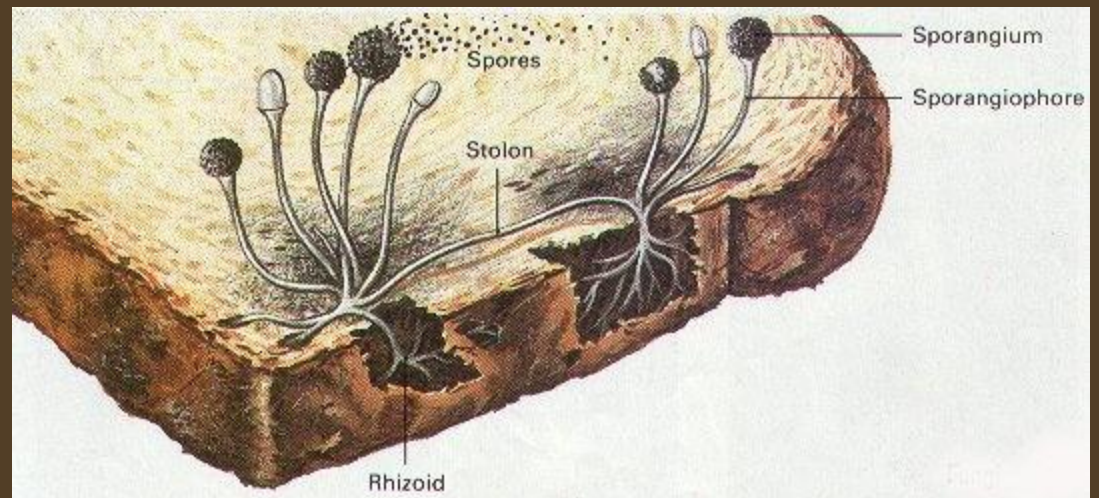
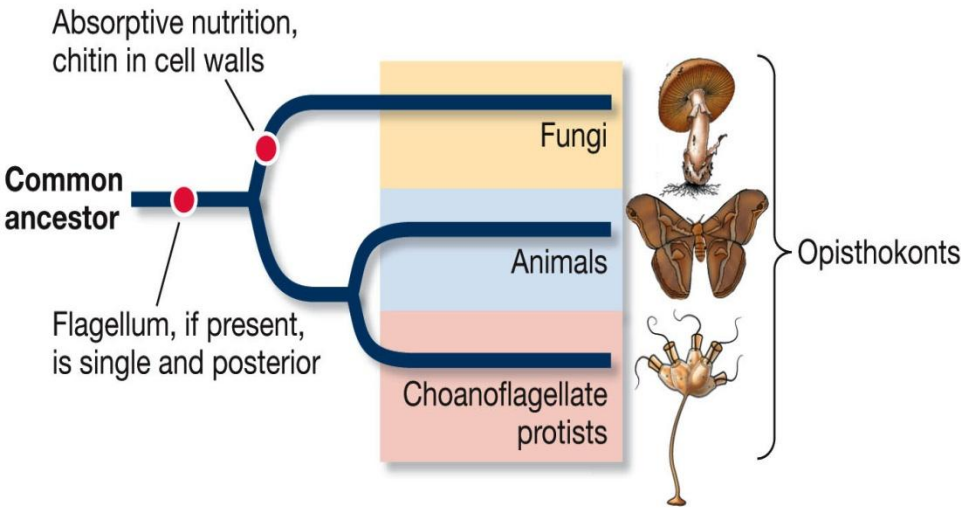


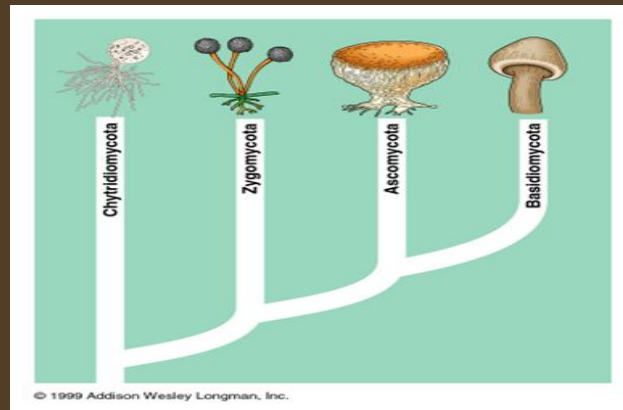
Fungi: Recyclers, Pathogens, Parasites, and Plant Partners



