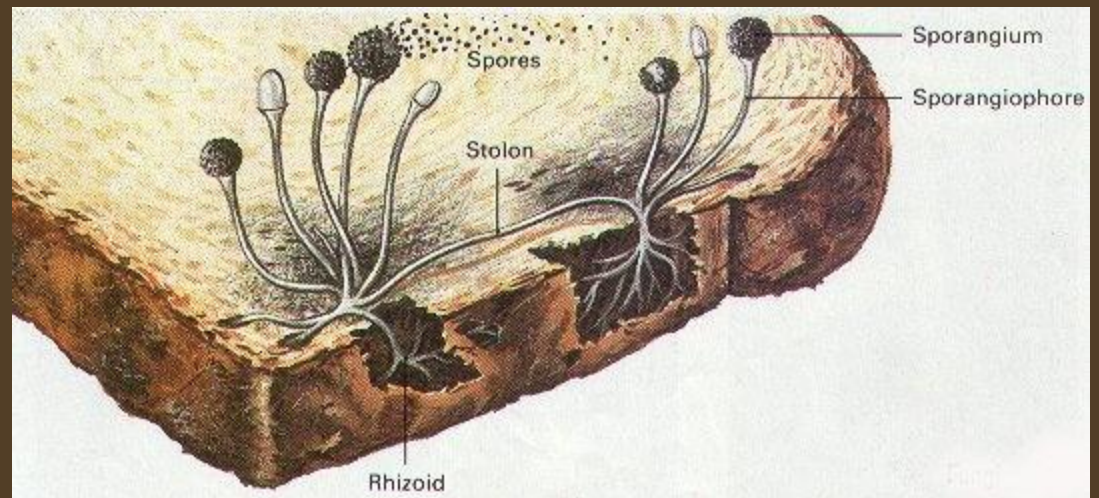
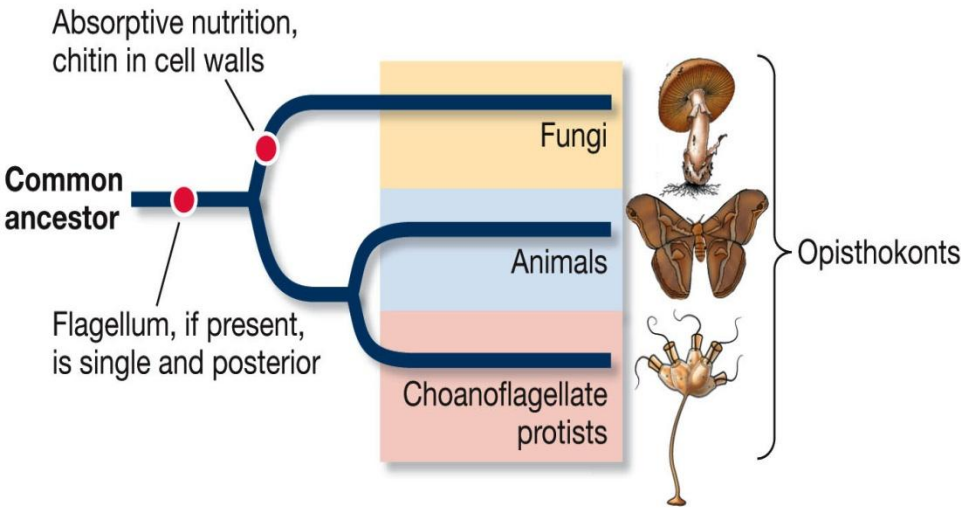


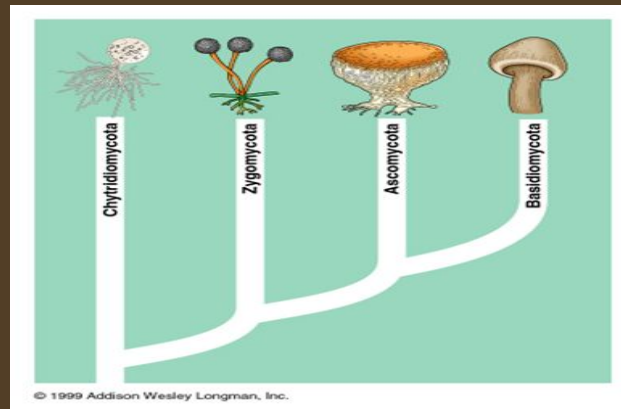
Fungi: Recyclers, Pathogens, Parasites, and Plant Partners



