

Science Study Guide- Cells

The first microscopes were invented in the early 1600's.

The cell is the basic unit of structure and function of all living things.

As different as plants and animals seem to be, all of them are made up of cells.

Most plants and animals are made up of many cells, but humans are made up of trillions of cells.

Cells work together to perform basic life processes that keep an organism alive.

Plant & Animal Cells

Although cells are the basic unit of all living organisms, cells contain even smaller structures called organelles.

The cell membrane holds the part of the cell together. It also separates the cell from its surroundings.

The nucleus which is enclosed in its own membrane, determines the cells activities.

One function of the nucleus is to control cell reproductions. Inside the nucleus are threadlike structures called chromosomes.

Cytoplasm is a jellylike substance containing many chemicals to keep the cell functioning.

Mitochondria release energy from food.

Vacuoles are storage organelles. They store food, water, or waste materials.

A plant cell is surrounded by a rigid cell wall, which gives it strength. Plant cells also have chloroplasts, which make food.

Materials move into & out of cells

Mitochondria use food, oxygen, and water to produce energy. This process produces carbon dioxide.

In the process of diffusion, particles of a substance move from an area where there are a lot of particles of the substance to an area where there are fewer particles of the substance.

The movement of water and dissolved materials through cell membranes is so important to living organisms that it is given special name- osmosis.

Tissues, Organs, and Systems

Cells that work together to perform a specific function form a tissue.

There are four kinds of tissues in humans.

1. Muscle tissue is made up of cells that contract when they receive signals from the brain.
2. The brain and spinal cord, as well as the places where sight, hearing, taste, smell, and touch begin, are all nervous tissue.
3. Connective tissue is the third kind of tissue. It includes the tissue in bones, cartilage, and tendons.
4. The fourth kind of tissue is epithelial tissue. This tissue includes the body covering of an animal.

Just as cells work together to form a tissue, tissues work together to form an organ. Organs that work together to perform a function form a system.