

Chapter 3 : Plant Kingdom

Biology Notes | Class 11

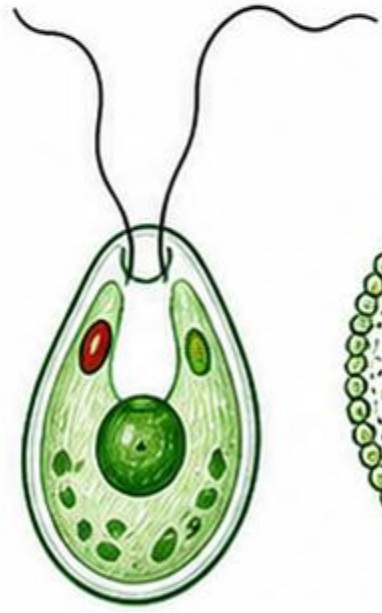


PLANT KINGDOM: MAJOR GROUPS

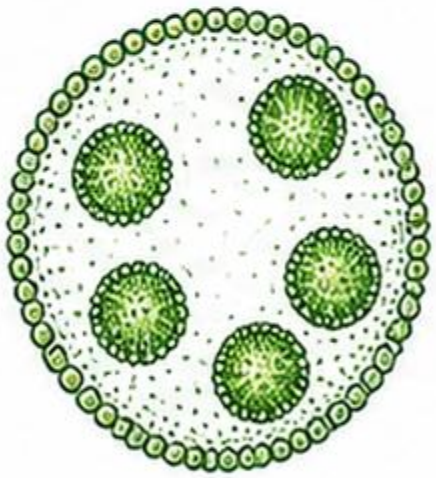
① ALGAE

- simple thalloid body
- mostly aquatic

Examples:



Chlamydomonas



Volvox

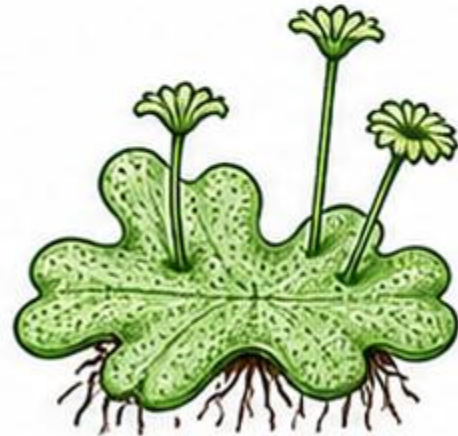
② BRYOPHYTES

- non-vascular
- dominant gametophyte
- water needed for fertilisation

Examples:



Funaria



Marchantia

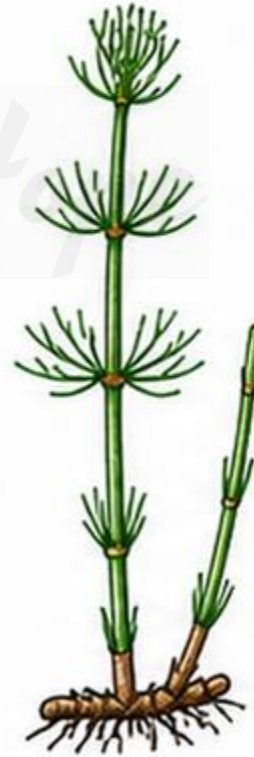
③ PTERIDOPHYTES

- vascular, spore-bearing plants
- dominant sporophyte

Examples:



Pteris



Equisetum

④ GYMNOSPERMS

- ovules and seeds exposed or naked

Examples:



Pinus



Cycas

⑤ ANGIOSPERMS

- flowering plants
- seeds enclosed in fruits

Examples:



