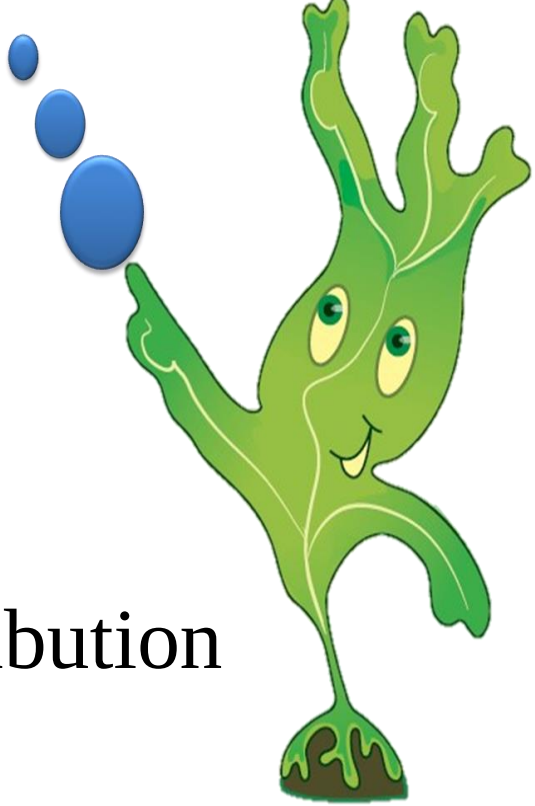
Biology Dept., College of Education, Salahaddin University - Erbil, Kurdistan region - Iraq

An Introduction about the Algae

Lab-1

Khasro.ismael@su.edu.krd

Outline



- Introduction about algae
- Classification, occurrence and distribution
- Reproduction of algae
- Forms of algae

Definition of Algae

Phycology: is the science of algal study.

- Algae (singular called alga): are widely distributed in aquatic, terrestrial and unusual habitats.

- They are extremely diverse photosynthetic plants.

Definition of Algae

- The algal body is known **Thallus (Undifferentiated plant body)** because its body is not developed into stems, roots, leaves.

- The algae range in size and organization from diameter to highly organized macroscopic plants which may get lengths of 60 meter.

The classification of Algae

Algae have been mainly classified **on the basis** of the:

1. Composition of cell wall
2. Photosynthetic pigments
3. Storage products of vegetative cells
4. Form of motile reproductive cells
5. Habitat

The Occurrence and Distribution of Algae

Aquatic algae may be:

A. suspended (**Planktonic**)
B. attached and living in the bottom (**Benthous**).

<u>The benthic algae classified as:-</u>

1. **Epilithic:** Living on stones.
2. **Epipelic:** Attached to mud or sand.
3. **Epiphytic:** Attached to plants.
4. **Epizoic:** Attached to animals.
5. **Cryophilic**: living on snow,
6. **Halophylic**: living on salty water

The Occurrence and Distribution of Algae:-

Soil algae classified as:

- **Endedaphic:** Living in soil.
- **Epidaphic:** Living on the soil surface.
- **Hypolithic:** Living on Lower surface of stones on the soil surface.

Whereas, rock algae including:

- **Chosmolithic:** Living in rock fissures.
- **Endolithic:** Living in rock penetrations.

Algal Reproduction:-

There are three common methods of reproduction found in algae

1. **Vegetative Reproduction:** Unicellular algae may divide into two halves to produce new individuals. In multicellular forms the thallus often breaks into small fragments. Each of which grows to a new individual.

2. **Asexual Reproduction:** include the formation of one or more of the following types of spores: zoospores, aplanospores, autospores, hypnospores, carpospores, tetraspores, endospores and exospores.

