

BIOLOGY

CONCEPTS & CONNECTIONS
Fourth Edition

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CHAPTER 5 The Working Cell

Modules 5.5 – 5.6

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HOW ENZYMES WORK

5.5 Enzymes speed up the cell's chemical reactions by lowering energy barriers

- For a chemical reaction to begin, reactants must absorb some energy
 - This energy is called the **energy of activation** (EA)
 - This represents the energy barrier that prevents molecules from breaking down spontaneously

- A protein catalyst called an **enzyme** can decrease the energy barrier

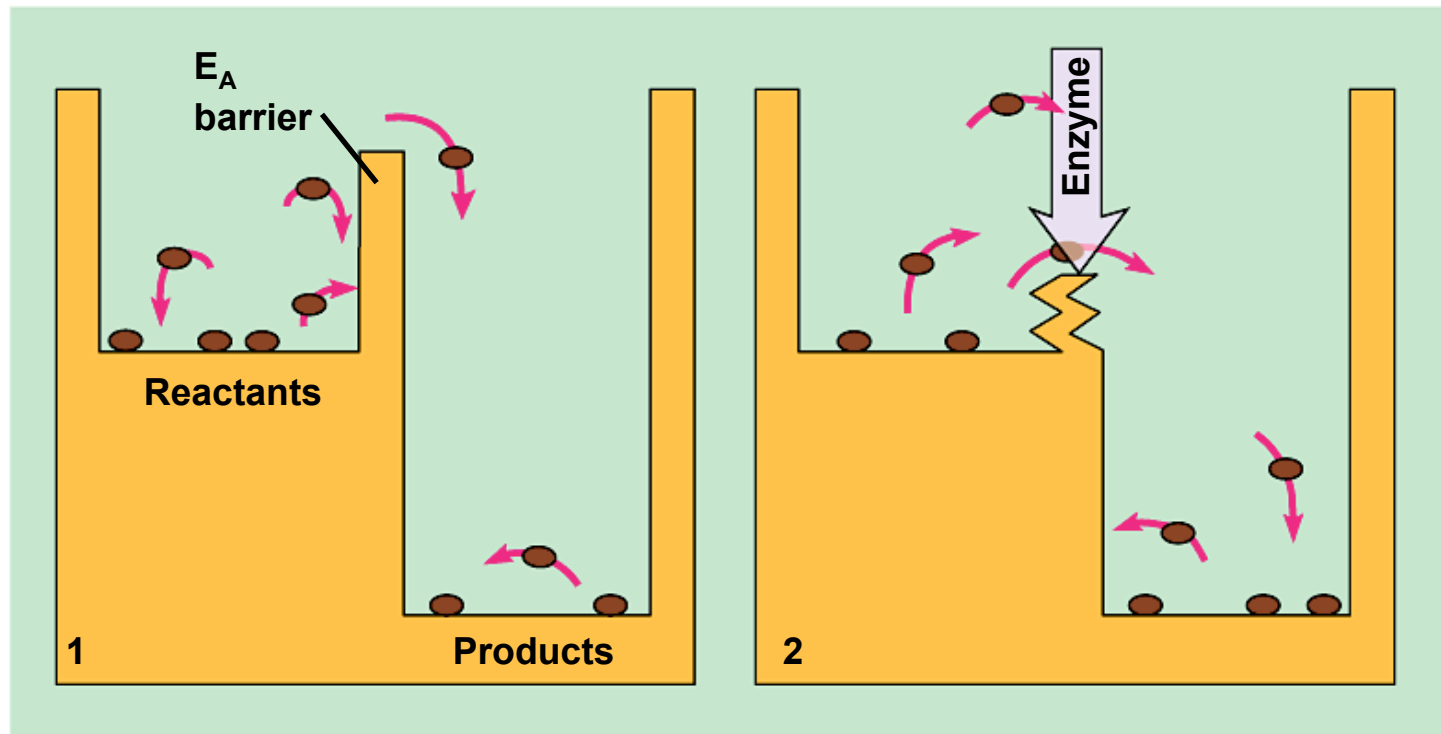


Figure 5.5A

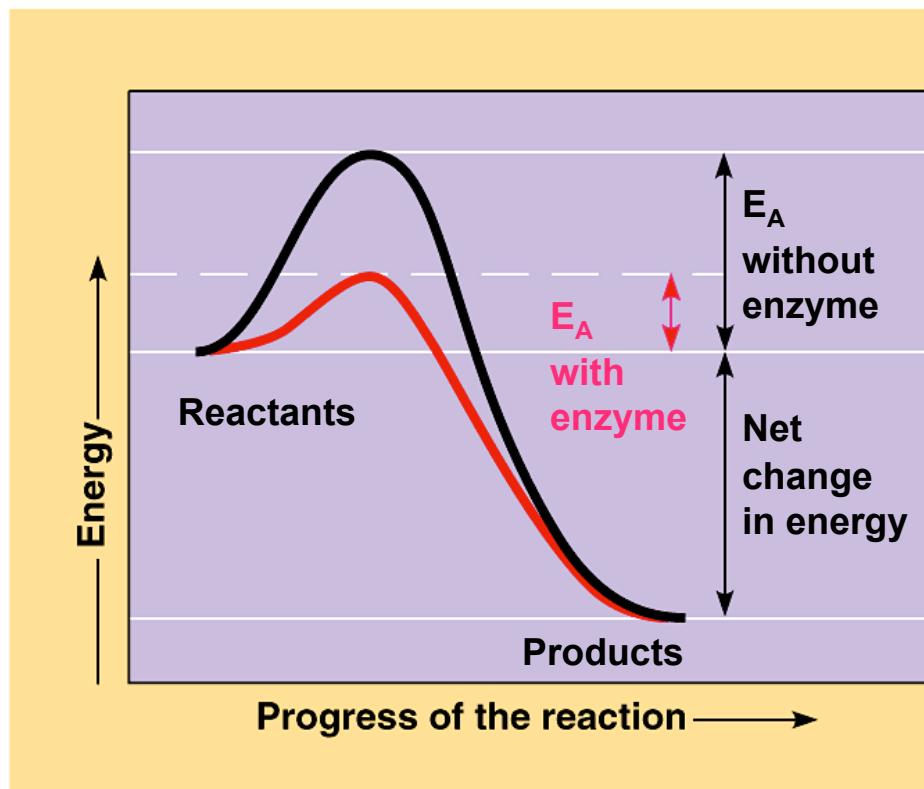


Figure 5.5B

5.6 A specific enzyme catalyzes each cellular reaction

- Enzymes are selective
 - This selectivity determines which chemical reactions occur in a cell

- How an enzyme works

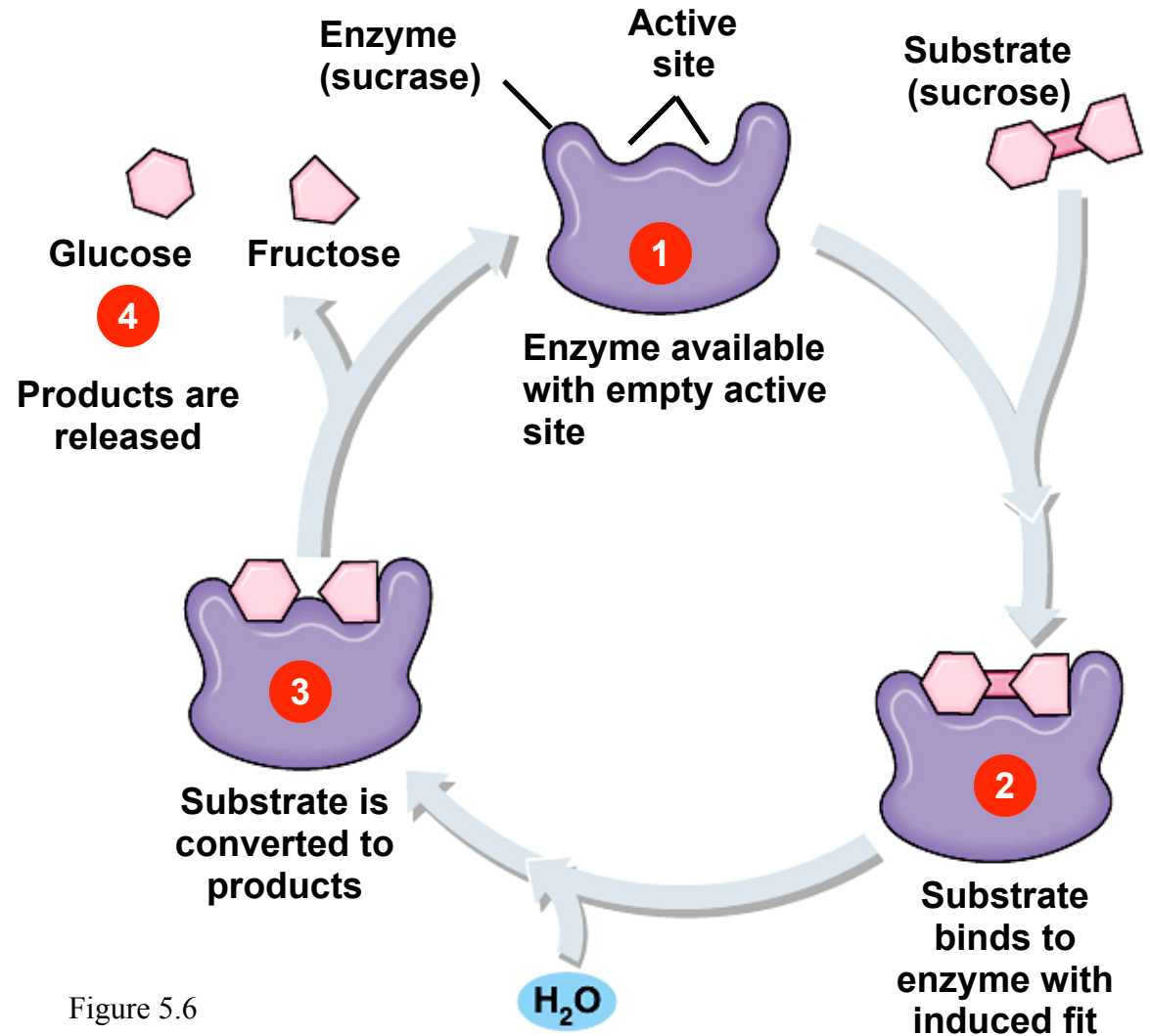


Figure 5.6

- The enzyme is unchanged and can repeat the process