DNA and Protein Synthesis

Name:_____ Per:____ 12/13

PRACTICE WITH mRNA, tRNA, & CODONS

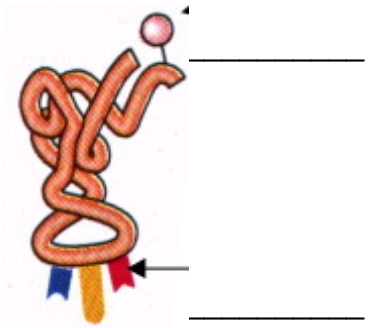
Part 1. Transcription- For each DNA strand, create a mRNA strand **using the original DNA strand.**

Remember to replace thymine with uracil.

Original DNA *(strand 1)*	**TACATTGCG**	**AACACCGAT**	**TCCGGTTGG**	**GCCGACCAC**
mRNA				

Part 2. Translation- For each mRNA molecule (written below the tRNA), write the ***anticodon*** on the blank (by the arrow).

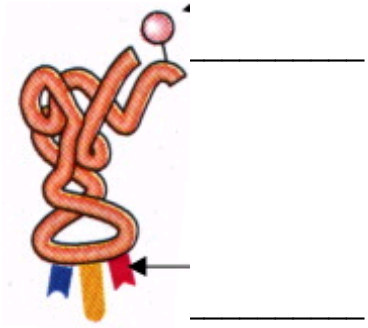
Don't worry about the blank at the top of each tRNA….you'll use that in part 3.



_____

_____

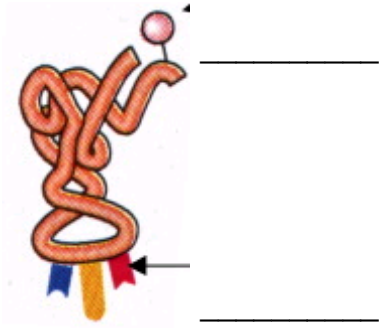
mRNA = AUG



_____

_____

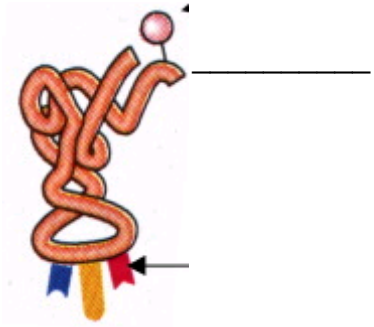
mRNA = GCA



_____

_____

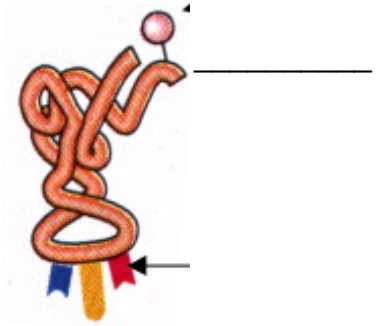
mRNA = AUU



_____

_____

mRNA = CUG



_____

_____

mRNA = AAG

Part 3. Use the mRNA sequence and the genetic code chart below to determine which amino acid is carried by each tRNA above. **The amino acid is determined by the mRNA sequence, NOT the anticodon.** Write your answer in the blank next to the amino acid (the circle at the top of each tRNA).

Part 4. More work with amino acids. Read the chart below to find the amino acid for these mRNA strands.

1. AUG CGA UAC UAA → _____ , _____, _____ , _____
2. AUG ACC GGG UGA→ _____ , _____, _____ , _____
3. AUG CAG UGG UAG→ _____ , _____, _____ , _____
4. AUG GGG CCC UAA → _____ , _____, _____ , _____

DNA and Protein Synthesis

Name:_____ Per:____ 12/13

Transcription - Fill in the following table using the correct DNA or mRNA sequence.

Template DNA	NONCODING DNA	Messenger RNA (use template strand)
ATTACG	1.	2.
3.	GACATC	4.
5.	6.	AUACGA
GCGTAT	7.	8.
9.	10.	UAGACA

Translation (Codons) - Find the corresponding amino acid for each codon using the chart below.

1. AUC=_____
2. GAU=_____
3. GGG=_____
4. CUC=_____
5. UAG=_____
6. CAU=_____
7. For what amino acids does this 9-letter sequence code? UCGCACGGU

_____, _____, and _____

Translation: Fill out the flow chart showing the steps of translation from messenger RNA to proteins.

messenger RNA is made in the _____ and goes into the cytoplasm to attach to a _____

↓

transfer RNA- translation begins at the start codon, _____

↓

Each transfer RNA's _____-codon is complementary to a codon on the _____ strand

The ribosome positions the start codon with its anticodon, which is methionine. The next sequences also bind together a codon and anticodon.

↓

After the ribosome binds a codon and anticodon together, the _____ and the amino acid methionine break their bonds. The tRNA can then go bind to another _____.

↓

All of the amino acids released during translation form a chain called a _____chain. This process (of making chains of amino acids) continues until the ribosome reaches a _____ codon.