

Introduction to Botany: BIOL 154

Lab 10. Life cycles

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READ Textbook: chapter 21.8, figure 21.16. Atlas Rushforth et al. (5th edition): figures 4.15–4.18. Atlas Graaf et al. (4th edition): figures 4.15–4.18. Atlas Graaf et al. (3rd edition): figures 4.9–4.12.

1. *Ulothrix* sp.— a filamentous green alga (phylum Chlorophyta, class Ulvophyceae) with zygotic cycle and vegetative reproduction. Procedure: prepared slide.

- (a) Draw mature algal filament (that is not involved in spore production).

Label: chloroplast, cell

- (b) Draw filament with a gametangium/sporangium.

Label: sporangium/gametangium, spore/isogamete.

READ Textbook: chapter 22.1, 22.5, figures 22.3, 22.4, 22.15–22.17. Atlas Rushforth et al. (5th edition): figures 6.28, 6.35–6.41. Atlas Graaf et al. (4th edition): figures 6.29, 6.36–6.41. Atlas Graaf et al. (3rd edition): figures 6.23, 6.28–6.33.

2. *Mnium* sp.—a moss (phylum Bryophyta, class Bryopsida) with tissues, multicellular sporangia and gametangia and sporic life cycle with *predominance of gametophyte*. Procedure: **three** prepared slides (one for anteridia, one for archegonia and for one young sporangium (sporophyte)).

- (a) Draw a young moss sporangium (capsule) which is actually a reduced sporophyte.

Label: seta, columella, spores, operculum.

- (b) Draw a female archegonial head.

Label: archegonium, egg, venter, neck, neck canal, paraphyses

- (c) Draw a male antheridial head.

Label: antheridium, spermatogenous tissue, paraphyses

READ Textbook: chapter 24.7, figures 24.19–24.22. Atlas Rushforth et al. (5th edition): figures 8.38, 8.55–8.63. Atlas Graaf et al. (4th edition): figures 8.32, 8.46–8.52. Atlas Graaf et al. (3rd edition): figures 8.27, 8.45–8.47.

3. *Pinus* sp.— pine tree (phylum Spermatophyta, class Pinopsida) with sporic life cycle with *sporophyte predominance* and *seed*. Procedure: **two** prepared slides (one for ovulate (female) cone, one for pollen (male) cone).

- (a) Draw an overview of young female cone axis with three scales.

Label: cone axis, bract, scale, ovule, integument, megaspore mother cell (megasporocyte), micropyle.

- (b) Draw an overview of pollen cone axis with three microsporangia.

Label: strobilus axis, pollen grain, microsporangium, microsporophyll.

- (c) Draw a pollen grain in **detail**.

Label: wing, vegetative (tube) cell, vegetative cell nucleus, generative cell, generative cell nuclei(us).