

2.Asexual Reproduction

- Asexual reproduction is a mode of reproduction by which offspring arise from a single organism, and inherit the genes of that parent only.
- it is reproduction which almost never involves ploidy or reduction.
- The offspring will be exact genetic copies of the parent, except in the specific case of automixis .

- A more stringent definition is agamogenesis which is reproduction without the fusion of gametes.
- Usually the protoplast of a cell divides into several protoplasts and there after they escape from the mother and develop into new plants.
- Asexual reproduction is the primary form of reproduction for single-celled organisms such as the archaeobacteria , eubacteria, and protists .

- Many plants and fungi reproduce asexually as well.
- Asexual reproduction take place by a variety of spore formed in different Algae. they include.....

❖ (i) **By zoospores:**

- The zoospores are formed from certain older cells of the filaments.
- The cytoplasm divides to form zoospores which are escaped from the mother cell.
- They are always formed in favourable conditions.
- The zoospores are always motile.

zoospores

flagella

flagella



- The zoospore are naked protoplasmic bodies which move by mean flagella or cilia .
- They may be (i) biflagellate, (ii) tetraflagellate, and (iv) compound zoospores.
- E.g Oedogoniales , Vaucheriaceae

❖ (ii) **By aplanospores:**

- When motile phase of zoospores is eliminated, the bodies are called aplanospores.
- The aplanospore are produce when there is a lack of sufficient water.
- These are covered by a thin wall but do not possess flagella like the zoospores.
- The also germinate directly to give rise to new plant .

❖ (iii) **By hypnospores** :

- Actually they are very thick-walled aplanospores and develop only in adverse conditions.
- In comparatively drier situation the content of mother cell round off and secrete a thick wall around them , to tide over the unfavourable condition.
- These thick walled structure called resting spore or hypnospores .

- Sometime the entire cell as such become thick-walled to form an akinete .
- They are usually produced at the approach of dry and hot weather .
- On the approach of favourable condition they germinate directly to produce a new plant or form zoospores.
- e.g., *Pediastrum*, *Vaucheria*.

❖ (iv) **Palmella stage:**

- The approach of dryness as when the plants are left on the moist bank by receding water of the ponds the cells of many algae continue to divide but their contents are not liberated.
- The mother wall becomes gelatinous thus forming a mass or colony of rounded cells which lie embedded in a jelly like substance formed from the cell walls.

Palmella stage



- On the return of favourable condition the cell come out either as zoospore or as aplanospores.
- The germination to produce normal plant .
- e.g Ulothrix etc

❖ (v) **Autospores:**

- They are just like aplanospores except that they are smaller in size.
- They resemble in shape to mother cell except in size.
- Each autospore gives rise to a new plant.
- Such autospores are reported from many Chlorococcales.
- E.g ,Scenedemus etc.

❖ (vi) **Endospores:**

- In many blue green algae and Bacillariophyceae, the endospores are formed within the cells.
- The endospore forming cell behaves as a Sporangium .
- On the approach of favourable conditions, each endospore develops in a new individual.

❖ (vii) **Cysts** :

- These are thick walled spores formed during unfavourable conditions or even when food supply is abundant.
- During their formation as in vacheria the thallus becomes many septate and each chamber thus formed produce a thick walled cysts.

Cysts

