

STUDENT REFERENCE SHEET

Student Reference Sheet: mRNA Codon Charts

The 20 Amino Acids

Abbreviation	Amino Acid	Abbreviation	Amino Acid
Ile	Isoleucine	Leu	Leucine
Lys	Lysine	Met	Methionine
Phe	Phenylalanine	Thr	Threonine
Trp	Tryptophan	Val	Valine
His	Histidine	Arg	Arginine
Ala	Alanine	Asn	Asparagine
Glu	Glutamic acid	Gly	Glycine
Pro	Proline	Ser	Serine
Tyr	Tyrosine	Asp	Aspartic Acid
Cys	Cysteine	Gln	Glutamine

Codon Chart

Start with the first base (also called the *First Letter*), then look at the second and then the third. For example, AUG synthesizes “Met,” and the codon triplet GUA synthesizes the amino acid “Val” (Valine).

First Letter	Second Letter				Third Letter
	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 or Start	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

Example 1
(dashed lines):
AUG to Start

A is the first base.
U is the second base.
G is the third base.

First look at the four possibilities where “A” and “U” meet.

Then narrow the choices to one by looking at the third base “G.”

Example 2
(solid lines):
GUA to Val

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