

Module 05: Membranes — Study Questions

1. Describe the fluid mosaic model of cell membrane structure. Why is it called "fluid" and "mosaic"?
2. What are phospholipids, and how does their structure make them ideal for forming cell membranes?
3. Why do phospholipids spontaneously form a bilayer when placed in water?
4. What role does cholesterol play in the cell membrane?
5. What is the difference between integral proteins and peripheral proteins?
6. Name three functions that membrane proteins can perform.
7. How do glycoproteins on the cell surface help with cell recognition?
8. Why is the plasma membrane described as "selectively permeable"?
9. What is passive transport, and why doesn't it require cellular energy?
10. Define diffusion and explain what determines which direction molecules will move.
11. What is the difference between simple diffusion and facilitated diffusion?
12. What is osmosis, and how is it different from other types of diffusion?
13. Define isotonic, hypertonic, and hypotonic solutions.
14. What happens to a red blood cell placed in distilled water? Why?
15. What happens to a plant cell placed in a hypertonic saltwater solution?
16. What is the main difference between passive transport and active transport?
17. Describe how the sodium-potassium pump works and why it is important.
18. What is the difference between endocytosis and exocytosis?

19. Compare phagocytosis, pinocytosis, and receptor-mediated endocytosis.
20. Give an example of a cell that uses phagocytosis as part of its normal function.