**The Cell Membrane**

The cell membrane helps to balance the internal condition of the cell-maintain Homeostasis, while the cell exists in an aqueous medium.

1938-University of Toronto-Made “first” usable electron microscope-Could finally see that the membrane was a BILAYER of PHOSPHOLIPID molecules.

 

Functions:

* Protective barrier
* Controls what goes IN & OUT of the cell (selectively permeable) (proteins)
* Allows for cell recognition (carbohydrate chains)
* Signal reception and transduction (proteins)
* Provides anchoring sites for cytoskeleton (proteins)
* Provides a binding site for enzymes

Recall: phospholipids have a polar head and non-polar tail region.

Cell membrane is a PHOSPHOLIPID BILAYER.

 

Small molecules and larger hydrophobic molecules pass through the membrane easily (e.g. O2, CO2, H2O).

Ions, hydrophilic molecules and large molecules such as proteins do not. Materials that are soluble in lipids can pass through the cell membrane easily.

 Cell membrane also called: **FLUID MOSAIC MODEL (FMM)**

FLUID: Individual phospholipids and proteins can move side-to-side within the layer, like it’s a liquid. If there is a puncture to the membrane, the phospholipids will quickly rearrange to seal the area.

 What factors fluidity?

* Temperature: Inc Temp-bilayer becomes too fluid to act as a barrier

 Dec Temp-bilayer changes to a gel-like state

* Presence of double bonds: increased double bonds, many “kinks”-less tightly packed🡪increases fluidity
* Length of FA tail: long FA increases intermolecular attractions🡪 reducing fluidity
* Presence of cholesterol: at room temp and above cholesterol inc intermolecular forces, holding it closer together🡪 decreasing fluidity. At low temps, cholesterol helps to keep the bilayer from changing into a solid gel-like state

MOSAIC: The pattern produced by the scattered protein molecules when the membrane is viewed from above.