

# CELL ORGANELLES

(parts of cells)

# Nucleus



# Nucleus (plant & animal cells)

The nucleus is the control center of the cell.

It directs cell activities kind of like your brain directs your body.

# Nucleus

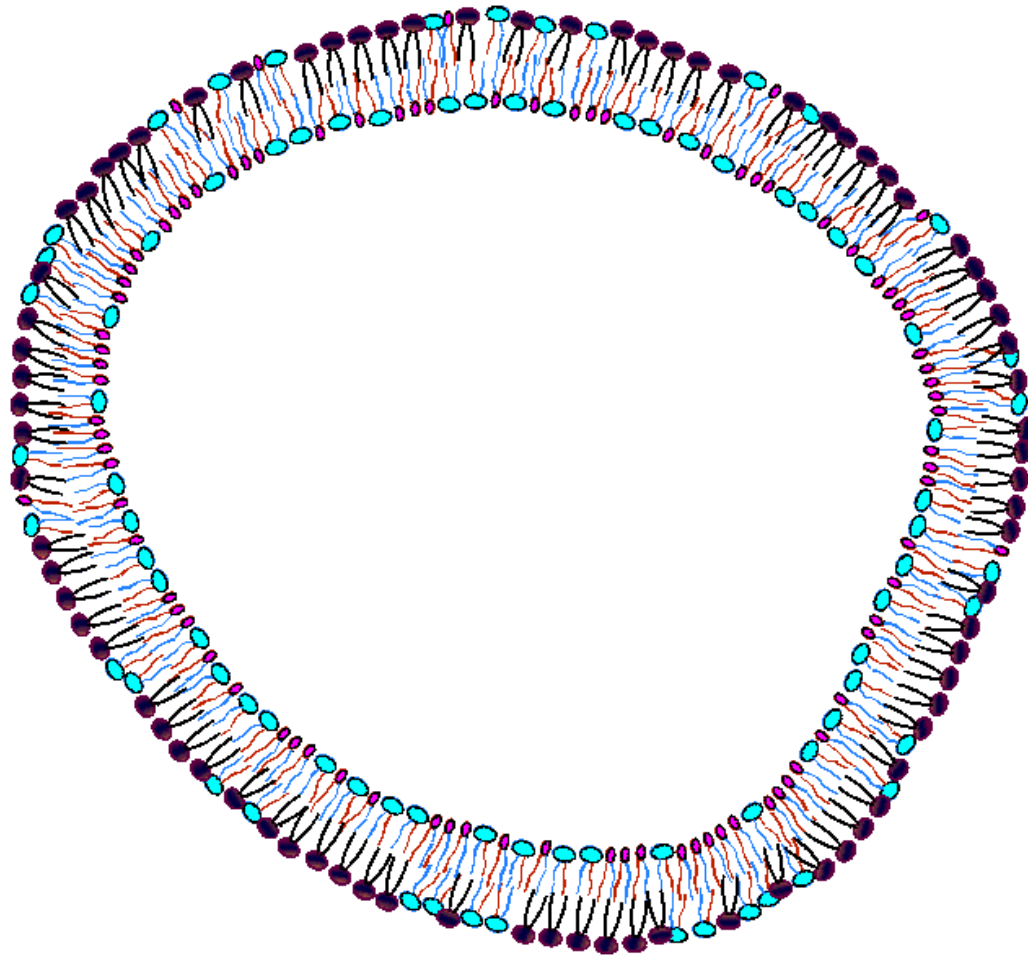
The nucleus stores genetic information that is passed on from one generation to the next.

# Nucleus

The nucleus is surrounded by a membrane called the nuclear envelope.

Small openings or pores in the nuclear membrane allow material to flow between the nucleus and other parts of the cell.

# Cell Membrane



# Cell Membrane

(plant & animal cells)

A cell membrane forms an outside boundary that separates a cell from its environment.

The cell membrane controls what comes in and out of a cell.

# Cell Membrane

Cell membranes allow food and oxygen to enter the cell.

Cell membranes allow harmful waste products to leave the cell.



# Cell Membrane

Cell membranes keep harmful materials from entering the cell.

Kind of like a window screen or fenced in yard.

