

ESSENTIAL BIOLOGY 02: CELLS

24. Draw and label a simplified (2D) diagram of the plasma membrane.
Include: phospholipid bilayer, integral and peripheral proteins, glycoproteins and cholesterol.
25. What are the functions of these plasma membrane components?
- a. glycoproteins
 - b. cholesterol
26. Match the following membrane proteins with their functions:
- | | |
|----------------------------|---------------------------------------|
| Channel/ carrier proteins | used in cell surface reactions |
| Protein pumps | binding cells together |
| Receptor proteins | communication between cells |
| Enzymes | passive transport across the membrane |
| Adhesion proteins | active transport across the membrane |
| Neurotransmitter receptors | hormone binding and recognition |
27. Draw a single phospholipid molecule. Label the hydrophobic and hydrophilic sections.

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28. Explain how hydrophobic and hydrophilic properties of the phospholipid bilayer allow a membrane to maintain its structure.

29. Define *diffusion*.

Define *osmosis*.

30. In the table below, tick the conditions required for each type of transport to occur.

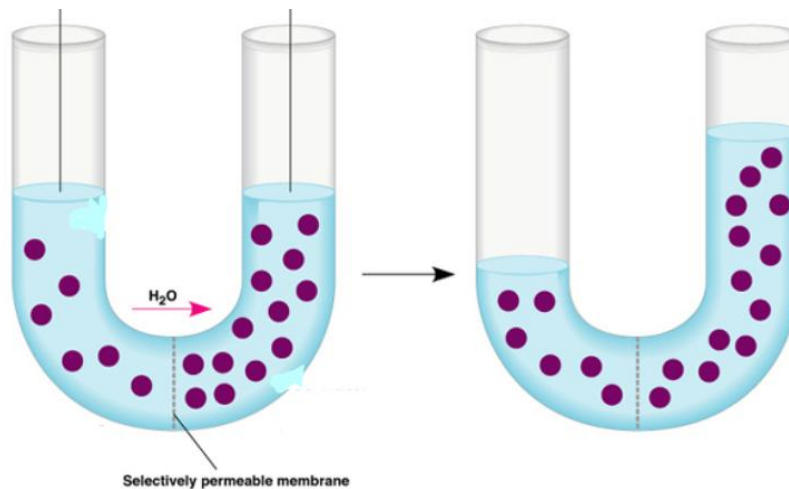
	Concentration gradient	Selectively permeable membrane.	Membrane proteins	ATP (source of energy)
Simple diffusion				
Osmosis				
Facilitated diffusion				
Active transport				

31. State four ways to maximize the rate of diffusion of a substance across a membrane.

- a.
- b.
- c.
- d.

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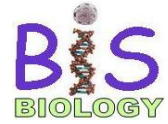
32. Explain what is happening in this diagram:



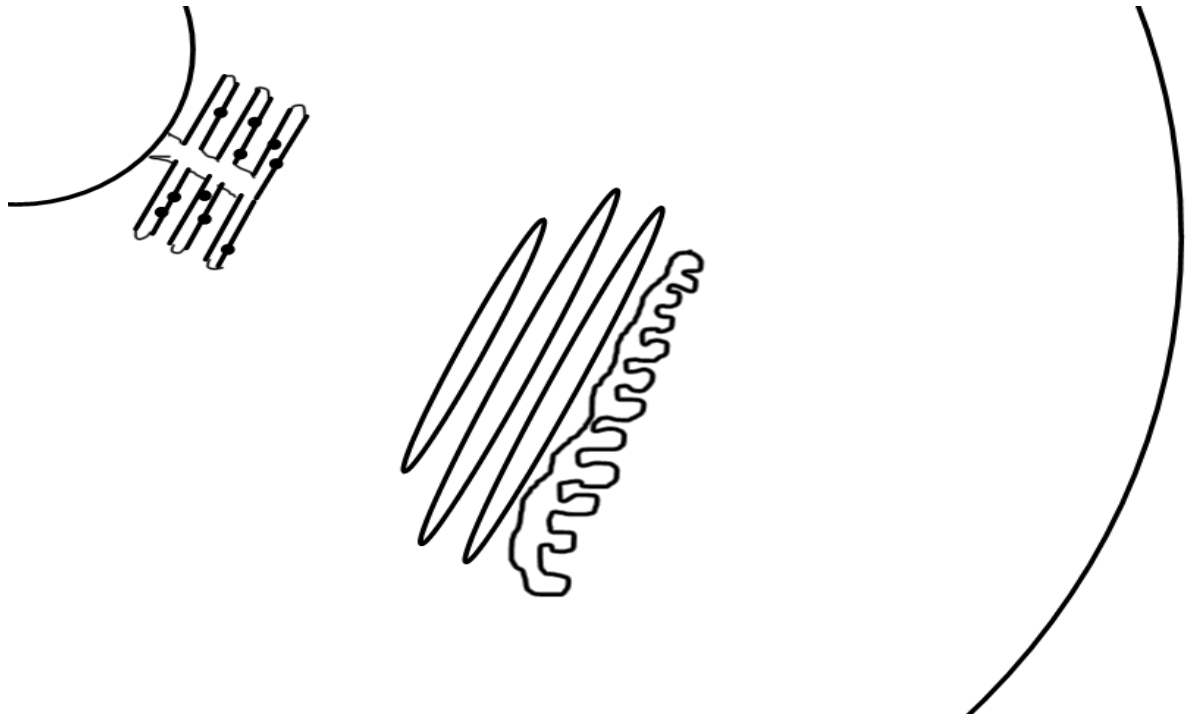
33. In the space below, draw a diagram of a plant cell before and after plasmolysis.
Explain how osmosis causes plasmolysis.

34. In the space below, draw a simple, annotated diagram showing how a protein pump is used in active transport of molecules across a plasma membrane. Use the Na⁺/K⁺ pump as an example.

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35. What is a *macromolecule*? Give one example of a macromolecule produced in the cell.
36. Complete and annotate the diagram below to show the process of vesicle transport of a protein molecule through a eukaryote cell. Begin with protein synthesis in the Rough ER and finish with exocytosis through the plasma membrane. Label all organelles shown.



37. Differentiate between *exocytosis* and *endocytosis*.
38. Describe how the plasma membrane breaks and reforms during exocytosis and endocytosis. How does the fluidity of the membrane allow this?