LESSON

9 How Do Specialized Cells Work?

An animal generally has billions of cells. Even though all of these cells are alive, they are not separate living things. The billions of cells in an animal need one another. The body's work is divided among specialized cells so that all cells receive what they need to live and do their work.

For example, bone cells make tough fibers and produce minerals that harden to form bones. The bones make a rigid, or firm, skeleton to protect, support, and move the body. Inside each bone, more bone cells produce red blood cells for the circulatory system.

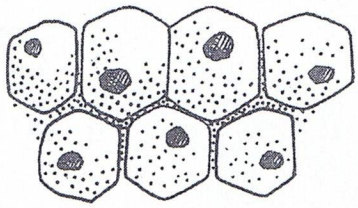
Let's use the action of picking up a pencil to show how specialized cells cooperate to complete a simple task. Bone cells form the bones inside your hand. Your hand also contains muscle cells, grouped into muscles and attached to the bones. Muscle cells are made of fibers and can change shape and size to do work. Together, the bones and muscles let you wrap your fingers around a pencil and grasp it.

How did the hand know to pick up the pencil? Nerve cells form nerves like telephone wires that extend to and from the brain. Nerves carry messages. In this case, when you decided to pick up the pencil, a message from your brain told the muscles in your hand to contract, or shorten, so that your fingers closed around the pencil.

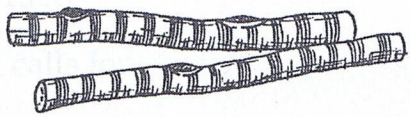
But to work, bone, muscle, and nerve cells need food and oxygen. They must also remove wastes. Blood cells deliver what cells need and remove wastes.

As you can see from this example, the simple act of picking up a pencil takes the cooperation of many of your body's specialized cells. Every action demands that cells work together so that an animal can live.

Cell Specialists



Bone cells



Muscle cells

Cells have different sizes, shapes, and jobs.

A.

Write the missing word or words in each sentence.

1. Most animals are made of _____ of cells.
   (thousands, millions, billions)
2. An example of a specialized cell is a _____.
   (mitochondrion, tissue, red blood cell)
3. Body cells that are specialized to change shape are
   _____.
   (bone cells, muscle cells, nerve cells)
4. Blood cells are specialized to be able to _____.
   (send messages, carry materials, stretch and contract)
5. Even a simple action such as picking up a pencil calls for the _____ of many specialized cells.
   (cooperation, reproduction, removal)

B.

Draw a line from the kind of cell to the words that describe its job.

1. blood cell	produces hard surface of support
2. bone cell	changes shape and size to do work
3. muscle cell	carries messages to and from the brain
4. nerve cell	carries food and oxygen and removes wastes

C.

Write one or more sentences to answer the question.

When a person's leg is paralyzed, all the specialized groups of cells may be in working order except one. Which one? Explain.

_____

_____

_____

_____

_____