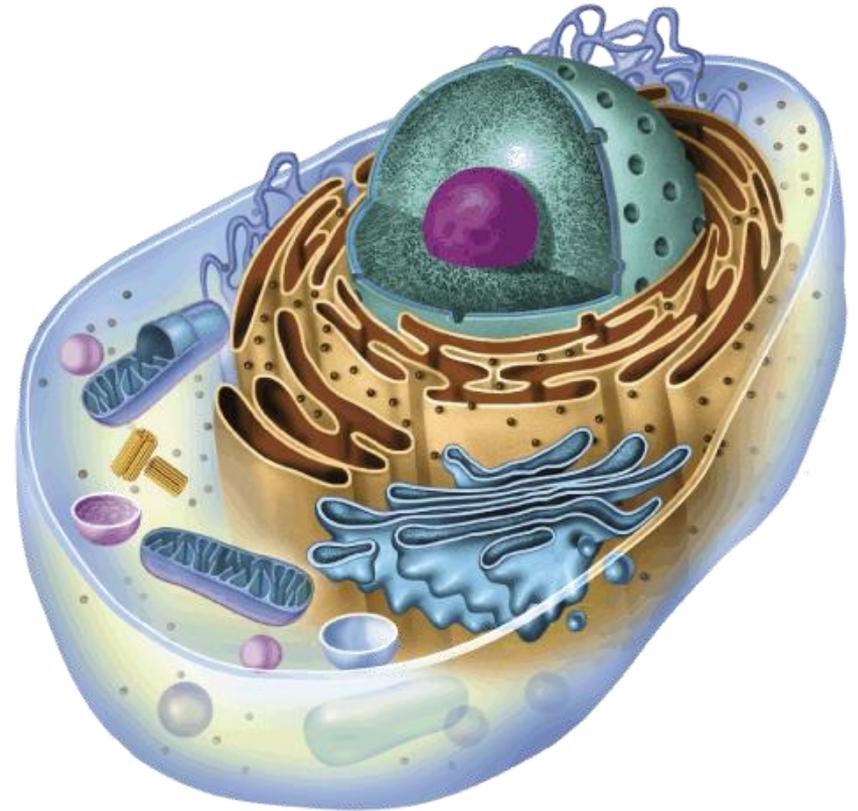
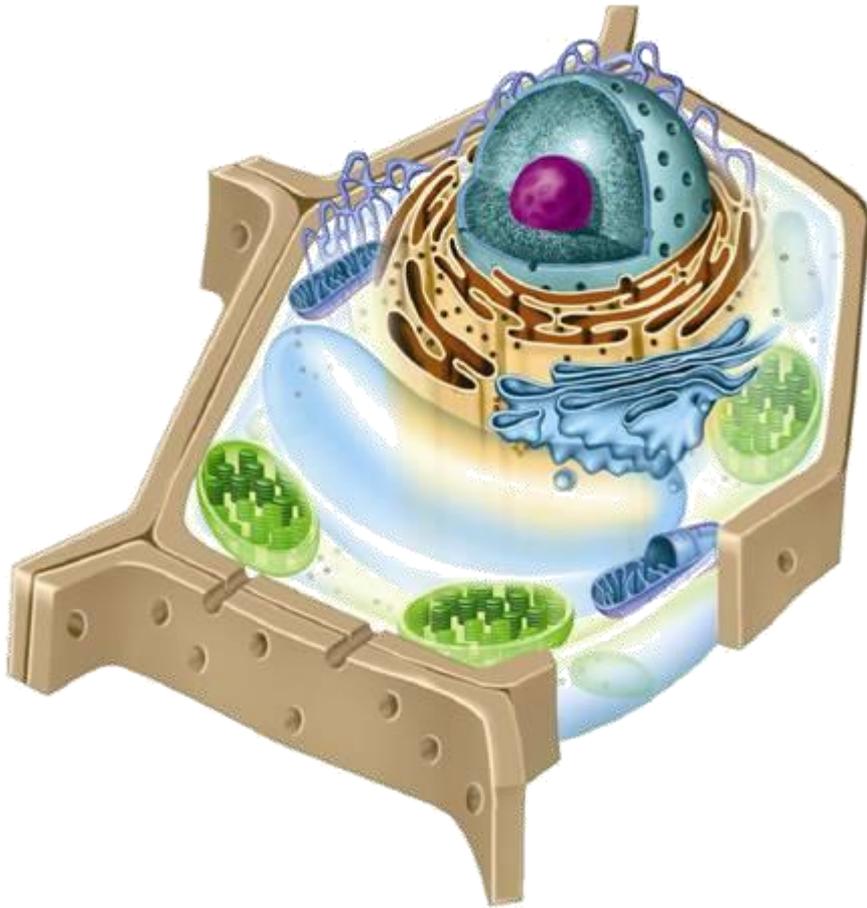


