

Name _____

Period _____

AP Biology

Date _____

RAVEN CHAPTER 15 GUIDED NOTES: GENES AND HOW THEY WORK

1. Briefly describe the function of each type of RNA.

a. rRNA _____

b. mRNA _____

c. tRNA _____

2. Explain the “Central Dogma” of biology.

3. Give an overview of transcription.

4. Give an overview of translation.

5. Out of the work of a number of scientists, we have now determined that the *four* “letters” of the DNA “alphabet” translates to the *twenty* “letters” of the amino acid “alphabet”. Briefly explain how this works.

6. Briefly describe how the experimental works of Francis Crick and Marshall Nirenberg “cracked the genetic code”.

7. Why is the genetic code said to be universal? What is the significance of this?

8. The enzyme which transcribes the DNA is _____

The strand of DNA that is transcribed is called _____

The strand of DNA that is *not* transcribed is called _____

9. List the highlights of the three stages of **transcription**.

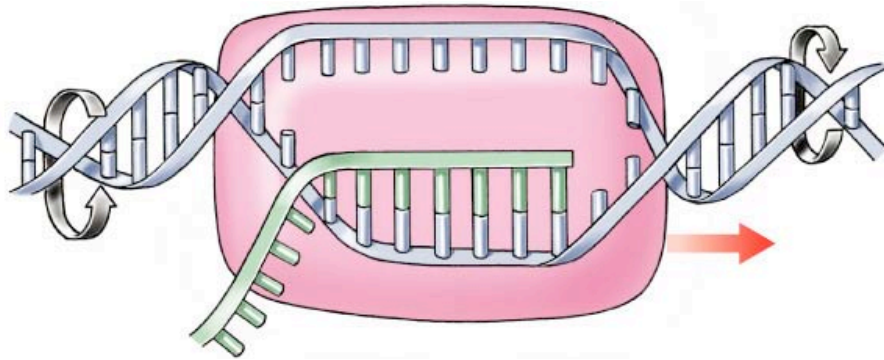
a. Initiation _____

b. Elongation _____

c. Termination _____

10. Describe the significant differences between **transcription** in prokaryotes and eukaryotes.

11. Make notes on the following diagram to describe the model of a transcription bubble.



12. Describe what happens to the RNA transcript, in eukaryotes, before it leaves the nucleus.

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

14. Identify and briefly describe the steps of translation.

a. Initiation _____

b. Elongation _____

c. Translocation _____

d. Termination _____

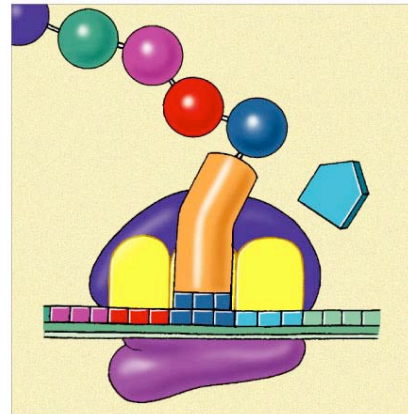
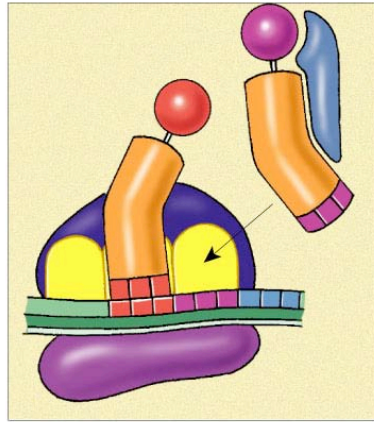
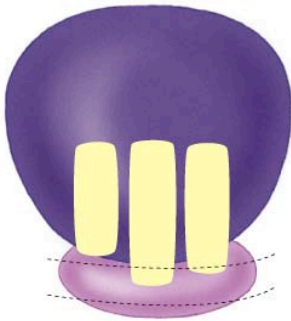
15. Identify the roles of the players of the translation process.

a. Transfer RNA _____

b. Aminoacyl-tRNA synthetase _____

c. Ribosomes _____

16. Make notes on the following diagrams to describe the process of translation.



17. Distinguish between exons and introns.

18. Describe the mechanism for splicing RNA.

19. What does alternative RNA processing do for cells?

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

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

21. Use the diagram to trace the flow of chemical information from a gene to its protein product.

