



# ORGANELLES

## Learning Target

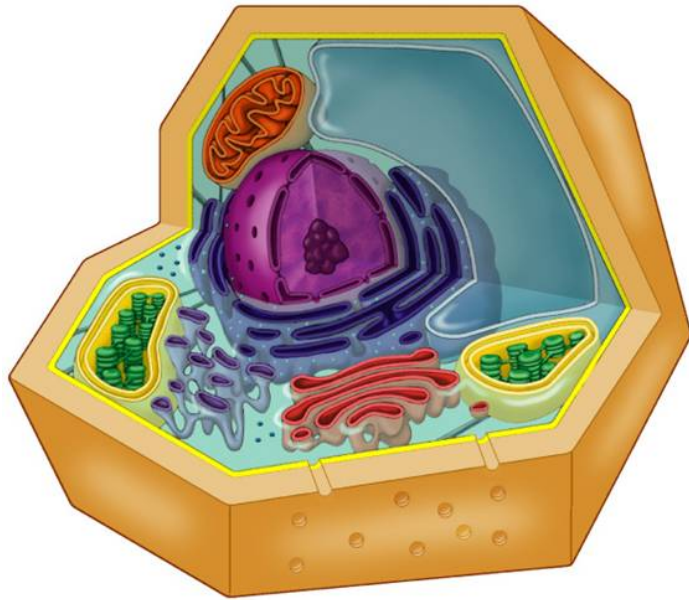
Can I describe the structure and function of organelles in a typical cell?

# What do cells contain?

- Cells are tiny but very complex.
- **Organelle**: membrane-bound structure in the cell with a specific function.

