

# Unit 3 Notes: Ch. 7.1 Cell Discovery and Cell Theory

## Scientists who Contributed:

|              |                       |                    |                 |                |
|--------------|-----------------------|--------------------|-----------------|----------------|
| Robert Hooke | Anton Van Leeuwenhoek | Matthias Schleiden | Theodor Schwann | Rudolf Virchow |
|              |                       |                    |                 |                |

## Cell Theory:

- 1.
- 2.
- 3.

## Microscopes:

| Type                        | Components/how it works | Maximum Magnification | Disadvantages |
|-----------------------------|-------------------------|-----------------------|---------------|
| Compound Light              |                         |                       |               |
| Transmission Electron       |                         |                       |               |
| Scanning Electron           |                         |                       |               |
| Scanning Tunneling Electron |                         |                       |               |

## Basic Cell Types:

|                        | PROKARYOTE | EUKARYOTE |
|------------------------|------------|-----------|
| Nucleus                |            |           |
| Genetic Material (DNA) |            |           |
| Organelles             |            |           |
| Cell Membrane          |            |           |
| Cytoplasm              |            |           |
| Examples               |            |           |

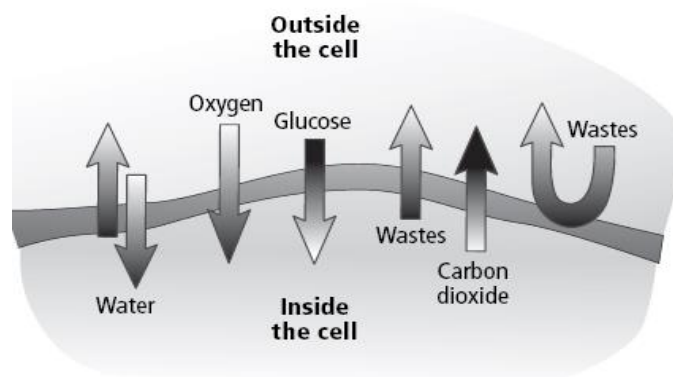
## Unit 3 Cells Notes: Ch. 7.2 Plasma Membrane

The plasma membrane is also called the \_\_\_\_\_.  
It is found in \_\_\_\_\_ and \_\_\_\_\_ cells.

Plasma Membrane Main Function (Job):

---

---



The plasma membrane allows \_\_\_\_\_ in such as

---

and \_\_\_\_\_ out such as \_\_\_\_\_.

---

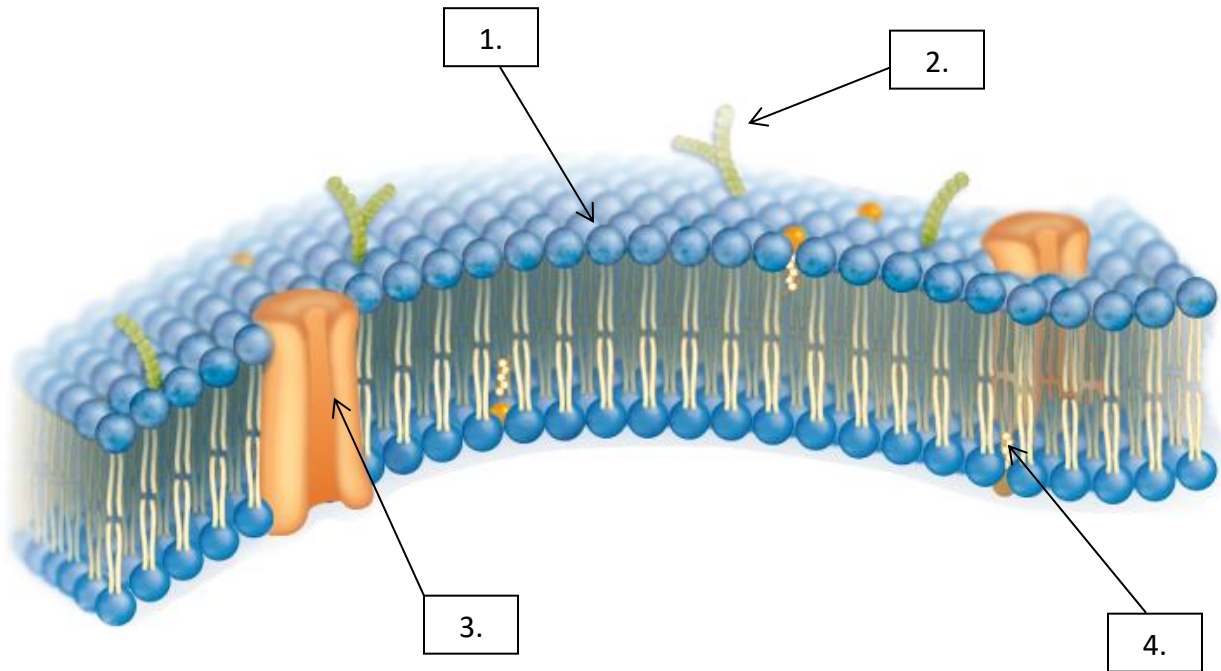
It is a \_\_\_\_\_ membrane that regulates the flow of nutrients in and wastes out based on the principle of \_\_\_\_\_.

