

Protein Synthesis & Mutations Review Sheet

1. RNA is similar in structure to DNA. List 3 major differences:

- a.
- b.
- c.

How are DNA and RNA similar?

- a.
- b.

2. Draw an RNA nucleotide and label its 3 components.

3. Complete the following table (write yes or no in the table blanks)

	DNA	RNA
Deoxyribose present		
Phosphoric acid present		
Ribose present		
Adenine present		
Thymine present		
Uracil present		
Guanine present		
Cytosine present		
Formed from nucleotides		
Double stranded		
Single stranded		
Remains in the nucleus		
Moves out of the nucleus		

4. DNA holds the “recipe” or information for producing proteins. List 3 reasons that proteins are so vital to us. (think *structure & chemical reactions*)

- a.
- b.
- c.

5. In order for the code to reach the cytoplasm where protein is made, the DNA code is "written" into mRNA during the process of _____.
The DNA acts as a _____ or pattern by which the mRNA is formed. Each triplet of the DNA is "copied" as a _____ of mRNA.

6. Identify the mRNA for the DNA below:

A ____

1st triplet{ T ____ } 1st codon

A ____

G ____

2nd triplet{ T ____ } 2nd codon

C ____

7. Write out the steps of transcription: *(five basic steps, look at your notes!)*

8. During _____, mRNA codons are translated into protein molecules. Translation occurs in the cytoplasm in the _____ (organelle). The _____ molecules bring the appropriate _____ to the ribosome. The tRNA _____ lineup with mRNA codons following the base pairing rules. In this way the correct amino acid is put into place in the ribosome.

9. Look up the amino acid for the following mRNA codons:

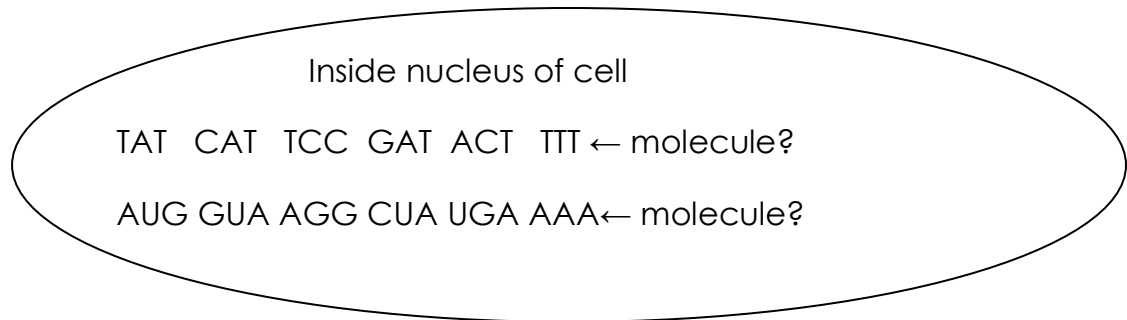
a. AGU =

b. CAU =

c. UCC =

d. GGG =

10. Use the below information to answer the following questions:



11. Groups of three nucleotides along an mRNA molecule are called

_____.

12. What tRNA anticodons would match up with the mRNA from question 10?

13. Where specifically in the cell do the tRNA anticodons temporarily “attach” to the mRNA codons?

14. What is a peptide bond? Where is this bond occurring in protein synthesis?

15. What is the difference between a polypeptide and a protein?

16. Listed below are mRNA codons. Using your amino acid wheel (pg 303), tell me what amino acids will make up this polypeptide (small protein).

AUGCCGAAAGCGUUAUA


17. What is the organelle that synthesizes (makes) proteins and what organelle produces this organelle?

18. List the steps and cell parts involved with translation. *(Look at your notes!)*

19. Define a "Point Mutation".

20. What are the three main types of "point mutations" and give an example of each using the following DNA strand: AATCGGTACTG

21. What is the difference between "point mutations" and "chromosomal mutations?"

22. Using the following chromosome describe/draw the following: 

Deletion:

Translocation:

Duplication:

Inversion:

23. A student decided to test the difference in plant growth with the natural light (the sun) and a bright light. His experiment involved 2 daisies. He used the same amount of dirt with vitamins, same amount of water each day, and same amount of classical music played to each daisy for one week. The daisy in the natural light grew 1" and the daisy in the bright light grew 1.5".

a. What is the problem?

b. What is your hypothesis?

c. What is the experimental group (or subject)?

d. What is the experimental (manipulated) variable?

e. What is the control group (or subject)?

f. What are the control variables?

g. What is the conclusion?

h. What is the inference?