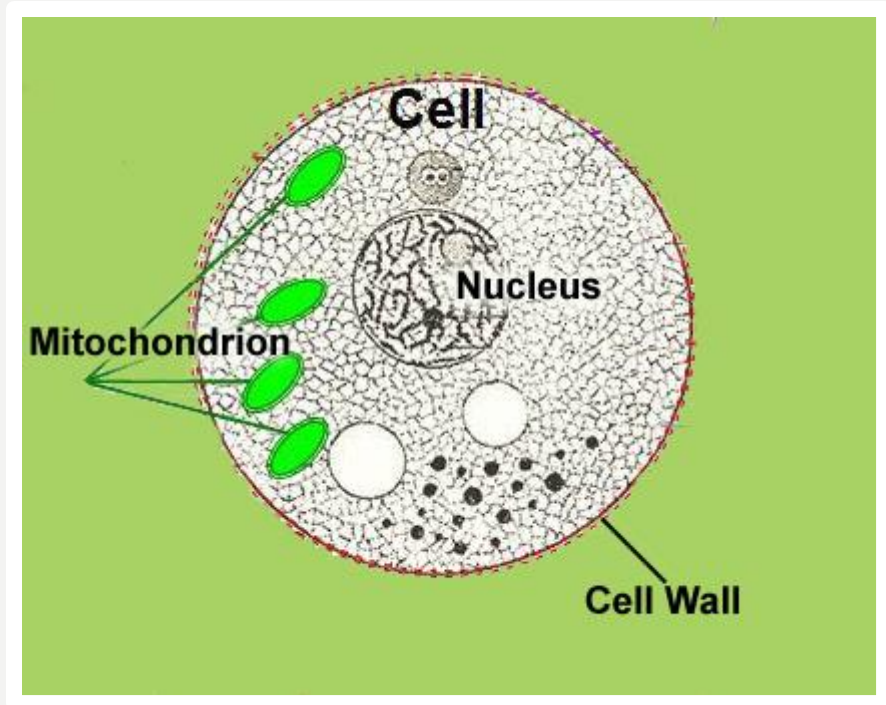


# **THE CELL**

**TYPES OF CELLS**  
**PARTS OF CELLS**

# THE CELL:

- The smallest unit in living things that shows the characteristics of life; **the basic building blocks of life.**





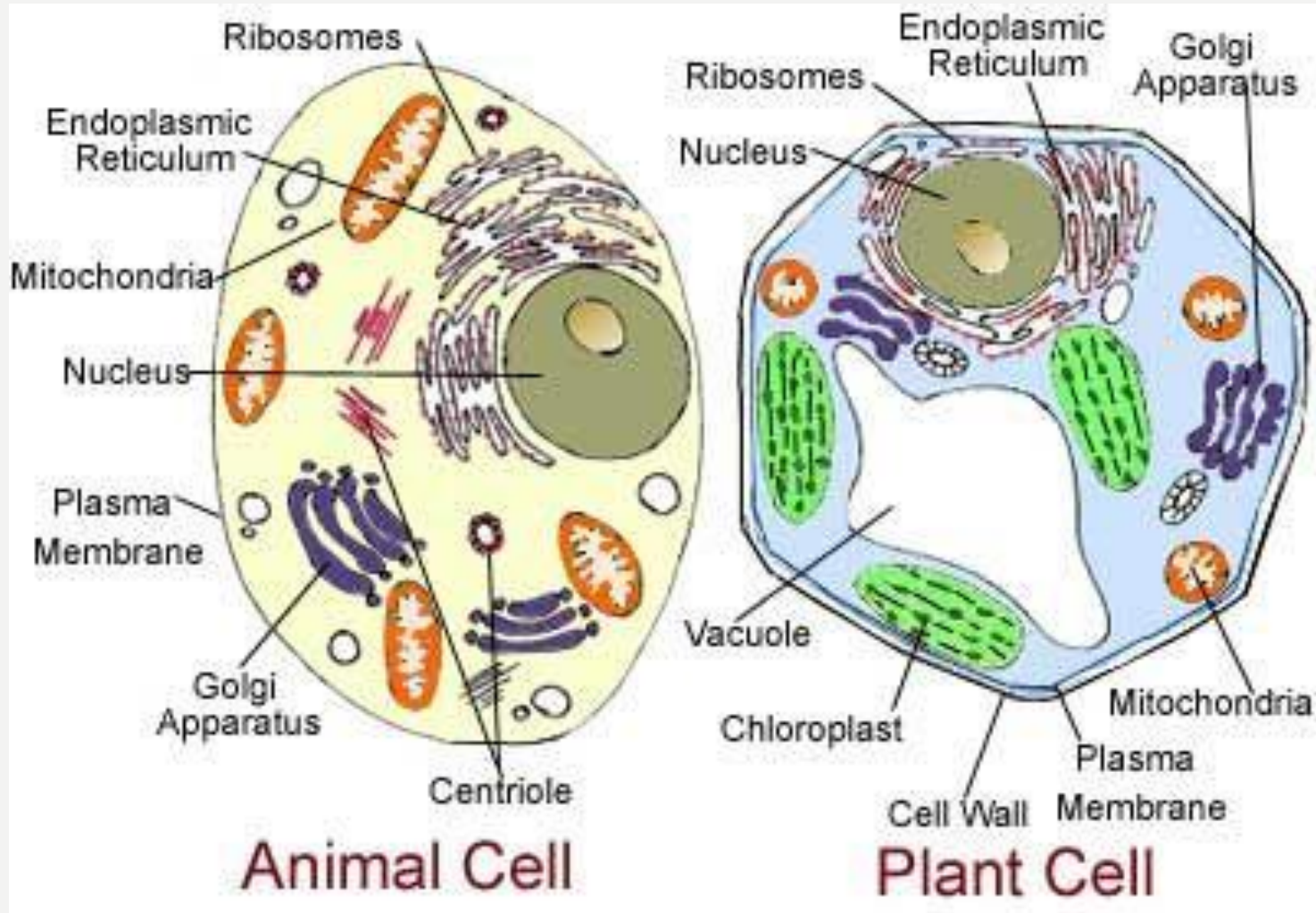
# WHAT DOES A CELL DO?



- Each cell contains information (DNA) that is used as **instructions** for growth, functioning, and development.



# THE TWO MAIN TYPES OF CELLS ARE:

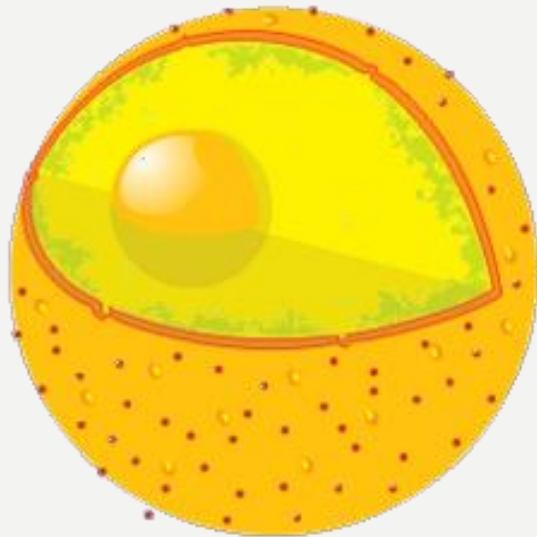


# WHAT ARE CELLS MADE OF?

- Made up of tiny membrane-bound structures called **ORGANELLES**. Each organelle is a specialized structure that carries out a specific role in the cell.

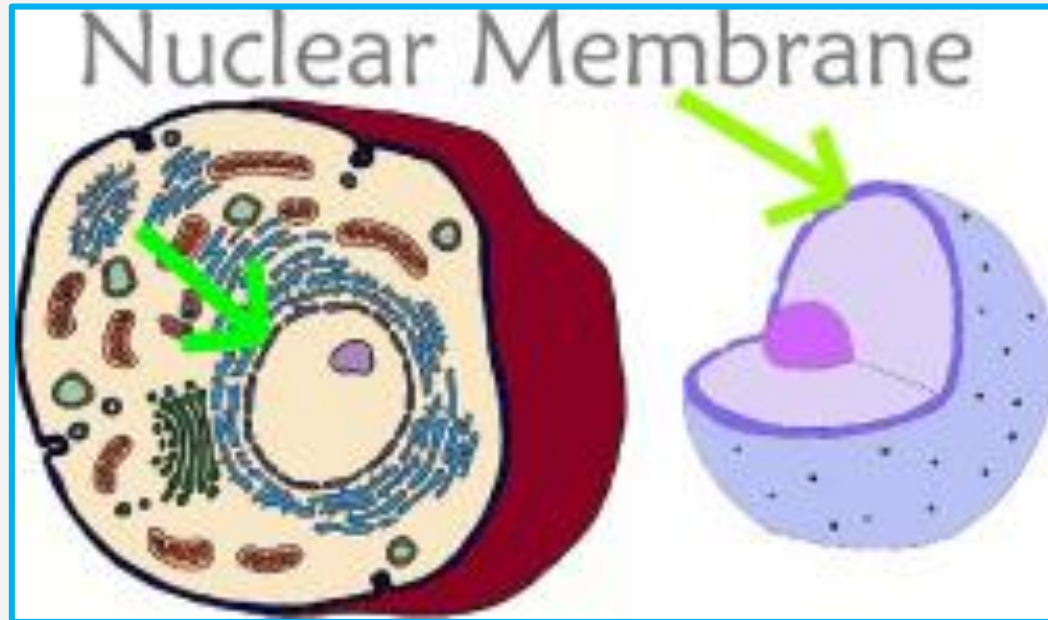
# NUCLEUS

- 



- Serves as the **control centre** for a cell. If it is removed the cell dies.

