

reading compare and contrast - articles on CELLS

CELL is the basic unit of all life. All living things—tigers, trees, mosquitoes, and men—are made up of cells. Some animals and some plants consist of only one cell. Other plants and animals are made up of many cells. The body of a man has more than a million million (1,000,000,000,000) cells.

Most cells are so small that they can be seen only under a microscope. It would take about 40,000 of your blood cells to fill this letter O. It takes more than a million cells to make up one square inch of your skin.

Some one-celled plants and animals lead independent lives. Others live in loosely organized groups. In plants and animals made up of many cells, the cells are specialists with particular jobs to do. As you read these words, for example, nerve cells in your eyes are carrying messages of what you are reading to your brain. Muscle cells attached to your eyeballs are moving your eyes across the page. Nerve cells, muscle cells, and other specialized cells group together to form *tissues*, such as nerve tissue or muscle tissue. Different kinds of tissues form *organs*, such as the eyes, heart, and lungs. All the specialized cells together form you—or a giraffe, or a daisy, or a bluebird.

Almost all cells have some things in common, whether they are specialized cells or one-celled plants and animals. A cell is alive—as alive as you are. It “breathes,” takes in food, and gets rid of wastes. It grows and *reproduces* (creates its own kind). And, in time, it dies.

A thin covering encloses each cell. Within the covering is a fluid that looks like jelly. This fluid is called *cytoplasm*. It contains many tiny structures. Each has a job to do, such as producing energy. Near the center of the cell is the *nucleus*, the cell’s control point. The nucleus contains a master plan that controls almost everything the cell does. The entire living substance that makes up the cell is often called *protoplasm*.

Just as all living things are made up of cells, every new cell is produced by a cell. Most cells reproduce by dividing, so that there are two cells where there once was one. When a cell divides, each of the two new cells gets a copy of the master plan.

The master plan is a chemical substance called *DNA* (deoxyribonucleic acid). All DNA, whether it comes from a human cell, an animal cell, or a plant cell, looks much alike, and has about the same chemical composition. But DNA has a chemical code that makes every living thing different from all other living things. This code makes a dog different from a fish, a zebra different from a rose, and a willow different from a wasp. It makes you different from every other person on earth.

Scientists are beginning to break the DNA code. After they have solved it, they may be able to control cancer and many other diseases that arise in the cell. Scientists also may be able to change the characteristics of plants and animals. They may even be able to create life in a test tube.

A B CELL, the smallest organized unit of living matter. All living things (plants and animals) are made up of cells. To see a cell you usually have to use a microscope. A cell may exist all by itself, as does the one-celled animal the amoeba. Or a cell may be a highly specialized part of a larger organism. Muscle cells, for example, are different from brain cells. Although the composition of a cell is more or less constant, particles are constantly entering and leaving it. (See METABOLISM.) A cell makes other cells by dividing. The exception is in sexual reproduction. Here two cells join to form a new cell.

In the cell is a substance called protoplasm. The protoplasm is divided into a nucleus, found near the center of the cell, and cytoplasm, or the material that surrounds the nucleus. The cell gets its nourishment from the blood and body fluids outside the cell. This material passes through the cell membrane and enters the cytoplasm. From here the nucleus transforms some of the nourishment into energy for life processes.

The cell is the element from which all of the vital activities of animals and plants emanate. The same fundamental vital functions are performed by unicellular animals and plants and by all of the individual cells that constitute multicellular animals and plants. All cells assimilate nutriment and transform it into the protoplasm that composes them. All are capable of growth. All are capable of fission, or division into halves. Each half soon grows to adult size. All cells must come from preexisting living cells; they cannot emerge from nonliving matter.

Although all cells are fundamentally alike, those of different animal and plant tissues differ considerably in their structure and in the special functions that they perform. For example, bone, muscle, blood, and nerve tissue of animals, the woody tissue of tree trunks, and leaf tissue of plants are each composed of cells of different structure and perform different specialized functions.

Multicellular animals and plants begin their existence with the union of a sperm cell and an egg cell, or ovum. The fertilized ovum then divides many times, and the resulting cells become differentiated to form the various tissues and organs of the adult animal or plant. Also, the fertilized ovum is the source of the germ cells—both sperm and ova—from which the succeeding generation will come.

In what way(s) are articles A and B similar?

think and search
question
Name
Class
Team
Parent
Signature

think and search
you learned from one article
that was not included in the other.

A B

World Book
Vol 3
p 270
Encyclopedia
Vol IV - p 537

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think and search
questions

Standards
57a, 57b, 57c, 57d, 57e,
56d, 52a

our goal is to compare two articles on similar subject matter/can we see differences?

sally