7-2 Eukaryotic Cell Structure



Eukaryotic Cell Structures

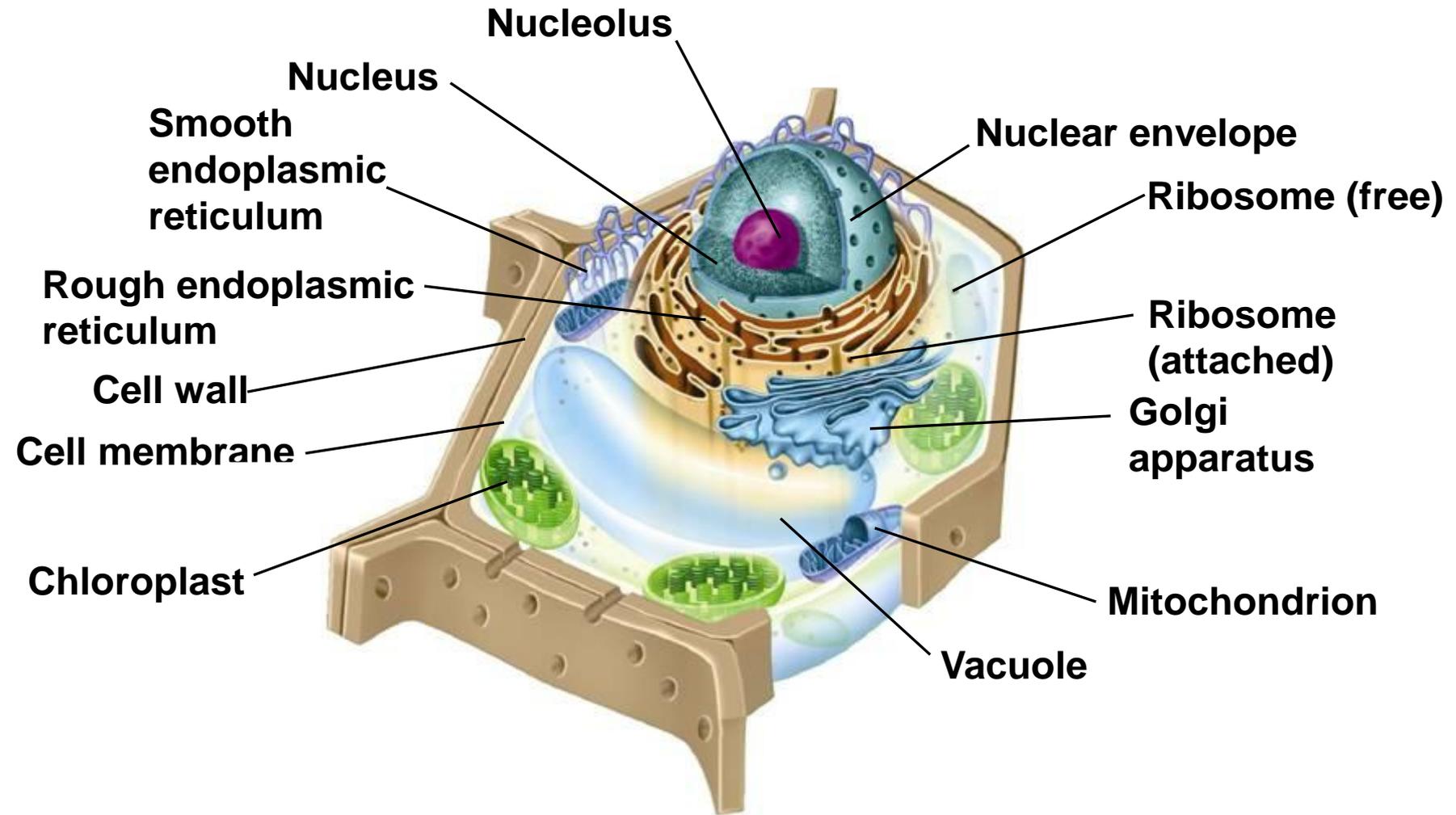
Organelles- structures in a eukaryotic cell that perform important cellular functions.

The eukaryotic cell is divided into two major parts: the **nucleus** and the **cytoplasm**.

The **Cytoplasm** is the portion of the cell outside the nucleus.