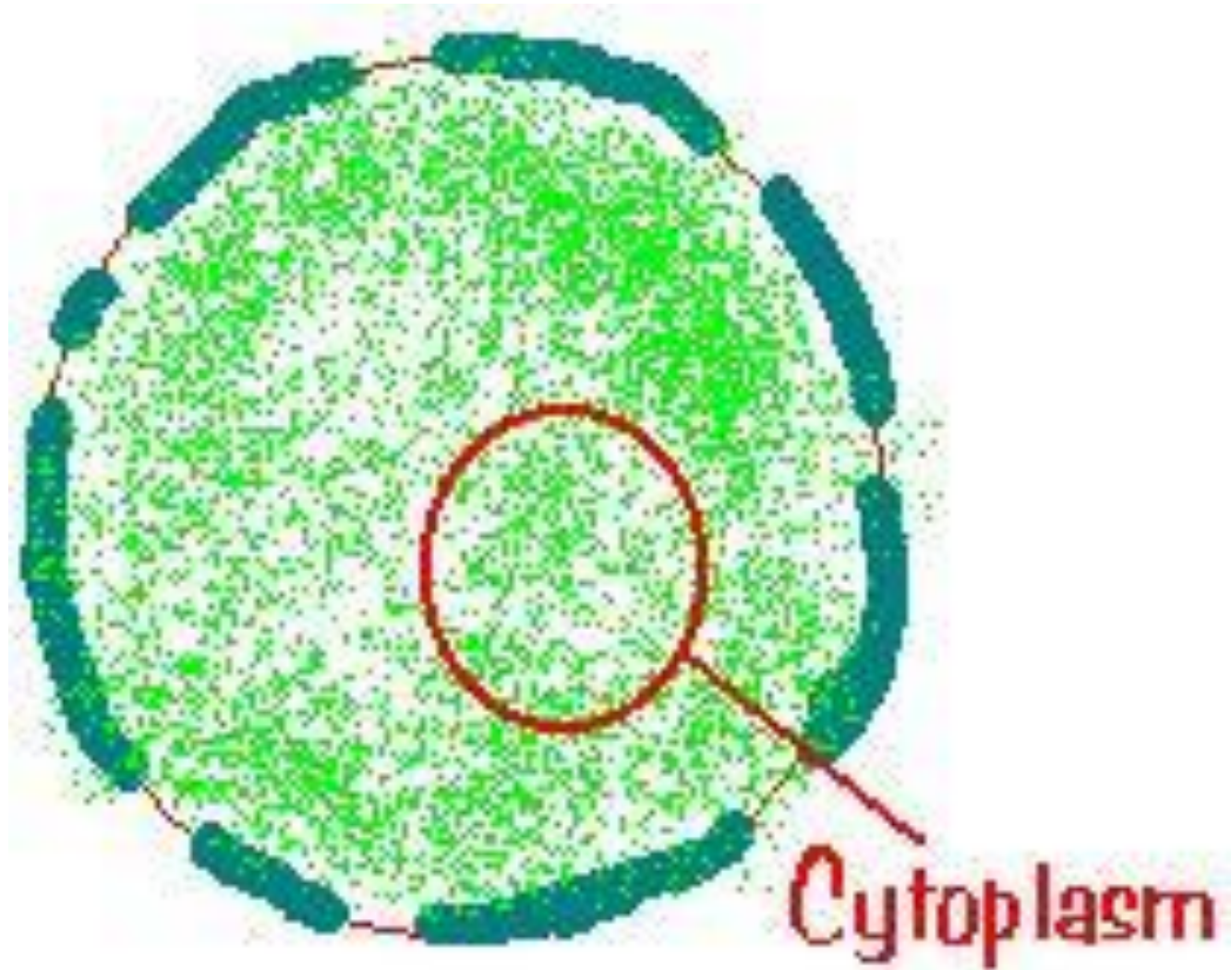
# Location of Cell Membrane

All cells have cell membranes.

In animal cells the membrane is the outermost part of the cell.

In plants the cell membrane is just inside of the cell wall.

# Cytoplasm



# Cytoplasm (plant & animal cells)

The large, fluid-filled space between the nucleus and the cell membrane is the cytoplasm.

Cytoplasm is a jelly or gel-like substance that fills the cell inside the cell membrane.

# Cytoplasm

Cytoplasm acts as a support and cushion for organelles within a cell.