Hibiscus



Lilium

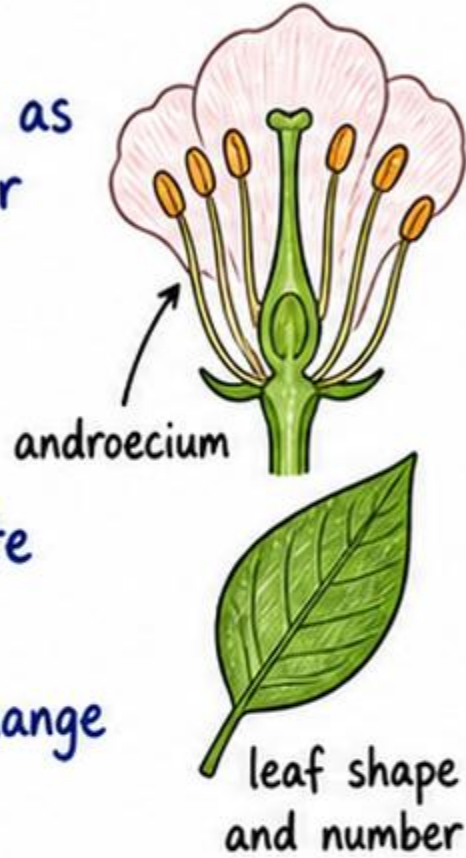
NOTE:

Fungi, Monera and Protista are excluded from modern Plantae; cyanobacteria are prokaryotes, not true algae.

PLANT CLASSIFICATION SYSTEMS & EVIDENCE

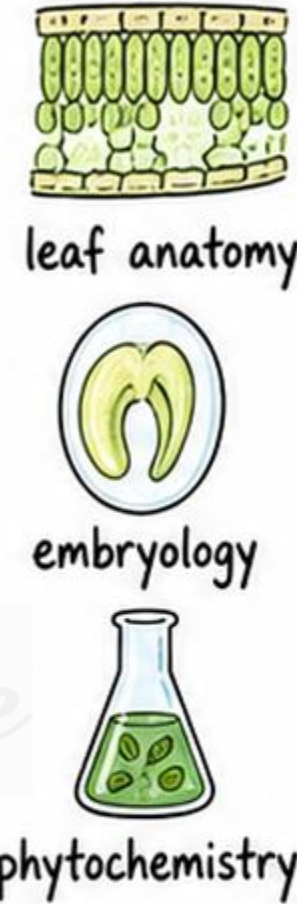
① ARTIFICIAL SYSTEM

- uses a few superficial morphological traits such as habit, colour, and number or shape of leaves.
- Linnaeus strongly used androecium characters.
- a few traits may separate close relatives.
- vegetative traits may change with environment.



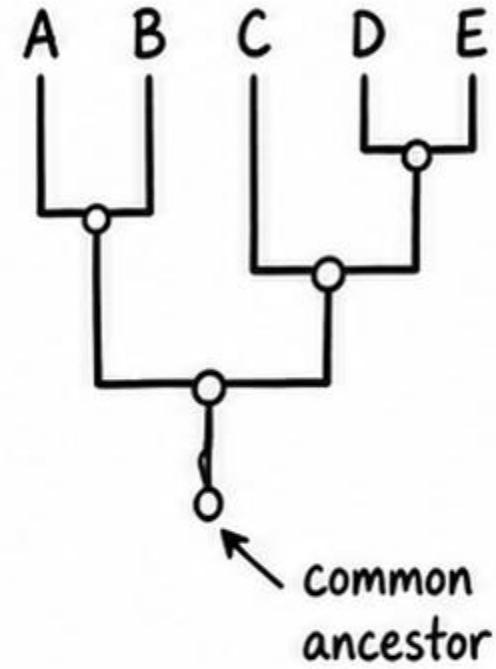
② NATURAL SYSTEM

- uses overall natural affinities from external and internal features, including anatomy, ultrastructure, embryology and phytochemistry.
- Bentham and Hooker proposed a natural system for flowering plants.



③ PHYLOGENETIC SYSTEM

- classification reflects evolutionary relationships.
- organisms in a taxon are inferred to share common ancestry.