The function of the plasma membrane is important to maintaining \_\_\_\_\_ for the cell and the living organism.

---

Because the plasma membrane has a distinct pattern/arrangement and its phospholipid molecules are free to move throughout the membrane, it is said to be a \_\_\_\_\_ model.

**Plasma Membrane Structure (Label the parts and describe the functions of these parts)**



**Forms the double layer of the plasma membrane and acts as a barrier between the cell and its environment = \_\_\_\_\_**

**Identify signals and is important in cell identification/communication = \_\_\_\_\_**

**Provides a pathway for large substances to enter and exit the cell, which otherwise could not pass through the plasma membrane = \_\_\_\_\_**

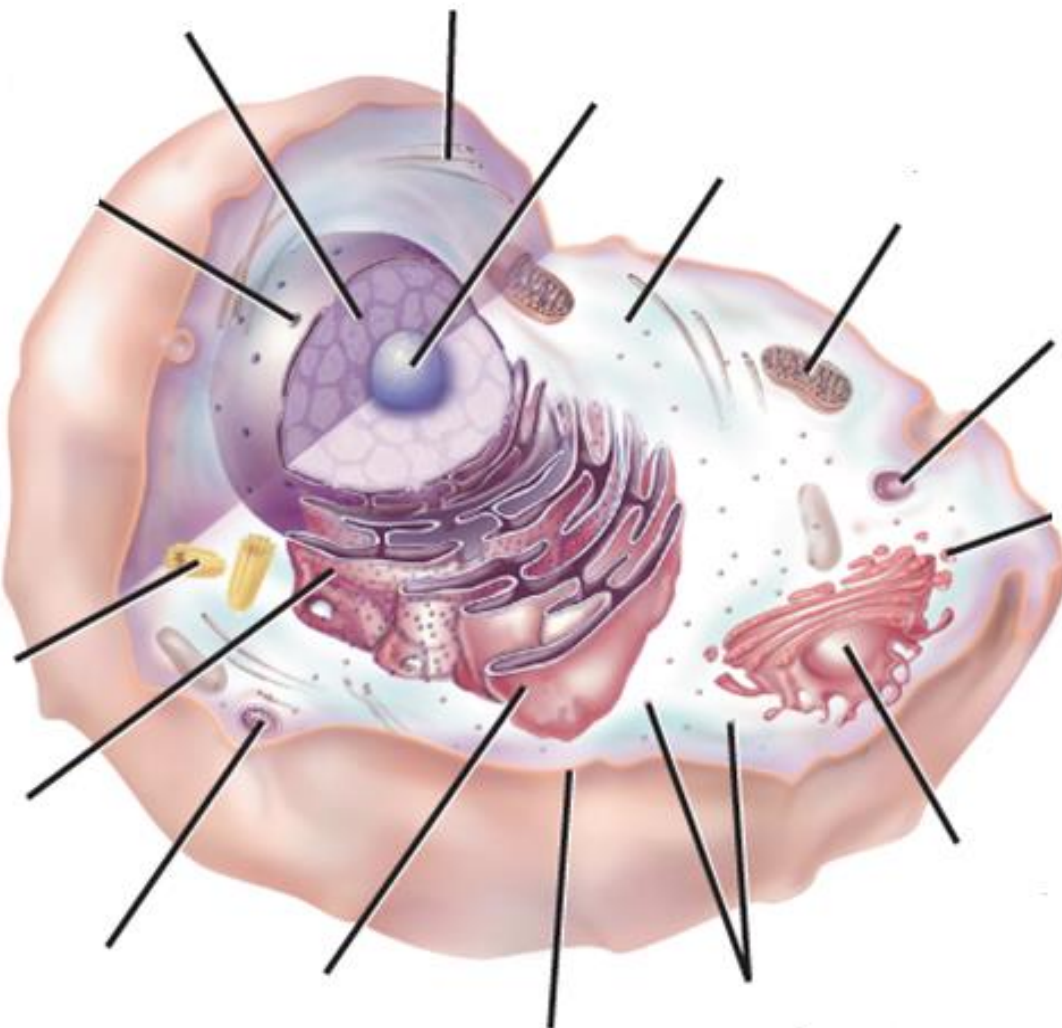
**Prevents fatty acid tails of phospholipids from sticking together, helping the plasma membrane to maintain its shape = \_\_\_\_\_**

