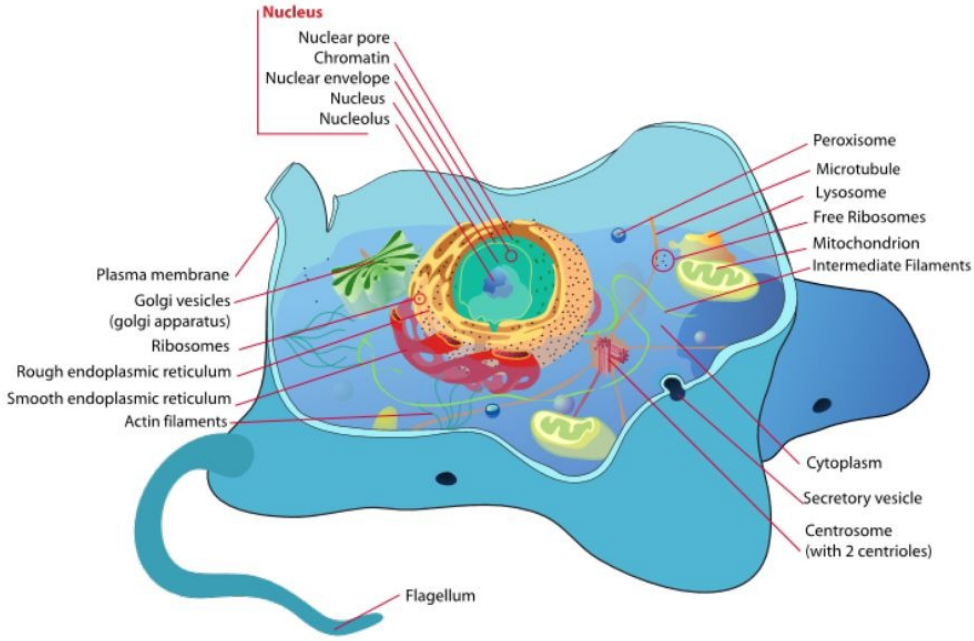
# The Cells That Make Us

by ReadWorks




"Mom, I'm hurt," said Mike.

"What happened?" asked Mike's mom.

"I stumbled and fell while playing football at the playground today. I scraped my knee," said Mike.

"You poor dear. Here, let's put a Band-Aid on your knee," said his mom.

Mike's mom gingerly wiped his bleeding knee with a wet cloth and pasted a Band-Aid on it. Mike wondered aloud, "Our bodies are made of arms and legs. The arms and legs are made of blood and bones. But what are these blood and bones made of?"

Mike's mom replied, "Everything in our body is made of small units called cells. Think of it this way. Just like hundreds of thousands of bricks form a house, millions of cells form our muscles, bones, skin, and hair-eventually coming together to form the human body."

As Mike looked at his bandaged knee, he wondered, "Wow, can I see these cells?"

"You cannot see most of your cells with the naked eye," said his mom. "A cell is small. A cell is the smallest unit that can be said to be alive. You can see a lot of cells through a microscope."

"So, every part of my body consists of cells?" Mike said.

"Yeah. Not just your body, mine too," said Mike's mom. "Your pet dog, Tommy? He's made of cells. Your friend Jim's cat? She's made of cells, too. The lions we saw on safari last year, the spiders in our

storeroom. Every creature on Earth is made of cells, just like you and me."

"Wow, so an ant or an amoeba is built up of cells, like Lego blocks?"

"The ant, yes, sort of like Lego blocks. But some creatures have just a single cell, like an amoeba. They are called unicellular organisms. Other creatures, like us human beings, are collections of cells. These are called multicellular organisms. Multicellular organisms can range in size from brown algae to large animals like elephants and whales, which have trillions of cells."

"But what does a cell look like?"

"A cell consists of different parts."

"Like what?"

"So you know how you have different parts of your body that are responsible for different activities? For example, your legs help you move, your stomach helps you in digestion, and your eyes help you see. Well, different parts within cells are responsible for different functions. These different parts perform the activities that keep the cell alive."

"Wow, so how does a cell stay alive?"

"The different parts of the cell work together to keep the cell alive. Many cells have a nucleus. The nucleus is the 'brain' of the cell. It controls and coordinates all activities of the cell. The nucleus is surrounded by the nuclear membrane, which helps to protect the nucleus. In addition to the nucleus, many cells have some other parts. All the parts of the cell are contained within a cell membrane. This is the outer covering of the cell. The cell membrane can allow certain substances, like nutrients and water, to enter the cell. It also can let out waste and even block out some unwanted substances."

"It's so cool that the cell membrane can let in some things and block other things."

"Yeah. Then, between the nucleus and the cell membrane, there is the cytoplasm, which is a gel-like fluid that fills the area. And some other parts of the cell are located in the cytoplasm. Like the nucleus and cell membrane, each part has structure and function."

"Wow. Cells are like machines! What powers them?"

