

Part I

Amino Acids are the building blocks of proteins. There are 20 different amino acids. The codes for amino acids are written in the genetic code of DNA. A sequence of 3 letters of nucleotide bases forms a codon. Codons on the mRNA correspond to specific amino acids carried by the tRNA.

Use the codon chart provided in question #3 to find the codons for each of the amino acids listed in the table and fill in the 3-letter CODONS for each of the amino acids listed. Remember that some amino acids have more than one codon that codes for them.

Name of Amino Acid	3-letter CODONS	Color of Paper
Alanine (ALA)		Light Blue
Arginine (ARG)		Light Blue
Asparagine (ASN)		Bright Blue
Aspartic Acid (ASP)		Bright Blue
Cysteine (CYS)		Light Yellow
Glutamic Acid (GLU)		Dark Green
Glutamine (GLN)		Dark Green
Glycine (GLY)		Dark Green
Histidine (HIS)		Bright Yellow
Isoleucine (ILE)		Light Pink
Leucine (LEU)		Salmon
Lysine (LYS)		Salmon

Phenylalanine (PHE)		Light Green
Proline (PRO)		Light Green
Serine (SER)		Purple
Threonine (THR)		Bright Pink
Tryptophan (TRP)		Bright Pink
Tyrosine (TYR)		Bright Pink
Valine (VAL)		Orange
START Methionine (MET)		White
STOP		Black

You will use this chart that you just completed to complete Part 2.

1. Create your own unique strand of DNA with your own code of A, T, C, and G's. *Do not use any of the following combos in your strand (ACT, ATC, ATT, or TAC)

T A C _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ A C T

2. Make a complementary strand of mRNA (codons) that correspond with each of the bases in your strand of DNA in question 1. *Remember that U replaces T as the base pair of A in RNA.

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

3. Use the codon chart below and the one you completed from Part 1 to find each of the amino acids that goes with the codons you have listed above. Write the abbreviated name of each amino acid on the lines below.

		Second Letter					
		U	C	A	G		
1st letter	U	UUU Phe UUC UUA Leu UUG	UCU Ser UCC UCA UCG	UAU Tyr UAC UAA Stop UAG Stop	UGU Cys UGC UGA Stop UGG Trp	U C A G	3rd letter
	C	CUU Leu CUC CUA CUG	CCU Pro CCC 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 Thr ACC 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 Ala GCC GCA GCG	GAU Asp GAC GAA Glu GAG	GGU Gly GGC GGA GGG	U C A G	

4. Use the color coded chart from part one to find the color of paper you will need for each of your 10 amino acids.

5. Write the abbreviation for the amino acids on the corresponding colored strips of paper and create a paper chain placing your amino acids in order from start to stop.

6. When your paper chain is complete check in with your teacher before you attach it to the classroom chain.