The organelles and their functions of the Amoeba, Paramecium, Euglena, and Volvox

11/21/2011
# The *Amoeba, Paramecium, Euglena, and Volvox*

All are protists: eukaryotes that **cannot** be classified as animals, plants, or fungi.

## Movement

- Amoeboid (*pseudopodia*)
- Ciliate (*cilia*)
- Flagellate (*flagella*)
- Parasitic (*attachment to a host cell*)

## Way of Life

- Autotrophic: make their own food (*plantlike*)
- Heterotrophic: consume autotrophs or other heterotrophs (*animal like*)
- Heterotrophic w/ cell walls and reproduce w/ spores (sort of animal and plantlike $\rightarrow$ *fungus like*)
The Amoeba, Paramecium, Euglena, and Volvox

Organelles in common

- Nucleus
- Cytoplasm
- Food vacuoles: food that is being digested or broken down to provide the cell with energy.
- Contractile vacuoles (vesicles): pump excess water from the cell; keeps water levels within the cell consistent.
The *Amoeba, Paramecium, Euglena, and Volvox*

**Differences in organelles**

**Amoeba** (0.25mm – 2.5mm)
- Pseudopodia
- Cell membrane
- Endoplasm
- Ectoplasm

**Paramecium** (up to 2mm) *most complex*
- Cilia
- Pellicle
- Oral groove
- Anal pore
- Macronucleus
- Micronucleus

**Euglena** (15 – 500µm)
- Flagella
- Pellicle
- Stigma/eyespot
- Chloroplasts

**Volvox** (can be large enough to be seen w/ the naked eye)
- Flagella
- Cytoplasm
- Chloroplasts
- Live in colonies
Moves by stretching its cytoplasm into finger like extensions or pseudopodia.
Cell membrane is very flexible and allows the organism to change shape constantly.
Has 2 types of cytoplasm → endoplasm and ectoplasm
Endoplasm $\rightarrow$ granular inner mass; darker cytoplasm toward interior of the cell.
Ectoplasm $\rightarrow$ absorb water and removes carbon dioxide clearer cytoplasm found near the cell membrane.
It pushes its **endoplasm** toward **cell membrane** to move and consume food.
Use **cilia** to aid in locomotion and gather food. Cilia extends out from **pellicle**.
Pellicle → stiff but flexible covering gives the organism its shape.
Most complex single celled organism with two nuclei: **macronucleus** & **micronucleus**
Macronucleus → larger nucleus, controls everything, but reproduction.
Micronucleus ⇒ smaller nucleus, controls reproduction (asexually through binary fission and/or sexually through conjugation).
Oral groove $\rightarrow$ collect food with the aid of cilia
Anal pore → expel wastes
Flagellum → used to aid in locomotion may have more than one
Pellicle ➔ flexible surrounding envelope that allows the organism to change shape.
Can **absorb food** directly through the pellicle or **produce food** through photosynthesis – food is stored as a complex carbohydrate.
Eyespot/stigma detects light to aid the organism in finding sunlight for food production.
Chloroplast → trap sunlight to be used for photosynthesis.
Nucleolus contains the nucleus of the cell.
Volvox: common single celled pond algae that consists of one or more colonies.
Each cell uses its flagella simultaneously to move the colony.
Absorb food through the cell surface or produce it through photosynthesis through use of chloroplasts and store it as a complex carbohydrate.