NEET 2025

BIOLOGICAL CLASSIFICATION

PART 2

BIOLOGY

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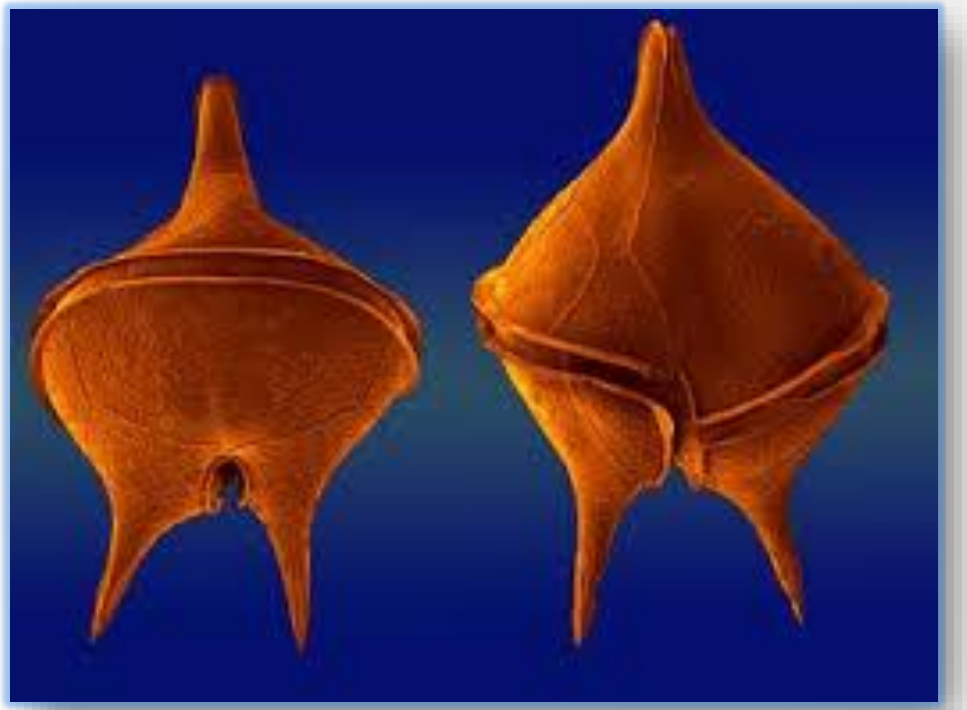
CONTENTS

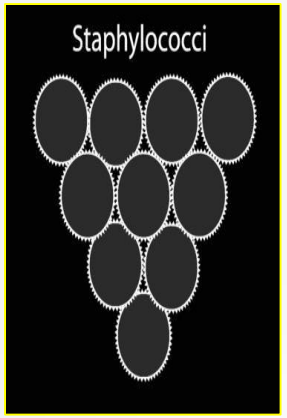


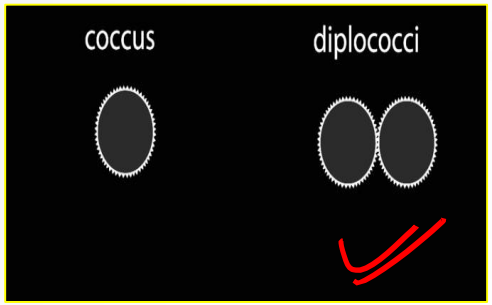
Eubacteria

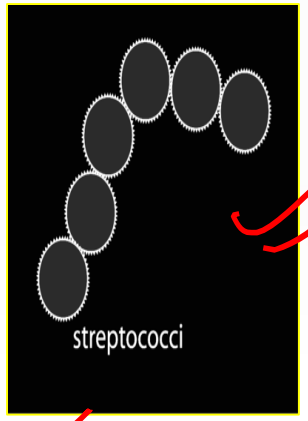
- Based on their shape, they are of the following types:

➢ **Coccus:** Cells are spherical.

E.g. Diplococcus pneumonia.







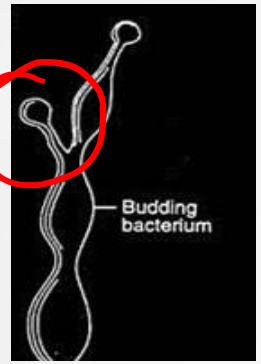
Eubacteria

- **Bacillus:** Cells are elongated and rod-like.