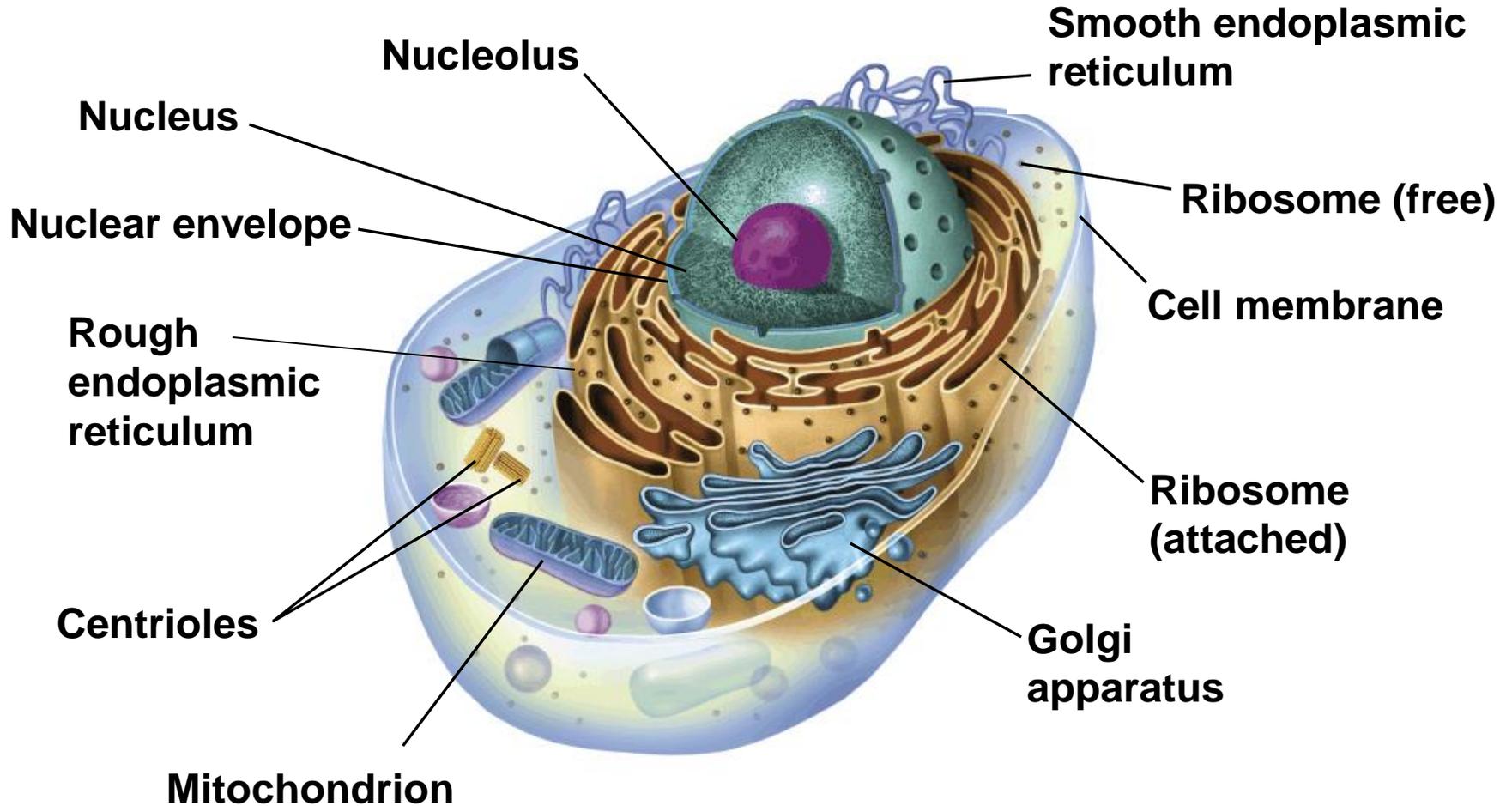
Eukaryotic Cell Structures

Plant Cell



Eukaryotic Cell Structures

Animal Cell



Nucleus

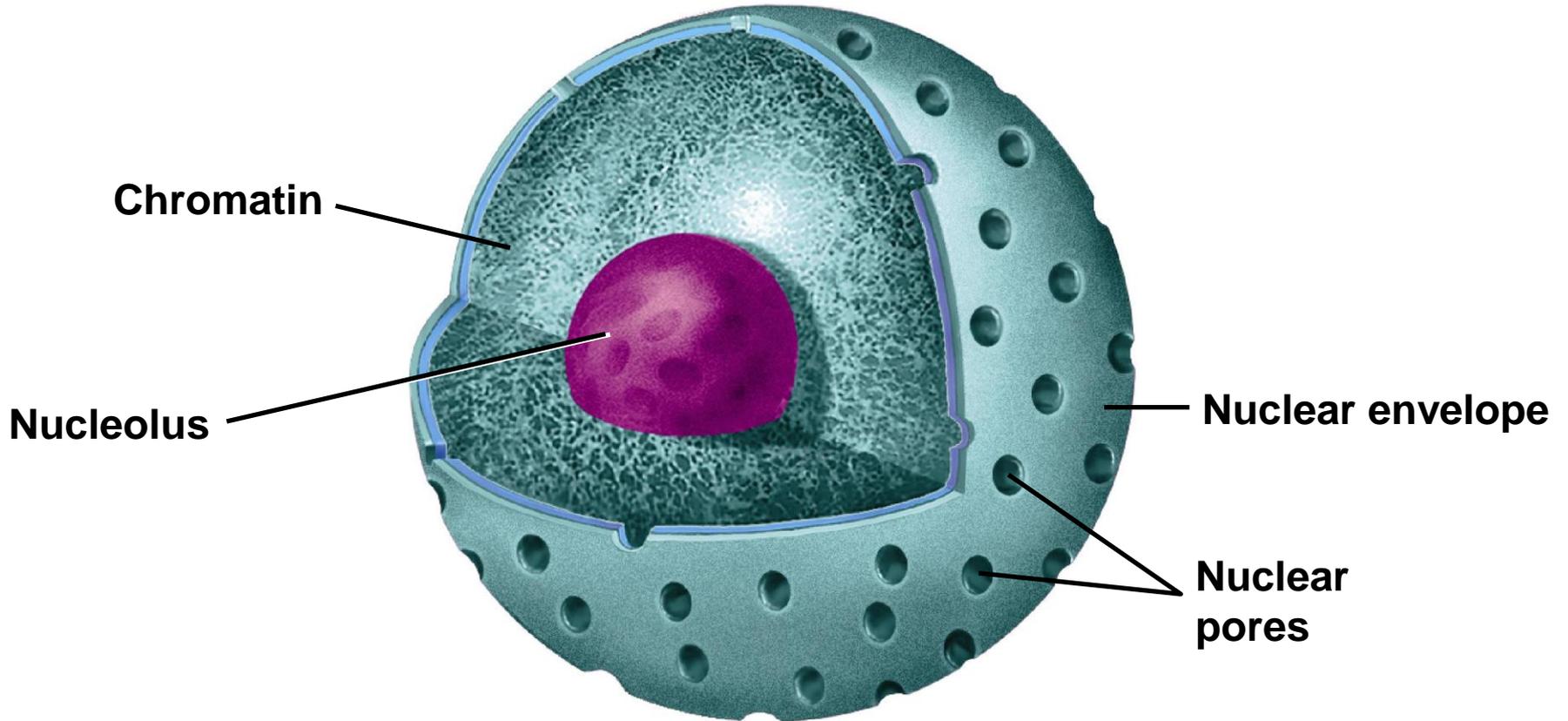
The nucleus is the control center of the cell.



