

Cell Theory 3: Cells and Organelles

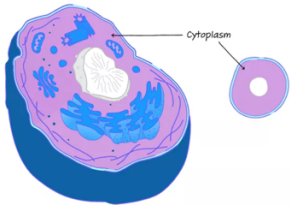

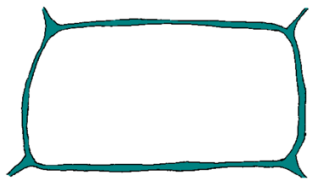

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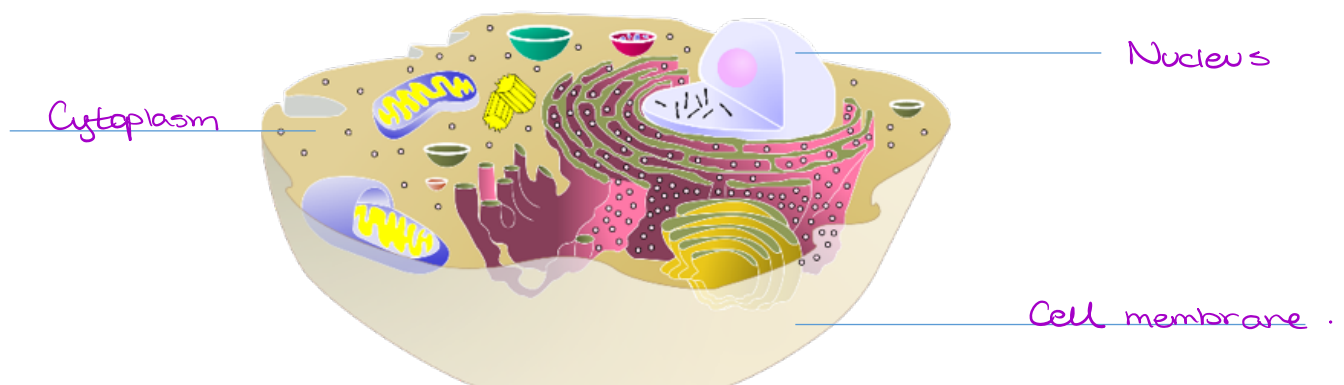
Block:

What are the 3 main jobs of cells?	<ol style="list-style-type: none"> 1. Make <u>energy</u> for the cell to function 2. Make <u>proteins</u> to do all the work in the cell 3. Clean up <u>waste</u> (produced from making <u>energy</u>)
What parts of the cell do those jobs?	<ul style="list-style-type: none"> • There are different structures (<u>organelles</u>) that carry out the three main jobs. • Organelles are like the cell's <u>organs</u> • Everything in the cell is an organelle except for the <u>cytoplasm</u>




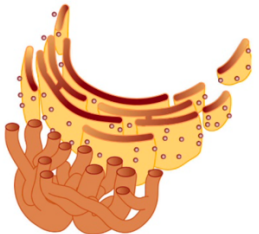


What are organelles and what do they do?

General	<u>Cytoplasm</u>	<ul style="list-style-type: none"> • <u>Jelly-like</u> substance • Maintains the <u>structure</u> of the cell • Contains organelles and other life-supporting materials 	
	<u>Cell membrane</u>	<ul style="list-style-type: none"> • <u>Boundary</u> of the cell • Controls movements <u>in</u> and <u>out</u> of the cell. • Flexible 	
	<u>Cell wall</u>	<ul style="list-style-type: none"> • One found in <u>plant</u> cells • Give the plant <u>structure</u>, so when they're full of water, the plant can stand up straight • <u>Semi-permeable</u> (has holes) so some materials can go through it 	
	<u>Nucleus</u>	<ul style="list-style-type: none"> • <u>Control center</u> of the cell, gives instructions • Contains genetic material called <u>DNA</u> • Largest organelle in the cell 	

