



3055 BA SANGAM COLLEGE

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WORKSHEET 12

School: **Ba Sangam College**

Year: **13**

Subject: **Biology**

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

Kingdom Protista

General Characteristics of Protists

- mostly unicellular, some are multicellular (algae)
- can be heterotrophic or autotrophic
- most live in water (though some live in moist soil or even the human body)
- ALL are eukaryotic (have a nucleus)

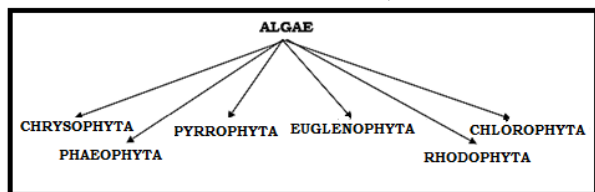
Classification of Protists

Organisms in this kingdom are classified according to:

- how they move
- how they obtain nutrition
- Plant like Protists - also called algae – autotrophs
- Animal like Protists - also called protozoa (means "first animal") heterotrophs
- Fungus like Protists - heterotrophs, decomposers, external digestion

Plant -Like-Protists-Algae

- are autotrophs
- source of food for other organisms
- release 50-60% earth's oxygen
- Do not have true stems, roots or leaves



Phylum Pyrrophyta (dinoflagellates)

- are very successful group

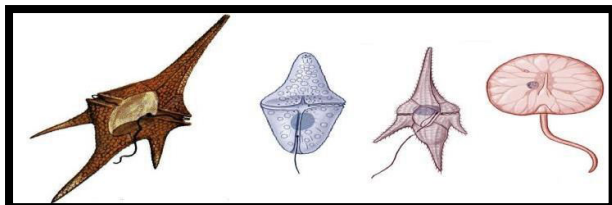
- at times a loss to the ecosystem
- When conditions are favorable, a population explosion or bloom may occur, sometimes resulting in contamination of fish and shellfish and posing threat to human and animal health.

Other characteristics include:

- Eukaryotic single-celled algae and autotrophic
- Many have two flagella, which allow the cells to have limited mobility
- Cells are covered by a theca (sheath) that can be smooth or ornamented
- Some species survive by other nutritional modes, and may absorb organic matter or engulf prey (heterotrophs)
- Of the 2000 known species, about 60 are able to produce complex toxins

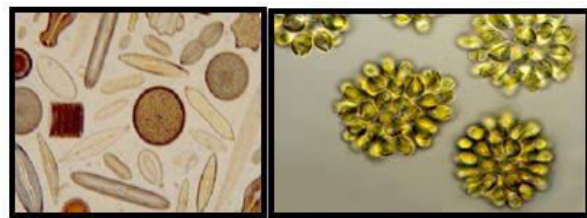
Other roles:

- **Zooxanthellae:** are symbionts (live in mutually beneficial relationship) in other organisms and photosynthesize and carbon products absorbed by corals, helping to make coral reefs one of the most productive habitats on earth.
- **Bioluminescence:** some emit light when disturbed
- **Red tides:** population explosions ("blooms") that can color the water with pigmented dinoflagellate cells
- **Toxins** in cells can kill marine life example, *Pfiesteria piscicida*: stuns fish with toxin and feeds on body fluids.



Phylum Chrysophyta (diatoms and golden algae)

- Eukaryotic and single celled
- meet their nutritional needs through photosynthesis
- The presence of chlorophyll and accessory pigments, especially fucoxanthin, give them a golden color and serve to harvest light energy from the sun.
- Cells are encased in a transparent glass-like silica “container” called a frustule that resembles a petri-dish.
- The frustules can be ornate and very beautiful, and due to the resistance of silica, they form an important part of the fossil record
- Cells may form chains or colonies.
- Up to 100,000 species of diatoms have been recorded world-wide

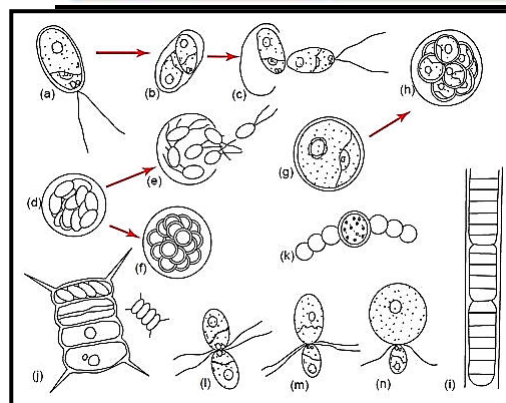
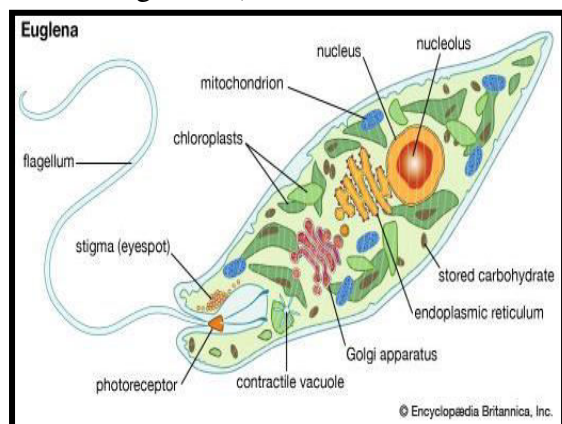


Phylum Euglenophyta (euglenoids)

- are heterotrophs and autotrophic
- Euglena usually live in freshwater ponds
- Chloroplasts trap sunlight required for photosynthesis and can be seen as several red-like structures throughout the cell.
- An eyespot is sensitive to light and moves forward it so photosynthesis can occur - known as phototaxis

Structure of Euglena

- Euglenoids move using flagellum
- **Nucleus**-contains the cell's DNA and controls the cell's metabolism
- The interior of the cell contains cytoplasm, a jelly-like fluid substance.
- Towards the posterior of the cell is a star-like structure, the contractile vacuole-helps the cell remove excess water (osmoregulation)



Examples of asexual reproduction in the algae include: (a-c) **Bipartition or binary fission**. (d) and (e) **Zoospore formation**. (f) **Aplanospore formation**, (g) and (h) **Autospore formation**. (i) **Fragmentation or hormogonium formation**. (j) **Autocolony formation**. (k) **Akinete formation**. (l) **Isogamy**. (m) **Anisogamy**. (n) **Oogamy**.

Vegetative reproduction: This is the most common method of reproduction. It generally takes place by fragmentation, cell division, hormogonia, bulbils and starch stars.

Activity

1. Name two characteristics of algae?

(2 marks)

Plant like Protists	Animal like Protists
<ul style="list-style-type: none"> • It has chlorophyll for photosynthesis. • It uses holophytic mode of nutrition if light is present. • Possession of pyrenoid. • Carbohydrate or food is stored in form of starch granules. 	<ul style="list-style-type: none"> • Possession of an eye part for light deflection. • Possession of pellicle. • Possession of a gullet and a food reservoir. • Possession of flagellum for movement. • Possession of contractive vacuole for excretion and osmoregulation.