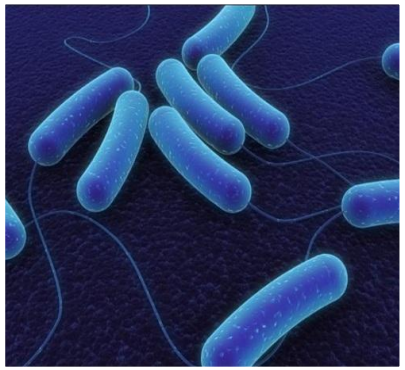
  E.g. Lactobacillus.

- Vibrio: Cells are comma-like.

  E.g. Vibrio cholerae



Stalked



Eubacteria

- Based on their shape, they are of the following types:

➢ **Spirillum:** Cells are coiled and spiral shaped.

E.g. Spirillum.

➢ **Stalked:** The cell has a stalk.

E.g. Caulobacter

➢ **Budding:** They have swelling like buds.

E.g. Rhodomicrobium.

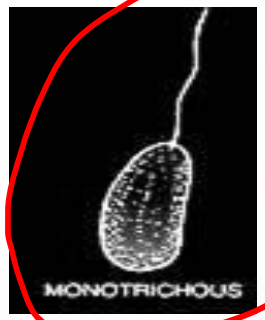
Eubacteria

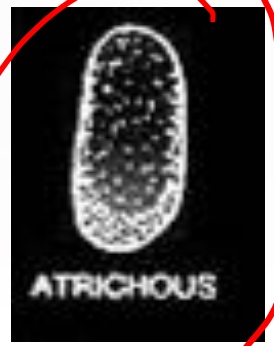
Based on the presence or absence of flagella, they are of the following types:

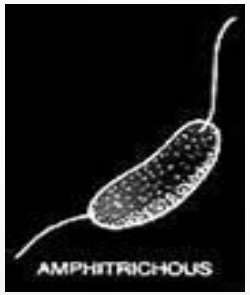
Atrichous : No flagella

Monotrichous : One flagella

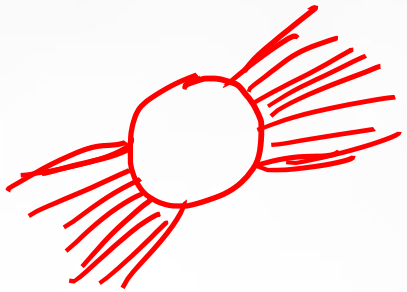
Amphitrichous : One at each side, total two flagella.



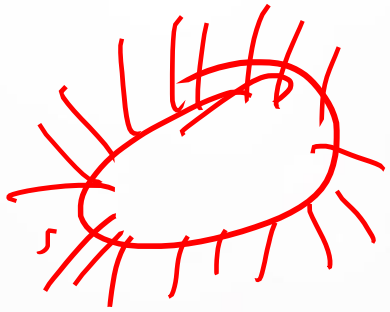




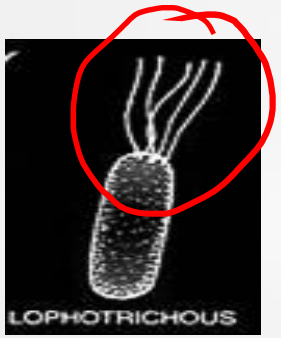
Eubacteria

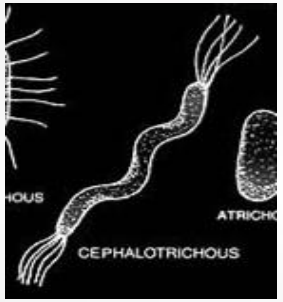


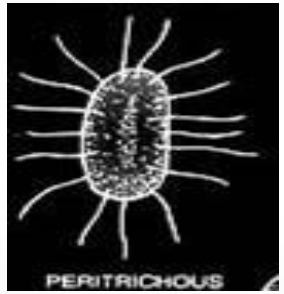
- **Lophotrichous:** One Tuft or group of flagella at one end.
- **Cephalotrichous:** Two Tufts or groups of flagella at each end.