Phylogeny of Fungi

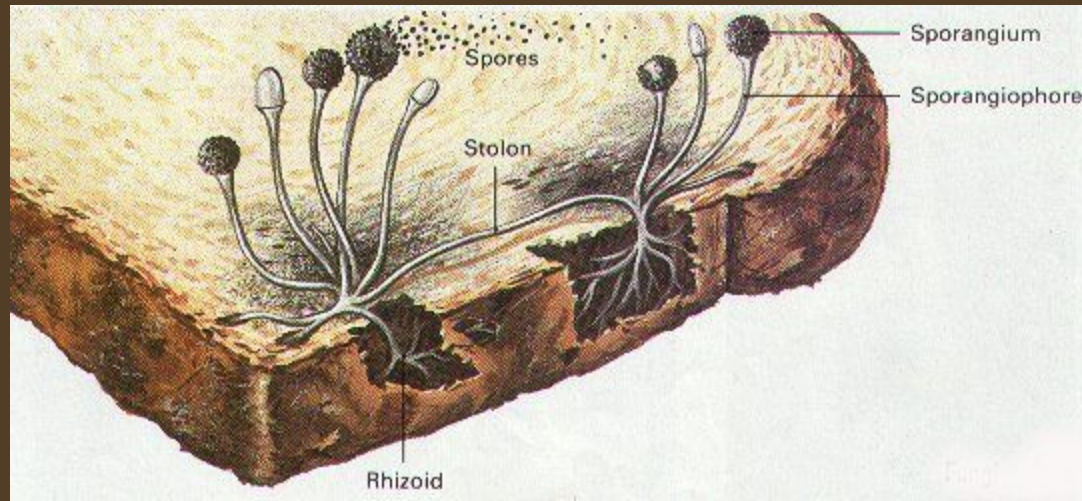


- **Domain** Eukarya
- **Kingdom** Fungi
 - Fungi are classified as a kingdom that is separate from plants, animals, and bacteria
 - Fungi have cell walls that contain chitin, unlike the cell walls of plants, which contain cellulose.



- **Phylum** (4)

30 Absorptive Heterotrophy



- Ex:
- *Rhizopus stolonifer*

- Fungi secrete digestive enzymes, breaking down large food molecules in environment

- Common fungi:
- yeasts
- molds
- mushrooms



Important phylum of Kingdom Fungi



**Phylum Chytridiomycota
(chytrids)**

**Phylum Zygomycota
(zygomycetes)**

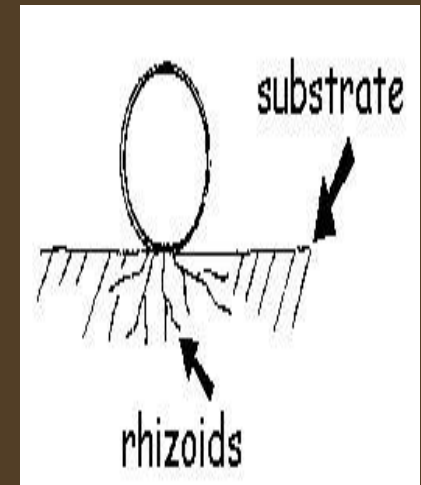
**Phylum Ascomycota
(ascomycetes)**

**Phylum Basidiomycota
(club fungi)**

**Phylum Glomeromycota
(mycorrhizae)**

Phylogeny of Fungi

- **Phylum Chytridiomycota**
 - ◆ Oldest
 - ◆ Saprobic
 - ◆ Rhizoid — “root like” feeding organs
 - ◆ Live in fresh water/moist Env
 - Ex: *Batrachochytrium dendrobatidis*
 - Unknown mode..
 - Keratin in skin?
 - Respiration affected



Phylogeny of Fungi

Phylum –
Basidiomycota

Club – Fungi

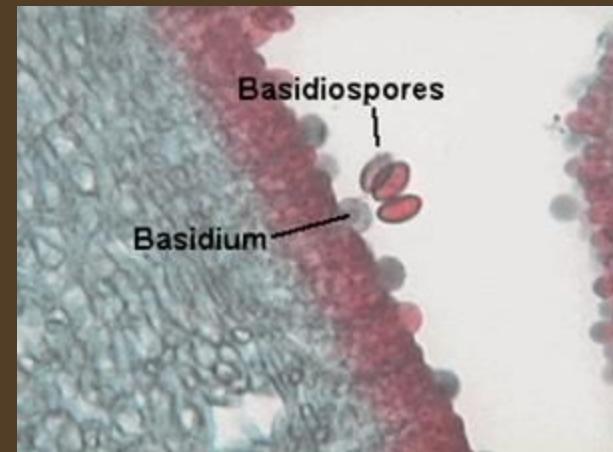
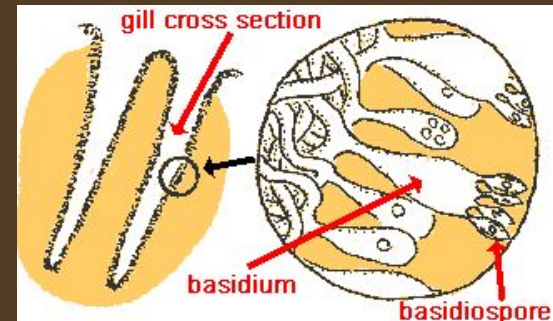
basidium – club shaped structure that develops during sexual reproduction



