

Classification systems

- Artificial system of classification
- Natural classification system
- Phylogenetic classification system
- Numerical taxonomy
- Cytotaxonomy
- chemotaxonomy

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graph TD; A[Algae] --> B[Chlorophyceae]; A --> C[Phaeophyceae]; A --> D[Rhodophyceae];
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Algae

Chlorophyceae

Phaeophyceae

Rhodophyceae

Algae

- Autotrophic, thalloid, aquatic organisms
- Unicellular, colonial, filamentous or massive plant bodies.
- Reproduce by vegetative, asexual or sexual methods.
- Asexual spores are zoospores.
- Sexual reproduction is isogamous, anisogamous or oogamous.
- Absence of vascular tissue, mechanical tissue, embryo stage
- Presence of mucilaginous covering

Chlorophyceae

- Unicellular, colonial or filamentous
- Major pigments are chlorophyll a and b, carotenoids.
- Storage bodies are called pyrenoids located in chloroplasts.
- 2-20 thylakoids
- Cell wall is made of an inner layer of cellulose and outer layer of pectose.
- Asexual reproduction is by zoospores, aplanospores.
- Sexual reproduction is isogamous, anisogamous or oogamous.

Phaeophyceae

- Filamentous or branched
- Possess chlorophyll a and c, carotenoids and xanthophyll, fucoxanthin.
- 3 thylakoid lamellae
- Fucosan vesicles are present
- Food is stored in the form of laminarin or mannitol.
- Have cellulosic cell wall usually covered on the outer side by a gelatinous coating called algin, fucin.
- Plant body has holdfast, stipe and frond.
- Asexual reproduction is through zoospores.
- Sexual reproduction may be isogamous, anisogamous or oogamous.

Rhodophyceae

- Contain chlorophyll a, d and phycoerythrin.
- Simple thallus or complex body organisation.
- Cell wall possesses cellulose, pectin and carrageenin
- Single thylakoids (unstacked)
- Food is stored in the form of floridean starch.
- Absence of motile stage in life cycle
- Asexual reproduction is by non-motile spores.
- Sexual reproduction is by non-motile gametes.

Economic importance

- Food – Sargassum, Laminaria
- Food supplements – Chlorella, Spirulina
- Primary producers
- Phycocolloids
- Sewage treatment

Bryophyte: amphibians of the plant kingdom

- Dependent on water for sexual reproduction
- Thallus like, prostrate or erect and attached to the substratum by unicellular or multicellular rhizoids
- Lack true roots, stem or leaves.
- Main plant body is haploid called gametophyte
- Antheridium and archegonium are reproductive organs.
- Show alternation of generation.

Economic importance

- Some provide food to birds, herbaceous animals
- Species of sphagnum provide peat which is partially carbonized vegetable matter, and used as fertilizer and fuel.
- Colonise rocks and cause weathering of rocks
- Make dense mats on the soil, hence reduce the impact of falling rain and prevent soil erosion

