I. Classification
  - multilevel grouping of individuals
  A. Carolus Linnaeus (mid 1700s)
    1. early systems based on genera of Greeks and Romans
      a. Latin
      b. polynomial system
      c. genus followed by several descriptive names
    2. binomial system
      a. developed by Linnaeus
      b. genus followed by species
      c. scientific name
  B. Taxonomy
    1. branch of biology
    2. Latin
  C. Categories of organization
    1. Kingdom
      2. Phylum
      3. Class
      4. Order
      5. Family
      6. Genus
      7. Species

II. Fungi
  A. Not plants
    1. heterotrophic
    2. filamentous bodies
    3. nonmotile sperm
    4. chitin
    5. nuclear mitosis
      - haploid nuclei
B. Structure
1. hyphae

2. septa
   - usually have holes
   - cytoplasmic flow “shared”
   - reproductive structures “isolated”

3. mycelium
   a. mass of hyphae
   b. usually underground
   c. all parts able to digest and absorb

C. Reproduction
1. sexual or asexual
2. spores

D. Food intake
1. external digestion
2. some are “worm hunters”

III. Types of Fungus
A. Zygomycota

B. Ascomycota
1. largest phyla
2. yeasts
3. morels
4. truffles
5. fungal pathogens (Dutch elm)

C. Basidiomycota
1. mushrooms
2. toadstools
3. puffballs
4. rusts and smuts

D. Yeasts
1. unicellular fungi
2. baker’s
3. brewer’s
4. Candida
E. Imperfect fungi
1. no sexual reproduction
2. penicillium
3. cheese flavors
4. athlete’s foot

IV. Symbiotic Fungal Relationships
A. Lichens (mutualism)
1. fungus
   - minerals and nutrients
2. photosynthesizer
   a. algae
   b. cyanobacteria
   c. energy and organic molecules
3. survive harsh environments
   - sensitive to airborne pollutants

B. Mycorrhizae
1. associate with plant roots
   - provides minerals from soil to root
   - plant provides organic compounds
2. endomycorrhizae
3. ectomycorrhizae