

Name _____ Date _____

Chapter 10: Protein Synthesis Worksheet

Transcribe and translate the mRNA strand below. Write the amino acid sequence in the space provided. (Remember: start at the start codon and stop at the stop codon.)

- a. **Transcription:** The process of copying DNA into mRNA. The template strand is read in the 3' to 5' direction, and the mRNA is synthesized in the 5' to 3' direction. The base pairing rules are: A pairs with U, C pairs with G, G pairs with C, and U pairs with A.

Transcribe the following DNA template strand into an mRNA strand.

DNA: 3'-TAC GGC TAA-5' mRNA: _____

- b. **Translation:** The process of using the mRNA code to synthesize a protein. The mRNA is read in the 5' to 3' direction, and the amino acid sequence is determined by the sequence of three bases, called a codon. The start codon is AUG, which codes for Methionine. The stop codons are UAA, UAG, and UGA.

Translate the following mRNA strand into an amino acid sequence.

mRNA: 5'-AUG GGC UAA-3' Amino Acid Sequence: _____

Transcription				Translation			
DNA Template	mRNA	Start Codon	Stop Codon	mRNA	Start Codon	Stop Codon	Amino Acid Sequence
3'-TAC GGC TAA-5'	5'-AUG GGC UAA-3'	AUG	UAA	5'-AUG GGC UAA-3'	AUG	UAA	Methionine
3'-ATG CCG TAA-5'	5'-UAC GGC UAA-3'	UAC	UAA	5'-UAC GGC UAA-3'	UAC	UAA	Stop
3'-GAC CCG TAA-5'	5'-CUG GGC UAA-3'	CUG	UAA	5'-CUG GGC UAA-3'	CUG	UAA	Leucine
3'-TAC GGC TAA-5'	5'-AUG GGC UAA-3'	AUG	UAA	5'-AUG GGC UAA-3'	AUG	UAA	Methionine