

Learning Target: I can read passages about the similarities and differences of cell organelles in animal and plant cells and then use the information gathered to answer multiple choice comprehension questions.

Animal and Plant Cells Reading for Meaning

Every living thing is made up of one or more cells. Cells are the smallest units of life that can carry out all the processes needed to survive. While both plant and animal cells share many similarities, they also have important differences that help them perform their roles in living organisms.

Both plant and animal cells have a **cell membrane**, which acts like a gatekeeper. It controls what enters and leaves the cell, such as nutrients, water, and waste. Inside the cell, the **nucleus** acts as the “control center,” storing genetic information and directing the cell’s activities. Another key structure is the **cytoplasm**, a jelly-like fluid that fills the cell and holds all the organelles in place. **Mitochondria**, known as the “powerhouses,” break down food molecules to release energy the cell can use.

Plant and animal cells are not exactly the same. One major difference is that plant cells have a **cell wall** in addition to the cell membrane. The cell wall is a stiff layer that supports and protects the plant, helping it stand upright. Plant cells also contain **chloroplasts**, which hold the green pigment chlorophyll. Chloroplasts capture sunlight and use it to make food through photosynthesis. Because of chloroplasts, plants can produce their own food, while animals must eat to get energy.

Another difference lies in the **vacuoles**, which are storage bubbles inside cells. Both plant and animal cells have vacuoles, but plant cell vacuoles are usually much larger. They store water, nutrients, and waste. A large vacuole also helps keep the plant cell firm, giving leaves and stems their shape.

By comparing the structures and functions of plant and animal cells, scientists can better understand how life is organized. Each organelle has a job, and together they allow cells—and the organisms they make up—to survive and thrive.

DOK 3–4 Multiple Choice Questions

1. A student compares an animal cell and a plant cell under a microscope. Which observation would provide the strongest evidence that the cell is from a plant?

- A. It has a cell membrane.
- B. It contains a nucleus.
- C. It contains chloroplasts.
- D. It has mitochondria.

2. If a plant cell’s vacuole is damaged and can no longer store water properly, what is the most likely effect on the plant?

- A. The plant will grow taller.
- B. The plant will lose its shape and wilt.
- C. The plant will capture more sunlight.
- D. The plant will stop making chlorophyll.

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3. Both plant and animal cells use mitochondria to release energy. What does this similarity suggest about the role of mitochondria?

- A. Mitochondria only work in animal cells.
- B. All living things need mitochondria to make sunlight.
- C. Both plants and animals rely on breaking down food to get energy.
- D. Plants do not need mitochondria because they can make their own food.

4. Which structure would a scientist focus on if they wanted to study how plant cells produce their own food?

- A. Cytoplasm
- B. Cell wall
- C. Chloroplast
- D. Vacuole

5. A scientist removes the nucleus from an animal cell. Which statement best predicts what will happen?

- A. The cell will stop controlling its activities.
- B. The cell will continue to function normally.
- C. The cell will make its own food using sunlight.
- D. The cell will become a plant cell.

6. How does the cell wall help plants survive in ways animal cells do not need?

- A. It controls the movement of materials into the cell.
- B. It provides energy for the cell's activities.
- C. It protects and supports the cell, helping the plant stay upright.
- D. It stores water and nutrients for later use.

7. A student claims: "Plants and animals get energy in completely different ways." Based on what you know about cells, how should you respond?

- A. The student is correct because plants use mitochondria and animals do not.
- B. The student is incorrect because both use mitochondria, but plants also use chloroplasts.
- C. The student is correct because animals use chloroplasts and plants do not.
- D. The student is incorrect because neither plants nor animals use chloroplasts.

8. Suppose a plant cell no longer had chloroplasts. Which outcome would most likely occur?

- A. The plant could still make food using the nucleus.
- B. The plant would stop producing its own food and might die.
- C. The plant would make more vacuoles to replace them.
- D. The plant would survive without any changes.

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9. Which of the following best explains why a large vacuole is more important in plant cells than in animal cells?

- A. It helps store DNA for the plant.
- B. It provides support and structure by holding water.
- C. It replaces the need for mitochondria.
- D. It allows plants to move from place to place.

10. A group of students is designing a model of a plant cell. They forget to include the mitochondria. Which reasoning best explains why their model is incomplete?

- A. Mitochondria are needed only in animal cells.
- B. Mitochondria are the control centers of all cells.
- C. Mitochondria are required for energy, and both plants and animals need energy to live.
- D. Mitochondria create chlorophyll for the cell.