

Name: _____ Date: _____ Period: _____

BREAKING THE CODE

REPLICATION

For each of the three DNA sequences below, write the sequence of the complementary strand of DNA that results after replication.

DNA molecule #1: **TACCGGATGCCAGATCAAATC**

Complementary DNA #1

DNA molecule #2: **TACGGGGGGCGTAACCACAAC**

Complementary DNA #2

DNA molecule #3: **TACCTGTTAAGCTACAAAATT**

Complementary DNA #3

TRANSCRIPTION

For each of the same DNA sequences below, write the sequence of messenger RNA codons that is synthesized during transcription. Be sure to separate the codons into triplets

DNA molecule #1: **TACCGGATGCCAGATCAAATC**

mRNA #1

DNA molecule #2: **TACGGGGGGCGTAACCACAAC**

mRNA #2

DNA molecule #3: **TACCTGTTAAGCTACAAAATT**

mRNA #3

TRANSLATION

For each of the mRNA codon sequences you have written, determine the sequence of tRNA anticodons that match it.

Anticodons for mRNA #1: _____

Anticodons for mRNA #2: _____

Anticodons for mRNA #3: _____

Using the chart below, write the amino acid sequence coded for by each mRNA.
(Note: The code is based on mRNA codons, not tRNA anticodons.)

Polypeptide #1: _____

Polypeptide #2: _____

Polypeptide #3: _____

The Genetic Code
(Based on Messenger RNA Codons)

First Base	Second Base				Third Base
	U	C	A	G	
U	Phenylalanine	Serine	Tyrosine	Cysteine	U
	Phenylalanine	Serine	Tyrosine	Cysteine	C
	Leucine	Serine	Stop	Stop	A
	Leucine	Serine	Stop	Tryptophan	G
C	Leucine	Proline	Histidine	Arginine	U
	Leucine	Proline	Histidine	Arginine	C
	Leucine	Proline	Glutamine	Arginine	A
	Leucine	Proline	Glutamine	Arginine	G
A	Isoleucine	Threonine	Asparagine	Serine	U
	Isoleucine	Threonine	Asparagine	Serine	C
	Isoleucine	Threonine	Lysine	Arginine	A
	start Methionine	Threonine	Lysine	Arginine	G
G	Valine	Alanine	Aspartic acid	Glycine	U
	Valine	Alanine	Aspartic acid	Glycine	C
	Valine	Alanine	Glutamic acid	Glycine	A
	Valine	Alanine	Glutamic acid	Glycine	G

- mRNA #1 AUG GCC UAC GGU CUA GUU UAG
 mRNA #2 AUG CCC CCG CAU UGG UGU UGA
 mRNA #3 AUG GAC AAU UCG AUG UUU UAA