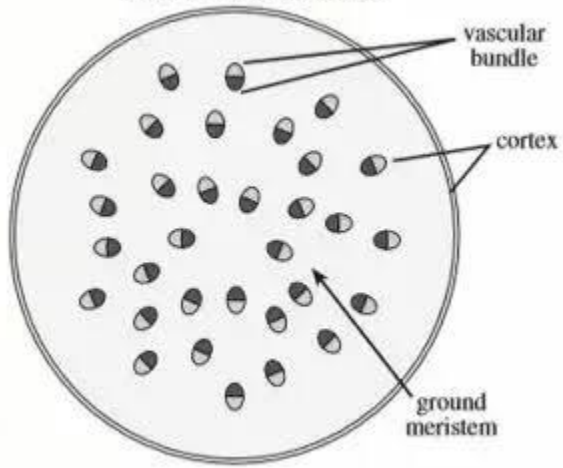
4. How do Bryophytes adapt to their environment?

- They have aerial portions which possess unique modifications which enables it to limit excessive loss of water through their body surface
- They have definite structures for absorption of water and nutrients from the soil and this they possess two parts :an aerial portion and a subterranean portion. Their subterranean portion is the rhizoid and it is not considered a true root.
- They also possess a waxy cuticle that keeps them from drying out through the process of desiccation
- They possess gametangia that keep the plants gametes from drying out.
- They possess openings on the aerial part of the plant that allow for gaseous exchange with the environment.

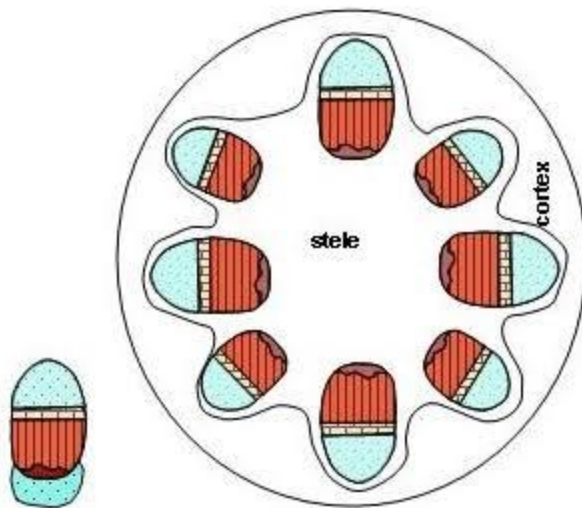
5. Describe with illustration the following terminologies: (a) eusteles (b) atactostele (C) siphonostele (d) dictyostele.

- a) Eusteles. This is a type of siphonostele which is usually found in dicotyledonous plants with rings of vascular bundles arranged around a central pith. The bundles contain xylem and phloem strands with parenchyma cells between the bundles.
- b) Atactostele. It is a type of eustele that is found in monocot plants. Here the vascular tissue within the stem of the plant exists as scattered bundles.
- c) Siphonostele. Here the vascular tissues are arranged like a cylinder surrounding a central pith. It is found in the stems of ferns and most seedless vascular plants.
- d) Dictyostele. This is a type of siphonostele found in many ferns where the vascular tissues are arranged in a cylindrical shape around a pith but with broken up network and series of vascular tissues such that any cross section of the stem would show multiple leaf gaps.

Atactostele.



Eustele



Types of Siphonostele



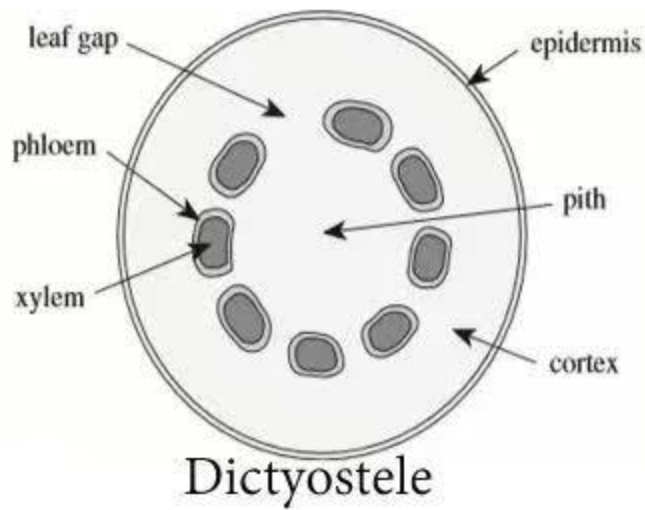
solenostele



dictyostele



eustele



6. Illustrate the life cycle of a primitive vascular plant.

Psilotum is a very primitive vascular plant. When its spores are released they develop into a gametophyte which can either develop into either of antheridium or the archegonium which are the sperm and egg respectively. They fuse to form a zygote which is the exit phase of the gametophytic generation. The zygote matures into a sporophyte which produces sporangia to give rise to spore formation repeating the cycle.

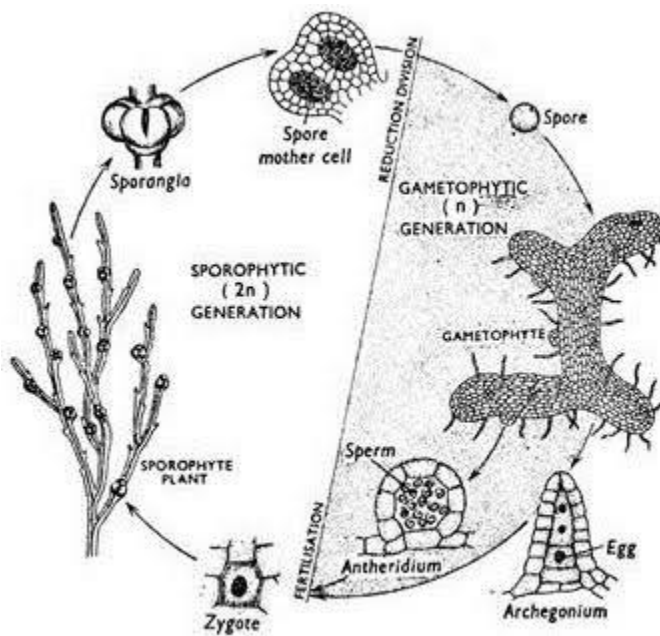


Fig. 7.22 : Life cycle of *Psilotum*