3055 BA SANGAM COLLEGE

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WORKSHEET 13

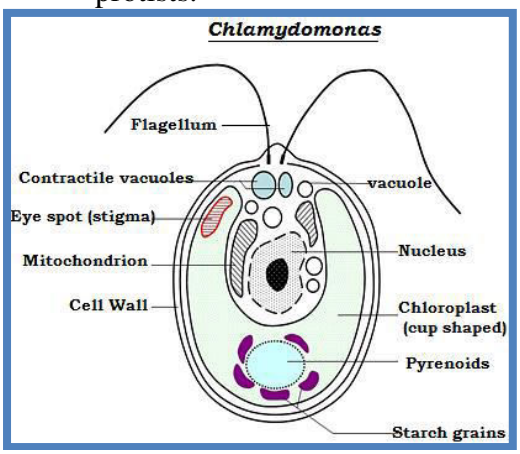
School: **Ba Sangam College** Subject: **Biology**
Year: **13** Name:_____

Strand	**3 Biodiversity Change and Sustainability**
Sub strand	**13.3.2 Diversity Of Life**
Content Learning Outcome B13.3.2.3	**Kingdom Protista** Describe the characteristics that separate organisms in this kingdom to different categories

Green Algae

i. Chlamydomonas

- Is a single celled green alga, grows in ponds, ditches, and wet soil.
- A small egg-shaped cell with two flagella.
- A light sensitive area called the eyespot that directs the *Chlamydomonas* to where light is
- *Clamydomonas* has a large cup-shaped chloroplast. At the base of the chloroplast is a small pyrenoid an organelle that synthesizes and stores starch.
- *Chlamydomonas* lacks the large vacuoles found in the cells of land plants. In¬ stead it has two small contractile vacuoles.
- , *Chlamydomonas* has a cell wall that does not contain cellulose.
- This combination of characteristics has led botanists to believe that *Chlamydomonas* is a good example of one step in the evolution of multicellular plants from unicellular protists.



Reproduction

Sexual Reproduction

- Whenever, two isogametes of different mating types are collide by chance, it is usually at their flagella ends.
- Both gametes unite and form a diploid zygote. The zygote soon loses its flagella, develops a thick wall around it and becomes relatively more resistant to unfavourable growth conditions.
- With the return of favourable ecological conditions, the zygote undergoes meiosis and produces four haploid, motile zoospores, each of which grows into a vegetative cell.

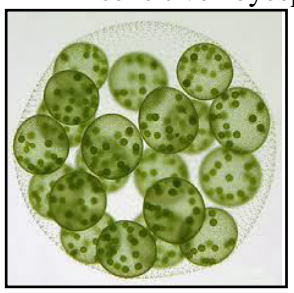
Asexual Reproduction

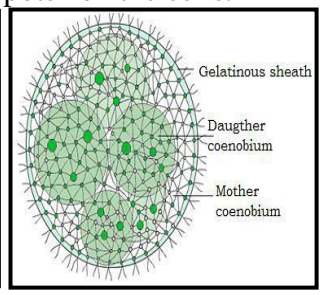
- The nucleus divides to produce up to sixteen offspring cells (zoospores) within the parent cell wall.
- Each cell develops flagella and secretes a wall around itself.
- The cells then secrete an enzyme that breaks down the parent cell wall by which they can escape.

ii. Volvox

- *Volvox* is a colonial algae, composed of spherical flagellate cells and found in freshwater.
- Each mature *Volvox* colony is composed of numerous cells similar to *Chlamydomonas*, on the order of 1000–3000 in total,

- and embedded in the surface of a hollow sphere or coenobium made of a gelatinous glycoprotein
- The colony has the tendency to swim towards light as a result of the light sensitive "eyespots" on the cells.



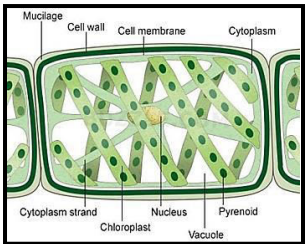


Reproduction

- The colony can be either asexual or sexual with the asexual colonies having both somatic cells and reproducing cells called **gonidia**.
- Gonidia cells are located near the posterior and produce new colonies through rapid reproduction.
- If sexual reproduction takes place, two types of gametes are produced.
- Male colonies will release sperm while female colonies will grow into **oogametes.**

iii. Spirogyra

- Filamentous green algae that is abundant in fresh water such as, water tanks, ponds, estuaries etc.
- They are unbranched and plant body is composed of multicellular and tubular or rectangular cells
- Cell wall is made of cellulose
- Vascular tissue is absent
- Reproduction occurs through vegetative and asexual methods;
- Sexual reproduction occurs either by lateral conjugation method
- Alternation of generation is clearly found in their life cycle.
- In adult stage, they usually live independently. After germination at the beginning stage, they usually remain attached to bricks, stones or aquatic plants

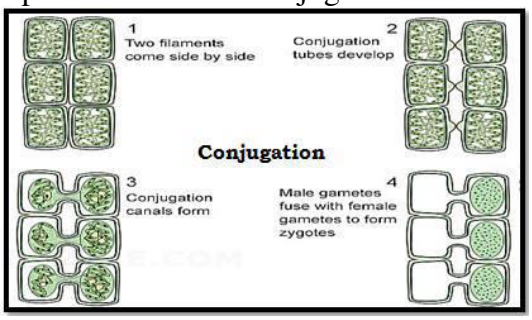


Reproduction

Vegetative Reproduction: the vegetative reproduction is fragmentation is fragmentation, i. e., and breakdown of filament into fragments due to mechanical stress or dissolution of septum between the cells.

Asexual Reproduction: the asexual reproduction, where present, is by formation of thick walled, non-motile **aplanospores**; or if a gamete fails to fertilize, it develops a thick wall to become a **zygospore** which give rise to a new filament.

Sexual Reproduction: the sexual reproduction occurs when the conditions are favorable for growth. It is primitive type of isogamous sexual reproduction called conjugation.



Activity

1. What is one important difference between *Chlamydomonas* and *Volvox*?

_____
_____
_____
_____ (2m)

2. How is alternation of generations an effective way of ensuring that fit individuals survive

_____
_____
_____
_____(2m)

3. Explain the economical importance of algae to life.

_____
_____
_____
_____(2m)