Every organelle in the cell is surrounded by Cytoplasm.

# Endoplasmic Reticulum

Rough  
ER



Smooth  
ER

# Endoplasmic Reticulum

(plant & animal cells)

- The endoplasmic reticulum is a system of “passageways”.
- The endoplasmic reticulum’s membranes and sacs move material from one part of the cell to another.

# Endoplasmic Reticulum

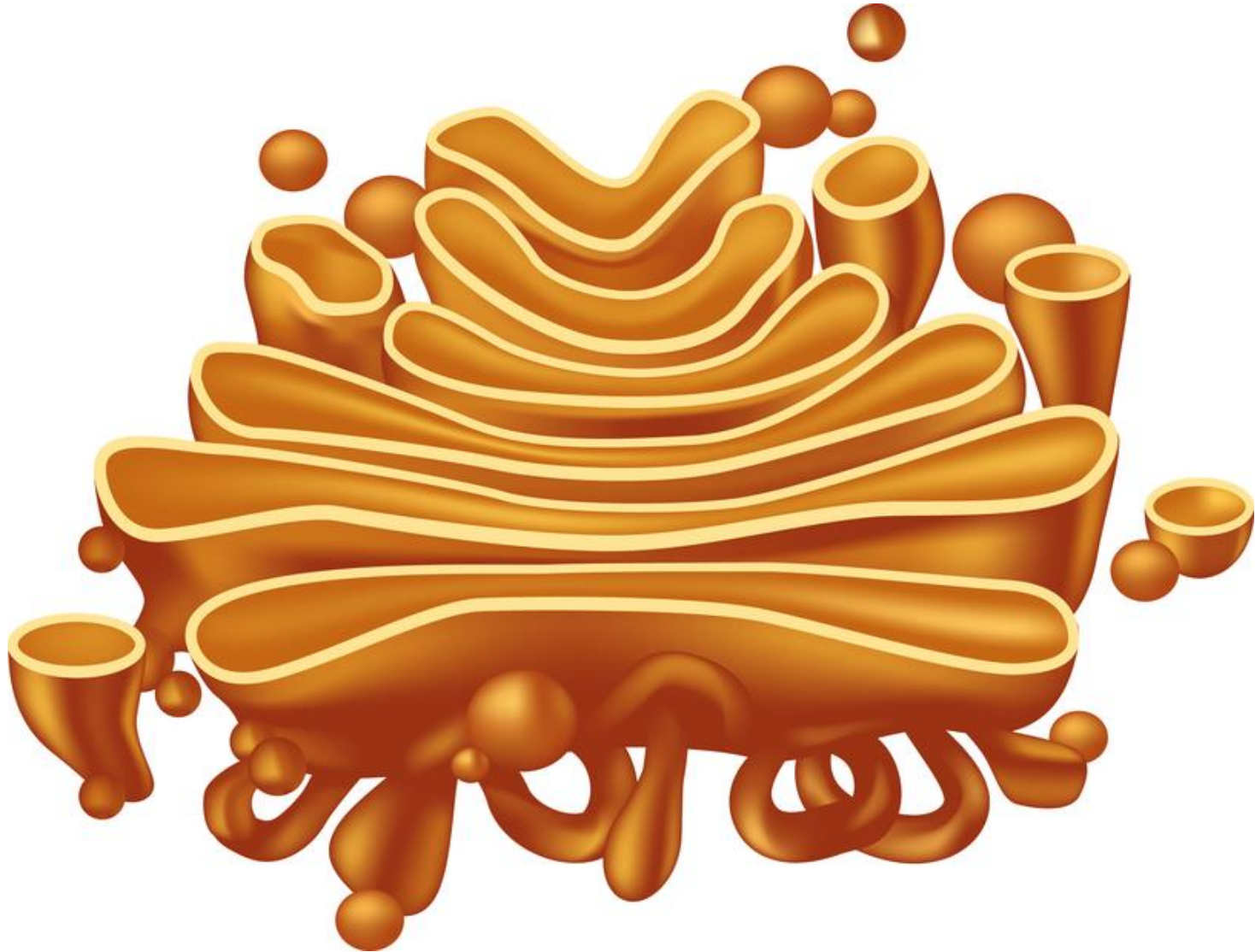
The endoplasmic reticulum transports proteins.



