Objectives:
1) Recognize that fungi are eukaryotic chemoheterotrophs that reproduce with spores and have chitinous cell walls.
2) Understand the role of fungi as decomposers
3) Learn how plants obtain nutrients
4) Compare the alternation of generation of fungi with plants
5) Recognize the strong interactions between plants and fungi as mutualists and pathogens

Characteristics of Fungi
Eukaryotic
   They have organelles (mitochondria, ER), chromosomes, mitosis/meiosis
Multicellular

The fungal vegetative body is made up of elongate tubular cells, with some simple branching.
The twist: Sometimes there are no septae between “cells.”

Cell walls
   Made of chiton, a nitrogen containing polysaccharide
   Provide structural support, protection, and control of osmotic forces

Produces Spores
   Spore: A meiotically produced haploid cell that divides mitotically, generating a multicellular haploid individual.
   Spore: A single celled reproductive/dispersal unit that can withstand environmental stresses.

Graham fig 9.23 or fig 20.6
Nutrition
Most fungi feed on decomposing organic matter. Hyphae are well adapted at growing in and penetrating chunks of organic matter. Hyphae secrete enzymes that break down macromolecules (good at breaking down polysaccharides). Hyphal cells can absorb and transport the smaller soluble molecules. Stored carbohydrates are in the form of glycogen.

Life Cycles

Zygomycota
Cam 20.7

Ascomycota
Cam 20.10

Basidiomycota
Cam 20.14

Which phase is the “Adult” phase?
The haploid stage is multicellular and emergent. What other organisms have this trait?
Why is the haploid stage dominant?
The diploid stage is short-lived, so why bother with it?
What are the implications if there are species that don’t sexually reproduce?
Symbiosis
Mutualistisms
Mycorrhizal associations

Lichens
Lichens are an association between a fungi and a cyanobacteria or algae

Note and Questions:
Many species of fungi produce and excrete antibiotics, such as penicillin. What are the values of these antibiotics to fungi? Fungi often produce unpleasant byproducts or secondary metabolites when digesting their “food.” What benefits does this garner the fungi?