## EEB 3240 Study guide for the final exam.

Two hypotheses continue to be discussed in terms of phylogenetic relationships of bryophytes to other land plants.

How do these differ in terms of their topology?

How do they differ in terms of the significance of bryophytes in the colonization of land? How do they differ in terms of the significance of bryophytes in the evolution of vascular plants?

Given that all land plants share the same fundamental life cycle, and that bryophytes and vascular plants differ in terms of their dominant generation, how do you explain the similarities (structural and functional) of the vegetative body of bryophytes and vascular plants. How can they be so different and yet so similar? (think of What is meant by fundamental genetic tool box?).

In the context of land plant evolution, discuss the concept of descent by modification by focusing on the evolutionary role of bryophytes.

What does this figure reveal in terms of genome or gene space evolution during the evolution of land plants?



What would be expected in the Sequential Replacement hypothesis regarding the diversification of bryophytes?

Briefly state the significance of whole genome duplication in the diversification/evolution of bryophytes?

Briefly state the significance of hybridization in the diversification/evolution of bryophytes?

Briefly discuss what is meant by bryophytes diversified in the shadow of angiosperms (how are the two evolutionary histories connected?).

How do terricolous bryophytes acquired nutrients? (there are two mechanisms or processes; picture a liverwort growing on soil...).

Describe the two mutualistic relationships that (and which) bryophytes may be involved in in terms of nutrient acquisition.

What are mycorrhizal associations? What lineages on both sides of the interaction are involved?

How may epiphytic bacteria affect bryophyte growth?

Explain the importance of external capillary water to the physiology of bryophytes and describe how they can accumulate a pool of external water.

Briefly state what this figure shows.

What is external capillary water and what is it function? Where is it on the previous figure? This figure may help:



Given three ways innovations that allow bryophytes to hold external capillary water.

What is meant by desiccation tolerance?

What do the figures to right reveal about variation in desiccation tolerance in mosses?



What is the range of pH of peatlands?

What ecological parameters are determinant in differentiating types of wetlands?

How does Sphagnum acidify peatlands?

What is peat? Make an argument why it should be included in a discussion on global climate change?

The soil or upper peat layers are anaerobic environments. How are anaerobic conditions created?