Algal Reproduction:-

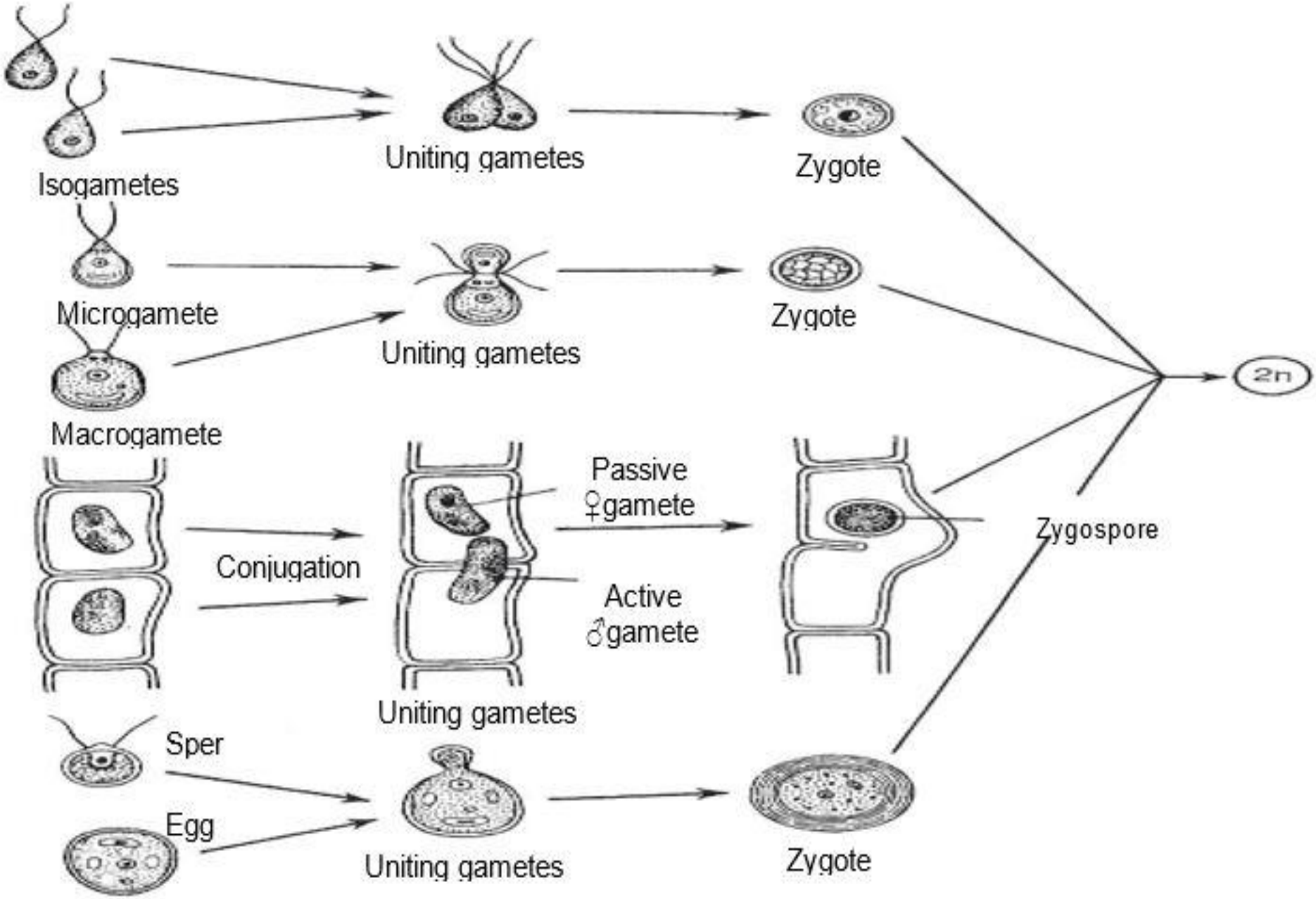
3. Sexual Reproduction: It means the union of two gametes. If the gametes are morphologically similar, the process is called (A) **Isogamous** sexual reproduction).

- If the gametes differ in size and motility the smaller and more active being male and the larger and less active being female, the process is known as (B) **An isogamous** sexual reproduction).