① NUMERICAL TAXONOMY

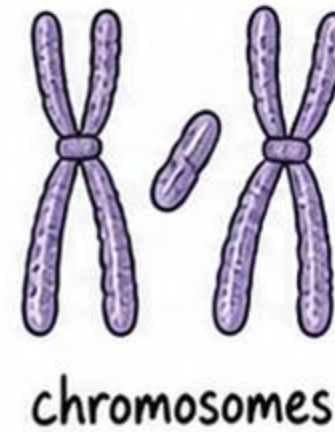
- many coded observable characters are processed computationally.
- characters may receive equal weighting in the stated method.

	Characters					
	1	2	3	4	...	n
Taxon A	1	0	1	1	...	0
Taxon B	0	1	1	0	...	1
Taxon C	1	1	0	1	...	0
...	:	:	:	:	:	:
Taxon n	0	1	1	1	...	1

EVIDENCE AND TOOLS

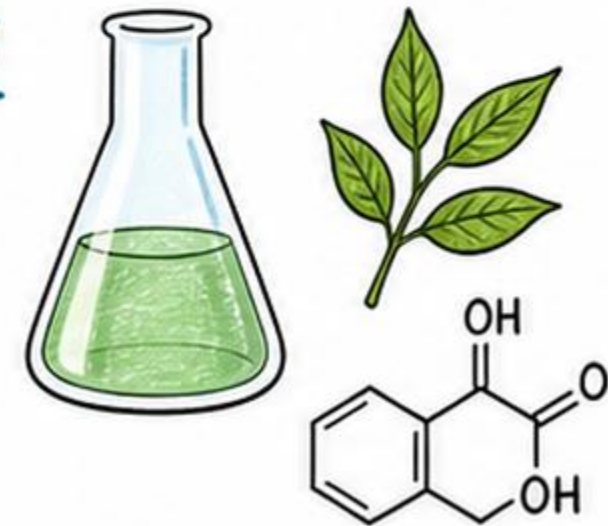
② CYTOTAXONOMY

- uses chromosome number, structure and behaviour.



③ CHEMOTAXONOMY

- uses chemical constituents to help resolve relationships.



Classification changes as evidence and evolutionary understanding improve.

ALGAE: DEFINITION & HABITATS

DEFINITION

- Algae are chlorophyll-bearing, simple, thalloid, autotrophic and largely aquatic organisms.
- A thallus lacks true roots, stems and leaves.