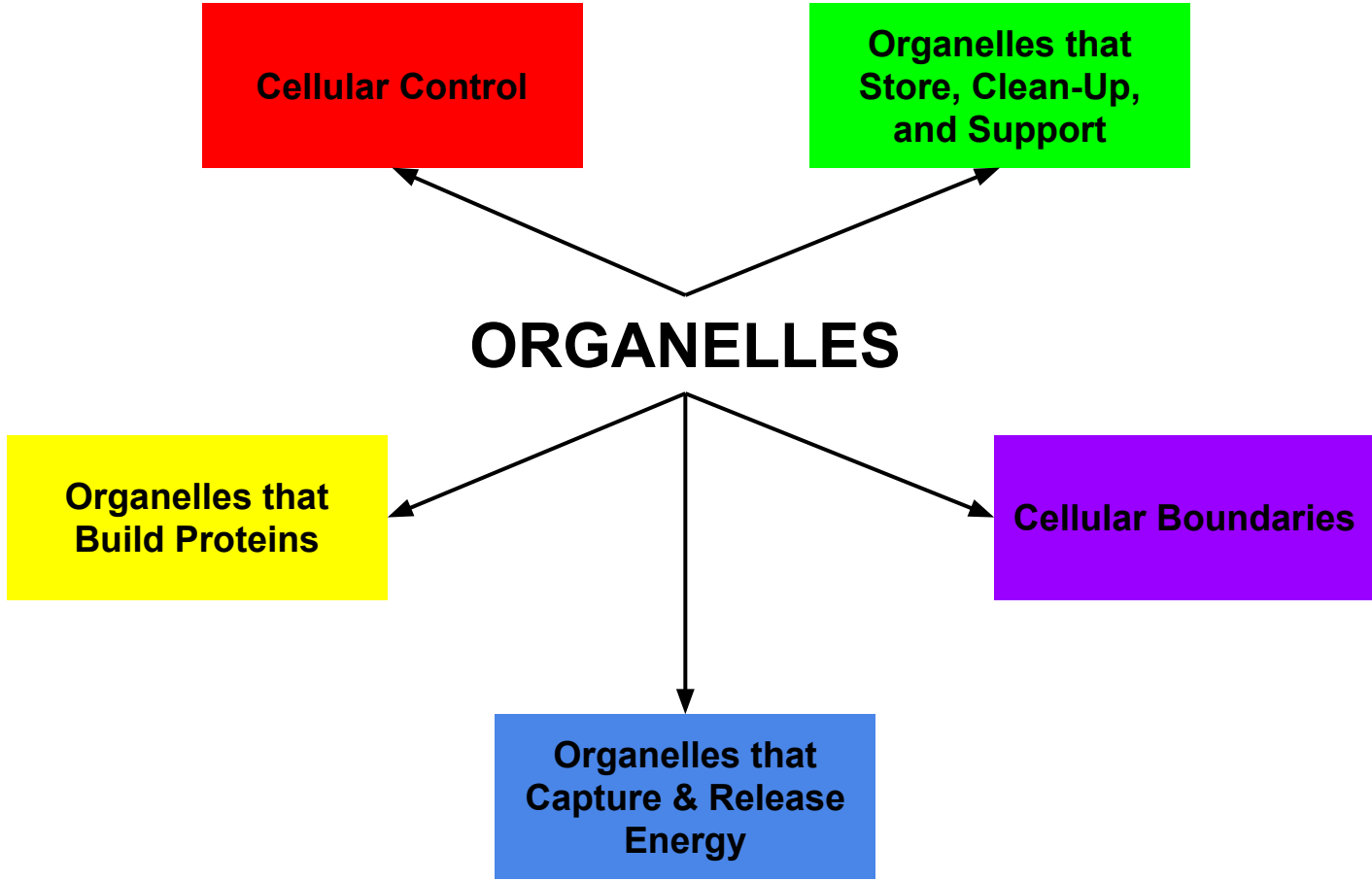


# What are eukaryotic cells?



**Eukaryote**: a complex cell *with* a nucleus.

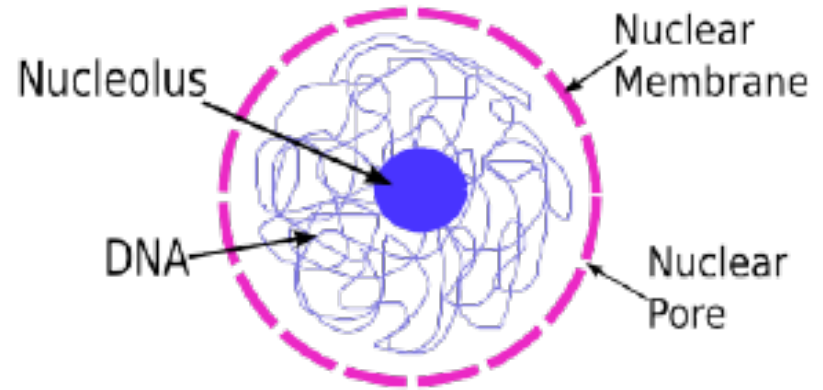
- Many organelles.
- Often multicellular.
- Complex
- Plant and animal cells.

