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Salahaddin University - Erbil,  
Kurdistan region - Iraq**



# **Division: Chlorophyta**

## **Green Algae**

### **Lab-7**

**Division: Chlorophyta**

**Class: Chlorophyceae**

**Order: Chlorococcales**

**1-Family: Chlorellaceae**

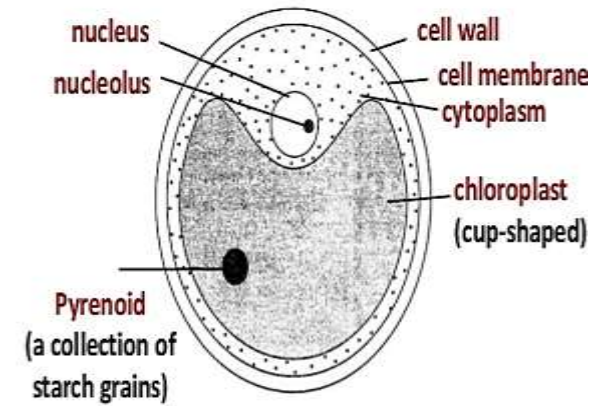
**Genus: Chlorella**

**(Chlor = green; ella = diminutive or tiny)**

**Occurs in fresh water and also endozoic (found inside the cell of protozoa)**

# External features:

1. Single cell and **non-motile**.
2. The cell mostly occur **singly** or **sometimes in groups**.
3. A cell is **very small**. It is **spherical to ellipsoidal** in shape.
4. The cell is surrounded by a **cellulosic cell wall**.



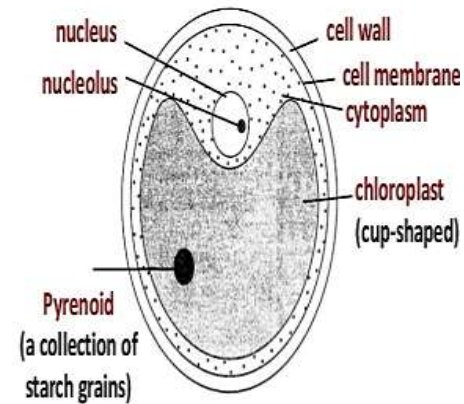
5. A cell has a single **cup-shaped chloroplast**.

6. A **single pyrenoid** is found .

7. Nucleus lies surrounded by the cytoplasm which fills up most of the cell.

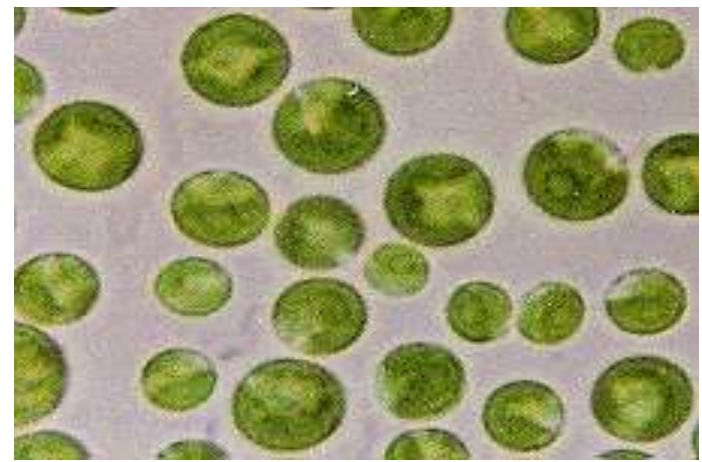
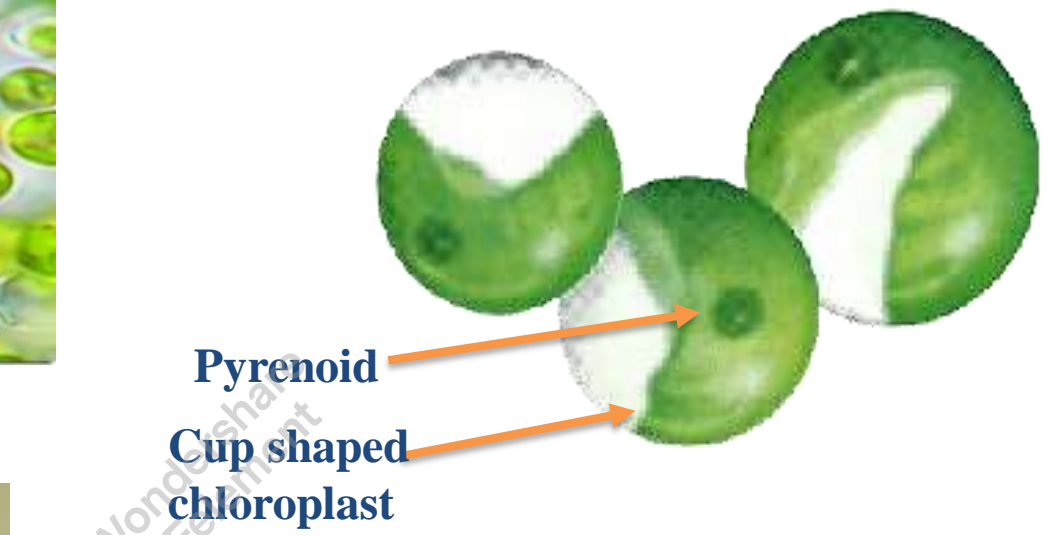
8. **A sexually reproduced**. **Two, four, eight or sixteen spores** are found in each cell having the same structure as that of the parent cell. These are called **autospores**.

