

Protein Synthesis & Amino Acid Worksheet

Terms

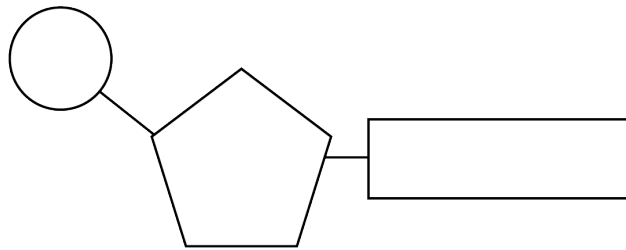
DNA	DNA & RNA	RNA	Protein Synthesis
deoxyribonucleic acid	base	ribonucleic acid	amino acid
deoxyribose	nucleotide	ribose	codon
hydrogen bond	pentose sugar	messenger RNA	anticodon
thymine	phosphate	transfer RNA	transcription
	backbone	mRNA	translation
	rungs	tRNA	polypeptide
	cytosine	ribosome	protein
	guanine		
	adenine		

Label the Diagrams:

Follow the coloring scheme for each diagram below, then label the parts listed.

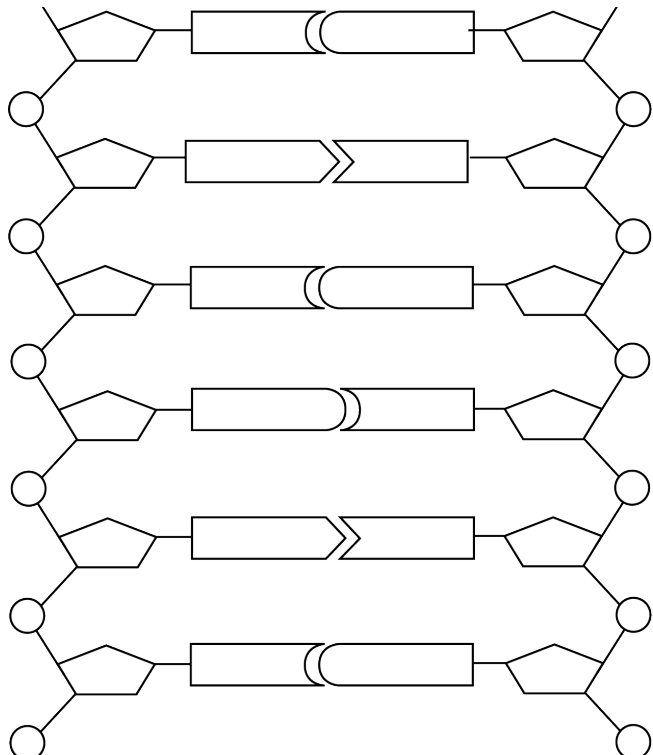
Nucleotide Structure

phosphate group – brown
 five-carbon sugar – orange
 nitrogen(ous) base – purple



DNA Structure

sugar-phosphate backbone – brown/orange
 adenine – red
 thymine – green
 cytosine – blue
 guanine – yellow
 hydrogen bond – black



