Worksheet – Determination of Protein Amino Acids from M-RNA's Codon chart.

Name _____

Date _____ Per ____

Part 1 "Amino Acid / codon Wheel"

Instructions: The "**Wheel**" at the right shows you how to determine which amino acid goes with which m-RNA codon sequence. To decode a codon, start at the middle of the circle and move outward.

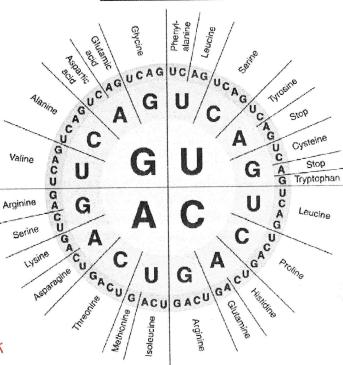1. Identify the amino acids what will be produced from the following m-RNAs codon:

    a. AAC _Asparagine_   b. UCU _Serine_

    c. GAU _Aspartic acid_   d. CCC _Proline_

2. What would the codon sequence (s) be for:

    Leucine? _UUA, UUG, CUU, CUC, CUA, CUG_

    Valine? _GUG, GUA, GUC, GUU,_

3. What are the m-RNA's stop codons: _UAU, UAG, UGA_

4. What amino acid sequence would be made from the mRNA sequence CGCUAUAGC? _Arginine – Tyrosine – Serine_

Part 2 "Amino Acid / codon Chart"

Instructions: The "Chart" at the right shows you how to determine which amino acid goes with which m-RNA codon sequence. To decode a codon, start with the **First Base**, then the **Second Base**, and finally the **Third Base**.

1. Identify the amino acids (you can get the full name from the wheel) what will be produced from the following m RNAs codon:

    a. GUA _Valine_   b. UUU _Phenylalanine_

    c. CAC _Histidine_   d. UAA _Stop._

2. Suppose the DNA sequence GCTATATCG was changed to GCGATATCG. How would the products of transcription and translation be affected?

mRNA sequence	Amino acid sequence
GCTATATCG → _CGA UAU AGC_	→ _Arginine – Tyrosine – Serine_
GCGATATCG → _CGC UAU AGC_	→ _Arginine – Tyrosine – Serine_

They are the same!!

Second Base

	U	C	A	G	
U	Phe	Ser	Tyr	Cys	U
	Phe	Ser	Tyr	Cys	C
	Leu	Ser	Stop	Stop	A
	Leu	Ser	Stop	Trp	G
C	Leu	Pro	His	Arg	U
	Leu	Pro	His	Arg	C
	Leu	Pro	Gln	Arg	A
	Leu	Pro	Gln	Arg	G
A	Ile	Thr	Asn	Ser	U
	Ile	Thr	Asn	Ser	C
	Ile	Thr	Lys	Arg	A
	Met	Thr	Lys	Arg	G
G	Val	Ala	Asp	Gly	U
	Val	Ala	Asp	Gly	C
	Val	Ala	Glu	Gly	A
	Val	Ala	Glu	Gly	G

First Base (left), Third Base (right)