

algae to angiosperms, and the two generations every one of them alternates between

Algae and Bryophytes

- Plantae splits on seeds, vascular tissue, and how differentiated the body is
- **Phanerogamae**: seed producers, reproductive structures visible (phaneros: visible)
- **Cryptogamae**: spore producers, no seeds or flowers, sex organs concealed
- kryptos: hidden, gamos: marriage, which is what the name records
- Cryptogamae splits again: Thallophyta and Bryophyta non-vascular, Pteridophyta vascular

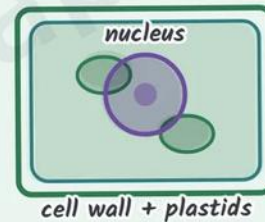
Kingdom Plantae



the first split: spore producers against seed producers

Algae, general features

- mostly aquatic; body is **thalloid**: no true root, stem or leaves
- microscopic unicellular (Chlorella non-motile, Chlamydomonas motile)
- filamentous (Spirogyra unbranched, Chara branched) to a 60 m seaweed (Sargassum)
- wall of cellulose, or protein, or both; food reserve is starch or a related form
- vegetative, asexual and sexual reproduction; in most algae the haploid phase dominates
- classified by pigment: chlorophyll, xanthophylls, phycobilins
- sexual pattern ranges isogamous to anisogamous to oogamous



a walled algal cell with plastids inside and the nucleus at the centre

Three algal classes *

Chlorophyceae, green

chlorophyll a, b; cellulose wall; true starch; mostly fresh water. Chlamydomonas, Spirogyra, Chara, Volvox, Ulothrix

Phaeophyceae, brown

chlorophyll a, c, fucoxanthin; wall of cellulose, fucans, algin; mannitol, laminarin, starch; mostly marine. Laminaria, Sargassum, Fucus, Ectocarpus

Rhodophyceae, red

chlorophyll a, d, phycoerythrin; cellulose and pectin wall; floridean starch; marine, including deep sea. Polysiphonia, Gracilaria, Gelidium, Porphyra

brown algae body: holdfast, stipe, frond; red algae give commercial agar-agar