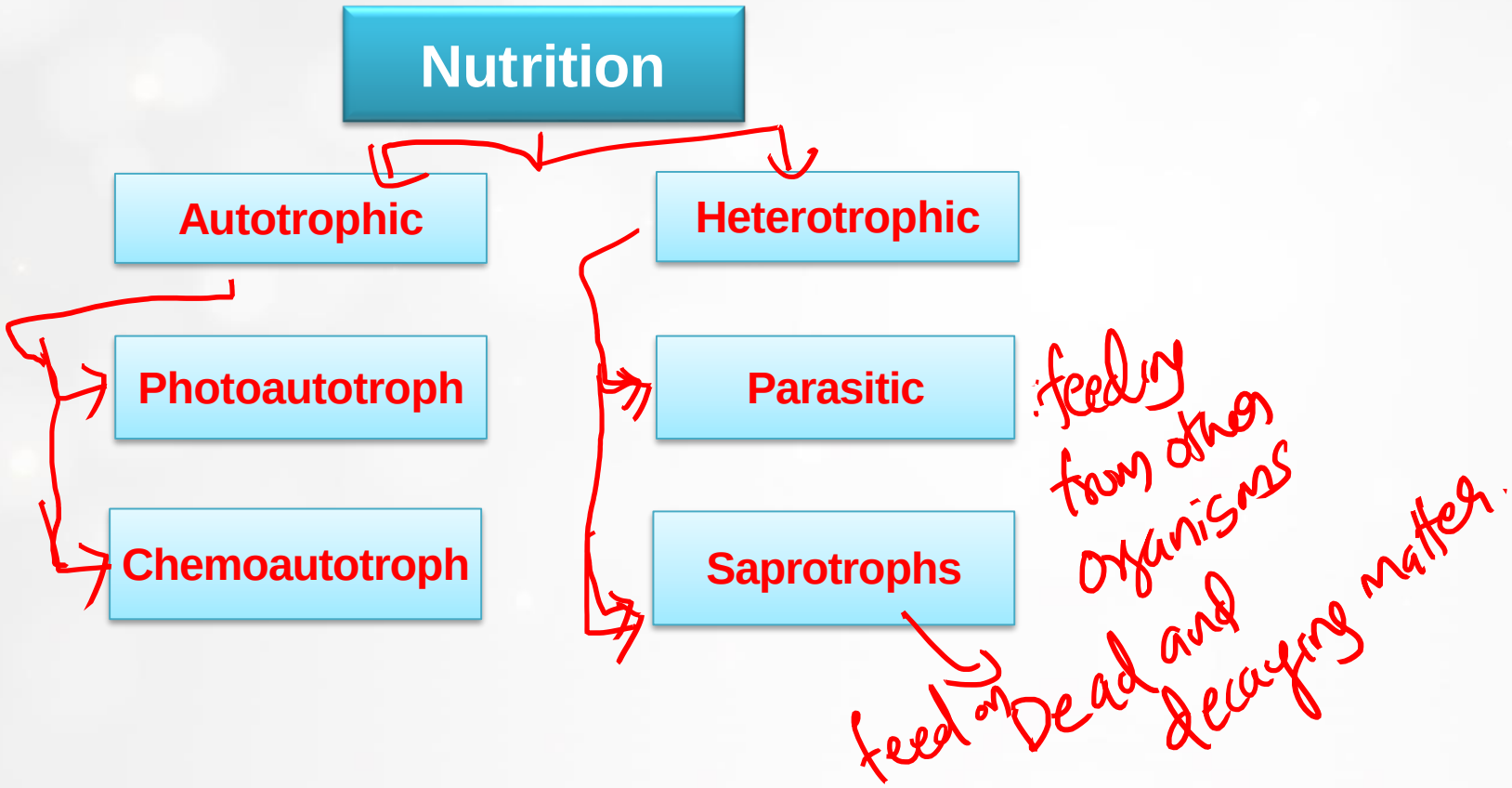


- **Peritrichous:** Flagella distributed throughout the perimeter of the cell.





