

# What Are Cells?

Read the text and answer the questions.

Have you ever wondered what you are made of? Or why a scrape on your skin heals? Or, how you grow taller every year? The answer is a small but essential biological structure called cells!

Cells are the smallest unit of life. Most cells can only be viewed under a microscope. Even though a cell is small, it has specific parts that are responsible for the cell's life processes. Like you, it must breathe, make energy, and get rid of waste. Cells are often called "the building blocks of life"—these building blocks join together to make all living things.

Some organisms, called unicellular, only have one cell. In unicellular organisms, the single cell is responsible for making energy, controlling movement, and all other life processes. Other organisms, called multicellular, are made of many cells. In multicellular organisms, cells join together to make tissue and organs that carry out the organism's life processes.

One of the most important processes of the cell is to reproduce. In reproduction, a cell creates an exact copy of itself and splits into two new cells. This cell process is how animals and plants, even humans, grow and change.

- Breathing, making energy, and getting rid of waste are examples of:
  - unicellular
  - cells
  - life processes
- Describe the size of cells.
  - What technology allows us to observe cells more easily?
- How is a cell's life similar to your own?
- Explain why cells are called the "building blocks of life."
- How are unicellular organisms different from multicellular organisms? What do they have in common?
- What is the relationship between cell reproduction and organism growth?

# Robert Hooke's Discovery

Read the text and answer the questions.

King Charles I of England hired 26-year-old scientist Robert Hooke to study and observe insects under a microscope. King Charles I only asked for observations of insects, but Robert Hooke went far beyond his expectations. He put everything from fabric and leaves to mica and glass under the microscope.

Microscopes in the 1600s were not very powerful. However, Robert Hooke had a special talent for building scientific instruments. He used light and magnifying glass to make objects appear 50 times larger than normal. With this magnifying power, Hooke was able to see microscopic detail that no one had ever seen before!

Robert Hooke was also a very talented technical artist. As he looked at an object or animal under the microscope, he drew it with great detail. He recorded all his microscopic observations in drawings. Later, he published *Micrographia*, a book of his scientific drawings.

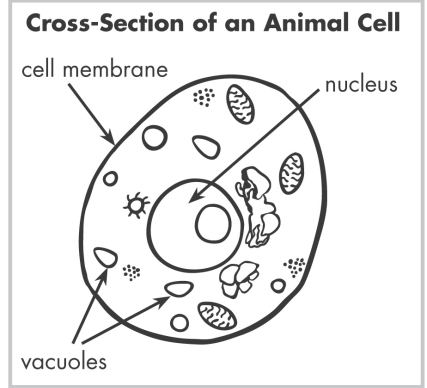
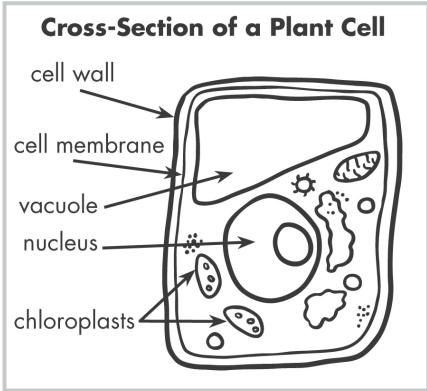
Among his observations, Hooke looked at several slices of dead cork under his microscope. He noticed that the cork had empty spaces surrounded by walls. He described these small areas as "cells," and the name stuck. In 1665, Hooke did not realize he had discovered the building blocks of all life, but his discovery was one of the most important in the history of science.

- Define observe as it is used in the text.
  - Use the text to explain why observation is important to scientific discovery.
- What obstacles to observation did Hooke encounter?
- What role did the microscope play in Hooke's discovery?
- What sentences in the text support the statement, "Technology is important to science."?
- According to the text, how did cells get their name?

## COMPARE & CONTRAST

# Animal & Plant Cells

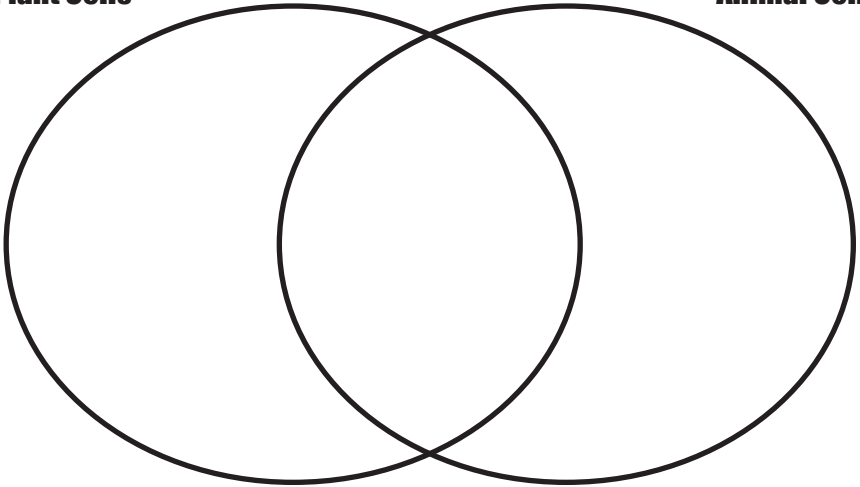
Look at the two diagrams and answer the questions.



1. Use the Venn diagram to compare and contrast plant cells and animal cells.

**Plant Cells**

**Animal Cells**



2. Why do plant cells have chloroplasts while animal cells do not? What special function do chloroplasts serve? What is the result of having chloroplasts? What is the result of not having chloroplasts?