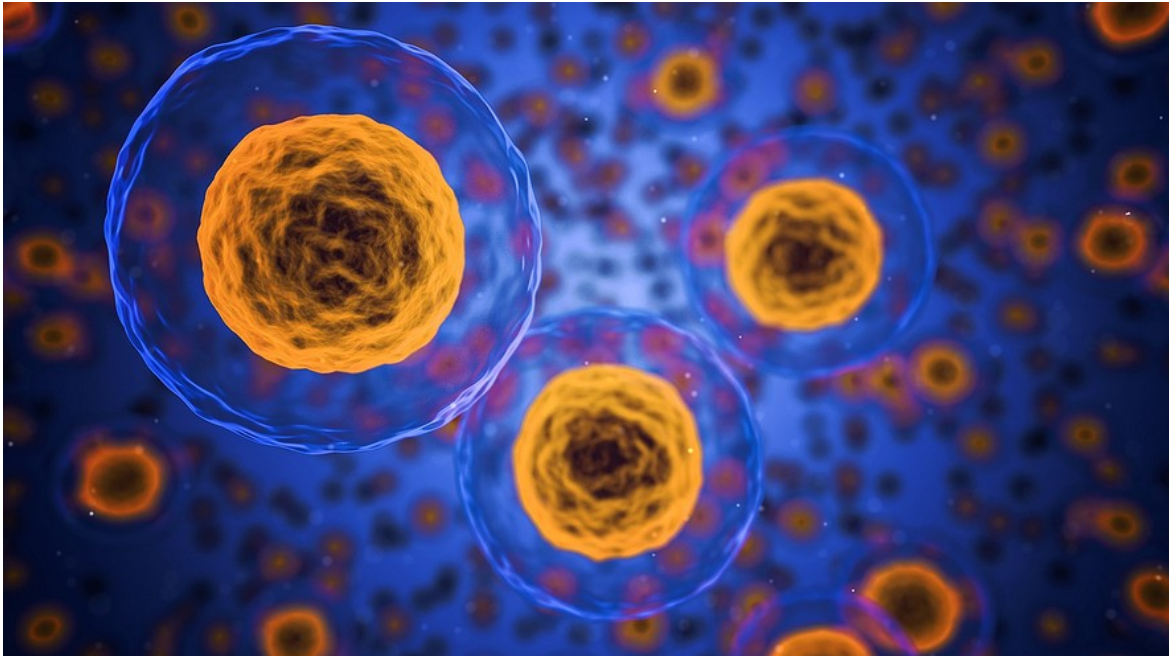


The facts about cells

By Regina Bailey, ThoughtCo.com on 10.17.17

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An illustration of cells. Photo by: Pixabay Photo by: Pixabay.

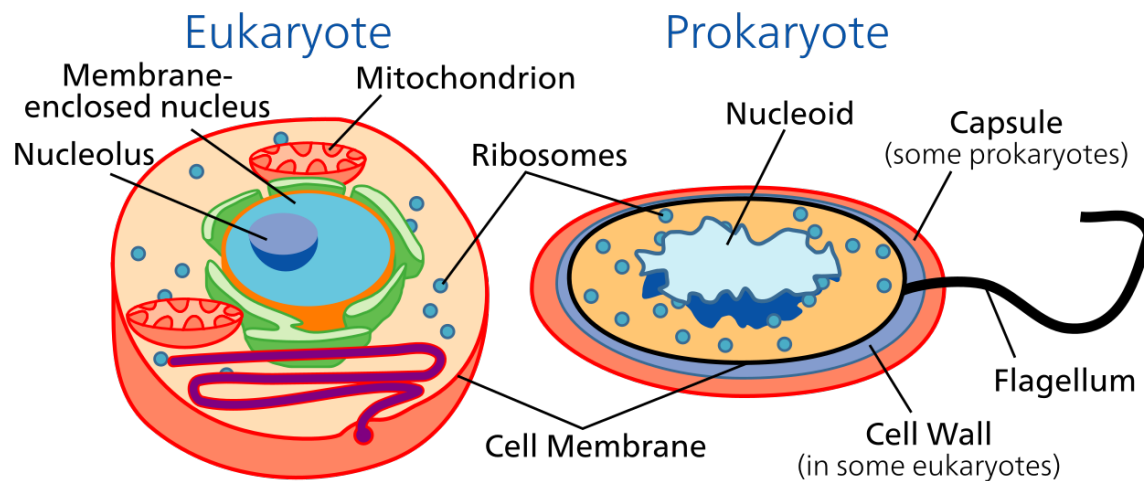
Cells are the fundamental units of life. Whether they be unicellular or multicellular life forms, all living organisms are composed of and depend on cells to function normally. Scientists estimate that our bodies contain anywhere from 75 to 100 trillion cells. In addition, there are hundreds of different types of cells in the body. Cells do everything from providing structure and stability to providing energy and a means of reproduction for an organism.