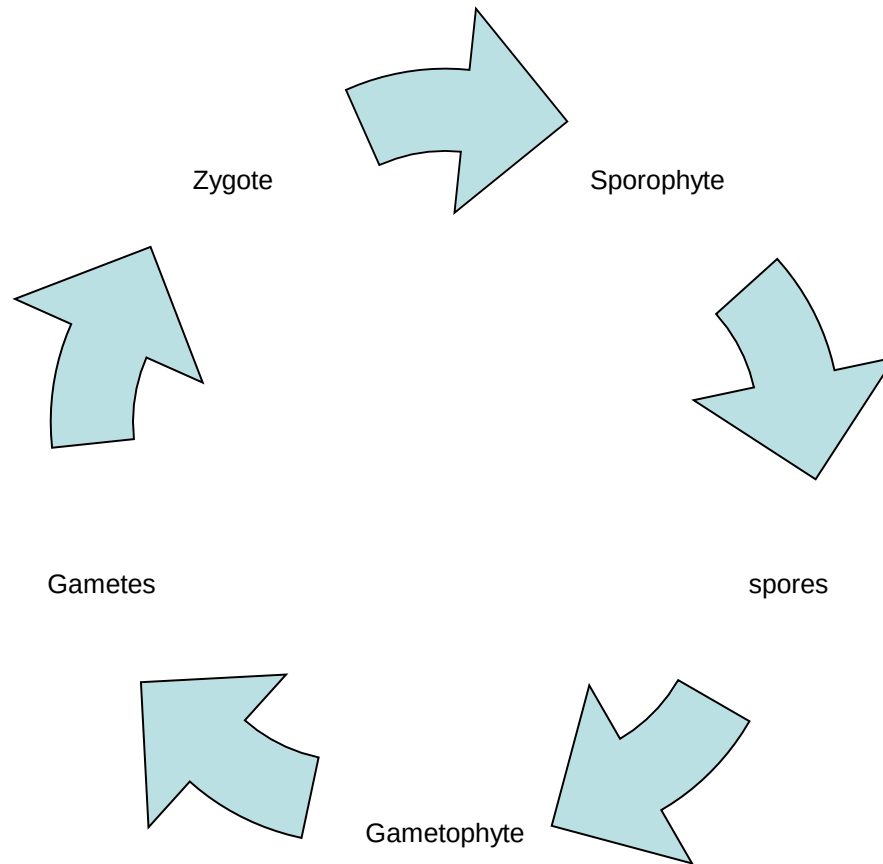
Liverworts

- Body is thalloid, dorsiventral and leafy members have tiny leaf like appendages
- Asexual reproduction is by fragmentation or by formation of gemmae
- Homothallic or heterothallic
- Sporophyte is differentiated into foot, seta and capsule

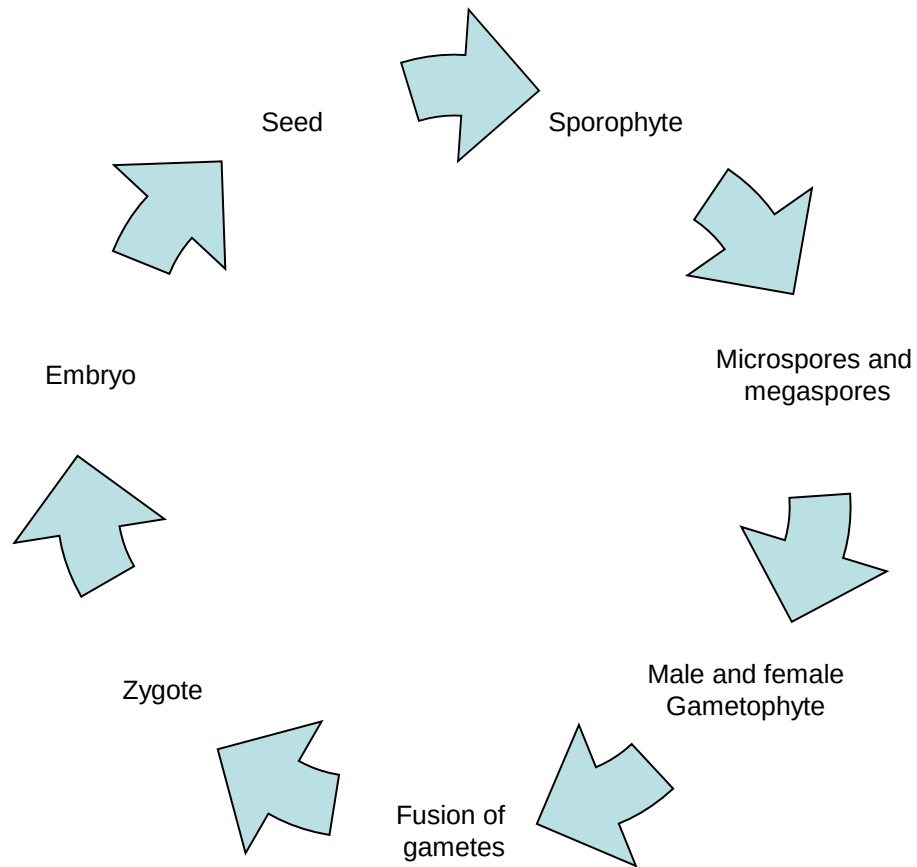
Mosses

- First stage is the protonema stage.
- Second stage is the leafy stage.
- Rhizoids and leaf like structures are present.
- Vegetative reproduction is by budding and fragmentation in the secondary protonema
- Antheridia and archegonia are produced at the apex of the leafy shoots.
- Sporophyte has foot, seta and capsule.