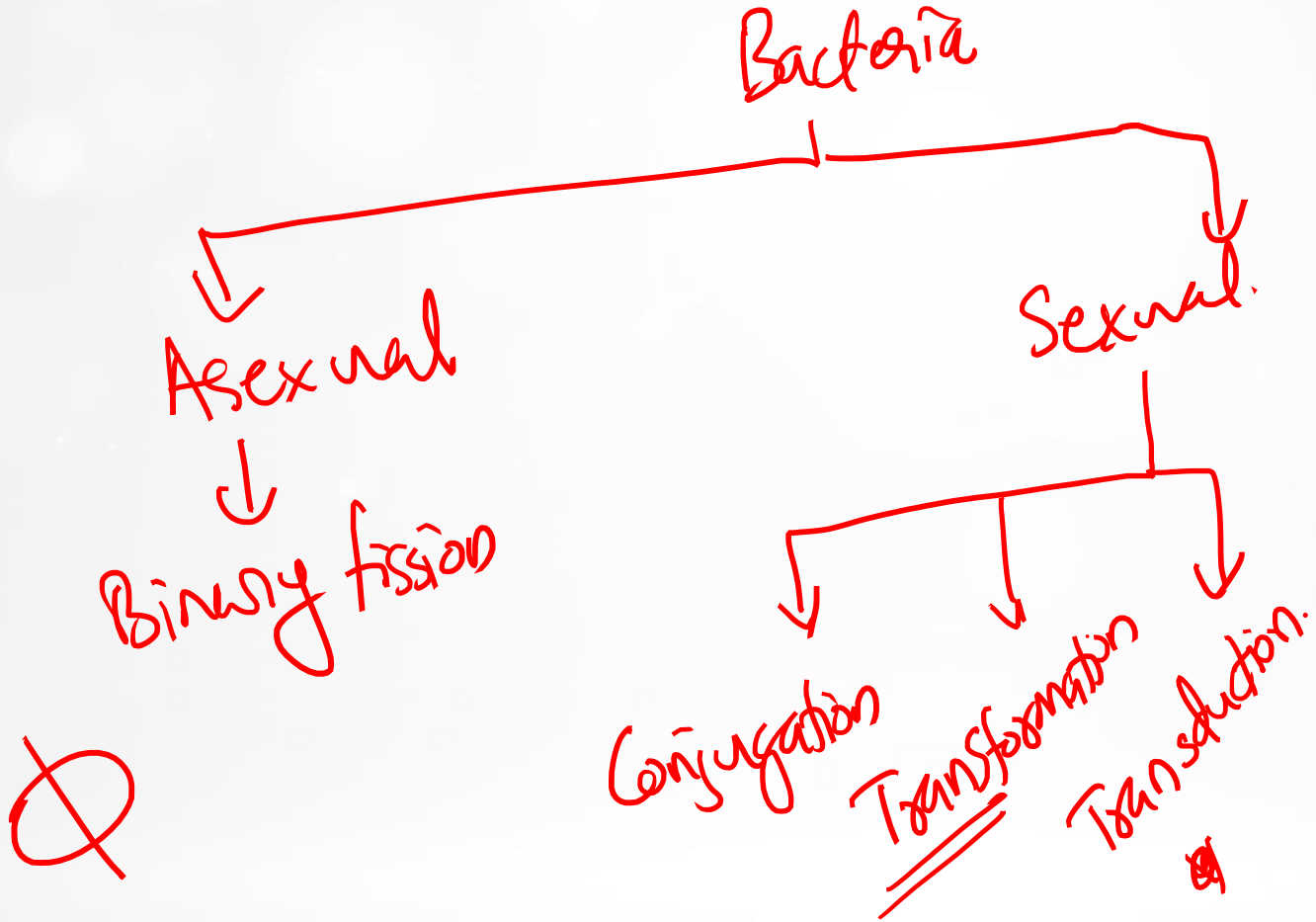




Autotrophic: Prepare their own food.

