

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

## Scientists who contributed:

| Robert Hooke<br>1665  | Anton Van Leeuwenhoek<br>1683  | Matthias Schleiden<br>1838             | Theodor Schwann<br>1838                 | Rudolf Virchow<br>1855                           |
|---|--|--|---|--|
| discovered & named cells after looking at cells in cork from oak bark (Plant cells) | designed and used a microscope to view living organisms in Pond water = "animalcules" = Protists | Concluded all plants are made of cells | Concluded all animals are made of cells | Concluded all cells come from pre-existing cells |

## Cell Theory (3 parts):

- All living things are made of one or more cells.
- Cells are the basic unit of structure and organization (basic unit of life).
- Cells come from pre-existing cells (Pass on genetic material)

## Microscopes:

| Type                              | Components/how it works           | Maximum Magnification | Disadvantages  |
|-----------------------------------|-----------------------------------|-----------------------|--|
| Compound Light                    | lenses & light                    | 1000 X                | low magnification & resolution (blurry)  |
| Transmission Electron (TEM)       | Magnet beam & electrons → slice   | 500,000 X             | only nonliving specimen slices   |
| Scanning Electron (SEM)           | Magnet beam & electrons → surface | 500,000 X             | only nonliving specimen surfaces   |
| Scanning Tunneling Electron (STM) | Electron tunnel                   | 500,000 X or more     | requires skill and expensive<br>3D live specimens<br>- can see atoms/molecules |

## Basic Cell Types:

|                         | <small>small size</small><br><b>PROKARYOTE</b> <small>before nucleus</small> | <small>large size</small><br><b>EUKARYOTE</b> <small>True Nucleus</small> |
|-------------------------|--|---|
| Nucleus                 | No   | Yes   |
| Genetic Material (DNA)  | Yes, $\circ$ circular plasmids   | Yes, linear in nucleus &  |
| Organelles (cell parts) | No, only ribosomes   | Yes, membrane-bound   |
| Plasma (Cell) Membrane  | Yes  | Yes   |
| Cytoplasm               | Yes  | Yes   |
| Examples                | Bacteria   | Protists, Fungi, Plants, Animals  |

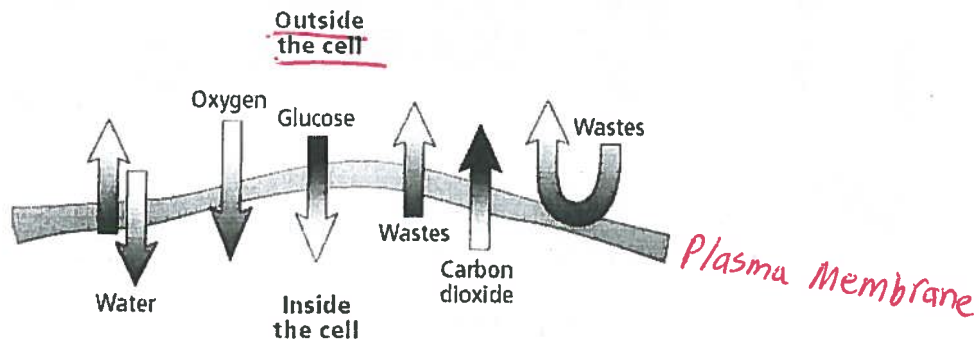


## Unit 3 Cells Notes: Ch. 7.2 Plasma Membrane

The plasma membrane is also called the Cell Membrane.  
It is found in Prokaryotic and Eukaryotic cells.

Plasma Membrane Main Function (Job): "Bouncer @ a club" or Anti-virus software

To regulate or control which materials enter or exit the cell (boundary layer between cell and its environment)



The plasma membrane allows Nutrients in such as

glucose, oxygen, and water

and Wastes out such as Carbon dioxide, lactic acid, Sodium chloride, Phosphates, sulfates, & Nitrogen-containing compounds.

