The facts about cells

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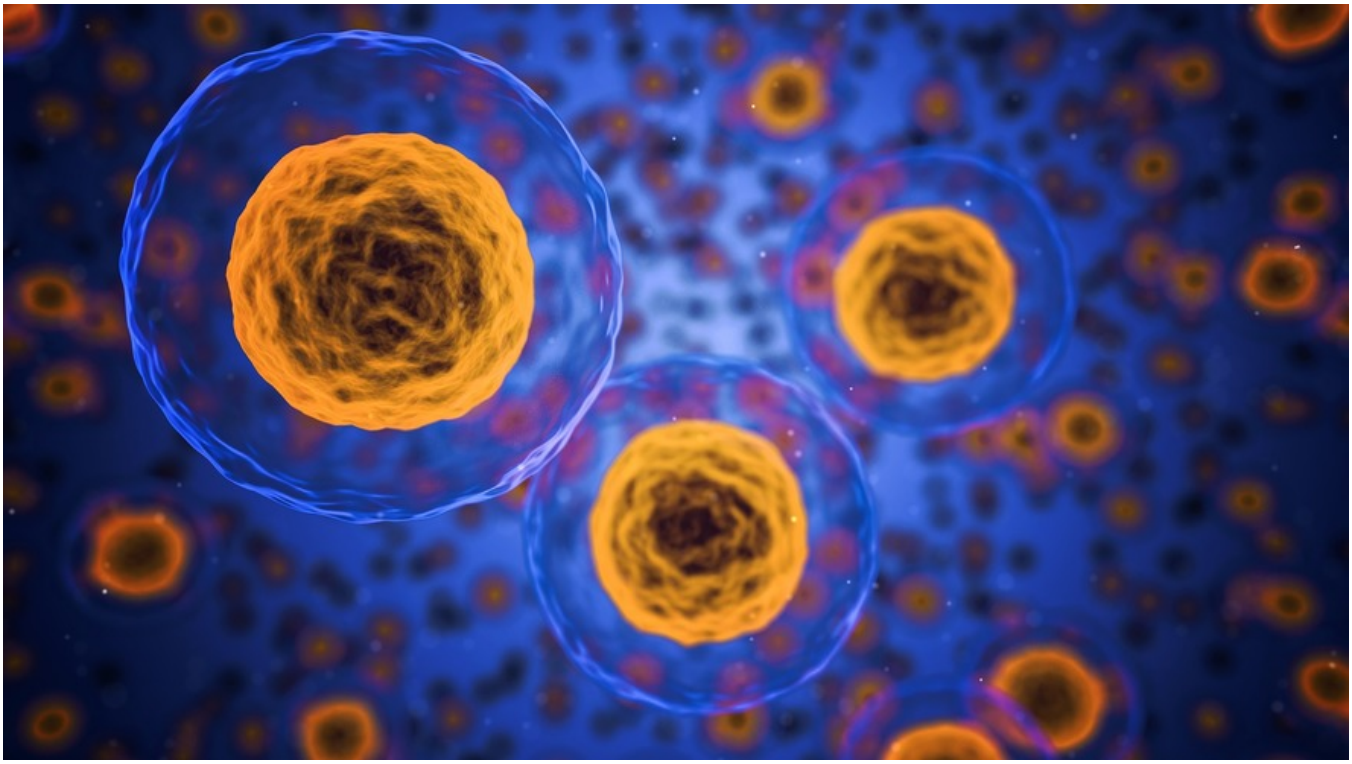


An image of cells. Photo from Pixabay.

Cells are the basic building blocks of life. All living things, or organisms, are made of cells.

Some life forms are made of a single cell. Humans, on the other hand, have up to 100 trillion cells in their bodies. That is about 1,000 times the number of stars in our galaxy!

There are hundreds of different types of cells. They give our bodies their shape, give us energy, let us have children and much more.

