

Lab Exam 1 Study Guide

- Know what a zygotic, gametic and sporic life cycle are and the difference between meiosis and mitosis and where they occur (see handout from the first lab)
- Know how to ID parenchyma cells, and state their primary functions
- Know how to ID and recognize collenchyma, sclerenchyma (sclerids and fibers), phloem, xylem, epidermal cells and their main functions.
- Within Phloem know the sieve tube members and the companion cells
- Within Xylem, know the vessel elements and the tracheids
- Know what the pith and cortex are, and vascular bundles
- Recognize cytoplasmic streaming
- Recognize a chromoplast, and know what its function is
- Recognize other *plastids* such as amyloplasts and chloroplasts
- What are plastids?
- Be able to recognize starch grains (amyloplasts)
- What are crystals? How might they be recognized? We had most success with Raphides (the 'shards of glass')
- Recognize and state the function of some major plant cell organelles such as chloroplasts, the central vacuole, the cell wall, mitochondria, and the cytoskeleton
- Be able to recognize a cyanobacteria and a heterocyst and state its function (we focused on identifying heterocysts, but know the function of an akinete too)
- What are some major characteristics of cyanobacteria?
- Know what a spectrophotometer does, what an absorption spectrum is, and how to read one
- Know what paper chromatography shows, and be able to recognize some major pigments
- Know why O₂ production is a measure of photosynthesis
- What is the *likely* relationship between light output and O₂ production?
- What can happen in the presence of heat? What is the big enzyme called that is affected and is responsible (ultimately) for sugar production in the Calvin cycle?
- Know how to recognize plasmodesmata, and what their function is
- For the following protists know the clade and phylum, major characteristics including photosynthetic pigments, cell wall components, living arrangements (single, chain, colony, multicellular etc), reproductive strategies. Also, be able to state whether they have likely gone through primary, secondary or tertiary endosymbiosis, and what evidence we have for that.
 - Euglena (Euglenophyta)
 - Dinoflagellates (Dinophyta)
 - Diatoms (Bacillariophyta)
 - Golden-browns (Chrysophyta) (we didn't do much with these – so just know some of the major characteristics – like the photosynthetic pigments)
 - Three divisions (phyla) of algae (Phaeophyta, Rhodophyta, Chlorophyta) (including body (thallus) part identification: holdfast, stipe, blade, pneumatocyst)
- Life cycles and stages in polysiphonia
- For the Volvox (chlorophyta), be able to identify the asexual reproductive structures (daughter colonies)
- For spirogyra, be able to identify it, and state some key characteristics of its life cycle that we saw (eg. conjugation in spirogyra)
- For chlamydomonas be able to recognize it as a single celled alga