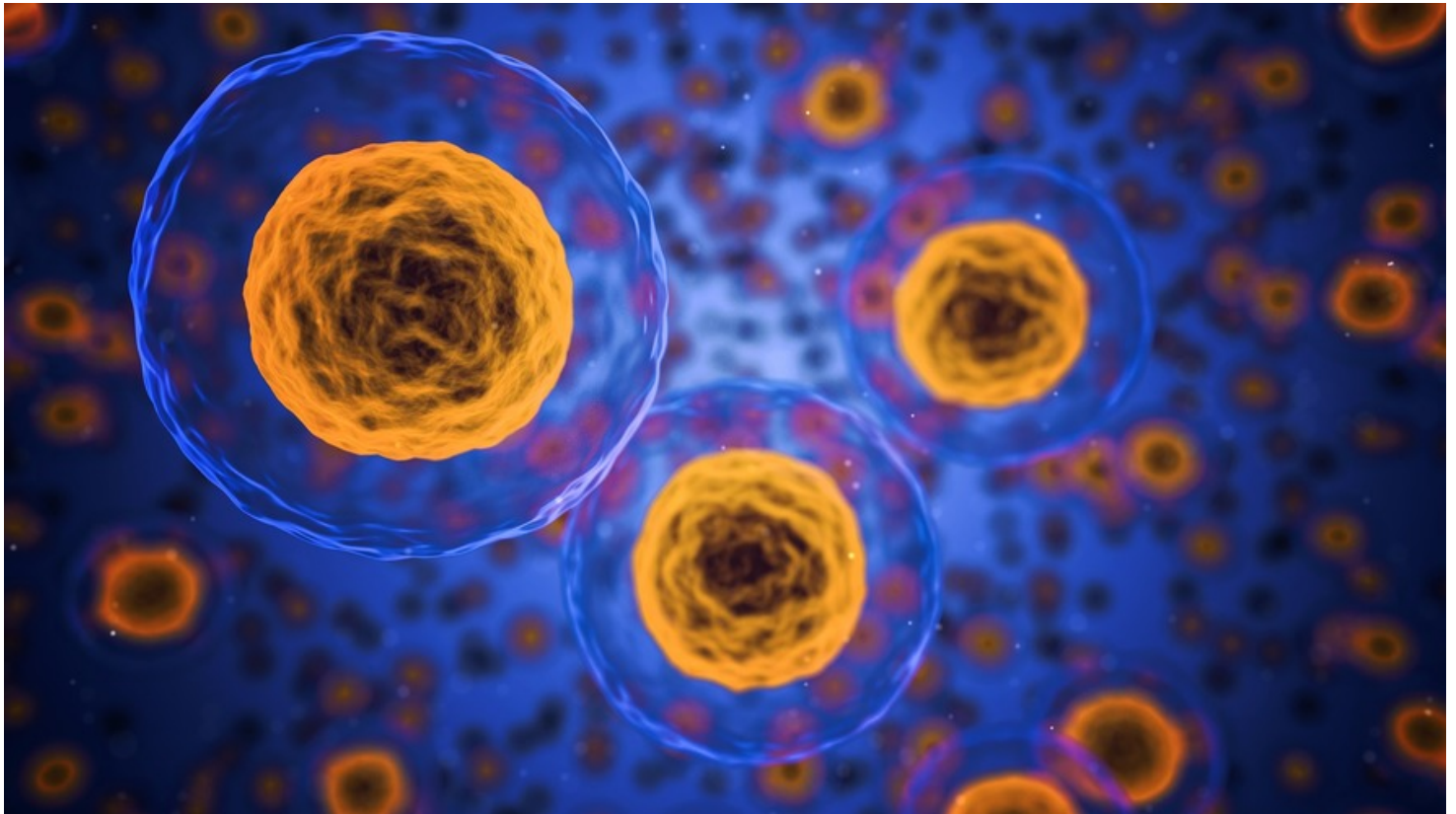


The facts about cells

By ThoughtCo.com, adapted by Newsela staff on 10.18.17

Word Count **904**

Level **930L**



An illustration of cells. Photo from Pixabay.

Cells are the basic building blocks of life. Some life forms, or organisms, are made out of a single cell, whereas others are made of millions.

Scientists estimate that our bodies contain anywhere from 75 to 100 trillion cells, which come in hundreds of different types. Cells do everything from providing energy to allowing animals to reproduce.

Below are 10 facts about cells, some of which are well-known while others may surprise you.

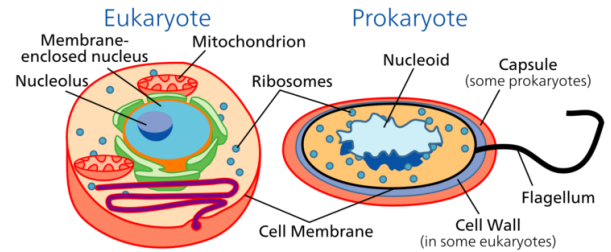
1. Cells are too small to be seen without magnification.

Cells come in a variety of sizes, ranging from 1 to 100 micrometers across. A micrometer is a millionth of a meter, and there are more than 25,000 micrometers in a single inch.

The study of cells is called cell biology. Because cells are so small, it would have been impossible to study them without the invention of the microscope. Thanks to this technology, cell biologists can study detailed images of even the smallest of cells.

2. There are two main types of cells.

Cells are divided into eukaryotic and prokaryotic cells. Eukaryotic cells have nuclei that are surrounded by membranes. A nucleus is a structure that stores genetic information such as DNA. Animals, plants and fungi are called eukaryotes because they are organisms that are made of eukaryotic cells.



