

Cells and Organisms

What is the relationship between cells and an organism?

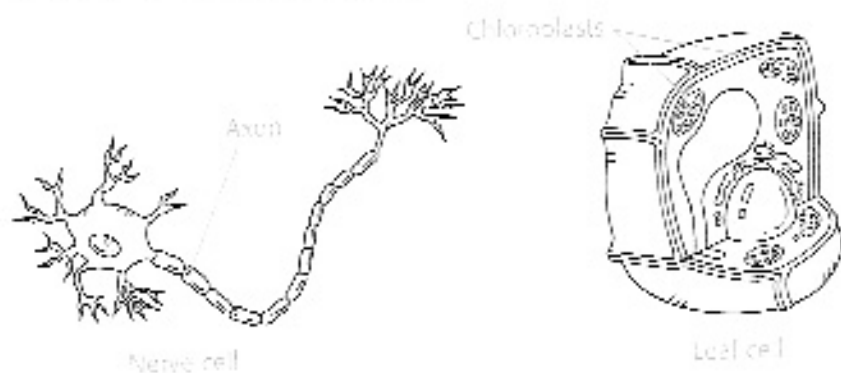
Organisms are made of one or more cells. In **unicellular** organisms, the single cell must perform all of the organism's activities. The cells of **multicellular** organisms are **specialized**. Although cells share many basic functions, different kinds of cells may have specialized functions as well.

A specialized cell may have unique structures. For example, nerve cells have long branches called **axons** that transmit signals from cell to cell. Cells in the leaves of a plant have **chloroplasts** for

photosynthesis, but cells in the root do not. Cells in a tadpole's tail have specialized organelles that contain digestive enzymes. When a tadpole becomes an adult frog, the enzymes digest the tail cells, and the tail disappears.

In plants and animals, groups of specialized cells are arranged into **tissues**. The cells in a tissue all have the same specialized function. Tissues with different functions form an **organ**. Each organ has a different function. A group of organs work together as an **organ system** to do a job for the organism.

Organisms carry out diverse activities, such as taking in nutrients to provide energy for moving, growing, and reproducing. Having many different kinds of cells permits an organism to carry out all its different functions.



A cell that has a specialized function often has specialized structures for performing that function.

Show What You Know

Name one way that cells in a plant root are different from cells in a plant leaf. Why do you think they are different in this way?