- Most recognizable fungi

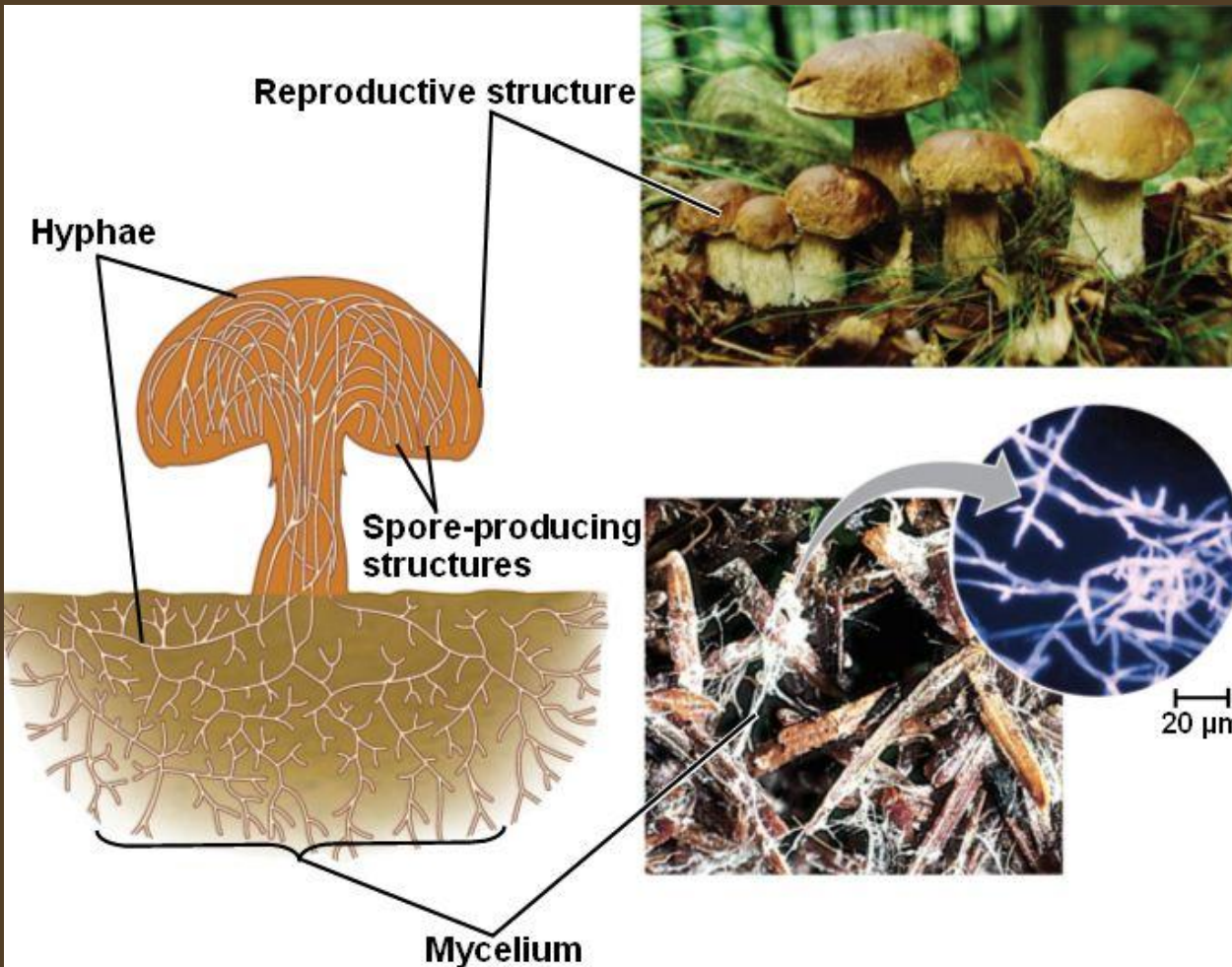


Fruiting
body

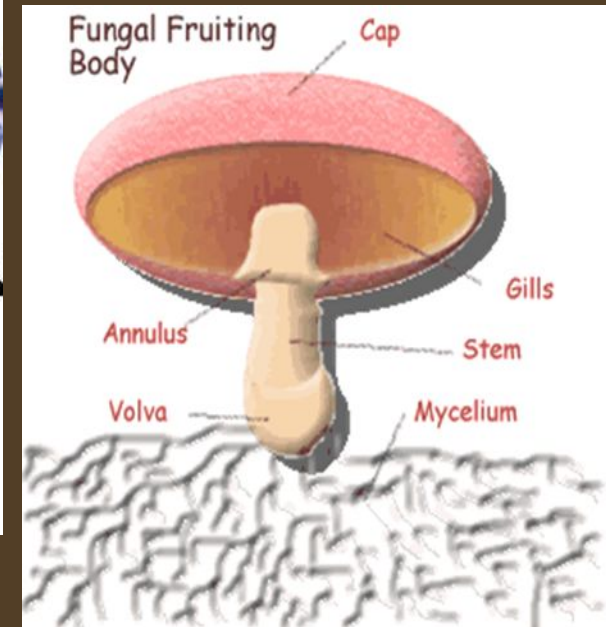


Structure of Fungi

- Most fungi are mycelial (filamentous)