Phylogeny of Fungi

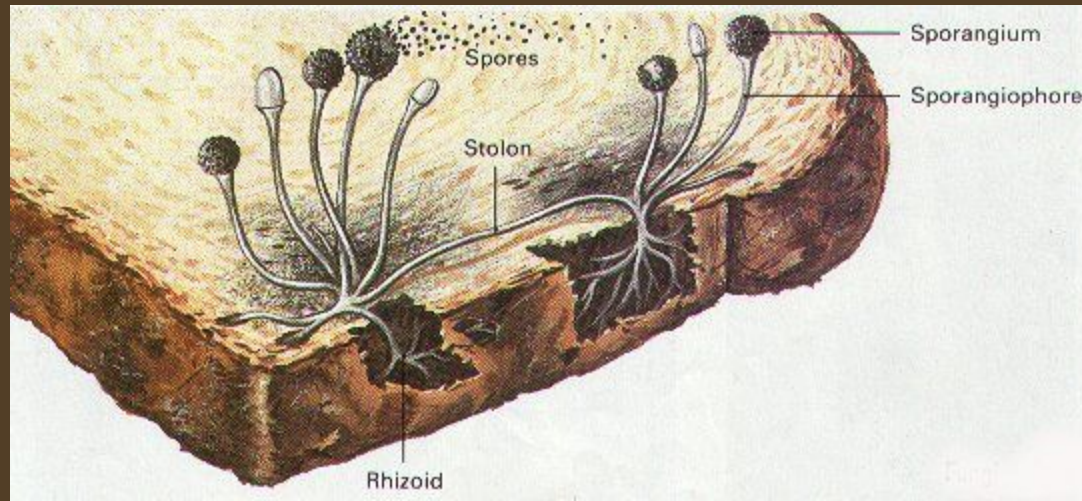


- **Domain** Eukarya
- **Kingdom** Fungi
- Fungi are classified as a kingdom that is separate from plants, animals, and bacteria
- Fungi have cell walls that contain chitin, unlike the cell walls of plants, which contain cellulose.



- **Phylum** (4)

30 Absorptive Heterotrophy



- Ex:
- *Rhizopus stolonifer*

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

FUNGI

- Common fungi:
- yeasts
- molds
- mushrooms



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Important phylum of Kingdom Fungi



**Phylum Chytridiomycota
(chytrids)**

**Phylum Zygomycota
(zygomycetes)**

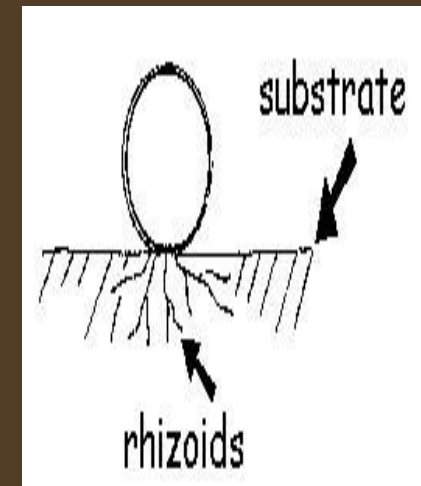
**Phylum Ascomycota
(ascomycetes)**

**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*



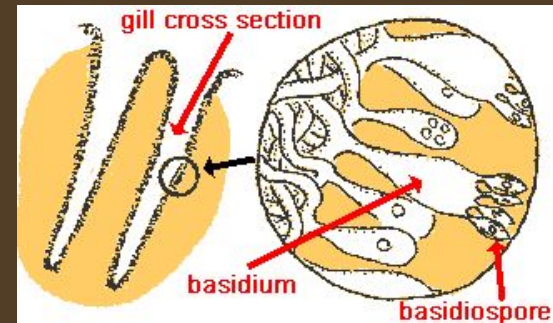
Phylogeny of Fungi

Phylum –

Basidiomycota

Club – Fungi

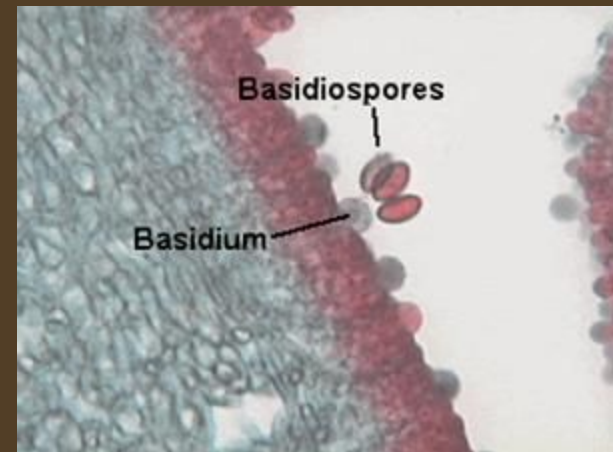
basidium – club shaped structure that develops during sexual reproduction



