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## Plant vs. Animal

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Cells can be found in all living things. There are several types of cells. They are usually separated into prokaryotic (pronounced "proh-KAR-ee-AH-tik") or eukaryotic (pronounced "yoo-KAR-ee-AH-tik") and are either plant or animal cells. An "animal" cell could be anything from a tiny, one-celled microorganism like an amoeba to a nerve cell from your brain. Plant cells are cells found in any plant that uses photosynthesis to make its own food.



The first classification of cells is whether they are prokaryotic or eukaryotic. Prokaryotic cells are simpler cells. They were probably the first cells on earth. Prokaryotic cells do not have a nucleus or any membrane-covered organelles.

The only cells on earth that are prokaryotes are bacteria. Eukaryotic cells have a nucleus and membrane covered organelles. Things that have eukaryotic cells include animals, plants, protists, and fungi. Organelle means "little organ." Organelles are the parts inside a cell that have specific functions or jobs. Just as the human body has organs that do specific jobs, cells have organelles, or little organs, that do specific jobs in the cell. In the human body, the heart is an organ whose job is to pump blood. In a cell, the mitochondria are organelles whose job is to convert food into energy.

Plant cells and animal cells have many of the same characteristics, but they are different in some ways. Plant cells are easier to identify under a microscope because they have a rigid cell wall made of cellulose outside the cell membrane. This gives the plant, and the cell, structure and support. Animal cells do not have a cell wall.

Another way plant cells are different from animal cells is that plant cells usually have just one very large vacuole. Animal cells may have more than one vacuole, and they are smaller than a plant cell's. Vacuoles are used to store materials in the cell that may be used by the cell or wastes that must be moved out of the cell. Often, plant cells store water in the vacuole. When a plant doesn't get enough water, it must use the stored water in its vacuoles to live. This causes the plant to "wilt." When a plant wilts, it cannot support itself anymore. The water inside each cell's vacuole helps the plant to stand up, like air in a beach ball makes the ball "stand up." If the plant uses the stored water, then the plant becomes less firm and may finally become so limp that it lies on the ground. After watering, the limp plant will become firm and again "stand up."

Plants also have organelles called chloroplasts. Chloroplasts contain a green pigment called chlorophyll. This is what makes leaves appear green. This special organelle and the chemical chlorophyll enable plants to capture energy from the sun in a process called photosynthesis and convert the energy to sugars that the plant uses for food. Plants are the only living things on earth that can make their own food because of this special organelle. Animal cells do not have chloroplasts.

If plant and animal cells were in a survival contest, who do you think would win? One of the most important needs

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that must be met to survive is the need for food. Since plants can make their own food, they have a huge advantage over animals. All animals must hunt their own food, whether that food is a plant or another animal.

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## Questions

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- \_\_\_\_\_ 1. Which cells probably were first on earth?
  - A. animal cells
  - B. eukaryotic cells
  - C. plant cells
  - D. prokaryotic cells
  
- \_\_\_\_\_ 2. What is the difference between prokaryotic and eukaryotic cells?
  - A. Eukaryotic cells have a nucleus and membrane-covered organelles, and prokaryotic cells don't.
  - B. Prokaryotic cells have a nucleus and membrane-covered organelles, and eukaryotic cells don't.
  
- \_\_\_\_\_ 3. What are organelles?
  - A. little organs
  - B. parts inside a cell that have specific functions
  - C. eukaryotic cells
  - D. prokaryotic cells
  - E. both a and b are correct
  
- \_\_\_\_\_ 4. What are the differences between plant and animal cells?
  - A. Animal cells have a cell wall, chloroplasts, and one large vacuole.
  - B. Animal cells are eukaryotic, and plant cells are prokaryotic.
  - C. Plant cells have a cell wall, chloroplasts, and one large vacuole.
  - D. Plant cells are eukaryotic, and animal cells are prokaryotic.
  
- \_\_\_\_\_ 5. What is a cell wall made of?
  - A. sugars
  - B. oxygen
  - C. carbon dioxide
  - D. cellulose
  
- \_\_\_\_\_ 6. What is the function of the cell wall?
  - A. gives the plant structure and support
  - B. tells the cell what to do
  - C. lets molecules pass in and out
  - D. lets water pass in and out
  
- \_\_\_\_\_ 7. What is the function of the vacuole?
  - A. stores materials in the cell that may be used by the cell or wastes that must be moved out of the cell
  - B. gives the plant food
  - C. lets water pass in and out
  - D. tells the cell what to do

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- \_\_\_\_\_ 8. What is the function of the chloroplast?
- A. tells the cell what to do
  - B. stores materials to be used or eliminated
  - C. lets water pass in and out
  - D. changes energy from the sun into sugars