HABITATS

- freshwater



POND

- marine water



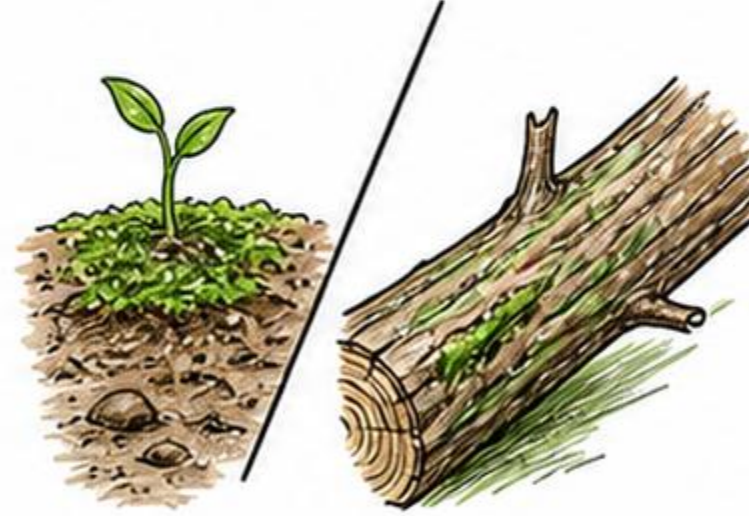
SEA COAST

- moist stones



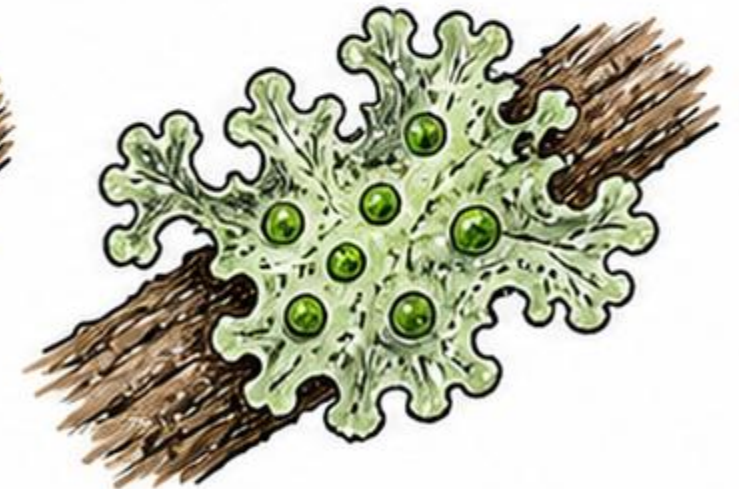
MOIST ROCK

- soil
- wood



SOIL / WOOD

- associations with fungi in lichens and with some animals

