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