# Notes: Cell Structures/Organelles & Cellular Transport

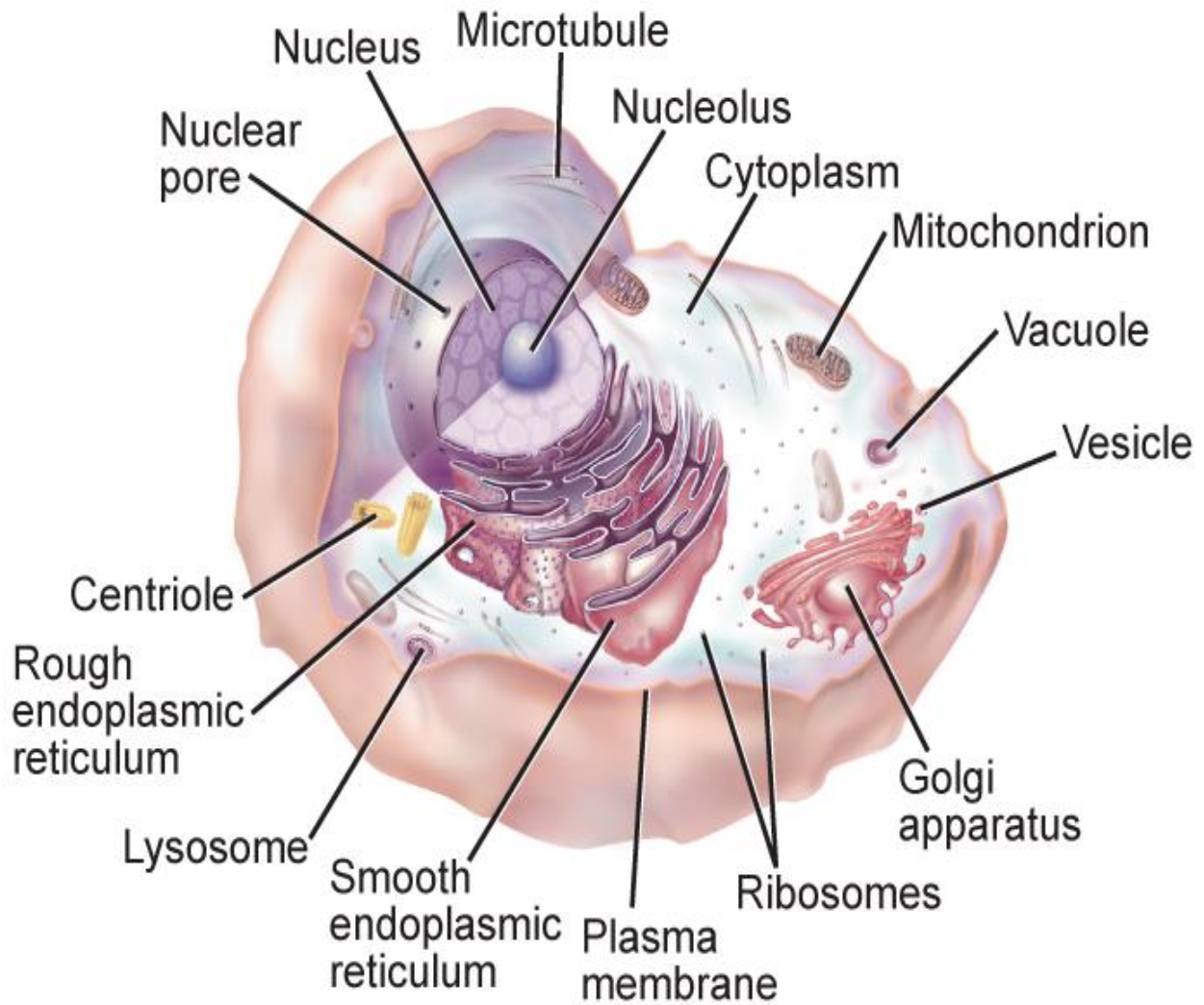
## Ch. 7.3 Animal and Plant Cell Structures/Organelles

