

Unit 8: Biodiversity Kingdom Protista (8.4)

I. Protista

- A. Most of these organisms are *uni-cellular*.
- B. Means of *nutrition (feeding)* for these organisms:
- Heterotroph** (Feeds on other organisms.)
 - Includes the Animal – like protists. (These are protozoa or zooplankton.) (“zoa” means “animal”)
 - Also includes the Fungus – like protists.
 - Photoautotroph** (Photosynthesizers)
 - Includes the Plant – like protists. (These are the algae and phytoplankton.)
 - Mixotroph** (These organisms can obtain energy either way listed above.)
- C. Most organisms are motile.
- They use flagella or cilia to move through the water or other liquid.
 - These are not homologous structures with bacteria – it is an analogous structure, remember.
Please review with student’s theses two terms and the connection with common ancestry.
 - These are an *extension* of the cytoplasm in protists so they are considered organelles; They are part of the plasma membrane in prokaryotes and are therefore not considered organelles.
 - The flagella are believed to have been a helical prokaryote that entered into a *symbiotic relationship*.
- D. Reproductive Means
- Most are *sexually reproducing* organisms. (Remember, this method favors variation.)
 - Some are asexual. (This is a *faster process* but produces *no variation*; they are all clones.)
- E. Habitats of these organisms
- These are mostly aquatic organisms. (Most are important parts of food aquatic food chains or webs.)
 - Some organisms are symbiotic parasites.

II. Endosymbiotic Hypothesis

- A. This was proposed by Lynn Margulis in 1960.
- B. It proposes that smaller prokaryotes entered into a *symbiotic relationship* with a larger prokaryote for protection. In return, the smaller prokaryote provided the ability to produce energy or motility for the larger organism. This relationship would have given the “new” organism an evolutionary advantage over the existing prokaryotes. This advantage led to the evolution of the Domain Eukarya and eventually over hundreds of millions of years to the Kingdoms Fungi, Plantae, and Animalia.
- C. Supporting evidence – Mitochondria, Chloroplasts, Flagella

III. The main examples of protists that exists:

A. Euglenozoa

- These are *Bi-flagellated* organisms.
- Most of these organisms are **Mixotrophic**. (They can photosynthesize and also are heterotrophic.)
 - They have a *red eye spot* that helps in detecting sunlight.

B. Alveolata

- These organisms *contain small air –filled chambers called alveoli*.
- Dinoflagellates
 - Most are phytoplankton.
 - Example - **Red Tide** (These are toxic to most mollusks, fish, and humans.)

Please point out to students that this is a common occurrence in the Gulf of Mexico and also the University of Alabama Crimson Tide gets its name from this event.

C. Diatoms

- Produce a *yellow-brown, energy rich oil*.
- Have a strong outer *shell composed of silica*. (They look like stained glass.)
- Important phytoplankton. (In food chains, they are major producers.)*

D. Phaeophyta (Phaeo – means “brown”)

- A.K.A. Sea weed or kelp
- Produce a *brown, light absorbing pigment that contains Iodine*

E. Animal – like Protists (A.K.A. **protozoa**.) (“Proto” means “first”; “zoa” means “animal”)

- Most move using **Pseudopodia** “oozing”. (“pseudo” means “false”; “poda” means “foot”)
- These *catch and eat other organisms*, just like animals.
- Amoebas
 - Most are free-living organisms and have no “real shape”.

F. Fungus – like Protists (A.K.A. **Mycetozoa** – fungus animals) (“mycota” means “fungus”)

- These feed on *decaying organisms* as they are decomposers.

G. Plant – like Protists

- These organisms *perform photosynthesis*, just like plants.