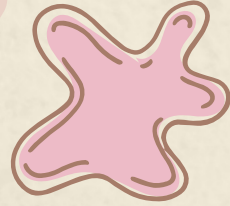


Zoo 642

Cell Organelle's Functions and the Relationship Between Them



Cells arise only by division of previously existing cells



4



organisms are composed of one or more cells

1

The Cell Theory

3



The cell is the basic unit of life in all living things

2

Cells are the smallest living things





1

cell

2

tissue

3

organ

4

system

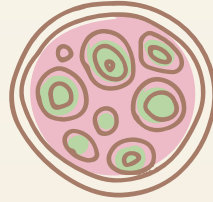
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body

Eukaryote

e.g. Plants-Animals

- Membrane-bound nucleus
- Contain organelles

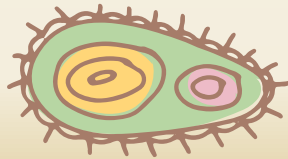



- lack a membrane-bound nucleus.
- One-celled organisms.

Types of Cells

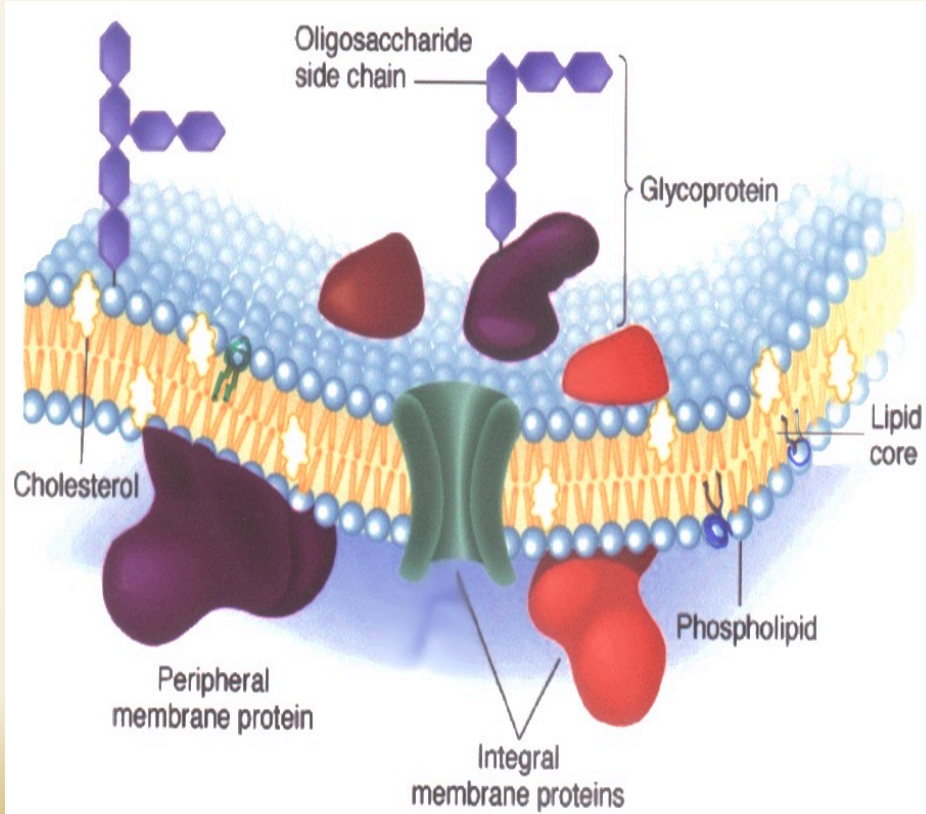
e.g. Bacteria

Prokaryote

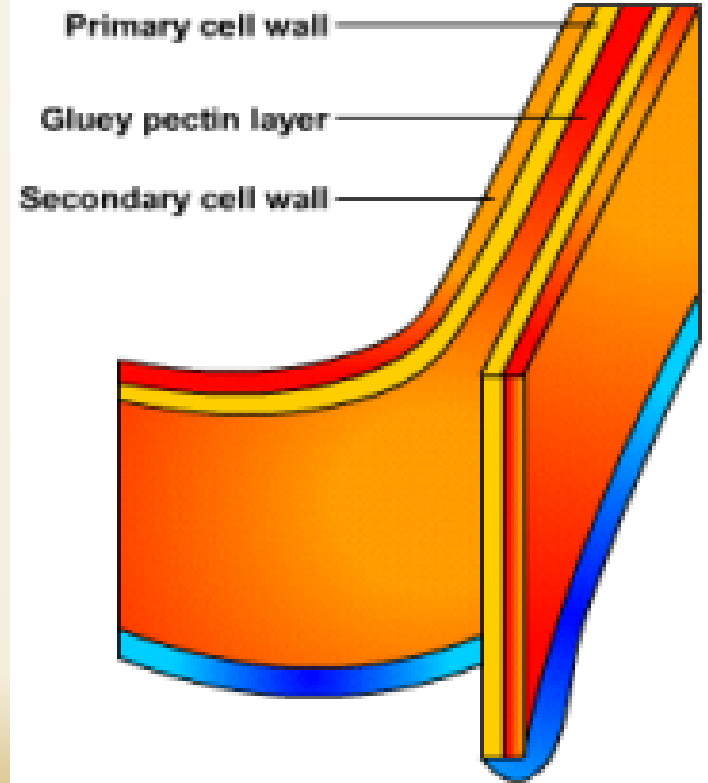


organelle	Location	Structure	Function
