Chapter 19 FUNGI

Section 19.5 What is a fungus?

I. The Characteristics of Fungi

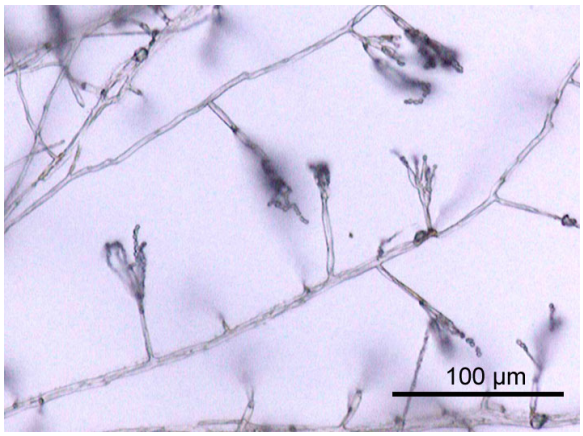
- Fungi are everywhere, in the air and water, on damp basement walls, in gardens, on foods, and sometimes even between people's toes.

The structure of fungi

- Most fungi are ***multicellular***
- The cells walls of fungi contain the polysaccharide, ***chitin.***
- **Hyphae** = ***threadlike filaments*** which develop from fungal spores.

- **Mycelium** = ***a network of hyphae*** that elongate at their tips and branch out.

- There are different types of hyphae in a mycelium. Ex:Some ***anchor*** the fungus, some ***invade*** the food source, and others form ***fungal reproductive*** structures.



II. Adaptations of Fungi

- Fungi can by ***harmful***, cause ***food to spoil***, or cause ***diseases***, **i.e. athletes foot**.
- They also play an important and beneficial role, they are ***decomposers***.
- They ***break down complex organic*** substances into raw materials that other living organisms need.
- They flavor ***food***, i.e. soy sauce, bleu cheese; produce ***medicines***, i.e. antibiotics & penicillin.

A. How fungi obtain food

- Fungi are ***heterotrophs***, and they use a process called ***extracellular digestion*** to obtain nutrients.
- Food is digested ***outside*** of fungus' cells, and the digested products are then ***absorbed***.

B. Different feeding relationships

- Fungi have different types of ***food sources***.
- They may be ***saprophytic***, ***mutualistic***,or ***parasitic***

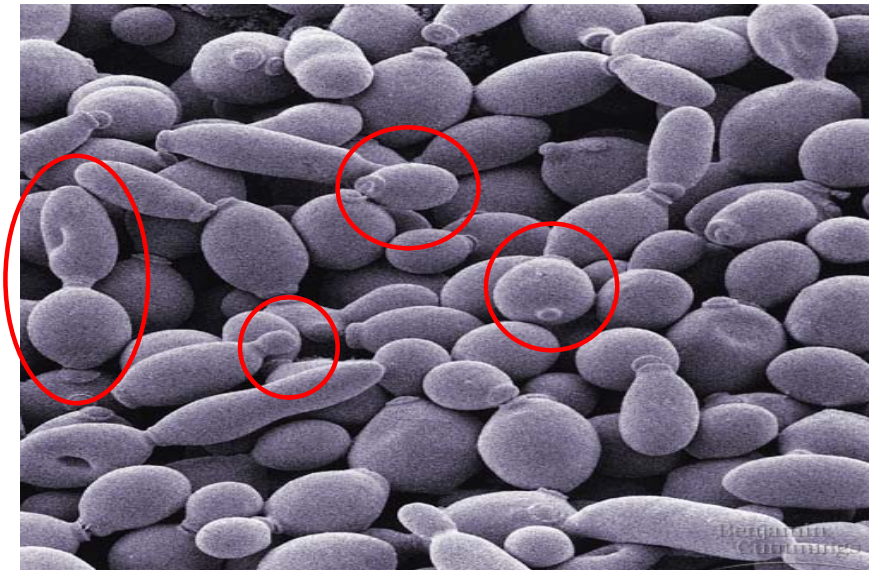
III. Reproduction in Fungi

- A fungus may reproduce ***asexually or sexually***.
- Asexually by **fragmentation, budding, or producing spores**

A. Fragmentation and budding

- In **fragmentation,** pieces of the fungus break off and grow into a new fungus.

- The unicellular fungi called yeasts often reproduce by a process called **budding -** a form of **asexual reproduction** in which mitosis occurs and **a new individual pinches off from the parent,** matures and separates from the parent.



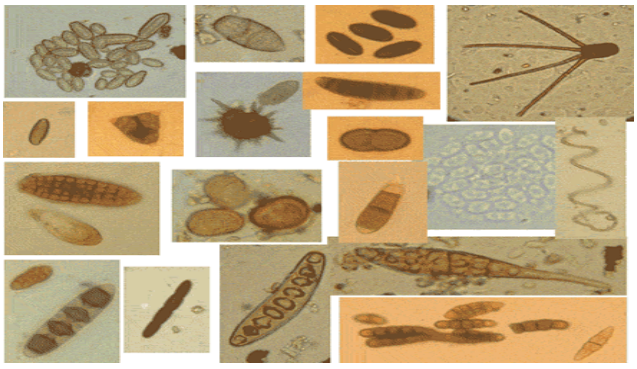
B. Reproducing by spores.

- Most fungi produce ***spores***.

C. The Adaptive Advantages of Spores

- Many adaptive advantages of fungi involve ***spores and their production*****.**
- In some fungi, specialized hyphae grow away from the rest of a mycelium and produce a spore-containing structure called a ***sporangium* - a sac or case in which spores are produced**.
- Second, most fungi produce ***large number*** of spores at one time.

- Producing so many spores increases the ***germination rate*** that improves the species survival chances.
- Fungal spores are ***small and lightweight*** and can be dispersed by ***wind, water, and animals***.



Section 19.6 The Diversity of Fungi

Mutualism: Mycorrhizae and Lichens

A. Mycorrhizae

- A mychorrizae is a ***mutualistic*** relationship in which a fungus lives symbiotically with a plant.

- The fungus increases the ***absorption surface area*** of the plants roots, and the fungus receives organic nutrients such as ***sugars and amino acids*** from the plant.

- **About *80-90 %* of all plants species have mycorrhizae associated with their roots.**

B. Lichens

- The orange, green, and black blotches you see on rocks and trees are forms of ***lichens***.
- Lichen is a ***mutualistic*** symbiotic association between a fungus and a ***photosynthetic*** **green algae or a cyanobacterium**.
- Lichens need only light, air, and minerals to grow, the photosynthetic partner provide the ***food*** for both organisms; the fungus in turn provides its partner with ***water and minerals*** **that it absorbs**.

- Lichens are called "**pioneer**" species because they are usually one of the first to inhabit a barren environment.
- Lichens live in a variety of climates, and are indicators of ***pollution***; they absorb minerals from the air, so if ***pollution*** is present, the fungus dies.

VI. Origins of Fungi

- ***Mycologists*** (biologist who study fungus) hypothesize that ***one group of*** fungi to evolved first, and then the other groups evolved later from a common ancestor.

- Few fossils are found because fungus is made of ***soft materials***. The oldest fungal fossil is over 400 million years old.