

RANGE OF THALLUS ORGANIZATION

Algal thallus organization can be broadly classified into unicellular and multicellular thallus.

1. Unicellular algae

The unicellular types may be amoeboid motile or non-motile, the motility being due to the movement of the flagella attached at the anterior end. These are of two types-

- a) **Non-motile**- Non-motile unicells do not possess any outgrowth for locomotion. Example- *Chlorella*, *Spirulina*
- b) **Motile**- These unicellular algae are found in all shape and sizes. They range from small spherical cells to large irregular cells. The unicellular forms may be spherical, oblong, pear- shaped or sometimes elongated bearing flagella. Example- *Chlamydomonas*.

Unicellular Amoeboid Forms or Rhizopodial Forms

These algae lack flagella, the organs of motion, but are able to perform amoeboid movement by means of cytoplasmic growth. E.g- *Chrysamoeba*

2. Multicellular Algae- Colony is formed by aggregation of individual cells. These are of following kinds-

- a) **Coenobium** – A colony with definite shape, size and arrangement of cells are found. Coenobium can be motile e.g.- *Gonium* (small colony), *Volvox* (Big colony) and non-motile. E.g- *Pediastrum*. In **motile coenobial type**, a number of individual unicellular cells with their flagella protruded out is embedded together in a gelatinous sheath to form more or less rounded colony or coenobium.

In non- motile coenobial type, non- motile cells are arranged in a single layer along the long axis or cells are attached end to end forming a pentagonal or hexagonal mesh of net. E.g.- *Pediastrum*.

- b) **Amorphous or Palmelloid Colony**- It is a temporary stage found in the alga *Chlamydomonas* and *Chromulina* of Chlorophyceae under unfavourable conditions. During the vegetative phase, the non-motile parent cell produces several non-motile daughter cells which are embedded within a common gelatinous envelope. The daughter cells further divide forming numerous cells within the matrix which later on become motile by the formation of flagella.
- c) **Dendroid colony**- Mucilaginous thread is present at the base of each cell and the threads of different cells are united to form a branched structure. It gives a tree-like appearance to the whole colony. E.g.- *Dinobryon*
- d) **Rhizopodial colony**- Cells of the colony are united through cytoplasmic projections or rhizopodia. E.g.- *Chrysidiastrium*.

3. Filamentous forms- Filamentous algae are floating or attached. The simplest filamentous algae consist of a thallus (body) of a single chain of cells. This is the result of cell division in one plane only. Filamentous algae are of following types-

- i) **Unbranched filamentous algae**- Consist of straight row of cells without any branching points. E.g.- *Spirogyra* (free living), *Ulothrix* and *Oedogonium* (attached).
- ii) **Branched filamentous algae**- Filaments remain attached to the substratum with the help of a holdfast. Branches may arise as a lateral outgrowth of any cell except from the holdfast. E.g.- *Cladophora*.

- iii) **Pseudobranched algae**- This type of algae appears like branched under microscope. Actually, branching is due to close association of unbranched individual filaments. E.g- *Scytonema*.
 - iv) **Heterotrichous forms**- Presence of more than one type of filament. Some cells in the filaments divide several times in different planes resulting in two parts. Plant body consist of prostrate system (horizontal part) and erect system (vertical part). E.g.- *Chara*, *Draparnaldiopsis*.
4. **Siphonous forms**- In this type the thallus is made up of long hollow tube-like structure called coenocyte. The coenocytic filament without partition or cell wall contains many nuclei and is branched. Eg.- *Vaucheria*, *Botrydium*
5. **Parenchymatous type**- Modification of filamentous habit with cell division in more than one plane. Depending upon the nature of cell division, the parenchymatous thalli may be “leaf-like”, foliose, tubular or highly developed structure.
E.g.- *Ulva*, *Porphyra*