For the audio version of the file, click this link: Base Pairing Worksheet Audio

The Central Dogma: DNA → RNA → Protein

Base Pairing – DNA and Transcription

1. *The following is a sequence of DNA. Some bases are missing.* ***Fill them in.***

G	**A**	**T**	**T**	**A**	**C**	**A**	___	___
C	**T**	**A**	**A**	___	___	**T**	**T**	**G**

2. *The following is a sequence of DNA. All bases are missing.* ***Fill them in.***

C	**T**	**T**	**C**	**C**	**G**	**C**	**A**	**A**
___	___	___	___	___	___	___	___	___

3. *The following DNA sequence is undergoing* ***Transcription. Fill in the appropriate bases on the DNA and RNA****.*

A	**T**	___	**C**	___	**G**	___	___	**T**	**C**
___	___	**A**	___	**G**	___	**U**	**C**	___	___

4. *The following DNA sequence is undergoing* ***Transcription. Fill in the appropriate bases on the RNA strand.***

T	**A**	**C**	**C**	**G**	**G**	**T**	**T**	**T**	**A**
___	___	___	___	___	___	___	___	___	___

5. *The following RNA transcript is undergoing* ***Translation. Fill in the appropriate bases to match anticodon with codon.***

AUG	**ACG**	**GAG**	**CUU**	**CGG**	**AGC**	**AAA**	**UAA**
____	____	____	____	____	____	____	____

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6. *Using the above mRNA codon/anticodon triplet codes as well as the chart at the bottom of the page,* ***identify the amino acids coded for by this sequence. Circle the start codon and square the stop codon.***

AUG	ACG	GAG	CUU	CGG	AGC	AAA	UAA
_____	_____	_____	_____	_____	_____	_____	_____

Reminders:

Bases in **DNA**: **A**denine, **T**hymine, **C**ytosine, **G**uanine

Purines: **A & G**

Pyrimidines: **C & T**

Pairing: **A ←→ T**
C ←→ G

Bases in **RNA: A**denine, **U**racil, **C**ytosine, **G**uanine

Pairing from DNA → RNA: **A → U** **mRNA** contains **codons**
T → A **tRNA** contains **anticodons**
C → G

Proteins: sequence of amino acids → from start codon to stop codon

Codons Found in Messenger RNA

First Base	Second Base U	Second Base C	Second Base A	Second Base G	Third Base
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

Answers: 1) Top: AC Bottom: TG 2) GAAGGCGTT 3) Top: TCAG Bottom: UAGCAG 4) AUGGCCAAAU
5) UAC UGC CUC GAA GCC UCG UUU AUU 6) Met (start) Thr Glu Arg Arg Ser Arg Stop