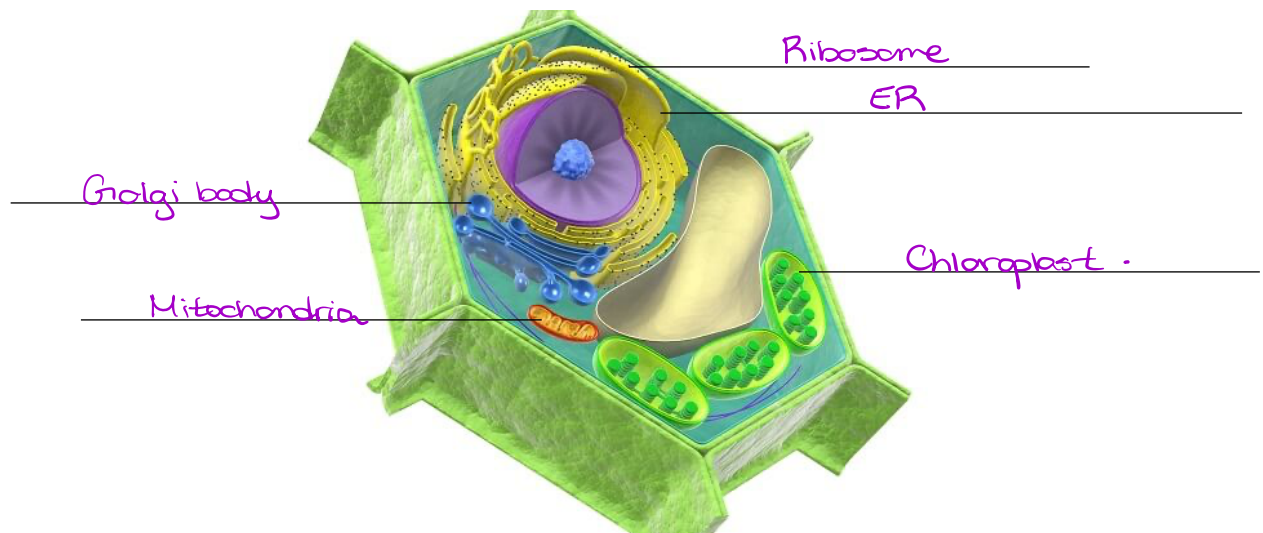
Practice: label the cytoplasm, cell membrane, and nucleus on the animal cell below:



What are organelles and what do they do?

Job #1: Produce energy	Mitochondria	<ul style="list-style-type: none"> Powerhouse of the cell. <u>Cellular respiration</u> occurs here to release energy for the cell to use in the form of <u>ATP</u> 	
	Chloroplasts	<ul style="list-style-type: none"> Only in <u>plant</u> cells This is where <u>photosynthesis</u> happens, to turn energy from the sun into glucose (a sugar) 	
Job #2: Make proteins	Ribosomes	<ul style="list-style-type: none"> Small particles that make <u>proteins</u> Found floating free in cytoplasm or attached to <u>endoplasmic reticulum</u> 	
	Endoplasmic Reticulum (<u>ER</u>)	<ul style="list-style-type: none"> <u>Highway</u> of the cell (from membrane around nucleus to vesicles headed to Golgi Body) <u>Transport proteins</u> and other compounds Can be smooth or rough (with ribosomes attached) 	
	Golgi body	<ul style="list-style-type: none"> <u>Stores, modifies, packages</u> proteins. Proteins are transported to and from the Golgi body by <u>vesicles</u> 	
	Vesicles	<ul style="list-style-type: none"> Vesicles function like a <u>mail system</u> Carry proteins, nutrients and water in and out of and around the inside of the cell. Vesicles are like the <u>vehicles</u> of the cell 	

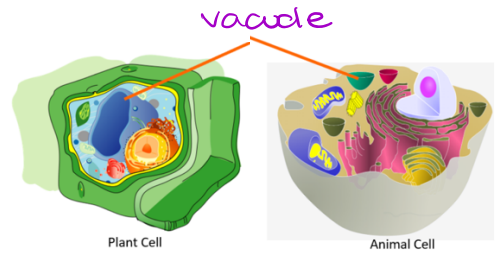
Practice: label the mitochondria, chloroplasts, ribosomes, endoplasmic reticulum, and Golgi body on the plant cell:



