Name:_____Date:_____

**Reading Guide: Chapter 15 - Genes and Proteins** (OpenStax Biology 2E)




1. What is the central dogma? _____
2. How many nucleotides are needed to code for one amino acid? ____
3. Why is the genetic code said to be "degenerate?" _____
4. What nonsense codon? _____
5. Use Figure 15.4 to indicate the amino acid formed by each codon:
   U C U _____ A A G _____ G G A _____ A G U _____
6. Why is degeneracy believed to be an important cellular mechanism?
   _____

**15.2 Prokaryote Transcription**

7. How is a bacteria chromosome different from eukaryotes? _____
8. In mRNA, thymine (T) nucleotides are replaced with what? _____
9. Indicate the mRNA sequence code by the DNA sequence shown below (use base-pair rule):

| DNA | A | T | A | G | C | A | T | A | G |
|---|---|---|---|---|---|---|---|---|---|
| RNA | | | | | | | | | |

10. What protein is used to transcribe prokaryote genes? _____
11. What does the promoter do? _____

**15.3 Eukaryote Transcription**

12.. What are transcription factors? _____
13. How many RNA polymerases are involved in eukaryotic transcription? _____
14. In eukaryotes, the promoter sequence is called the _____
15. Octamer and GC-rich boxes are likely found on what type of genes? _____

**15.4 RNA Processing**

16. What are the coding sequences called? _____ What are the noncoding one called? _____
17. What happens to introns during mRNA processing? _____
18. What does the enzyme poly-A- polymerase do? _____
19. What is the role of the poly-A tail? _____
20. Scientists suggest what reason for the existence of introns?_____
21. What occurs during splicing?_____
22. What is the anticodon? _____

**15.5 Ribosomes and Protein Synthesis**

23. What are the two subunits of the ribosome called? _____
24. What is the role of tRNA? _____
25. What is the significance of the AUG sequence on mRNA? _____