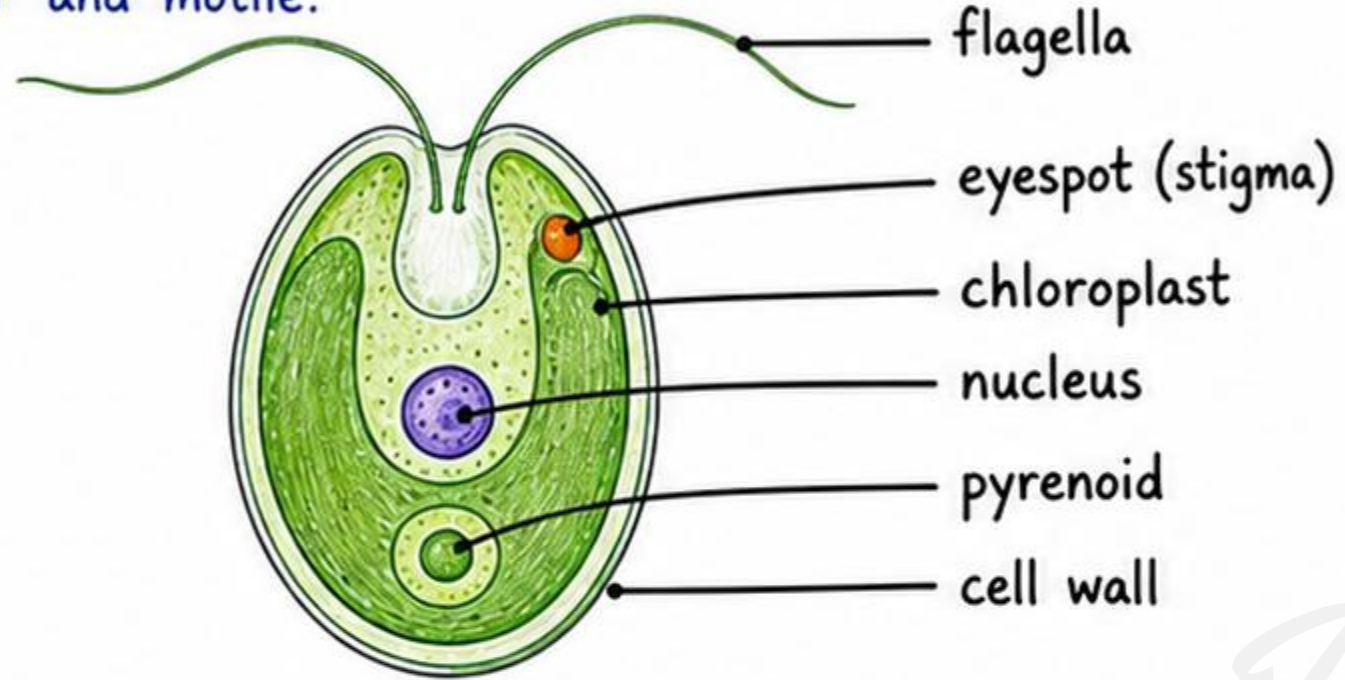


LICHEN ASSOCIATION

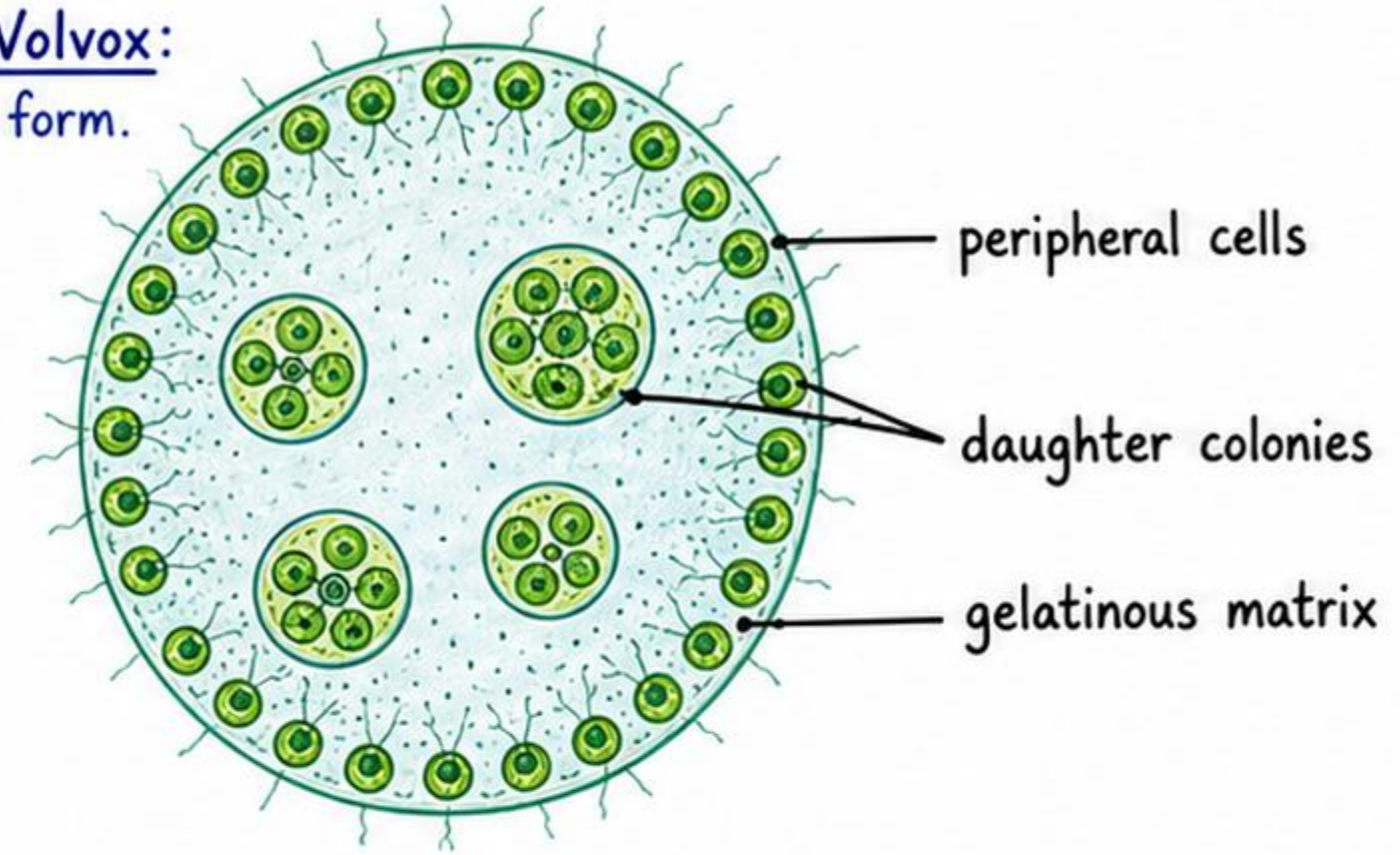
Algae is a useful classroom and ecological grouping spanning several eukaryotic lineages; cyanobacteria are prokaryotes and are excluded here.

