

Name _____

AP Biology
TEXT: *Biology, Campbell and Reece*
7th Edition
Chapter 17

Gene to Protein
Thematic Review Guide

1. How did diseases involving metabolic pathways lead to hypotheses about the nature of genes?

2. Identify some genetic diseases that occur along metabolic pathways.

3. What was Beadle and Tatum's hypothesis regarding enzymes?

4. How has that hypothesis been modified?

5. What occurs during transcription?

6. What occurs during translation?

7. How does the protein process differ in prokaryotes and eukaryotes?

8. Briefly explain how Marshall Nirenberg and Heinrich Matthaei “cracked the genetic code?”

9. What is the genetic code and why is said to be universal?

10. List several features about the genetic code.

11. Give an example of what happens if reading frames are altered?

12. List the highlights of the three stages of transcription.

a. Initiation _____

b. Elongation _____

c. Termination _____

13. What happens to the transcript RNA before it leaves the nucleus?

14. What is the advantage of the 5' cap and poly A tail?

15. Distinguish between exons and introns.

16. Describe the mechanism for splicing RNA.

17. What does alternative RNA processing do for cells?

18. Identify the roles of the players of the translation process.

a. Transfer RNA _____

b. Aminoacyl-tRNA synthetase _____

c. Ribosomes _____

19. Identify and briefly describe the steps of translation. Initiation Elongation Termination

20. What is the advantage of polyribosomes?

21. Give an example of how a polypeptide gets into the ER for additional processing.

22. How does protein synthesis differ between prokaryotes and eukaryotes?

23. Define point mutations.

24. Define mutations that are:

a. Missense

b. Nonsense

c. Insertion or deletion