# NUCLEAR MEMBRANE

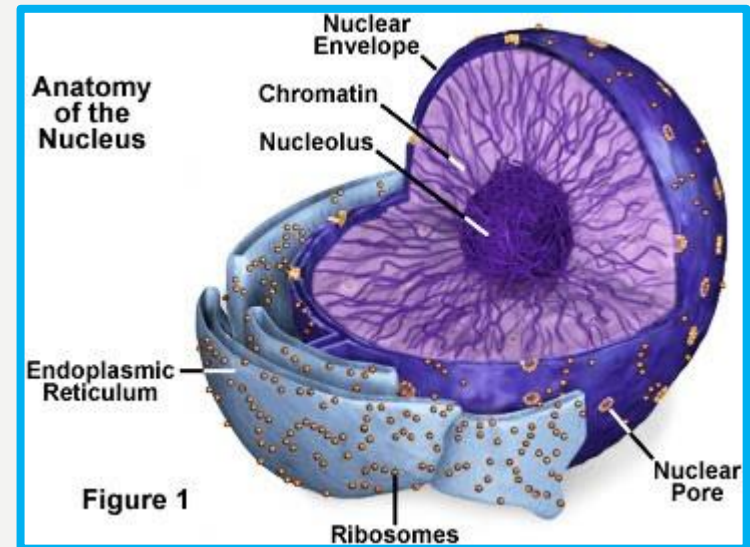


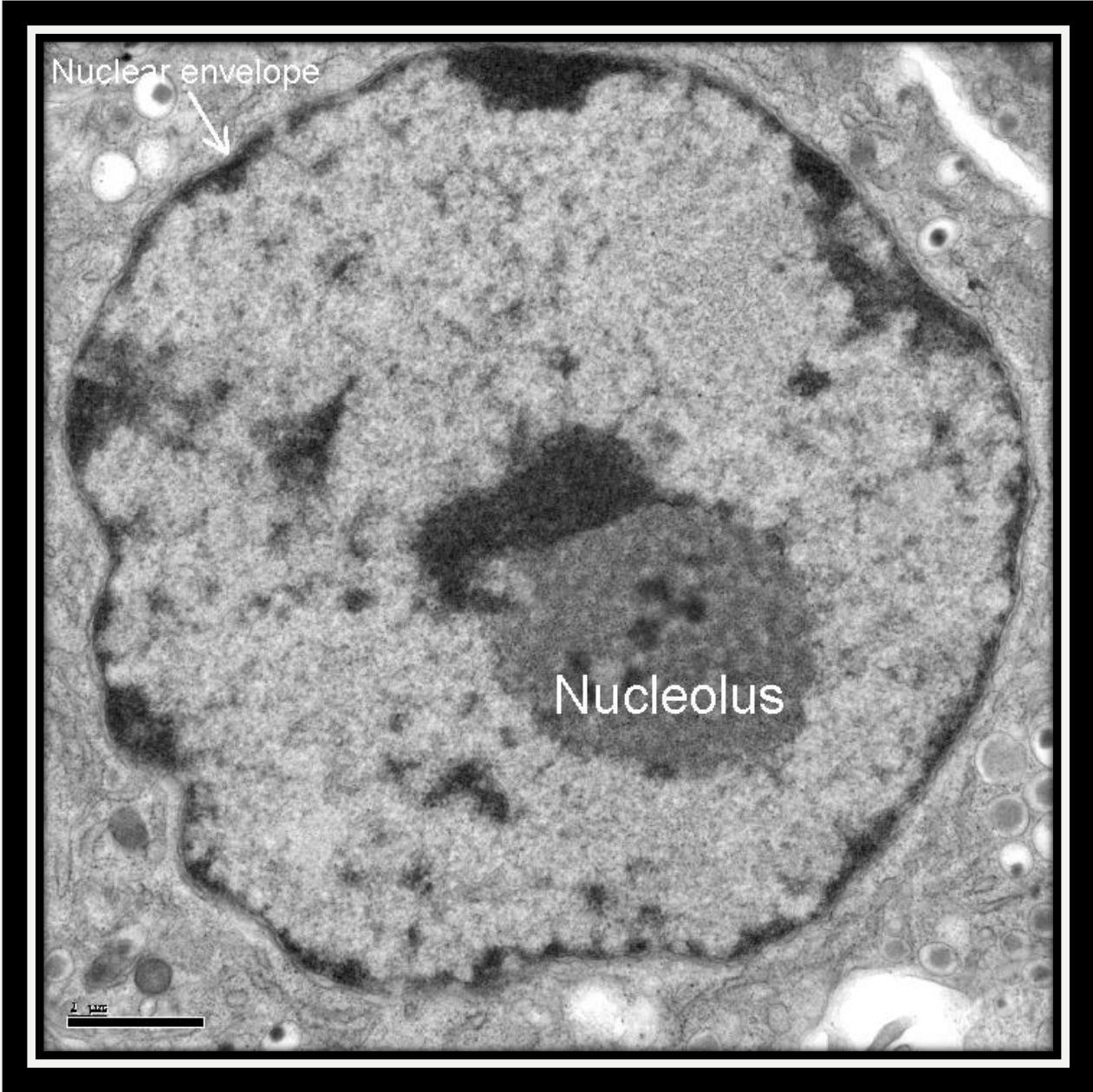
- A double-layered, **selectively permeable** membrane that surrounds the nucleus.
- Decides to let stuff in or not!



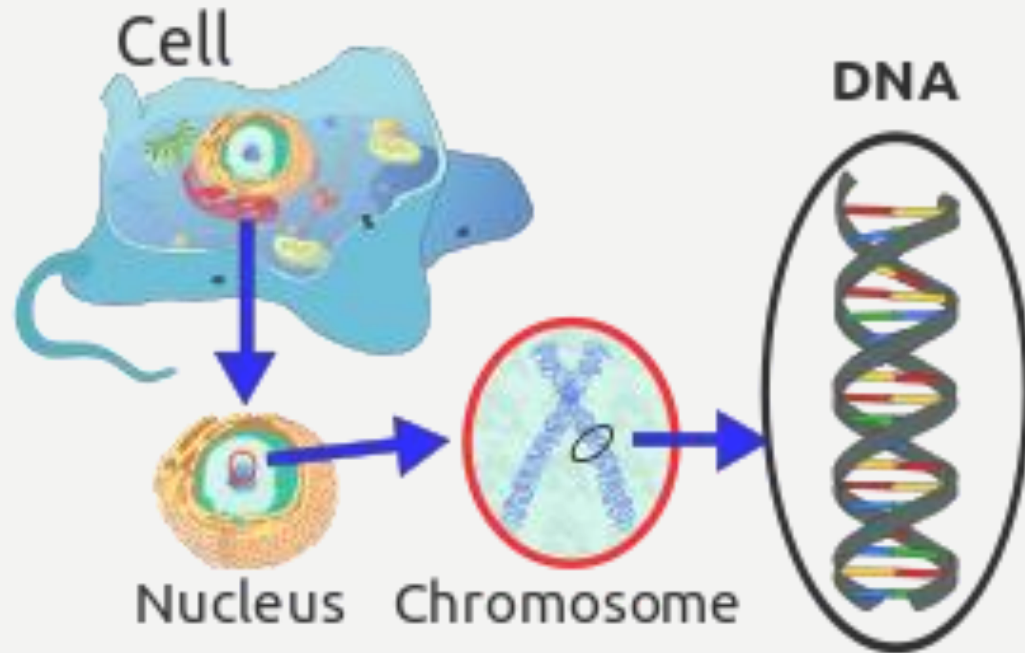
# NUCLEOLUS

- Dense, granular bodies within the nucleus that **produce ribosomes.**



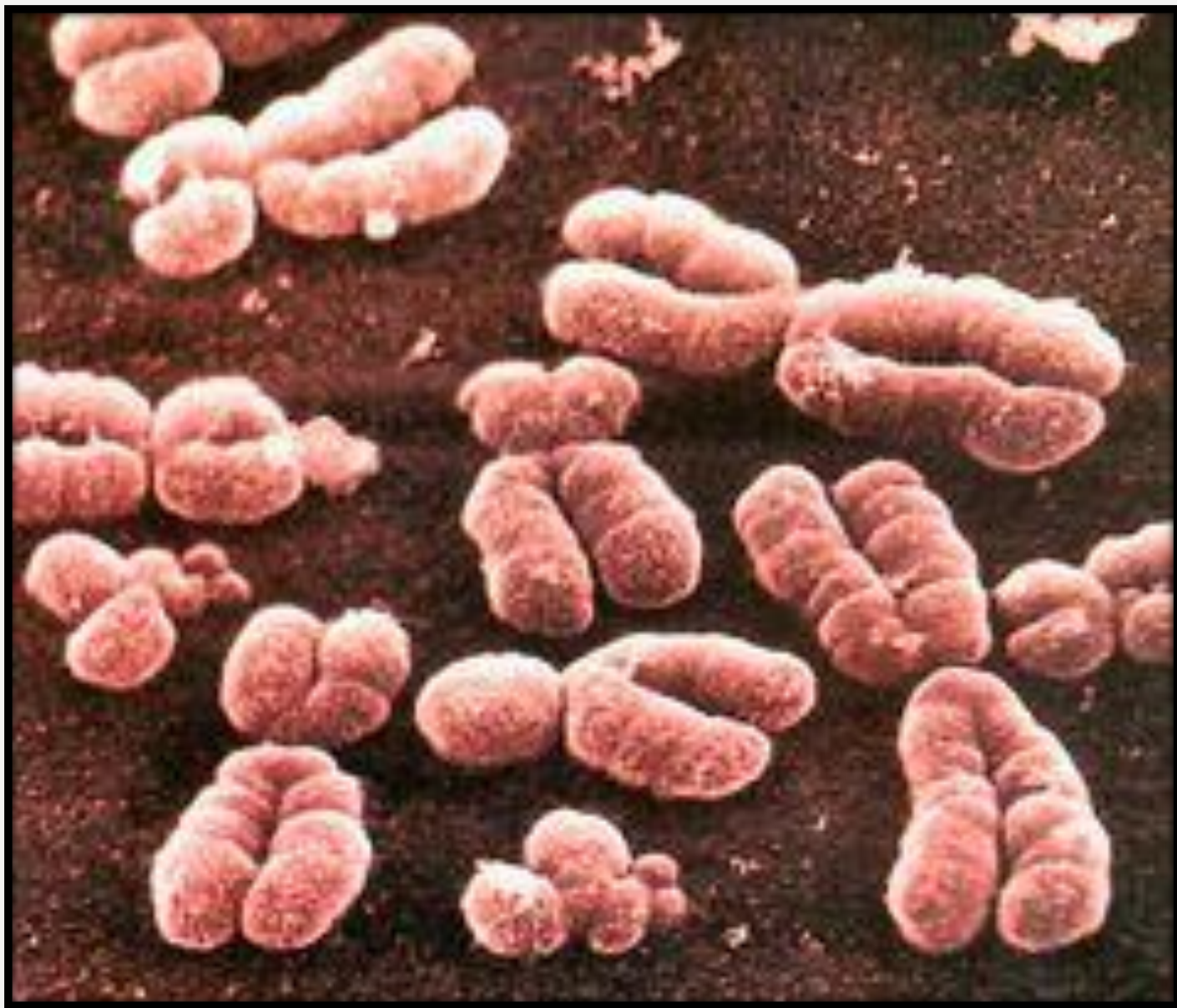


# CHROMOSOMES



- Long thin strands of chromatin that **make up the DNA** in cells.







