



Taxonomy of Phytoplankton

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Order: Cladophorales

- Fibrillar, branched or unbranched
- Attached to the substratum
- Fresh waters, seas

Genus: Cladophora

- Cells consist of filaments which are long and can reach up to 100 micron
- Cell wall is thick and layered
- Chloroplast is slime like, lots of pyrenoid
- Filaments (tallus) usually rigid like structure
- 5-10 cm length 0.1-0.5 cm thickness (Sea forms)
- Stiff (contains CaCO_3) and dark green
- This genus has many species
- Extremely develops. This is also called blanket mass
- Tennis balls (Marimo balls, *Cladophora linnae*)
- Reproduction;
- Asexually: Zoospores (2-4 flagellats)
- Sexually: Fertilization is shaped with merging gamets which are coming through seperate strings
- Distribution Range;
- Freshwaters, streams, waterfall, dams, seas



- **DIVISIO (Phylum)**
XANTHOPHYTA
- **Class: Xanthophyceae**
- **Colour: Yellow-Green**
- **Pigment (Chloroplast):**
- **Chloroplast**
 - Chlorophyll a (+)
 - Carotene (+/-)
- **Carotenoid**
 - β - Carotene (+)
 - Heteroxanthin (+)
 - Diadinoxanthin (+)
 - Diatoxanthin (+)

Tallus Shape: Single celled, colony, rarely filamentous

Flagellates: In flagellatous forms contain uneven heterokont flagellats

Storage Material: Lipid, leucosin

Cell Wall: Cellulose-Pectin

Reproduction: Rarely sexually reproduction

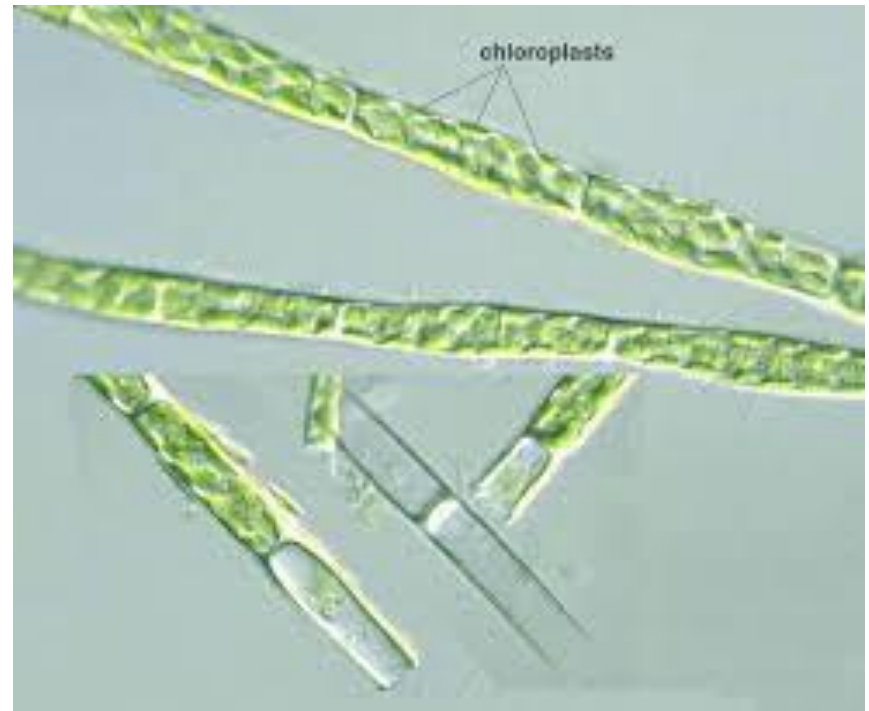
Asexually reproduction - Dividing in mobile forms, in immobile forms zoospores

Distribution Range: Mostly in fresh waters, seas, humid areas

Ordo: Heterotrichales

Genus: Tribonema

- Cells are long, have cylindrical shaped
- Filaments are unbranched
- Cell walls are in H shaped
- One nucleus in each cell
- Cells side sides are parallel to each other
- 2 or more chloroplasts and parietal
- This genus has many species
- Reproduction;
- Asexually: With heterokont zoospores
- Sexually : Rarely, isogamy
- Distribution Range;
- Pools which contains plants and grasses
- Lakes