- *Cap/Pileus
- *Gills/Lamellae
- *Hyphae
- *Mycelium



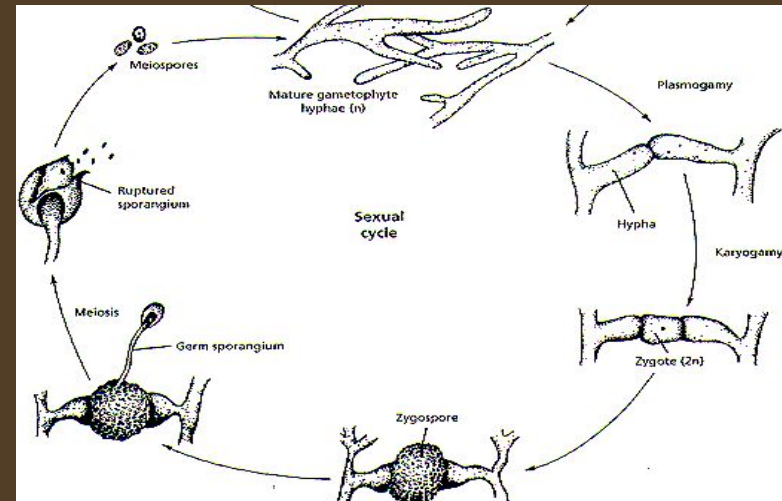
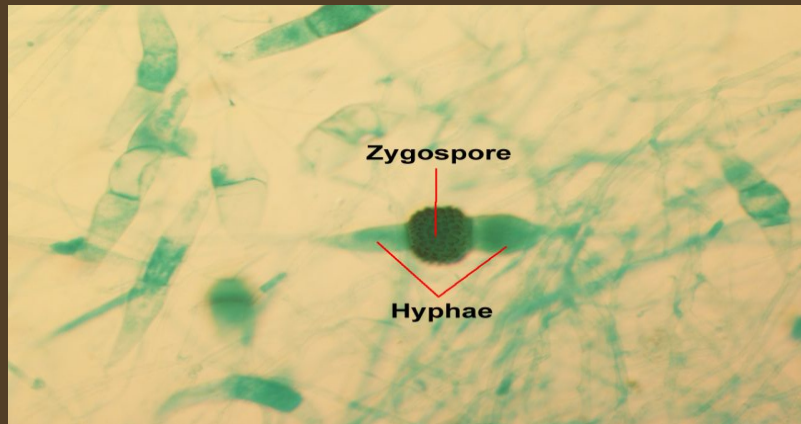
Phylogeny of Fungi

• Zygospore Fungi

• Phylum Zygomycota

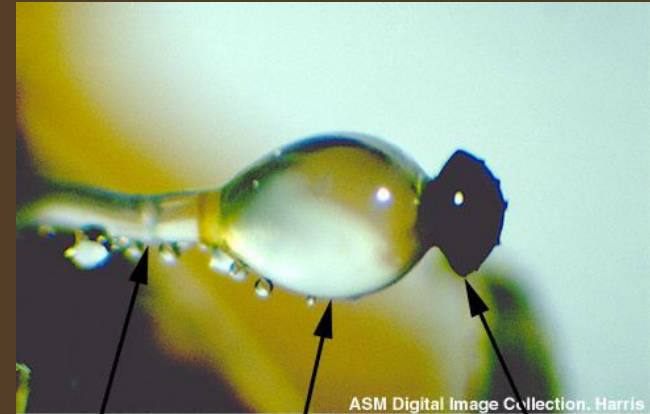
The name comes from zygosporangia, where resistant spherical spores are formed during sexual reproduction

- ◆ 1,000 species
- ◆ Arguably the most ecologically diverse group of fungi
- ◆ Terrestrial
 - Soil, organic matter, poo



Phylogeny of Fungi

- **Phylum Zygomycota**
- **Pilobolus**

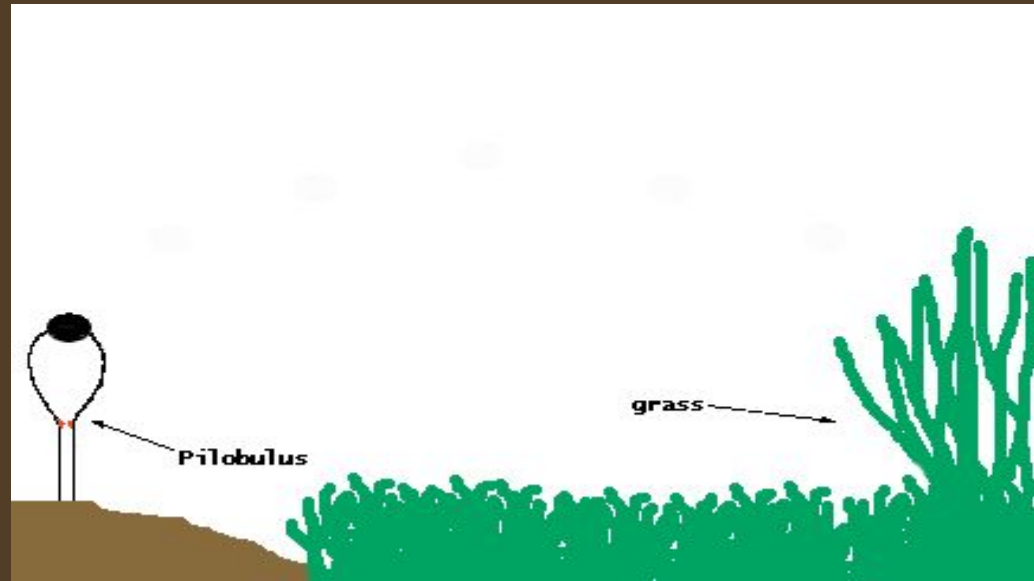


ASM Digital Image Collection. Harris

The sporangial stalk moves to adjust to the direction of light

The sporangium contains spores of the *Pilobolus* fungus.

