Department of biology

2025-2026

((Plant groups))

Stage (2)

Sixth lecture

Bacillariophyta (Diatoms)

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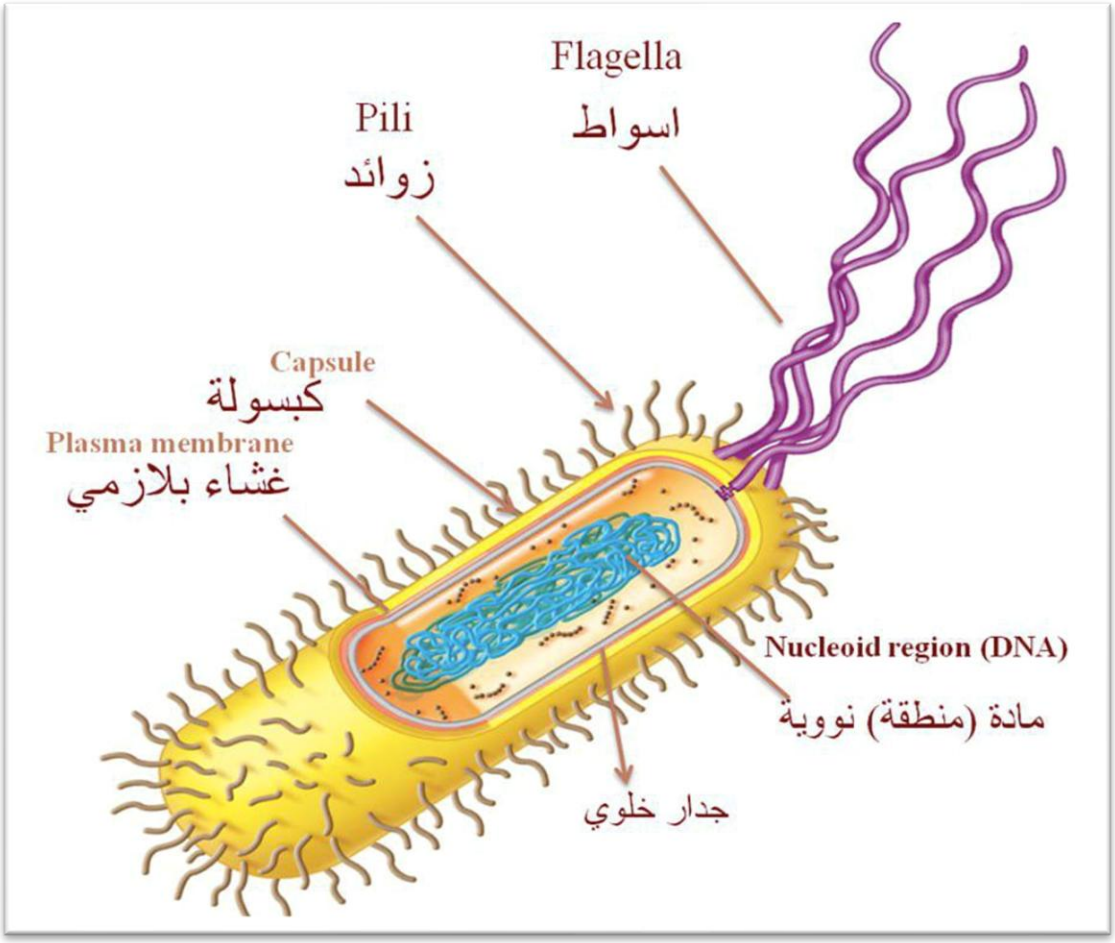
Bacillariophyta (Diatoms)

- **Bacteria:** Are single-celled organisms, microscopic and small in size, not visible to the naked eye.
- They have many forms, some of which are in the form of a ball, and some of which are similar to rods, and they are also found in the form of clusters in different shapes such as the shape of a bunch of grapes, So that they become able to work and protect themselves more during these gatherings.
- Some species of these organisms live inside the human body, and others are outside it.
- The sizes of bacteria vary greatly, some of which do not exceed half a micrometer in size, and some of which tend to share micrometers, and they are characterized by being small and complex. Which enables them to survive and live in harsh conditions,

and some of them have special structures that help them build and adapt to different conditions.

