Department of biology

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((Mycology))

Stage (The thrid stage)

LEC- ((2))

By

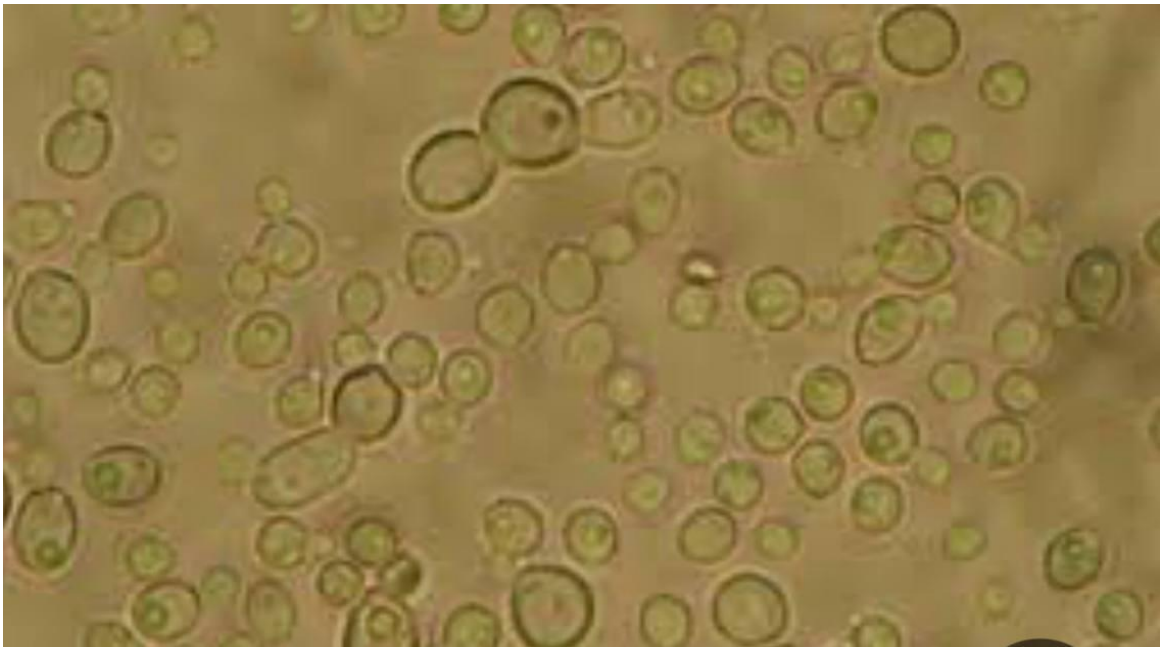
By :MSC.Baneen Maen Kareem

Morphology of gungi

Fungi show a wide variety of shapes, and even within a single life cycle, the morphology of the fungal body—known as the thallus—can undergo noticeable changes Generally, the fungal thallus has two main stages: a vegetative (growth) stage and a reproductive stage. Fungi usually exist in one of the following structural forms:

1 gelatinous form or Plasmodium: This appears as a plasmodium, characteristic of slime molds like Physarum, where the body takes on a flowing, shapeless structure.

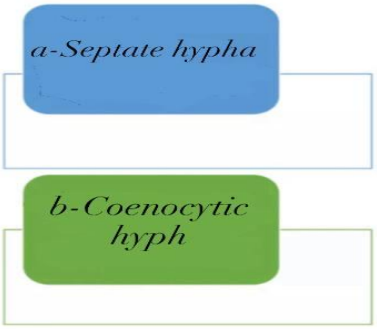
2-Yeast form: These fungi are unicellular, and their cells are typically spherical or oval. A common example is Candida yeast.