Job #3: Eliminate waste

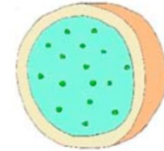
Vacuole

- Storage container for food, water, waste, etc.
- Larger in plant cells



Lysosomes

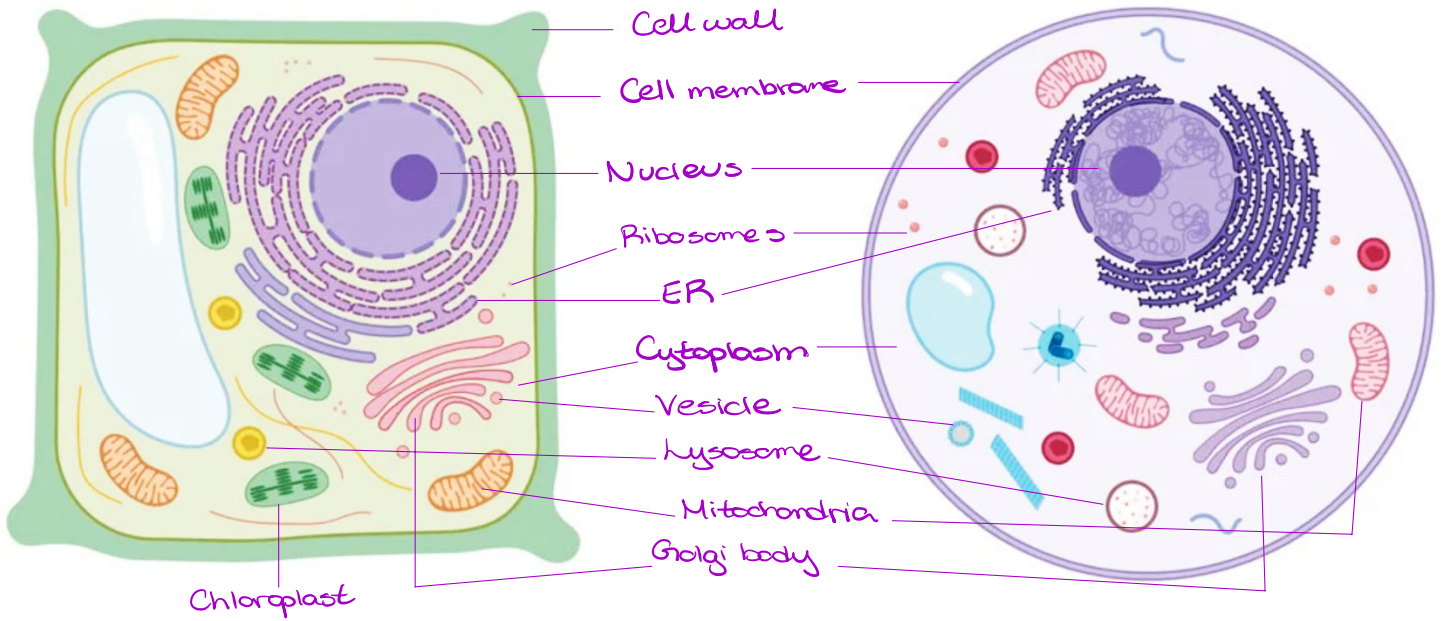
- Garbage disposal of the cell
- Contain digestive enzymes that break down waste



Quick Review: Organelles of the Cell

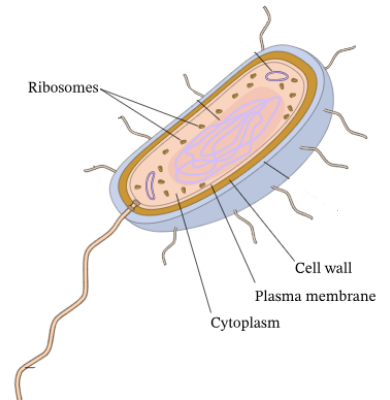
Use the word bank to label the cells below. If an organelle exists in both cells, draw a line to the organelle in each cell from the label.

Cell membrane	Lysosome	Endoplasmic reticulum	Golgi Body
Cell wall	Mitochondria	Ribosome	Cytoplasm
Nucleus	Chloroplast	Vesicle	Vacuole



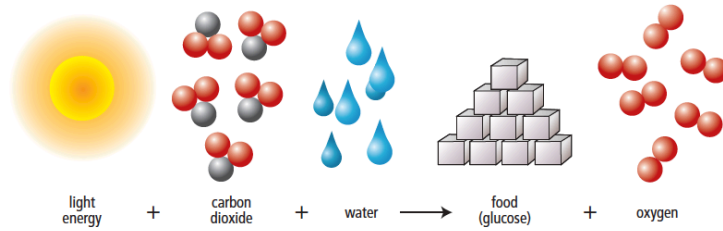
What are the two categories of cells?