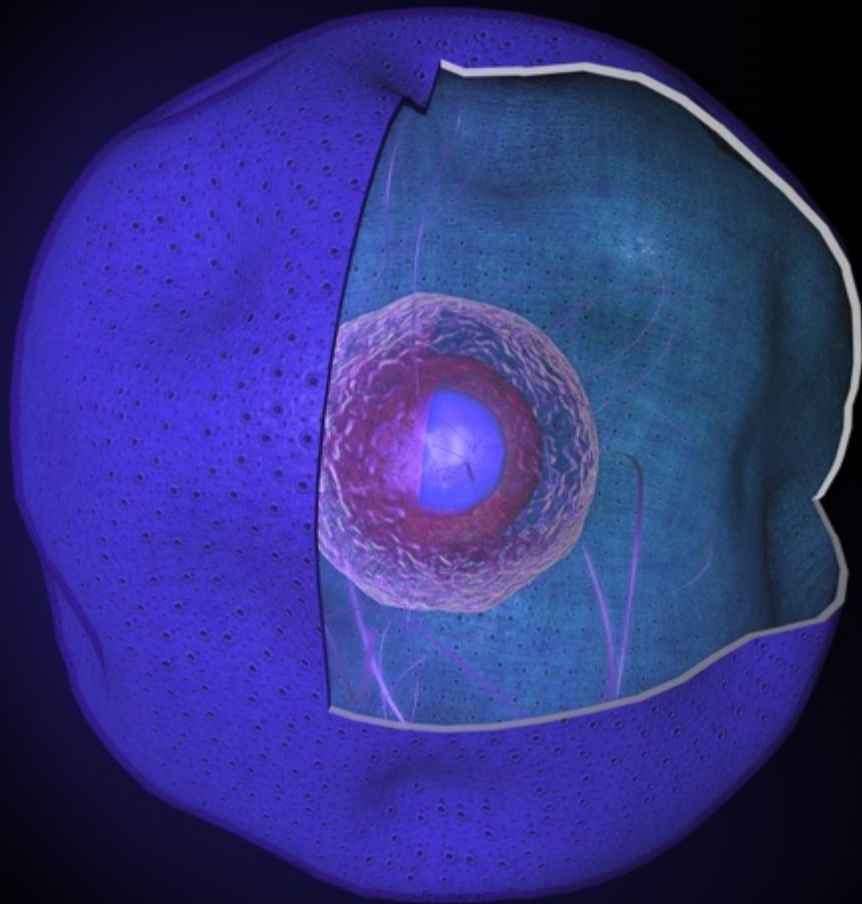


# Cellular Control

# What is the **nucleus**?

- Contains DNA (instructions for making proteins).
- Membrane-bound.
- **Nucleolus**: makes ribosomes.



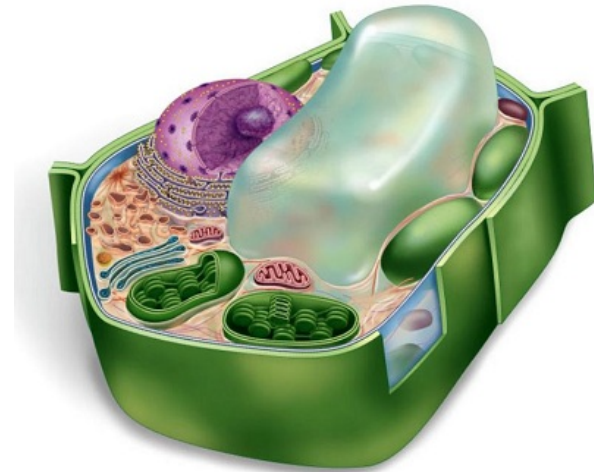
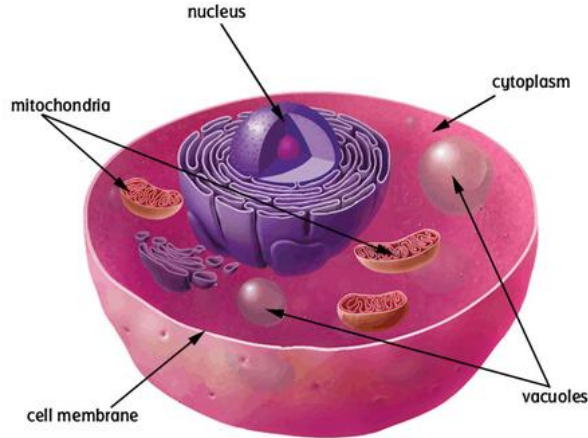


# Organelles that Store, Clean-Up and Support

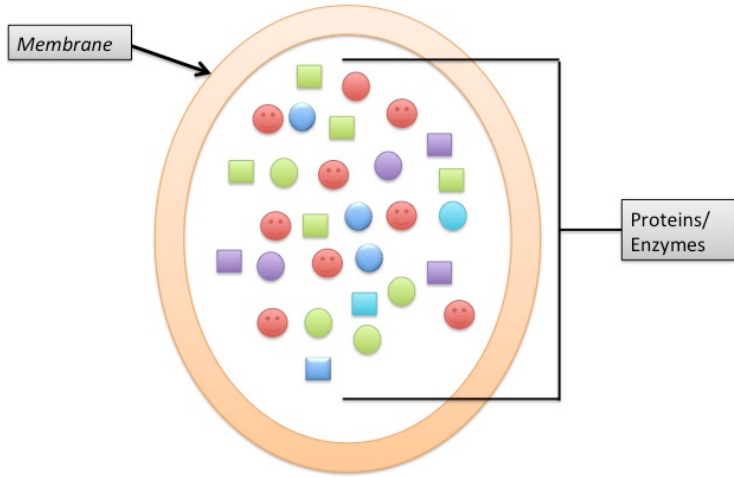


# What are **vacuoles** and **vesicles**?

- Store materials (water, salts, proteins, carbs).
- Different in plant and animal cells.