# DNA

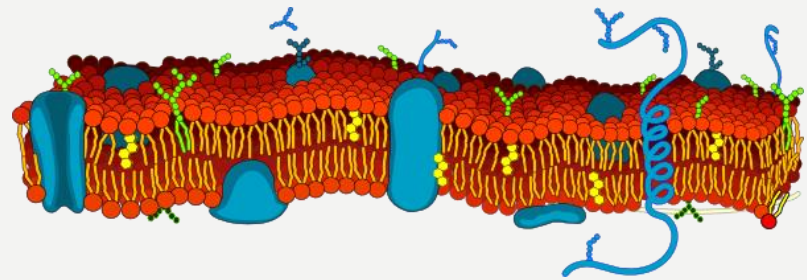
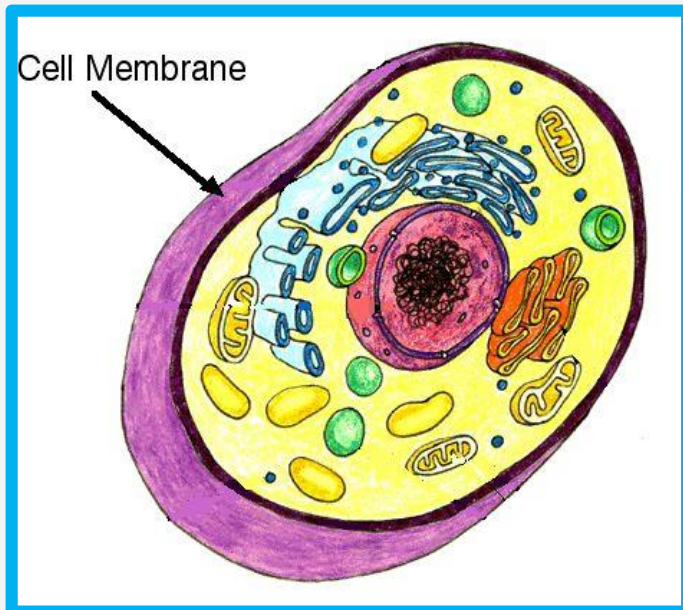
- **The hereditary material of the cell.**



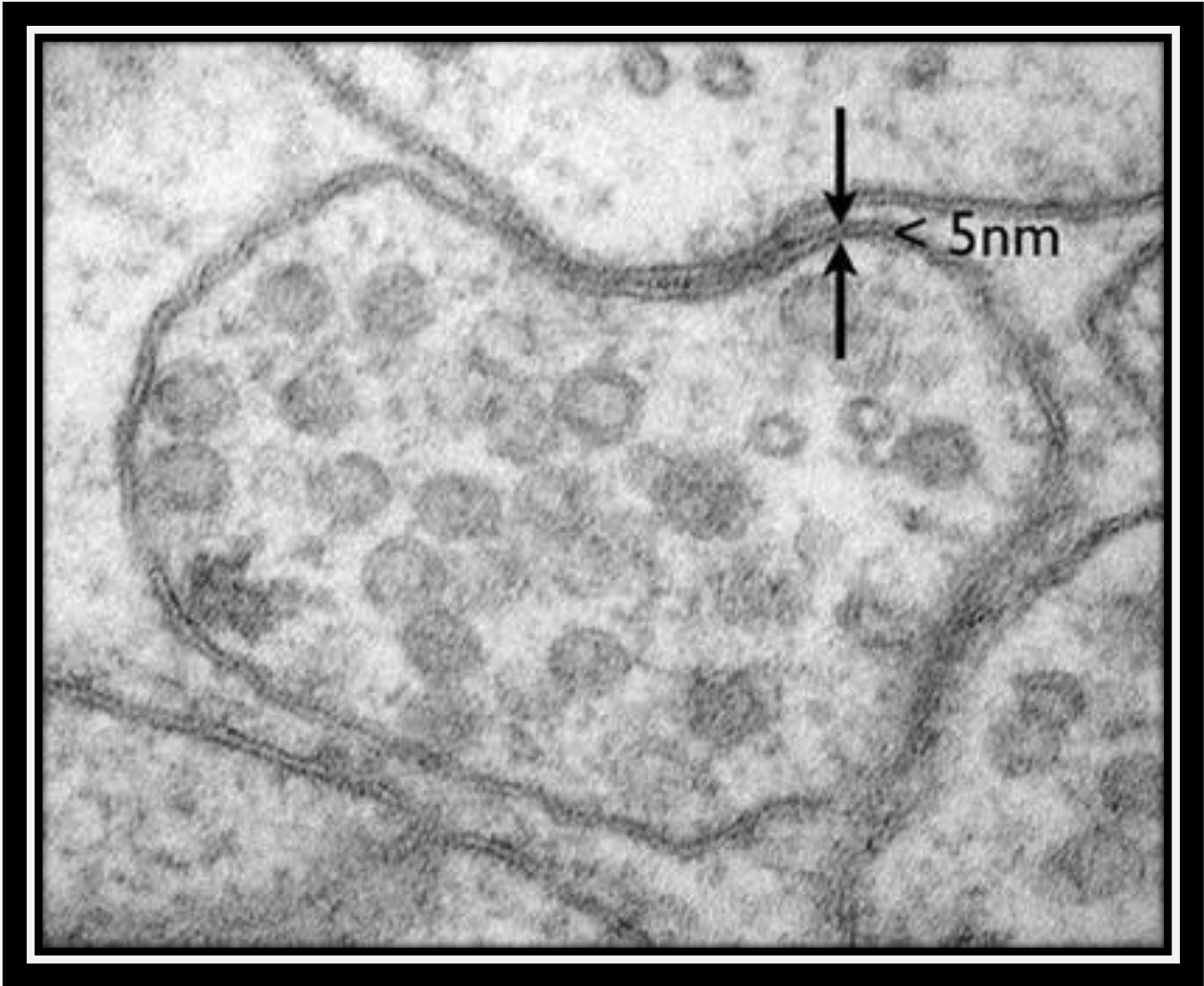
- **Chromatin is DNA bound to various proteins.**
- **Found in the nucleus.**

# CELL MEMBRANE

- Separates the cell from its surrounding environment.
- **Controls the movement** of materials into and out of the cell.