**Autospore** is an uninucleate, non-motile (non-flagellated).



# Features of special interest in the genus.

1. *Chlorella* is used in many physiological tests.
2. An antibiotic, chlorellin is extracted from *Chlorella*.
3. It is very rich in vitamins and proteins.
4. *Chlorella* is used in cosmetic products.



**Division: Chlorophyta**

**Class: Chlorophyceae**

**Order: Chlorococcales**

**2-Family: Hydrodictyaceae**

**Genus: *Hydrodictyon***

**(Hydro=water; diction=net)**

# External features

1. The body is **net like structure** hence called as **water-net**.
2. **Hollow**, free floating coenobia consists of many **non-motile cells**.
3. **A mature coenobium** may reach up to **one to two** feet in length.

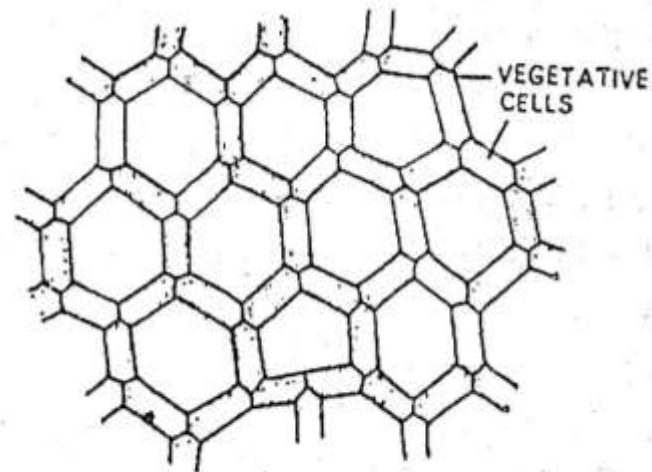
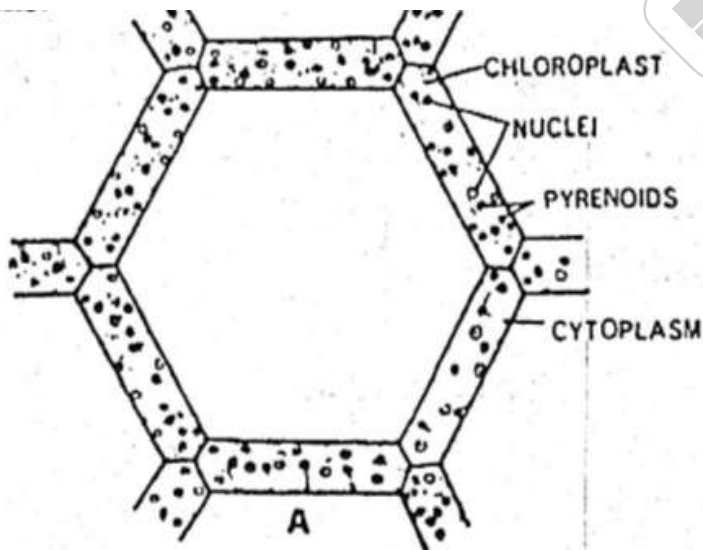