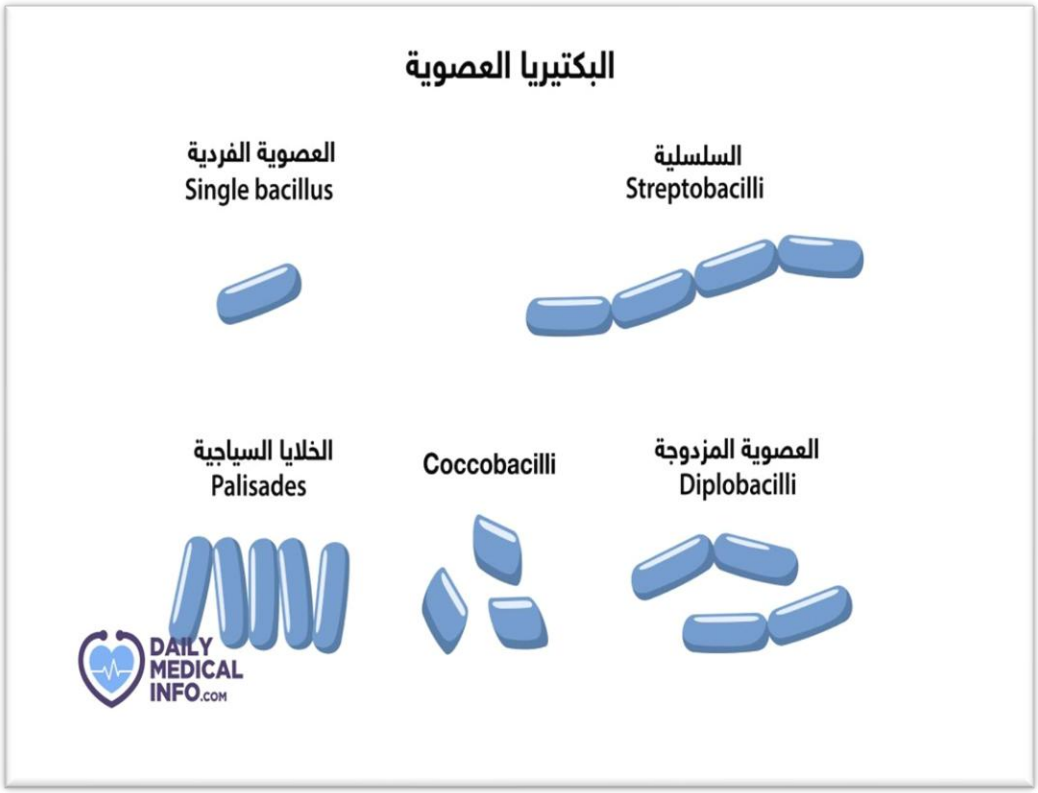


Environment and presence

- ✓ The **Bacillariophyta** are the most species-rich group of autotrophic algae, found in fresh, brackish, and marine waters, and also in land wet. They are well represented in marine phytoplankton and may account for 20% of

global photosynthetic carbon fixation. However, the vast majority of the estimated 100,000 species are benthic, living attached to surfaces or gliding over sediments using a unique organelle, the **Flagellate cells are absent**. Diatoms possess a similar photosynthetic apparatus to that present in several other stramenopile lineages (with fucoxanthin and chlorophyll c as the principal accessory pigments).

- ✓ But are easily recognized by the unique construction and composition of their cell wall, which is usually strongly silicified and consists of two overlapping halves, these in turn consist of a larger end piece (valve) and a series of narrow strips (girdle bands).



General Characteristics of (Bacillariophyta)

1) Comprises a single class Bacillariophyceae, the members of which are popularly known as **diatoms**.