The nucleus contains the cell's DNA

Nucleus

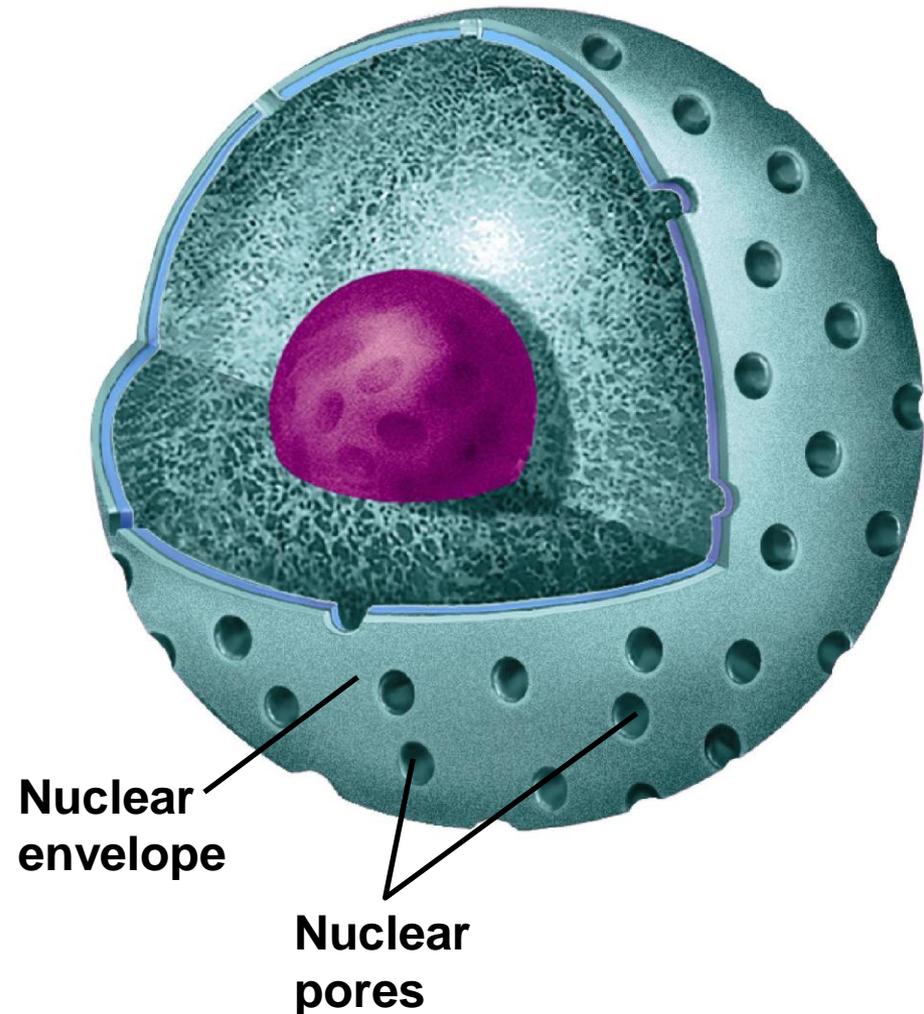
Parts of the Nucleus



Nucleus

nuclear envelope-
membrane
surrounding nucleus.

nuclear pores-
openings in nuclear
envelope; allows
materials in and out
of nucleus.

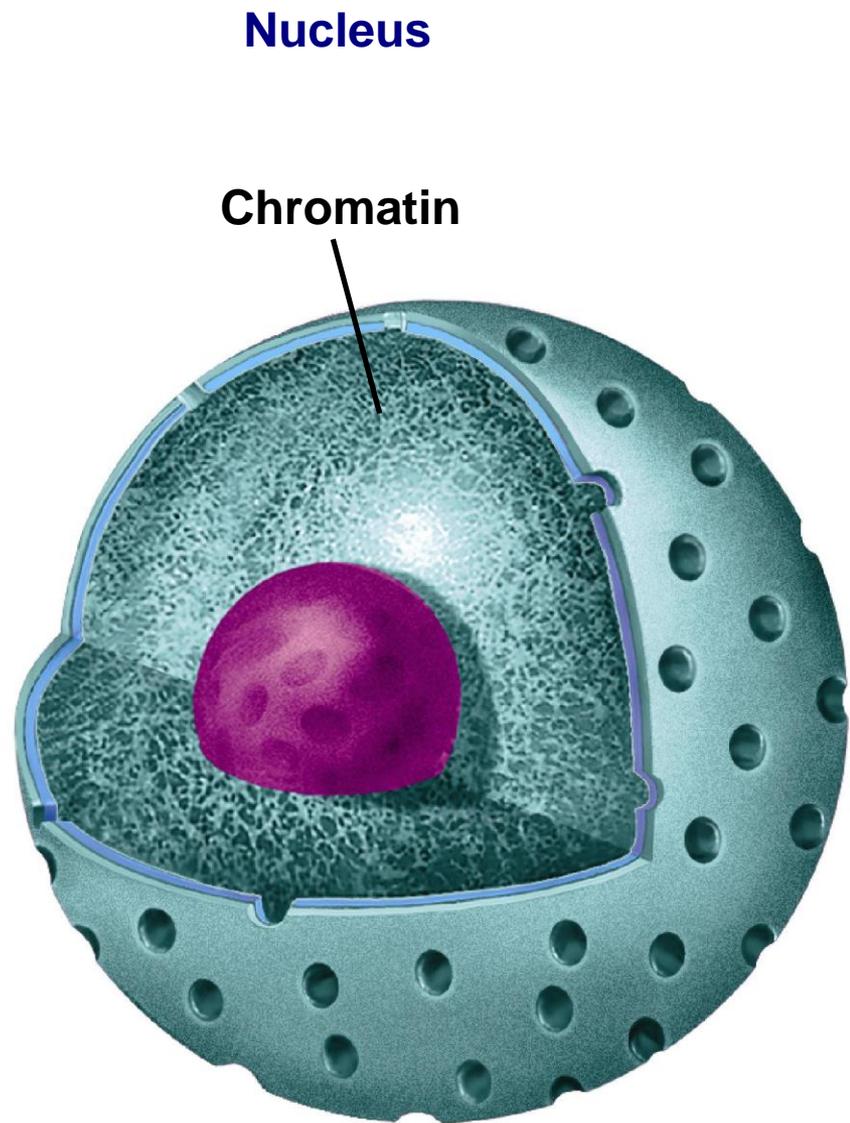


Chromatin- material in the nucleus made of DNA bound to protein.