"Energy production usually happens in a part of the cell called the mitochondrion. Not all cells have mitochondria, but a lot of cells do. Mitochondria are usually round or oval-shaped. Sometimes they are shaped like kidney beans. Mitochondria convert food into chemical energy for the cells."

"Do we use this energy, too?"

"Absolutely. The accumulated energy in a lot of the trillions of cells in the average human body help to give us energy. It helps us have the strength to move our arms and legs, to think, and to live."

"Wow. So the cells work together?"

"Yeah. A group of human cells band together and form a tissue. There are four main types of tissue in humans. Connective tissues include blood or bones. These form connections between structures in the body. Muscle tissues form muscles, which help us move. Nervous tissues are in the brain, spinal

cord, and nerves. This type of tissue helps to control many body activities. Epithelial tissues are tissues that line or cover the different parts of the body. This type of tissue has various functions, such as protecting and filtering."

"So many cells make up different types of tissues, and the tissues have different functions in our body?"

"Exactly! The tissues are specialized for different functions, so the cells of one type of tissue work together in unison. For instance, all the cells in the muscle tissue in your calf muscles work together to help you walk or run."

"And the tissues in my biceps help me wave my hand," said Mike, waving his hand from side to side.

"That's not all," said Mike's mom. "Various types of tissue in your body team up to make an organ. Organs perform specific functions in your body. For example, your heart is made of all four types of tissue. All of the tissues in your heart work together to pump blood through your body. The heart is one of five vital organs in humans. The other vital organs are the brain, kidneys, liver, and lungs."

"So these organs are important in keeping me alive?" asked Mike.

"Yeah, and each organ performs its specific function because of the tissues that constitute it."

"And the tissues are formed by cells! That is so cool!"

"That's right. Just about everything a person does is thanks to the teams of cells that make up the tissues that make up the organs!"

"Wow! Unlike a football team competing against other teams, all the teams in the human body work together. That is amazing!"

**Name:** _____ **Date:** _____

**1.** According to Mike's mom, what is a cell?

A. a multicellular organism

B. the smallest unit of life

C. a type of tissue

D. a gel-like fluid

**2.** How does Mike's mom compare the cell membrane and the nuclear membrane?

A. Both the cell membrane and nuclear membrane are coverings.

B. Both the cell membrane and the nuclear membrane controls the cell's activities.

C. Both the cell membrane and the nuclear membrane let out waste.

D. Both the cell membrane and the nuclear membrane allow substances to enter the cell.

**3.** Read the following sentences from the text.

> "But some creatures have just a single cell, like an amoeba. They are called unicellular organisms. Other creatures, like us human beings, are collections of cells. These are called multicellular organisms. Multicellular organisms can range in size from brown algae to large animals like elephants and whales, which have trillions of cells."

What can be concluded about cells based on this information?

A. Unicellular organisms were once part of collections of cells.

B. Cells in multicellular organisms are stronger than unicellular organisms.

C. Cells can only support life if they are part of a multicellular organism.

D. Some cells can support life independently. Other cells support life collectively.

**4.** Read the following sentences from the text.

> "A group of human cells band together and form a tissue. There are four main types of tissue in humans. Connective tissues include blood or bones. These form connections between structures in the body. Muscle tissues form muscles, which help us move. Nervous tissues are in the brain, spinal cord, and nerves. This type of tissue helps to control many body activities. Epithelial tissues are tissues that line or cover the different parts of the body. This type of tissue has various functions, such as protecting and filtering."

Based on this information, what can you conclude about tissues?

A. All tissues in the body have similar functions.
B. All tissues band together to form cells.
C. Each type of tissue has a different function.
D. Some tissues are more important than others.

**5.** What is this text mostly about?

A. how the parts of cells, tissues, and organs work together
B. the importance of mitochondria in the life of a human being
C. how tissues are made from groups of cells to serve different functions
D. the differences between unicellular and multicellular organisms

**6.** Read the following sentences from the text.

> "That's not all," said Mike's mom. "The organs in your body are made of various tissues. For example, your heart is made of all four types of tissue. All of the tissues in your heart work together to pump blood through your body. The heart is one of five vital organs in humans. The other vital organs are the brain, kidneys, liver, and lungs."
>
> "So these organs are important in keeping me alive?" asked Mike.
>
> "Yeah, and each organ performs its specific function because of the tissues that constitute it."

As used in this sentence, what does the word "constitute" most nearly mean?

A. take away from something
B. give something energy
C. make up the parts of something
D. change in shape or size

**7.** Choose the answer that best completes the sentence below.

_____ one type of tissue in the heart by itself cannot pump blood through the body, a collection of the four types of tissue in the heart can work together as an organ to pump blood.

A. Thus
B. Although
C. Above all
D. For instance

**8.** What is an organ made of?

**9.** Why are all the different parts of the cell necessary?

**10.** Explain how different parts of a human being work together in unison. Use evidence from the text to support your answer.