Fig. 3.16. *Hydrodictyon*. A part of net.



4. Many cells of net remain in contact in the groups of 5 or 6 cell forming **pentagonal** or **hexagonal** structures.
5. At each angle of the net met three cells.
6. Each cell of coenobium is elongated, cylindrical or ovoid in shape.
7. The cells remains surrounded by a **cellulose cell wall**.

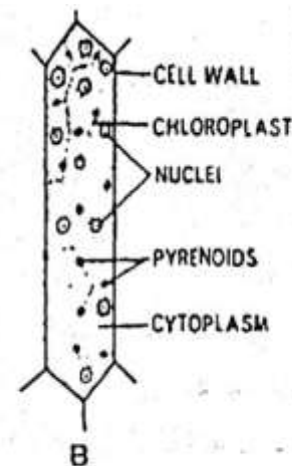
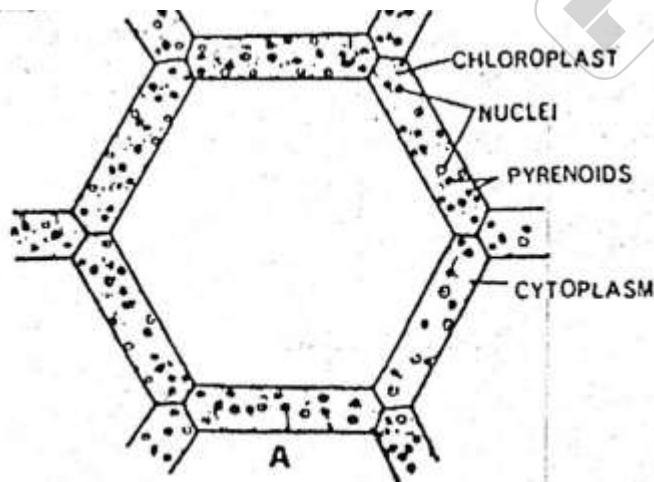


Fig. 3.17. *Hydrodictyon*. A—A part of net showing arrangement of cells. B—A single cell.

