

RAVEN CHAPTER 15 GUIDED NOTES: GENES AND HOW THEY WORK

Raven 9th edition

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 _____

9. The strand of DNA that is transcribed is called _____

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

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

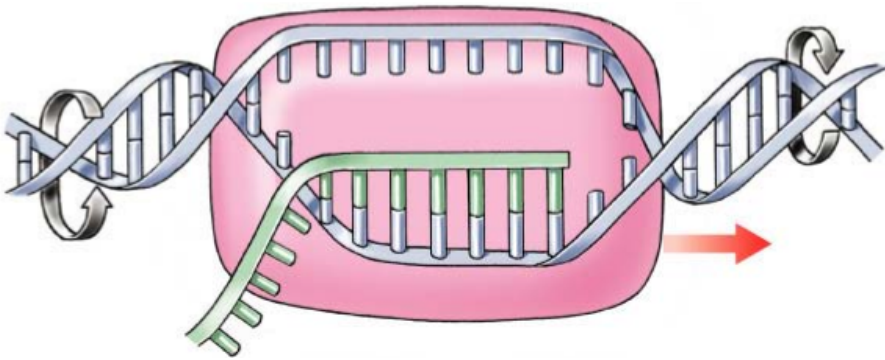
a. Initiation

b. Elongation

c. Termination

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

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



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

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

16. Identify and briefly describe the steps of **translation**.

a. Initiation

b. Elongation

c. Translocation

d. Termination

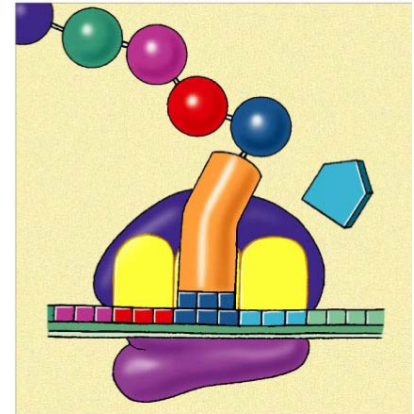
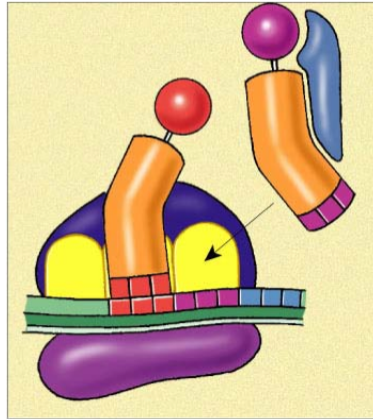
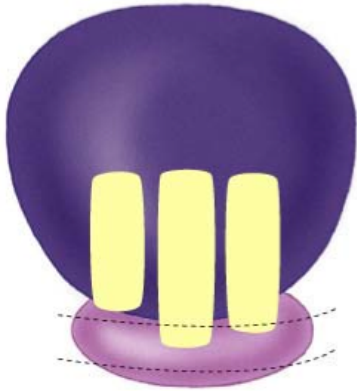
17. Identify the roles of the players of the translation process.

a. Transfer RNA

b. Aminoacyl-tRNA synthetase

c. Ribosomes

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



19. Distinguish between exons and introns.

20. Describe the mechanism for splicing RNA.

21. What does alternative RNA processing do for cells?

22. 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.