- Most recognizable fungi

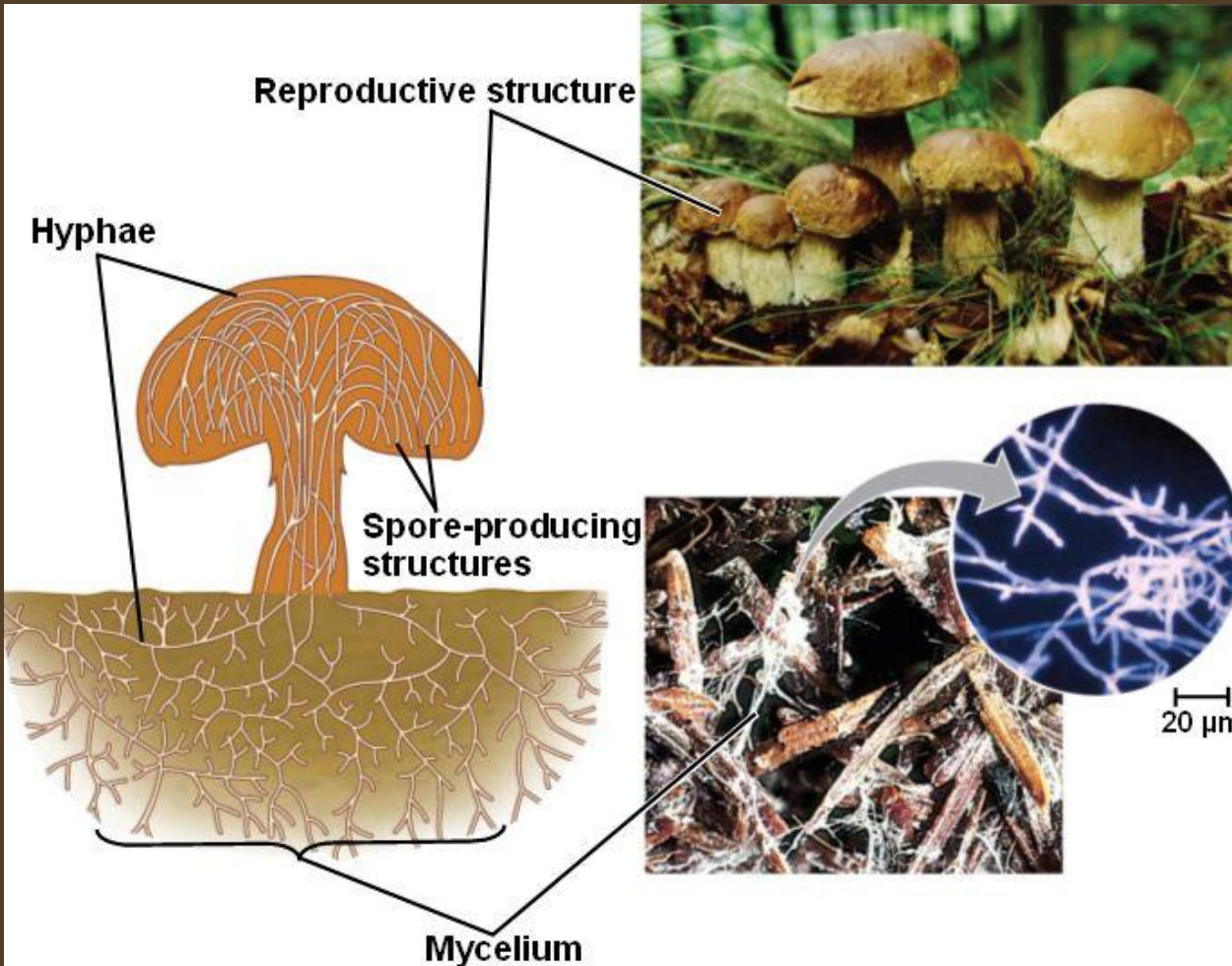


Fruiting
body

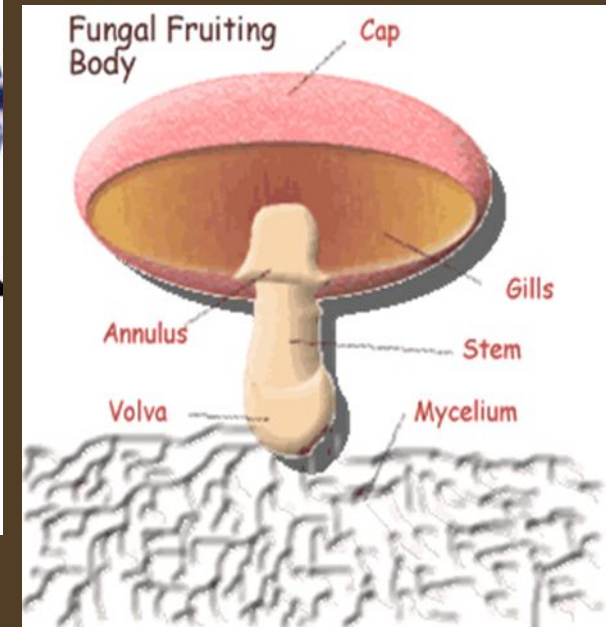


Structure of Fungi

- Most fungi are mycelial (filamentous)



