

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?

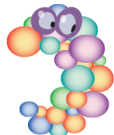
Each cell is different, but all cells have features similar to this **HUMAN CELL** ➡

Ingredients of Cells



WATER

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



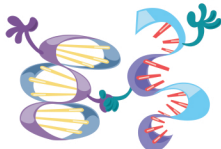
PROTEINS

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

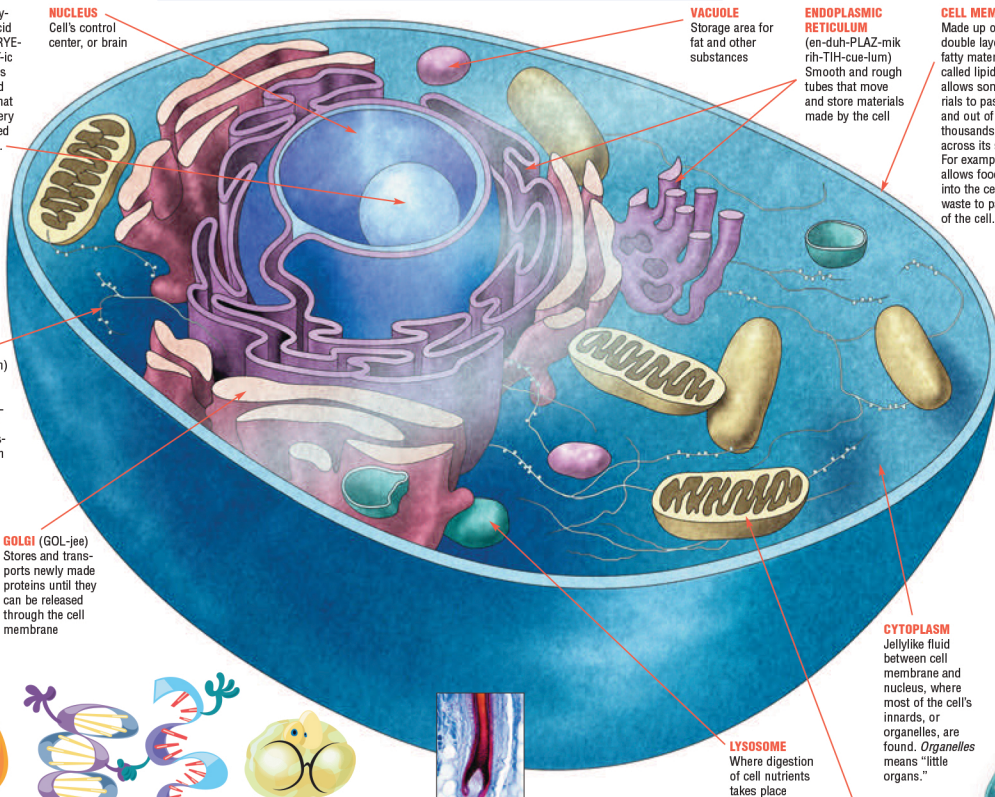
Fats, oils, and waxes called lipids make up about 1 percent—mostly in the cell's outer membrane.



A HAIR FOLLICLE, like this one, and nails are made of proteins. About half the stuff in your body is made of protein. Every person has

about 500,000 different proteins working at any time. Most serve as switches that turn chemical reactions on and off when needed.

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



DNA, or deoxyribonucleic acid (dee-ox-see-RYE-bo-new-CLAY-ic acid), contains cleverly coded information that passes on every single inherited characteristic.

NUCLEUS
Cell's control center, or brain

VACUOLE
Storage area for fat and other substances

ENDOPLASMIC RETICULUM (en-duh-PLAZ-mik ri-TIH-cue-lum)
Smooth and rough tubes that move and store materials made by the cell

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.

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

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

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.

CYTOPLASM
Jellylike fluid between cell membrane and nucleus, where most of the cell's inards, or organelles, are found. *Organelles* means "little organs."

LYSOSOME
Where digestion of cell nutrients takes place

MITOCHONDRION (mih-uh-CON-dree-on)
Produces energy for cell to use by breaking down substances



CHLOROPLAST

CELL WALL