-Cell Wall	-Plant cell	Solid structure surrounds the cell membrane.	-Provides structure, support and protection.
-Cell Membrane	-Plant and Animal cell	-Phospholipid Bilayer(hydrophobic and hydrophilic). -Semi-permeable.	-Allows substances in and out of the cell.
-Cytoplasm 	Plant and Animal Cells	Jelly-like substance that fills the area between the nucleus and cell membrane.	-Gives cell support and shape. -surrounds organelles. -Where cellular activities occur.

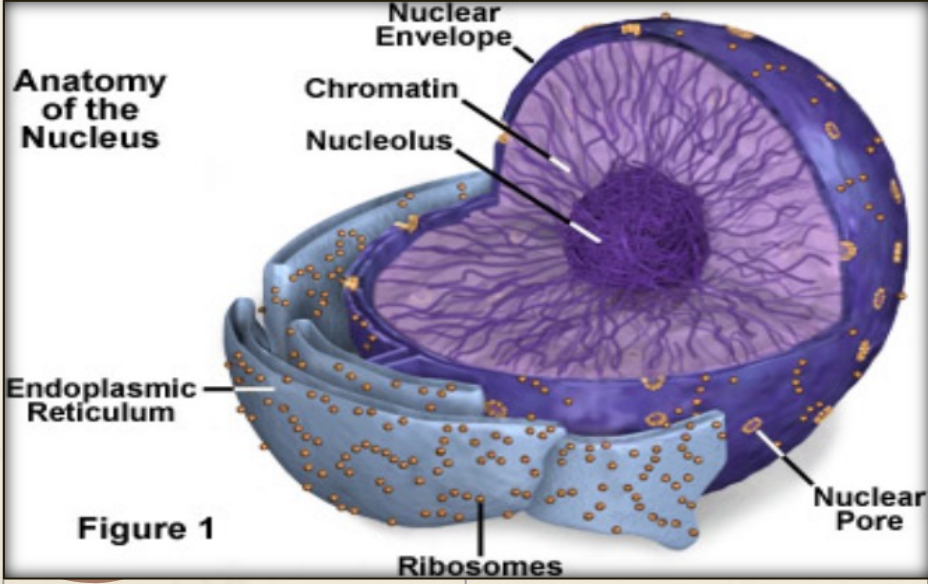
Cell Membrane



Cell Wall



organelle	Location	Structure	Function
-Nucleus	-Plant and Animal Cells	<ul style="list-style-type: none"> -Membrane bound organelle. -Contains DNA. -DNA in the nucleus is organized into structures called chromosomes 	<ul style="list-style-type: none"> -Control center -directs cell activities and contains genetic information