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



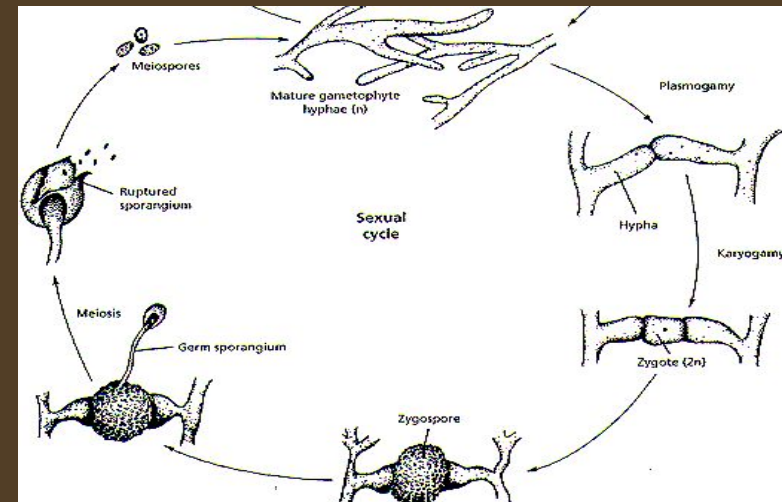
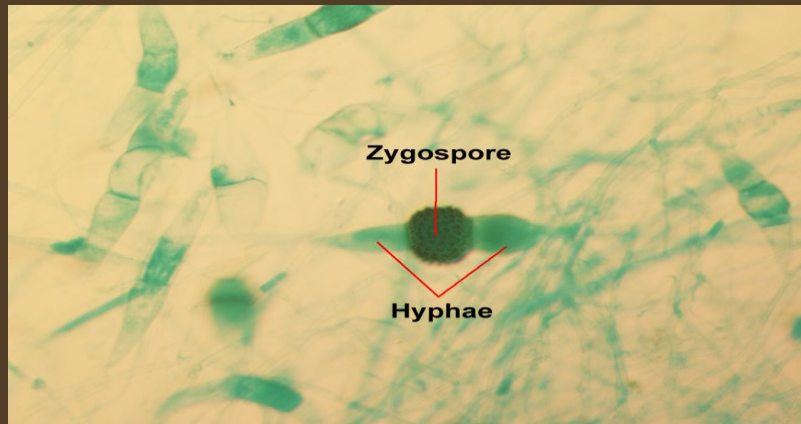
Phylogeny of Fungi

• Zygosporium Fungi

• Phylum Zygomycota

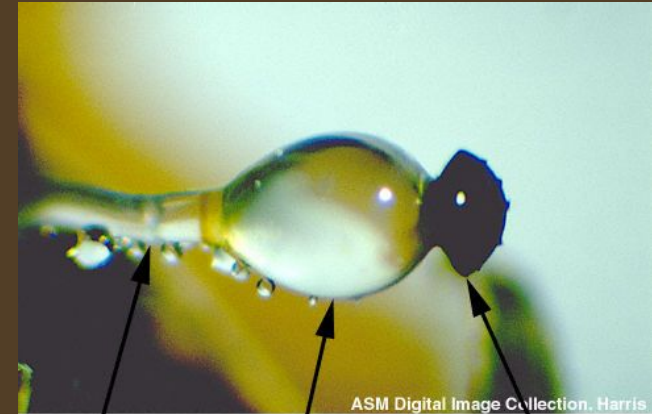
The name comes from zygosporangia, where resistant spherical spores are formed during sexual reproduction

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



Phylogeny of Fungi

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

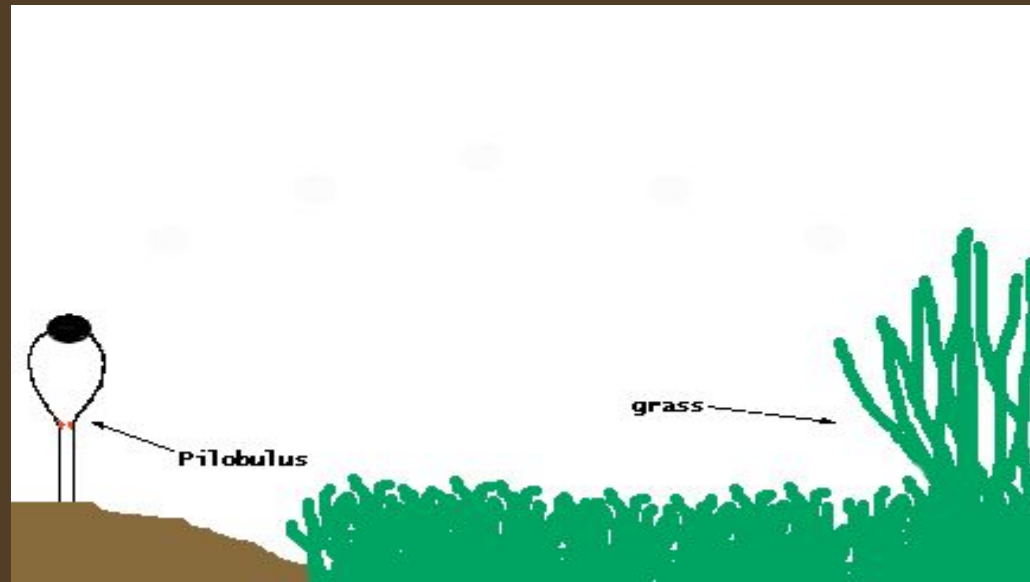


ASM Digital Image Collection. Harris

The sporangial stalk moves to adjust to the direction of light

The sporangium contains spores of the *Pilobolus* fungus.