ALGAL BODY FORMS

1. **UNICELLULAR** — Chlamydomonas:
unicellular and motile.

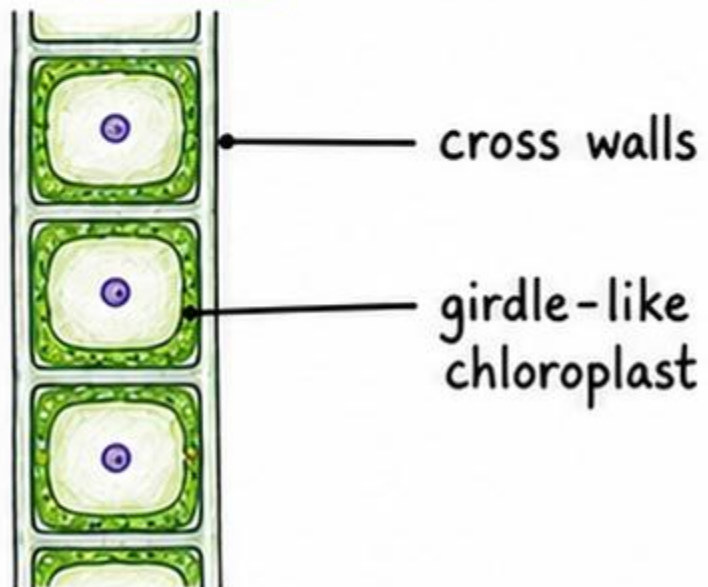


2. **COLONIAL** — Volvox:
spherical colonial form.

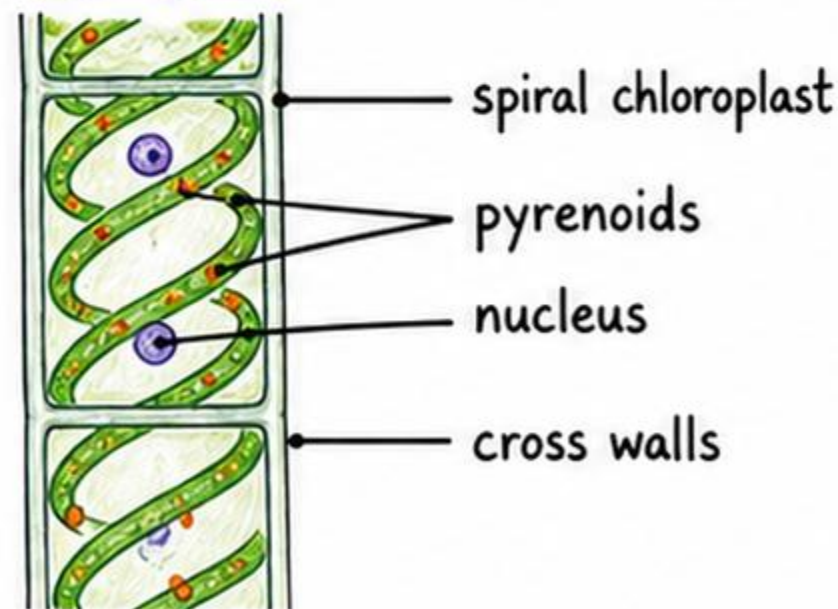


3. **FILAMENTOUS** — Ulothrix and Spirogyra:
unbranched filaments.

