# Quick-guide to the major groups of freshwater algae

Cells contain organelles (e.g., chloroplasts; nucleus)

**YES** → Chloroplasts usually grass green

**YES** → Cells store starch: positive reaction to starch test

**YES** → **Chlorophyta**

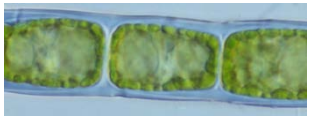
A large, diverse group, including:

Chlorophyceae

Charophyceae

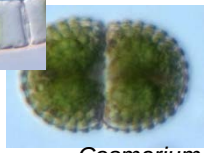
Ulvophyceae

**GREEN ALGAE**

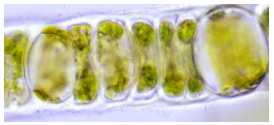


*Microspora*

*Mougeotia*



*Cosmarium*

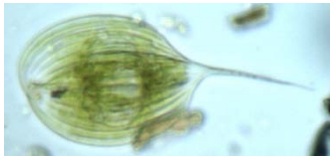


*Ulothrix*

Cells store starch: positive reaction to starch test → Cells motile and may change shape, many small chloroplasts

**YES** → **Euglenophyta**

**EUGLENOIDS**

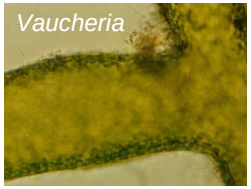


Highly motile with flagella. Many species colourless and or phagotrophic (ingest particles)

*Phacus*

Cells motile and may change shape, many small chloroplasts → Cells may be filamentous, many small chloroplasts → **Ochrophyta:** Xanthophyceae

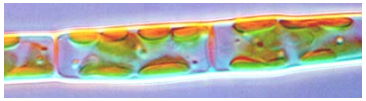
**YELLOW-GREEN ALGAE**



*Vaucheria*

NB. Difficult to distinguish from Chlorophyta. Placed in Ochrophyta because of pigments and food storage products, and phylogeny.

*Tribonema*

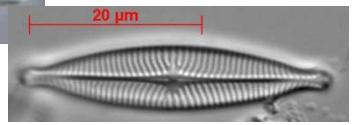


Chloroplasts usually grass green → Chloroplasts some other colour → Chloroplasts brownish. Ornamented silica cell walls. Definite geometric shapes. → **YES** → **Ochrophyta:** Diatoms

**DIATOMS**

*Diatoma*

Cells solitary or in filaments. Often motile, but no flagella.




*Navicula*

Cells contain organelles (e.g., chloroplasts; nucleus) → **YES** → Chloroplasts usually grass green

Cells contain organelles (e.g., chloroplasts; nucleus) → Chloroplasts some other colour → Chloroplasts brownish. Ornamented silica cell walls. Definite geometric shapes. → Shapes → **CONTINUED**

Cells contain organelles (e.g., chloroplasts; nucleus) → No organelles → **CONTINUED**

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# Quick-guide to the major groups of freshwater algae (continued)

Cells **not** containing organelles (e.g., chloroplasts; nucleus)

Chloroplasts yellow to brown. Produce stomatocysts (silica-walled resting stage with a characteristic collar and "mouth") — **YES** → Mixotrophic. — **YES** → **Ochrophyta: Chrysophyceae** — **GOLDEN-BROWN ALGAE**

*Dinobryon*

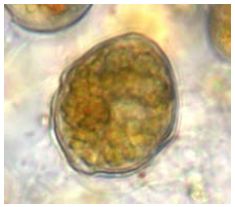
These two groups separated by pigments and structure of the flagella.

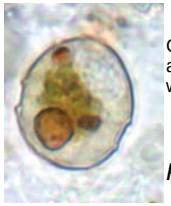
Mixotrophic. → Silica-scaled. Always photoautotrophic. — **YES** → Synurophyceae

*Synura*

Schematic of stomatocyst

No stomatocysts → Brownish chloroplasts. Cells with 2 furrows around the cell, perpendicular to each other. — **YES** → **Dinophyta** — **DINOFLAGELLATES**

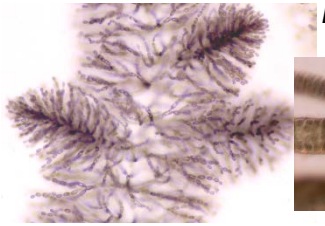




Cell wall smooth or of angular plates, sometimes with projections.

*Peridinium ?*

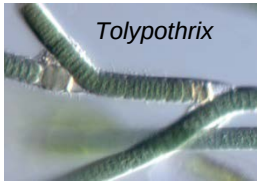
Some other cell arrangement → Olive or pinkish chloroplasts. Filamentous plants usually with a complex structure — **YES** → **Rhodophyta** — **RED ALGAE**



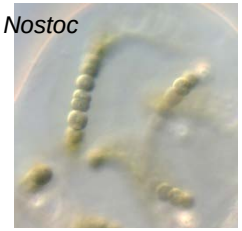
*Batrachospermum*

*Compsopogon*

Filaments (trichomes), single cells or gelatinous colonies. Cell contents diffuse; granules may be present — **YES** → **Cyanobacteria** — **"BLUE-GREEN" ALGAE**



*Tolypothrix*



*Nostoc*