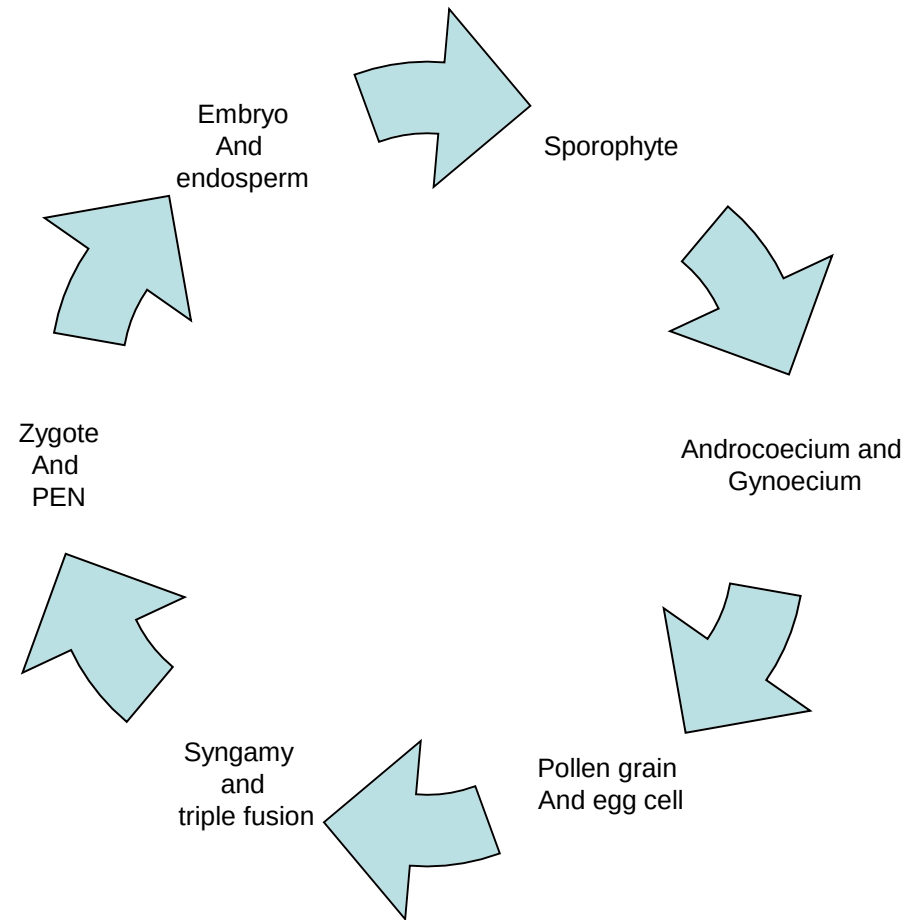
Life cycle of Pteridophyte



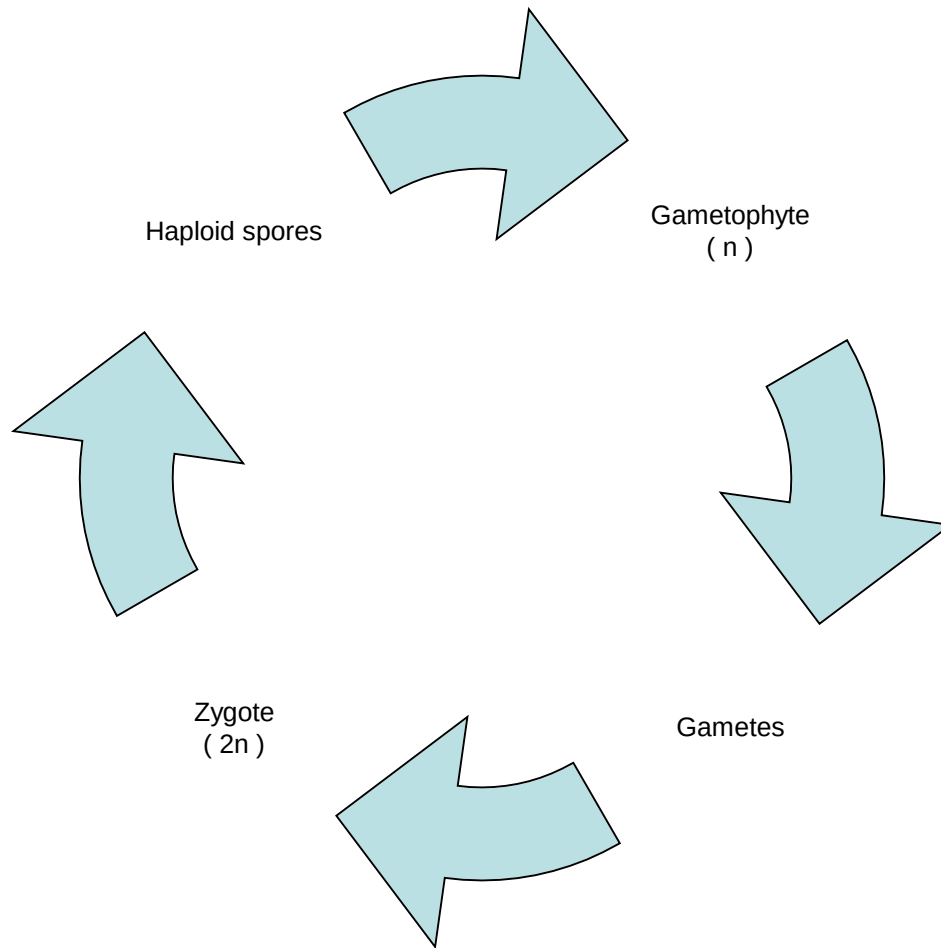
