

# BIOLOGY

CONCEPTS & CONNECTIONS  
Fourth Edition

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## CHAPTER 5 The Working Cell

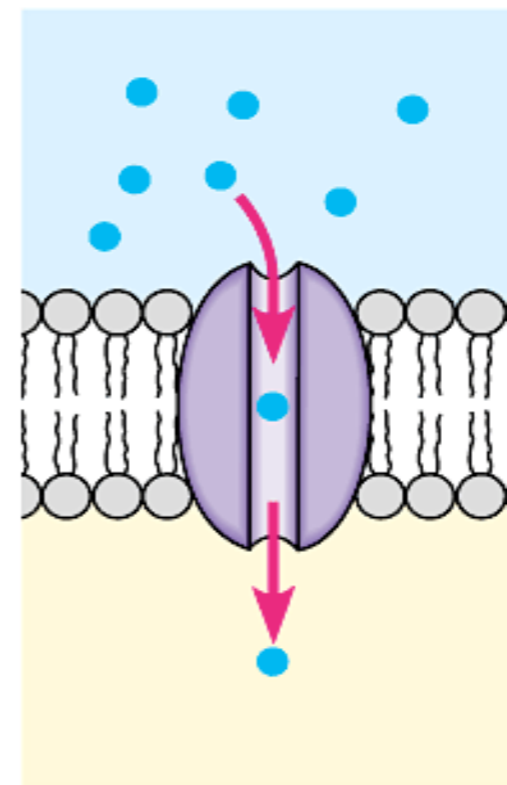
Modules 5.13 – 5.15

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## 5.13 Proteins make the membrane a mosaic of function

- Some membrane proteins form **cell junctions**, either attachments to other cells or the internal cytoskeleton
- Others transport substances across the membrane



Transport

Figure 5.13

- Many membrane proteins are **enzymes**
- Some proteins function as **receptors** for chemical messages from other cells
  - The binding of a messenger to a receptor may trigger **signal transduction**

