ANATOMY OF A CELL

Zooming In
In 1664, English scientist Robert Hooke viewed a thin slice of cork through an early microscope. Cork looked to him as if it were constructed of dozens of tiny rectangular compartments. He called them cells, from the Latin cella, meaning small room.

At first, scientists couldn’t see much within a cell and thought it was just filled with jelly. They called that jelly protoplasm. But improved microscopes slowly changed that view. We know now that each cell is really a complex part of life.

What’s in a Cell?
Each cell is different, but all cells have features similar to this HUMAN CELL.

Ingredients of Cells

WATER
Water makes up about 90 percent of a cell’s weight. Here’s what’s in the other 10 percent.

PROTEINS
About 5 percent are protein molecules, which in turn are made up of chemicals called amino acids.

CARBOHYDRATES
These are sugars, which are burned for quick energy. They make up about 2.5 percent.

NUCLEIC ACIDS
These go by their initials—DNA and RNA—and make up about 1.5 percent of cells. They control the cells by supplying the codes that decide which chemicals get made and when.

FATS
Fats, oils, and waxes called lipids make up about 1 percent—mostly in the cell’s outer membrane.

A HAIR-FARING, like this one, and nuclei are made of proteins. About half the stuff in your body is made of protein. Every person has about 50,000 different proteins working at any time. Most serve as switches that turn chemical reactions on and off when needed.

PROTEINS
Proteins are made by organelles. Organelles perform other jobs as well, such as turning food into energy and moving molecules around.

MITOCHONDRIA
(mito-uh-KON-dree-uh)
Produces energy for cell to use by breaking down substances

CELL MEMBRANE
Made up of a double layer of fatty material called lipids. It allows some materials to pass into and out of a cell at thousands of places across its surface. For example, it allows food to pass into the cell and waste to pass out of the cell.

PLANT CELLS
differ greatly from animal cells
They have a stiff outer covering instead of a fatty one. Most plant cells also contain organelles called chloroplasts. Within each chloroplast, the green pigment (color) chlorophyll uses the sun’s light energy to combine carbon dioxide and water to make sugar. This process—called photosynthesis—supplies plants with energy. Plants in turn supply energy for all other forms of life.

LYSOSOME
Where digestion of cell nutrients takes place.

GOLGI
(GOL-je) Stores and transports newly made proteins until they can be released through the cell membrane.

VACUOLE
Storage area for fat and other substances.

ENDOPLASMIC RETICULUM
(en-duh-PLAZ-mik ret-ih-KLUS-ih) Smooth and rough tubes that move and store materials made by the cell.

RIBOSOME
(Rih-buh-sohm) Protein-producing factories. Proteins produce chemical messages that run a cell.

NUCLEUS
Cells’ control center, or brain.

CELL WALL

CHLOROPLAST

DNA, or deoxyribonucleic acid (dee-oh-REE-boe-new-CLAY-ic acid), contains clearly coded information that passes on every single inherited characteristic.