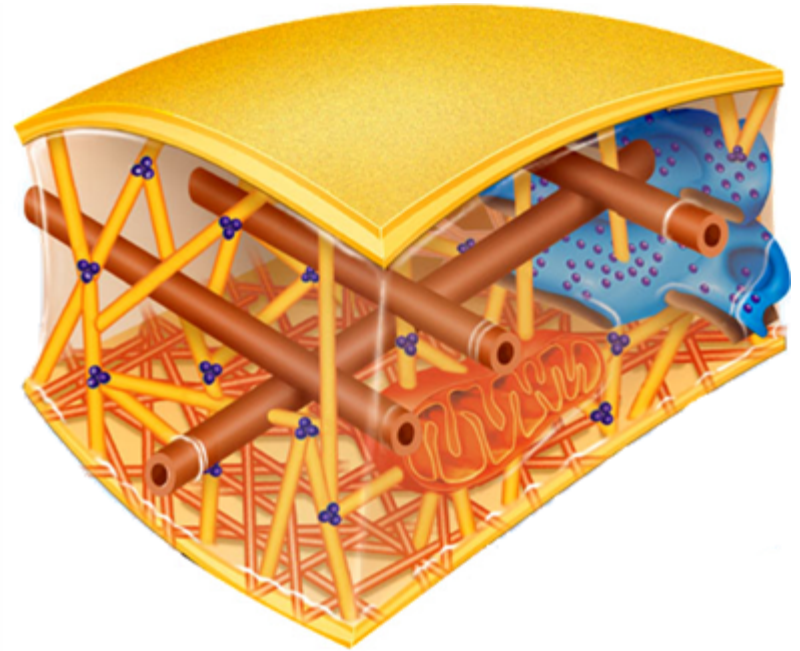
# What are lysosomes?



- Break down carbs, lipids, and proteins.
- Rare in plant cells but common in animal cells.
- Lysosome failure linked to several diseases.

# What is the **cytoskeleton**?

- Made of fibrous proteins.
- Maintains cell shape.
- Moves cell parts and helps cells move.



# What are centrioles?

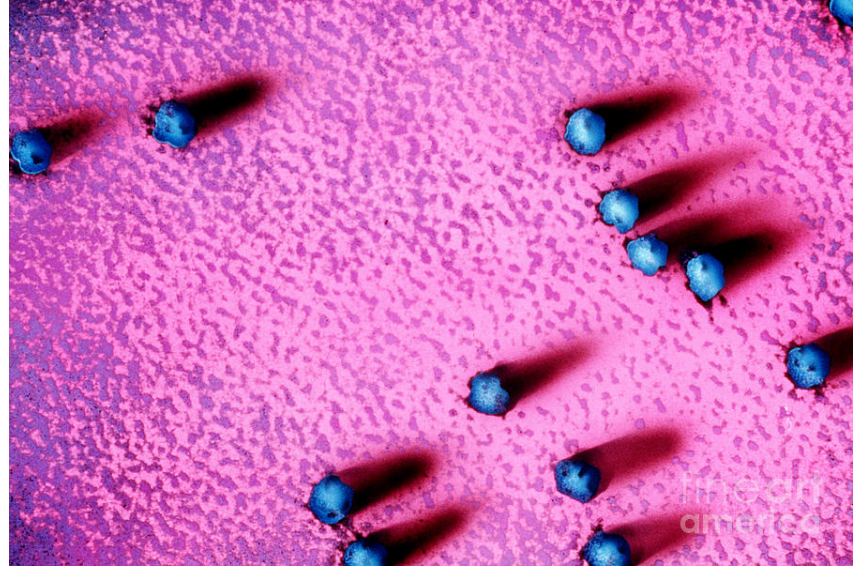


Organize cell division  
in **animal** cells.

# **Organelles that Build Proteins**

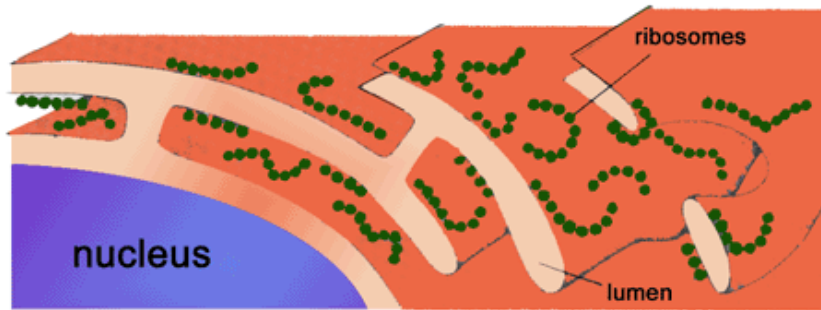
# What are **ribosomes**?