Prokaryotes are creatures that are made of a single prokaryotic cell. Examples include bacteria and archaeans. Unlike a eukaryotic cell, the nucleus of a prokaryotic cell is not surrounded by a membrane. This region in the cell is called nucleoid.

3. Prokaryotic single-celled organisms were the earliest and most basic forms of life on Earth.

Prokaryotes can live in environments that would be deadly to most other organisms. Some archaeans are even able to live inside animal intestines. Others live in extreme environments such as hot springs, swamps and wetlands.

4. There are more bacterial cells in the body than human cells.

Some scientists have calculated that about 95 percent of all the cells in the body are bacteria. These bacteria help humans digest their food. In fact, most bacteria in humans can be found in the digestive tract, which are the organs that take in food and let out waste. Billions of bacteria also live on the skin.

5. Cells contain genetic material.

Cells contain DNA and RNA, which hold the information needed to tell the cells how to work. DNA, or deoxyribonucleic acid, and RNA, or ribonucleic acid, are known as nucleic acids.

In prokaryotic cells, the DNA is not contained inside a membrane but it is coiled in a region called nucleoid. In eukaryotic cells, DNA is found in the cell's nucleus, protected by the membrane.

Strands of DNA form structures called chromosomes. Human cells have 23 pairs of chromosomes, for a total of 46. These chromosomes contain information about how a person's body will look and develop, with one pair determining the person's sex.

6. Cells contain structures called organelles which carry out specific roles.

Organelles are units in a cell that have specific responsibilities. Eukaryotic cells contain several types of organelles, while prokaryotic cells contain a few organelles called ribosomes. In prokaryotic cells, the organelles are not surrounded by a membrane.

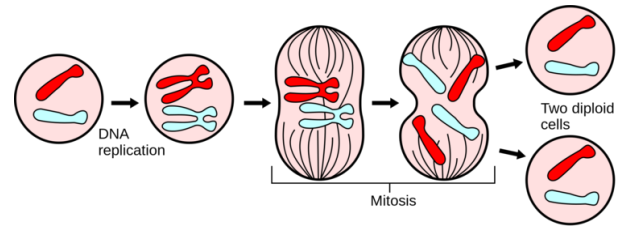
Here are a few examples of organelles in eukaryotic cells:

- The nucleus controls the cell's growth and how it reproduces.
- Mitochondria provide energy for the cell.
- The endoplasmic reticulum creates carbohydrates, like sugar, and fats.
- Ribosomes help create proteins.

- The Golgi complex packages and ships the proteins and fats produced by the cell.
- Lysosomes help with digesting substances inside the cell.

7. Different types of cells reproduce through different methods.

Most prokaryotic cells reproduce through binary fission. In binary fission, a single cell splits into two new copies of itself.



Eukaryotic organisms can reproduce in two ways.

Single eukaryotic cells can split into two through a process called mitosis. Larger eukaryotic organisms, such as animals, reproduce by combining special cells called gametes. These gametes are made through a process called meiosis.

8. Groups of similar cells form tissues.

Tissues are groups of cells that have the same structure and behavior. In animal tissue, cells are sometimes woven or stuck together.

Different types of tissues can also be arranged together to form organs, which can, in turn, form organ systems. An example is the circulatory system, which includes the heart, lungs and veins. It allows animals to breathe and spread oxygen throughout their bodies.

9. Cells have varying life spans.

Different cells have different life spans. They can live anywhere from a few days to a year. Certain cells in the digestive tract live for only a few days, while some of the cells in the immune system can live up to six weeks. The immune system is the group of cells and organs that defend the body from small organisms that can harm it. Brain cells can live for a whole lifetime.

10. Cells commit suicide.

When a cell becomes damaged or infected, it will self-destruct by using a process called apoptosis. Apoptosis is a way of keeping the process of mitosis in check. Cells with cancer are not able to go through apoptosis, which is why they reproduce and spread uncontrollably.

Quiz

- 1 Read the sentence from the section "5. Cells contain genetic material."

In prokaryotic cells, the DNA is not contained inside a membrane but it is coiled in a region called nucleoid.

Which of the following words, if it replaced the word "contained" in the sentence above, would CHANGE the meaning of the sentence?

- (A) encased
- (B) released
- (C) enclosed
- (D) held

- 2 Read the following sentence from the introduction [paragraphs 1-3]. Then, fill in the blank.

Scientists estimate that our bodies contain anywhere from 75 to 100 trillion cells, which come in hundreds of different types. Cells do everything from providing energy to allowing animals to reproduce.

The word "estimate" in the sentence above tells the reader that _____.

- (A) a human body has many different types of cells
- (B) each type of cell lives for a different period of time
- (C) cells are so small and numerous that they would be impossible to count
- (D) you can only see cells with a microscope

- 3 Which selection from the article is BEST explained by the diagram in the section "7. Different types of cells reproduce through different methods"?

- (A) Eukaryotic organisms can reproduce in two ways.
- (B) Single eukaryotic cells can split into two through a process called mitosis.
- (C) Larger eukaryotic organisms, such as animals, reproduce by combining special cells called gametes.
- (D) These gametes are made through a process called meiosis.

- 4 How does the image and information in the section "2. There are two main types of cells" develop a coherent understanding of the differences between prokaryotic and eukaryotic cells?

- (A) by defining and demonstrating structural differences between the two types of cells
- (B) by contrasting how the structure of each cell influences how the cell reproduces
- (C) by highlighting the major differences in how a cell is protected from the environment around it
- (D) by showing different organelles that perform similar functions in both types of cells