

GENERAL BIOLOGY Lecture 21 - Fungi and Plants

- I. Kingdom Fungi (also Kingdom Mycota)
  - A. Important in decay, disease, and symbiotic relationships
  - B. Economic importance as a source of antibiotics, food, and fermentation
    - 1. Aspergillus makes citric acid (soft drinks & soy sauce)
    - 2. Penicillium makes aromas for distinctive cheeses and makes the antibiotic, penicillin
    - 3. Mushrooms are good to eat
  - C. What are they? HETEROTROPHIC
    - 1. Saprophytes - nutrition from dead organic matter
    - 2. Parasites - nutrition from living sources
    - 3. Symbiotic relationships - mycorrhizae improve availability of plant nutrients
    - 4. Lichens - work with bacteria or algae to break down rock
  - D. Usually filamentous (has filaments)
    - 1. Filaments called hyphae - collectively called mycelium
  - E. Cell walls composed of chitin (special CHO with nitrogen)
  - F. No motile cells
  - G. Asexual reproduction by spores
    - 1. Spore formation - gives rise to new hyphae of the mycelium
    - 2. Binary fission
    - 3. Growth of hyphal fragments
  - H. Sexual reproduction
    - 1. Dikaryotic stage which intervenes between cytoplasmic fusion and fusion of gametes
- II. Kingdom Plantae
  - A. Essential for life (food chain) - oxygen, food, shelter, medicine, beauty, etc.
  - B. What are they? MOSTLY PHOTOSYNTHETIC AUTOTROPHS
  - C. Evolutionary trends of terrestrial plants - evolved from green algae
    - 1. Cellular and metabolic adaptations to dry periods
    - 2. Development of vascular tissues (xylem & phloem)
    - 3. Development of "motile" sperm
      - a) Spores are reproductive units
        - 1) Megaspores (female)
        - 2) Microspores (male)
    - 4. Transition from unprotected zygotes to formation of seeds
  - D. Typical life cycle for a vascular plant
    - 1. Flowering plant - male & female parts on same plant (monoecious) - different plants (dioecious)
    - 2. Meiosis to produce gametophytes (megaspores and microspores)
    - 3. Mitosis to produce gametes (sperm and egg)
    - 4. Pollination (pollen goes from male to female)
    - 5. Double fertilization
    - 6. Seed development
    - 7. A new seed - germination - to a new plant