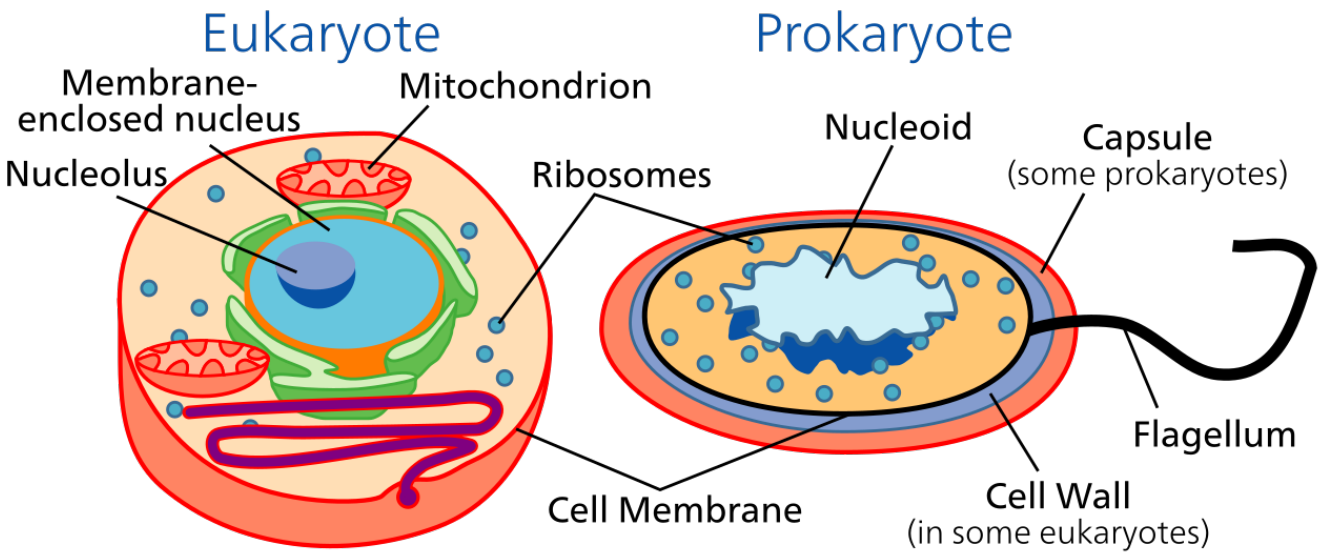
Below are 10 facts about cells. Some are well-known, but others may surprise you.

1. Cells are too small to see without a microscope.

Cells come in many sizes, from 1 to 100 micrometers wide. There are a million micrometers in one meter, and more than 25,000 in a single inch. In other words, cells are so small they are almost always impossible to see with just your eyes.

The study of cells is called cell biology. Since cells are so small, it would have been impossible to study them without the invention of the microscope. By using this tool, cell biologists can see details of even the tiniest cells.

2. There are two main types of cells.



Cells are either eukaryotic or prokaryotic. Eukaryotic cells have a nucleus, which is an area that stores DNA and is surrounded by a kind of skin called a membrane. Animals and plants have eukaryotic cells, and are called eukaryotes.

Prokaryotes are tiny creatures that are made of a single, prokaryotic cell. Prokaryotic cells do not have a nucleus with a membrane. Instead, they have an open area in the middle called nucleoid. Bacteria and archaeans are examples of prokaryotes.

3. Prokaryotes were the earliest and most basic forms of life on Earth.

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

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

Some scientists have found that, in a person's body, there are 9 bacteria for every human cell. In other words, our body is home to a huge amount of bacteria, which often work to help it out. For example, bacteria in the stomach help it with digesting food.

5. Cells contain DNA.

Cells carry DNA and RNA, which are the information building blocks that tell cells how to work. DNA and RNA are known as nucleic acids.

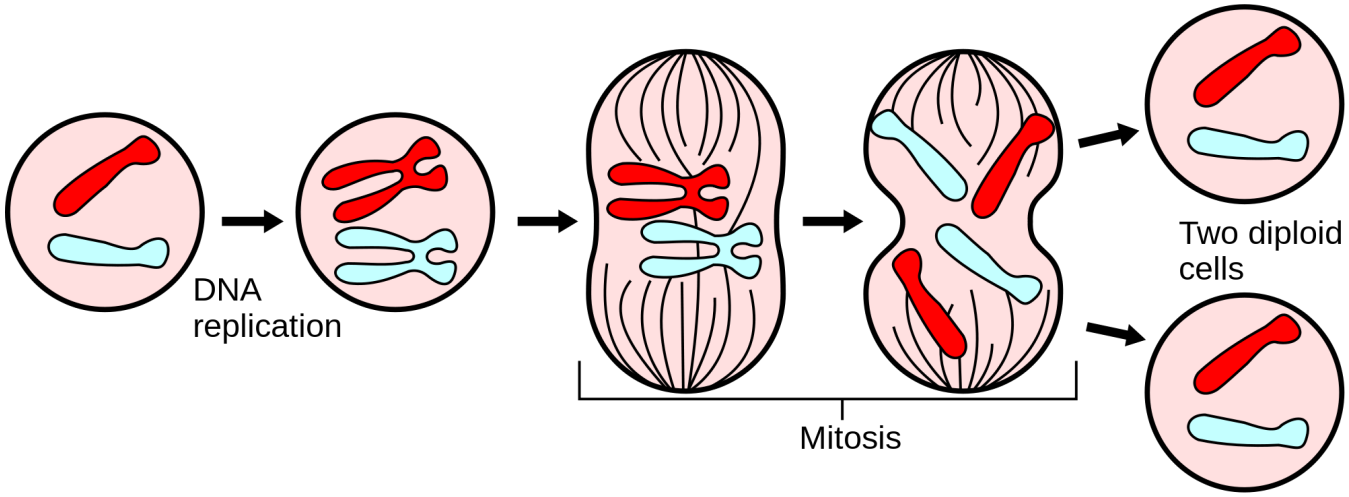
In prokaryotic cells, DNA is in the nucleoid. In eukaryotic cells, it is in the nucleus, protected by the membrane. DNA form long strands called chromosomes, which tell an organism how to grow and look. Human cells have 23 pairs of chromosomes, for a total of 46.