The nucleolus:

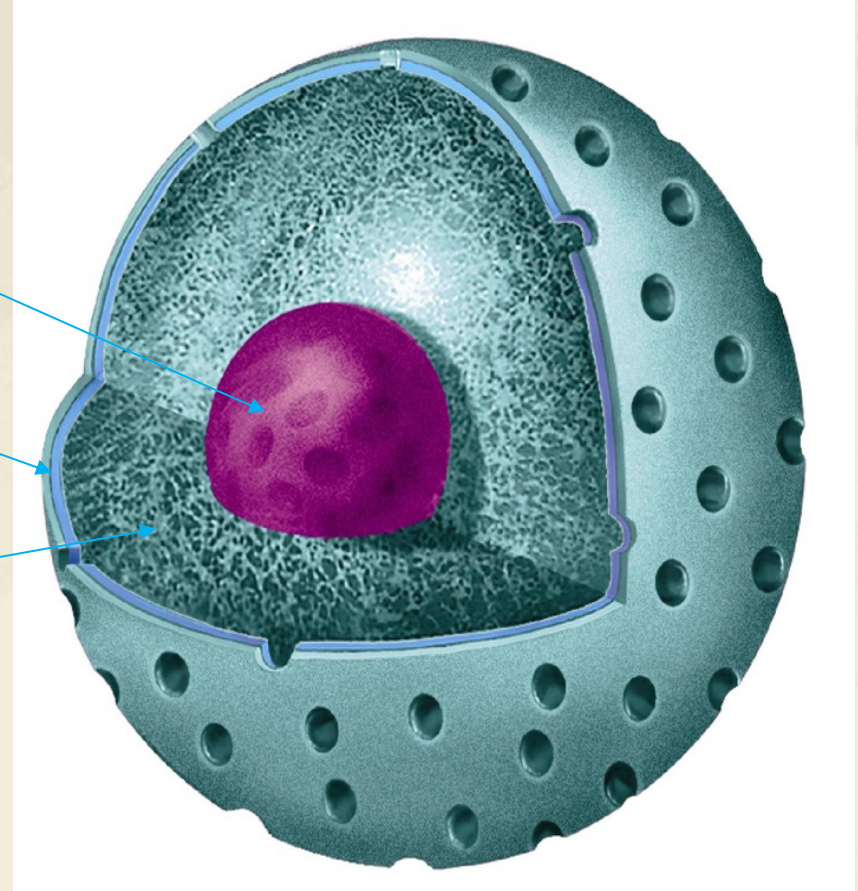
- Inside nucleus
- ribosomal RNA synthesis

Nuclear Membrane:

- Surrounds nucleus
- Made of two layers
- Openings allow material to enter and leave nucleus (pore complex)

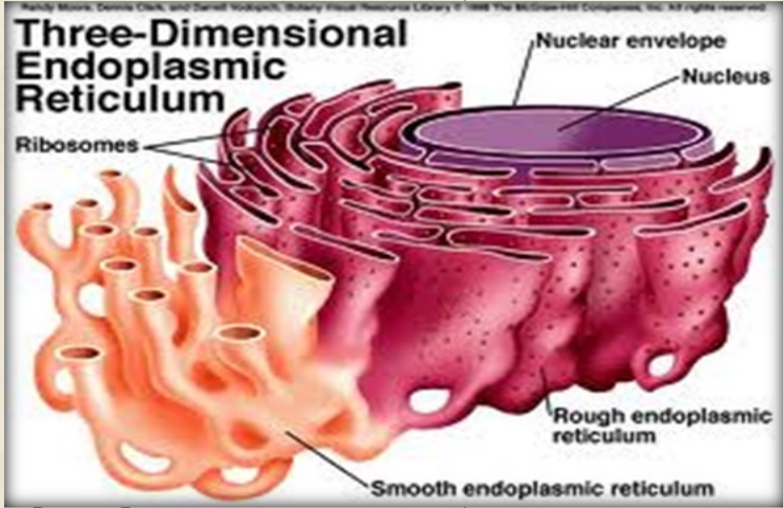
Chromosomes:

- In nucleus
- Made of DNA
- Contain instructions for Protein synthesis



organelle	Location	Structure	Function
-Ribosome	in cytoplasm Plant and Animal Cells.	<ul style="list-style-type: none">-composed of RNA and protein (subunits large and small).-Attached to membranes or free in cytoplasm.	Site of protein synthesis.