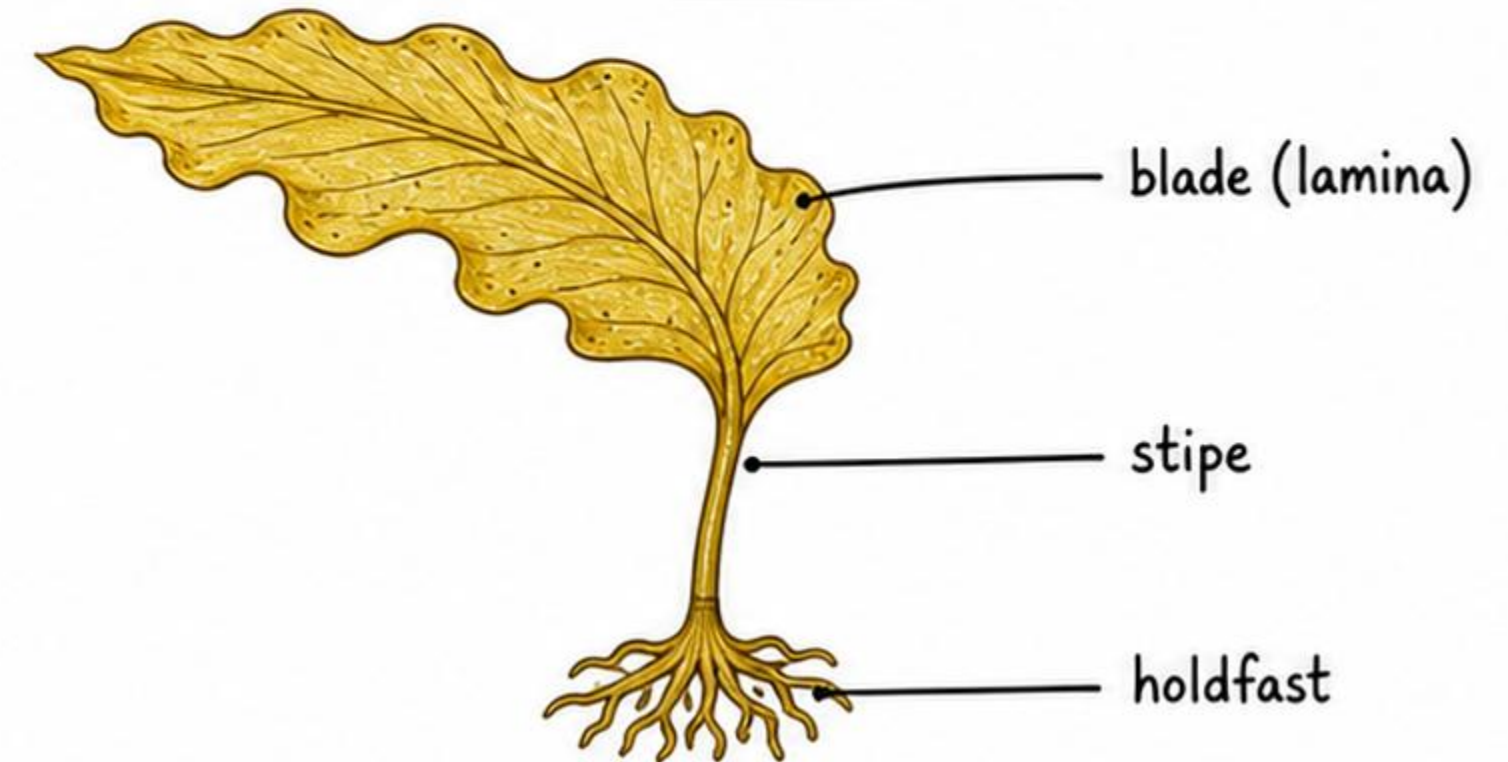
Ulothrix



Spirogyra



4. **LARGE MARINE THALLUS** — Laminaria (kelp).



Body organisation ranges from one cell to large multicellular thalli.

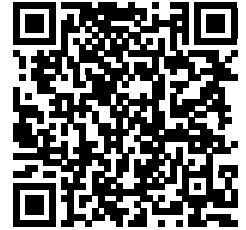


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