

Organisms are Made of Cells

Vocabulary:	microscope	function	grow	photosynthesis	organ
	tissue	organism	living	cell	paramecium
	multicellular	amoeba	transport	body system	unicellular

Cells as Building Blocks

All **living** things are made of **cells**, contain similar chemicals, use energy, **grow** and develop, respond to their surroundings, and reproduce. Cells are tiny parts of the **organism** with specific functions that keep the organism alive. Most cells are so small, they were never seen until the **microscope** was invented.

Unicellular Organisms

Some tiny organisms such as the **amoeba** or **paramecium** have only one cell. In these organisms, the single cell carries on all the functions of life such as eating, respiration, movement, and excretion. Although these functions are really quite complex (it is awesome to consider that a tiny, single cell can actually do all those things!), compared to the human body which has billions of cell, a **unicellular organism** appears to be quite simple.

Multicellular Organisms

In plants or in animals, cells are like building blocks. No one cell or kind of cell can do all the functions necessary to maintain life. That is why **multicellular organisms** need specialized cells. Specialized cells (such as muscle cells) are similar and work together in larger groups of like

cells called **tissues** to carry out a specific **function** needed by the organism. If you have ever eaten a chicken leg, you have seen muscle tissue: the muscle is the part you eat! When you have eaten a chicken leg you have also observed bone (a tissue), fat (a tissue), and skin (a tissue). The human body has similar parts to the chicken (including muscle, bone, fat, and skin), with each tissue made of millions of a particular kind of specialized cell.

Tissues, Organs, and Organ Systems

Different tissues combine to form **organs**, like the stomach, heart, or lungs, which have a specific function needed to keep the body healthy. The function of the stomach is to help digest food. Muscle tissue in the stomach churns the food to break it down physically. The lining of the stomach is a different kind of tissue that excretes acids to chemically digest the food. Cells work together in tissues, different kinds of tissues combine to form organs, and several organs work together as **body systems** such as the digestive system or respiratory system. But all are made of cells.

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Cells Need Energy

Cells need energy to grow, repair, reproduce, and do work. Where does the energy come from? You remember from studying food chains that all energy on Earth comes from the energy of sunlight.

Each leaf is made of millions of **cells**. Each cell is so small you need a **microscope** to see it. As a new plant develops from a seed, these leaf cells **grow** and reproduce to make a leaf. The job or function of a leaf is to make food for the plant. A leaf traps energy from the Sun in its cells in a process called **photosynthesis**. These specialized leaf cells use that energy to change water and oxygen into a form of sugar that the plant can use as food. This food provides the energy the plant needs. The function of specialized cells in the stem and veins of leaves is to **transport** water and nutrients to all the cells of the plant.

Animals eat plants and other animals, and energy is passed along to their cells, too. For example, a rabbit's cells use some of the energy produced by plant cells when it eats clover. In this way, energy from the Sun travels through the food chain. Life depends on the ability of plant cells to make food.

Cells Respond to their Environment

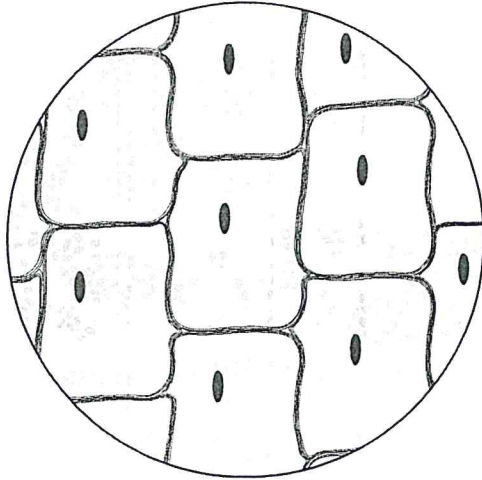
Cells respond to their environment to help them survive. Have you ever noticed that the stems of house

plants grow toward the window so the plant gets more light? Animals move to get food and water. If a deer goes to a pond for water but the pond has dried up because it has not rained, what will the deer do? It will move to an area that has water. The deer's cells need water to survive. Organisms respond to their environment in many different ways.

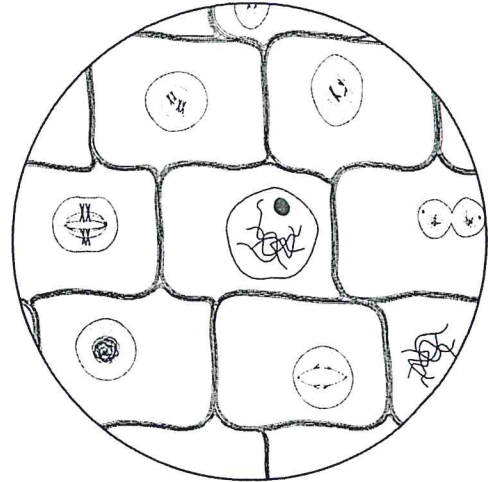
Organisms are Made of Cells (continued)

Application

The illustrations below are the way plant cells look under a microscope. Explain why you believe scientists consider plant cells to be “building blocks.” _____



Elodea cell



Onion cell

Circle the best answer to the questions below:

1. Finish this sentence: “All living things are made of...”

- A. Cells.
- B. Skin.
- C. Minerals.
- D. Water.

2. The BEST definition of *function* is:

- A. You didn't pass second grade.
- B. A material plants need to make food.
- C. The name of a plant that lives in the desert.
- D. The job certain parts of a living plant or animal does.

3. Why do we need a microscope to see cells?

- A. They are too hot to touch.
- B. They are too small to see with your eyes.
- C. They would break if you touched them.
- D. They move around.

4. Which object is NOT living?

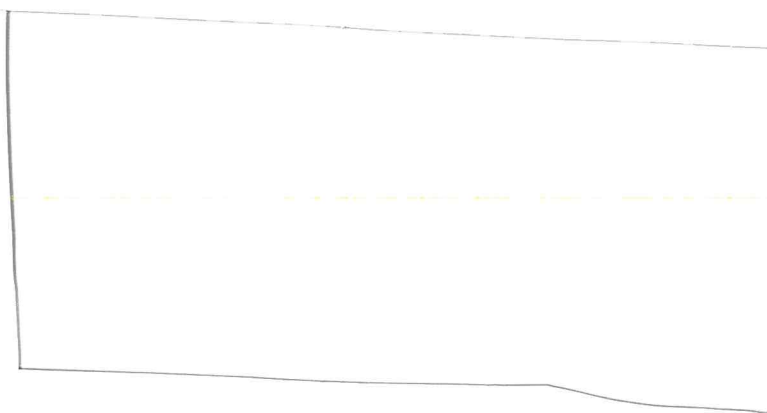
- A. Butterfly
- B. Dandelion
- C. Rock
- D. Baby

Organisms are Made of Cells (continued)

5. Why are some kinds of leaves large and some kinds small?
- A. A rabbit ate part of the small leaf.
 - B. More cells grow together to make a large leaf.
 - C. The large leaves get more sunlight.
 - D. The large plants have longer roots.

6. You and your family are going on vacation for three weeks. The blinds are closed and nobody will be in the house while you are away. A plant is on the kitchen table. What do you think it will look like when you get back? Justify your answer.

7. Describe at least two ways you could find out what causes leaves to stop making food and turn yellow:



	Ribosomes
	Lysosomes
	Cell Membrane
	Cell Wall
	Nucleus
	Golgi Body Complex
	Chloroplast
	Cytoplasm
	Endoplasmic Reticulum
	Ribosomes
	Vacuole