The following 10 facts about cells will provide you with well-known and perhaps little-known tidbits of information about cells.

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

Cells range in size from 1 to 100 micrometers. The study of cells, also called cell biology, would not have been possible without the invention of the microscope. With the advance microscopes of today, such as the Scanning Electron Microscope and Transmission Electron Microscope, cell biologists are able to obtain detailed images of the smallest of cell structures.

2. There are two primary types of cells.



Eukaryotic and prokaryotic cells are the two main types of cells. Eukaryotic cells are called so because they have a true nucleus that is enclosed within a membrane. Animals, plants, fungi and protists are examples of organisms that contain eukaryotic cells. Prokaryotic organisms include bacteria and archaeans.

The prokaryotic cell nucleus is not enclosed within a membrane.

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

Prokaryotes can live in environments that would be deadly to most other organisms. These extremophiles are able to live and thrive in various extreme habitats.

Archaeans for example, live in areas such as hydrothermal vents, hot springs, swamps, wetlands and even animal intestines.

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

Scientists have estimated that about 95 percent of all the cells in the body are bacteria. The vast majority of these microbes can be found within the digestive tract. Billions of bacteria also live on the skin.

5. Cells contain genetic material.

Cells contain DNA (deoxyribonucleic acid) and RNA (ribonucleic acid), the genetic information necessary for directing cellular activities. DNA and RNA are molecules known as nucleic acids. In prokaryotic cells, the single bacterial DNA molecule is not separated from the rest of the cell but coiled up in a region of the cytoplasm called the nucleoid region. In eukaryotic

cells, DNA molecules are located within the cell's nucleus. DNA and proteins are the major components of chromosomes. Human cells contain 23 pairs of chromosomes (for a total of 46). There are 22 pairs of autosomes (non-sex chromosomes) and one pair of sex chromosomes. The X and Y sex chromosomes determine sex.

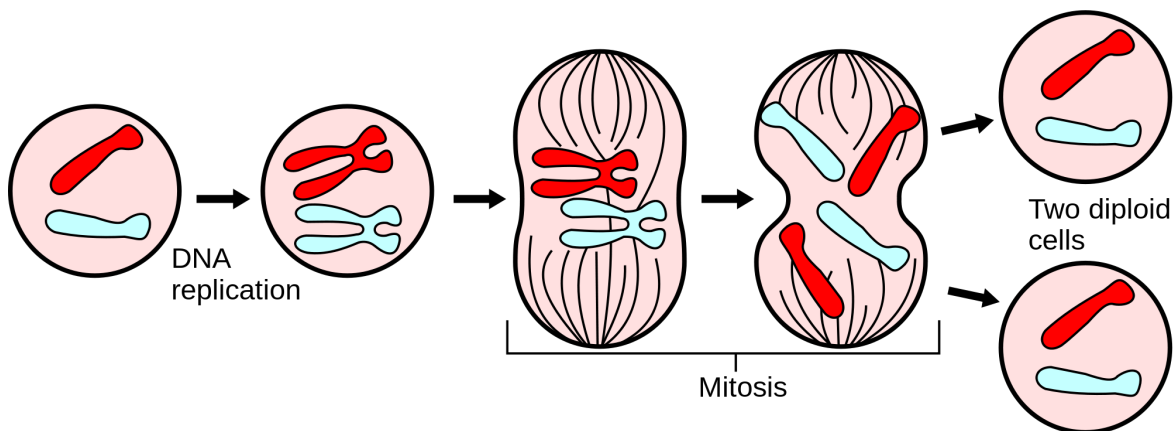
6. Cells contain structures called organelles which carry out specific functions.

