

Quiz 2: Transcription and Translation

Name:

Winter 2013, Mr. Burdick

Hour:

Date:

Total Score: (20 Points Possible).....

Selected Response Clear Purpose:

This formative task was developed to assess the knowledge and understanding of key components that high school students would need in order to understand the basics of Transcription and Translation. The purpose of the assessment is to help the instructor determine if the students understand the key concepts of Transcription and Translation from pictorial interpretations at this point of the unit. Another purpose of this formative assessment is to give students a feedback on their knowledge/understanding of DNA Replication as that they will need to know before they can effectively move on further in General Biology.

Michigan Standards/Benchmarks:

- STANDARD B4: GENETICS
 - **B4.2x DNA, RNA, and Protein Synthesis**
 - B4.2f Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.
 - B4.2g Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.

Learning Target:

Learning Targets	Knowledge Questions	Reasoning Questions
I can demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.	1-10	10
I can describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.	1-10	10

Directions:

- This quiz is worth 20 points and please put your name, hour and date in the upper left corner. Please place your answers on the answer sheet.
- Once you are completed, look over the test again and double check your work. After this, quietly walk up to my desk and place the test in the basket for your class.
- Please be quiet since every student deserves a quiet environment for this assessment.
- Take your time; you have the rest of the class period to complete this test. Don't rush and Good Luck! If you have any questions, raise your hand and I will assist/clear up any misunderstandings.

Multiple Choice (2pt each): For each question below, select the best answer by filling in the corresponding letter and filling in the bubble on your answer sheet. You may use a scrap piece of paper to solve these problems. Also, make sure you check or mark if you are sure or unsure about the answer.

1. Which mRNA strand will be complementary to the following DNA strand 5'- ATCG-3'
- a. 5'- UAGC-3'
 - b. 3'- UAGC-5'
 - c. 3'- UAGG-5'
 - d. 5'- ATCC-3'

Sure: _____ Unsure: _____

2. RNA is created in the following direction
- a. in the 3' to 3' direction
 - b. in the 3' to 5' direction
 - c. in the 5' to 5' direction
 - d. in the 5' to 3' direction

Sure: _____ Unsure: _____

3. The codon is found on which molecule
- a. tRNA
 - b. mRNA
 - c. DNA
 - d. rRNA

Sure: _____ Unsure: _____

4. All of the following are either used or made in transcription except
- a. RNA Polymerase
 - b. DNA
 - c. rRNA
 - d. Proteins

Sure: _____ Unsure: _____

5. In DNA Transcription, Adenine will pair with what base in the DNA molecule
- a. Cytosine
 - b. Thymine
 - c. Uracil
 - d. Guanine

Sure: _____ Unsure: _____

6. Which types of bonds are created by translation?
- a. Peptide bond
 - b. Hydrogen bond
 - c. Covalent bond
 - d. Ionic bond

Sure: _____ Unsure: _____

7. In DNA Transcription, Guanine will pair with what base in the DNA molecule
- a. Cytosine
 - b. Thymine
 - c. Uracil
 - d. Adenine

Sure: _____ Unsure: _____

8. All of the following of post-transcriptional modification except
- a. introns are removed from the mRNA
 - b. a 5' cap is added to the mRNA.
 - c. exons are removed from mRNA.
 - d. adding a poly A tail to the mRNA

Sure: _____ Unsure: _____

Short Answer (4pt each): Use the following genetic code, in order to answer the following question by SHOWING YOUR WORK. Use your work to find the amino acid sequence from a given DNA sequence. Also, make sure you check or mark if you are sure or unsure about the answer.

		Second letter				
		U	C	A	G	
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	U C A G
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G
						Third letter

9. Using the top strand of the DNA sequence below, write out the resulting mRNA and Amino Acid sequence
 3'- TTACGGAGTGCCCCGCGTCACTGA- 5'
 5'- AATGCCTCACGGGGCGCAGTGACT- 3'

mRNA: _____

Amino Acid Sequence: _____

Sure: _____ Unsure: _____