Kingdom Fungi

**Mycology** - the study of fungi

### 4 Main Characteristics of Fungi

1) **fungi are eukaryotic**
   - they have a nuclei & mitochondria

2) **they are heterotrophs**
   - they depend on other organisms for food

3) **they are multicellular**

4) **they cannot move on their own**
4 Reasons Fungi Are Different From Plants

1) fungi lack chlorophyll

2) fungi are not photosynthetic
   • most are saprophytes
   • some are parasites

3) they *never* reproduce by seeds

4) most fungi have cell walls made of chitin…
   *Except molds*
   • Plant cell walls are made of what?  *cellulose*
   • molds have cell walls made of cellulose...like plants
Parts of fungi:

**Hyphae** - network of thin thread-like structures that form the “body” of a fungus

- hyphae contain cytoplasm
- hyphae grow and branch until they cover and digest the food source
Parts of fungi

**Mycelium** - a mass of hyphae

- The mycelium is usually hidden in the soil, in wood, or another food source

- A mycelium may fill a single ant, or cover many acres
What are we looking at when we see a fungus among us?

The part of the fungus that we see is only the “fruit” of the organism.

The ‘living’ body of the fungus is a mycelium.
4 Main Types of Fungi:

1. Sporangium Fungi/Mold

Sporangium fungi reproduces by spores in the sporangia

- Sporangia - structures found on the tips of hyphae that make spores

• EX: Bread Mold

• Bread mold produces spores in sporangia that stick up above the bread
**Rhizoids** - hyphae of bread mold that digest bread for ingestion
4 Types of Fungi

2. Club fungi - have a club-shaped part which produces the spores

• Example: Mushrooms

3. Sac Fungi - produce spores in sac-like structures

EX: yeasts, cup fungi, powdery mildews, & lichens

Lichens - a fungus and an organism with chlorophyll that live together
Lichen morphology

b. Mixture of crustose lichens

c. Fruticose lichen, *Cladonia*

d. Foliose lichen, *Xanthoparmelia*
4 Types of Fungi

4) Imperfect - sporangium/mold, sac, and club fungi that can only reproduce asexually

• cause most fungal diseases in humans

EX: ringworm, athletes foot, thrush
Fungi Reproduction:

• the structure of the fungi that you can see, is the part that carries out reproduction

• most fungi reproduce by using microscopic spores

• EX: Mushrooms & puffballs release large clouds of spores. Each cloud contains millions of spores
Fungi Reproduction of 4 types of fungi:

1) Mold - reproduce asexually & sexually

2) Sac fungi - reproduce asexually & sexually
Fungi Reproduction of 4 types of fungi

3) Club fungi - reproduce asexually & sexually

4) Imperfect - can only reproduce asexually
How Do Fungi Get Around Not Being Tall Enough?

Fungi have a major problem:

Many fungi do not grow tall enough to clear the "boundary layer" of still air next to the ground so they…

1) Shoot their spores

2) Use animals or water dispersal

Once spores are caught by something they can be carried long distances
Fungi Reproduction Cont’d:

• Fungi can also reproduce from pieces of hyphae.

• Wind and water can carry pieces of hyphae to new places.

• If enough moisture and food is present, the spores/hyphae can grow into new fungi.