

# Module 5: Membranes — Keys to Success

## Learning Objectives

By the end of this module, you should be able to:

1. Describe the fluid mosaic model
2. Explain the structure and function of phospholipids
3. Distinguish passive from active transport
4. Predict osmosis in different solutions
5. Compare types of bulk transport

## Key Terms to Know

- **Fluid Mosaic Model** — Membrane with floating proteins in a phospholipid bilayer
- **Phospholipid** — Molecule with hydrophilic head and hydrophobic tails
- **Selective Permeability** — Membrane controls what enters and exits
- **Diffusion** — Movement from high to low concentration
- **Osmosis** — Diffusion of water across a membrane
- **Facilitated Diffusion** — Diffusion with help of proteins
- **Active Transport** — Uses ATP to move against gradient
- **Isotonic** — Equal solute concentration inside and outside
- **Hypertonic** — Higher solute concentration outside
- **Hypotonic** — Lower solute concentration outside
- **Endocytosis** — Bringing materials into cell
- **Exocytosis** — Releasing materials from cell

## Key Concepts

Transport Type	Energy?	Direction	Example
Simple Diffusion	No	High → Low	O <sub>2</sub> , CO <sub>2</sub>
Facilitated Diffusion	No	High → Low	Glucose
Active Transport	Yes	Low → High	Na <sup>+</sup> /K <sup>+</sup> pump
Endocytosis	Yes	Into cell	Phagocytosis
Exocytosis	Yes	Out of cell	Secretion

## Study Tips

1. **Draw the phospholipid bilayer** — Label heads and tails
2. **Memorize tonicity effects** — Hypo = swell; Hyper = shrink
3. **Know the Na<sup>+</sup> /K<sup>+</sup> pump** — 3 Na<sup>+</sup> out, 2 K<sup>+</sup> in, uses ATP