Plant and animal cells are both examples of \_\_\_\_\_ cells.

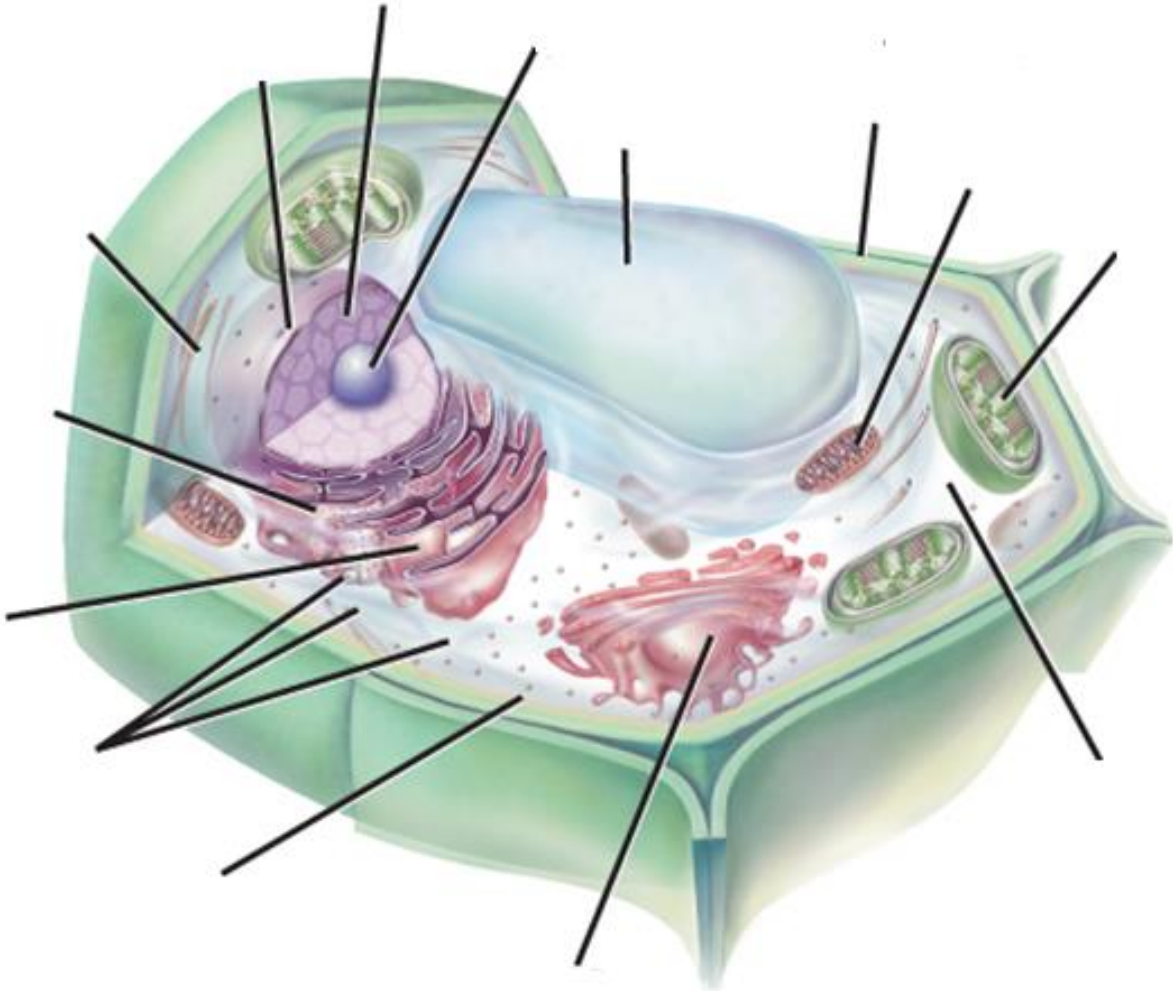
### Label the Animal Cell Structures/Organelles