The diagram illustrates the structure of a ribosome. It consists of two subunits: a larger, purple-colored 'Large subunit' and a smaller, pink-colored 'Small subunit'. The subunits are joined together to form the complete 'Ribosome'. A white arrow points from the 'Small subunit' label to the corresponding part of the ribosome structure.

organelle	Location	Structure	Function
<p>-Endoplasmic Reticulum (ER)</p>	<p>Plant and Animal Cells</p>	<p>1-Rough Endoplasmic Reticulum System of membranes found in the cell's cytoplasm Contains ribosomes.</p>	<p>-Production, processing, and transport of proteins</p>
 <p>Three-Dimensional Endoplasmic Reticulum</p> <p>The diagram illustrates the structure of the endoplasmic reticulum. It shows a central purple nucleus surrounded by a nuclear envelope. The rough endoplasmic reticulum (RER) is depicted as a series of flattened, interconnected sacs (cisternae) with small dots representing ribosomes on their surface. The smooth endoplasmic reticulum (SER) is shown as a more tubular, branched network of membranes without ribosomes. Labels include: Nuclear envelope, Nucleus, Ribosomes, Rough endoplasmic reticulum, and Smooth endoplasmic reticulum.</p>		<p>2-Smooth Endoplasmic Reticulum (ER) System of membranes found in the cell's cytoplasm, It does not contain ribosomes.</p>	<p>-synthesize lipids, sex hormones, storage of calcium ions. -detoxification</p>

organelle

Location

Structure

Function

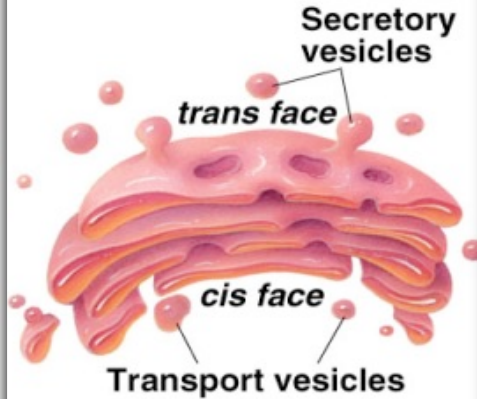
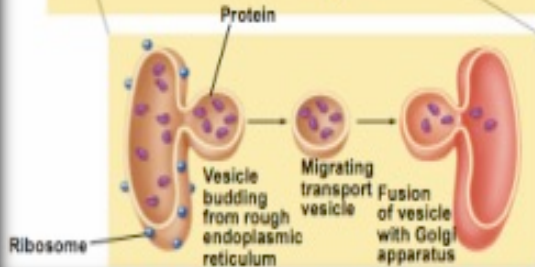
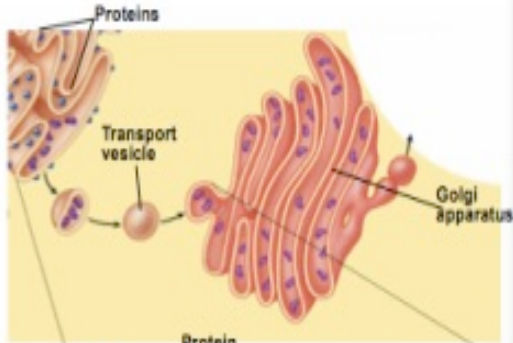
-Golgi Apparatus


Plant and Animal Cells

Flattened, curved sacs.