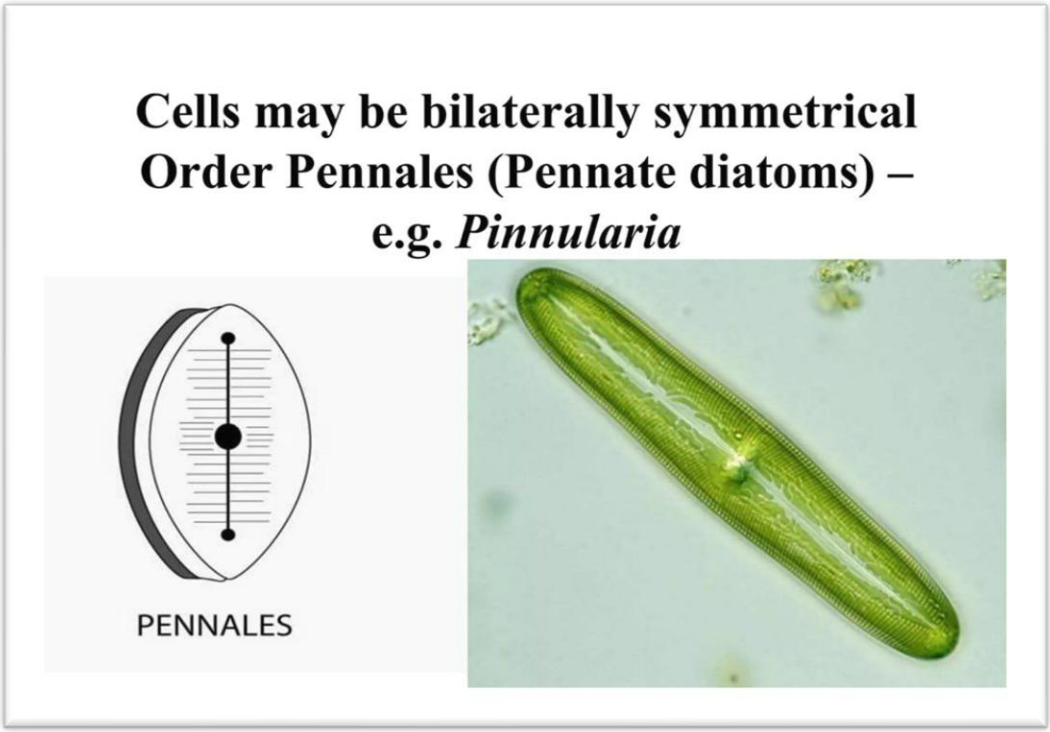
2) Possess Chlorophyll (A) and Chlorophyll (C) and fucoxanthin.

3) The food as **oil** and **chrysolaminarin** or a protein-like food material called **volutin.**

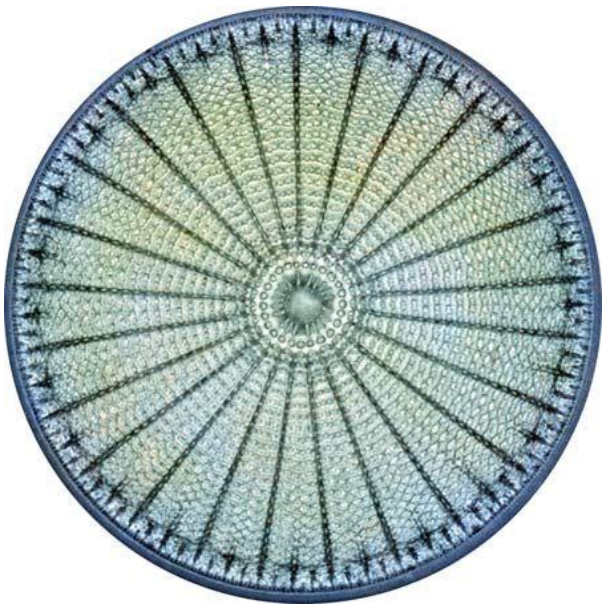
4) The cells are surrounded by a rigid cell wall–box like in shape called **Frustule**. The cell wall is **silicified**.

The diatoms placed under two taxonomic groups

1) **Order: pennales:** are pen-shaped, the structure exhibits bilateral symmetry. The diatoms of this order called **pennate diatoms.**



2) Order: Centrales: are cylindrical shaped, the structure exhibits radially symmetry. The diatoms of this order called **centric diatoms**.



The order of Centrales is characterized by the following characteristics:

1- Discoid valve.

2- Radial symmetry of valve.

3- Non-motile.

4- Multiple plate plastids.

5- Most of them are found in salt water and some in fresh water.

As for the characteristics of the Pennales, they are:

1- Boat shape valve.

2- Bilateral symmetry of valve.

3- Some of them are motile.

4- Plastids plates.

5- Most of them are found in fresh water and some in salt water.

6- Most of them are attached to plants, animals, mud, sand, or any surface present in their environment.