

# Taxonomy of Phytoplankton Chlorophyta

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- **DIVISIO (Filum) CHLOROPHYTA**

- **Class: Chlorophyceae**

- **Colour: Green**

- **Pigment (Chloroplast): Chlorophyll**

Chlorophyll a-b (+)

Carotene (+/-)

- **Carotenoid**

β - Carotene (+)

Zeaxanthin (+)

Lutein (+)

Violaxanthin (+)

Echinenone (b)

Canthaxanthin (b)

Astaxanthin (b)

Siphanoxanthin (a)

Loroxanthin (+)

Nooxanthin (+)

- **BILIPROTEIN**

Pliochrome (+)

**Tallus Geometry:** Single-celled colony, filamentous (branched, unbranched), wide tallus

**Flagellum:** Typically 2,4 or rarely 8 pieces of equal length flagellums extend from the anterior side of floating cells or mobile reproductive cells.

**Repository Material:** Generally Starch, Lipids

**Cell Wall:** Cellulose-Pectin

**Reproduction :** Sexual Reproduction, Isogamy, Anisogamy, and Oogamy

**Asexual Reproduction-** Mobile Zoospores (Pear-shaped 2-4 pieces of flagellates). Immobile zoospores

**Distribution range:** %90 in fresh-waters, %10 in seas, moist soil and arid areas

**Note:**

(+) Found in all species

(+/-) Found in some of them, but not all of them

(a) Only found in green algae

(b) Secondary carotenoids

# **Class: Chlorophyceae**

## **Order: Volvocales**

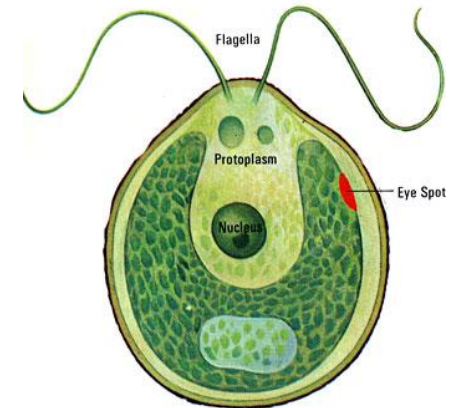
- Single-celled (Chlamydomonas)
- Regular Colony (similar cells, Example; Volvox)
- Irregular colony (similar cell are getting together) eg; Tetraspora)
- Cell Wall: Cellulose
- Reproduction: Asexual and sexual

# Class: Chlamydomonas

- Single-celled (Circular-oval) 2,5-50 micron (5-20 micron)
- Two flagellates of equal length
- Cellulose in cell walls
- Red eye spot on the side, the nucleus in the middle
- Bell-shaped chloroplast
- Two pirenoids on the chloroplast
- Two contractile vacuoles

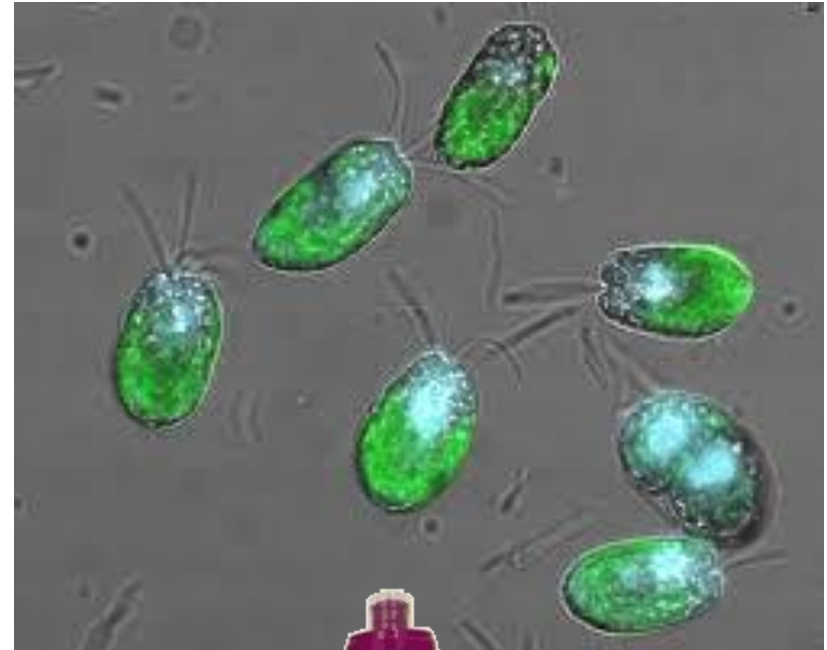
## Reproduction:

- Asexually (When cells have reached the size of the upper limit, flagellates start to disappear. Cells start to divide 6-16 times. Individuals with two flagellates occur. Cell walls explode.
- Individuals become independent.
- They reach mature cell size.
- Sexually: Isogamy, anisogamy and rarely oogamy.
- Distribution Range: They exist in freshwaters and salty waters.



# Genus: Tetraselmis

- Cell: Widely oval and heart-shaped
- One end (apex) is slightly collapsed
- Flagellates: 4 pieces with equal length
- Eye spot: In the anterior side or the middle
- Reproduction: Asexual (by dividing), sexual
- Distribution Range: Brackish waters, oceans and freshwaters





# Genus: Dunaliella

- Cell: front end is narrow shaped (appendage), back end is oval shaped
- Cell's whole view is pear/egg shaped
- Cells are mostly red coloured
- (hematocrome-colouring material)
- Chloroplast is in the posterior
- Two pieces of flagellats (whiplash type)
- Reproduction: Sexually and Asexually
- Distribution : Seas, Brackish Waters
- This genus is an industrial type of algae, beta carotene is being produced.