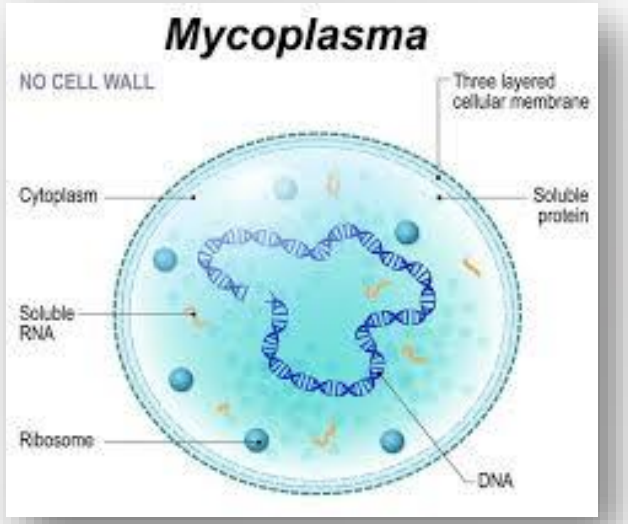
Heterotrophic: Depends upon others for food.

Reproduction



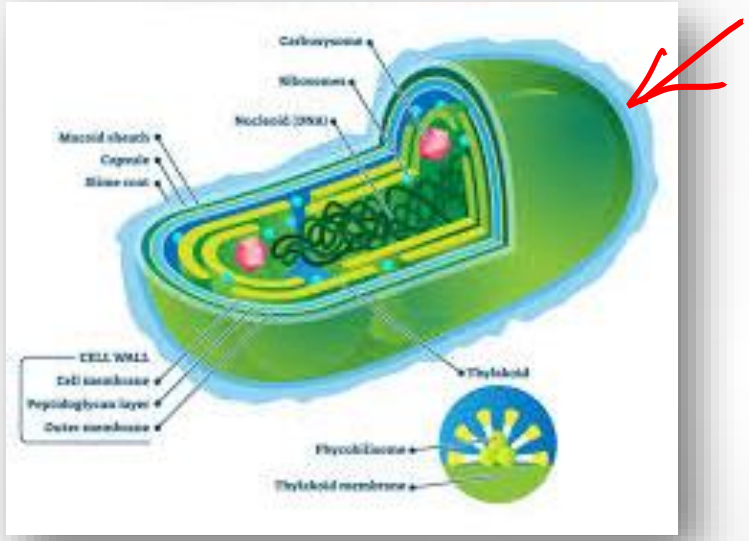
Mycoplasma

- Facultative anaerobes.
- Also called Pleuropneumonia-like organisms (PPLO).
- First isolated from cattle suffering from Pleuropneumonia.
- Cause diseases in plants and animals.
- It is also called joker of the plant kingdom.



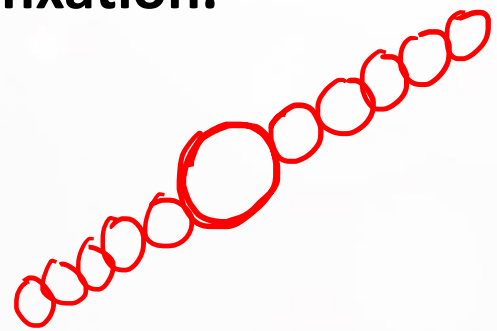
Cyanobacteria (Blue green algae)

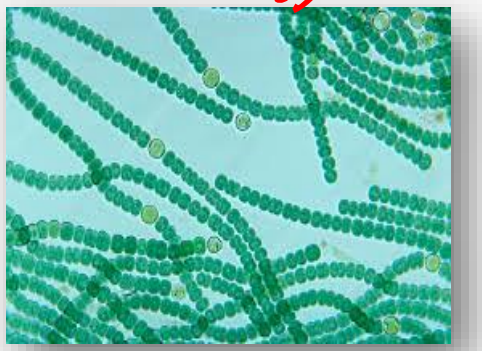
- Prokaryotic.
- Unicellular/Colonial.
- Surrounded by a gelatinous sheath.
- Cell wall made up of peptidoglycan.
- All members are autotrophs.



Cyanobacteria

- Characteristic pigments like c-phycocyanin (blue colour), c-phycoerythrin (Red colour), β-carotene and chlorophyll- a are present.
- Heterocyst helps in nitrogen fixation.
- Used as Biofertilizers
- Example:
  - Nostoc
  - Anabaena.





