

**Concept Review Questions** At the end of each numbered section of the text there are review questions that help students assess their understanding of the material. Concept review questions are answered at [www.mhhe.com/enger14e](http://www.mhhe.com/enger14e).

**5.1 CONCEPT REVIEW**

1. What is the difference between a catalyst and an enzyme?
2. How do enzymes increase the rate of a chemical reaction?

**Basic Review Questions** Students can assess their knowledge by answering the basic review questions. The answers to the basic review questions are given at the end of the question set so students can get immediate feedback.

CHAPTER 5 Enzymes, Coenzymes, and Energy 113

**Key Terms**

Use the interactive flash cards on the Concepts in Biology 14e website to help you learn the meaning of these terms.

acetyl CoA 106	enzyme 101
activation energy 100	enzyme-substrate complex 101
active site 103	flavin adenine dinucleotide (FAD) 103
adenosine triphosphate (ATP) 110	gene-regulator proteins 106
anabolism 109	high-energy phosphate bond 110
binding site (attachment site) 101	inhibitor 106
biochemical pathway (metabolic pathway) 109	negative-feedback inhibition 109
catabolism 109	nicotinamide adenine dinucleotide (NAD <sup>+</sup> ) 103
catalyst 101	nutrients 100
coenzyme 103	substrate 101
cofactors 103	turnover number 103
competitive inhibition 107	vitamins 103
enzymatic competition 106	

**Basic Review**

1. Something that speeds the rate of a chemical reaction but is not used up in that reaction is called a
  - a. catalyst.
  - b. catabolic molecule.
  - c. coenzyme.
  - d. ATP.
2. The amount of energy it takes to get a chemical reaction going is known as
  - a. starting energy.
  - b. ATP.
  - c. activation energy.
  - d. denaturation.
  - e. Q.
3. A molecule that is acted upon by an enzyme is a
  - a. cofactor.
  - b. binding site.
  - c. vitamin.
  - d. substrate.
4. Your cells require \_\_\_\_\_ to manufacture certain coenzymes.
5. When a protein's three-dimensional structure has been altered to the extent that it no longer functions, it has been
  - a. denatured.
  - b. killed.
  - c. anabolized.
  - d. competitively inhibited.
6. Whenever there are several different enzymes available to combine with a given substrate, \_\_\_\_\_ results.
7. In \_\_\_\_\_, a form of enzyme control, the end product inhibits one step of its formation when its concentration becomes high enough.
8. Which of the following contains the greatest amount of potential chemical-bond energy?
  - a. AMP
  - b. ADP
  - c. ATP
  - d. ARP
9. Electron-transfer reactions are commonly called \_\_\_\_\_ reactions.
10. As electrons pass through the pores of cell membranes, an enzyme, \_\_\_\_\_ (a phosphorylase), uses electron energy to speed the formation of an ATP molecule by bonding a phosphate to an ADP molecule.
11. If a cleaning agent contains an enzyme that will get out stains that are protein in nature, it can also be used to take out stains caused by oil. (T/F)
12. Keeping foods in the refrigerator helps make them last longer because the lower temperature \_\_\_\_\_ enzyme activity.
13. ATP is generated when hydrogen ions flow from a \_\_\_\_\_ to a \_\_\_\_\_ concentration after they have been pumped from one side of the membrane to the other.
14. What are teams competing for in a football game? \_\_\_\_\_
15. A person who is vitamin deficient will most likely experience a \_\_\_\_\_ in their metabolism.

**Answers**  
 1. a, 2. c, 3. d, 4. vitamins, 5. a, 6. enzymatic competition, 7. negative feedback, 8. c, 9. oxidation-reduction, 10. ATP synthase, 11. F, 12. slows/inhibits, 13. higher/lower, 14. the ball, 15. disruption

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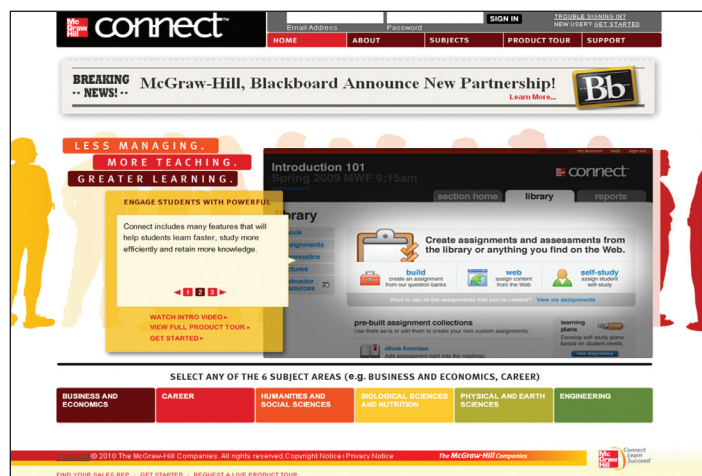
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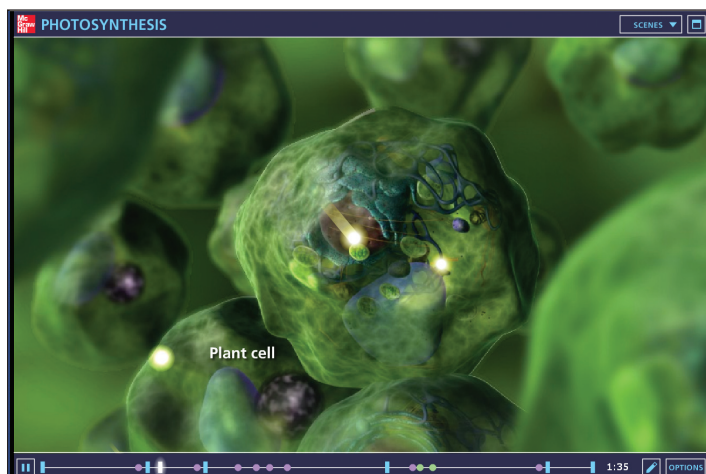
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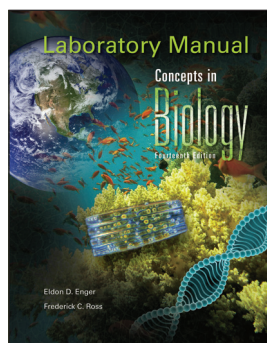
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[www.mhhe.com/enger14e](http://www.mhhe.com/enger14e)

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