

204 Midterm #2 PRELIMINARY Study Guide

Life cycle fundamentals – Chap. 13 (pp. 234-239)

How do mitosis and meiosis differ in terms of the number and ploidy of the daughter cells in relation to the parental cell? Know the steps of the three basic life cycles and understand how the three types differ from one another, and which major groups of organisms have which types. Be able to look at a schematic of a life cycle and know which type it is, as well as which phases are haploid, diploid, important for dispersal, dominant, or subordinate. What is “alternation of generations” and what are the three variations on that type of life cycle?

Protista Diversity and Evolution – Chap. 28

Define the characteristics of the kingdom protista as discussed in the Powerpoint presentation. Where did the first eukaryotes come from? Explain the hypotheses and the evidence. List the types of organisms included in this kingdom. How do the protists vary in terms of body size, morphology, motility, and energy sources? Be able to recognize the group (protozoa, algae, fungus-like protist) from a description of an organism in it. Are these natural groups? What features are used to differentiate between phyla in the algae? In the protozoa? Describe how a ciliate feeds and behaves. Have a general idea of who is most related to whom (fig. 28.8), but you don’t need the whole figure memorized. What are some of the key ecological roles of the protists and what are examples of each? What are the main parts of a macroalgae (sea weeds) and what are the functions of these parts? What are the advantages of being multicellular colonial (all cells the same)? What are the advantages of being multicellular complex bodied (differentiated tissues)?

Plants – Chaps. 29 and 30

What are some of the key plant functions and what structures are responsible for those functions? In what ways do land plants differ from algae (e.g., Chlorophyta) in those structures? What are the Charophyceans and how are they related to the green algae and the plants? What are some of the defining characteristics of land plants and which ones are shared with other algae vs. being representative of the land plants only? What is an embryophyte?

What are some of the problems associated with living on land (i.e., in air), and how are these solved along the major steps of plant evolution?

What are the 3 phyla of Bryophytes and what are some of their general characteristics? What are at least three important ecological roles of bryophytes? Be familiar enough with the structure and general life cycle of the bryophytes that you would be able to answer fundamental questions about them.

What are the two current phyla of seedless vascular plants (SVP’s) and some representatives of each? What’s new evolutionarily with the seedless vascular plants? What are microphylls and megaphylls and how do they differ? What’s the difference between a true root and a rhizoid in both structure and function? What is heterospory, how does it work and who has it (in both SVP’s and seed plants)? What problems of living on land have the SVP’s solved and which have they not solved?

What is new with the seed plants? What is a seed? What is pollen? What is an ovule? How do these structures relate to the general plant life cycle? What are the 4 phyla of gymnosperms? How do these compare in terms of species diversity and overall abundance? Be familiar enough with the conifer life cycle that you can answer fundamental questions about it and know how it relates to the life cycles of SVP’s and bryophytes. What problems of living on land have the gymnosperms solved and how?

What are the two largest groups within the Angiosperms? What are the parts of the flower and how do they relate to functionally similar structures in the other plant groups that we’ve studied? What is a fruit, where does it come from developmentally, and why is it an improvement in it’s main function compared to what happens in the gymnosperms? What is coevolution and how has this been important for the angiosperms? What’s new with the angiosperm life cycle? Be familiar enough with the angiosperm life cycle that you can answer fundamental questions about it and know how it relates to the life cycles of the other plant groups that we’ve studied. In what ways are angiosperms important ecologically and for humans directly?

Fungal Kingdom – Chap. 31

Define the kingdom. Distinguish the following terms: spore, sporangium, hypha, mycelium. Describe how fungal hyphae gain nutrition and grow. From what protistan group did fungi evolve? When? Where (water, air, land)? Know the features of the following fungal phyla (including the name of the diagnostic cell of each): Chytridiomycota, Zygomycota, Ascomycota, Basidiomycota. You do not need to know the details of their life cycles. However, for the phylum Basidiomycota, you should understand what a dikaryon is and the significance to this phylum having a long-lived dikaryotic mycelium. For each of the three terrestrial phyla, you should know the main economic importances, if any. Be able to identify from a complete description, a fungus in any of the phyla of the fungus kingdom and identify the phylum (scientific name). Describe the general ecological roles of fungi. Why are fungi good at relating with plants? Describe what is meant by the following fungus “life styles”: yeasts, molds, mycorrhizas, lichens. Give economic or ecological examples of each. Why is the Deuteromycota not a true phylum? For symbiotic relationships (both mutualistic and parasitic) that fungi have with other organisms, what is the advantage to the fungus and what is the advantage or disadvantage to the associated organism? Why do lichens make good air quality monitors?

Animals – Chaps. 32-34, and associated readings

This will be posted soon.