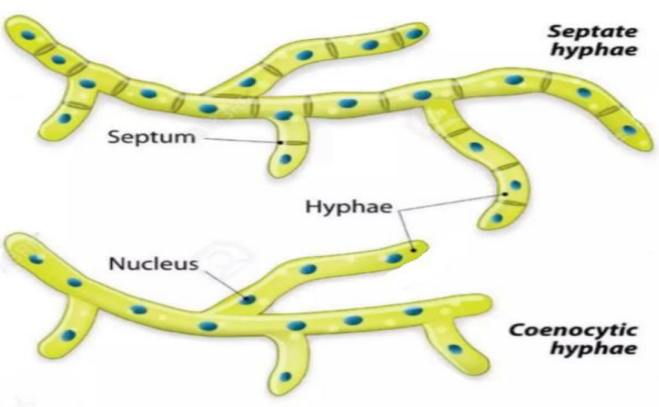


3-Filamentous form: These fungi grow as branched thread-like structures called hyphae, which may be:

Septate: divided by internal cross-walls known as septa.

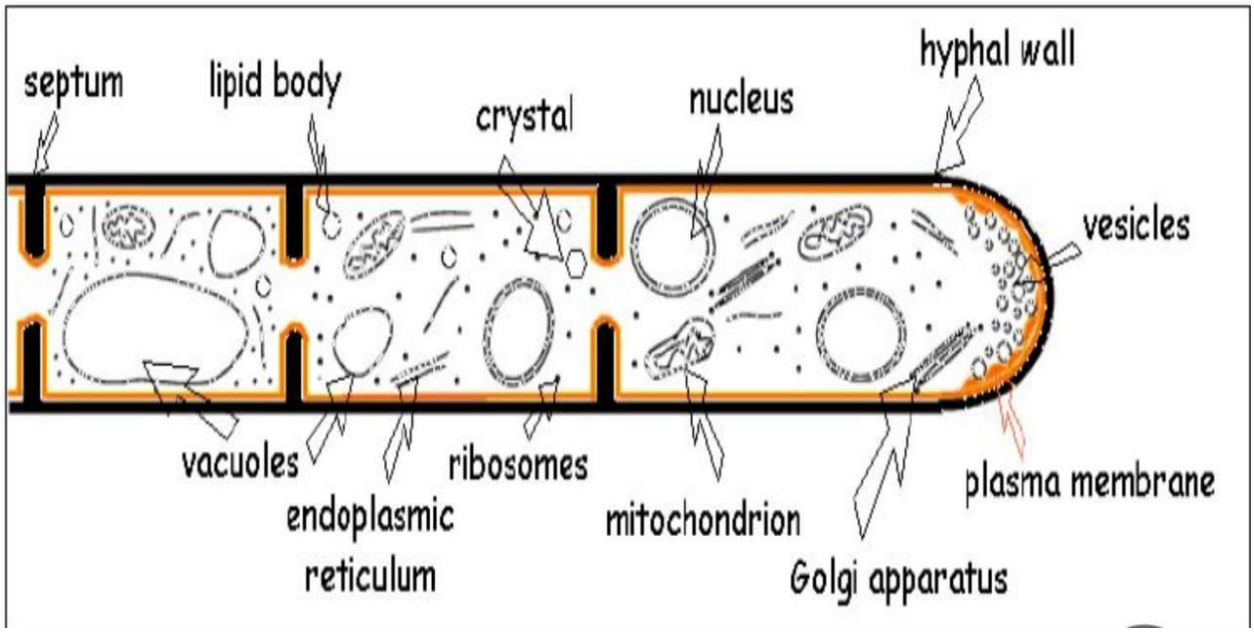
aseptate: lacking these divisionsThis is the most common form among fungi.





Hyphae branch and intertwine to form a visible mass known as the mycelium, which is often seen as mold growing on spoiled food and fruit in a variety of colors.

Hyphal growth occurs specifically at the tip, a process known as apical growth, as illustrated in the figure below.