- Prokaryotic
 - No nucleus - small + simple .
 - Example: bacteria cell
- Eukaryotic
 - Have a nucleus
 - Example: plant cells and animal cells

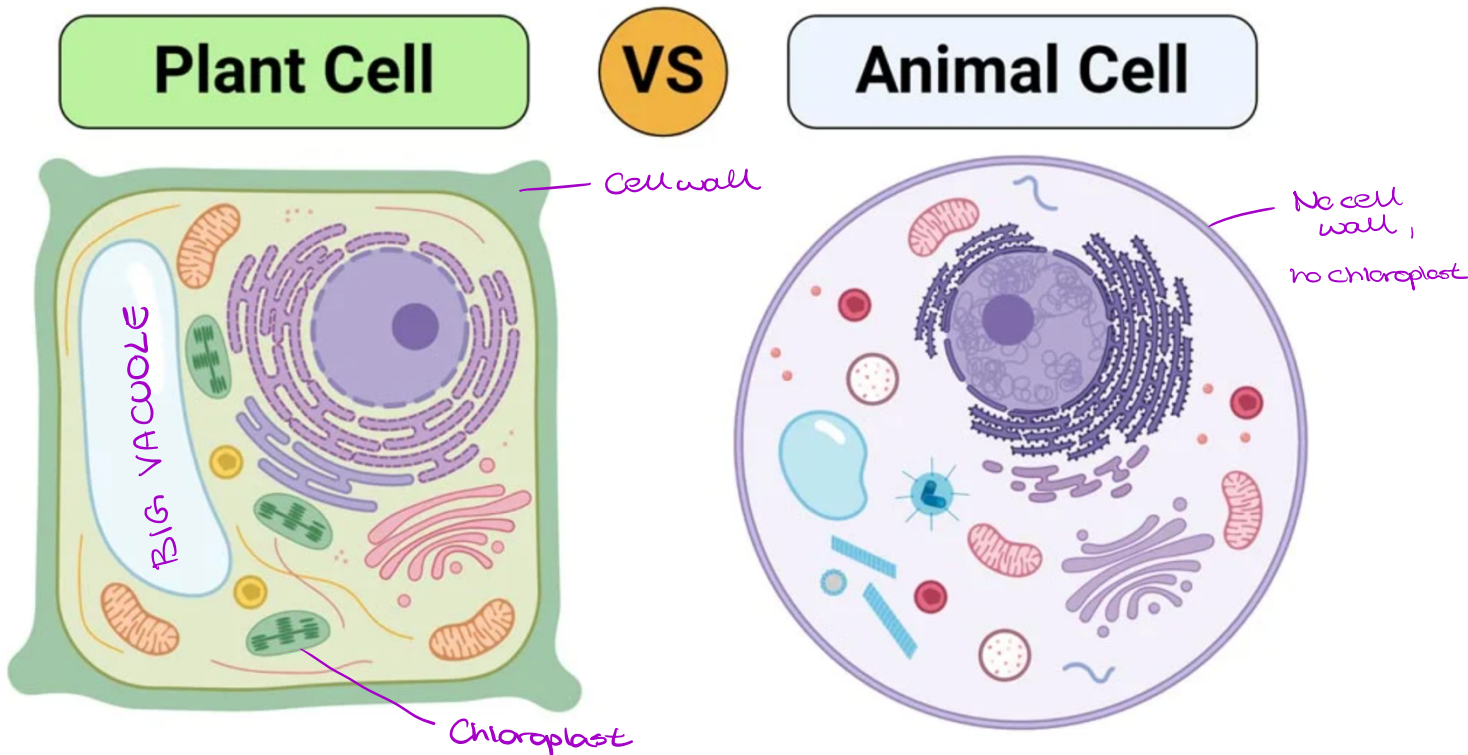


What are the differences between plant and animal cells?

1. Cell wall
 - Found in plant cells and bacterial cells (not in animal cells!)
2. Chloroplasts
 - Found only in plant cells
 - Contains the green pigment chlorophyll
 - Site of food production during photosynthesis



3. Vacuole
 - Bigger in plant cells than in animal cells.



Quick Review: Plant vs Animal Cells

1. Plant cells have 3 organelles not found in animal cells: the cell wall, a large central vacuole and chloroplasts. Complete the table below using those 3 organelles:

Organelle	Function
<u>Vacuole</u>	Fluid-filled organelle that stores water, enzymes and waste products. Size of this organelle can vary (change).
<u>Cell wall</u>	Supports and protects the cell.
<u>Chloroplast</u>	Convert light energy to chemical energy for use by the cell.