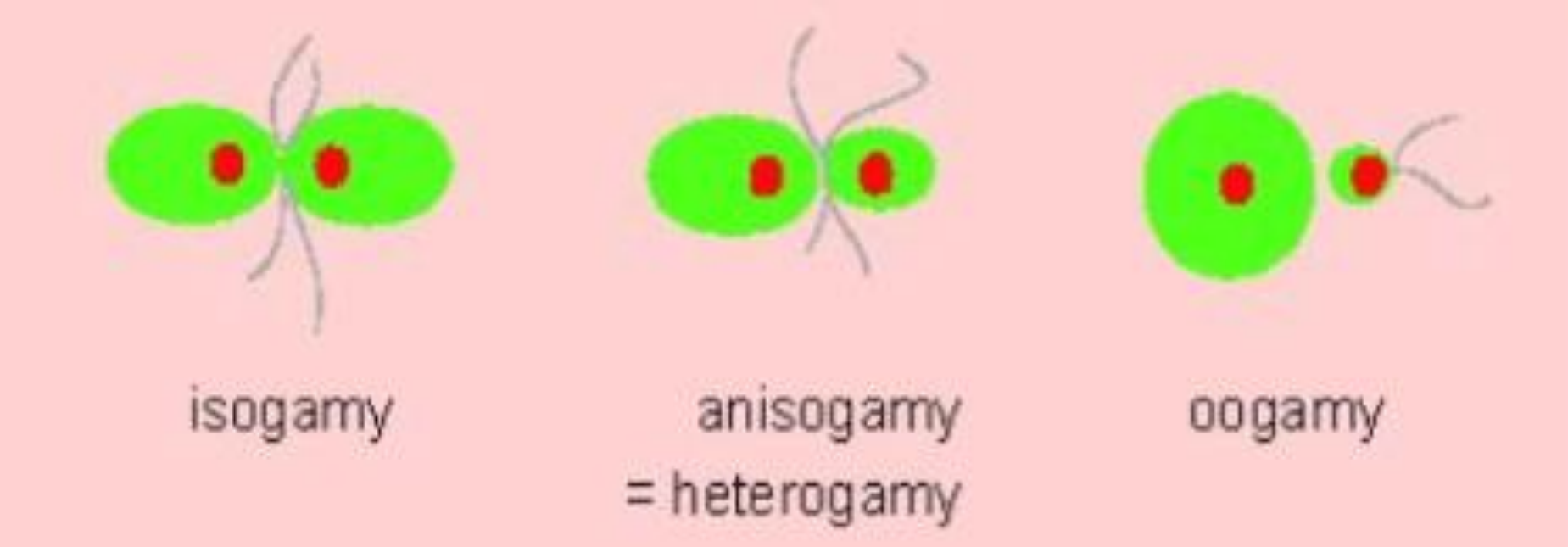
- If the gametes being extremely different, the larger – nonmotile one called egg and the smaller – motile one called sperm, the process is known (C) **Oogamous** sexual reproduction) .

