READING MATERIAL

Read About Plant & Animal Cells

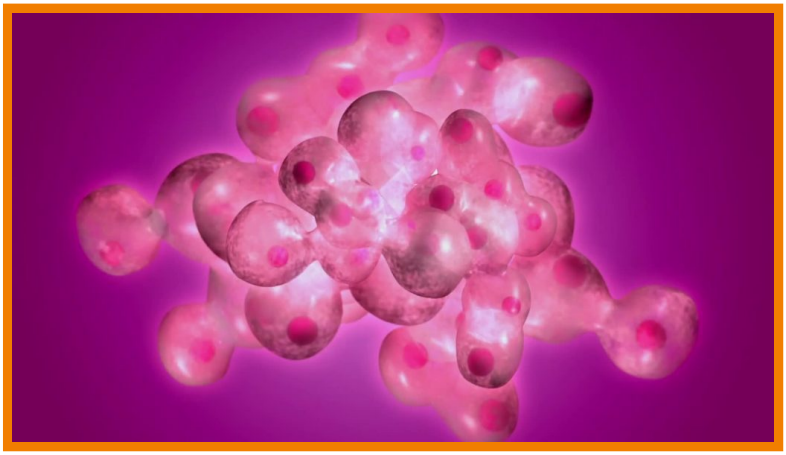
WHAT IS A CELL?

Cells are the basic unit of all living things. All cells need energy, get rid of waste and contain genetic material to make more cells. Some living things are made of only 1 cell (unicellular) and other organisms like humans are made of many cells working together (multicellular).

To better understand cells...

LET'S BREAK IT DOWN!

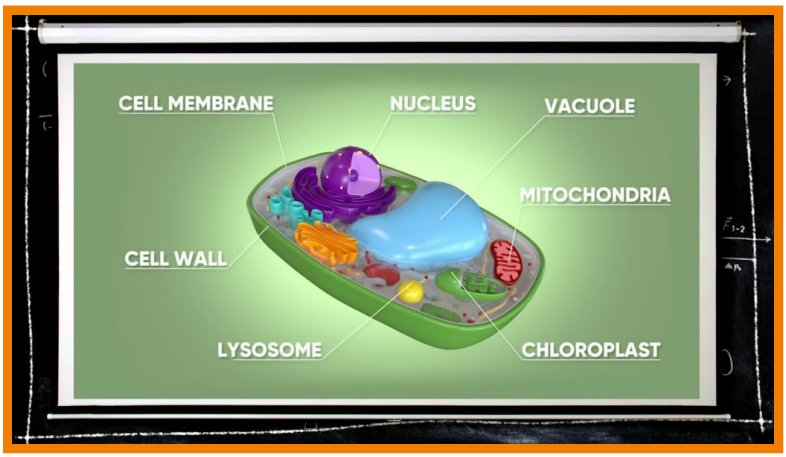
All living things are made of cells.



Cells can be seen with a light microscope which can magnify objects up to 1,000 times. Typically a microscope slide is prepared which creates a thin layer of cells and holds them in place. Dye is used to stain the cells, making them easier to see. Cells can range in size. For example, an amoeba is about 1 mm in length and the biggest ones can be seen without a microscope. A red blood cell is 100x smaller at 0.01 mm and a bacteria is 1000x smaller than an amoeba at about 0.001 mm.

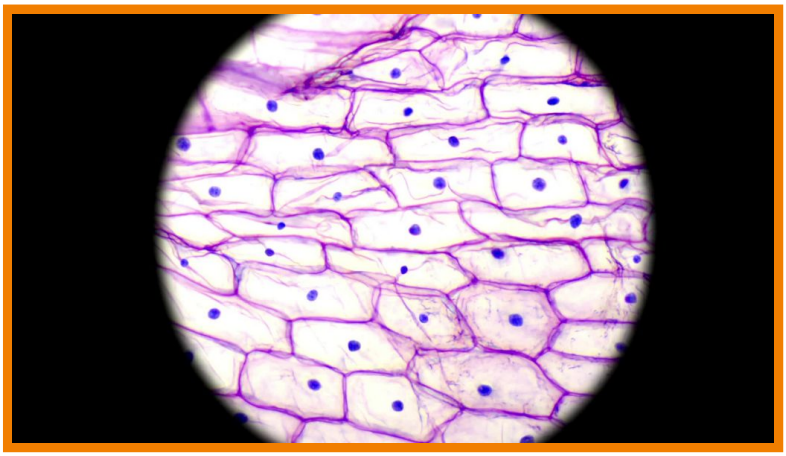
Plant & Animal Cells Have Organelles.