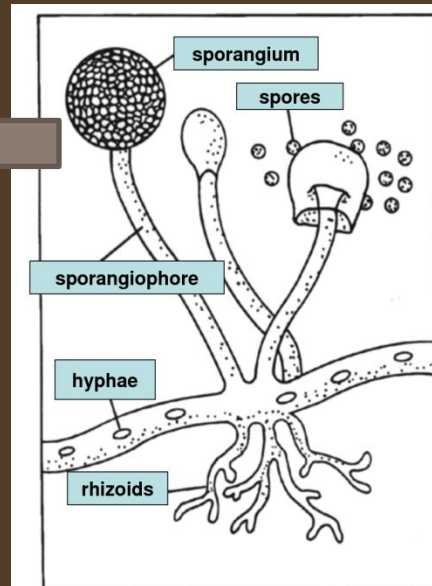
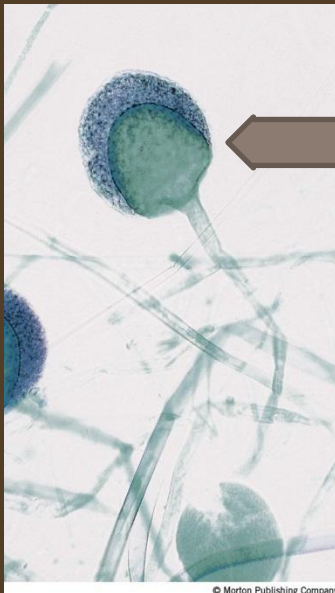
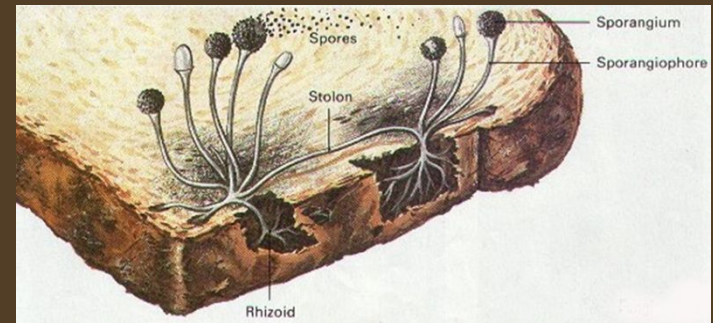
The transparent vesicle serves as the source of the explosive force used to eject the sporangium and also acts as a sensitive positioning mechanism which responds to the direction of light.



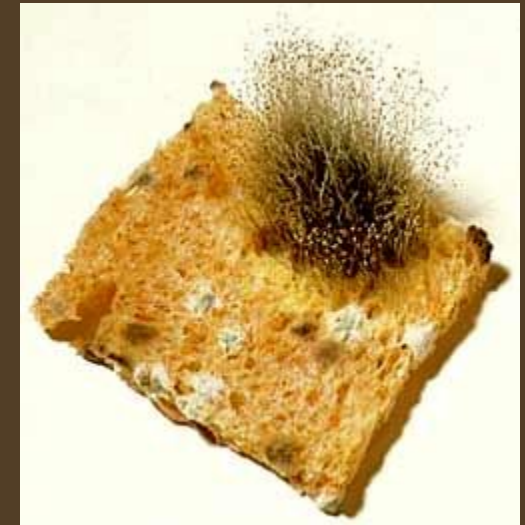
Phylogeny of Fungi

- 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)