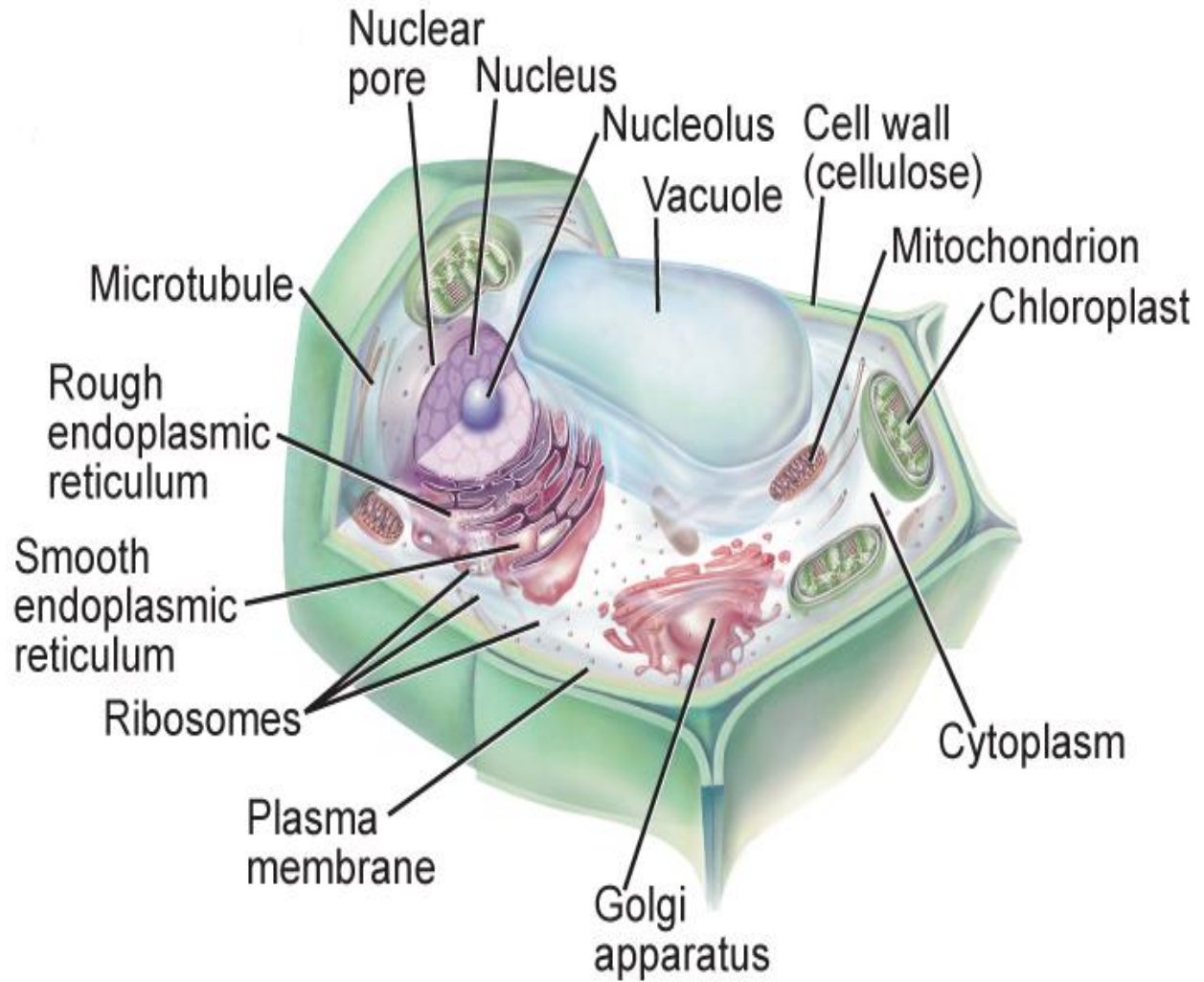
## Animal Cell Structures/Organelles Answer Key