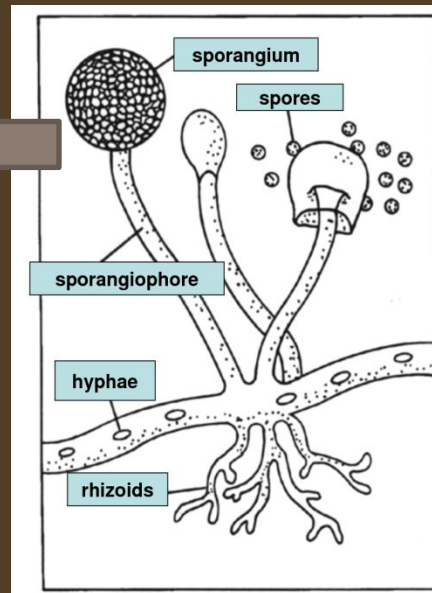
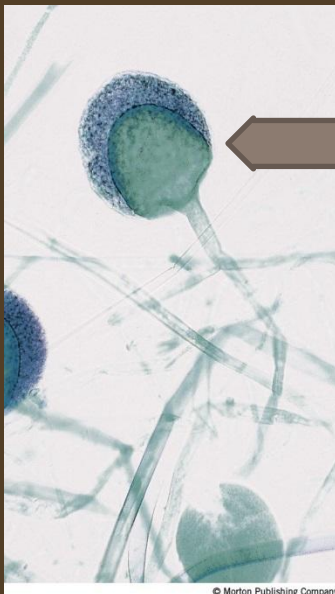
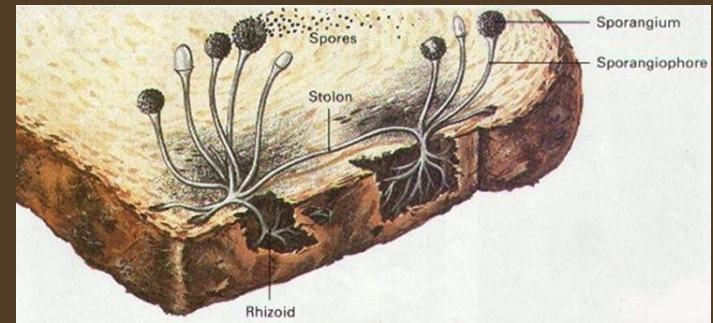
The transparent vesicle serves as the source of the explosive force used to eject the sporangium and also acts as a sensitive positioning mechanism which responds to the direction of light.



Phylogeny of Fungi

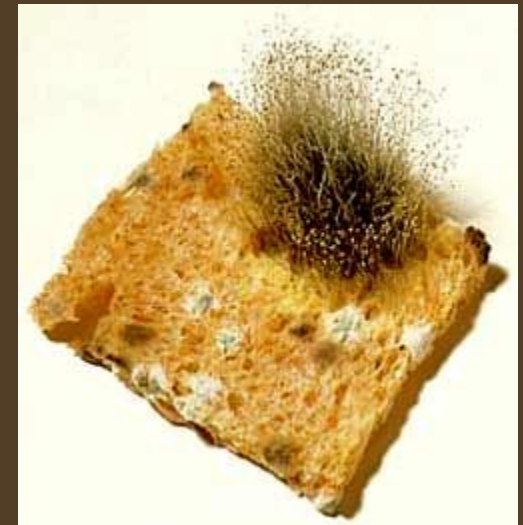
- Phylum Zygomycota

- Black bread mold
 - ◆ *Rhizopus stolonifer*



Black Bread Mold

Scientific name:
Rhizopus stolonifer



Phylogeny of Fungi

Phylum – Ascomycota

Majority of fungal species (50,000)