# Endoplasmic Reticulum

- Two types:
  - Smooth Endoplasmic Reticulum
  - Rough Endoplasmic Reticulum

# Golgi Body



# Golgi Body (plant & animal cells)

The golgi bodies receive proteins and other newly formed materials from the endoplasmic reticulum, package them, and distribute them to other parts of the cell.

# Golgi Body

- The proteins produced by the ribosomes in the endoplasmic reticulum move to the golgi apparatus.

# Golgi Body

- The golgi apparatus changes, sorts, and packages the proteins to be stored in the cell or secreted out of the cell.

# Golgi Body

- The golgi apparatus is like the shipping department at Fed Ex.
- “Mail Room”

# Mitochondria



# Mitochondria

(plant & animal cells)

These organelles convert chemical energy stored in food into compounds that can be used by the cell.



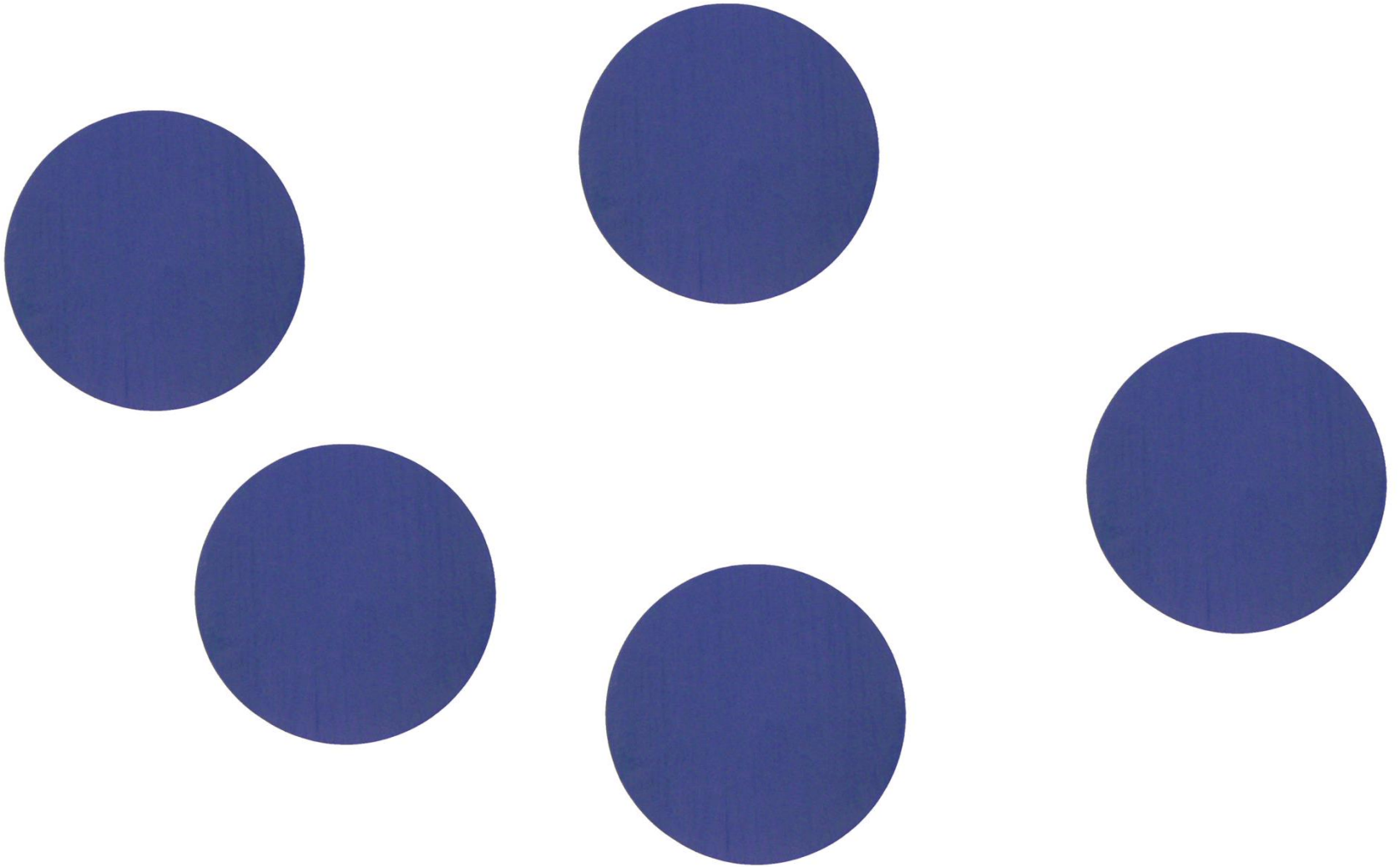
# Mitochondria

- Mitochondria are the “*power houses*” of the cells.
- The more energy a cell requires the more mitochondria it will have.