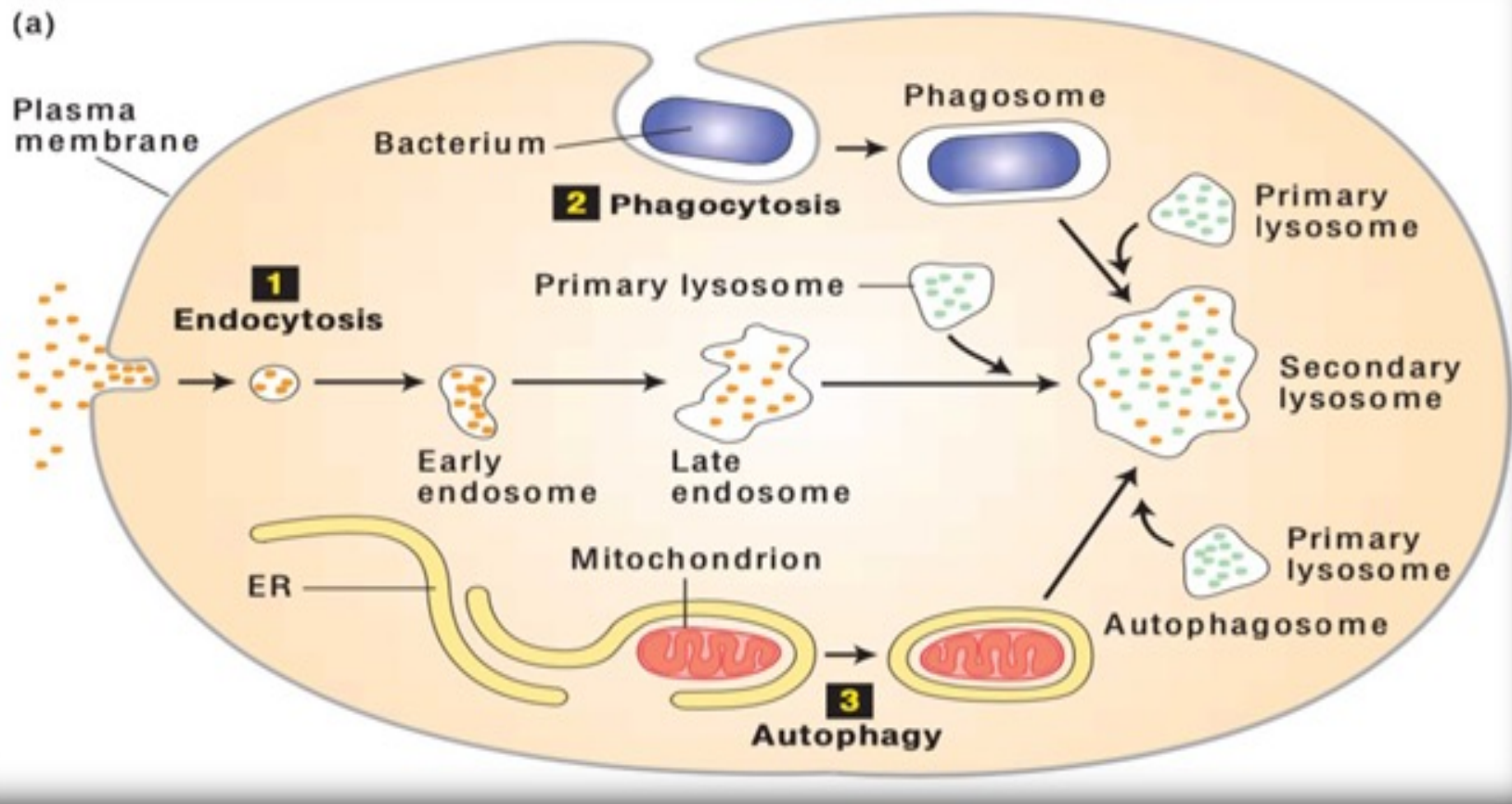
-Collects, modifies, and packages proteins.
-Move materials within and out of the cell

