

Comprehension Questions - Module 5: Membranes

Membrane Structure

1. Explain how the phospholipid bilayer forms a barrier while allowing selective transport.
2. Describe the fluid mosaic model and how it explains membrane properties.
3. How do membrane proteins contribute to membrane function, and what are the different types?

Passive Transport

1. Compare and contrast diffusion, facilitated diffusion, and osmosis.
2. Explain how concentration gradients drive passive transport processes.
3. What factors affect the rate of diffusion across membranes?
4. Describe how osmosis affects cells in different osmotic environments (isotonic, hypotonic, hypertonic).

Active Transport

1. Compare and contrast active transport and passive transport, including energy requirements and direction of movement.
2. Explain how the sodium-potassium pump works and why it is important for cell function.
3. Describe endocytosis and exocytosis, and give examples of their importance in cells.

Membrane Potential

1. Explain how ion gradients across membranes create membrane potential.

2. How do cells use membrane potential for communication and function?

Membrane Dynamics

1. How do cells maintain membrane fluidity under different conditions?
2. Explain the role of cholesterol in animal cell membranes.
3. Describe how membrane composition can vary between different cell types and organelles.