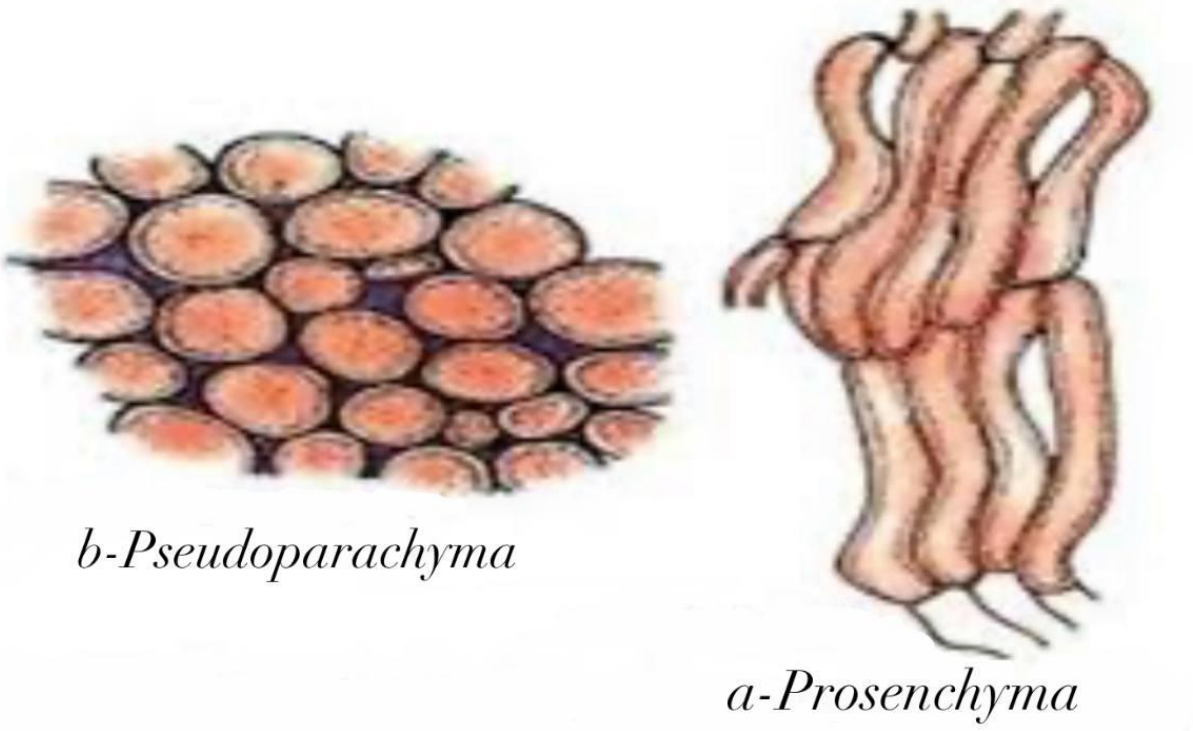


The mycelium may be:Loosely arranged, as is typical in most fungi, or

Densely compacted, forming a structure known as plectenchyma, which can take one of two forms:

Prosenchyma: loosely woven tissue where individual hyphae are still visible.

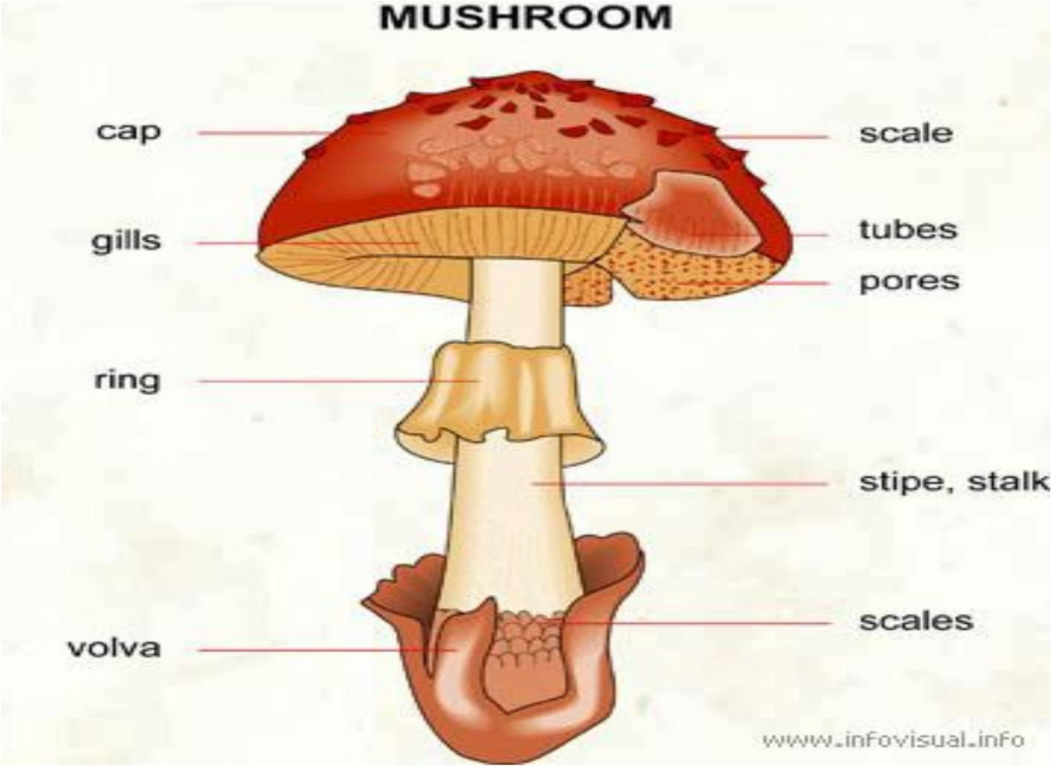
is a tissue made of fungal hyphae that are :Pseudoparenchyma packed so tightly together they look like plant parenchyma. The individual hyphae cannot be easily seen or separated .