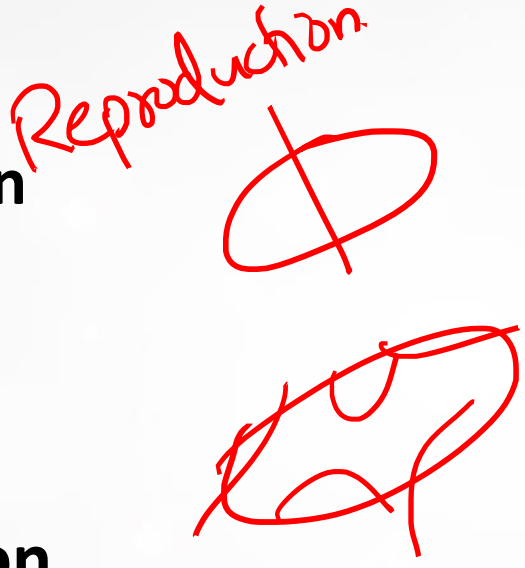
Reproduction

- Asexual ~~Riproduction~~

  - Binary Fission.
  - Fragmentation

- Sexual Reproduction

  - Not reported



Economic importance

- Dairy Industry
- Converting milk into curd

  e.g. Lactobacillus.
- Cheese,

  e.g. Propionibacterium shermanii.
- Fermentation
- Production of alcohol

  e.g. Zymomonas mobilis.

Economic

- **Pharmaceutical**
  - **Many of them yield antibiotics,**

e.g.

- **Streptomycin (Streptomyces griseus)**
- **Tetracycline (Streptomyces rimosus)**
- **Chloramphenicol (Streptomyces venezuelae)**

- **Bio fertilizers**
  - **Many bacteria are able to fix atmospheric nitrogen,**

e.g.

- **Rhizobium.**

Various Plant Diseases

- Citrus canker:

  Xanthomonas citri

- Blight of rice:

  Xanthomonas oryzae

- Crown gall:

  Agrobacterium tumefaciens

Various Animal diseases

- **Tetanus:**
- **Clostridium tetani**
- **Cholera:**
- **Vibrio cholerae**
- **Leprosy:**
- **Mycobacterium leprae**
- **Diphtheria:**
- **Corynebacterium** Diphtheriae
- **Pneumonia:**
- **Diplococcus pneumoniae**

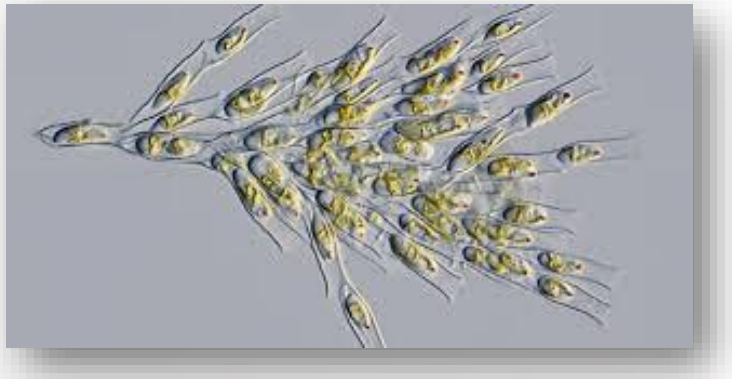
Kingdom protista

- Microscopic Organisms.
- Many occur in water bodies as planktons.
- Some are parasitic on animals.
- Surrounded by plasma membrane.
- Additional covering of Pellicle, Cuticle, Shell or Cellulose wall may be present.

Protista - Classification

Chrysophytes

- Chrysophytes includes diatoms (previously known as golden brown algae) and desmids.
- Occur in both marine and freshwater habitats.