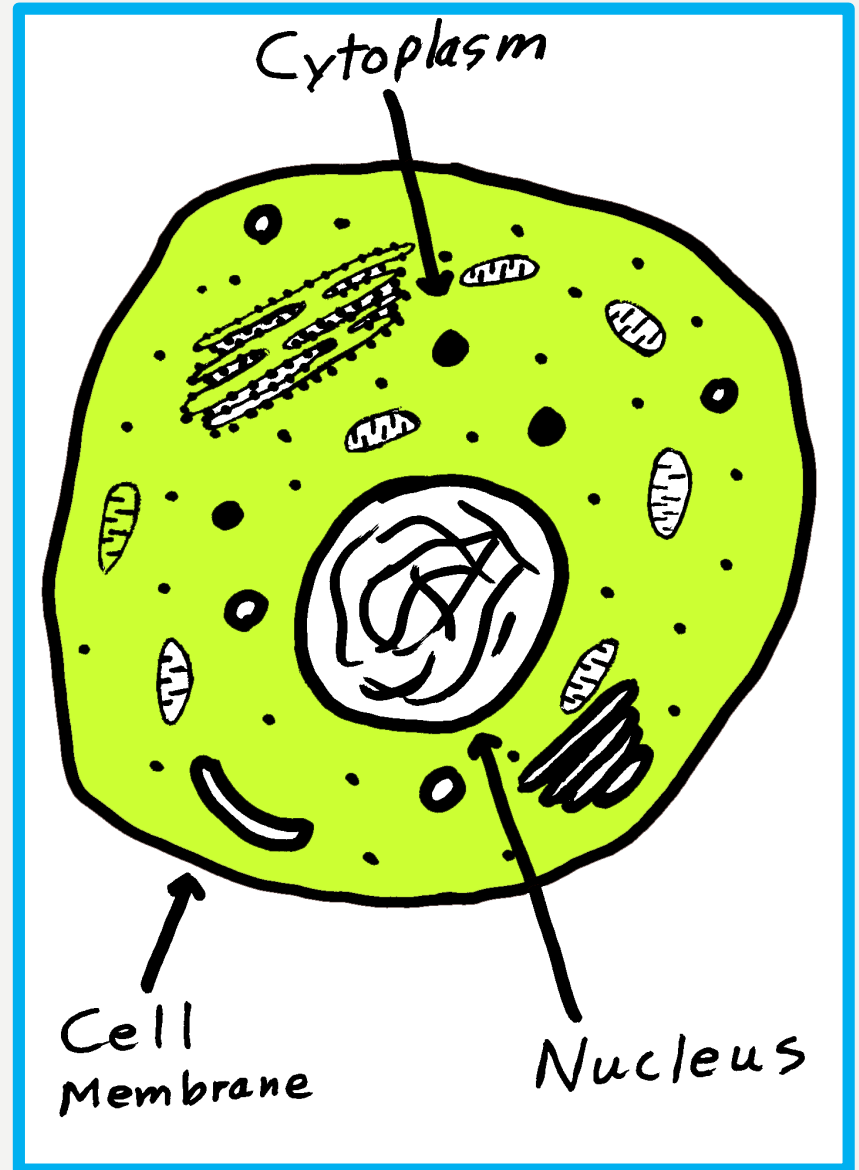


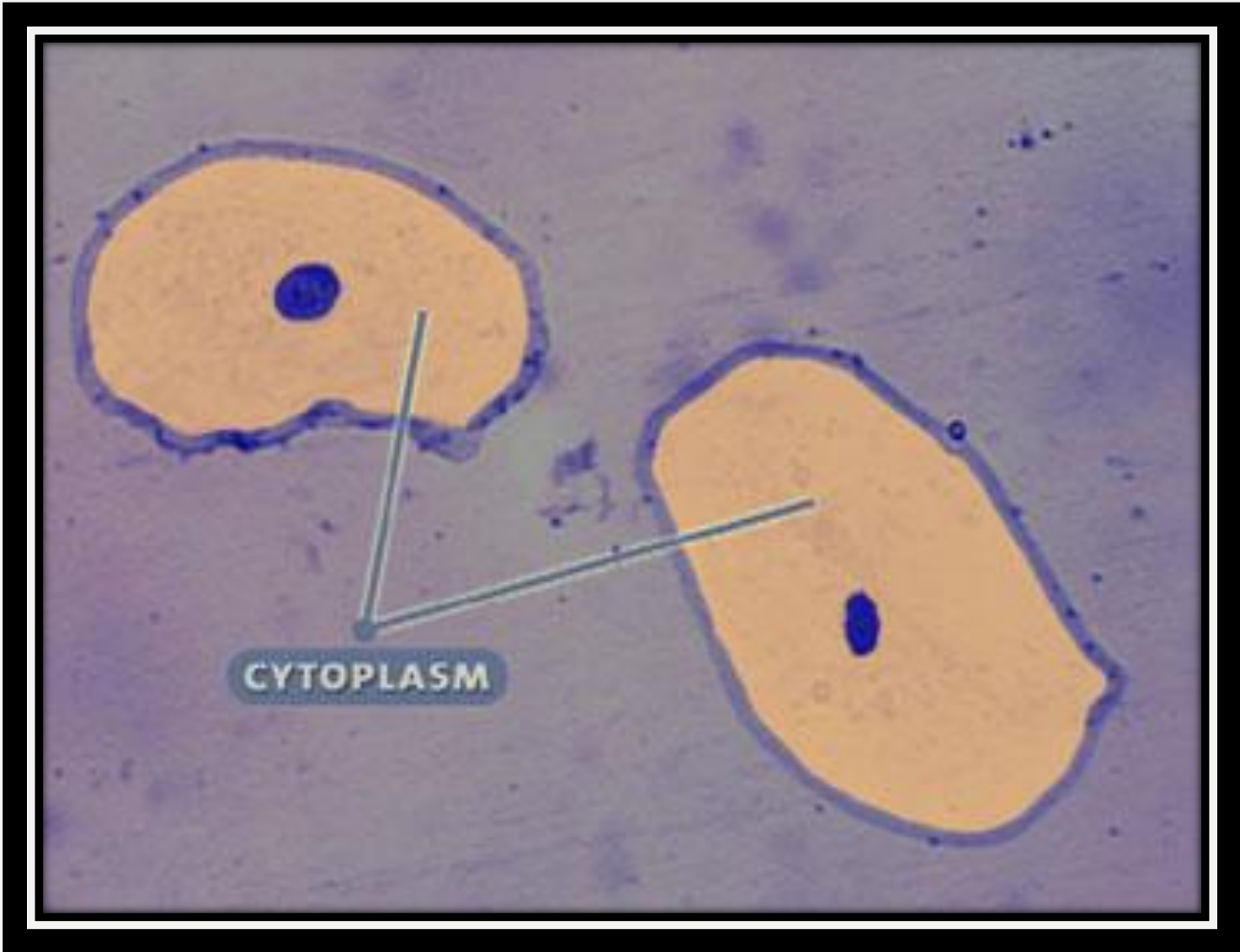




# CYTOPLASM

- The watery material lying within the cell between the cell membrane and the nucleus.

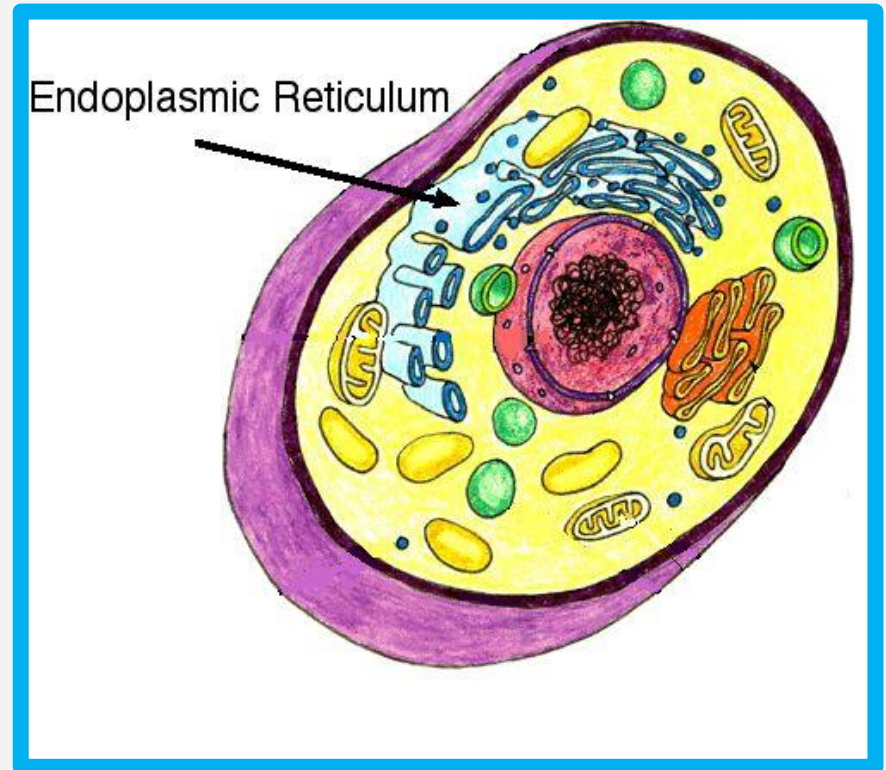




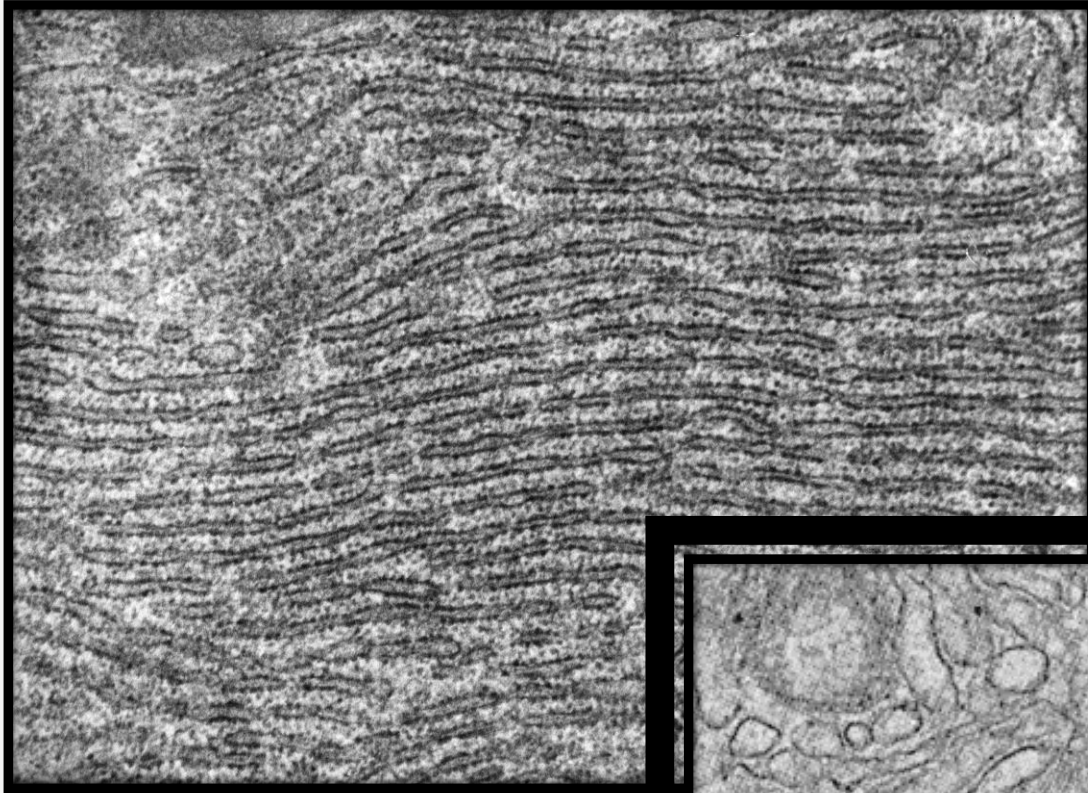
**CYTOPLASM**

# ENDOPLASMIC RETICULUM

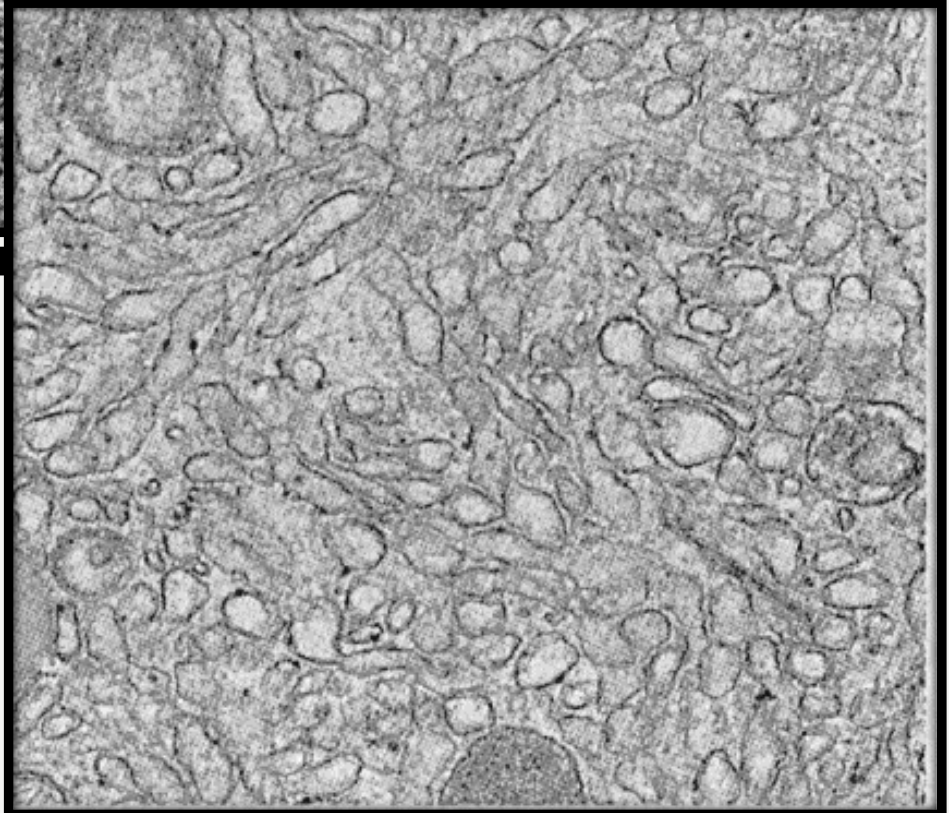
- A system of fluid-filled canals that serve as paths for the transport of materials through the cell.
- Rough ER contains ribosomes on its surface.
- Smooth ER does not contain ribosomes.





