

Name _____ Period _____ Date: _____

Ms. Randall Anatomy and Physiology
Lab activity: Cell Membrane Coloring Lab

Background: A cell is enclosed, or defined by a membrane. Cell membranes shape and protect the cell and are responsible for maintaining homeostasis within the cell. The membrane is **selectively permeable**, it controls or regulates what can pass into and out of a cell. All communication between the cell and the rest of the body takes place on the cell membrane. Receptors sticking out of the cell membrane bind (attach) with chemical messages sent from other cells allowing cells to communicate or “talk” to each other.

The cell membrane is made of a **phospholipid bilayer** composed mainly of proteins and lipids. The phospholipids have a hydrophilic (water attracting) end and two hydrophobic (water repelling) ends. Small molecules and nonpolar molecules can move most easily across the lipid bilayer and enter the cell. Diffusion is the process that causes these molecules to move in or out of the cell.

A wide variety of **proteins** are located in the cell membrane. These proteins float in the fluid lipid layer of the cell membrane creating a fluid mosaic model. Proteins in the cell membrane assist the cell membranes in many different ways;

- **Integral proteins** are any proteins that extend through one or both layers of the phospholipid bilayer.
- **Peripheral proteins** are attached to lipid molecules which anchor them to the membrane. They help to maintain the flexibility of the membrane.
- **Receptor proteins** are involved in cell to cell communication; they transmit signals across a membrane into and out of the cell.
- **Transporter and channel proteins** form pores through the membrane that can be opened and closed to allow large molecules to pass through in active transport.

Objective: To relate the function of the cell membrane to its structure.

Pre-lab Questions:

1. List 4 functions of the cell/plasma membrane:

- a. _____
- b. _____
- c. _____
- d. _____

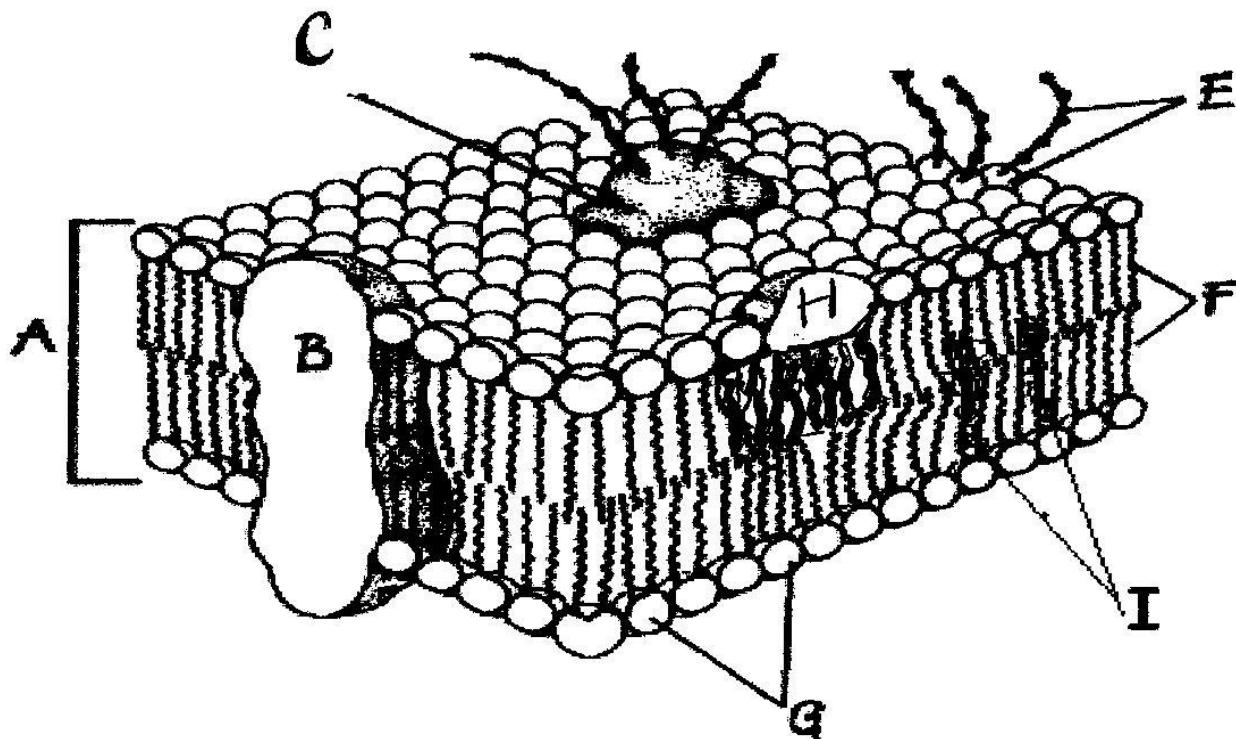
2. How do cells communicate with each other?

3. Define selectively permeable.

Procedure:

Correctly **color code and label** the name for each part of the cell membrane.

Letter	Name/Color	Letter	Name/Color
A	Phospholipid bilayer (no color)	F	Hydrophobic tails (orange)
B	Integral protein (pink)	G	Hydrophilic heads (yellow)
C	transporter Protein (green)	H	Peripheral protein (red)
E	Receptor proteins (purple)	I	Cholesterol (blue)



Match the cell membrane structure or its function with the correct letter from the cell membrane diagram.

Letter	Structure/Function	Letter	Structure/Function
_____	Attracts water	_____	Repels water
_____	Helps maintain flexibility of membrane	_____	Make up the bilayer
_____	Involved in cell-to-cell recognition	_____	Help transport certain materials across the cell membrane