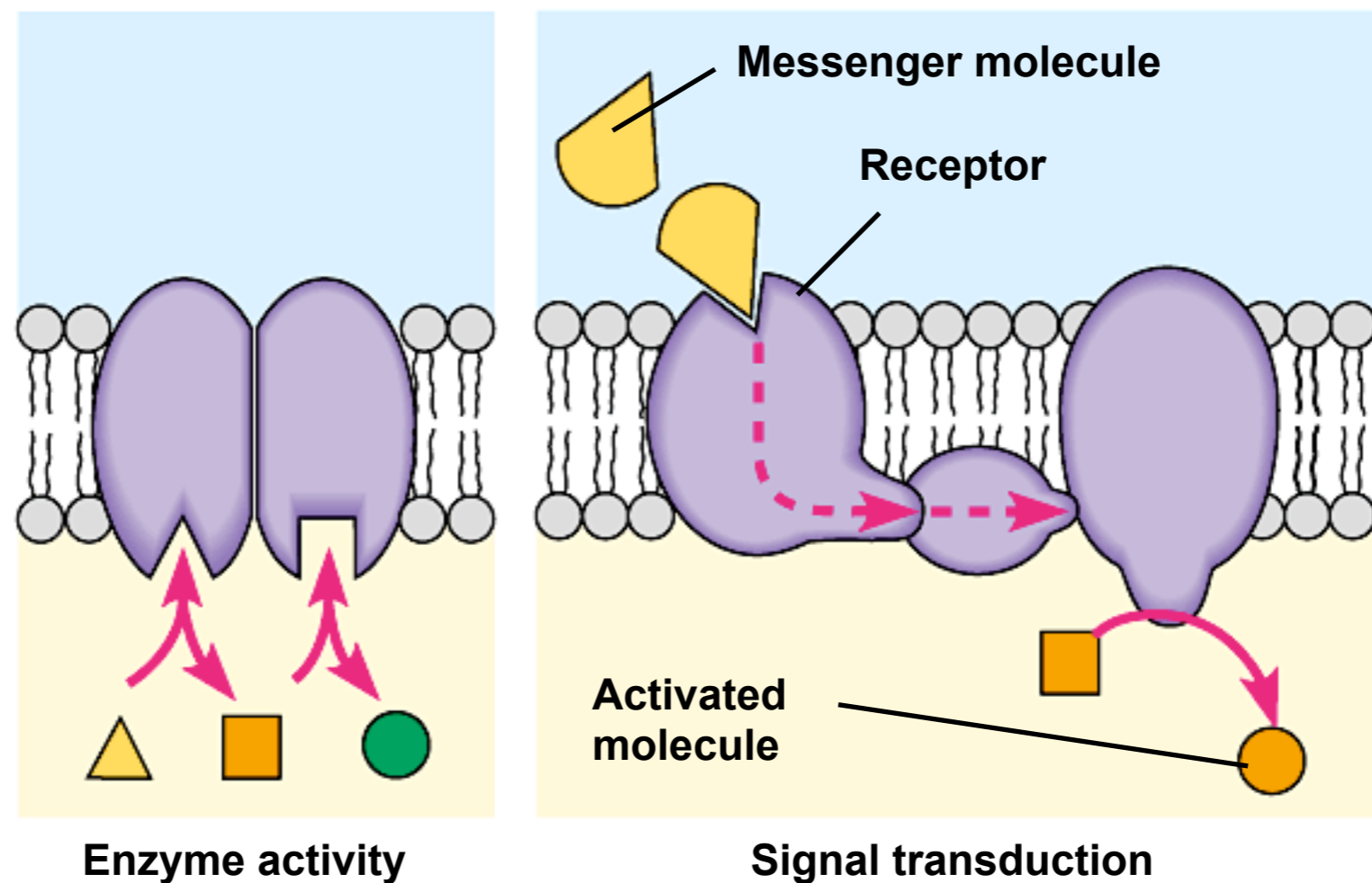


Figure 5.13

**Enzyme activity**

**Signal transduction**

- Proteins serve as identification tags for a cell: examples are glycoproteins (and nonprotein-containing glycolipids)

## 5.14 Passive transport is diffusion across a membrane

- In passive transport, substances **diffuse** through membranes without work by the cell

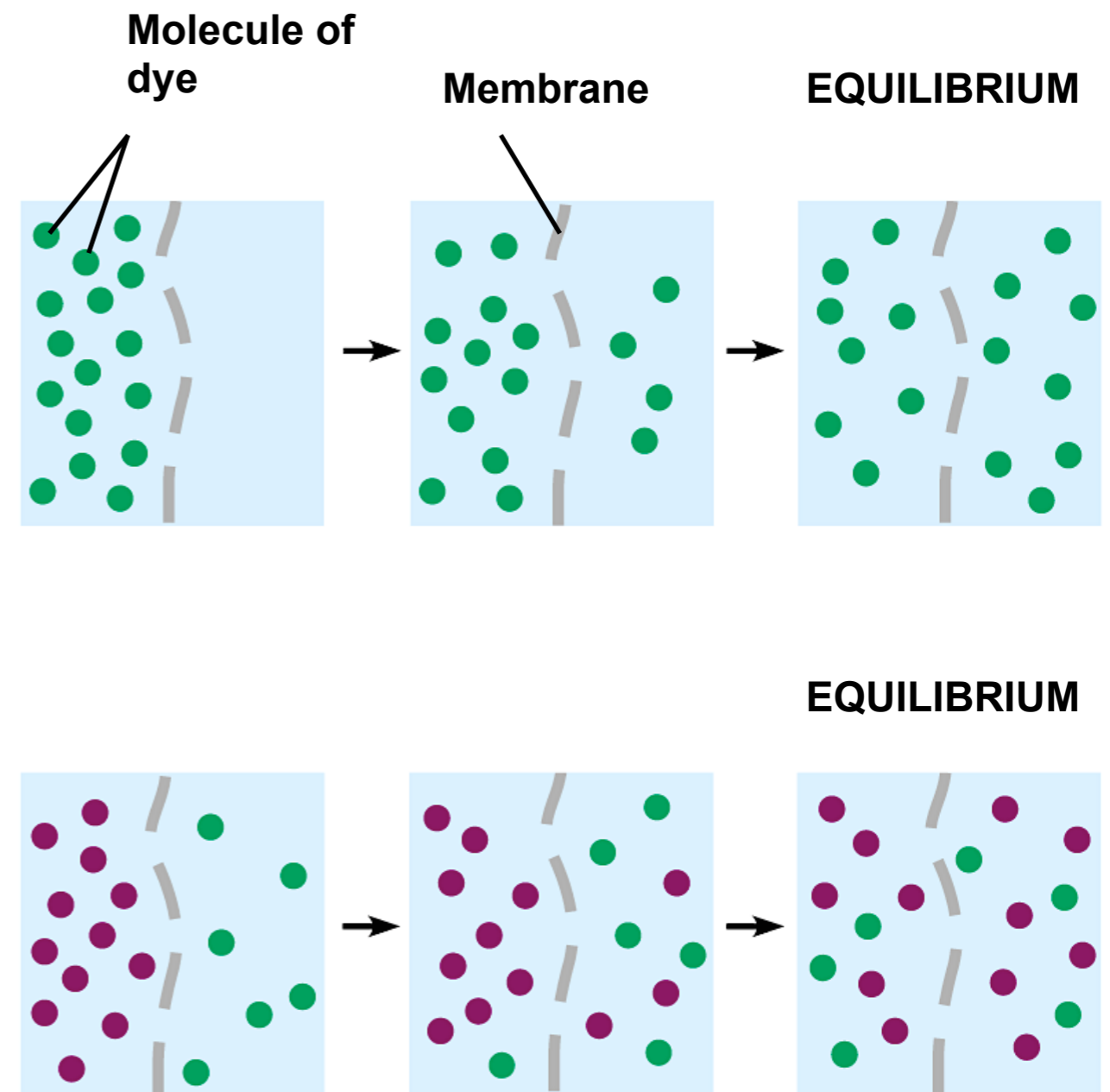


Figure 5.14A & B

- Substances move from areas of high concentration to areas of lower concentration
- A substance, therefore, diffuses down its **concentration gradient**.