# Mitochondria

- Mitochondria break down sugar into a molecule called ATP.
- ATP gives the cell energy.

# Ribosomes



# Ribosomes

(plant & animal cells)

- Ribosomes are the factories that produce proteins.
- Proteins are chemical compounds that determine many processes and traits within an organism.

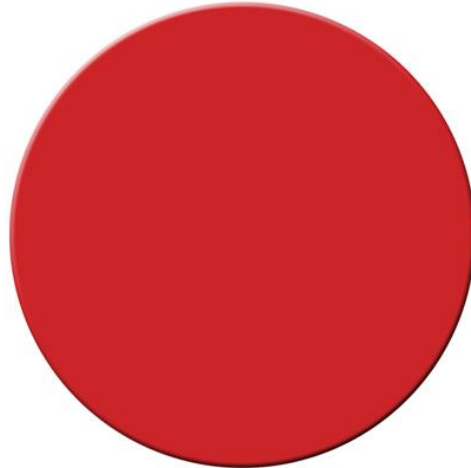
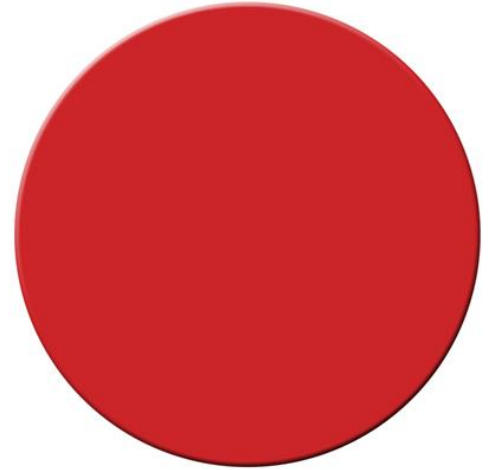
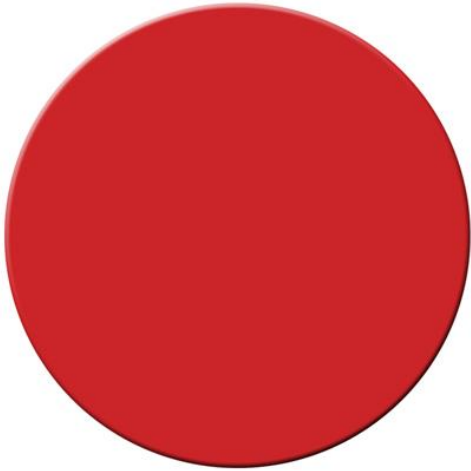
# Ribosomes

- Ribosomes are found in the walls of the endoplasmic reticulum.
- Other ribosomes float around in the cytoplasm.

# Ribosomes

Cells that produce large amounts of proteins have many ribosomes.

# Vacuoles



# Vacuoles

(plant & animal cells)

- A vacuole is a large water filled sac in all plant cells and some animal cells.
- Vacuoles are the storage areas of cells.