b-Pseudoparachyma

a-Prosenchyma

4-Fleshy or large-sized fungi: These include mushrooms, toadstools, and truffles. The fruiting body of such fungi is typically composed of multiple parts, as commonly seen in mushrooms.



Important of fungi

Benefits of Fungi

1-Fungi are used as food, such as mushrooms and truffles.

2-They are a source of antibiotics, like penicillin, which was first extracted from the fungus Penicillium by Alexander Fleming in 1928.

3-Fungi play a crucial role in breaking down organic matter, helping to clean the environment by decomposing plant and animal waste as well as carcasses, thereby contributing to nutrient cycling in nature.

4-They enhance soil fertility through symbiotic relationships with plant roots, known as mycorrhizae, where fungi live in the roots of certain plants and assist in nitrogen fixation and making it available to the plant.

5-Fungi are employed in biological control as natural agents against pests, including harmful insects and other pathogenic fungi.

6-They are used in food industries, such as cheese making, pickling, and baking.

7-Fungi are valuable in genetic research and have even been used in studies conducted in outer space.

Harmful Effects of Fungi

1-They cause diseases in humans, animals, and plants.

2-They produce highly toxic substances called mycotoxins, especially aflatoxins, which are among the most dangerous toxins known.

3-They lead to spoilage and decay of food, leather, wood, and other materials.

Modes of living (Nutrition)

Fungi cannot make their own food, so they obtain it through one of the following methods:

A-Saprophytes (saprobic nutrition):

In this method, the fungus feeds on organic matter such as dead tissues, animal waste, and plant debris. It releases enzymes outside its body to break down the materials into simpler substances, which are then absorbed through root-like structures called rhizoids.

Some fungi are obligate saprobes, meaning they can only survive by feeding on dead matter. Others are facultative parasites—they are mainly parasitic, but can switch to saprophytic feeding if no suitable host is available.

B-Parasitic:

In this case, the fungus gets its nutrients directly from living cells or tissues. There are two types:

External parasitism (Ectoparasites): the fungus lives on the surface of the host and sends feeding structures into its cells.

Internal parasitism (Endoparasites): the fungus lives inside the host's cells and absorbs nutrients directly.

Some fungi **are obligate parasites** which means they can only survive on a living host. Others are **facultative parasites** which usually live on dead material but can become parasitic if they find a suitable host.

C-Symbiosis:

This is a mutually beneficial relationship between fungi and plants, where the fungus forms structures called mycorrhizae in the plant's roots. The fungus helps the plant by fixing nitrogen and providing it with nutrients, and in return, the plant supplies the fungus with sugars.

D-Commensalism:

In this type of relationship, fungi live alongside other organisms without helping or harming them. An example is lichens, which are colonies made up of a fungus and an alga living together, without exchanging direct benefits.

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