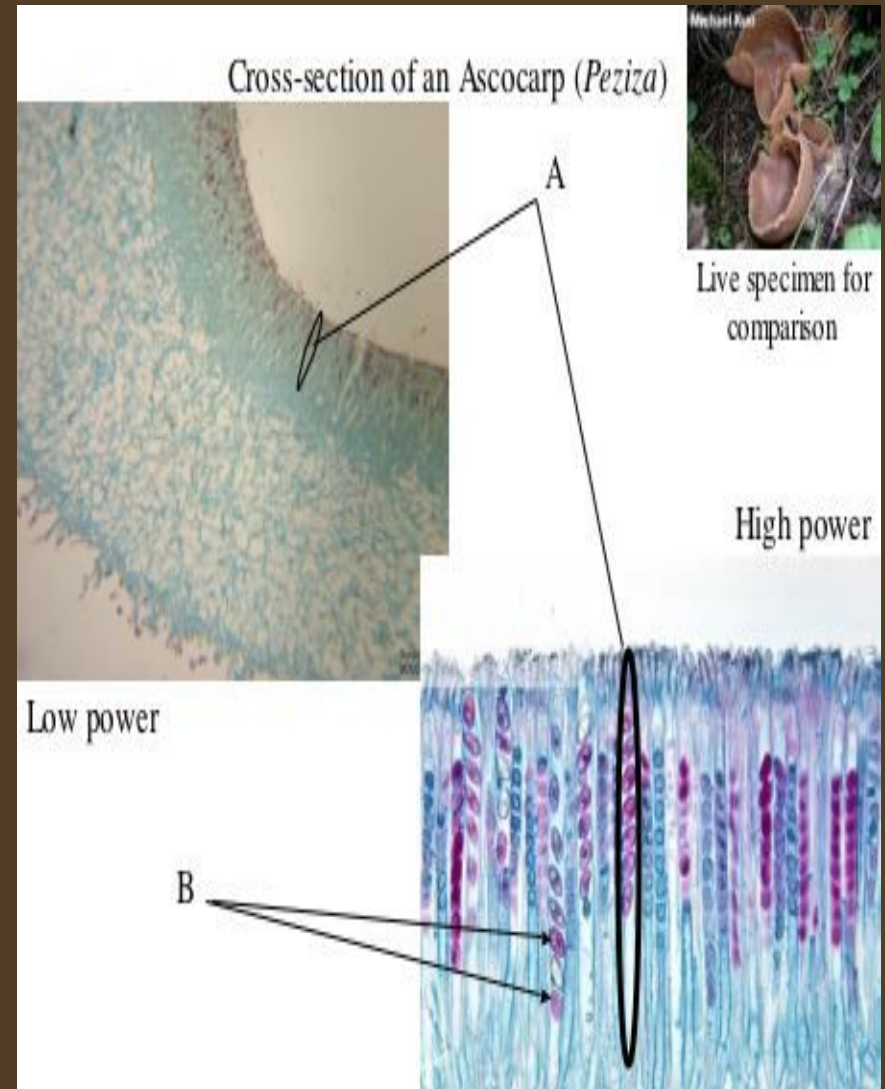
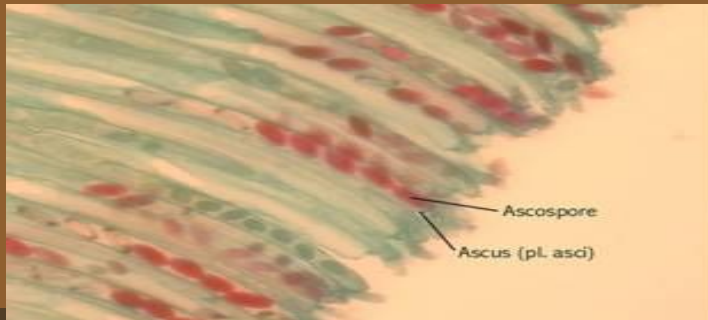
Ascus – sac like contain asospores

* Examples of sac fungi are yeasts , truffles,& penicillin



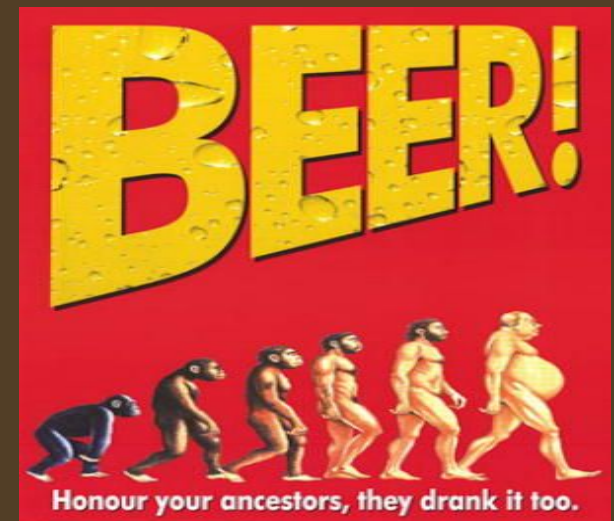
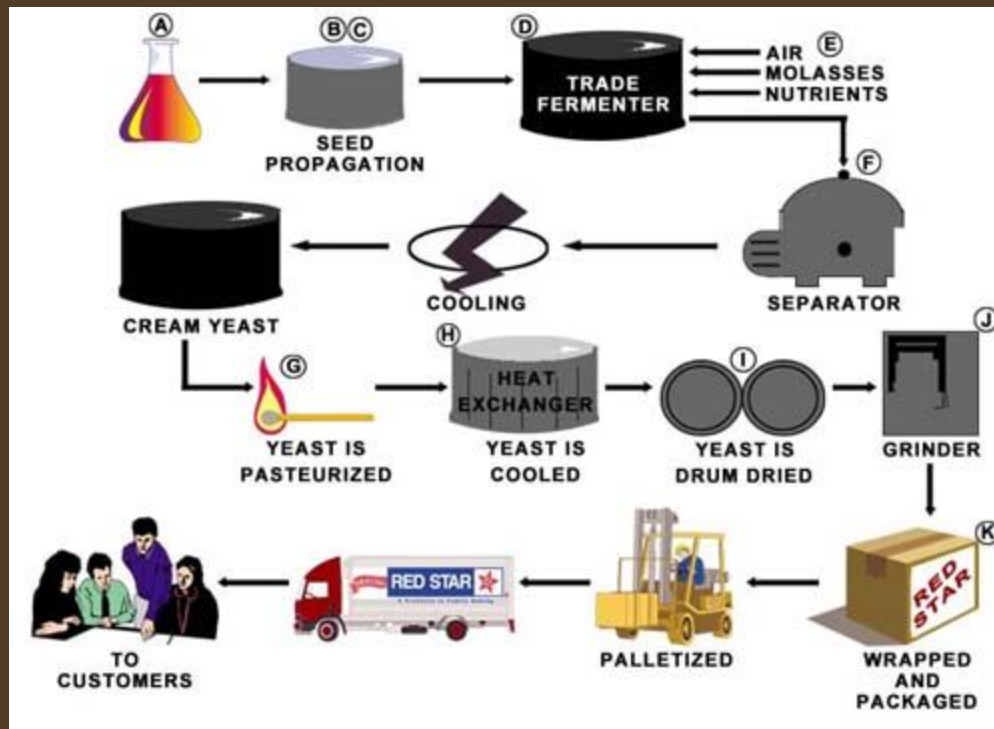
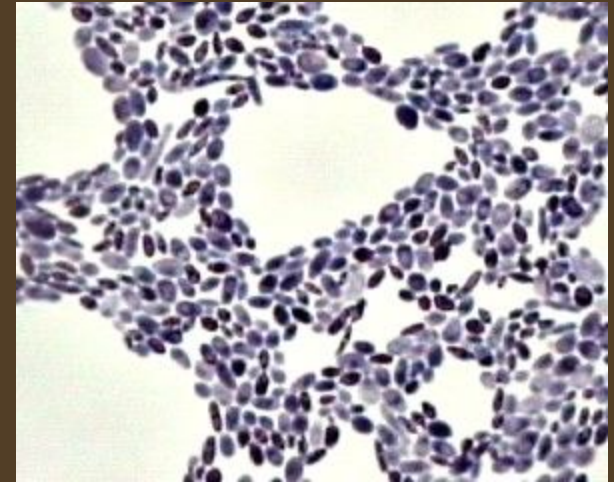
Phylogeny of Fungi