Chrysophytes

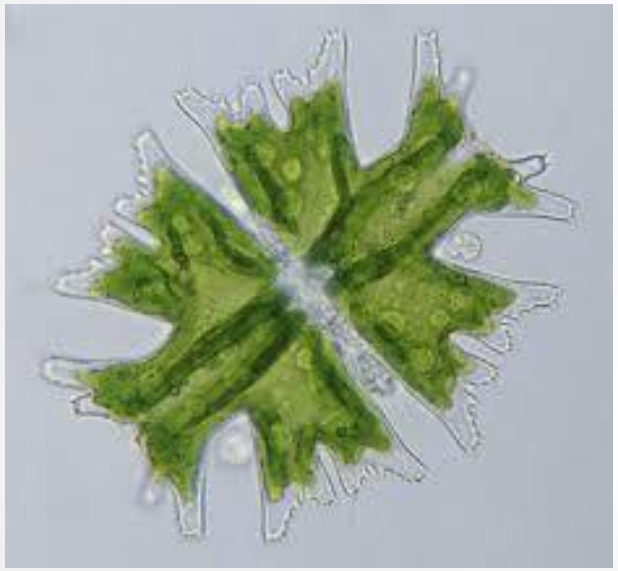
- Free floating or benthic.
- Perform Photosynthesis, constitute the major phytoplanktons of water bodies.

Chrysophytes

- Float passively in water currents (plankton).

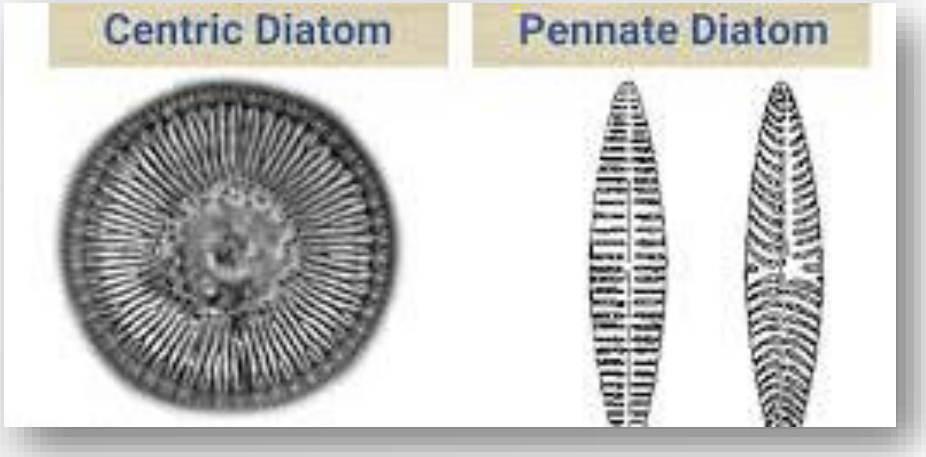
  [plankton – passive flow,

  nekton - active flow]



Chrysophytes

- Most of them are photosynthetic.
- They are of two types- pinnate and centric diatoms



Diatoms (2n)

- Cell wall consists of 2 overlapping halves like a soap case.
- Cell wall made of siliceous frustules (Silica deposited in cell wall).
- They do not decay easily.

Diatoms (2n)

- Reproduction through asexual and sexual modes.
- Zygote forms a rejuvenescent cell called auxospore.
- Pile up at the bottom of the water bodies and form diatomaceous earth or diatomite.

Diatoms (2n)

- Diatoms have left behind large amount of cell wall deposits in their habitat, this accumulation over billions of years is referred to as ‘diatomaceous earth’.

Diatoms (2n)

- Being gritty this soil is used in polishing, Filtration of oils and syrups.
- Diatoms are the chief ‘producers’ in the oceans.

Diatoms (2n)

- Chloroplasts or Chromatophores are yellowish brown to greenish brown.
- Pigments present: Chlorophyll a, chlorophyll c and fucoxanthin.

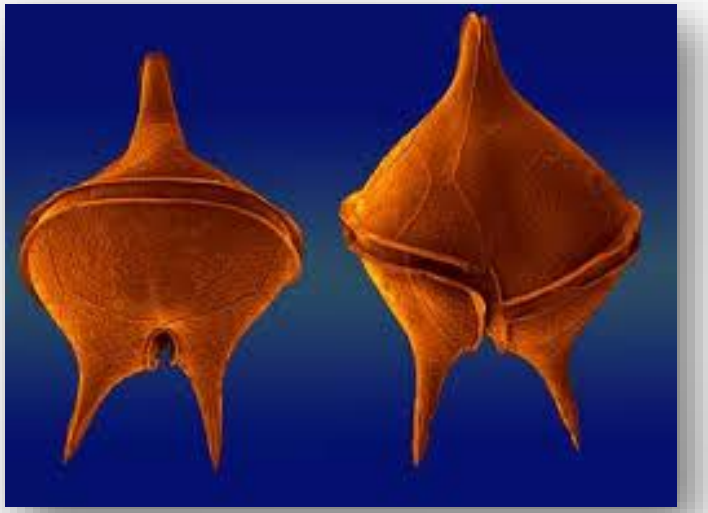
Desmids

- They are unicellular green algae.
- Somewhat similar to Spirogyra in terms of large chloroplast and sexual reproduction