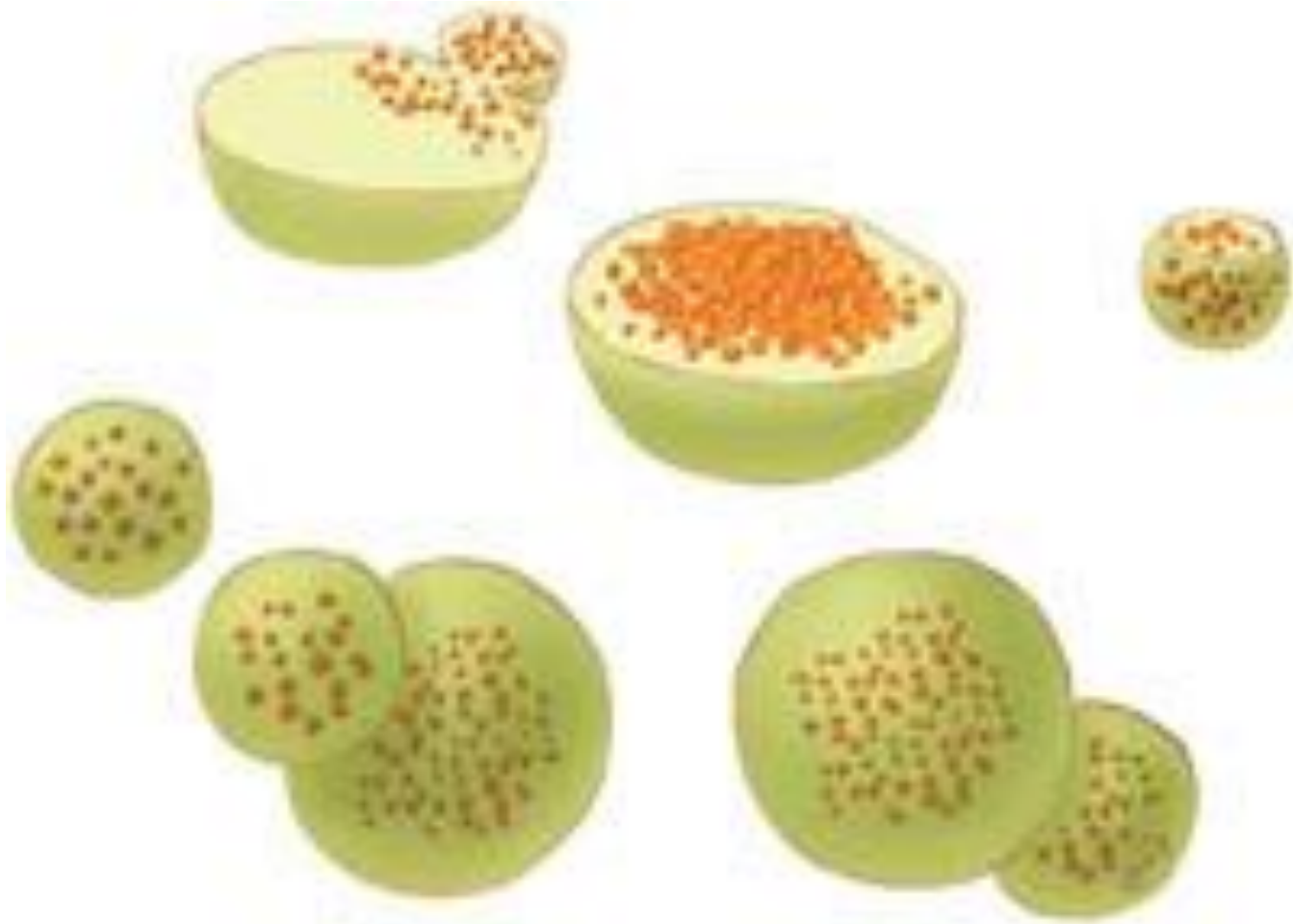
# Vacuoles

- Vacuoles can store food and other materials needed by the cell.
- Vacuoles can also store waste products.

# Vacuoles

- In plants, the water pressure in vacuoles make the cells rigid and enable the plant support leaves and flowers.
- If too much water is released from the vacuole the plant cell becomes limp and the plant wilts.

