Paramecium

Paramecium are unicellular protozoans classified in the phylum Ciliophora, and the Kingdom Protista. They live in quiet or stagnant ponds and are an essential part of the food chain. They feed on algal scum and other microorganisms, and other small organisms eat them. All members of the Phylum Ciliophora move by tiny hair-like projections called cilia.

The paramecium cannot change its shape like the ameba because it has a thick outer membrane called the pellicle. The pellicle surrounds the cell membrane.

There are two types of nuclei (plural of nucleus). The large nucleus is called the macronucleus which controls respiration, protein synthesis and digestion. The much smaller micronucleus is used only during reproduction. Reproduction in paramecium involves the exchanging of DNA within the micronucleus. In order to do this, two paramecium lie side by side and join at the mouth pore. This process is called conjugation and is a method of sexual reproduction in other microorganisms.

Contractile vacuoles are used in animal cells to remove the excess water. The contractile vacuole is shaped like a star.

Paramecium are heterotrophs, meaning they must consume food for their energy. Food enters the paramecium through the mouth pore and goes to the gullet. At the end of the gullet, food vacuoles are formed. Food vacuoles then remain in the cytoplasm until the food is digested. Undigested food particles are eliminated through the anal pore. The indented area where food enters the paramecium is referred to as the oral groove.

Paramecium can respond to temperature, food, oxygen and toxins and have a very simple defense mechanism. Just inside the pellicle are threadlike organelles called trichocysts. The paramecium can shoot tiny threads out of the cell to entangle a predator or to make themselves appear bigger. Paramecium are also known to exhibit avoidance behavior. This is where the paramecium will move away from a negative or unpleasant stimulus.

There are 2 kinds of cytoplasm in the paramecium. The cytoplasm around the edges is clear and is called ectoplasm. The rest of the cytoplasm is more dense is called endoplasm.

Questions

1. Is the paramecium a unicellular or multicellular organism?

2. What do paramecium eat?

3. How do all members of the Phylum Ciliophora move?

4. What is the function of the contractile vacuole?

5. What is the oral groove?

6. Wastes exit the paramecium through what structure?

7. What is the function of the trichocysts?

8. Define avoidance behavior.

9. Where do paramecium live?

Flip over and color the Paramecium according to the directions.

Paramecium

1. **Cilia** (black)
2. **Pellicle** (light blue)
3. **Macronucleus** (red)
4. **Micronucleus** (pink)
5. **Contractile Vacuole** (dark green)
6. **Mouth Pore** (orange)
7. **Gullet** (dark blue)
8. **Food Vacuole** (light brown)
9. **Anal Pore** (dark brown)
10. **Trichocysts** (purple)
11. **Ectoplasm** (white)
12. **Endoplasm** (yellow)