GENERAL BOTANY Lecture 29 - Higher Fungi

IV (Continued from last time) - Types of fungi
(Continued from last time) - Kingdom Fungi (Mycota): characteristics - Hyphae & mycelium

- **A. Phylum Zygomycota (the zygote sits around zzzzzzzzzzz!)**
  ---------- THE HIGHER FUNGI START HERE ----------
- **B. Phylum Ascomycota - it has to ASK for a partner)**
- **C. Phylum Basidiomycota "B" - Puffballs, Bracket fungi, mushrooms)**
  - Elaborate structures referred to as basidiocarps; distinguishing characteristic – the four nuclei (after meiosis) are carried on separate stalks called sterigmata; cell undergoing meiosis and producing spores are called basidium and the spores are called basidiospores
  - **1. (Class) Homobasidiomycetes - elaborate basidiocarps**
    - **a) Cell walls contain chitin, hyphae are septate, sexual reproduction is highly developed (asexual also occurs)**
    - **b) Sexual reproduction - conjugation (fusion) of hyphae produces a dikaryon (N + N) [the dikaryon can last up to centuries]**
      - **1) Homothallic - conjugation with self or others**
      - **2) Heterothallic - conjugation only with others**
      - **3) N + N mycellium divides and maintains N + N condition**
      - **4) N + N phase gives rise to spore bearing body called basidiocarp (the mushroom, puff ball, etc.)**
      - **5) Stalk = stipe, cap (umbrella) = pileus, underside contents = hyphae with large number of basidia , gills = fleshy-looking plates radiated out from the stalk**
      - **6) In basidia, nuclei fuse and immediately undergo meiosis to make haploid cells**
        - **a)) Sterigmata form at the tip of basidium and haploid nuclei escape to make spores (up to a million a minute for several days!)**
      - **7) Order Agaricales: some are poisonous, some aren't**
      - **8) Variations include gills, pores, and brackets (conk)**
  - **2. (Class) Heterobasidiomycetes - basidiocarps not very elaborate**
    - **a) Heteroecious - have more than one host (i.e., rust requires barberry & wheat)**
      - **1) Mycellium develops in tissue of host to make pustules called spermagonia - these get cut off to make spermata**
      - **2) Spermatia go by wind to receptive hyphae - an N + N mycelium results (note genetic diversity)**
      - **3) Mycelium forms pustules called aecia which form N + N aeciospores**
      - **4) Aeciospores escape and invade wheat (through stomata)**
      - **5) In wheat, N + N uredospores form in uredia (and invade wheat)**
      - **6) During winter, teliospores are produced by mycelium**
      - **7) Fusion occurs in teliospores during winter and meiosis leads to new haploid cells that put out a short hypha in the spring**
    - **b) Autoecious - have only one host**
      - **1) Haploid stuff, conjugation, N + N mycelium, N + N spores formed, over winter nuclei fuse, spring meiosis, haploid basidiospores**
    - **c) Examples: rust and smut**
- **D. Phylum Deuteromycota - Fungi Imperfecti - "Retarded dude"**
  - **1. No known reproductive cycle - can not be considered ascomycetes or basidiomycetes**
  - **2. Examples include <u>Penicillium</u> and <u>Aspergillus</u>**

V. Lichens - algae and fungi

- **A. Symbiotic - algae provides food; fungus provides moisture, shelter, & minerals**