UNIT II – LIVERWORTS
(Hepatophyte = Marchantiophyta)

Reading

Nov. 14: pages 351 – 356 (section on liverworts)
Understand Fig. 16-15: life cycle of complex thalloid, be able to apply this to a leafy liverwort (*Porella*)

Preparation for Nov. 14 lecture: Draw the life cycle of a liverwort using the following terms (not all terms need apply): antheridia, archegonia, calyptra, egg, embryo, foot, gametophyte, meiosis, seta, sperm, sporangium, spore, sporophyte, zoospores, zygote

Outline

A. Introduction
B. Life Cycle
C. Gametophyte
D. Sporophyte
E. Troubles with Trees

Learning Objectives

By the end of this unit you should be able to:

1. Compare and contrast the gametophyte anatomy and structure of leafy liverworts and complex thalloid liverworts.
2. Explain the form and (potential) functions of complex old bodies.
3. Explain the functions of the two types of rhizoids in *Marchantia*.
4. Draw a cross-section of the thallus of *Marchantia*. Label with the following terms: chlorophyllose layer, complex oil body, scale, pegged rhizoid, smooth rhizoid, pore, air chamber.
5. Explain why *Marchantia* is considered a weed?
6. Compare and contrast the sporophytes of leafy and thalloid liverworts.
7. Explain the features that the leafy and thalloid liverworts share that support their classification into a single phylum.
8. Explain (or illustrate) the life cycles of *Marchantia* and *Porella*. Compare and contrast their modes of sperm and spore dispersal.
9. Explain problems encountered when trying to determine evolutionary relationships based solely on morphology. Explain how understanding ecology can sometimes give you a clue.
10. Draw a phylogenetic tree using the following taxa: Charales, hornworts, leafy liverworts, liverworts, mosses, thalloid liverworts, tracheophytes
Base the topology (arrangement of branches) on the relationships presented in Biology 209. Labe the tree with the following characters: antheridia, archegonia, branched sporophyte, complex oil bodies, elaters, embryo, embryo, leaves, roots, spores with sporopollenin walls, stem, stomata, xylem
11. Identify the characteristics unique to liverworts (you may have to wait until you study the other bryophytes to answer this question completely).