Biol 1409: Study Guide for Exam II (Spring, 2004)

History of Life

After completing this section your should be able to:

1. Distinguish between anaerobic and aerobic respiration; which is the more efficient method of energy production
2. Describe in as much detail as possible the characteristics of the first living cell
3. Explain why the evolution of photosynthesis changed the world forever
4. Describe the general sequence of major events in the history of life on earth
5. Explain why most of the history of the earth is considered “the age of bacteria”
6. Describe and provide some evidence for the current theories about how eucaryotes originated
7. Describe the ways in which eucaryotic life differs from procaryotic life

Be able to define or describe the following terms:

natural selection  procaryotes  heterotrophs  anaerobic  archaeabacteria
fermentation  organic molecules  autotrophs  ozone  mitochondria
photosynthesis  oxygen gas  aerobic respiration  chloroplast  eucaryotes
endosymbiont  multicellularity

Bacterial Kingdoms

After completing this section your should be able to:

1. Explain what we mean when we say that bacteria show great physiological diversity; what exactly does that mean
2. Explain what microbial communities are and what advantage these groupings have to the organisms involved
3. Describe the appearance and functions of the major distinctive structures found on and in typical bacterial cells
4. Explain why bacteria are so diverse and successful in the world today (be specific)
5. Name, describe, and give some examples of the two different kingdoms of bacteria
6. Explain why procaryotic organisms that look so similar are placed in two completely separate kingdoms
7. Discuss some of the major impacts that bacteria have had on the world
8. Describe some specific examples of bacterial symbioses

Be able to define or describe the following terms:

motility  taxes  fix nitrogen  root nodules
anaerobes  aerobes  selective media  enrichment media
differential media  binary fission  generation time  conjugation
pathogens  nannobacteria  hydrothermal vents  hydrogen sulfide
methane

Viruses

After completing this section your should be able to:

1. Explain why viruses are not living organisms (be specific)
2. Describe the basic structure of viruses
3. Give some examples of diseases caused by viruses

Be able to define or describe the following terms:

parasites  infectious  chronic infections  herpes  cold sores
host  HIV/AIDS  T-cells  warts
Protists & Eucaryotes

After completing this section your should be able to:

1. Distinguish between procaryotic and eucaryotic cells
2. Why are eucaryotic cells more “efficient” than procaryotic cells
3. Where do you find protists; ie. in what habitats are each of the three kinds of protists found?
4. Describe some kinds of sexual and some kinds of asexual reproduction used by protists
5. Describe some of the different ways that protists get food
6. Name, describe and distinguish between the three major groups of protists
7. Distinguish between: fire algae, diatoms and euglenas and give examples of how each group directly affects human activities
8. distinguish between red and brown seaweeds and give examples of how each group directly affects human activities
9. Name two kinds of protists that have a silica “shell” or cell wall
10. Why are the parts of a seaweed not considered true organs like the roots, stems and leaves of plants
11. How are protozoa classified
12. Describe six different diseases caused by protozoa
13. Describe the role of vectors in the life cycle of protozoan parasites and in the transmission of disease
14. How are slime molds like protozoa; how are they like fungi

Be able to define or describe the following terms:

- compartmen talization
- nucleus
- organelles
- endosymbiont theory
- chloroplasts
- mitochondria
- unicellular
- colonial
- multicellular
- plankton
- feeding stage
- resistant stage
- phytoplankton
- seaweeds
- symbioses
- agar
- red tides
- diatomaceous earth
- zooplankton
- saprobe
- cyst
- asymptomatic
- filamentous
- chlorophyll

Fungi

After completing this section your should be able to:

1. Distinguish between yeast, mold and fungi
2. How are fungal cells similar to algae, how do they differ
3. Both protozoa and fungi are heterotrophs; both can be saprobes, predators and parasites; what is the major difference in the way that they get their food
4. Distinguish between hyphae, mycelium and fruiting bodies
5. Describe the different kinds of fruiting bodies and spores produced for asexual reproduction and those produced for sexual reproduction
6. List the different ways in which fungi can disperse their spores and describe a specific example of each method.
7. List the major ways that fungi directly affect human activities and describe a specific example of each.
8. Describe an example of symbiosis between:
   a fungus and an alga or bluegreen bacterium
   a fungus and a plant
   a fungus and an animal

Be able to define or describe the following terms:

- multicellular
- yeasts
- absorptive heterotrophs
- enzymes
- chitin
- fruiting bodies
- mycotoxins
- lichens
- mycoses
- mycorrhizae