# 5.15 Osmosis is the passive transport of water

- In osmosis, water travels from an area of lower solute concentration to an area of higher solute concentration

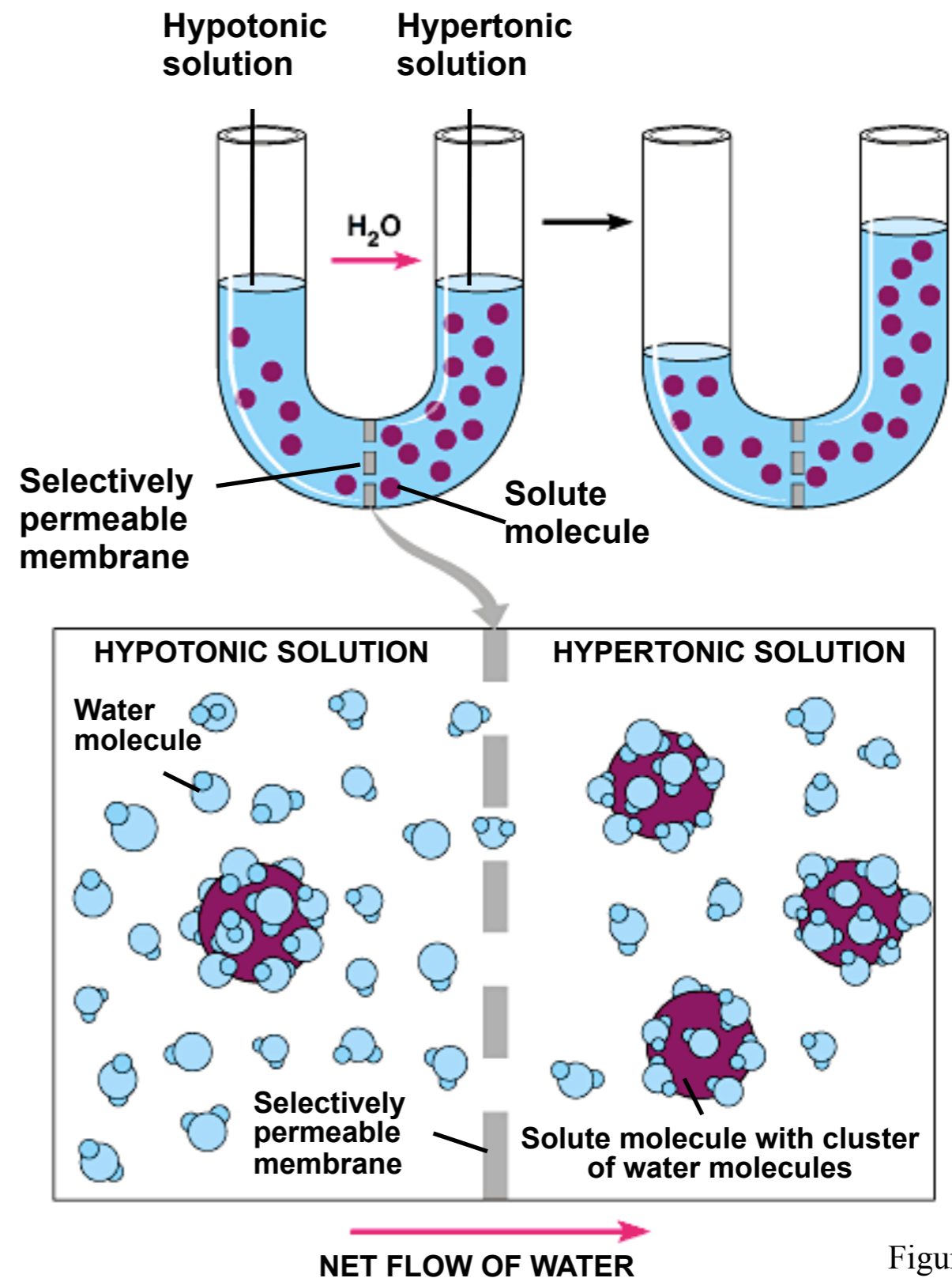


Figure 5.15

- There are three different scenarios for osmosis:

- hypertonic - the solution with the **higher** concentration of solute
- hypotonic - the solution with the **lower** concentration of solute
- isotonic - solutions of equal concentrations of solutes