Life cycle of Gymnosperms



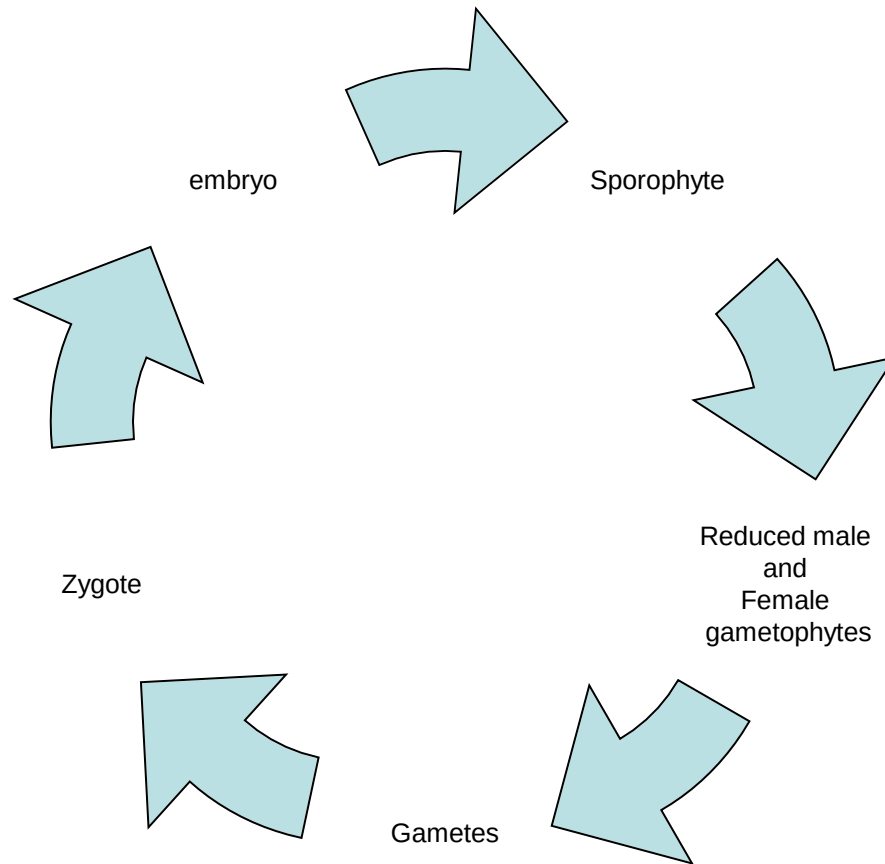
Life cycle of angiosperm



Haplontic



Diplontic



Haplo-diplontic