# Label the Plant Cell Structures/Organelles



## Plant Cell Structures/Organelles Answer Key



Compare and contrast between prokaryotic and eukaryotic cells. Identify an example of each type of cell.

| Prokaryotic   | Both   | Eukaryotic  |
|---|--|---|
| <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> <p data-bbox="188 636 293 667">Example</p> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> <p data-bbox="1034 636 1140 667">Example</p> |

Compare and contrast plant and animal cells.

| Plant  | Both   | Animal   |
|--|--|--|
| <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> |



## Ch. 7.4 Cellular Transport

### Cellular transport –

---

---

#### Two Types of Cellular Transport:

1. \_\_\_\_\_ - movement of particles across plasma (cell) membrane \_\_\_\_\_.

#### Examples of Passive Transport (no energy required):

a. Diffusion - \_\_\_\_\_

---

---

Factors that affect the rate of diffusion:

- 
- 
- 

When diffusion of substances into the cell = diffusion of substances out of the cell (no net movement of particles), the system is at \_\_\_\_\_.

b. facilitated diffusion - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

Facilitators (helpers)

- 
- 

c. \_\_\_\_\_ - diffusion of water across a plasma (cell) membrane.

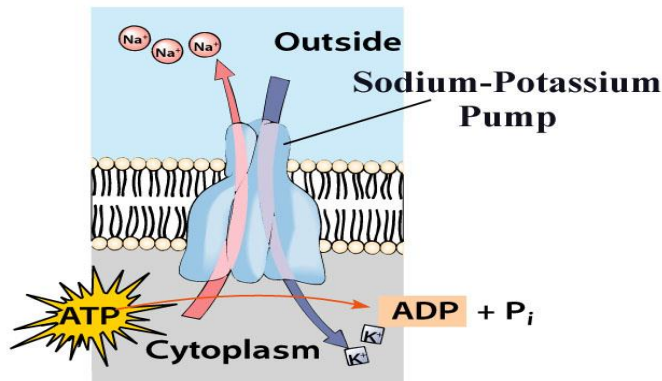
2. \_\_\_\_\_ - movement of particles across plasma (cell) membrane \_\_\_\_\_.

Examples of Active Transport (requires energy):

a. Sodium ( $\text{Na}^+$ )/Potassium ( $\text{K}^+$ ) ATPase Pump

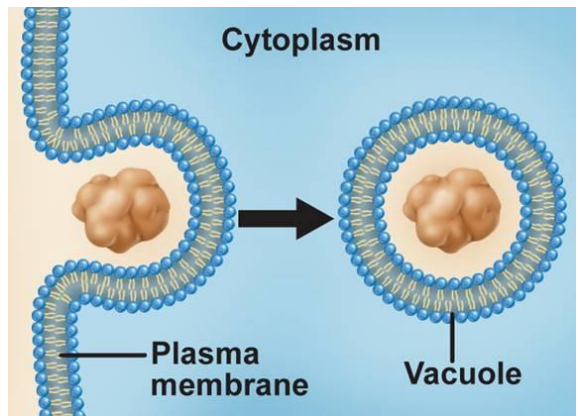
Found in the \_\_\_\_\_ of \_\_\_\_\_ cells.

Exchanges 2 \_\_\_\_\_ into the cell for 3 \_\_\_\_\_ out of cell.



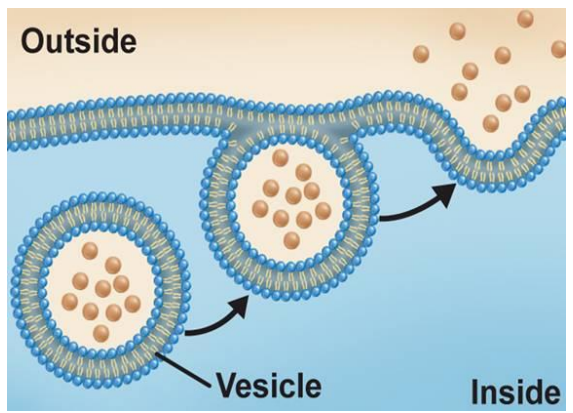
b. *Endocytosis* - \_\_\_\_\_

---



c. *Exocytosis* - \_\_\_\_\_

---

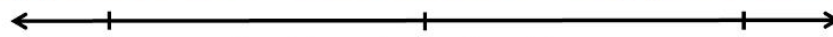


Compare and contrast passive and active transport? Provide an example of each type of transport in your response.