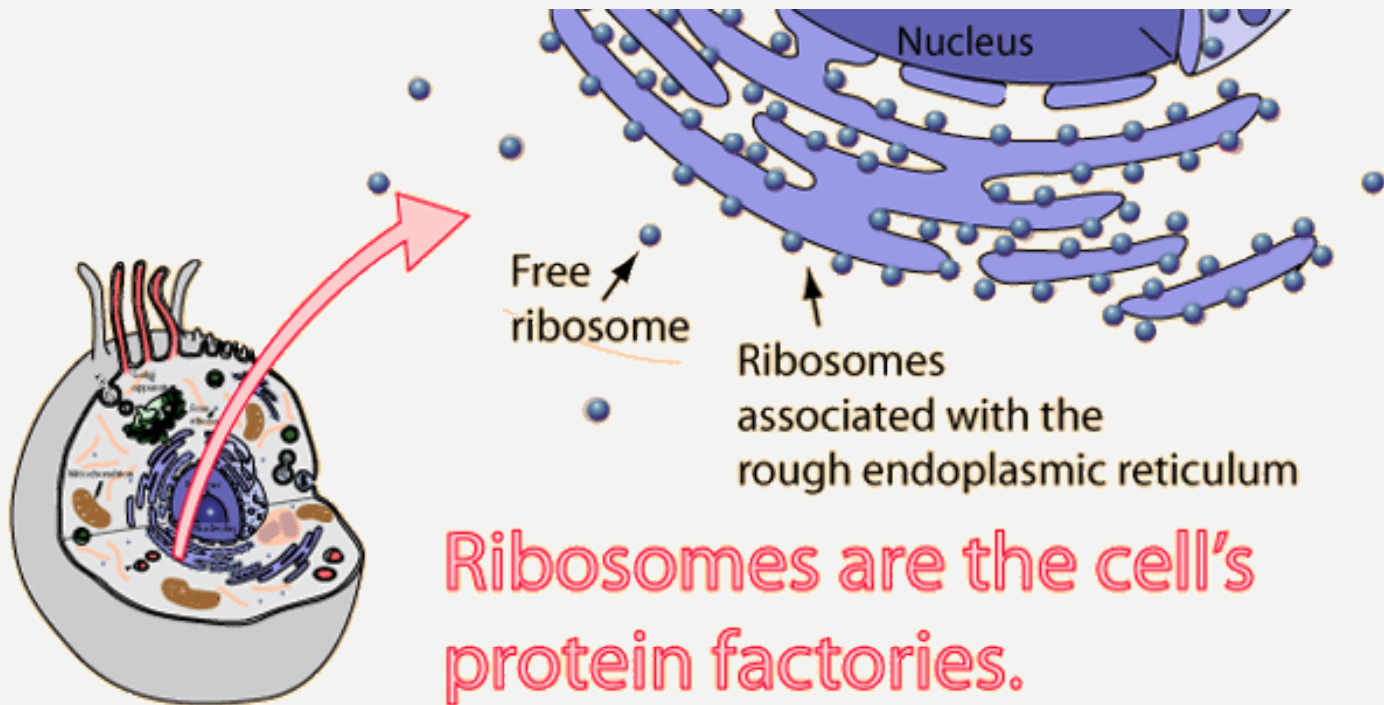


**ROUGH  
vs.  
SMOOTH  
E.R.**

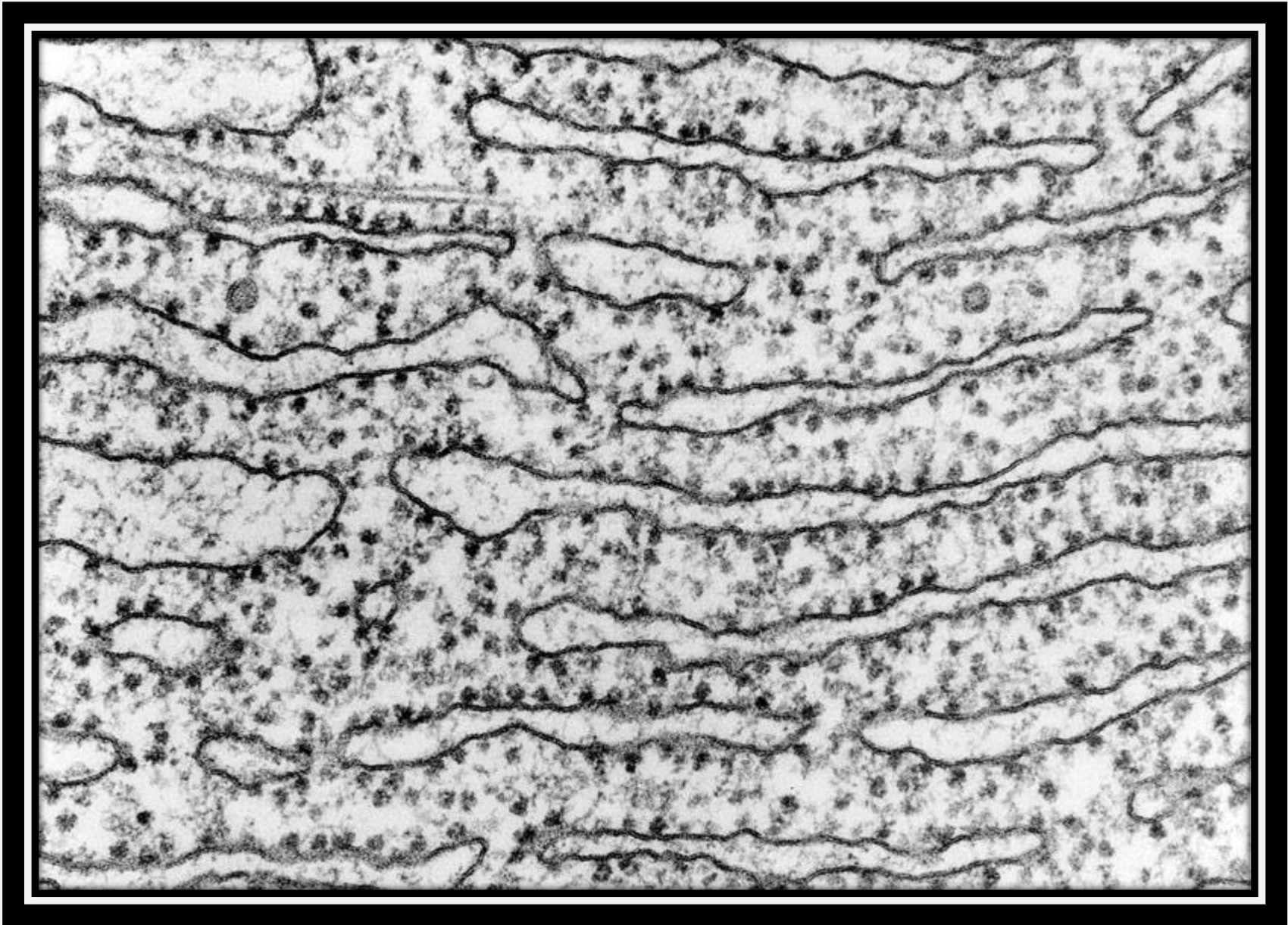


# RIBOSOME

- Small particles in the cell **where protein is made.**

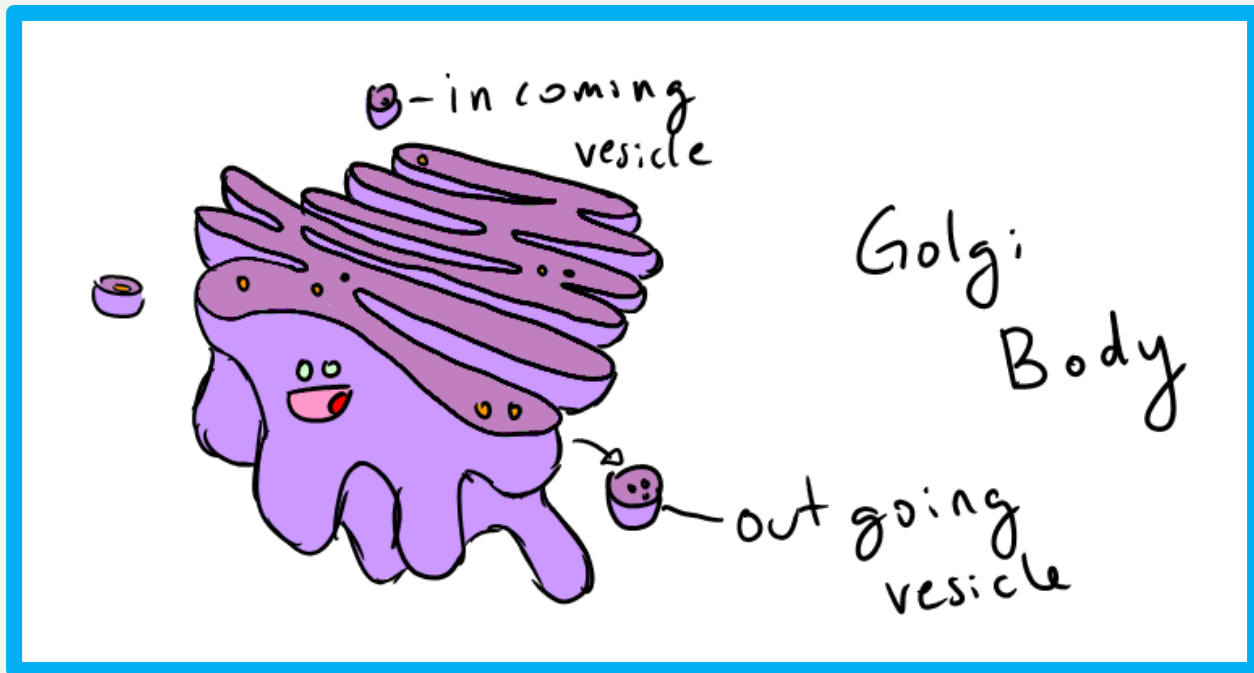


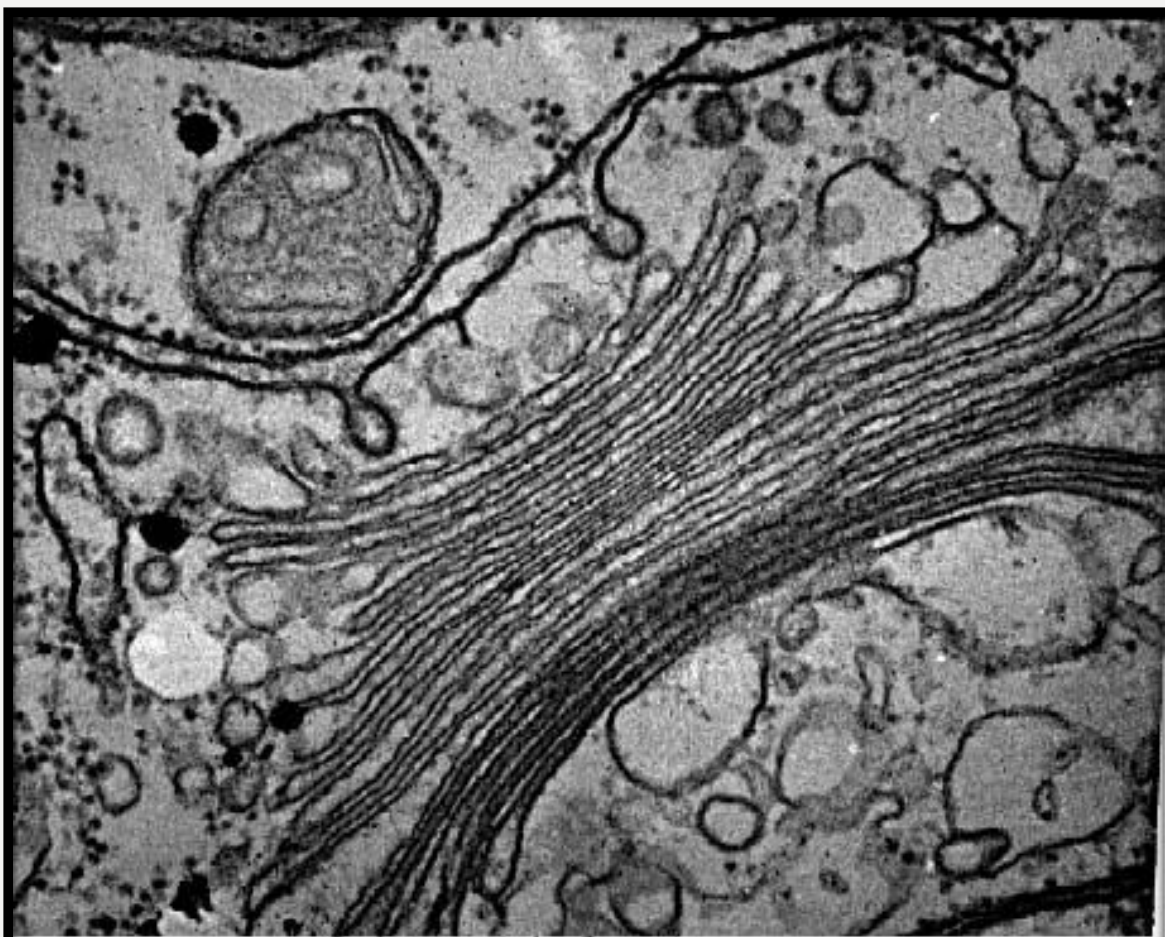




# GOLGI BODY

- Stacks of flattened membrane sacs that serve