- Make proteins according to the DNA instructions.
- Teeny, tiny!
- Made in the nucleolus.

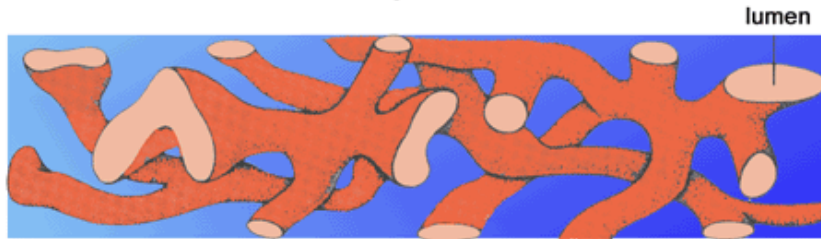


# What is the endoplasmic reticulum?

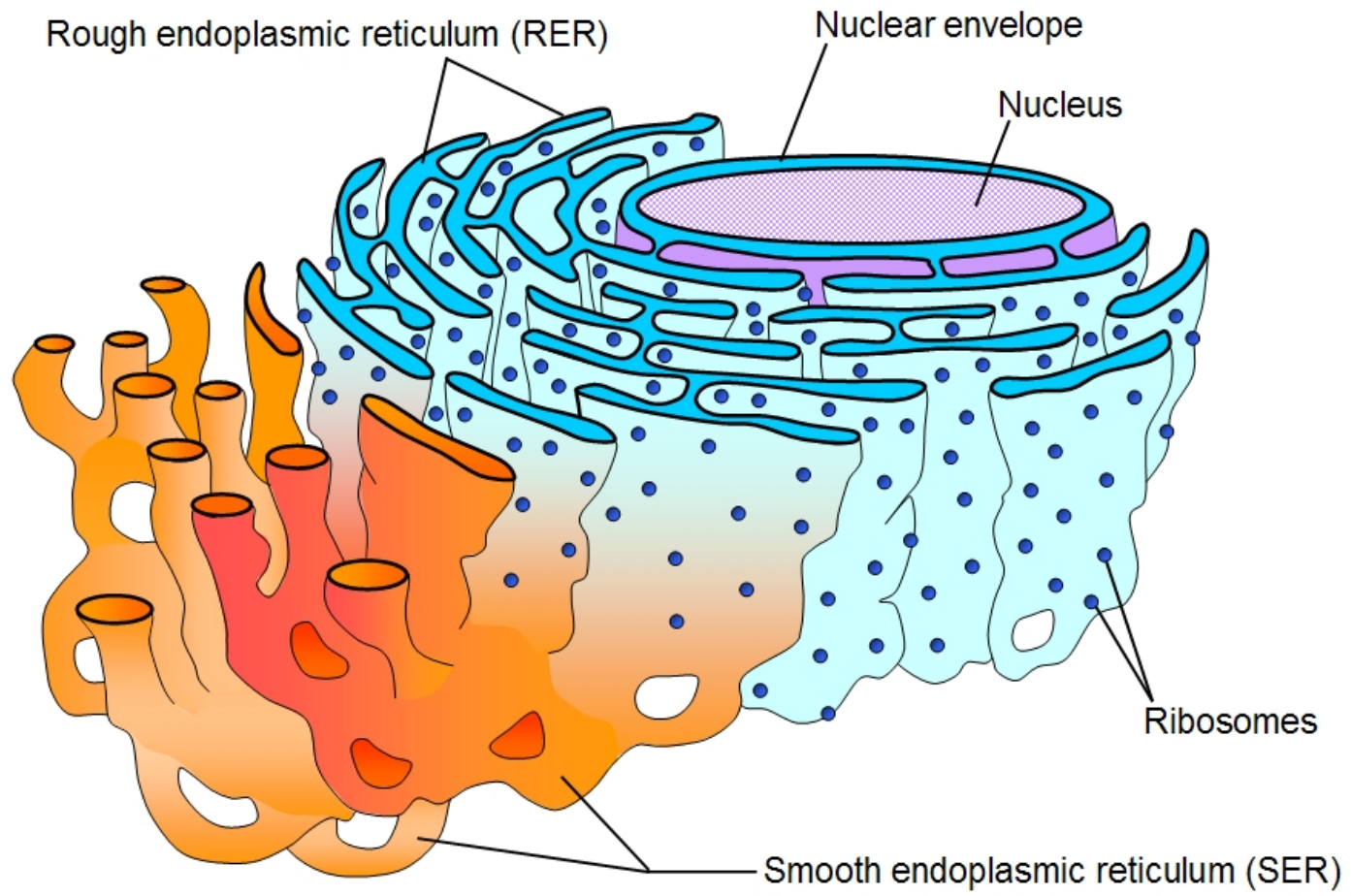
Rough Endoplasmic Reticulum



Smooth Endoplasmic Reticulum



- Two types: rough and smooth.
- Assemble proteins (rough) and lipids (smooth).
- Abbreviated as the ER.