When a cell divides, chromatin condenses to form

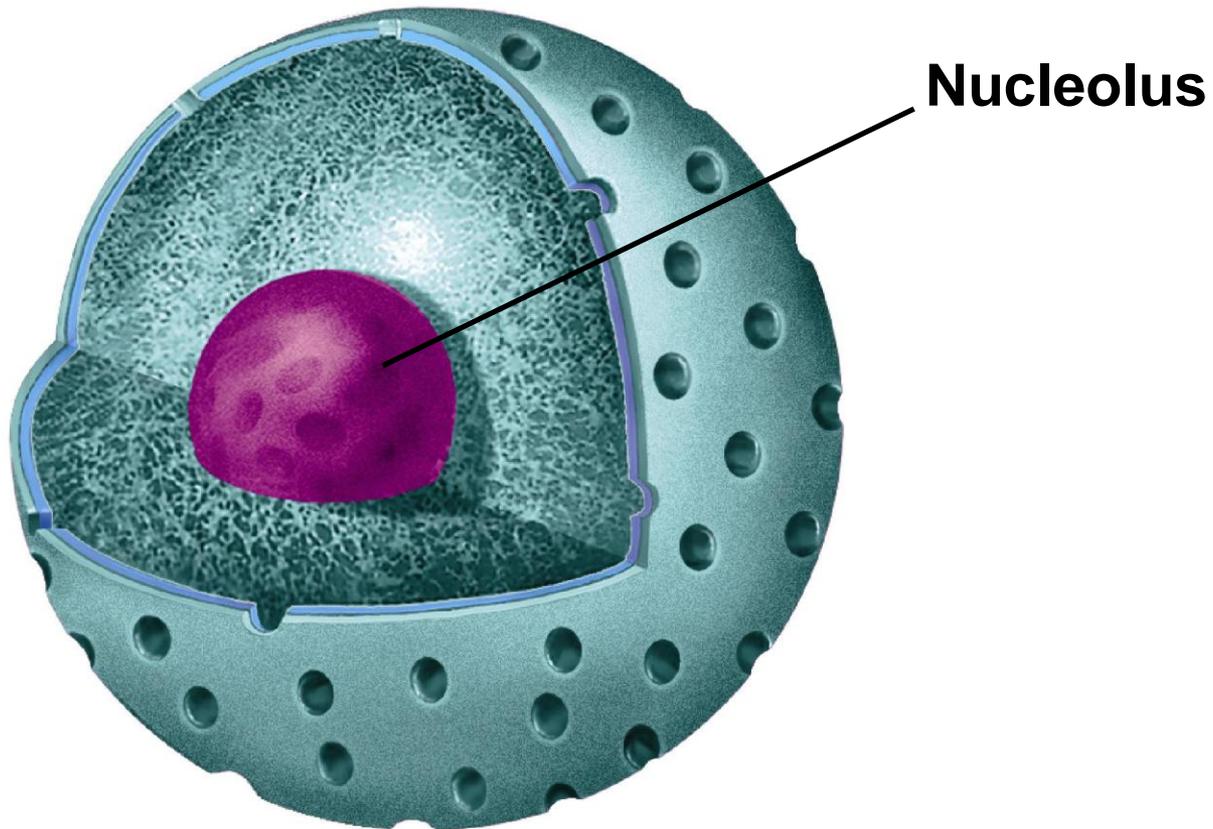
chromosomes.

Chromosomes contain the genetic information.



Nucleus

The **nucleolus** is where the assembly of ribosomes begins.



Ribosomes

IMPORTANT job of cell → make proteins

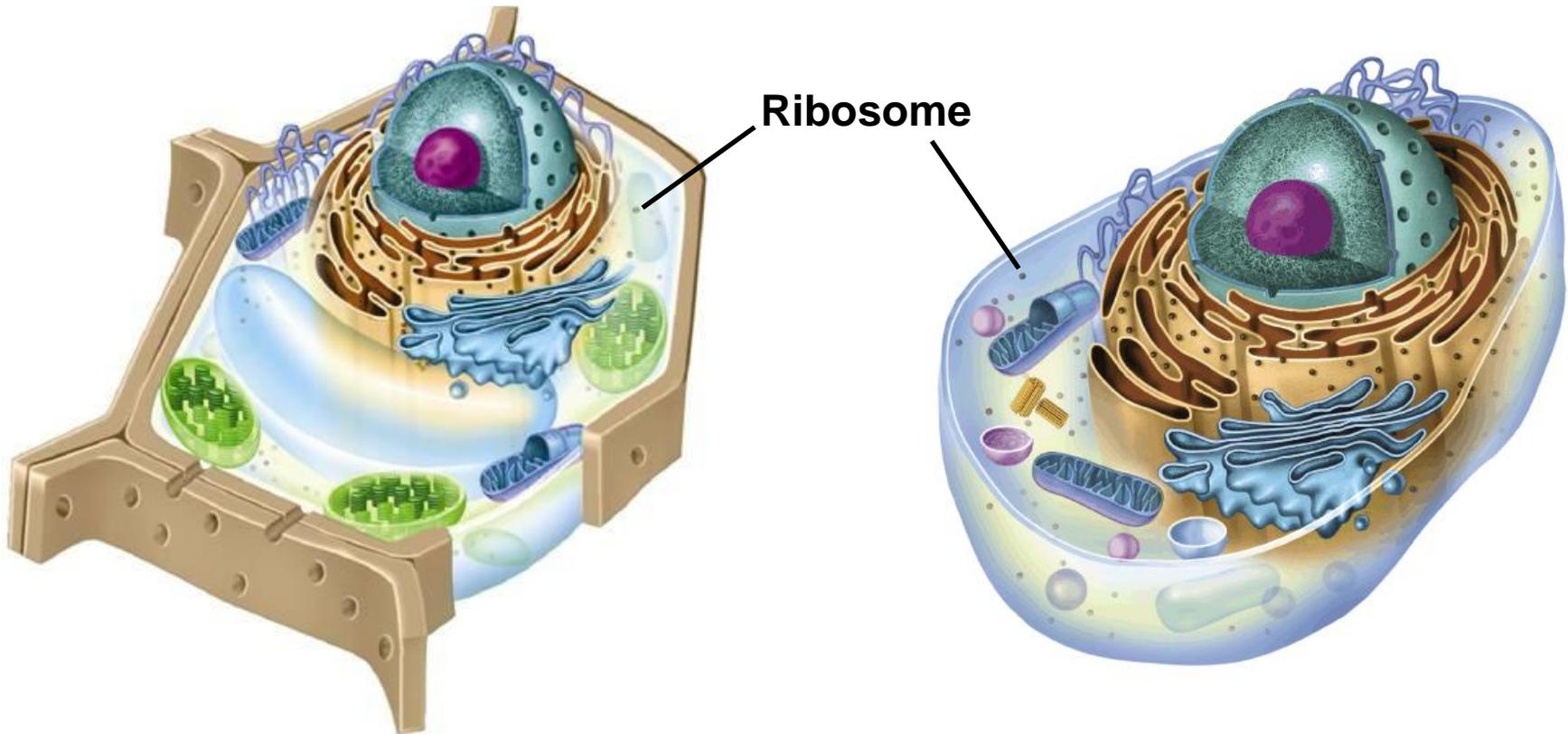
Proteins are made on ribosomes.