Algal Reproduction:-

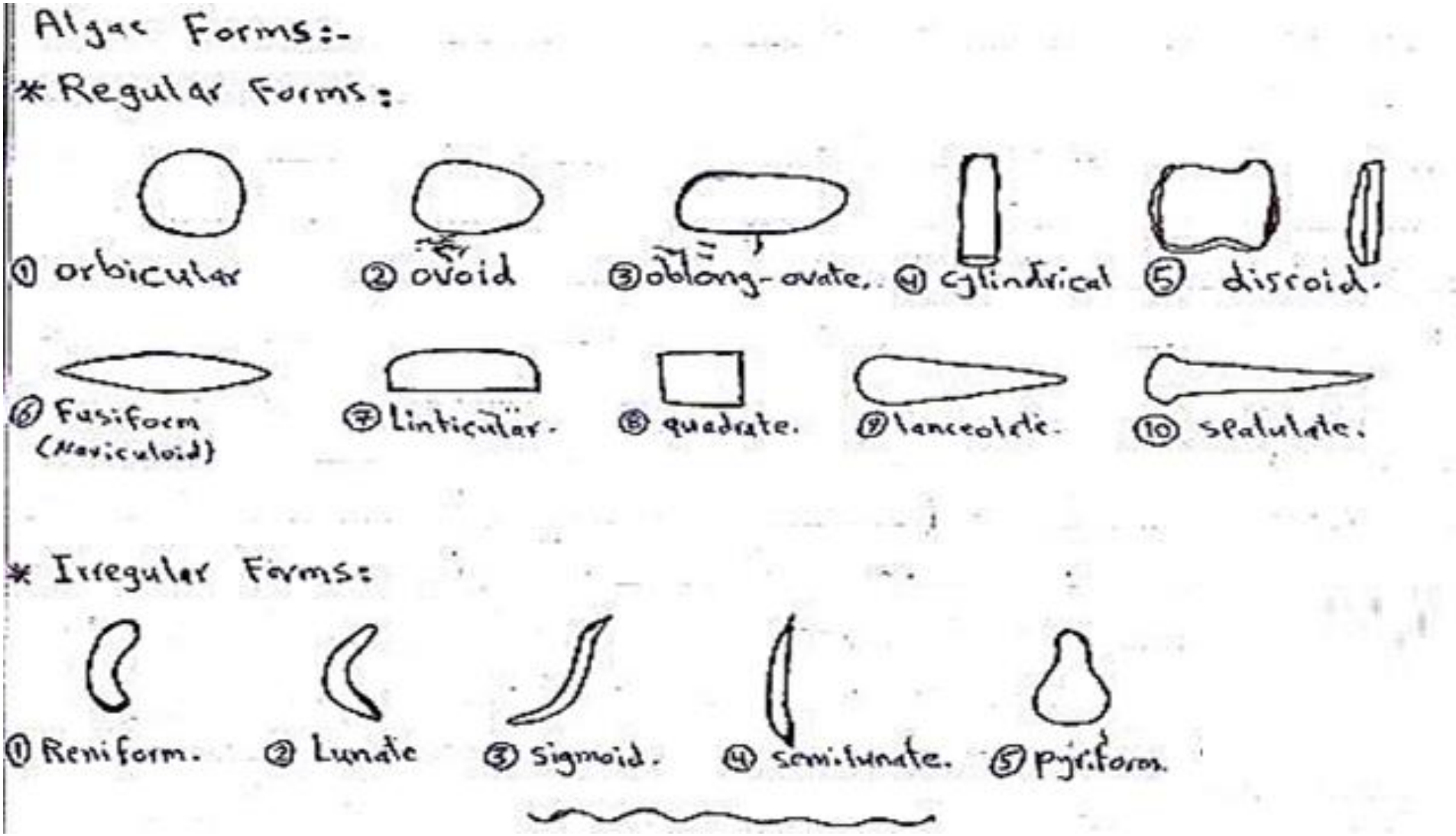
d. Conjugation is the type of sexual reproduction occurs between some filamentous algae like zygnematales group and dismediaceae, forming conjugation tube between male and female filaments.



Modes of Sextual Reproduction in Algae


isogamy
anisogamy
= heterogamy
oogamy

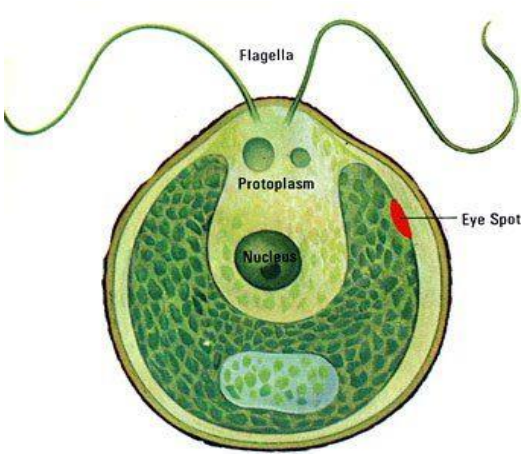
The forms of algae



Plastid Forms in Algae

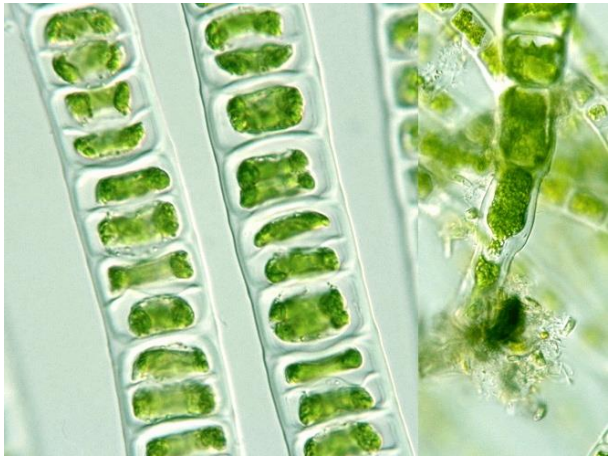
- Cup: *Clamydomonas sp, Volvox sp.*
- Discoid: *Vouchria* sp*, Chara sp.*
- Girdle: *Ulothrix sp.*
- Reticulate: *Oedogonium* sp*, Cladophora sp*
- Spiral: *Spirogyra sp.*
- Star: *Zygnema sp.*