- **DIVISIO (Phylum):**
CHRYSTOPHYTA
- **Class: Chrysophyceae**
- Colour: Golden yellow coloured
(Because chlorophyll is covered by
fucoxanthine)

- **Pigment (Chloroplast):**

- **Chlorophyll**

Chlorophyll a (+)

Chlorophyll c (+)

Carotene (+/-)

Carotenoid

β - Carotene (+)

Fukoxanthine (+)

Diadinoxanthine (+/-)

Diaxanthine (+/-)

Tallus Shape: Single-celled with
flagellas, colony formed and
filamentous

Flagellum: heterokont flagellas

Storage Material: Lipid, leucosin

Cell Wall: Cellulose-Pectin, silicon
and calcium

Reproduction:

Sexually: Oogamy, anisogamy

Asexually: immobile cells, zoospores
with flagellates

Distribution Range: Fresh waters,
seas

Order: Chrysomonadales

- Simple-structured, single-celled, with flagellates
- Number of flagellates; 1, 2 or 4 pieces.

Genus: Uroglena

- Cells have ovoid shaped
- Chloroplasts are parietal
- 500 pieces of cells are forming a colony
- Reproduction: Asexually
- Distribution Range: Pools, lakes



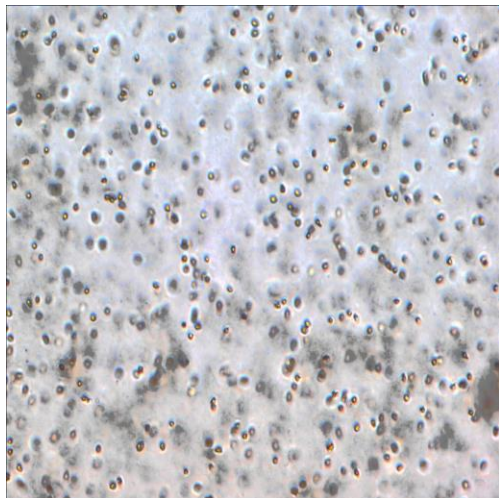
Genus: Dinobryon

- They usually create colony formation
- (Occasionally single-celled structure)
- Cell is made of protoplasts
- Cells are in the cellulose cover (Lorika)
- Lorica can be thin or thick and it is colourless
- Lorica contains Fe
- Lorica is vase shaped, or bell shaped
- Each cell has 2 chloroplasts
- Heterokont has flagellate
- Contractile vakuole and has eye dots
- Cells inside the Lorika are connected to each other with stalks (fibrils)
- Reproduction
 - Asexually: Dividing
- Distribution Range: Lakes, pools
- They can be seen especially on springs



Family : Haptophyceae

- Mostly contains sea species
- Members of this group has two flagellates and also one more flagellate like organ consists (Haptonema).
- Haptonema can be spirally shaped shrinks
- 3 parts of them or totally connects the algae to the substratum.
- Two of flagellates are equal in length (Isokont)
- Each cells has two pieces parietal chloroplast



Order: Isochrysidales

- In mobile phase no heptonema exists

Family: Isochrysidaceae

Genus: Isochrysis

Cells are naked (unarmoured)

They have a metabolic movement

Pear shaped

Two pieces of parietal chloroplast

Each side of the cell this is evident red eye dot in the front side

Reproduction: Asexual-Zoospores(cyst)

Distribution Range:

- - This genus develops fast in 1.5-4% salty waters

Order: Prymnesiales

- Haptonema exists in mobile forms
- Mineralized stumped in cell walls
- Freshwaters and seas

Genus: Prymnesium

- Two pieces of flagellates
- Haptonema is short
- Haptonema are not curved
- Cells are in form of mucus

Reproduction:- Asexual: Cell
Dividing- Sexual
(occasionally)

Dispersion Range:- Fish
pools (Israeli)

- Ichthyotoxin secretes