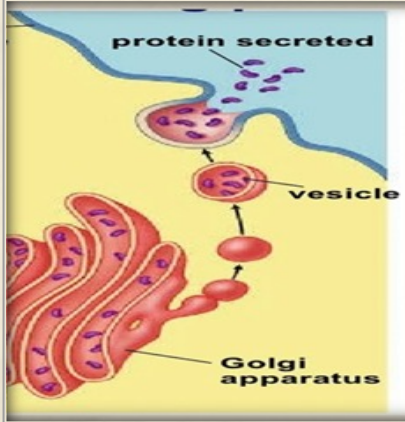
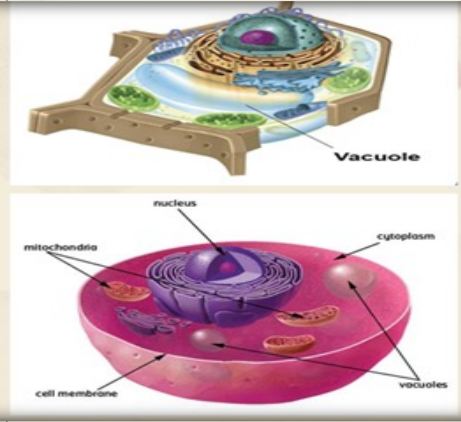
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organelle	Location	Structure	Function
-Lysosome	Animal Cells	-Small spherical organelles -a vacuole that contains digestive enzymes	-Contains digestive enzymes Breaks down organelles, debris, and particles in the cell.
-Peroxisomes 	Plant and Animal Cells	Single membrane structure	-contain enzymes for degrading amino acids and fatty acids -Hydrogen Peroxide generated and degraded -detoxify alcohol

(a)



organelle	Location	Structure	Function
<p>-Vacuole</p>	<p>In Plant cells one vacuole and it is the largest organelle In animal cells, there are few small vacuoles</p>	<p>-Membrane bound sac</p>	<p>-Stores water and may contain substances like ions, nutrients, and wastes.</p>
<p>-Vesicles</p>  <p>The diagram shows a cross-section of the Golgi apparatus (a stack of red, flattened sacs) on the left. Small red vesicles are shown budding from the right side of the Golgi and moving towards the cell membrane. One vesicle is shown fusing with the membrane, releasing purple protein molecules into the extracellular space. Labels include 'Golgi apparatus', 'vesicle', and 'protein secreted'.</p>	<p>Plant and Animal Cells</p>  <p>Two diagrams are shown. The top diagram is a 3D cutaway of a plant cell, showing a thick cell wall, a large central vacuole, and other organelles. A label 'Vacuole' points to the large central sac. The bottom diagram is a 3D cutaway of an animal cell, showing a nucleus, cytoplasm, mitochondria, and a cell membrane. Labels include 'nucleus', 'cytoplasm', 'mitochondria', 'cell membrane', and 'vacuoles'.</p>	<p>-Golgi derived vessicles</p>	<p>-Store and transport within the cell.</p>

