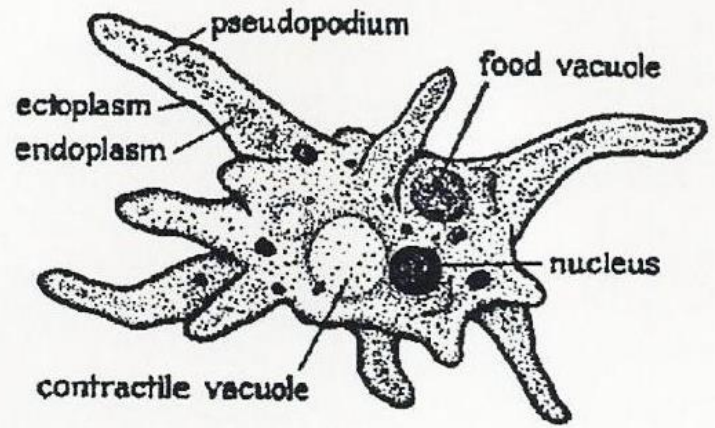


# Amoebas

1 Living things are made of cells. Some things consist of only one cell. They are called unicellular organisms. One of the simplest living things, an amoeba, is made of only one cell. Amoebas (sometimes spelled amebas or amoebae) are too small to be seen without a microscope, but they are commonly found in ponds and lakes. They are "shape-shifters" that sometimes appear as a round blob, sometimes appear to have feet, and sometimes appear to have arms that can surround their food. Amoebas are characterized by their flowing movements, considered to be the most primitive form of animal



locomotion, or movement. Some are well-known parasites of plants, animals, and humans. It should be noted that amoeba are not animals; however, they are classified in the protist kingdom.

2 An amoeba's single cell appears to be not much more than **cytoplasm** held together by a flexible **cell membrane**. Floating in this cytoplasm, several kinds of cell bodies (organelles) can be found. The most easily identified is the **nucleus**. Some species have only one nucleus; others may have hundreds of nuclei. The nucleus or nuclei control the growth and reproduction of the amoeba. Amoebas reproduce asexually by fission, or splitting in two. The "parent" cell divides into two smaller copies of itself. The nucleus also divides into two.

3 Amoebas are able to change their shapes. They can extend parts of themselves into what are called pseudopodia and then flow in the direction in which they wish to go. Pseudopodia means "false feet." If they find something to eat, they can engulf it with their pseudopodia and pull themselves around it to digest it. They can "ooze" and surround their food by making their cytoplasm more liquid and able to flow.

4 Amoebas eat algae, bacteria, plant cells, and other unicellular organisms. It engulfs or surrounds its prey and usually forms a kind of dome that makes escape impossible. Then, and only then, does the amoeba touch its prey. Scientists speculate that they must have some sort of chemical detection system since they can find prey without touching it. That's a pretty clever trick for a simple blob! Amoebas seem to use different engulfing tactics to suit the various types of prey. They can detect if prey needs a fast approach, such as a paramecium, or can be feasted on as a slow meal, such as algae that cannot move.

5 Some amoebas are parasites. Amoebic dysentery is transmitted by contaminated water and is well known as travelers' dysentery or "Montezuma's Revenge," particularly in Mexico. The disease causes severe diarrhea and liver infection. It can be treated with antibiotics.

6 Amoebas, though small, are complex and interesting creatures. The next time you look at pond water, imagine what might be living in it!

## Paramecium

Some "animals" are one single cell, or unicellular. This one cell must contain everything needed for survival. They are too small to be seen without a microscope, but they are fun and interesting to look at. One of these is a paramecium (pair-ah-me-see-um.) A paramecium does not become much larger than 0.3 mm.

A paramecium (plural: paramecia) is called a ciliate. Ciliates (silly-ates) are named for the very small hair-like organelles they have on the outside of their cell. Paramecia have hundreds of cilia. Paramecium use cilia to move and to catch food.

Why cilia? When you are less than a millimeter in body size, water is like thick syrup. Swimming like a fish would not be very efficient! If you want to swim fast and be able to maneuver, you need cilia. These tiny hairs act like many oars that push through the water.

Most ciliates like the paramecium are wonderful swimmers. Their speed of motion is about four times their own length per second. Some species are so fast that you must add a thickening agent to the water to slow the organism down enough to study it.

One thing that makes paramecia so interesting to study is their defense against predators. If another unicellular organism tries to eat it, the paramecium fires little stinging filaments called **trichocysts** (trick-o-sists) at the enemy.

Another interesting behavior is their way of escape. If the paramecium comes across an obstacle, it stops and reverses the beating of the cilia. This causes it to swim backward. It backs away from the obstacle or the predator at an angle and starts off in a new direction.

The cilia also are used in feeding. Paramecia feed on other microscopic organisms like bacteria. As the paramecium moves through the water, it rotates because of the action of the cilia. Small particles of food are swept into the gullet.

Paramecia are plentiful in freshwater ponds throughout the world. At least eight species have been identified. One species lives in sea water. Paramecia reproduce usually through asexual reproduction, which means they only need one parent and they can simply divide and multiply. Under suitable conditions, they may divide two or three times a day, and so large numbers may build up.

Paramecium are helpful by controlling algae, bacteria, and other protists by eating them. They also help clean up tiny particles of debris in the water, and they feed small animals. Paramecium can also live inside human bodies, and some can cause illness.

Paramecium are the most complex of the protists because they have two nucleus's!

