PEER Life Science Cells Are Us Gateway to the Cell Notes Outline

**Introduction**

* Cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ keep bulky materials inside the cell and allow \_\_\_\_\_\_\_\_\_\_\_\_ substances to pass from the outside to the inside of the cell and other substances to pass in the opposite direction.

**What We Know**

* The cell membrane, or \_\_\_\_\_\_\_\_\_\_ membrane, separates the world outside of the cell, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ space, from the world inside the cell, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ space.
* Both/neither plant and animal cells have a cell membrane.
* Functions of the cell membrane include:
  + Holding the cell \_\_\_\_\_\_\_\_\_\_\_\_\_, keeping its parts in place
  + Mediating cellular processes by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ materials that enter and exit the cell by being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Carrying \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that allow cells to recognize each other and transmit signals.
* \_\_\_\_\_\_\_\_\_\_\_\_\_ is another word for “fat.”
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are what make up the cell membrane.
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ “head” interacts with water.
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ “tails” do not interact with water.
* In the presence of water, lipids line up parallel to each other so that the heads are touching the water and the tails are in between. This makes up the phospholipid \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Hypothesize what would happen to a cell that is put in a solution of water and salt where there is a higher concentration of salt outside the cell than inside.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Name two things that proteins embedded in cell membranes do.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The electric field generated by negatively charged proteins being trapped inside cells influences the movement of electrically charged \_\_\_\_\_\_\_\_\_ across the membrane. The negative proteins inside the cell attract positive/negative ions.
* This separation of electrical charges creates a form of stored \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Changing the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a membrane causes movement of ions because:
  + Charged atoms move from areas of high/low concentration to areas of high/low concentration. This falls under the laws of diffusion.
  + Charged atoms are attracted to regions of opposite/similar charge.

**How We Know**

* Scientists were able to conclude the existence of membranes because:
  + Something was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ how water and other chemicals were getting into and out of cells.
  + When the surface of a cell was punctured, materials inside the cell \_\_\_\_\_\_\_\_\_\_\_\_ out.
* One of the clues to knowing that membranes are made up of lipids is that fatty substances \_\_\_\_\_\_\_\_\_\_\_\_ entered cells while other kinds of chemicals passed \_\_\_\_\_\_\_\_\_\_ or not at all.
* The bilayer nature of membranes discussed earlier was discovered because the total surface area of a lipid was exactly \_\_\_\_\_\_\_\_\_\_\_\_\_ the surface area needed to completely surround the cell.
* Membrane proteins are classified into two groups:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proteins are anchored on the side of the membrane and do not go completely through the membrane.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proteins pass completely through the membrane with parts of the protein hanging out of either side.

**Common Hazards**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is attracted to and concentrates in cell membranes.
* Alcohol can change the function of \_\_\_\_\_\_\_\_\_\_\_\_ cells and thus affect behavior. This change in behavior is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Alcohol orients itself in the cell membrane so that the carbon portion of the molecule aligns with the phosphate heads/ carbon tails of lipids and the OH group aligns with the phosphate heads/carbon tails.
  + The resulting change in the membrane changes the shape and function of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ embedded in the membrane.