

## Chapter 10: Transcription and Translation Practice Problems

1. DNA: 5'-AAT GTC ACG AGA TGA GTT-3'

mRNA (codons):

tRNA (anti-codons):

Peptide Sequence:

2. DNA: 5'-CGA TTG GCC ACG GAC TAA-3'

mRNA (codons):

tRNA (anti-codons):

Peptide Sequence:

3. A mutation occurs in the DNA!

DNA: 5'-CGA TTG GCC ICG GAC TAA-3'

mRNA (codons):

tRNA (anti-codons):

Peptide Sequence:

What kind of mutation occurs?

How is the protein affected?

4. DNA: 5'-GGT CAT ATG CCA GAT ACG CCA-3'

mRNA (codons):

tRNA (anti-codons):

Peptide Sequence:

5. A mutation occurs in the DNA!

DNA: 5'-GGT CAT ATG **I**CA GAT ACG CCA-3'

mRNA (codons):

tRNA (anti-codons):

Peptide Sequence:

What kind of mutation is this?

How is the protein affected?

**Table 10-3 The Genetic Code (Codons of mRNA)**

		Second Base							
		U		C		A		G	
U	UUU	Phenylalanine (Phe)	UCU	Serine (Ser)	UAU	Tyrosine (Tyr)	UGU	Cysteine (Cys)	
	UUC	Phenylalanine	UCC	Serine	UAC	Tyrosine	UGC	Cysteine	
	UUA	Leucine (Leu)	UCA	Serine	UAA	Stop	UGA	Stop	
	UUG	Leucine	UCG	Serine	UAG	Stop	UGG	Tryptophan (Trp)	
C	CUU	Leucine	CCU	Proline (Pro)	CAU	Histidine (His)	CGU	Arginine (Arg)	
	CUC	Leucine	CCC	Proline	CAC	Histidine	CGC	Arginine	
	CUA	Leucine	CCA	Proline	CAA	Glutamine (Gln)	CGA	Arginine	
	CUG	Leucine	CCG	Proline	CAG	Glutamine	CGG	Arginine	
A	AUU	Isoleucine (Ile)	ACU	Threonine (Thr)	AAU	Asparagine (Asp)	AGU	Serine (Ser)	
	AUC	Isoleucine	ACC	Threonine	AAC	Asparagine	AGC	Serine	
	AUA	Isoleucine	ACA	Threonine	AAA	Lysine (Lys)	AGA	Arginine (Arg)	
	AUG	Methionine (Met) <b>Start</b>	ACG	Threonine	AAG	Lysine	AGG	Arginine	
G	GUU	Valine (Val)	GCU	Alanine (Ala)	GAU	Aspartic acid (Asp)	GGU	Glycine (Gly)	
	GUC	Valine	GCC	Alanine	GAC	Aspartic acid	GGC	Glycine	
	GUA	Valine	GCA	Alanine	GAA	Glutamic acid (Glu)	GGA	Glycine	
	GUG	Valine	GCG	Alanine	GAG	Glutamic acid	GGG	Glycine	