

Name _____ Period _____ Date _____

Building Models of the Cell Membrane Structure

Adapted from von Bargen

1.3.NOS1: Using models as representations of the real world-there are alternative models of membrane structures

Section	Points Possible	Points Received
Format / Communication	2	
First sketch and description of general membrane structure model	3	
Second sketch and description of Davson and Danielli membrane structure model	3	
Third sketch and labeled model of membrane structure	3	
Analysis Questions	3	
Total Points Earned	14	

Background:

Modeling is a scientific activity; the aim of which is to make a particular part or feature of the world easier to understand, define, quantify, visualize, or simulate by referencing it to existing and usually commonly accepted knowledge.

Procedures:

All sketches are to be made in your lab notebook. Use a sharp pencil and a straight edge for labeling lines.

Note: sketches do not need to be as precise as drawings in IB.

1. **Sketch and describe** how the Oreo can be a model of general cell membrane. Include the following words in your description: *cookie, filling, hydrophilic, hydrophobic, head, tail, phosphate, glycerol, fatty acid, bilayer*
2. Cover the top and bottom cookie part of the Oreo with a layer of fruit roll up.
3. Make a second **sketch and describe** how the Oreo can be a model of the **Davson and Danielli** model of the cell membrane.
4. Remove the fruit roll up and then use a jellybean to add an integral protein to your Oreo membrane model.
5. Draw a **third sketch** of your model and label: *hydrophilic, hydrophobic, phospholipid heads, phospholipid tails, integral protein*
6. Use icing as glue to add **TWO** peripheral proteins (jellybeans) to your membrane model.
7. **Add and label** the peripheral proteins on to your third drawing.
8. Use icing as glue to add a Nerd candy to **ONE** of the peripheral proteins.
9. **Add and label** this structure on your third drawing.
10. **Eat you model!**

Analysis Questions on the Back

Analysis Questions

1. State the name of the structure the Nerd candy is modeling.
2. State where membrane bound proteins made in the cell.
3. Outline how membrane proteins get to the cell membrane from where they are made.
4. State where the sugars (“glyco”) are added to the proteins in the cell.
5. State the names of the people who suggested the third model of cell membrane structure we created.
6. Define the term scientific model.
7. Scientific models have limitations. Evaluate our model and state **5** ways our model differs from that of an actual cell membrane.