  through conjugation.
- Occur in freshwater and regarded as the indicator of unpolluted water.

Dinoflagellates

- Unicellular, autotrophic Cellulosic cell wall, divided into plates.
- Have 2 flagella one lies in the longitudinal direction, which hangs out while the other lies transversely in the furrow between the cell wall plates.



Dinoflagellates

- They are mostly marine and photosynthetic.
- Sexual reproduction is unknown.
- Gonyaulax causes red tide in the ocean; it secretes a toxin called saxitoxin, that causes fish mortality.

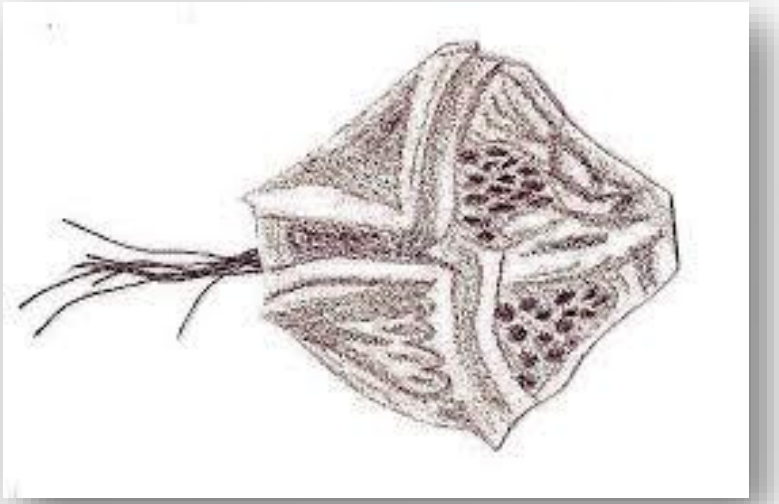
Toxins

- Toxins released by such large numbers may even kill other marine animals such as fishes.
- Some show bioluminescence, due to enzyme luciferase.

E.g. Noctiluca.

Dinoflagellate

- They appear yellow, green, brown, blue or red depending on the main pigments present in their cells.
- The cell wall has stiff cellulose plates on the outer surface.



Example

Genophore/bacterial genome or nucleoid is made of (1993)

(a) histones and non-histones

(b) RNA and histones

(c) a single double stranded DNA

(d) a single stranded DNA.

Example

Which of the following organisms are known as chief producers in the oceans? (NEET 2018)

(a) Dinoflagellates (b) Diatoms
(c) Cyanobacteria (d) Euglenoids

Example

In which group of organisms the cell walls form two thin overlapping shells which fit together? (2015)

(a) Dinoflagellates **(b) Slime moulds**

(c) Chrysophytes **(d) Euglenoids**

Example

Euglenoids are Similar to higher plants because of the presence of

a. Cell walls
b. Pigments
b. C. Both a and b
d. Flagella

Example

Read tides often cause massive fish kills and human illness in those eating shellfish. Which group of protists is responsible for red tides?

a. Diatoms
b. Protozoa
c. Desmids
d. Dinoflegallates

Example

Which one of the following is true regarding Chrysophytes?

a. They Parasitic forms which cause diseases in animals
b. They have a protein rich layer called pellicle
c. They include diatoms
d. They are saprophytic protists

Example

Most of them have two Flegella; one lies longitudinally and the other transversely in a furrow Between the wall plates.
Here were talking about

a. Euglenoids **b. Protozoa**
c. Dinoflagellates **d. Golden brown algae**

Example

Diatomaceous earth used in polishing and filtration due to its

a. Slimy nature
b. Gritty nature
c. Dusty nature
d. Hard nature

Add slide