

Biology 1

8.3 Guided Reading

Please read pages 235-238 and answer the questions below on your own paper using complete sentences.

1. If you know the sequence of nitrogen bases on one strand of DNA, how is it possible to know the sequence of nitrogen bases on the second strand?
2. What is the process by which DNA is copied called?
3. What is the purpose of replication?
4. How does replication ensure that cells have complete sets of DNA?
5. Why is the use of any cell through out the body useful to forensic scientists?
6. What are the enzymes that form bonds between nucleotides during replication called?
7. Describe two major functions of DNA polymerases.

8. In your own words, summarize the replication process.
Step 1:

Step 2:

Step 3:

9. How does step 3 of replication show that DNA acts as a template?

10. How is each new molecule of DNA related to the original molecule?

11. What is the rate at which DNA replication occurs in human cells?

12. Why does a cell need to replicate its DNA quickly?

13. Explain how the built-in "proof reading" function of replication works to correct errors.

SECTION

8.3

DNA REPLICATION

Study Guide

KEY CONCEPT

DNA replication copies the genetic information of a cell.

VOCABULARY

replication

DNA polymerase

MAIN IDEA: Replication copies the genetic information.

1. What is DNA replication?

2. Where does DNA replication take place in a eukaryotic cell?

3. When is DNA replicated during the cell cycle?

4. Why does DNA replication need to occur?

5. What is a template?

6. If one strand of DNA had the sequence TAGGTAC, what would be the sequence of the complementary DNA strand?

MAIN IDEA: Proteins carry out the process of replication.

7. What roles do proteins play in DNA replication?

8. What must be broken for the DNA strand to separate?

9. Why is DNA replication called semiconservative?

STUDY GUIDE, CONTINUED

Use words and diagrams to summarize the steps of replication, in order, in the boxes below.

10.	11.	12.
→	→	
_____	_____	_____
_____	_____	_____
_____	_____	_____

MAIN IDEA: Replication is fast and accurate.

13. Human chromosomes have hundreds of _____, where the DNA is unzipped so replication can begin.

14. DNA polymerase has a _____ function that enables it to detect errors and correct them.

Vocabulary Check

15. Explain what DNA polymerase is by breaking the word into its parts.

16. Write a short analogy to explain what replication is.

Be Creative

17. People sometimes like to display bumper stickers that relate to their trade or field of study. For example, a chemist may have a bumper sticker that says "It takes alkynes to make the world." Then, chemists or other people who know that an alkyne is a molecule that contains carbon atoms joined by a triple bond get a nice little chuckle out of the play on words. Use your knowledge of DNA replication to write a bumper sticker.