Ribosomes are small particles of RNA and protein found throughout the cytoplasm.

Ribosomes

Ribosomes produce proteins by following instructions that come from the nucleus.



Endoplasmic Reticulum

Endoplasmic reticulum (ER) - an internal membrane system .



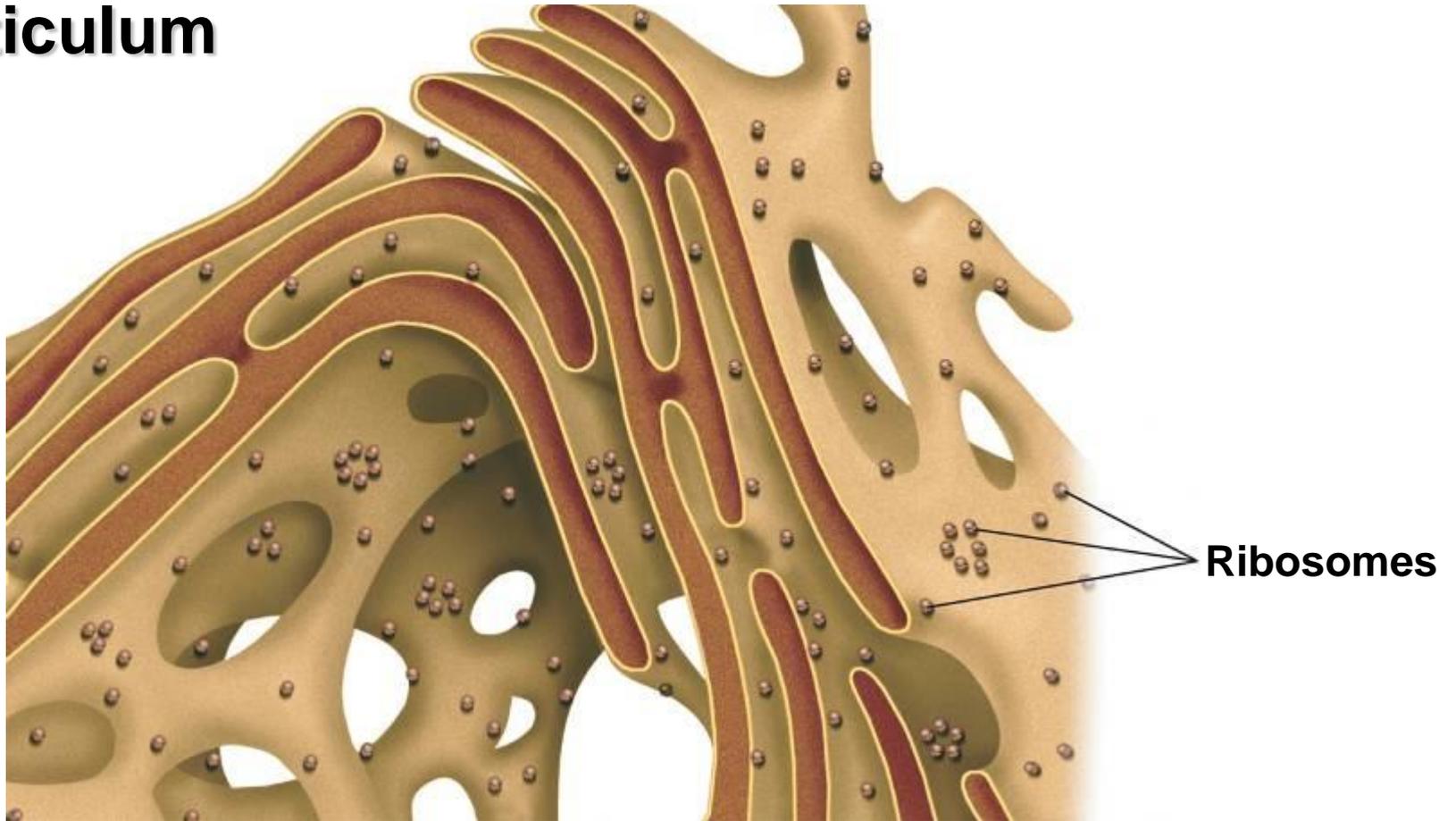
The endoplasmic reticulum is where

– Lipid parts of the cell membrane are assembled

– Proteins are assembled

Endoplasmic Reticulum

Endoplasmic Reticulum



2 types of ER- rough and smooth.