as **processing, packaging and storage centers** for the products released from the cell.



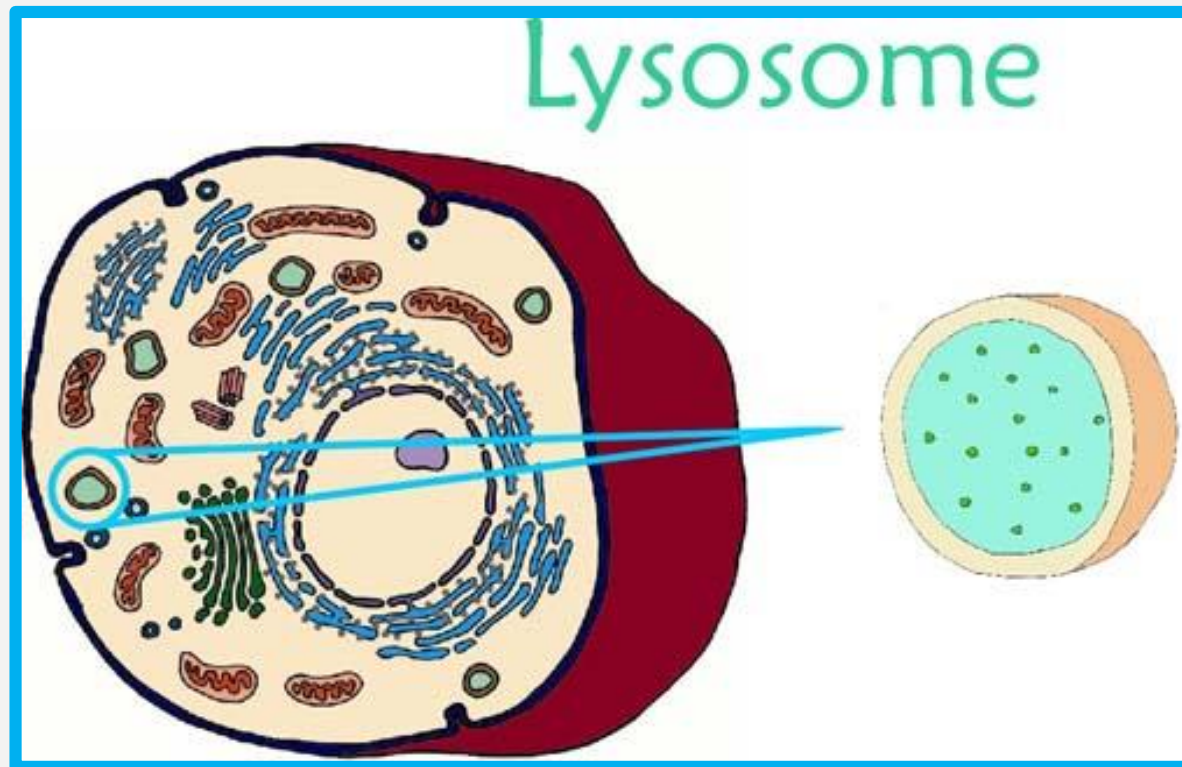


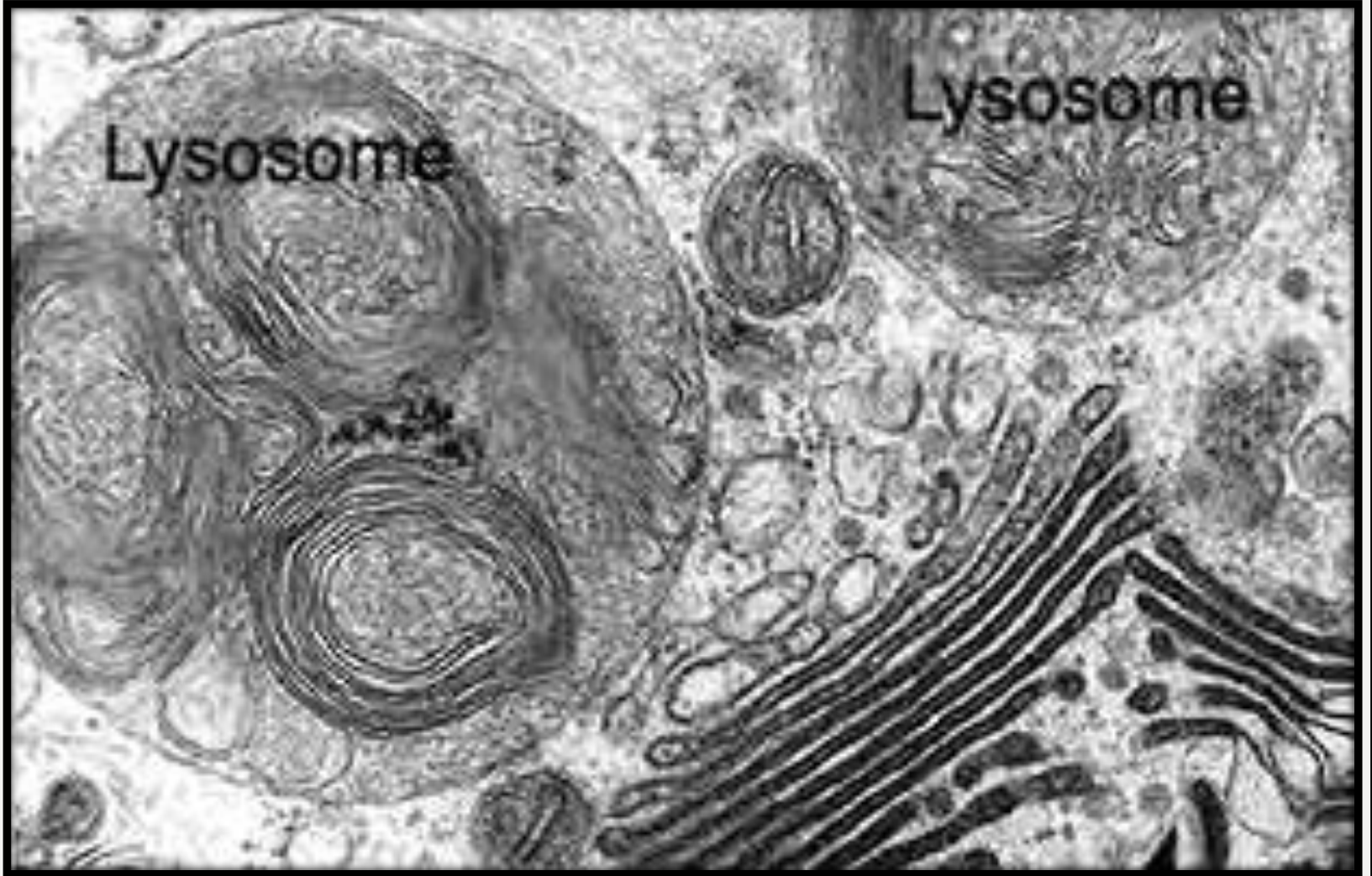
Golgi vesicle forming



# LYSOSOME

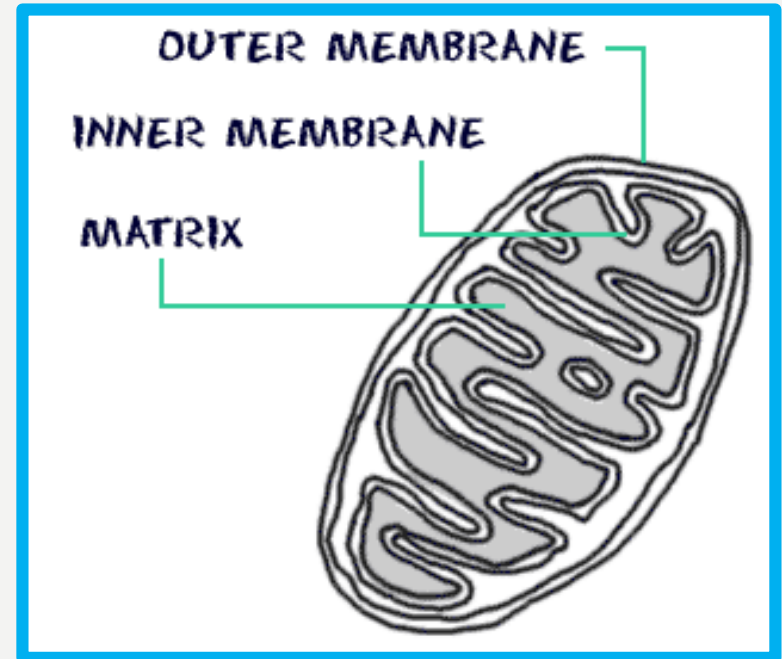
Small, sac like structures that **digest and break-down materials** in the cell.