- **Phylum – Ascomycota**
Sac Fungi or Sac Fungi
*Terrestrial / free-living
- **Ascus** – fingerlike sac that develops during sexual reproduction



Phylogeny of Fungi

- Phylum – Ascomycota
- Yeast
 - ◆ *Saccharomyces cerevisia*



Phylogeny of Fungi

- **Phylum – Ascomycota**

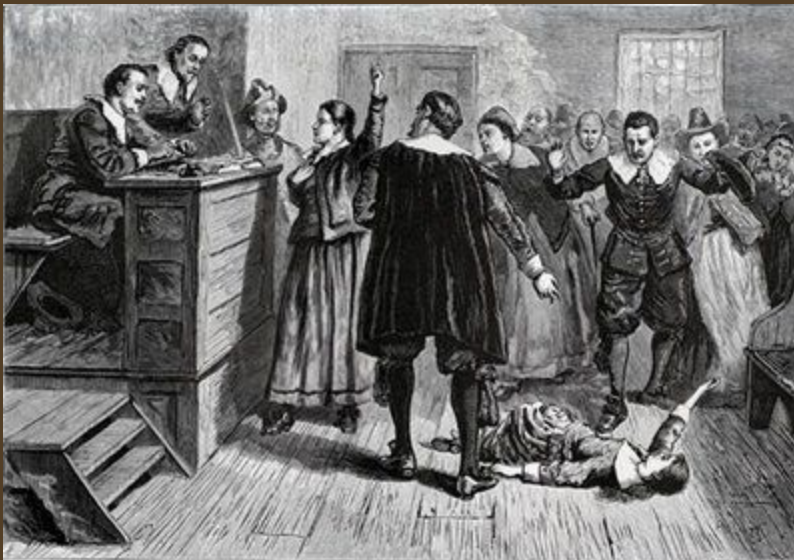
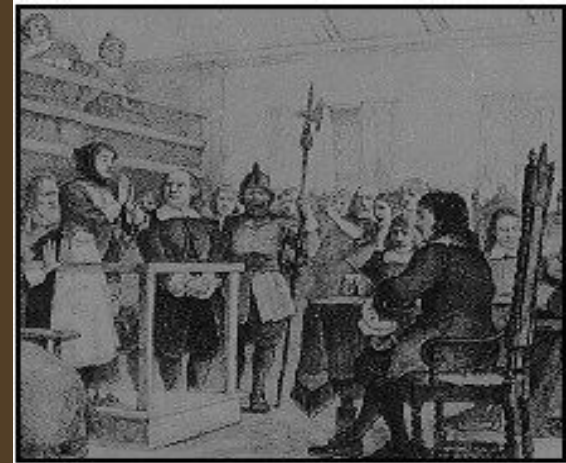
- ◆ *Claviceps purpurea*