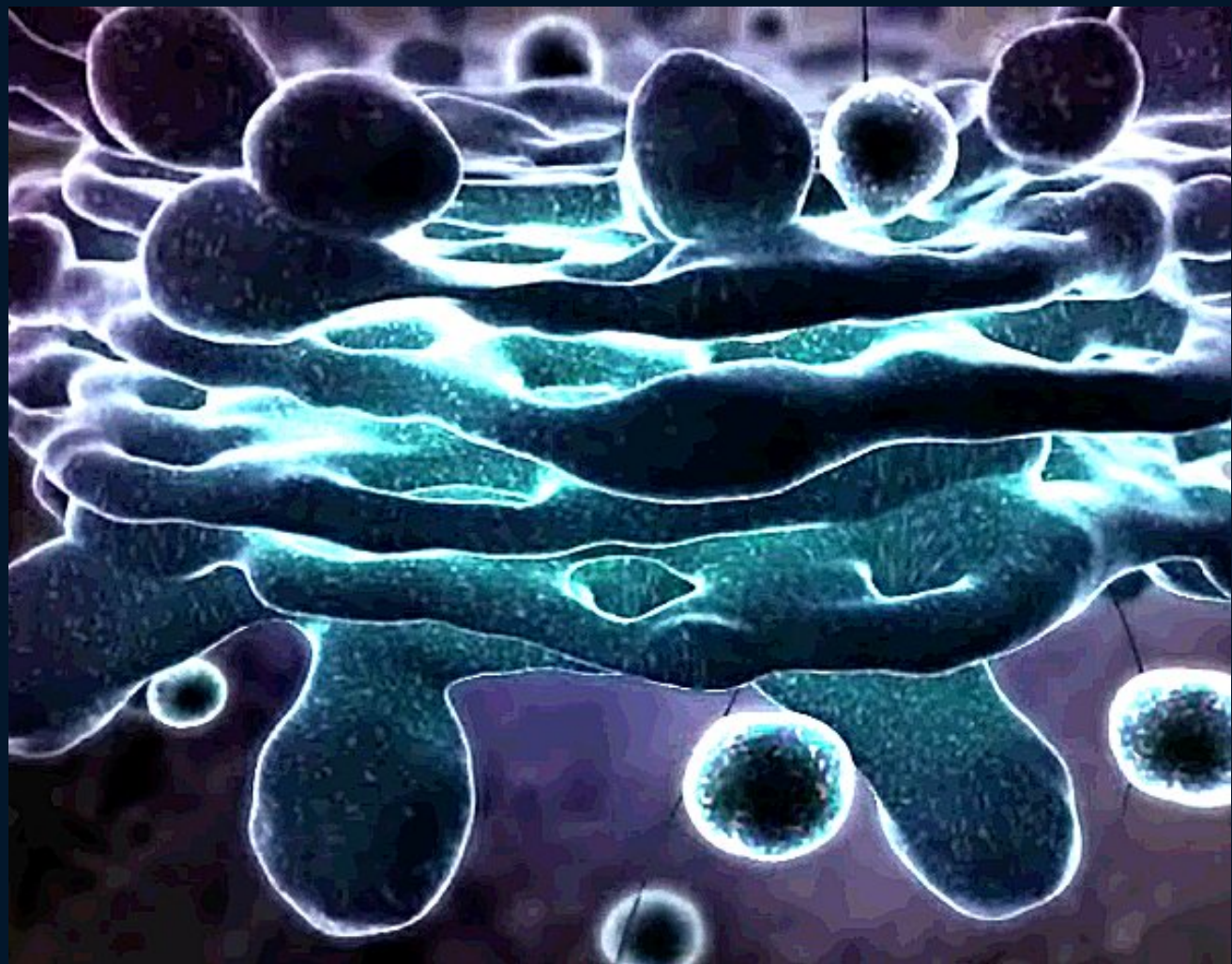