Plastid Forms in Algae

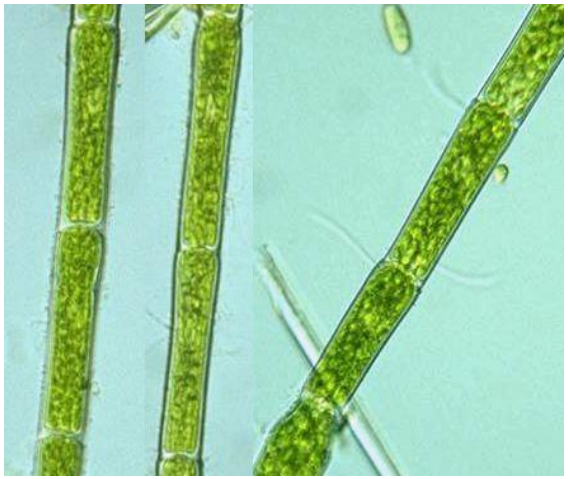


Clamydomonas sp

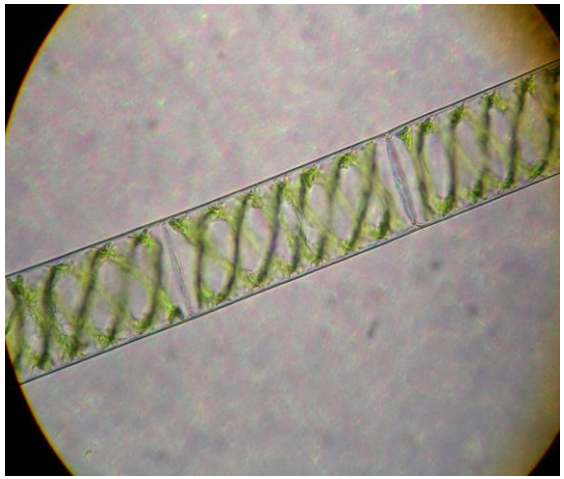
Vouchria sp



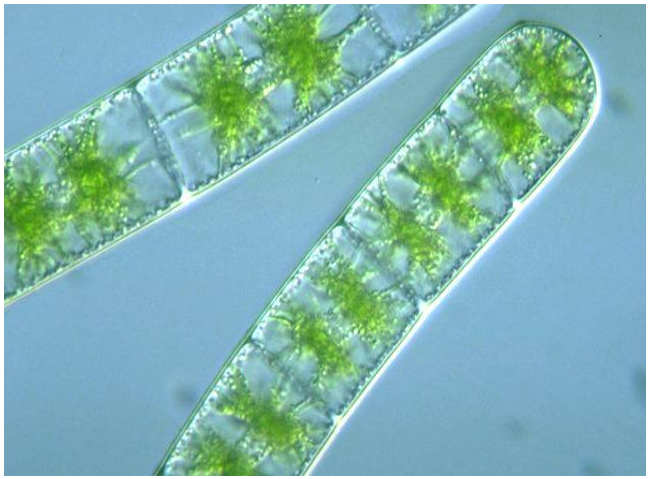
Ulothrix sp



Oedogonium sp



Spirogyra *sp*



Zygnema *sp*

Human-Algal interaction

Beneficial Effects of algae

- Used as nutrient, food and carbon recycling.
- Use carbon dioxide to produce oxygen.
- Biosynthetic factories. Can be used to produce drugs, antibiotics, alcohol, oil automobile and agar.
- Model organisms for biochemical and genetic studies
- Can be used to make biodiesel

Human-Algal interaction

Harmful Effects of algae

- Human illnesses, including allergies.
- Toxins produced by some species of poisonous algae to kill aquatic organism
- Pollute river, marine, sea and ocean (Red Tide).
- Plant diseases.

Thank you for Listening!