**Cell Membranes Bubble Investigation**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_ Seat: \_\_\_\_\_\_\_\_\_\_

Pre-Investigation Questions:

1. The plasma membrane is said to be semi-permeable. Explain what that means.
2. What causes the cell membrane to be semi permeable?

**Cell Concept 1 – Membranes are Fluid and Flexible**

*Cell membranes are not static, they bend and flex in order to adapt to changing conditions.*

**Like the bubble film, membranes can flex without breaking**

Questions:

1. What are the monomer and polymer names for lipids?

2. What is the name of this fluid model?

3. Why can the lipids move around so easily? (hint: it has to do with certain interactions we’ve learned about and lack of

a certain type of bond found connecting the monomers of all the other macromolecules together)

4. a. How would a colder temperature affect fluidity? A hotter temperature?

b. Which type of fatty acids tails would be best to stabilize a membrane in the cold? The heat?

**Cell Concept 2 – Membranes Can Self-Repair**

*Like the bubble membrane, cell membranes can spontaneously repair small tears in the lipid bilayer.*

Questions:

1. Based on what you have learned, how do you think the membrane self repairs?

2. Sketch a picture of a single lipid. Identify the hydrophilic end and the hydrophobic end.

3. Why was your finger able to pass through the bubble without popping it? (Make sure to get sciency and use

as much of the vocab we have learned)

**Cell Concept 3 – Eukaryotic Cells Feature Membrane Bound Organelles**

*The membranes surrounding the* ***membrane bound organelles*** *in Eukaryotic cells feature a phospholipid bilayer like the one found in the outer cell membrane.*

Notice how the smaller bubble creates a compartment of air that is contained within but separated from the air of the larger bubble.

**In a similar fashion, Eukaryotic cells feature membrane bound organelles that create specialized compartments within a single cell. The primary structure of the outer cell membrane as well as the membranes that enclose organelles is a double layer of phospholipids known as a phospholipid bilayer.**

Questions:

1. a. Which macromolecules are used to make membranes? b. Sketch and label a simplified membrane picture below.

\*2. Which organelles are membrane bound organelles. (use phones to do research if you need to)

\*3. Which organelles have double membranes…a membrane within a membrane? (use phones to do research)

**Cell Concept 4 – Membrane Proteins Perform Special Functions**

*Some specialized proteins embed within the lipid bilayer give the membrane unique properties.*

**Membrane proteins can also drift across the lipid bilayer in protein rafts.**

Questions:

1. Why do some molecules need to pass through a protein instead of squeezing between the lipids?

\*2. If molecules move from an area of high concentration to low concentration through a protein, its

called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\*3. If it takes ATP energy to move molecules from low to high concentration using a protein it’s called

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\*4. How do you think large molecules, that are polar and too large to fit through a protein, get in and out

of the cell?