1. **Rough endoplasmic reticulum** (rough ER)-
involved with making proteins.
 - Ribosomes are found on the surface of rough ER.
2. **Smooth endoplasmic reticulum** (smooth ER)-
contains enzymes that help make membrane lipids and detoxification of drugs.
 - Smooth ER does not have ribosomes on its surface.

Golgi Apparatus

Proteins produced in the rough ER move into the **Golgi apparatus**.

The Golgi apparatus appears as a stack of membranes.





The Golgi apparatus modifies, sorts, and packages proteins and other materials from the endoplasmic reticulum for storage in the cell or secretion outside the cell.

From the Golgi apparatus, proteins are then “shipped” to their final destinations throughout the cell or outside of the cell.

Lysosomes

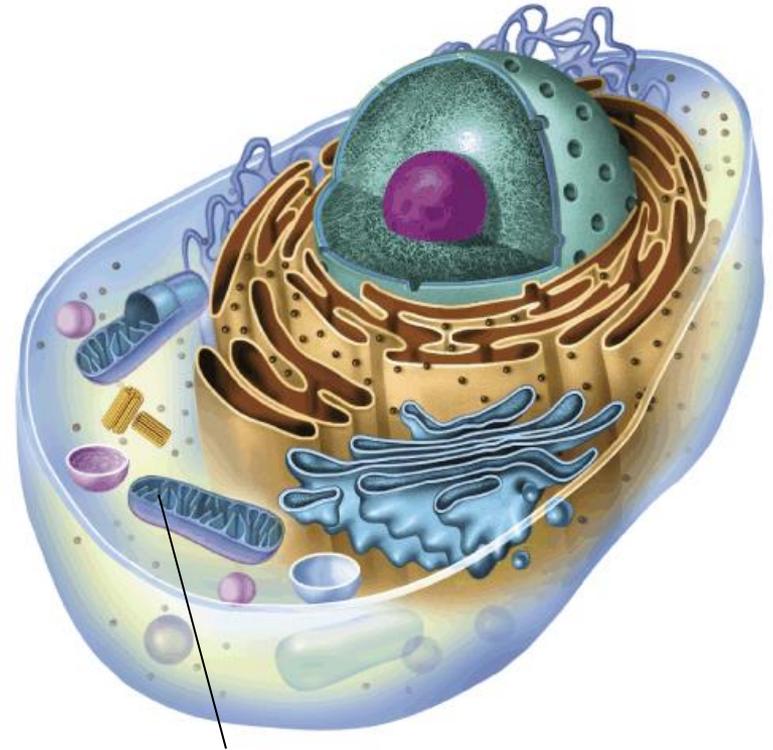
- organelles filled with enzymes.
- break down lipids, carbohydrates, and proteins into small molecules the cell can use.
- break down old and dead organelles.

Mitochondria



Mitochondria converts chemical energy stored in food into compounds that are more convenient for the cell to use.

“Power house” of the cell.



Mitochondrion

Mitochondria have an outer and inner membrane.

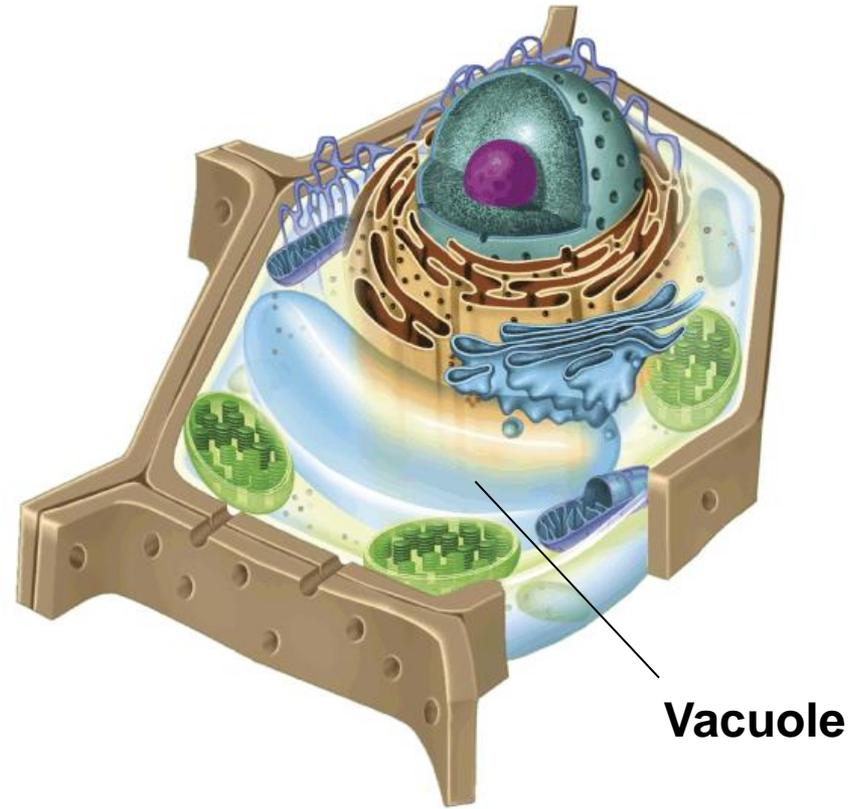
The inner membrane is folded up inside the organelle.

Vacuoles

Vacuoles- organelle that store materials such as water, salts, proteins, and carbohydrates.

Vacuoles

In many plant cells there is a single, large central vacuole filled with liquid.



