

2.5 Enzymes

KEY CONCEPT

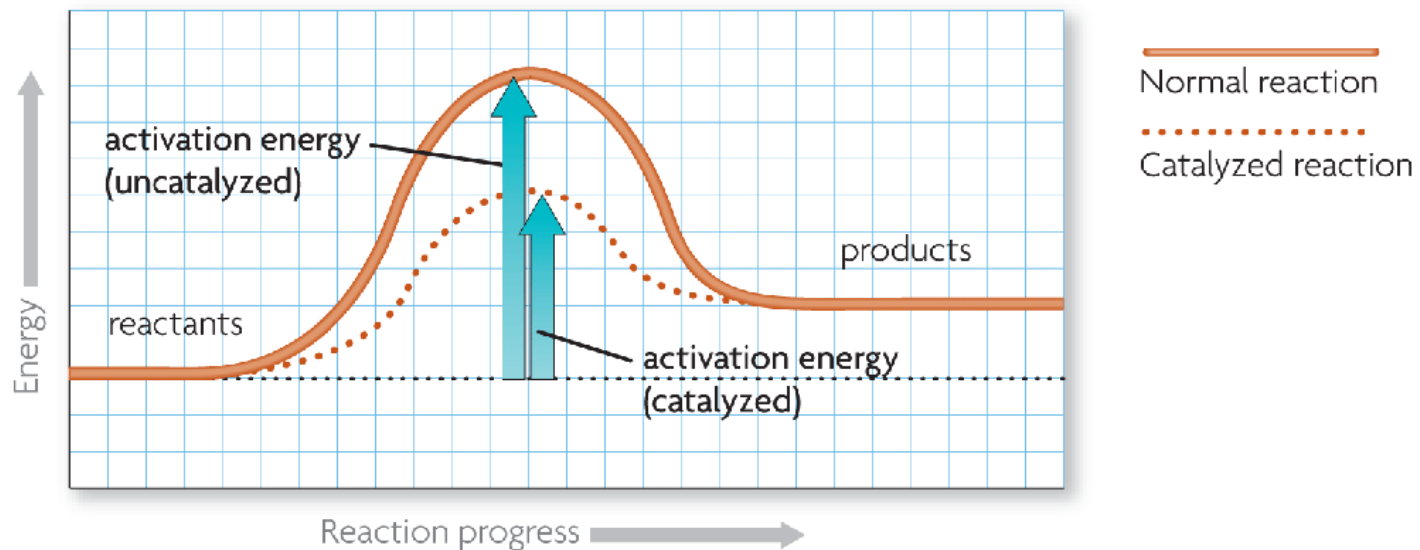
Enzymes are catalysts for chemical reactions in living things.



2.5 Enzymes

▶ A catalyst lowers activation energy.

- Catalysts are substances that speed up chemical reactions.
 - decrease activation energy
 - increase reaction rate



2.5 Enzymes

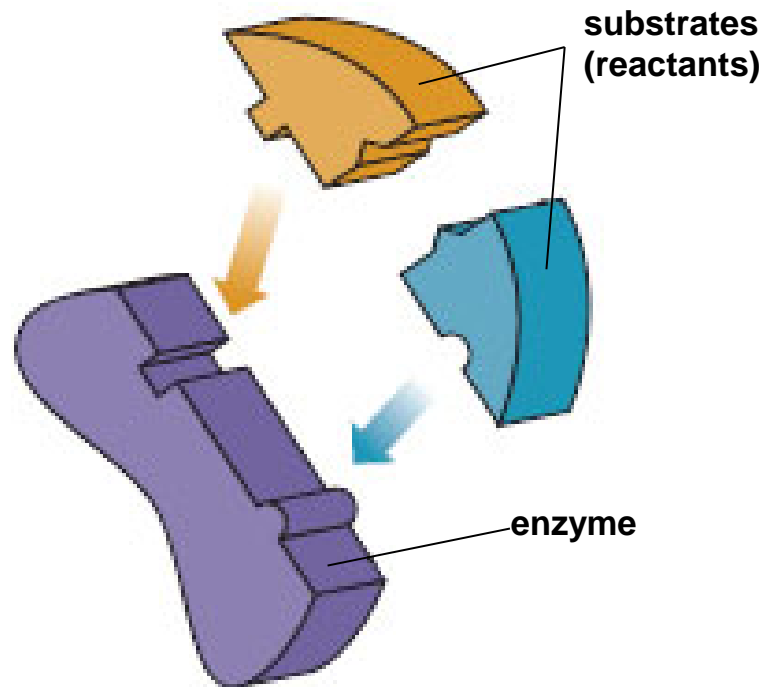
- ▶ **Enzymes allow chemical reactions to occur under tightly controlled conditions.**
 - Enzymes are catalysts in living things.
 - Enzymes are needed for almost all processes.
 - Most enzymes are proteins.

2.5 Enzymes

- Disruptions in homeostasis can prevent enzymes from functioning.
 - Enzymes function best in a small range of conditions.
 - Changes in temperature and pH can break hydrogen bonds.
 - An enzyme's function depends on its structure.

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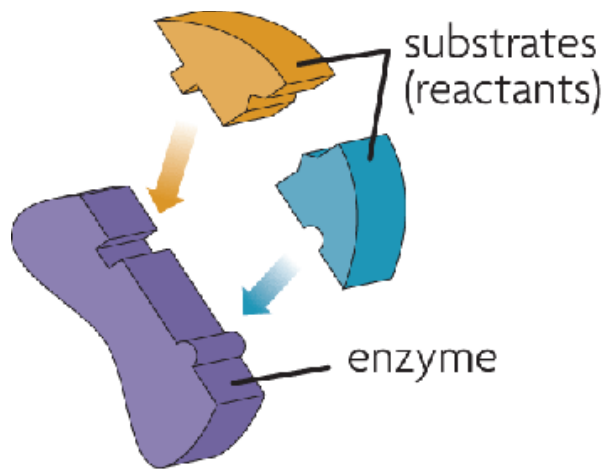
- An enzyme's structure allows only certain reactants to bind to the enzyme.
 - substrates
 - active site



Substrates bind to an enzyme at certain places called active sites.

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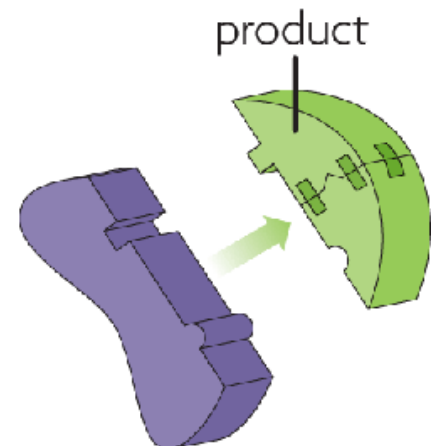
- The lock-and-key model helps illustrate how enzymes function.
 - substrates brought together
 - bonds in substrates weakened



Substrates bind to an enzyme at certain places called active sites.



The enzyme brings substrates together and weakens their bonds.



The catalyzed reaction forms a product that is released from the enzyme.