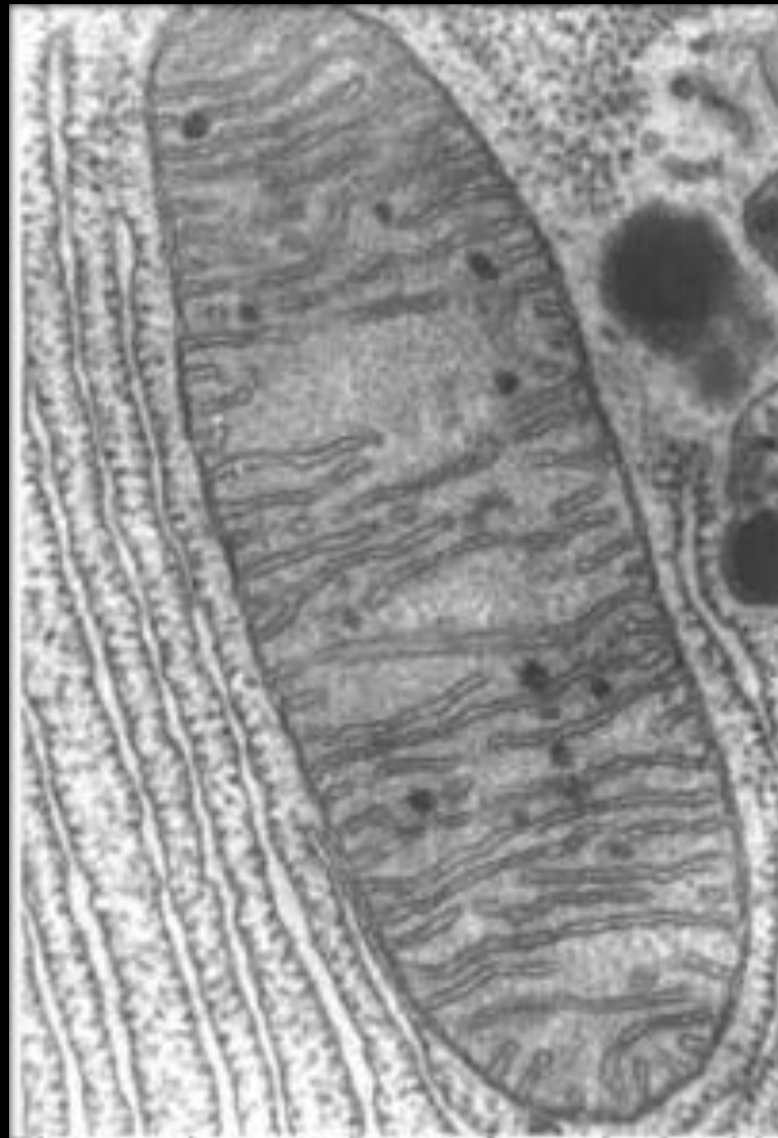


# MITOCHONDRIA

- Round or slipper shaped organelles that **release energy** for the cell.
- Contains an inner membrane that is highly folded, forming cristae.



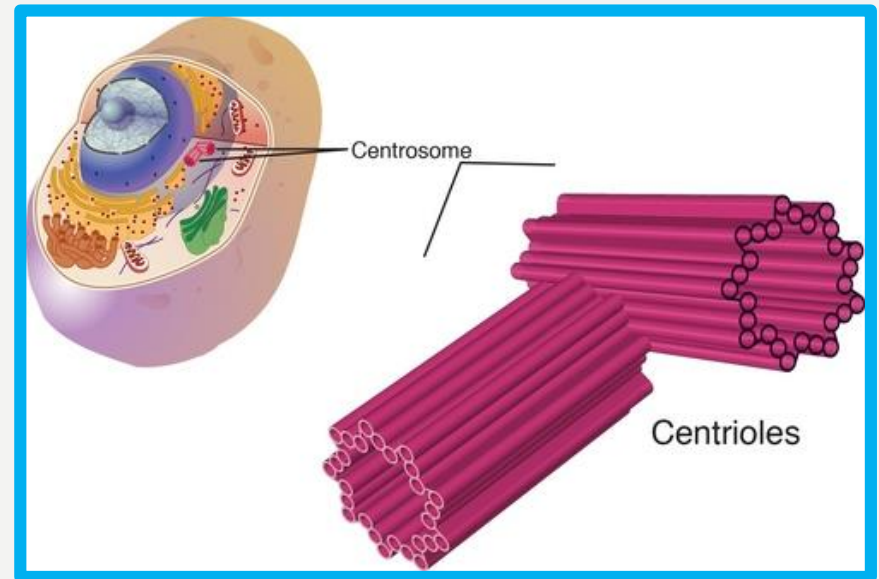


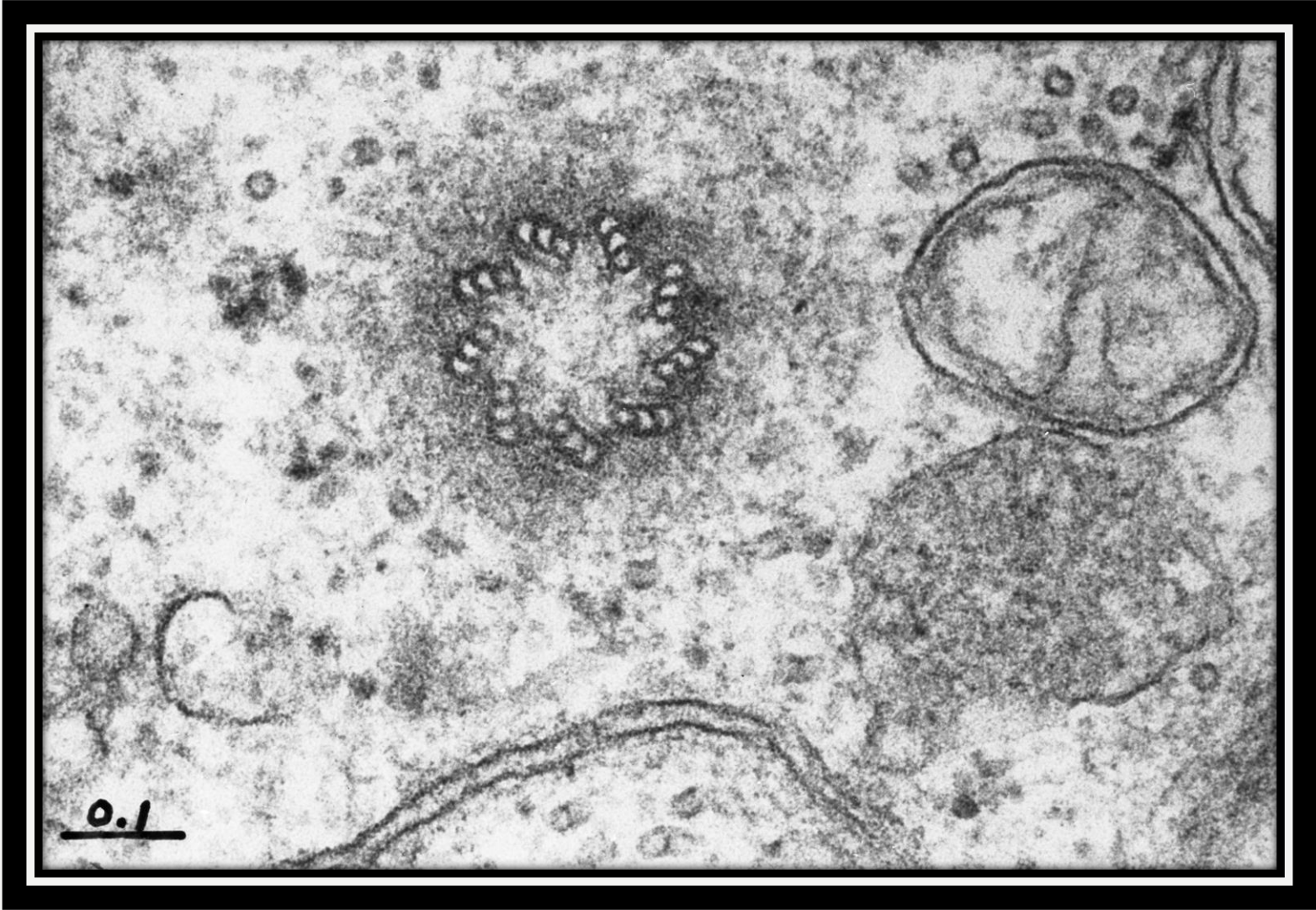


Electron microscope Image of one mitochondria:  
Architecture Dictates Function  
at <http://cellbio.utmb.edu/cellbio/mitoch1.htm>

# CENTRIOLES

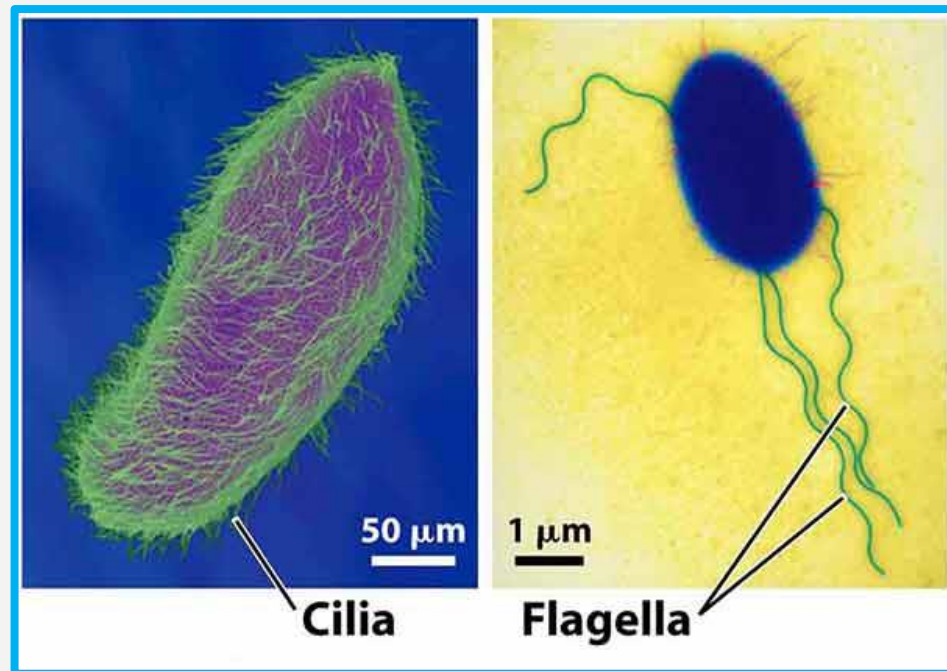
- Barrel shaped organelles that form spindle fibers to help chromosomes during cell division.
- Spindle fibers help separate chromosomes in cell division.