Organelles have a wide range of responsibilities within a cell that include everything from providing energy to producing hormones and enzymes.

Eukaryotic cells contain several types of organelles, while prokaryotic cells contain a few organelles (ribosomes) and none that are bound by a membrane. There are also differences between the kinds of organelles found within different eukaryotic cell types. Plant cells for example, contain structures such as a cell wall and chloroplasts that are not found in animal cells. Other examples of organelles include:

- Nucleus — controls cell growth and reproduction.
- Mitochondria — provide energy for the cell.
- Endoplasmic Reticulum — synthesizes carbohydrates and lipids.
- Golgi Complex — manufactures, stores and ships certain cellular products.
- Ribosomes — involved in protein synthesis.
- Lysosomes — digest cellular macromolecules.

7. Different types of cells reproduce through different methods.



Most prokaryotic cells replicate by a process called binary fission.

This is a type of cloning process in which two identical cells are derived from a single cell. Eukaryotic organisms are also capable of reproducing asexually through mitosis. In addition, some eukaryotes are capable of sexual reproduction. This involves the fusion of sex cells or gametes. Gametes are produced by a process called meiosis.

8. Groups of similar cells form tissues.

Tissues are groups of cells with both a shared structure and function. Cells that make up animal tissues are sometimes woven together with extracellular fibers and are occasionally held together by a sticky substance that coats the cells. Different types of tissues can also be arranged together to form organs. Groups of organs can in turn form organ systems.

9. Cells have varying life spans.

Cells within the human body have different life spans based on the type and function of the cell. They can live anywhere from a few days to a year. Certain cells of the digestive tract live for only a few days, while some immune system cells can live for up to six weeks. Pancreatic cells can live for as long as a year.

10. Cells commit suicide.

When a cell becomes damaged or undergoes some type of infection, it will self destruct by a process called apoptosis. Apoptosis works to ensure proper development and to keep the body's natural process of mitosis in check. A cell's inability to undergo apoptosis can result in the development of cancer.

Quiz

- 1 Read the sentence from the section "7. Different types of cells reproduce through different methods."

Most prokaryotic cells replicate by a process called binary fission.

What does the verb "replicate" convey in the sentence?

- (A) It conveys that cell division is controlled on a regular schedule.
 - (B) It conveys that this process differs depending on the type of cell.
 - (C) It conveys that this process often results in mutations.
 - (D) It conveys that the resulting cells are exact copies of the original cell.
- 2 Read the sentence from the section "5. Cells contain genetic material."

Cells contain DNA (deoxyribonucleic acid) and RNA (ribonucleic acid), the genetic information necessary for directing cellular activities.

Which sentence BEST emphasizes what the author means by "directing cellular activities"?

- (A) The X and Y sex chromosomes determine sex.
 - (B) Human cells contain 23 pairs of chromosomes (for a total of 46).
 - (C) Nucleus — controls cell growth and reproduction.
 - (D) They can live anywhere from a few days to a year.
- 3 What limitations does the image in the section "2. There are two primary types of cells" have that the article does NOT have?
- (A) The image only lists one major difference between the two types of cell.
 - (B) The image does not provide information about how DNA is stored in each type of cell.
 - (C) The image does not identify the function of each organelle in the diagram.
 - (D) The image does not include all of the possible organelles in eukaryotic cells.

- 4 Which image included in the article BEST depicts the idea that genetic material is the MOST important component of any cell?
- (A) Image 1
 - (B) Image 2
 - (C) Image 3
 - (D) None of the above