

Bio 1C Lab: Photosynthetic Protists

Laboratory Atlas Chapters 1 and 3

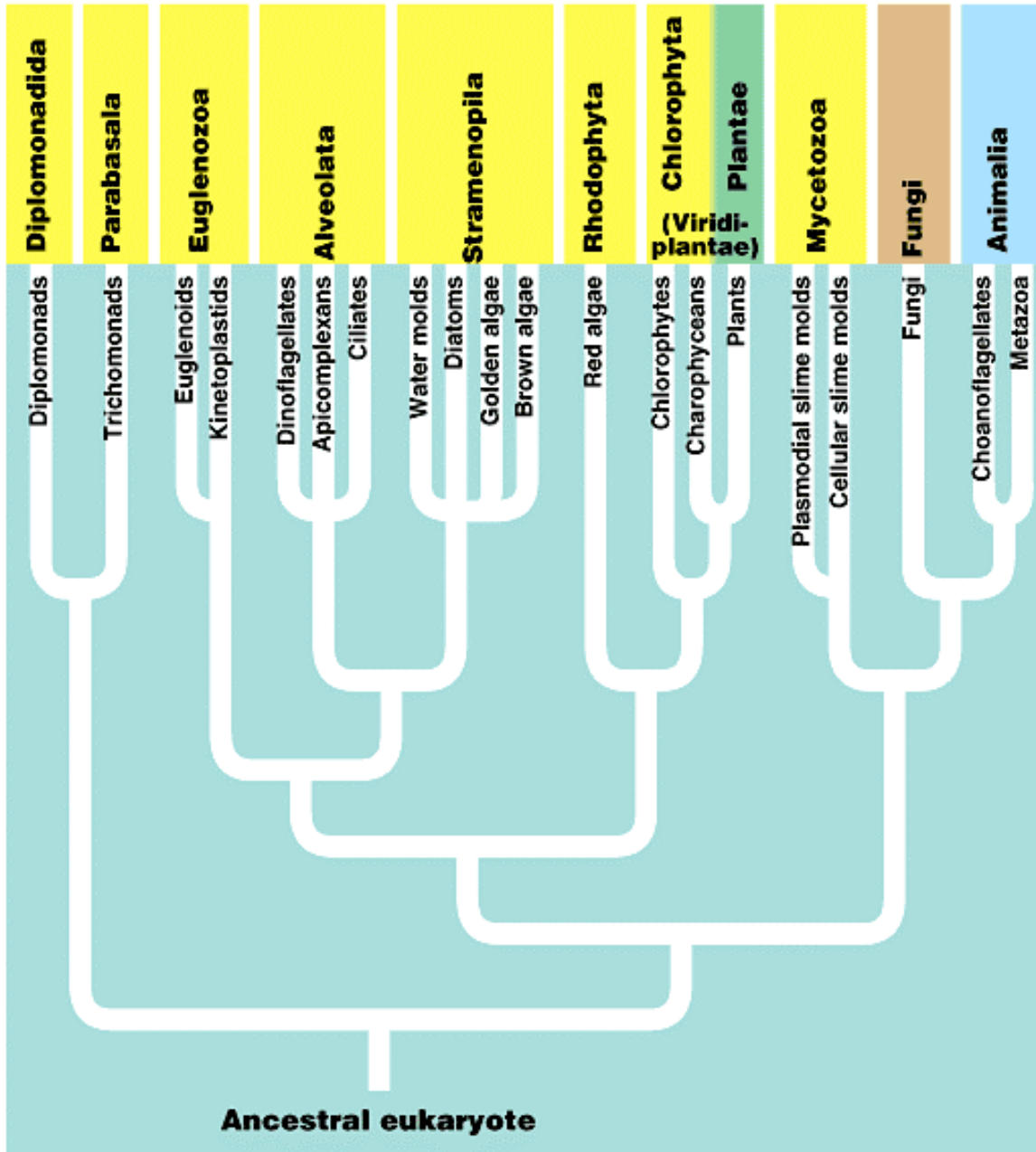
On an exam you will be asked questions such as what is this (structure or organism), and questions such as what does it do or what are some distinguishing characteristics, what is the evolutionary significance (eg. Endosymbiosis) and/or how is it classified.

Draw these, label drawings clearly, put a scale to them. Use the books to ID and define the terms and structures if you need to.

Important concepts and terms to know: **Plant Like Protists I:** Euglenophyta (phototaxis), Chrysophyta, Bacillariophyta, Dinophyta

5. For each of the above, know and see the following:
 - Classification (clade and phylum) and relationships to one another
 - Major characteristics, especially those that are unique to that group (pigments, cell walls etc.) – see handout
 - Nutritional mode
 - Movement?
 - Ecological importance
 - Diversity in form (*see it*). What is the significance of the diversity?

PART II: OBSERVATIONS OF ALGAL (PHOTOSYNTHETIC) PROTISTS



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PROCEDURE Photosynthetic PROTISTS: Draw, label, size and know major characteristics. Make a table? Use both fresh seawater AND the prepared slides so you can compare and get a good look at the structures.

Clade **Euglenozoa**: euglenoids. One celled algal Protists in the clade **Euglenozoa** with chlorophylls a and b and an array of carotenoids producing a grass green color. They are all motile by means of a single terminal flagellum and lack cell walls in their motile phase. Note the 'eye spot', and that it helps them be positively **phototaxic**. Why would they want that?

Clade **Straminopila** (hairy flagellum)

- "The Golden Algae" – **chrysophyta**. Unicellular and colonial algal Protists with chlorophylls a and c and accessory carotenoids, predominantly fucoxanthin which gives them a characteristic golden color.
- Diatoms: **bacillariophyta**

Clade **Alveolata**

Dinophyta: primarily the dinoflagellates. Unicellular photosynthetic Protists with chlorophylls a and c. Most are biflagellated 'spinners'. Responsible for massive blooms associated with 'red tides'.

It does not matter what order you do these in:

1. Prepare a slide of the plankton tow provided. Be careful as this is seawater and can DESTROY our scopes! If you spill seawater or it gets on the lenses, please let me know. Take a few drops of the seawater sample and drop it on the slide. Use a cover slip, but be sure that no water is running out over the sides. Look at it first under low magnification to find some **phytoplankton**. There will be plenty of swimming and very exciting zooplankton to look at. Look at them since they really are quite amazing, but then focus your eyes on to the smaller phytoplankton, some of which will be moving too!
 - a. Look at diatoms and try to find some *pennate* (long pen shaped ones), which exhibit bilateral symmetry, and some *centric* ones which have radial symmetry.
 - b. Find some dinoflagellates. There may be some tiny circles that spin, and some that are larger and shaped like a top-hat.
2. Use the prepared slides to make sure you get a good look at the diatoms, dinoflagellates and the chrysophyta (golden algae)
3. Prepare a slide of the Euglena. Find one (use glycerin to slow them down), and try and ID its major organelles. Use the diagram in your lab book to help.