# Lysosomes



# Lysosomes

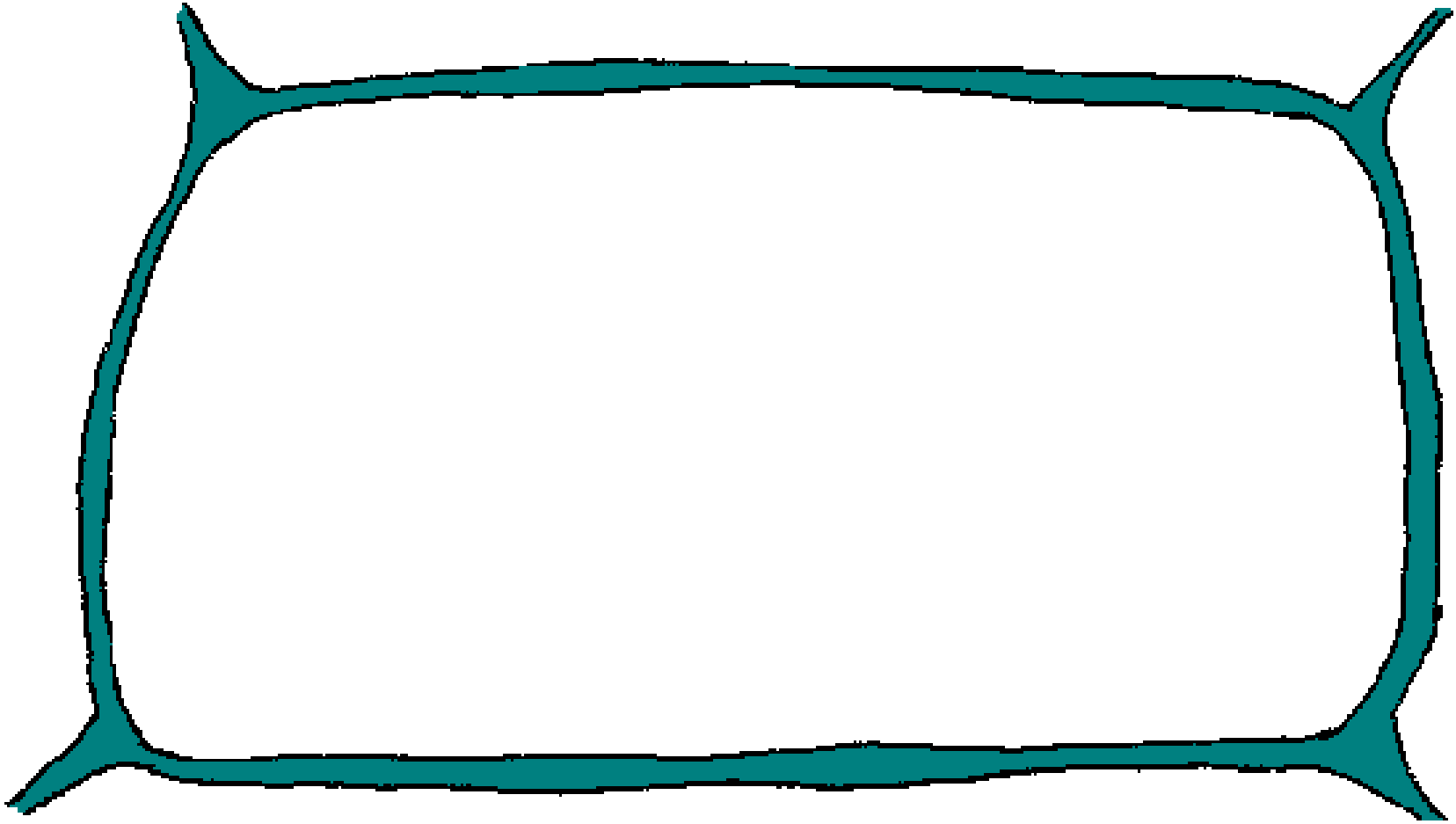
- Common in Animal cells.
- Lysosomes are organelles that break down certain materials in the cell.
- They are like the cell's digestive system.

# Lysosomes

- Lysosomes can break down large food particles into smaller ones.
- Lysosomes can also break down old organelles into materials that can be reused by the cell.

Lysosomes are  
the  
cell's  
“cleanup crew”.

# Cell Wall (plants only)



# **CELL WALL** (plant cells only)

A cell wall is a stiff outer layer that surrounds the cell membrane in plant cells.

The cell wall makes the cell rigid and protects it.



Cell walls are  
made  
up of cellulose.

Pores in a cell wall  
allow materials to pass  
in and out of the cell.

Animal cells

do not

have cell walls.

# Chloroplasts (plants only)



# Chloroplasts (Plant Cells ONLY)

- Chloroplasts capture energy from sunlight and use it to produce food for the cell.
- Chloroplast enable cells to carry out photosynthesis.

# **Chloroplasts (Plant Cells ONLY)**

- Green plants and some other organisms contain chloroplasts.
- Chloroplasts contain chlorophyll that gives plants their green color.