

Key

Chapter 4: DNA Study Guide

Name _____

Answer the following questions:

Date: _____

1. What happens to cells if an individual has cancer? *Cells grow and divide uncontrollably*
2. What may cause cancer? *Tar, UV Radiation, Inherited Traits, Environmental*
3. How can cancer be treated? *Surgery, Radiation, Substances, Drugs/Chemotherapy*
4. How can cancer spread in an individual? *Abnormal cells break off and the tumor cell may enter the bloodstream.*
5. Where does protein synthesis take place? *Ribosomes*

Please be able to recognize what is occurring in the figures found on pages 116 and 117 of the textbook. You will need to identify mRNA, tRNA, a ribosome, an amino acid and bases. Draw a ribosome complex on the back of this sheet and identify the parts listed in the previous sentence.

6. What is an amino acid? *Basic units of proteins
20 different amino acids combine to form 1000's of proteins*
7. How many bases code for one amino acid? *Three*
8. What does the order of the nitrogen bases determine? *It determines what proteins are being made*
9. What is the role of mRNA in protein synthesis? *copies the message from DNA in the nucleus and carries to ribosomes in cytoplasm*
10. What is the role of tRNA in protein synthesis? *Carries the amino acids to the ribosomes*
11. What bases are in a DNA strand A, T, C, G and an RNA strand?
 - a. How do the bases bond in each of these molecules?
A bonds with Thymine
C bonds with guanine

12. What is the role of the DNA bases?

13. What is a mutation? Why could they have harmful effects?

The order of the bases determining what protein will be made by ribosomes

↓ *Mutations can cause cells to produce an incorrect protein during protein synthesis.*

↓ *harmful mutations decrease the chance for survival*

DNA: The Code of Life (continued)**Essay**

Write an answer for each of the following questions in the spaces provided.

4. Describe what messenger RNA and transfer RNA do during protein synthesis.

mRNA - Messenger RNA copies the DNA code in the nucleus and carries it to the ribosome in the cytoplasm.

tRNA - Transfer RNA carries the amino acids to the ribosome and adds them to the growing protein.

5. Contrast the effects of harmful and helpful mutations.

Harmful mutations decrease the chance that an organism will survive → ex. white buffalo in wild

Helpful mutations increase an organism's ability to survive and reproduce.