8. The cells are **uninucleate** when young but become **multinucleate** at maturity.

9. Chloroplast is (**band shaped**) in young cells but becomes (**spiral or reticulate**) at maturity.

10. Young cells contain only **one pyrenoid** but **many pyrenoids** are present in mature cells.

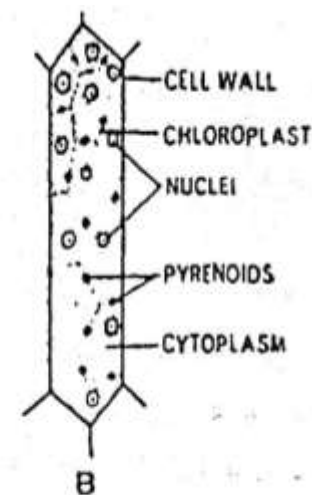
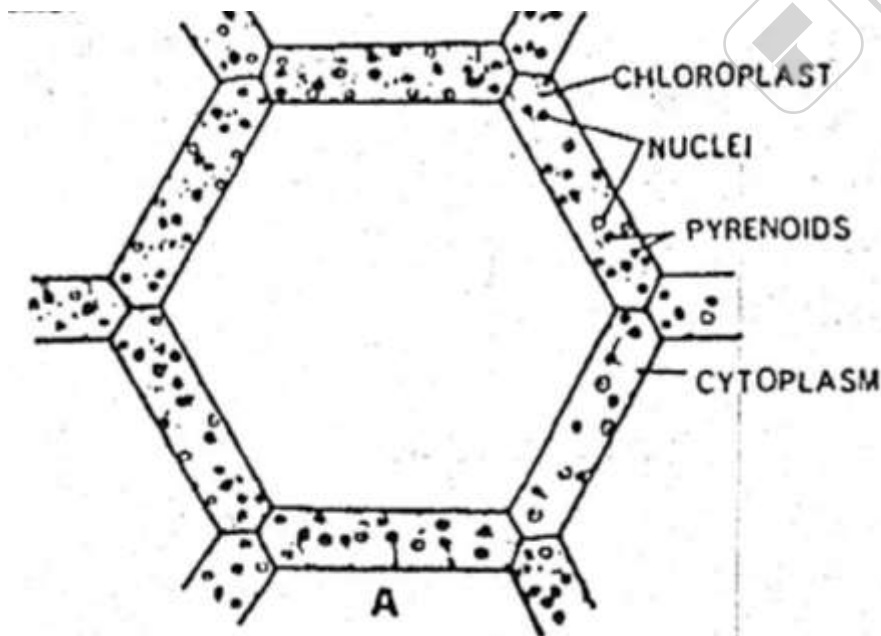
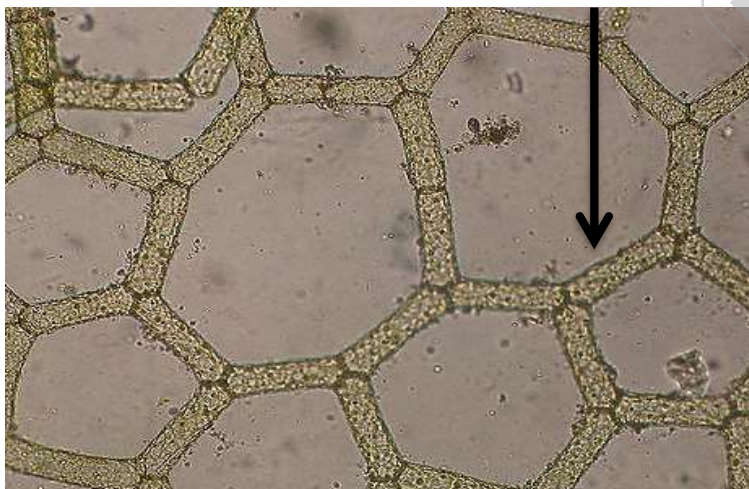


Fig. 3.17. *Hydrodictyon*. A—A part of net showing arrangement of cells. B—A single cell.



