

Cell Theory

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Definition of cell theory. : a **theory** in biology that includes one or both of the statements that the **cell is** the fundamental structural and functional unit of living matter and that the organism **is** composed of autonomous **cells** with its properties being the sum of those of its **cells**. Cell theory was eventually formulated in 1839. This is usually credited to Matthias Schleiden and Theodor **Schwann**. However, many other scientists like Rudolf Virchow contributed to the theory.

principles of cell theory

The **three** parts of the **cell theory** are as follows:

- (1) All living things are made up of **cells**
- (2) **Cells** are the smallest units (or most basic building blocks) of life
- (3) All **cells** come from preexisting **cells** through the process of **cell** division.

The main points of cell theory

Modern **Cell Theory** has three **main points**: All living things are made of one or more **cells**. The **cell** is the smallest unit of life in all organisms. All living **cells** come from the division of pre-existing **cells**.

Cell: The **cell** (from Latin *cella*, meaning "small room") the basic membrane-bound unit that contains the fundamental molecules of life and of which all living things are composed. A single cell is often a complete organism in itself, such as a bacterium or yeast. Other cells acquire specialized functions as they mature. These cells cooperate with other specialized cells and become the building blocks of large multicellular organisms, such as humans and other animals The study of cells is called cell biology, cellular biology, or cytology. A **cell** is basically **made of** biological molecules (proteins, lipids, carbohydrates and nucleic acids). These biomolecules are all **made from** Carbon, hydrogen and oxygen. Proteins and nucleic acids have Nitrogen

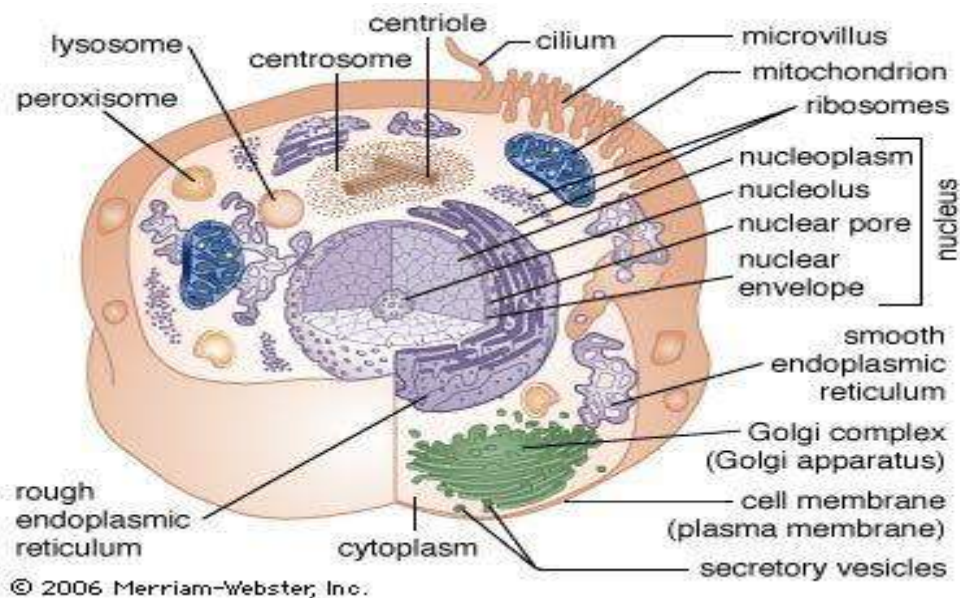
Scientists concluded that the average human body contains approximately **37.2 trillion cells!** Of course, your body will have more or fewer cells than that total, depending upon how your size compares to the average human being, but that's a good starting point for estimating the number of cells in your own body!

Types of cells

Cells can be subdivided into the following subcategories:

1. *Prokaryotes*: Prokaryotes are relatively small cells surrounded by the plasma membrane, with a characteristic cell wall that may differ in composition depending on the particular organism. Prokaryotes lack a nucleus (although they do have circular or linear DNA) and other membrane-bound organelles (though they do contain ribosomes). The protoplasm of a prokaryote contains the chromosomal region that appears as fibrous deposits under the microscope, and the cytoplasm. Bacteria and Archaea are the two domains of prokaryotes.
2. *Eukaryotes*: Eukaryotic cells are also surrounded by the plasma membrane, but on the other hand, they have distinct nuclei bound by a nuclear membrane or envelope. Eukaryotic cells also contain membrane-bound organelles, such as (mitochondria, chloroplasts, lysosomes, rough and smooth endoplasmic reticulum, vacuoles). In addition, they possess organized chromosomes which store genetic material.

Animals have evolved a greater diversity of cell types in a multicellular body (100–150 different cell types), compared with 10–20 in plants and fungi.



The Four Main Types of Cells

- Epithelial Cells. These cells are tightly attached to one another. ...
- Nerve Cells. These cells are specialized for communication. ...
- Muscle Cells. These cells are specialized for contraction. ...
- Connective Tissue Cells.

There are hundreds of types of cells, but the following are the 11 most common.

- Stem Cells.
- Bone Cells.
- Blood Cells. ...
- Muscle Cells. ...
- Fat Cells. ...
- Skin Cells. ...
- Nerve Cells. ...
- Endothelial Cells.

Stem cells

Stem cells are cells that are yet to choose what they are going to become. Some differentiate to become a certain cell type, and others divide to produce more stem cells. They are found in both the embryo and some adult tissues, such as bone marrow.

Bone cells

There are at least three primary types of bone cell:

Osteoclasts, which dissolve bone.

Osteoblasts, which form new bone.

Osteocytes, which are surrounded by bone and help communicate with other bone cells.

Blood cells

There are three major types of blood cell:

red blood cells, which carry oxygen around the body

white blood cells, which are part of the immune system

platelets, which help blood clot to prevent blood loss after injury

Muscle cells

Also called myocytes, muscle cells are long, tubular cells. Muscle cells are important for a huge range of functions, including movement, support, and internal functions, such as peristalsis — the movement of food along the gut.

Fat cells

Fat cells are also called adipocytes and are the main constituent in adipose tissue. They contain stored fats called triglycerides that can be used as energy when needed. Once the triglycerides are used up, the fat cells shrink. Adipocytes also produce some hormones.

Nerve cells

Nerve cells are the communication system of the body. Also called neurons, they consist of two major parts — the cell body and nerve processes. The central body contains the nucleus and other organelles, and the nerve processes (axons or dendrites) run like long fingers, carrying messages far and wide. Some of these axons can be over 1 meter long.

Skin cell

Within the epidermis are layers of four different kinds of skin cells: keratinocytes, melanocytes, Merkel cells, and Langerhans cells. A thin layer called the basement membrane separates the epidermis from the lower layer of the skin, called the dermis.

Endothelium

refers to cells that line the interior surface of blood vessels and lymphatic vessels, forming an interface between circulating blood or lymph in the lumen and the rest of the vessel wall. It is a thin layer of simple, or single-layered, squamous cells called endothelial cells.