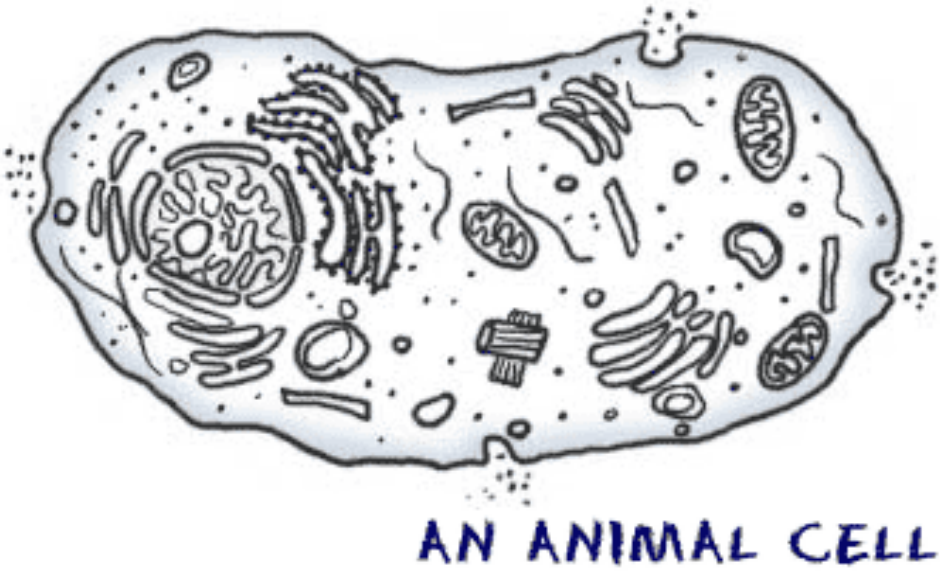
Cells are the Starting Point



All living organisms on Earth are divided into **cells**. The main concept of **cell theory** is that cells are the basic structural unit for all organisms. Cells are small compartments that hold the biological equipment necessary to keep an organism alive and successful. Living things may be single-celled or they may be very complex such as a human being.

There are smaller pieces that make up cells such as **macromolecules** and **organelles**. A protein is an example of a macromolecule while a mitochondrion is an example of an organelle. Cells can also connect to form larger structures. They might group together to form the **tissues** of the stomach and eventually the entire digestive **system**. However, in the same way that atoms are the basic unit when you study matter, cells are the basic unit for biology and organisms.

In larger organisms, the main purpose of a cell is to **organize**. Cells hold a variety of pieces and each cell type has a different **purpose**. By dividing responsibilities among different groups of cells, it is easier for an organism to survive and grow.

If you were only made of one cell, you would be very limited. You don't find single cells that are as large as a cow. Cells have problems functioning when they get too

big. Also, if you were only one cell you couldn't have a nervous system, no muscles for movement, and using the internet would be out of the question. The trillions of cells in your body make your way of life possible.

One Name, Many Types

There are many types of cells. In biology class, you will usually work with **plant-like** cells and **animal-like** cells. We say "animal-like" because an animal type of cell could be anything from a tiny microorganism to a nerve cell in your brain. Biology classes often take out a microscope and look at single-celled microbes from pond water. You might see hydra, amoebas, or euglena.

Plant cells are easier to identify because they have a protective structure called a cell wall made of cellulose. Plants have the wall; animals do not. Plants also have organelles such as the green chloroplast or large, water-filled vacuoles. Chloroplasts are the key structure in the process of **photosynthesis**.

Cells are unique to each type of organism. If you look at very simple organisms, you will discover cells that have no defined nucleus (prokaryotes) and other cells that

have hundreds of nuclei (**multinucleated**).

Humans have hundreds of different cell types. You have red blood cells that are used to carry oxygen (O_2) through the body and other cells specific to your heart muscle. Even though cells can be very different, they are basically compartments surrounded by some type of membrane.

Or search the sites for a specific topic.