

## *Comparison essay*

### High school biology

Even elementary students in biology know that all living things are composed of cells. This is a fundamental understanding in science. However, there are two different kinds of cells: prokaryotic cells and eukaryotic. These cells have many similarities and also some very important differences.

First, both kinds of cells contain DNA. A cell's DNA (hereditary material) determines exactly what kind of cell each cell is. Also, both prokaryotic and eukaryotic cells also contain RNA and are covered by a cell membrane. Both types are made from the same basic materials (chemicals) and have ribosomes for the creation of protein.

The two cell types probably have more that is different than they do that is alike. The differences can be categorized as age/origin and as structural. Basically, prokaryotic cells appeared much longer ago than eukaryotic. Bacteria (made up of prokaryotic cells) appeared on earth about 3.5 billion years ago, and eukaryotic cells did not appear until about 1.5 billion years ago, according to most scientists. Data exists that suggests eukaryotic cells evolved from groups of prokaryotic cells that became interdependent.

The structural differences between the two are even more interesting than the difference in the time these cells originated on earth. Eukaryotic cells contain two components that prokaryotic cells do not: a nucleus and organelles. In eukaryotic cells, the DNA is found in the nucleus. In prokaryotic cells, on the other hand, it floats around in the cell. The organelles in eukaryotic cells function as miniature organs that carry out complex functions. Some of these include the nucleus, which is like a command center, and the ribosomes, which are like factories for making proteins needed in the body. (Other organelles exist too.) Another important difference in the two types of cells is that eukaryotes are usually about ten times larger than prokaryotes.

These are some of the most fundamental similarities and differences between prokaryotic and eukaryotic cells. Any student who has studied these basic building blocks of life should know and understand these characteristics.