Vegetative cells



**Division: Chlorophyta**

**Class: Chlorophyceae**

**Order: Chlorococcales**

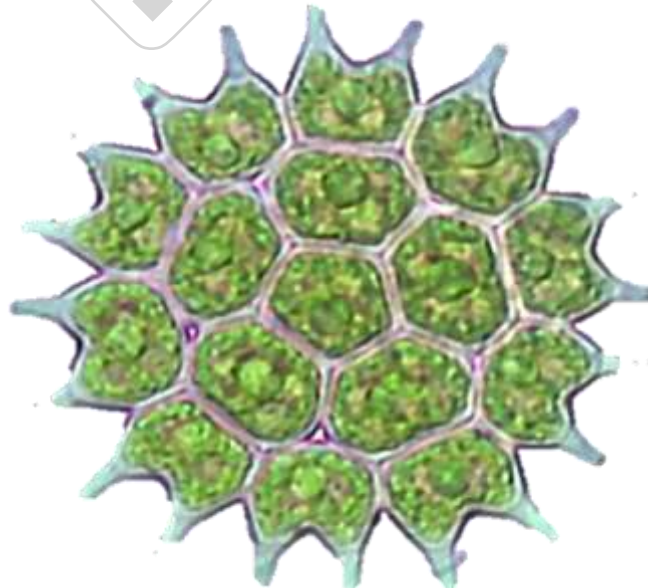
**Family: Hydrodictyaceae**

**Genus: *Pediastrum* Sp.**

***Pediastrum* : (Pedi = foot; Astrum = star)**

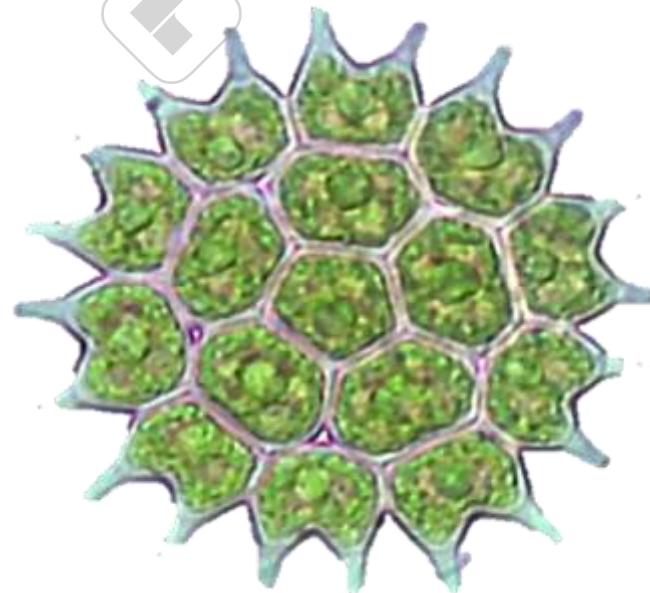
# External features

1. The genus *Pediastrum* is multicellular non-motile colonial green alga.
2. Each colony consists of definite number of cells (**multiples of two**) arranged in concentric rings around a single large cell (4 to 128 cells).
3. The colony is **star-shap** in appearance and macroscopic in size.



4. Each individual cell is some what **polyhedral** in shape and are **arranged very compactly** with each other **without any inter cellular space.**

5. The marginal cells of the colony are provided with **2-4** **diverging processes or bristles** or **projection** giving the star like appearance.