Protein Synthesis & Amino Acid

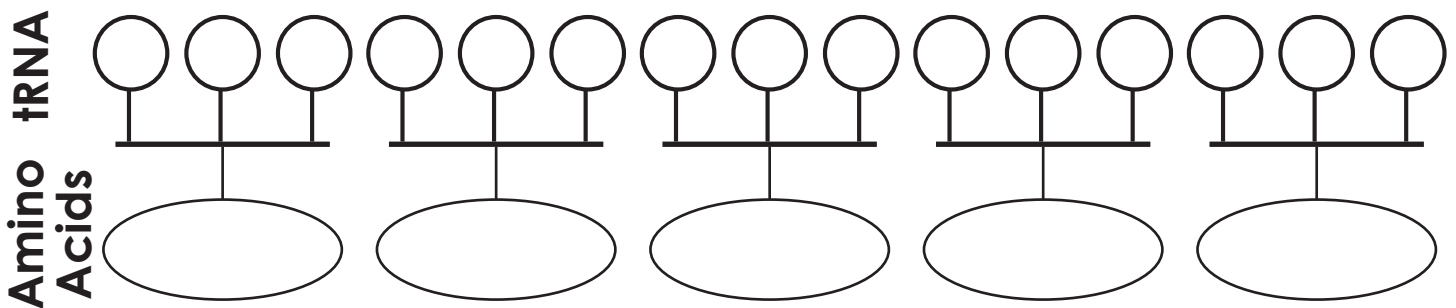
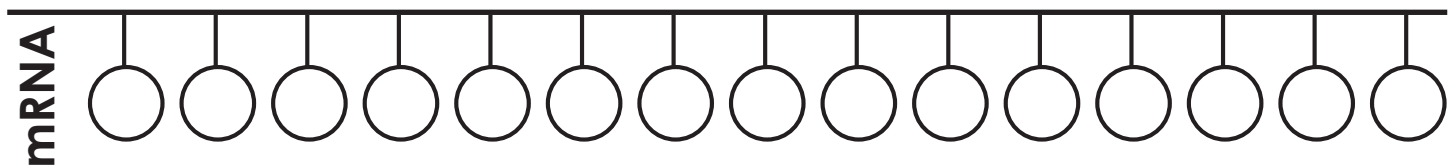
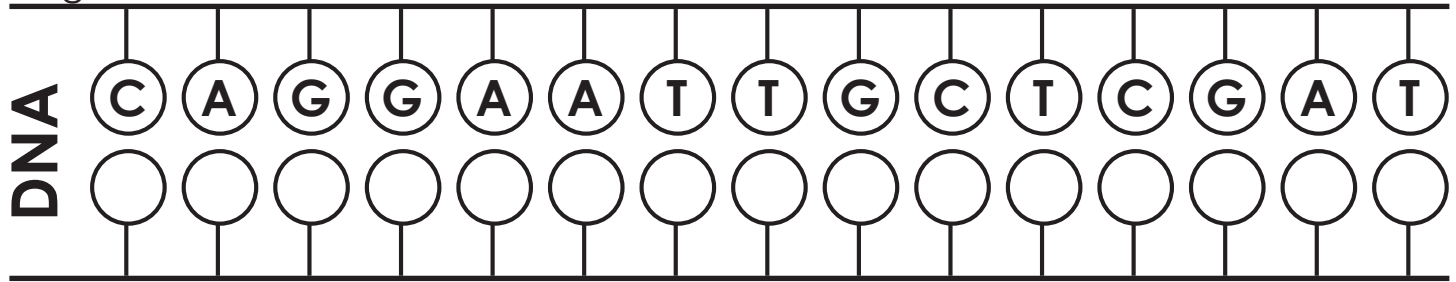
1. Fill in the complimentary DNA strand using DNA base paring rules.
2. Fill in the correct mRNA bases by transcribing the bottom DNA code.
3. Translate the **mRNA codons** and find the correct **amino acid** using the Codon Circular Table.
4. Write in the amino acid and the correct ant-codon, the tRNA molecule.
5. Then answer the questions about protein synthesis below the amino acids.

Original DNA	Complementary DNA	Codon mRNA	Anti-Codon tRNA	Amino Acid
A	T	A	U	Met., Methionine The start codon
T	A	U	A	
G	C	G	C	
G				
T				
A				
G				
C				
T				
A				
A				
C				
C				
T				
T				

Protein Synthesis & Amino Acid

Here's another way to look at the same process. Fill in all the circles and ovals.

