

Name _____ Period: _____

DNA Base Pairing Worksheet

There are base pairing rules for writing complimentary DNA strands for a given strand.

A pairs with T

C pairs with G

In RNA, A pairs with U, instead of T.

Write the complimentary DNA strand for each given strand of DNA.

1. CGTAAGCGCTAATTA

2. TCTTAAATGATCGATC

3. AATGAATAGCTAGCTT

4. GGCATTCGCGATCATG

5. CGTTAGCATGCTTCAT

6. ACTAACGGTAGCTAGC

Now write the mRNA strand for the given DNA strand.

7. ATGTCGCTGATACTGT

8. GAAGCGATCAGTTACG

9. AATGAATAGCTAGCTT

10. GGCATTCGCGATCATG

11. CGTTAGCATGCTTCAT

12. ACTAACGGTAGCTAGC

Write the tRNA sequence for the given strand of mRNA

13. AGGUCAUGCAUGGGCAUGCAU

14. AGAGAUUCAGCUAGCACGAUA

15. GUCAUCGAUCGAUCGGAUGCC

16. UUUCAGUCAGCUAGCGAUCGU

Now you will translate the *amino acid* sequence for the given tRNA strand. Remember that codons are 3 base pairs long.

17. AUG CAC UGU CCU UUC GCU GAC

18. GAG AUC UGG UUG GAA UCG

19. AGC GUA UUA ACG UAU CAU

20. AGU CGA UCG AUG CGG AUG AUA

21. GUC GUC GAU AGC UAU CAU GCA

Transcribe the following DNA strand. Then translate the tRNA strand you wrote.

22. TGAGTCGACTGGCTGACCGTAGAC

23. CTTGGCTTATGGTGGTTCGCTCGC

The following are pieces of mRNA. Give the DNA strand from which it was transcribed.

24. GAGAUCUGGUUGGAAUCG

25. AGCGUAUUAACGUAUCAU

		Second letter				
		U	C	A	G	
First letter	U	UUU UUC	UCU UCC UCA UCG	UAU UAC	UGU UGC	U
		UUA UUG		UAA UAG		UGA UGG
	C	CUU CUC CUA CUG	CCU CCC CCA CCG	CAU CAC	CGU CGC CGA CGG	U
				CAA CAG		Arginine
A	AUU AUC AUA	ACU ACC ACA ACG	AAU AAC	AGU AGC	A	
	AUG		AAA AAG		AGA AGG	C
G	GUU GUC GUA GUG	GCU GCC GCA GCG	GAU GAC	GGU GGC GGA GGG	A	
			GAA GAG		Glutamic acid	C

Complete the table below showing the sequences of DNA, mRNA codons, tRNA anticodons and the amino acids. Remember the genetic code is based on mRNA codons.

DNA	1.	2.	GAT	3.
mRNA codon	4.	5.	6.	UAU
tRNA anticodon	7.	UUC	8.	9.
Amino Acid	Tryptophan	10.	11.	12.

1. Using the following piece of DNA, give the mRNA molecule and the amino acid sequence for which it codes.

DNA- A T A T A A A C G A G G A A A T T C C G G G C G

mRNA

tRNA

Amino
acids:

2. Use the mRNA sequence to find the DNA sequence and the amino acid sequence.

DNA

mRNA- A U G C C U A C A U G U G G U G U A A C C U U A

tRNA

Amino
acids

For each codon below, give the tRNA anticodon.

3. UUC _____

4. AUC _____

5. CCG _____

6. CGU _____

7. Give all the possible Anti-codons for the amino acids listed below. (Use page 244 in your text).

Histidine (His) _____

Isoleucine (Ile) _____

Arginine (Arg) _____

Tryptophan (Trp) _____