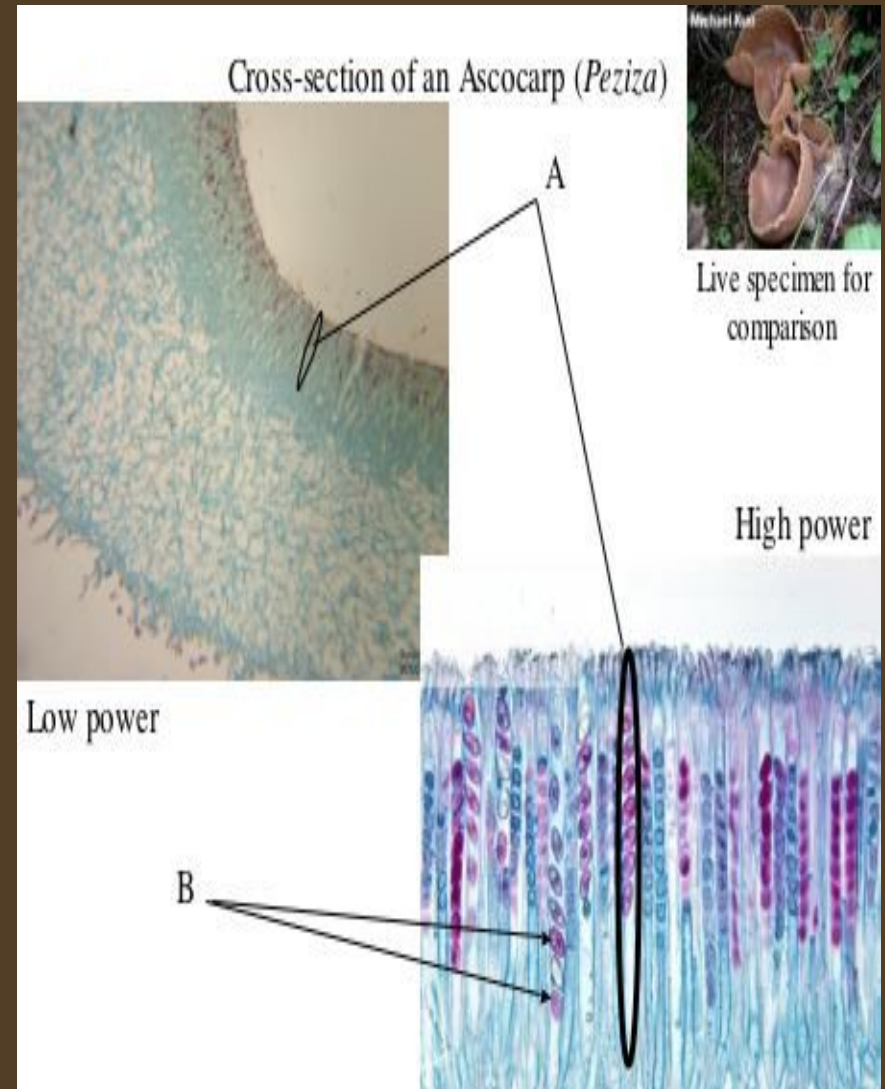
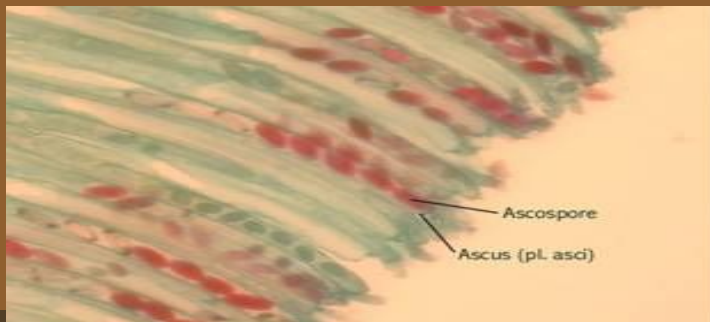
Ascus – sac like contain asospores

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



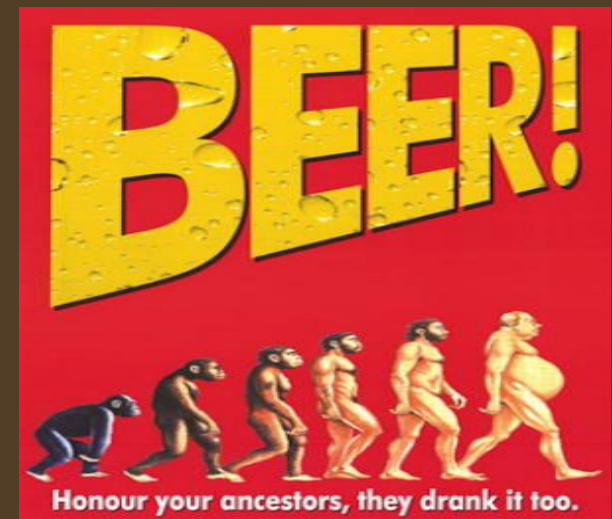
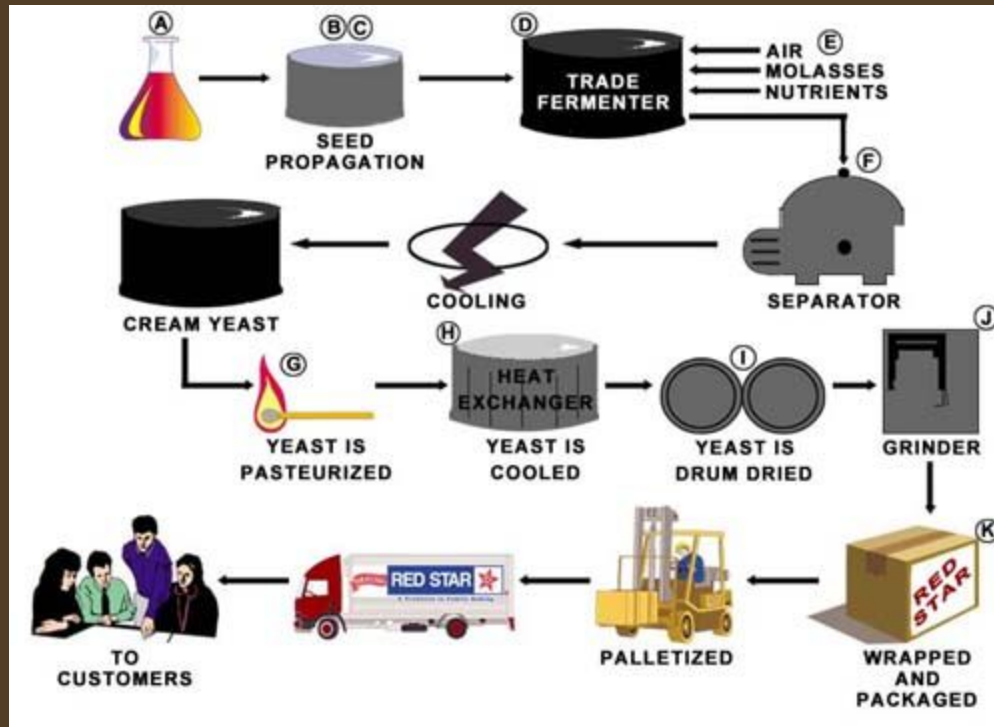
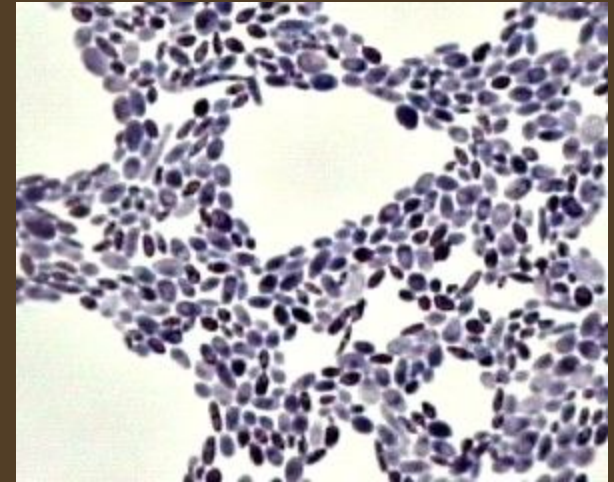
Phylogeny of Fungi

