Cell Membrane Worksheet

Composition of the Cell Membrane & Functions – use the words listed below to fill in the blanks.

Tails, Head, Bilayer, Plasma, Chains, Protein channels, Cholesterol

The cell membrane is also called the ______________ membrane and is made up of a phospholipid __________. The phospholipids have a hydrophilic (water-loving) __________ and two hydrophobic (water-hating) ____________. Phospholipids allow water and other molecules to pass through into or out of the cell.

**SKETCH AND LABEL** a phospholipid coloring the heads red and the tails blue.

PHOSPHOLIPID

Large molecules pass through the cell membrane using __________________ because they are too big to go through the phospholipid bilayer. Some of the proteins have carbohydrate __________ attached to help cells to recognize each other and certain molecules. ____________ are in the phospholipid bilayer to help prevent the tails of the phospholipids from sticking together and to keep the membrane fluid/flexible.
Correctly color code and identify the name for each part of the cell membrane.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Name/Color</th>
<th>Letter</th>
<th>Name/Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>______</td>
<td>Phospholipid bilayer</td>
<td>______</td>
<td>Protein Channels— 2 of them (red)</td>
</tr>
<tr>
<td>______</td>
<td>Fatty acid tails (orange)</td>
<td>______</td>
<td>Cholesterol (green)</td>
</tr>
<tr>
<td>______</td>
<td>Phosphate heads (yellow)</td>
<td>______</td>
<td>Carbohydrate Chains (purple)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Letter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>______</td>
<td>Attracts water (water-loving)</td>
<td>______</td>
<td>Repels water (water-hating)</td>
</tr>
<tr>
<td>______</td>
<td>Helps maintain flexibility of membrane (keeps it fluid)</td>
<td>______</td>
<td>Make up the bilayer</td>
</tr>
<tr>
<td>______</td>
<td>Involved in cell-to-cell recognition (identification)</td>
<td>______</td>
<td>Help transport large materials across the cell membrane</td>
</tr>
</tbody>
</table>
**Osmosis and Tonicity**

Define osmosis. _____________________________________

In which direction does water move across membranes, up or down the concentration gradient? ________________

Define these 3 terms:
a. isotonic- _______________________________________
b. hypertonic _______________________________________
c. hypotonic _______________________________________

*Use arrows* to show the direction of water movement into or out of each cell. *Color and label* the cell in an isotonic environment light blue, the hypotonic environment yellow, and the hypertonic environment light green.

Match the description or picture with the osmotic condition:

**A. Isotonic**

_____ solution with a lower solute concentration
_____ solution in which the solute concentration is the same

**B. Hypertonic**

_____ condition plant cells require
_____ condition that animal cells require

**C. Hypotonic**

_____ red blood cell bursts (cytolysis)
_____ plant cell loses turgor pressure (Plasmolysis)
_____ solution with a higher solute concentration
_____ plant cell with good turgor pressure
_____ solution with a high water concentration

*Label the tonicity for each solution (isotonic, hypotonic, or hypertonic):*
Transport Requiring Energy
What type of transport is represented by the following picture? ________________
What energy is being used? ________________
In which direction (concentration gradient), is the movement occurring? ________________

Color the internal environment of the cell yellow. Color and Label the transport proteins red and the substance being moved blue.

One type of active transport is called the ________________ pump which helps muscle cells contract. This pump uses ________________ to move ions ________________ the concentration gradient. The protein that is used to pump the ions through is called a ________________ protein and it
changes its _______ to move the ions across the cell membrane. **Label and color** the carrier proteins red and the ions green.