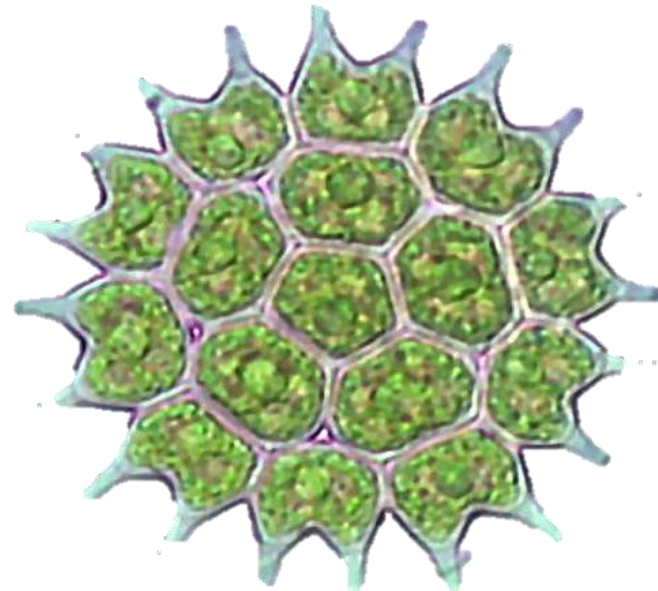


6. Each cell has a **single large parietal plate-like chloroplast.**

7. The chloroplast bears **one pyrenoid** but **more than one may be found in mature cells.**

8. Each cell is surrounded by a **cell wall of cellulose.**

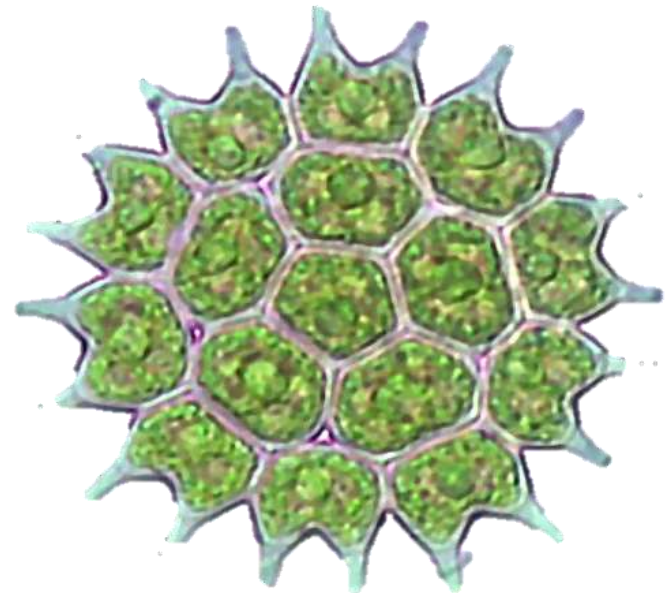
9. Cell wall may be **smooth, reticulate** or **granulate** in outline and consists of two layers.



10. In young stages, each cell is **uninucleate** but **it becomes bi or quadri-nucleate as it gets mature.**

11. Young cells contain a **single parietal chloroplast** with **one pyrenoid** but in mature and **older cells chloroplast** becomes **diffused** with **more than one pyrenoids.**