6. Cells contain structures called organelles which have specific roles.

Organelles are parts of a cell with certain responsibilities. In prokaryotic cells, there is mostly one type of organelle called ribosome. Eukaryotic cells have many different types of organelles, for example:

- The nucleus controls how the cell grows and behaves.
- Mitochondria give the cell energy.
- The endoplasmic reticulum makes carbohydrates, like sugar, and fats.
- Ribosomes help make proteins.
- The Golgi complex bundles up proteins and fats, and sends them where they need to be.
- Lysosomes help the cell digest what's inside it.

7. Cells have various ways of reproducing.



Cells are able to make copies of themselves. Most prokaryotic cells do this through binary fission. In binary fission, a single cell splits into two new cells that are just like it.

Eukaryotic cells can also split in two through a series of steps called mitosis. But larger eukaryotic organisms, like animals, reproduce in a different way. Two different cells, called gametes, come together to make a new life. Gametes are made through meiosis.

8. Groups of cells form tissues.

Tissues are groups of cells that are the same type and have the same role. Different types of tissues can also come together to form organs, like hearts and lungs.

9. Cells have varying life spans.

Different cells have different life spans, from a few days to a year. Brain cells can live for a whole lifetime.

10. Cells commit suicide.

When a cell becomes damaged or infected, it will self-destruct. This is called apoptosis, and it keeps one damaged cell from harming the rest of the body. Cells with cancer are not able to go through apoptosis. This is why they keep copying themselves, through mitosis. They can then spread cancer to the rest of the body.

Quiz

1 Read the sentence from the section "3. Prokaryotes were the earliest and most basic forms of life on Earth."

> *Prokaryotes can live in extreme environments that would be deadly to most other organisms.*

Which sentence uses "extreme" in the SAME way as the sentence above?

(A) The army went to extreme measures to win the war.

(B) The extreme sport of snowboarding can be dangerous.

(C) The buried treasure was located in the extreme north of the country.

(D) Mountain climbers have to work in extreme weather conditions.

2 Read the paragraph from the section "10. Cells commit suicide."

> *When a cell becomes damaged or infected, it will self-destruct. This is called apoptosis, and it keeps one damaged cell from harming the rest of the body. Cells with cancer are not able to go through apoptosis. This is why they keep copying themselves, through mitosis. They can then spread cancer to the rest of the body.*

Which word from the paragraph helps the reader understand the meaning of "apoptosis"?

(A) damaged

(B) self-destruct

(C) harming

(D) spread

3 Use the three images and information from the article to select the TRUE statement.

(A) Prokaryotic and eukaryotic cells contain the same organelles.

(B) Prokaryotic and eukaryotic cells are used to create larger organisms.

(C) Prokaryotic and eukaryotic cells use mitosis to create new cells.

(D) Prokaryotic and eukaryotic cells both contain DNA.

4 Examine the image in the section "7. Cells have various ways of reproducing," and read the selection below.

> *Cells are able to make copies of themselves. Most prokaryotic cells do this through binary fission. In binary fission, a single cell splits into two new cells that are just like it.*

HOW does the image support the information in the selection above?

(A) by showing the steps of binary fission

(B) by contrasting reproduction in prokaryotic and eukaryotic cells

(C) by identifying the causes of cell reproduction

(D) by showing what happens to DNA during meiosis