

**Scholars/ Honors Biology Genetic Code/ Protein Synthesis Worksheet**

**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: **TACGGGGGCGTAACCACAACT**  
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: **TACGGGGGCGTAACCACAACT**  
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 on the back side, 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: \_\_\_\_\_