# CILIA AND FLAGELLA

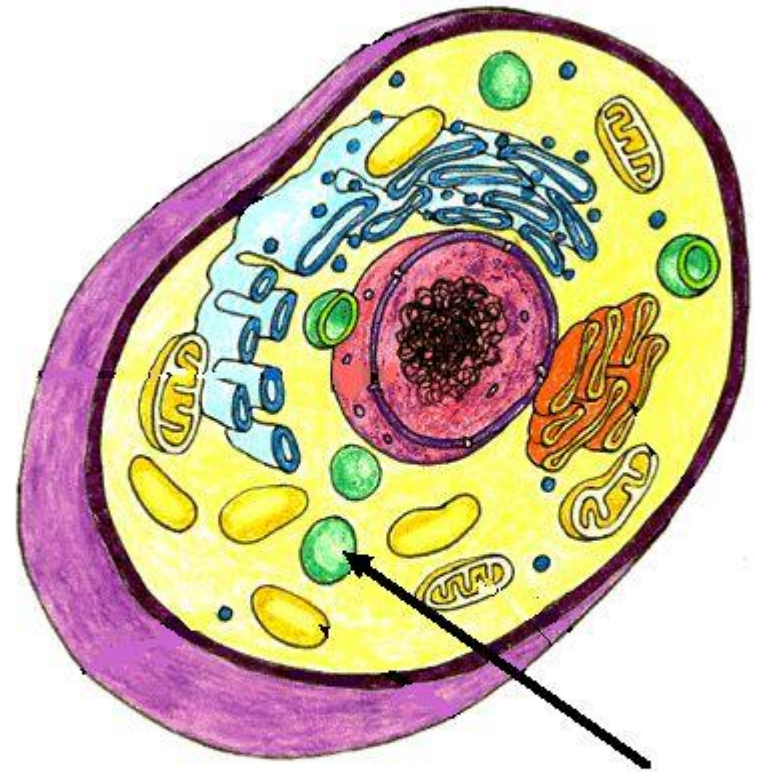
- Projections from the cell that move material around the cell or move the cell itself.
- Flagella are longer and more 'tail like' than cilia.



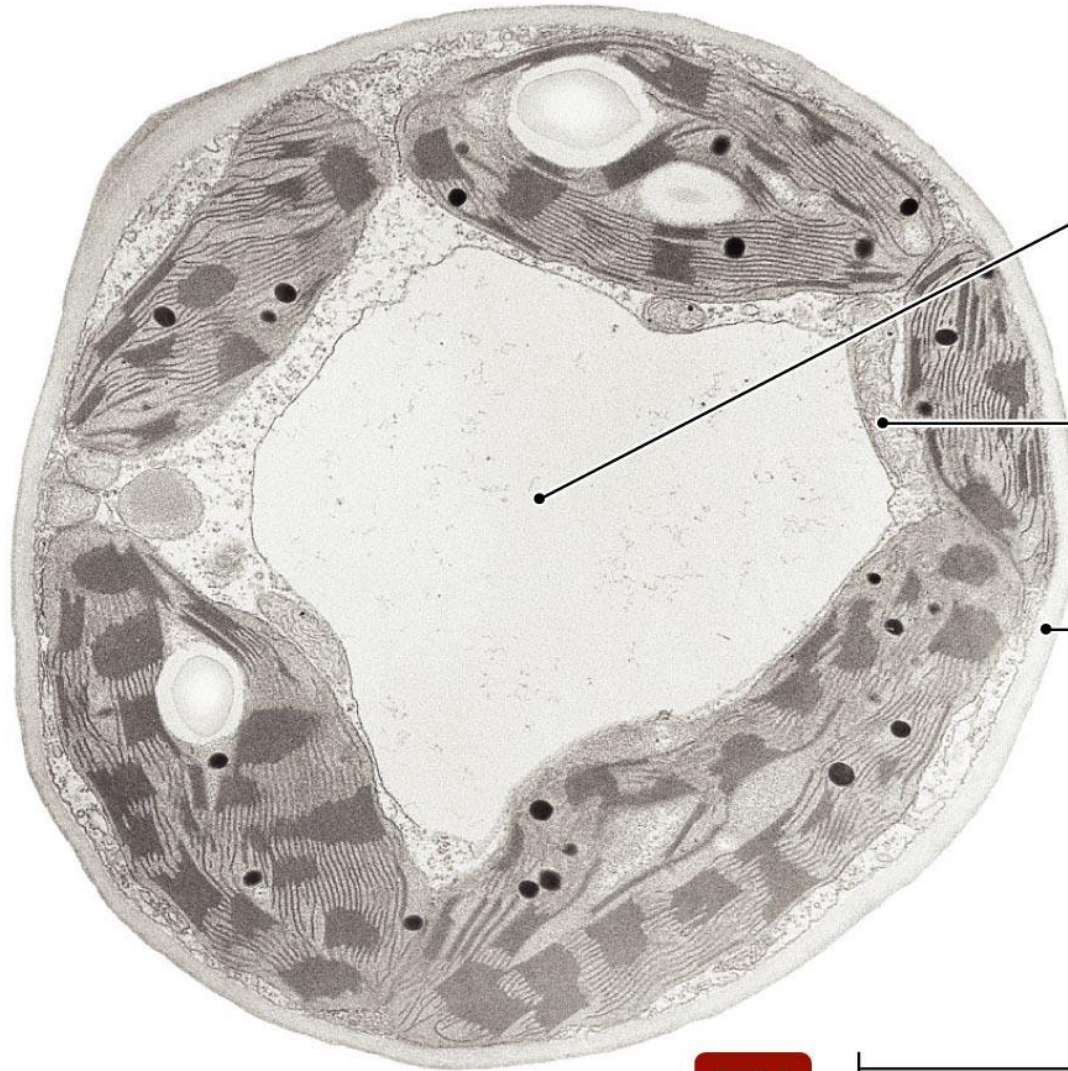


# VACUOLE

- Fluid-filled organelles used for **storage.**



Vacuoles



Central vacuole

Cytoplasm

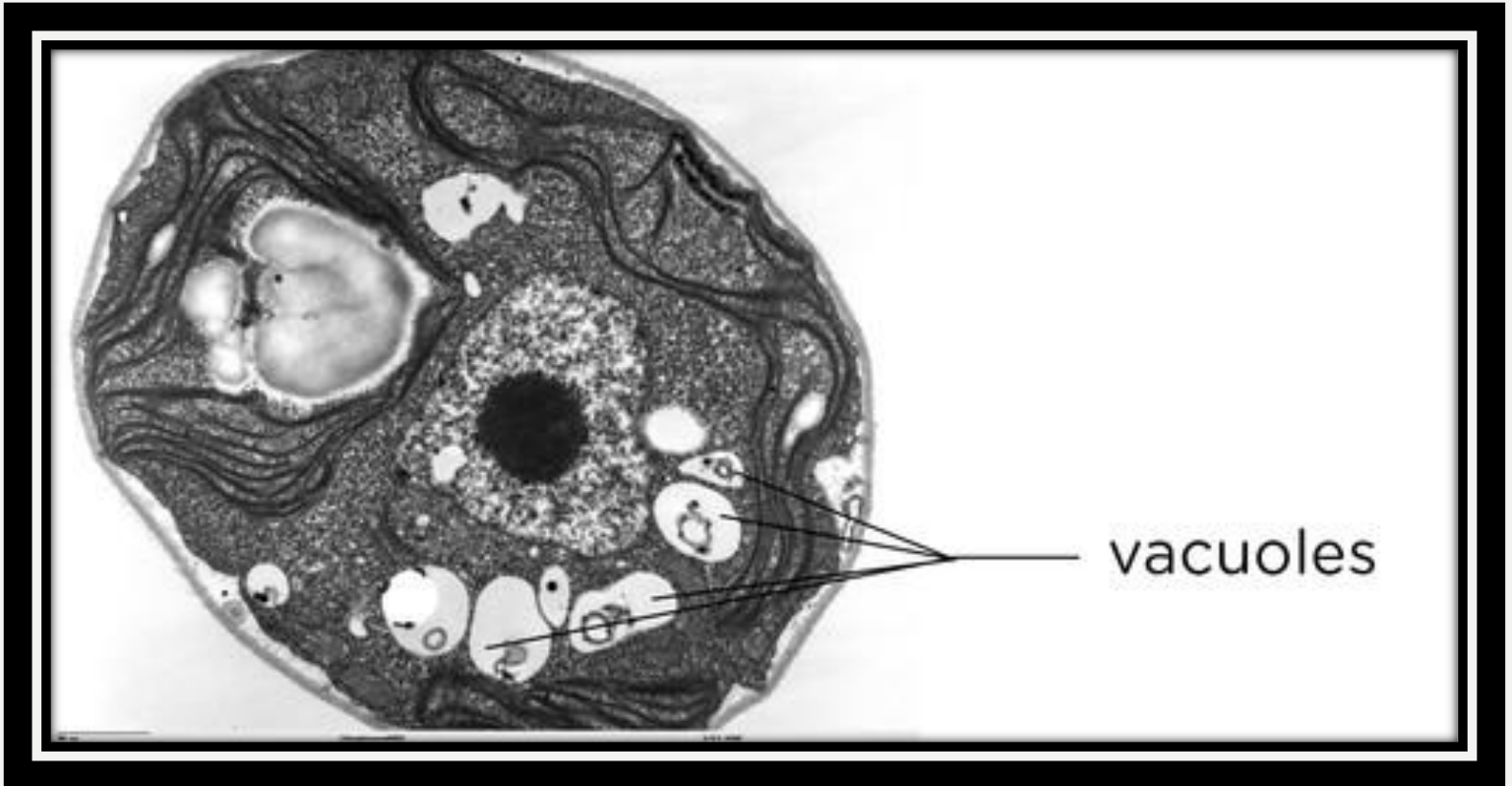
Cell wall

TEM

14  $\mu$ m

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vacuoles

1. obtain food,
2. convert energy,
3. eliminate wastes,
4. reproduce,
5. grow and repair
6. transport substances

# 6

**MAIN**

**PROCESSES**

**CELLS**

**MUST**

**MANAGE**