Organelles are parts of a cell that help the cell to function and stay organized. The mitochondria, for example, is where sugars are used to produce energy. The vacuole is a membrane bound organelle that stores fluids. The cell membrane controls what comes in and out of a cell. Plant and animal cells need organelles in order to carry out their everyday functions.

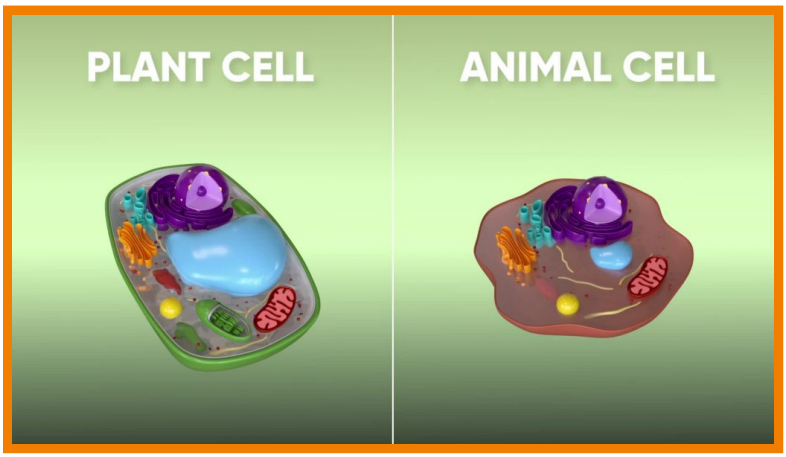


Cells are specialized, depending on their function.

Not all cells are the same. In the human body, for example, there are many kinds of cells. A nerve cell has long arm like features to help the cell communicate with other nerve cells. A muscle cell is more tubular in shape and it can get longer and shorter when muscles contract. These kinds of differences between the cells of an organism is called cell differentiation. Cells are structured in ways that help them achieve their function.



Plant and animal cells have similarities and differences.



Although plant and animal cells have many of the same organelles, there are some notable differences. Plant and animal cells both have a cell membrane, but in addition to a cell membrane, a plant cell also has a cell wall. The cell wall gives the plant cell structure. Plant cells also contain chloroplasts, green organelles that do photosynthesis. Animal cells do not have chloroplast because they do not do photosynthesis.

Studying cells can help us cure diseases.

There are several specialized types of scientists that study cells. Pathologists look at human cells under microscopes to diagnose diseases. For example, red blood cells normally have a disc like shape. In a disease called sickle cell anemia, cells are shaped like the letter “c” and this can be seen under a microscope to diagnose the disease so the patient can get treatment. Many other types of scientists also study cells such as molecular biologists, biochemists and more.

PLANT & ANIMAL CELLS VOCABULARY

Cell	The basic unit of all living things.
Organelle	Parts of a cell that help it function.
Nucleus	The organelle that contains DNA, the genetic material of the cell.

Cytoplasm	The jelly-like liquid inside the cell where the organelles are found.
Cell Membrane	The thin, flexible barrier surrounding the cell.
Cell Wall	Found outside the cell membrane, this organelle gives the plant structure. Animal cells do not have cell walls.

PLANT & ANIMAL CELLS DISCUSSION QUESTIONS

What is the difference between a unicellular organism and a multicellular organism?

Single celled organisms are made up of only one cell. An amoeba is an example of a unicellular organism. Multicellular organisms are made up of more than one cell. People, dogs and plants are all examples of multicellular organisms.

Why is the mitochondria of a cell important?

The mitochondria is where sugar is converted into energy. The cell needs energy in order to carry out its everyday functions.

What function does a cell wall serve for a plant?

The cell wall gives a plant cell support and structure allowing the plant to stand upright. This is important so that the plant can get sunlight in order to do photosynthesis.

Describe what you might see if you were to look at cells through a microscope.

Depending on the power of the microscope, you would be able to see the cell membranes (or cell walls if looking at plants). You would also most likely be able to see the nucleus of each cell. Other organelles might be too small or not colored.

Why does a piece of onion skin not contain any chloroplasts?

Onions are from the root of a plant, which is typically under the ground. Chloroplasts are found mostly in the leaves of plants. The leaves are where the process of photosynthesis takes place.

What would happen if one of the organelles stopped working?

All the organelles in a cell work together to keep the cell alive. If there was no nucleus the cell wouldn't be able to grow or reproduce. If there was no mitochondria, it would have no energy and if there was no cell membrane there wouldn't be any cell at all.