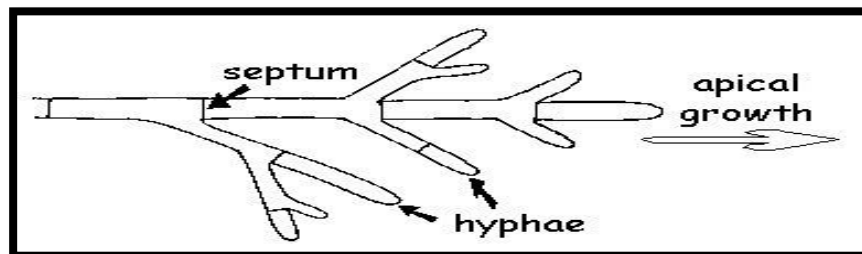


Growth forms of fungi:

Many of us are familiar with the appearance of mushrooms and toadstools. But these structures are simply the large, macroscopic fruiting bodies produced by some groups of fungi. The actively growing and reproductive structures of most species are microscopic, and although most fungi are mycelial (filamentous), there are some exceptions to this growth form.

- 1- Mycelial (filamentous)
- 2- Unicellular and primitively branched Chytrids
- 3- Yeasts (unicellular)
- 4- Dimorphism

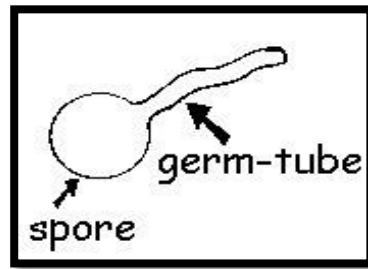
1- Mycelial (filamentous):



Most fungi are composed of microscopic filaments called Hyphae, which branch to eventually form a network of hyphae, called a Mycelium (colony). The mycelium extends over or through whatever substrate the fungus is using as a source of food.

Each hypha is essentially a tube, containing PROTOPLASM surrounded by a Rigid Wall. Depending upon the species, the protoplasm may form a continuous, uninterrupted mass running the length of the branching hyphae, or the protoplasm may be interrupted at intervals by cross-walls called Septa. Septa divide up hyphae into individual discrete cells or interconnected hyphae Compartments.

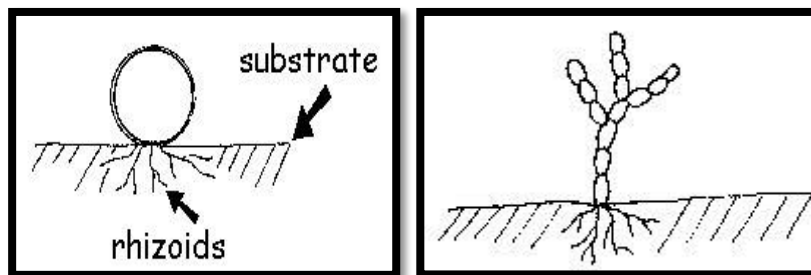
Hyphae exhibit Apical Growth (i.e. they elongate at their tips) and, at least in theory, are capable of growing indefinitely, provided that environmental conditions remain favourable for growth. In reality, of course, their environment eventually limits or restricts their growth.



Hyphae may initially develop from a Germ-Tube (a short, immature hypha) that emerges from a germinating spore. Spores are the microscopic dispersal or survival propagules produced by many species of fungi.

Although most fungi are mycelial (filamentous), the following represent exceptions to this growth form:

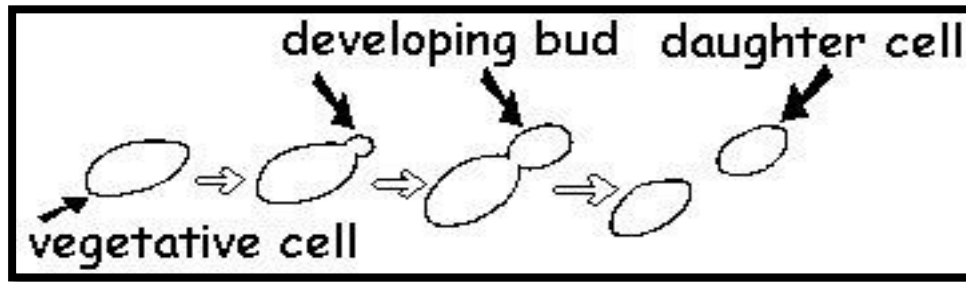
2- Unicellular and primitively branched Chytrids (Chytridiomycota):



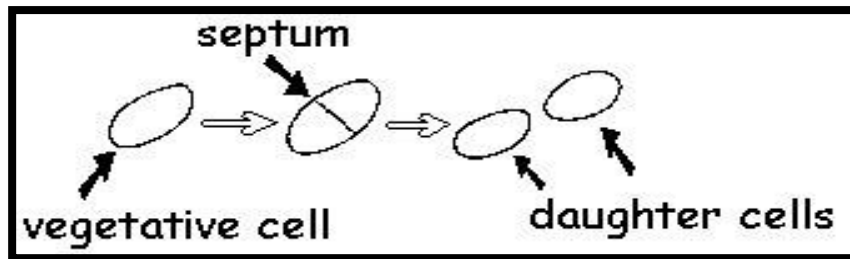
Fungi belonging to the Chytridiomycota exist as either single round cells (unicellular species) or primitively branched chains of cells. In either case, the fungus may be anchored to its substrate by structures called Rhizoids.

3- Yeasts (unicellular):

Yeasts, like all fungi, may have asexual and sexual reproductive cycles. The most common mode of vegetative growth in yeast is asexual reproduction by budding *Saccharomyces cerevisiae* where a small bud (daughter cell) is formed on the parent cell. The nucleus of the parent cell splits into a daughter nucleus and migrates into the daughter cell. The bud then continues to grow until it separates from the parent cell, forming a new cell. The daughter cell produced during the budding process is generally smaller than the mother cell. Some yeasts, including *Schizosaccharomyces pombe*, reproduce by Binary fission instead of budding, and thereby creating two identically sized daughter cells .



Budding (e.g. *Saccharomyces cerevisiae*)



Binary Fission e.g. *Schizosaccharomyces pombe*).

4- Dimorphism (i.e. existing in two forms):

Some fungi are capable of alternating between a mycelial growth form and a unicellular yeast phase. This change in growth form is often in response to some change in environmental conditions. This phenomenon is exhibited by several species of fungi that are pathogenic in humans, e.g. *Paracoccidioides brasiliensis*.