| Passive Transport  | Both   | Active Transport   |
|--|--|--|
| <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul> |
| <p>Example</p>   |  | <p>Example</p>   |

# How do cells react in 3 types of solutions?

## Hypotonic Isotonic Hypertonic

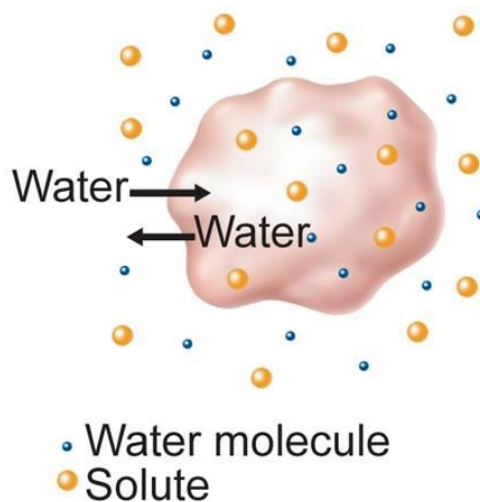


Graphic created by 5-a-side.com

|                               | Hypotonic  | Isotonic   | Hypertonic   |
|-------------------------------|--|--|--|
| <b>Carb content:</b>          | <b>1-3%</b>  | <b>6-8%</b>  | <b>10%+</b>  |
| <b>Purpose:</b>               | Quickly replace the fluids lost by sweating but low in carbohydrates   | Quickly replace the fluids lost by sweating and provide a boost of carbohydrates | To supplement carbohydrate intake  |
| <b>Used by:</b>               | Those who need hydration without such a hit of carbs: e.g. jockeys, gymnasts   | The most commonly drunk by athletes, footballers and other sports people         | Those who need very high levels of energy. Best drunk after exercise to top up on muscle glycogen stores |
| <b>Examples: (% of carbs)</b> |  2<br> 3.9<br> 6<br> 6.4<br> 9.1<br> 10.7<br> 15.9<br> 17.2 |  |  |

### 1. Isotonic Solution *Iso-* means \_\_\_\_\_

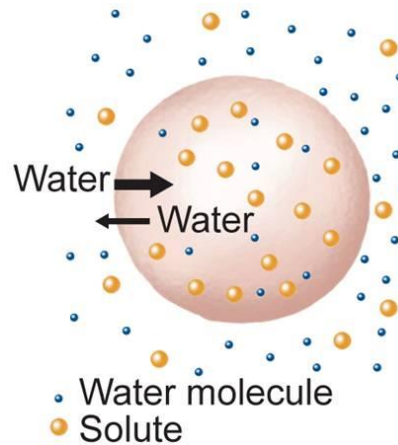
- solution in which water and other substances diffuse into and out of the cell at an \_\_\_\_\_ rate (equilibrium, no net movement of water).



RESULT: The cell size \_\_\_\_\_.

2. *Hypotonic* Solution      *Hypo- means* \_\_\_\_\_

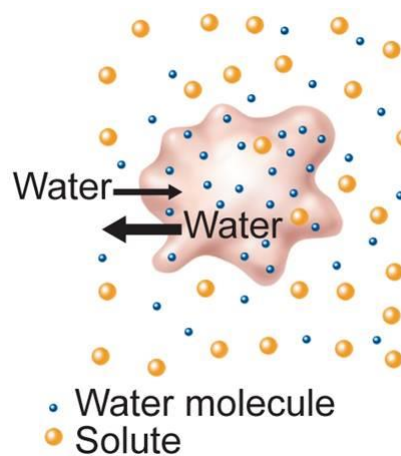
- solution where there is more water outside the cell than solute, water moves \_\_\_\_\_ the cell causing the cell to swell or burst.



RESULT: The cell size \_\_\_\_\_.

3. *Hypertonic* Solution      *Hyper- means* \_\_\_\_\_

- solution where there is less water outside the cell than solute, water moves \_\_\_\_\_ of the cell causing it to shrink.



RESULT: The cell size \_\_\_\_\_.