12. Asexually reproduced by **zoospore formation**





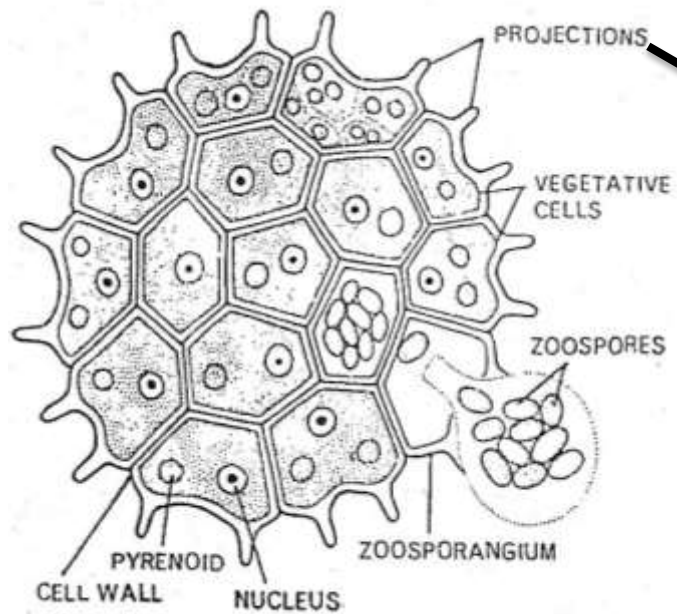
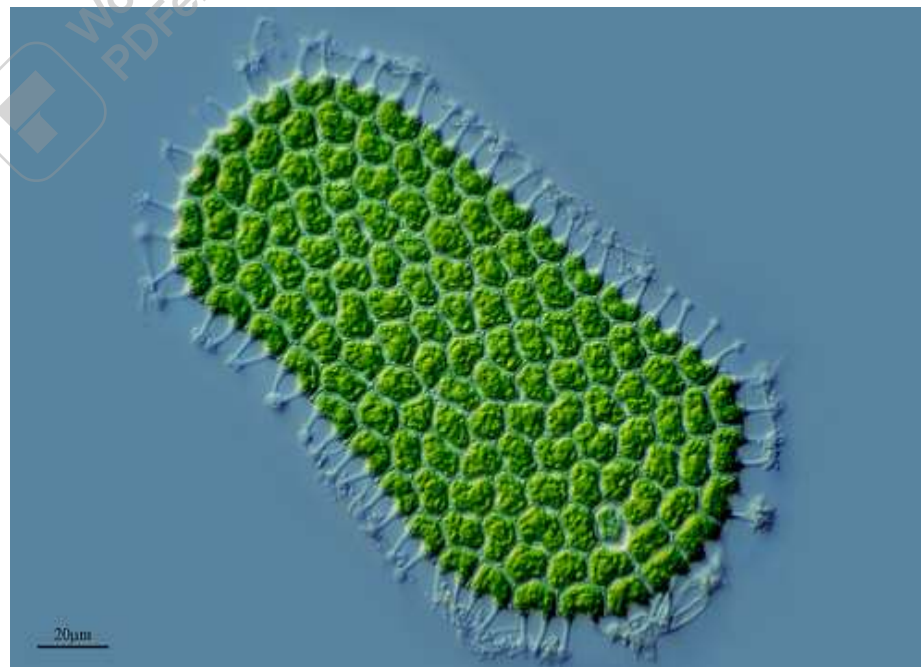
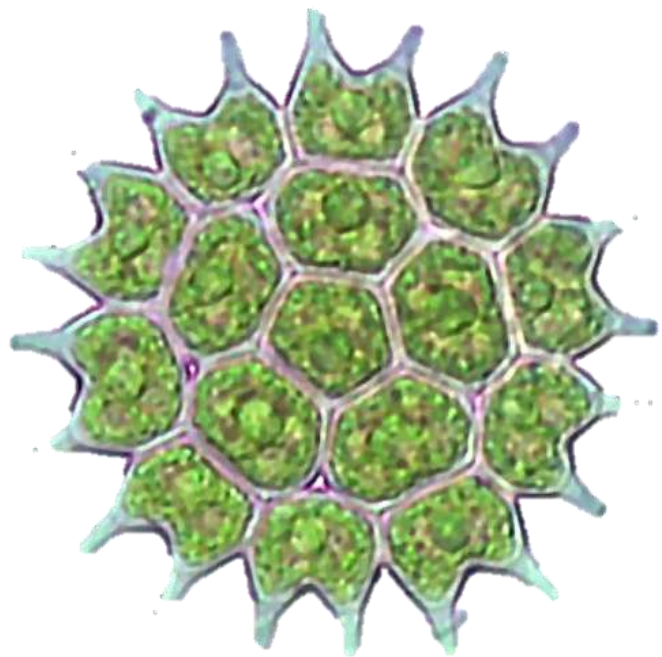
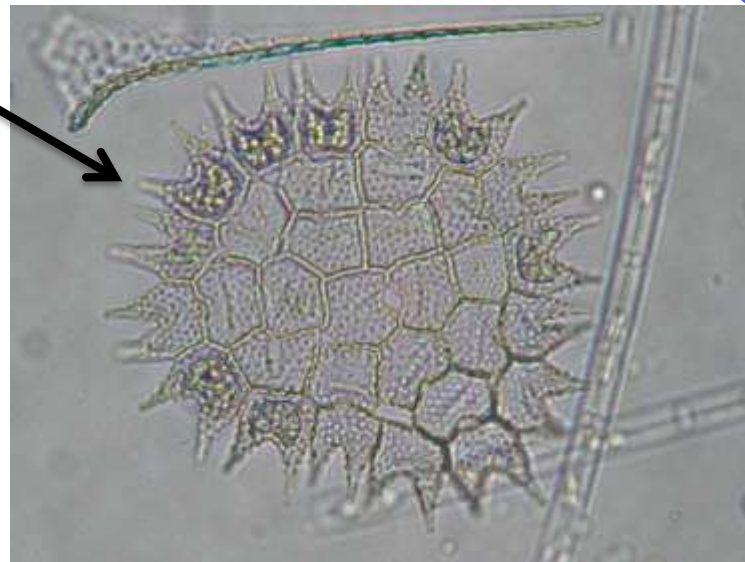


Fig. 3.19. *Pediastrum*. A 16 celled colony.



**Division: Chlorophyta**

**Class: Chlorophyceae**

**Order: Chlorococcales**

**Family: Scenedesmaceae**

**Genus: Scenedesmus**

# Genus: *Scenedesmus*

- 1- Very common algae and abundant **small linear colonies**.
- 2- Cell usually in groups of **2-4-8 or more**, **spines** sometimes present especially on the end cells.
- 3- Cell size **vary** from species to species .
- 4- When abundant may impart **unwanted odors** to drinking water.

