

Practice Problems: Decoding the Genetic Code

Directions: Create the complementary mRNA strand using the given DNA strand. Then, using the charts below, decode the mRNA into the correct amino acids. Use your amino acid sequence to figure out which protein the DNA codes for.

AMINO ACID CHART

		Second Position				
		U	C	A	G	
First position (5' end)	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA } Stop UAG }	UGU } Cys UGC } UGA - stop UGG - Trp	U C A G
	C	CUU } Leu CUC } CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } Arg CGC } CGA } CGG }	U C A G
	A	AUU } Ile AUC } AUA } Met AUG }	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } Val GUC } GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } Gly GGC } GGA } GGG }	U C A G
						Third position (3' end)

PROTEIN CHART

Protein A	Arg-his-phe-asn-ala
Protein B	Ile-pro-leu-his-ile
Protein C	Ile-pro-gly-phe-lys
Protein D	Arg-gln-leu-lys-ala
Protein E	Leu-pro-gly-thr-val

#1) Given DNA strand: TAG GGG CCC AAA TTT

mRNA strand: _____

amino sequence: _____

Which protein does the DNA strand code for? _____

#2) Given DNA strand: TAT GGT GAT GTG TAG

mRNA strand: _____

amino sequence: _____

Which protein does the DNA strand code for? _____

#3) Given DNA strand: A A C G G T C C A T G G C A G

mRNA strand: _____

amino sequence: _____

Which protein does the DNA strand code for? _____

#4) Given DNA strand: G C G G T G A A G T T G C G C

mRNA strand: _____

amino sequence: _____

Which protein does the DNA strand code for? _____

#5) Given DNA strand: G C C G T T A A T T T C C G A

mRNA strand: _____

amino sequence: _____

Which protein does the DNA strand code for? _____