Name _____

AP Biology
Chapter 7 - Membrane Structure and Function

Guided Reading Assignment Campbell's 10th Edition

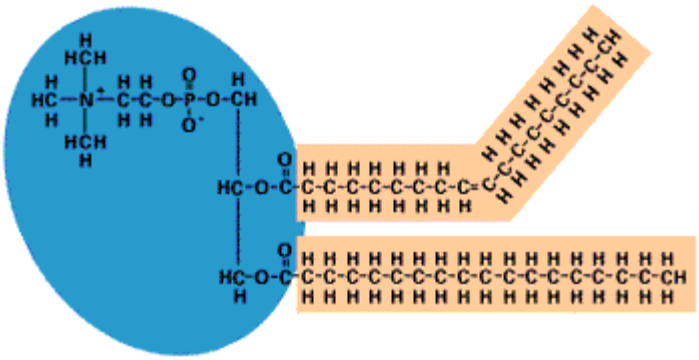
Essential Knowledge:
2.B.1 Cell membranes are selectively permeable due to their structure
2.B.2 Growth and dynamic homeostasis are maintained by the constant movement of molecules across membranes

LO 2.8 The student is able to justify the selection of data regarding the types of molecules that an animal, plant or bacterium will take up as necessary building blocks and excrete as waste products.
LO 2.9 The student is able to represent graphically or model quantitatively the exchange of molecules between an organism and its environment, and the subsequent use of these molecules to build new molecules that facilitate dynamic homeostasis, growth and reproduction.
LO 2.10 The student is able to use representations and models to pose scientific questions about the properties of cell membranes and selective permeability based on molecular structure.
LO 2.11 The student is able to construct models that connect the movement of molecules across membranes with membrane structure and function.
LO 2.12 The student is able to use representations and models to analyze situations or solve problems qualitatively and quantitatively to investigate whether dynamic homeostasis is maintained by the active movement of molecules across membranes.

1. What does selective permeability mean and why is that important to cells?

2. What is an amphipathic molecule? Label each portion of the diagram

A Phospholipid



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3. What are three factors that affect membrane fluidity?

4. What is one evolutionary advantage of being able to change the composition of membranes to change the fluidity?

5. List the 5 broad functions of membrane proteins.

6. How do glycolipids and glycoproteins help in cell to cell recognition?

7. Why is membrane sidedness an important concept in cell biology?

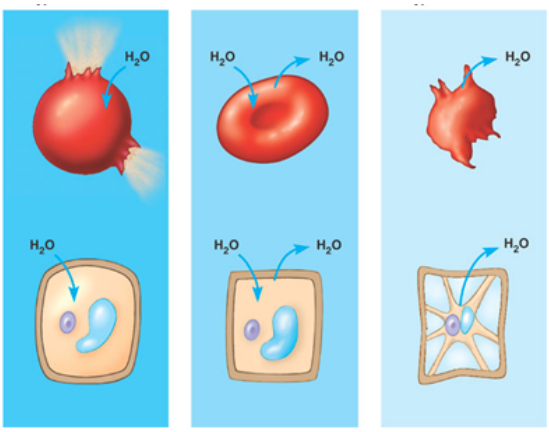
8. How do aquaporins benefit cells?

9. What is diffusion and how does a concentration gradient relate to passive transport?

10. Why is free water concentration the “driving” force in osmosis?

11. Why is water balance different for cells that have walls as compared to cells without walls?

12. Label the diagram below:



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13. What is the relationship between ion channels, gated channels and facilitated diffusion – write 1 -2 sentences using those terms correctly.

14. How is ATP specifically used in active transport?

15. Define and contrast the following terms: membrane potential, electrochemical gradient, electrogenic pump and proton pump.

16. What is cotransport and why is an advantage in living systems?

17. What is a ligand?

18. Contrast the following terms: phagocytosis, pinocytosis and receptor-mediated endocytosis.