

Topics covered for Exam 1 in BOT 4723/5723 – Fall 2007
Exam date: 9/26/07; final version of review sheet posted 9/20/07

Lecture 1 (8/20)

- Went over syllabus

Lecture 2 (8/22)

- How fungi fit into current 5-kingdom and 3-domain classification system
- Features that characterize the fungi
- How to set up a moist chamber to encourage the growth of fungi

Lecture 3 (8/27)

- Features of fungal hyphae
- Features of the main groups of fungi and fungus-like organisms (begin)
- Use of sterile technique to transfer fungi from moist chambers to agar plates

Lecture 4 (8/29)

- Features of the main groups of fungi and fungus-like organisms (finish)
- How to mount fungi for viewing with the compound microscope

Lecture 5 (9/5)

- Differences between (and strengths and weaknesses of) the four types of “species concepts”
- Nutrients that fungi must acquire from artificial media

Lectures 6 & 7 (9/10 and 9/17)

- Growth of a fungal colony
 - Differences in cell structure between the oldest and youngest parts of the colony
 - Events during each stage of colony growth: spore dormancy, spore germination, assimilative growth, sporulation.
 - How do these stages relate to what you observed when you compared colonies grown on CMA and PDA?
 - How do these stages relate to the “optimal” places to sample a colony for spores or healthy hyphae?
 - External factors affecting the growth of a fungal colony
- Side topic from 9/17: How experiments revealed that cytoplasm moves by mass flow rather than molecular motors [not in your book]
- Fungal metabolism
 - Difference between primary metabolism and secondary metabolism
 - The production of digestive enzymes is essential for ALL metabolism
 - Examples of important digestive enzymes
 - Difference between brown rot and white rot fungi
 - Primary metabolism
 - Synthesis of essential organic molecules
 - Aerobic respiration

- Role of glycolysis in producing 2 pyruvate, 2 ATP, and 2 NADH molecules
- Role of Krebs cycle and electron transport in oxidizing pyruvate to CO₂ and generating additional ATP
- Fermentation
 - glycolysis is sole source of ATP; NADH is used to reduce pyruvate, so that NAD⁺ is regenerated and glycolysis can continue
 - ethanol and CO₂ are examples of economically important products of fermentation

Lecture 8 (9/19): Focus on Scientific Literature #1

- Functions of the introduction and abstract
- How did this study relate to what you know about the diversity of carbon sources that fungi can metabolize? Be able to describe in general how to test the hypothesis that different fungi grow optimally on different C sources.