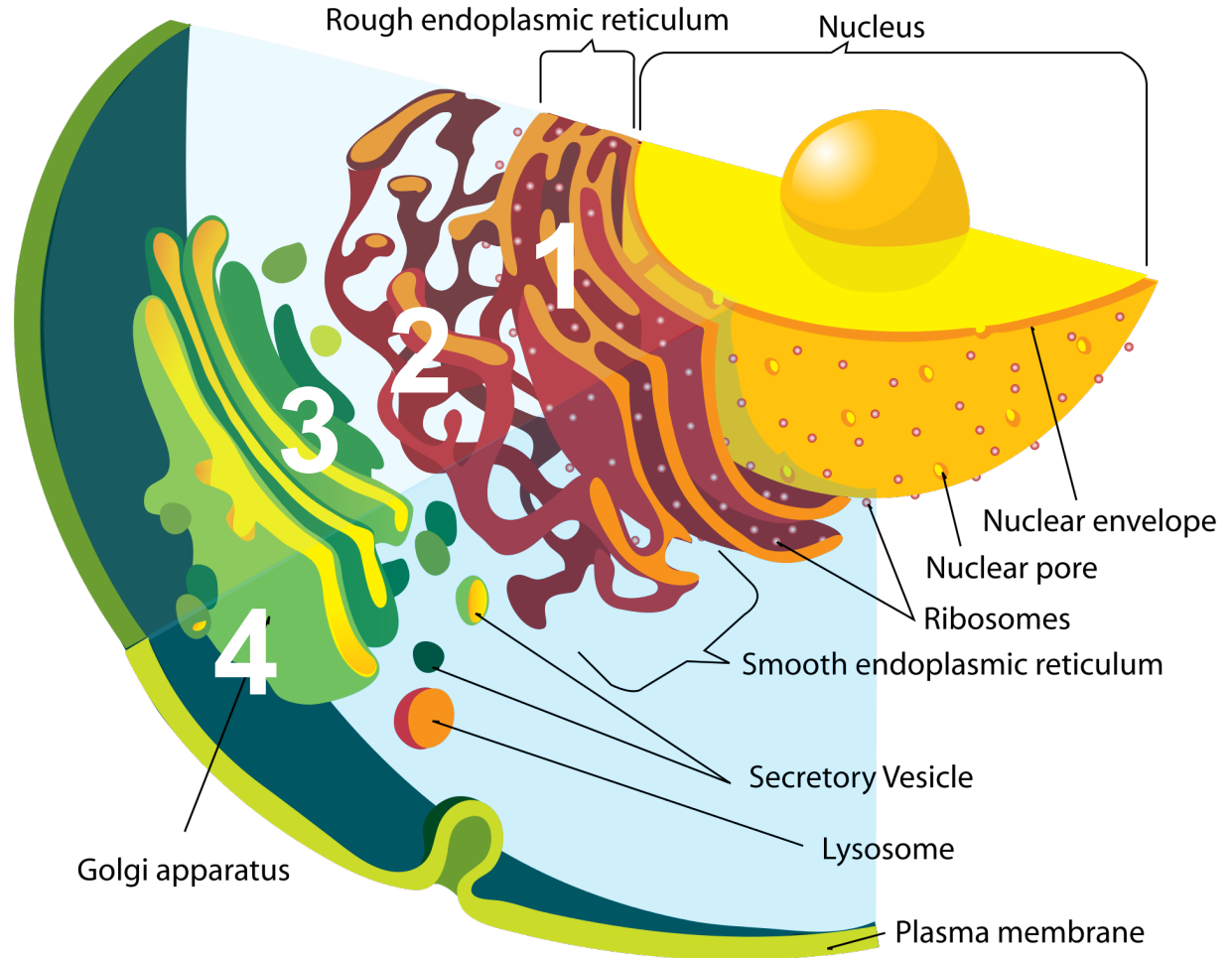
# What is the **golgi apparatus**?