- **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**

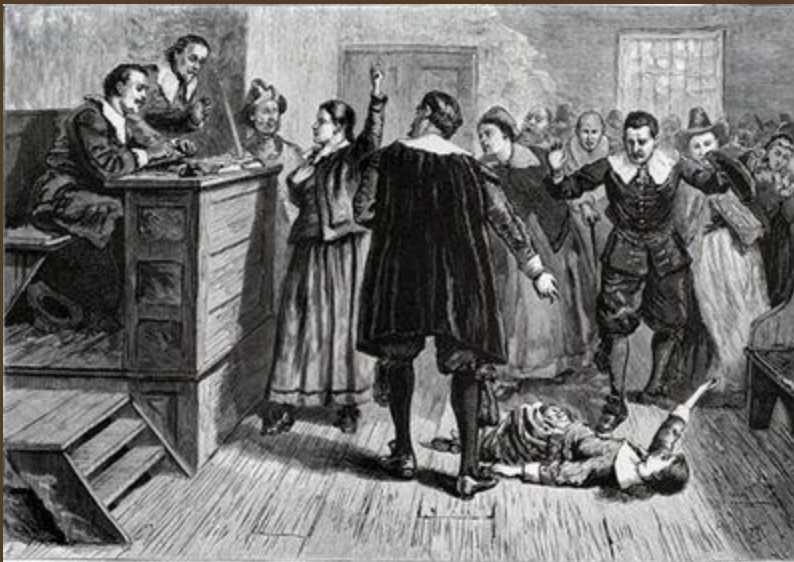
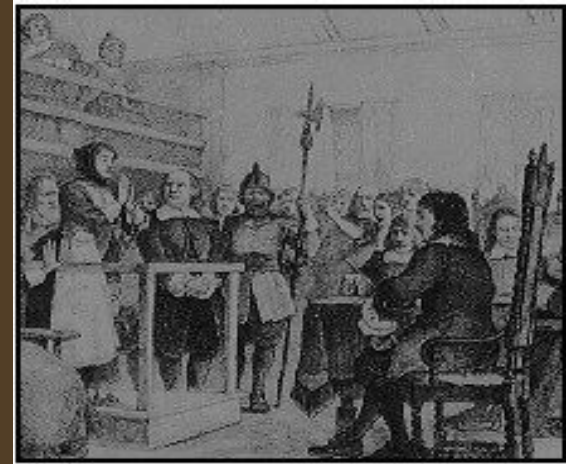
- ◆ *Claviceps purpurea*

