Key

Molecular Genetics Protein Synthesis: Transcription & Translation
Practice Worksheet

Directions

During this exercise you will transcribe DNA into mRNA, and use the mRNA to produce a protein. The resulting protein's codons will be further analyzed to determine the amino acid chain which makes up the protein. First, transcribe the given DNA into mRNA. Hint: Remember that mRNA uses U instead of T! Each nucleotide must be paired with its complementary nucleotide. Remember: C pairs with G, and A pairs with T (or U in mRNA). After completing the transcription process from DNA, use the Dictionary of the Genetic Code figure 12.14 on page 338 of your textbook to determine which amino acids are produced from the resulting mRNA. Translate the tRNA anticodon from the mRNA codon to make a protein.

1.

DNA	TAC	CAT	TGA	CCA	ACT

Transcription occurs in nucleus

mRNA	AUG	GUA	ACU	GGU	UGA

use chart

Translation occurs in cytoplasm @ the ribosome

Amino Acid	met	val	thr	gly	Stop
tRNA Anti codon	UAC	CAU	UGA	CCA	ACU

2.

DNA	TAC	ATG	CCC	GAG	ACT

Transcription

mRNA	AUG	UAC	GGG	CUC	UGA

Translation

Amino Acid	met	Tyr	Gly	Leu	Stop
tRNA Anti codon	UAC	AUG	CCC	GAG	ACU

3.

DNA	TAC	GGT	TAT	TAG	ATT

Transcription

mRNA	AUG	CCA	AUA	AUC	UAA

Translation

Amino Acid	met	Pro	Iso	Iso	Stop
tRNA Anti codon	UAC	GGU	UAU	UAG	AUU