Name _____

PLASMA MEMBRANE ON-LINE TUTORIAL

Directions—Follow both the directions in this guide as well as the on-line tutorial. Answer any questions on this sheet in the spaces provided and answer any questions from the tutorial on-line.

Click the arrow at the top right to start the demo

Carefully read the section entitiled "Membranes are Composed of Lipids and Proteins"

1. What are the primary molecules that make up plasma membranes and what is their relationship to membrane structure?
2. What is meant by "mosaic" in the fluid mosaic model?

Click on the diagram to view what is meant by membrane fluidity.

Click the arrow at the top right to move to page two, and answer the quiz question by clicking in the center of the box to view the multiple choice options.

Read the information regarding cell membranes internally and externally, click the arrow a the top right to move to page three.

1. Describe the five general functions of cell membranes (internal and external membranes)

Click the arrow at the top of the page to move to page 4

1. What are the three classes of membrane lipids?

2. What is meant by amphipathic?

Click on the arrow at the top of the page to move to page 5

1. Compare and contrast the three different types of phospholipids, be sure to click on the pictures of each to view the structural molecular diagrams.

Click on the arrow at the top of the page to move to page 6
Read the material on page 6 and take the quiz that will pop up when you click the arrow at the top to advance to page 7

Page 7 has four sections or pages, read the material on the first of these and click on the structures to view the animation. Use the arrow at the bottom left of the screen to view the remaining three sections of page 7. Be sure to click on a structure on the fourth section of page 7 to view the animation.

1. Completely explain why membrane lipids form a double layer (emphasis the forces and interactions involved).

Click on the arrow at the top of the page to move to page 8
Address the three questions regarding membrane fluidity on page 8
Can a membrane lipid rotate?
Can a membrane lipid flip-flop?
Can a membrane lipid move laterally?

What is determining this aspect of membrane?

Click on the arrow at the top of the page to move to page 9
Adjust the sliders at the top of the page to see how temperature, lipid tail length and degree of unsaturation affects the fluidity of the membrane.

Click on the arrow at the bottom of the page to view the second section of page 9
Explain why/how temperature affects membrane fluidity

Click on the arrow at the bottom of the page to move to section 3 of page 9
Explain why/how tail length affects membrane fluidity

Click on the arrow at the bottom of the page to move to section 4 of page 9
Explain why degree of unsaturation affects membrane fluidity

Click on the arrow at the bottom of the page to move to section 5 of page 9
Explain how cholesterol molecules function to maintain membrane fluidity.

Click on the arrows at the top of the page to move to page 10
Highlight the asymmetry of the membrane by identifying differences in the outer and inner leaflet

Click the arrow at the top of the page to move to page 11. Before moving to page 11 carefully read the text in the pop-up.
Why would large polar molecules have difficulty moving across the membrane?

Distinguish between what is meant by integral proteins and peripheral proteins.

Describe what is meant by transmembrane domains—how are integral proteins "attached" across the membrane?

Describe the significance of proteins being asymmetric across membranes.