- Ergot –in grain

- *Claviceps purpurea*

- Ergotism

- Synthesizes LSD

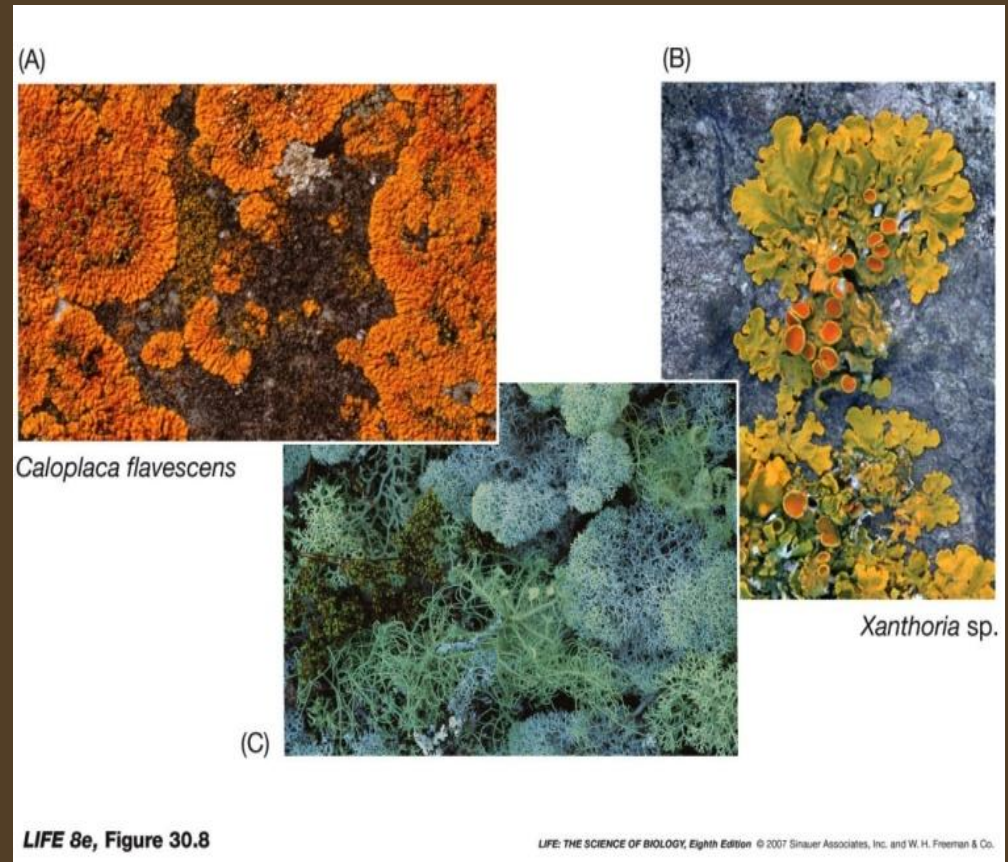


WITCHCRAFT AT SALEM VILLAGE



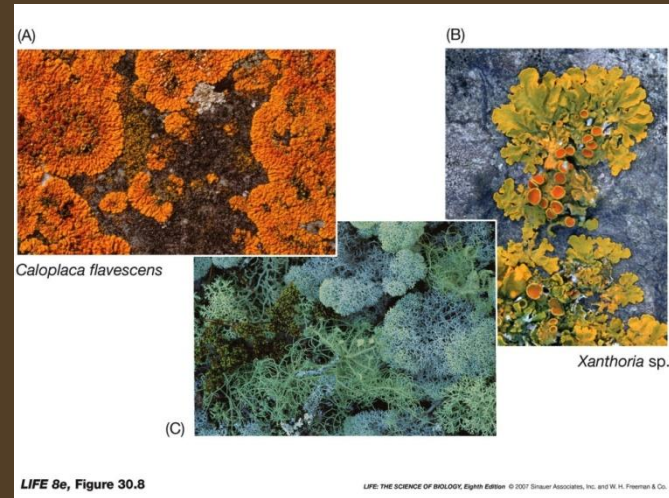
Phylogeny of Fungi

- **Ascomycetes**
—symbiotic
relationships with
algae to
form.....



Fungi as Symbionts

- Lichen
- an association between fungus and green alga.
- Exact relationship is unknown.



Fungi as Symbionts

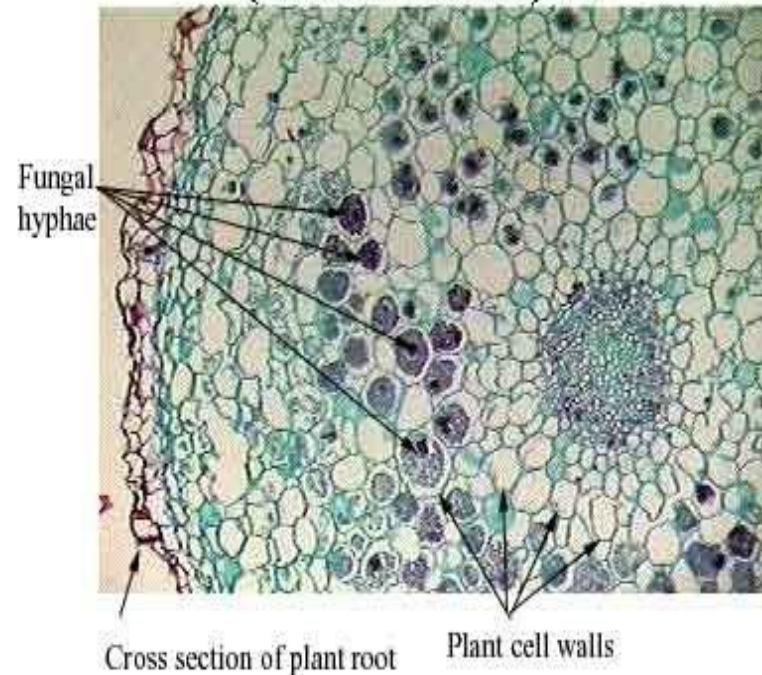
- **Mycorrhizas**
- mutualistic relationships between soil and fungi



Endomycorrhiza

Mutualistic relationship between plant root and fungus

Fungal hyphae penetrate the plant cell wall
(not cell membrane) 100x



30

Fun with Fungi

- Farmers and

ZOMBIES