- Ergot –in grain

- Claviceps purpurea*

- Ergotism

- Synthesizes LSD



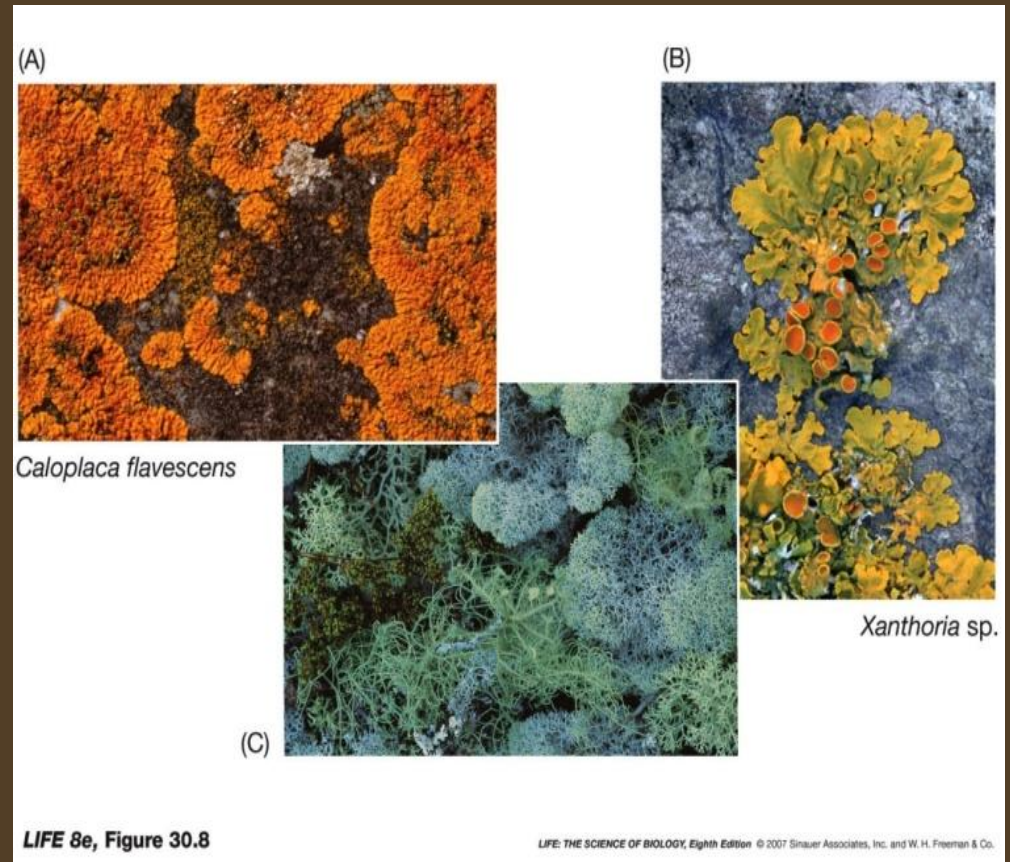
WITCHCRAFT AT SALEM VILLAGE



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Phylogeny of Fungi

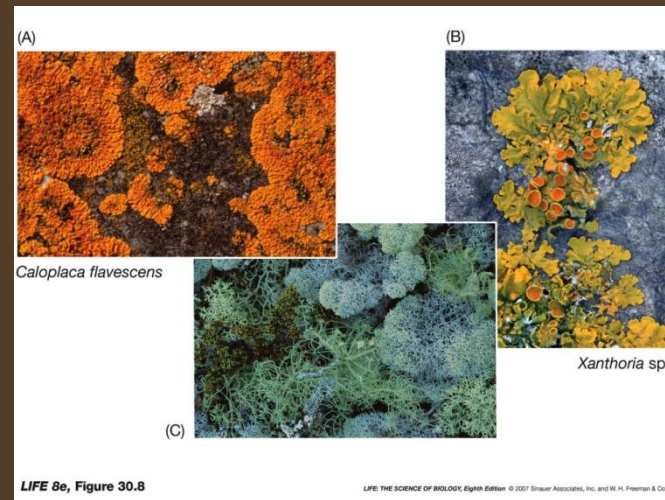
- **Ascomycetes**
–symbiotic relationships with algae to form.....



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Fungi as Symbionts

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



Fungi as Symbionts

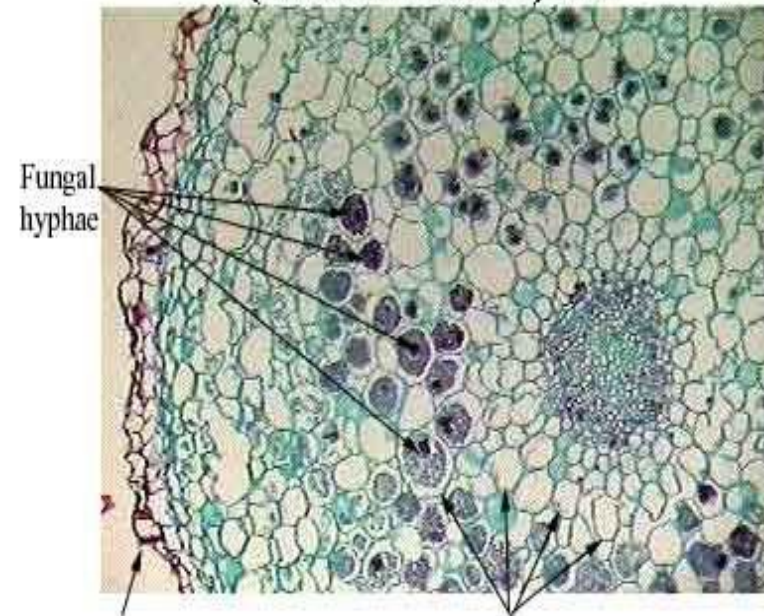
- **Mycorrhizas**
- mutualistic relationships between soil and fungi



Endomycorrhiza

Mutualistic relationship between plant root and fungus

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



Cross section of plant root

Plant cell walls

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Fun with Fungi

- Farmers and

ZOMBIES