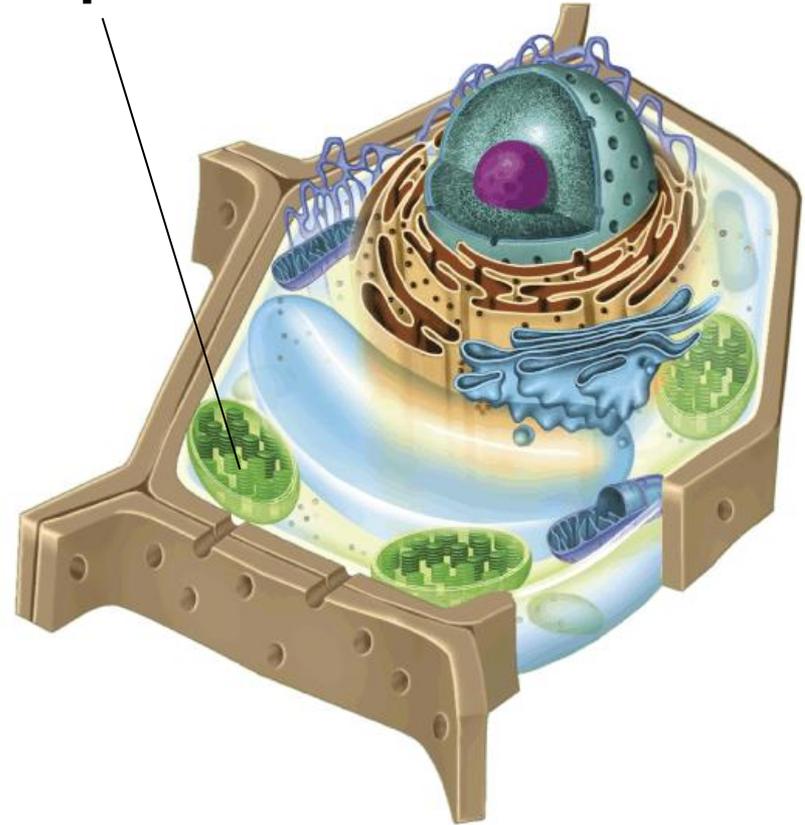
Chloroplasts



Chloroplasts capture energy from sunlight and convert it into chemical energy in a process called photosynthesis.

Chloroplasts contain the green pigment **chlorophyll**.

Chloroplast



Plant Cell

Cytoskeleton

Eukaryotic cells are given their shape and internal organization by the **cytoskeleton**.



The cytoskeleton is a network of protein filaments that helps the cell to maintain its shape. The cytoskeleton is also involved in movement.

The cytoskeleton is made up of:

- microfilaments
- microtubules

Cytoskeleton

Cytoskeleton

Cell membrane

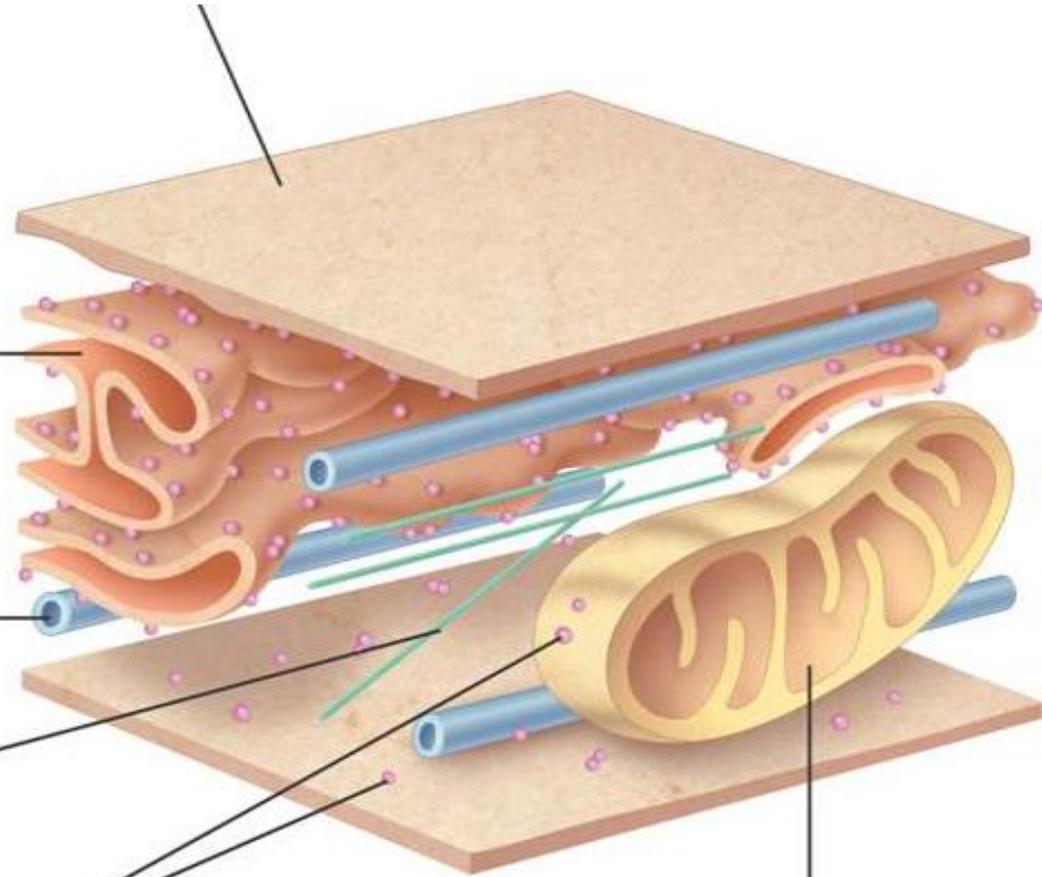
Endoplasmic reticulum

Microtubule

Microfilament

Ribosomes

Mitochondrion



Microfilaments

Microfilaments:

- threadlike structures made up of the protein actin.
- form extensive networks.
- Provide the framework that supports the cell.
- help some cells move.

Microtubules

Microtubules:

- Hollow structures made of tubulin
- maintain cell shape.
- are important in cell division.
- build projections from the cell surface—cilia and flagella—that enable some cells to swim.