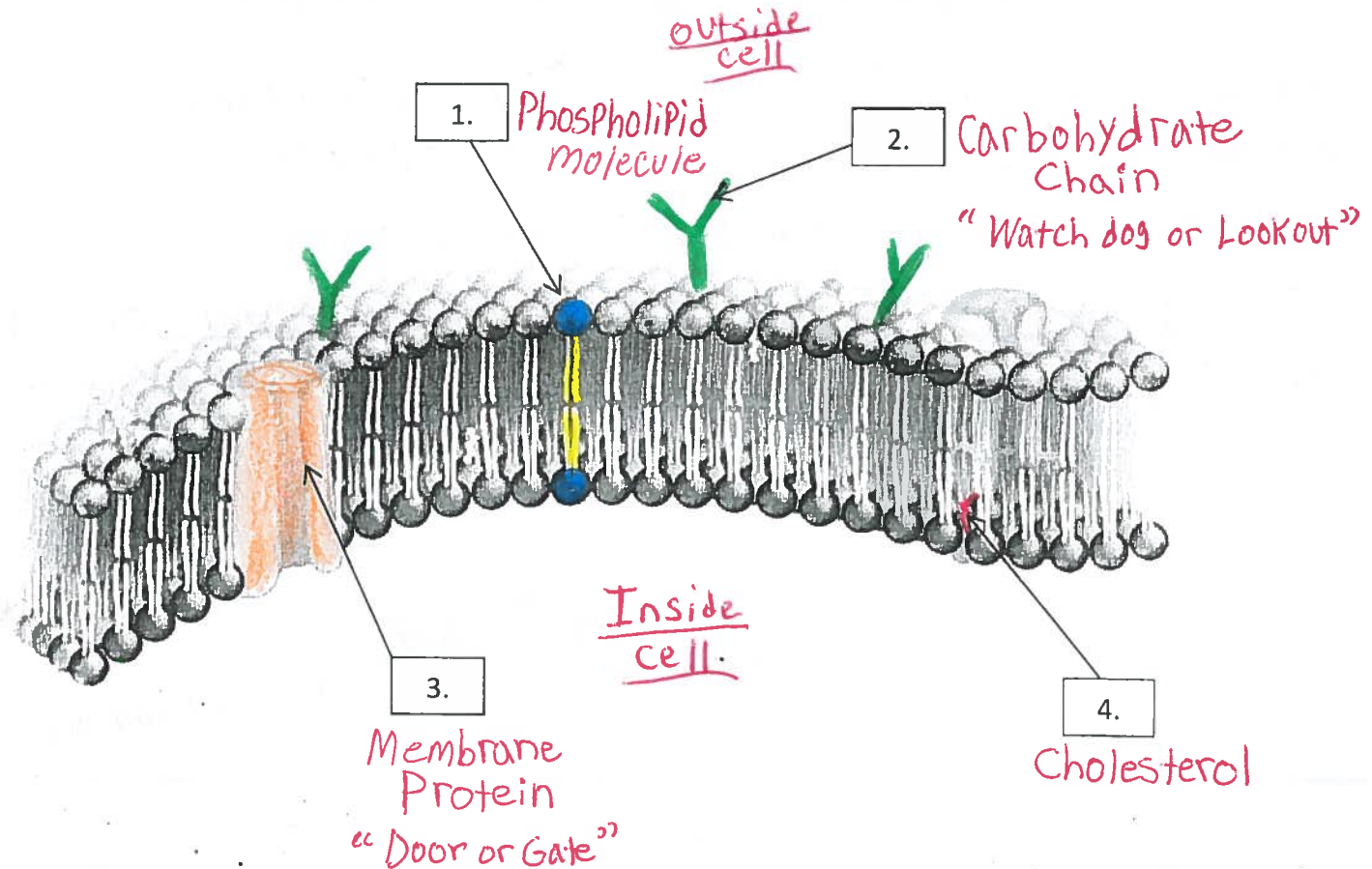
It is a Semi-Permeable membrane that regulates the flow of nutrients in and wastes out based on the principle of molecular/compound size.

The function of the plasma membrane is important to maintaining

homeostasis 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 fluid - mosaic 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 = Phospholipid molecule

Identify signals and is important in cell identification/communication = Carbohydrate chain

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

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