

# Protein Synthesis Worksheet

Directions:

- 1<sup>st</sup> Fill in the complimentary DNA strand using DNA base pairing rules.
- 2<sup>nd</sup> Fill in the correct mRNA bases by transcribing the bottom DNA code.
- 3<sup>rd</sup> Translate the mRNA codons and find the correct amino acid using the Codon Table
- 4<sup>th</sup> Write in the amino acid and the correct anti-codon the tRNA molecule.
- 5<sup>th</sup> The answer to the questions about protein synthesis below the amino acids.

**1.**

**DNA**

DNA template strand

**mRNA codons**

**tRNA anticodons**

**Amino Acids** Use abbreviations

A-T  
C-G

A-U  
C-G

A-U  
C-G

Use mRNA Codon chart

5. mRNA is synthesized in translation or transcription?

6. mRNA has codons or anti-codons?

**7.**

**DNA**

DNA template strand

**mRNA codons**

**tRNA anticodons**

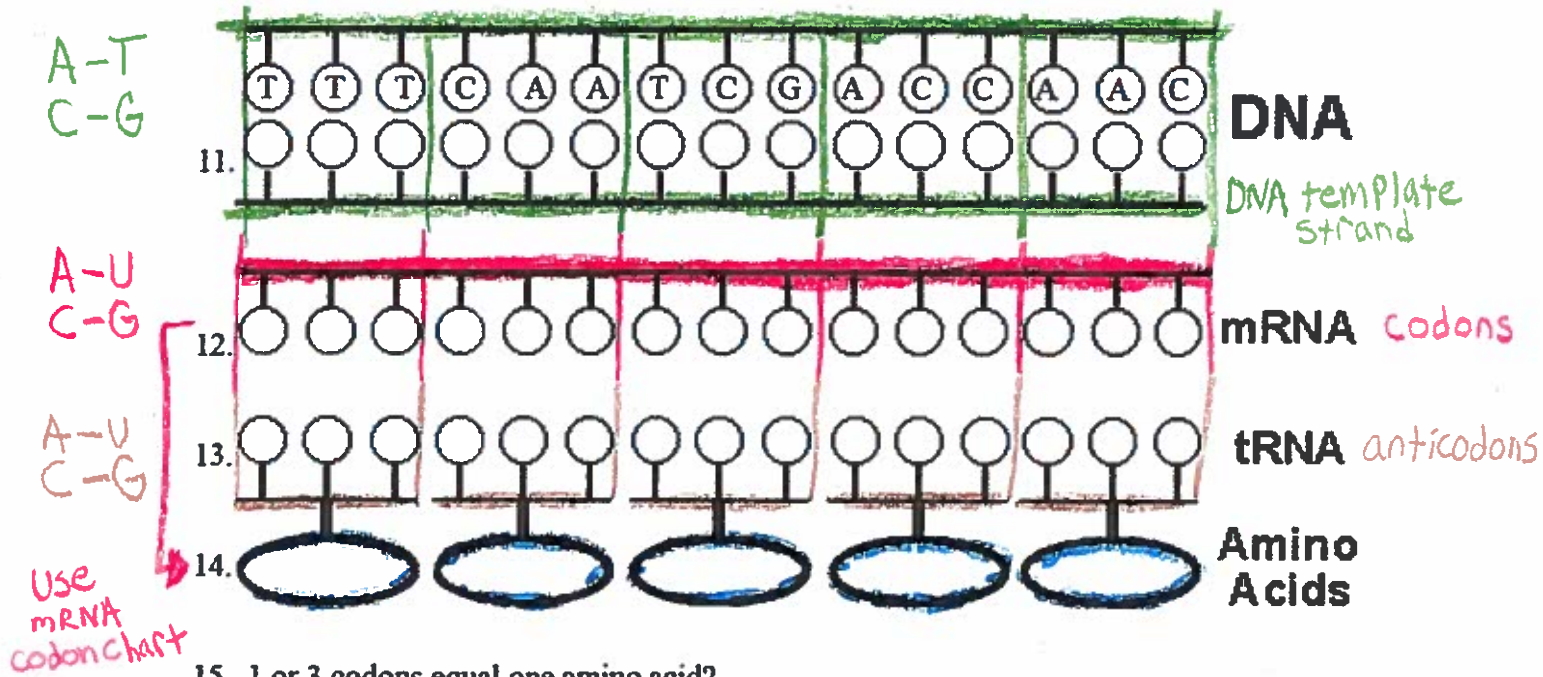
**Amino Acids** Use abbreviations

A-T  
C-G

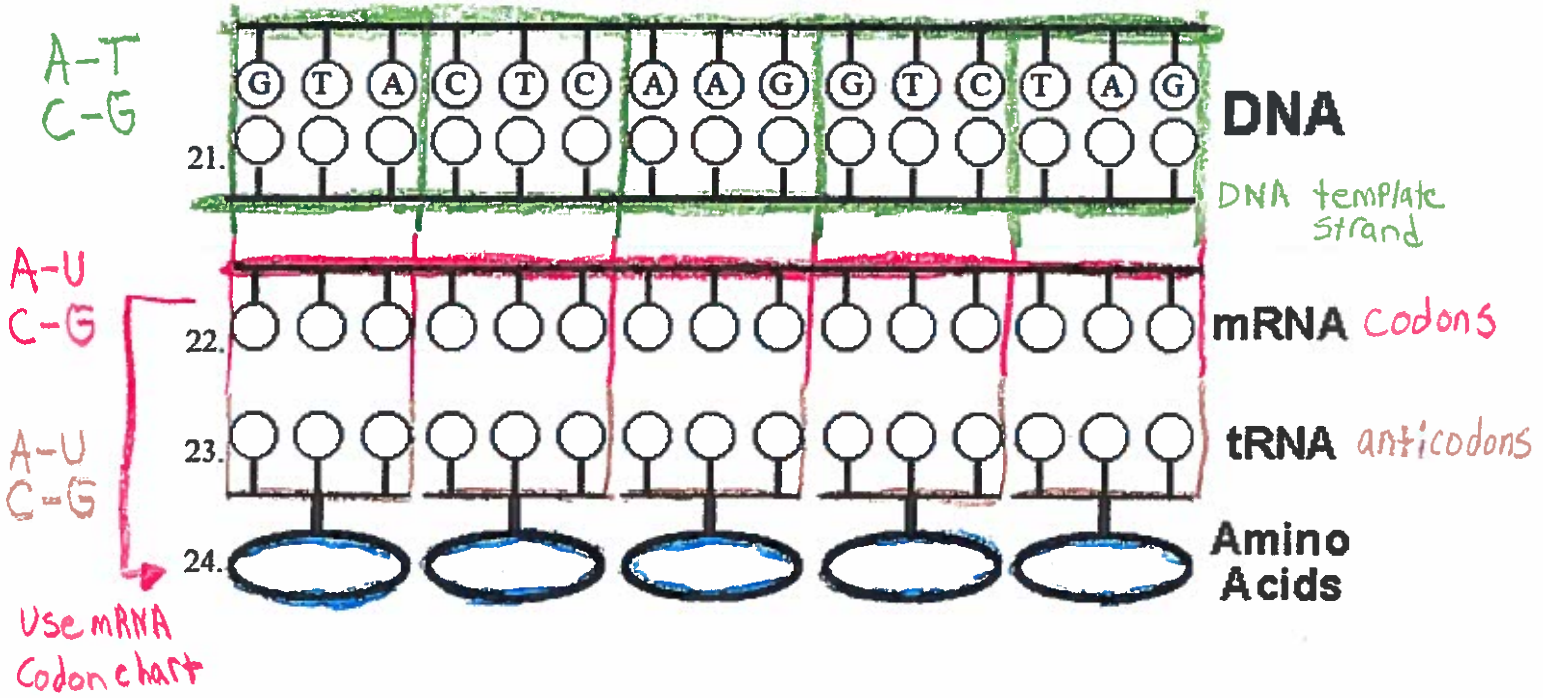
A-U  
C-G

A-U  
C-G

Use mRNA Codon chart



15. 1 or 3 codons equal one amino acid?
16. tRNA brings amino acids to the nucleus or ribosome?
17. A polypeptide is a sequence of proteins or amino acids?
18. tRNA has codons or anti-codons?
19. tRNA transfers amino acids during translation or transcription?
20. Ribosomes are the site where translation or transcription takes place?



# mRNA Codon/Amino Acid Chart

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