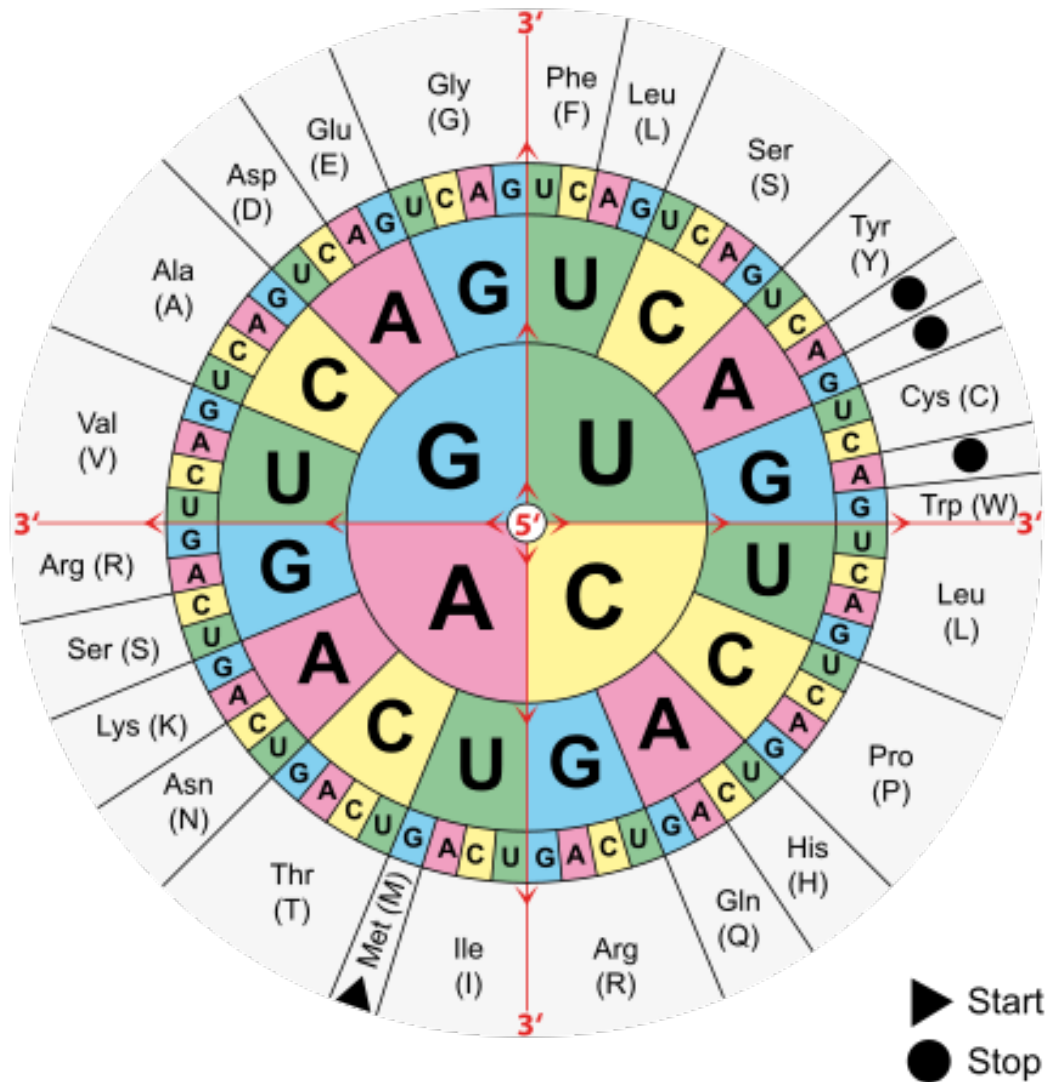
Original Strand



1. Where is mRNA synthesized, transcription or translation?
2. Does mRNA have codons or anti-codons?
3. How many codons equal one amino acid, 1 or 3?
4. Does tRNA bring amino acid to the nucleus or ribosomes?
5. Is a polypeptide a sequence of proteins or amino acids?
6. Does tRNA have codons or anti-codons?
7. Does tRNA transfer amino acids during transcription or translation?
8. Are ribosomes the site where translations or transcription takes place?

Codon to Amino Acid Circular Chart

Start at center of chart with the 5' end. Then work out from center toward 3' end to find amino acid abbreviation.



▶ Start
● Stop

List of Amino Acids

Amino Acid	Three Letter	Single Letter	Amino Acid	Three Letter	Single Letter
Alanine	ala	A	Leucine	leu	L
Arginine	arg	R	Lysine	lys	K
Asparagine	asn	N	Methionine	met	M
Aspartic Acid	asp	D	Phenylalanine	phe	F
Cysteine	cys	C	Proline	pro	P
Glutamic Acid	glu	E	Serine	ser	S
Glutamine	gln	Q	Threonine	thr	T
Glycine	gly	G	Tryptophan	trp	W
Histidine	his	H	Tyrosine	tyr	Y
Isoleucine	ile	I	Valine	Val	V