organelle

Location

Structure

Function

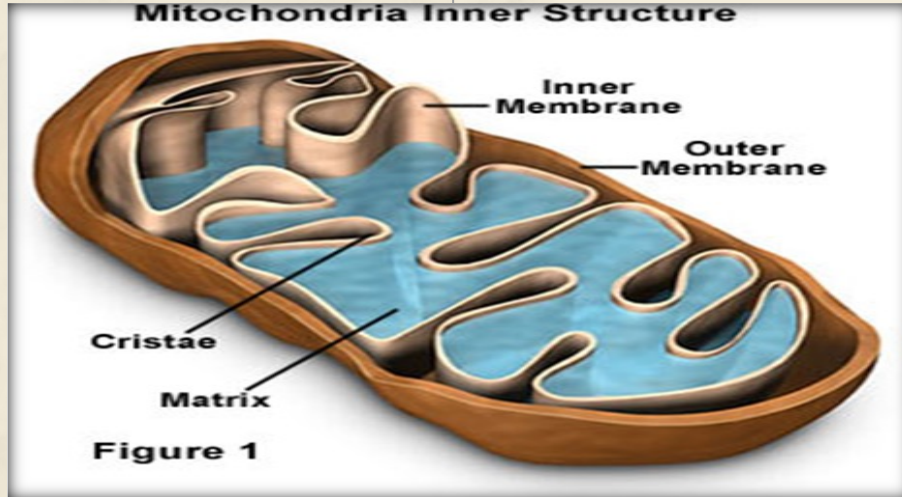
-Mitochondria

Plant and Animal Cells

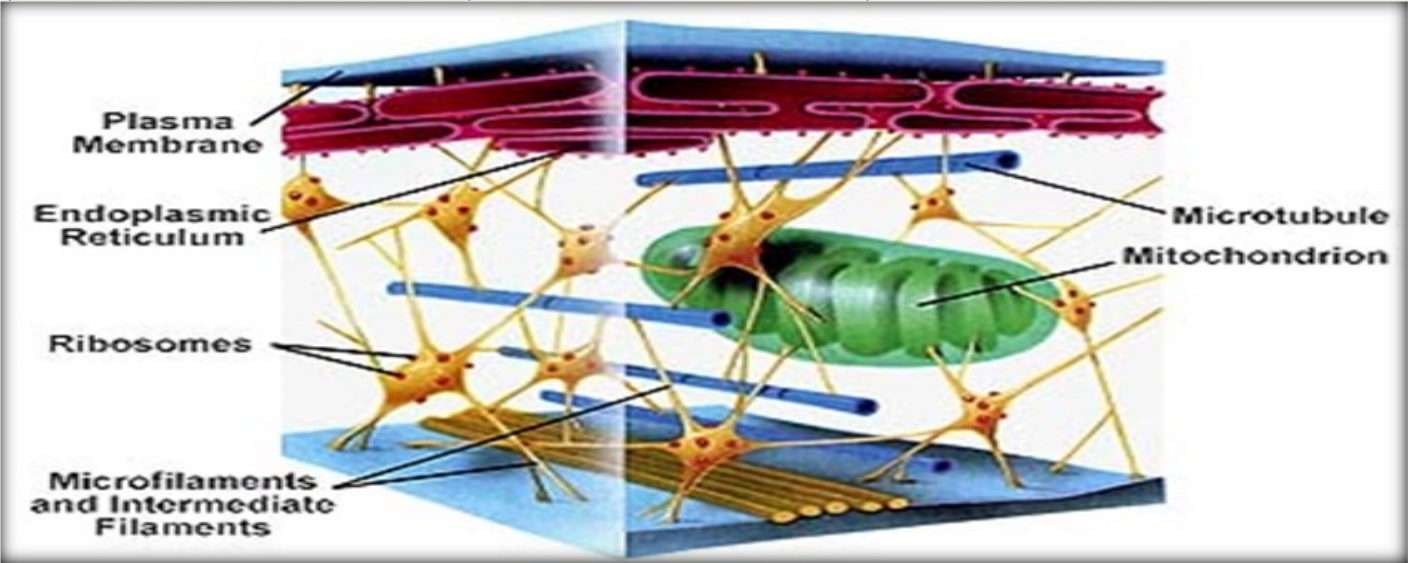
Surrounded by two membranes (smooth outer membrane Highly folded inner membrane).

-Power house”
Site of cellular respiration which produces ATP.

-Produces energy through chemical reactions – breaking down fats & carbohydrates



organelle	Location	Structure	Function
-cytoskeleton	Plant and Animal Cells	Long thin tubes of protein (Actin Filaments, Intermediate Filaments, Microtubules)	-Provide support - Helps to maintain shape.



organelle	Location	Structure	Function
-Centriole	Animal Cells	tubular structures arranged in Bundles(Microtubules arranged into 9 overlapping triplets)	Organize cytoskeleton Used in cell division
-Flagella	Animal Cells	Whip-like structure (9+2) microtubules	Movement
-Cilia	Animal cells	Hair-like structure (9+2) microtubules	Movement



