

## Unit 8: Biodiversity

### Content Outline: Kingdom Fungi (8.5)

- I. About 500 MYA, Fungi (Mycota) began to colonize the land to break down the abundant dead plant material that exists.
  - A. This Kingdom is composed mainly of *soil dwelling decomposers* mostly.
  - B. The Kingdom evolved from unicellular flagellated protists.
  - C. Fungi only resemble plants; but are more closely related to animals.
    1. Fungi are Heterotroph by *absorption* using exoenzymes. (Animals are heterotroph by *ingestion*.)
    2. Fungi cell walls composed of **Chitin**. (Same substance found in the exoskeleton of Arthropods.)
      - a. Remember, Plant cell walls are composed of Cellulose.
  - D. Most Fungi have symbiotic relationship with plants roots. (Referred to as **mycorrhizae**.)
    1. The Fungi help to increase the surface area for water uptake by the roots. The plant provides sugars for food.
    2. **Endomycorrhiza** (The fungus enters into the root cells of the plant.)
    3. **Ectomycorrhizae** (The fungus covers over the surface of the root of the plant.)
- II. Fungi Body Structure
  - A. **Hyphae** (These are tubular filaments.)
    1. Hyphae are intertwined to form a **Mycelium**. (means "Fungus body")
      - a. The mycelium extends above and below ground.
    2. Fungi can grow extremely fast. (This reduces competition.) (They just need moisture (rain) to grow.)
- III. Classification of Fungi
  - A. Most fungus are *classified according to the sexual reproductive structure* they produce.
  - B. Six Major Phylum exists
    1. Chytridomycota (The sexual structure is the Chytrids.)
      - a. Produce **flagellated spores called zoospores**. (Similar to sperm of the animal kingdom.)
    2. Zygomycota (The sexual structure is the Zygosporangium.)
      - a. Examples - Mycorrhizae, *Rhizopus stolonifer* (black bread mold), *Penicillium* (green bread mold)
    3. Glomeromycetes
      - a. Most are endomycorrhizae called **arbuscular**. (A **tree shaped** connection with plant cells.)
    4. Ascomycota (The sexual structure is the ascus - means "sac".)
      - a. Ascus are found on the large **ascocarp** mycelium.
      - b. Spores are small and dust like structures called **Conidia**.
      - c. Examples - Lichens, plant pathogens, mycorrhizae, yeast
    5. Basidiomycota (The sexual structure is the Basidium - means "club".)
      - a. Basidium found on the large **Basidiocarp** mycelium.
      - b. These fungi are important decomposers. (They can break down lignin of plant cell walls.)
      - c. Examples - Mycorrhizae, food mushrooms, Fairy Rings, Death Cap, Toad Stool, Puff balls
    6. Deuteromycota (These are the Imperfect Fungi - No known means of sexual reproduction; thus imperfect.)
      - a. Humans use Yeast for bread and alcohol production.
      - b. *Candidia albicans* – this fungus causes a yeast infection of the vagina. (**Mycosis** – means "a fungal infection") (A Fungicide is prescribed for treatment.)
- IV. Ecological Impact of Fungus
  - A. They are important *decomposers*. (A.K.A. Saprobies) They recycle vital nutrients back to the environment.
  - B. Some fungus plant pathogens – wheat rust, corn smut, Dutch Elm Disease, Chestnut Blight.
  - C. Some fungus human pathogens – ring worm, athletes foot, jock itch, yeast infections, dandruff.
  - D. Some fungus are used as medicines and food.