Modifies, sorts, and packages (**vesicles**) proteins and lipids for storage or transport out of the cell.





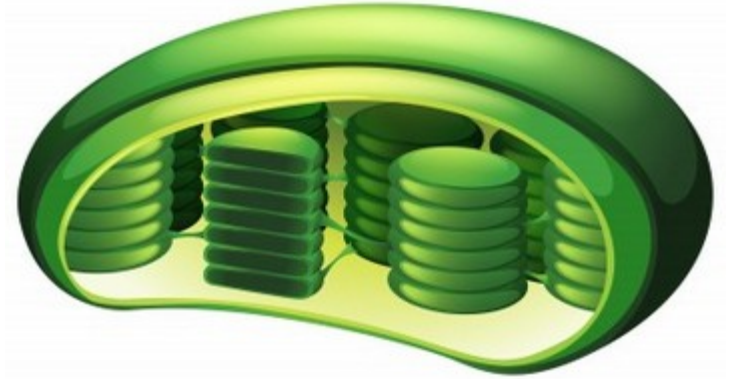
1. **Proteins are made at the ribosomes on the rough ER.**
2. **Proteins are moved through the ER and packaged into a vesicle.**
3. **The vesicle (carrying the new proteins) is sent to the Golgi apparatus.**
4. **The Golgi body modifies the proteins before sending them outside the cell.**



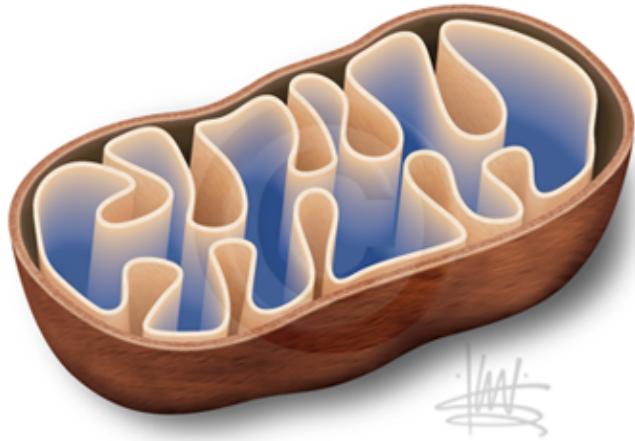
# **Organelles that Capture & Release Energy**

# What are **chloroplast**?

- Convert solar energy (sun) to chemical energy (carbohydrates).
- Plant cells only.



# What are mitochondria?

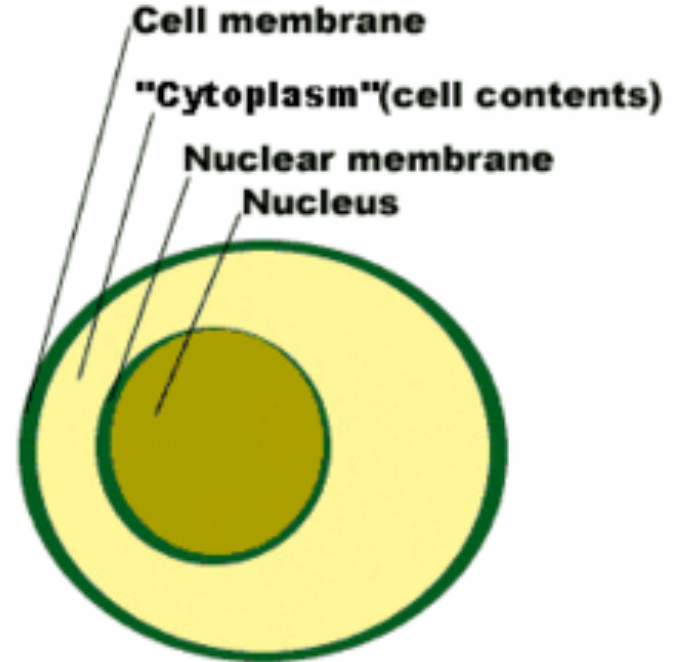


- Convert chemical energy (carbohydrates) into usable compounds (ATP) for the cell.
- Maternal mitochondria.
- “Powerhouse”

# Cellular Boundaries

# What is the **cell membrane**?

- Regulates materials entering and leaving cells.
- Protects and supports the cell.
- “Plasma Membrane”





# What is the **cell wall**?

- Shapes, supports, and protects the cell.
- Plants only.

