Name _____   **Period** _____

Ms. Foglia   **Date** _____

AP: CHAPTER 17: FROM GENE TO PROTEIN

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 _____

   _____

25. Use the diagram to trace the flow of chemical information from the gene to the protein product.