Decoding the Genetic Code

Protein synthesis happens at the ribosomes but actually begins in the nucleus. DNA unzips and mRNA makes a copy of a section of DNA using complementary bases. After mRNA is assembled, it leaves the nucleus through the porous nuclear envelope and travels to the ribosomes. At the ribosomes, the mRNA codons (3 base groups) will be matched to the tRNA anticodons. The tRNA brings amino acids that are joined together by peptide bonds to form proteins. In this activity, you will convert the DNA to mRNA and then create protein chains.

Directions:

1. Convert the DNA strand to mRNA on your paper. Remember that RNA does not have thymine.
2. Using the mRNA codons, write the tRNA anticodons.
3. Use the tRNA anticodons to create the proteins coded for in the original DNA strand. Record them on your paper,
4. Convert the individual amino acids in each protein to letters according to the key to decode the messages found in the strands. Write the message on your paper.

Strand 1

DNA – TACTAAATTTACAATTTGCATGCGATCTACTGCTAGTTAGAGTTGCCCCTCACT

mRNA –

Protein –

Message –

Strand 2

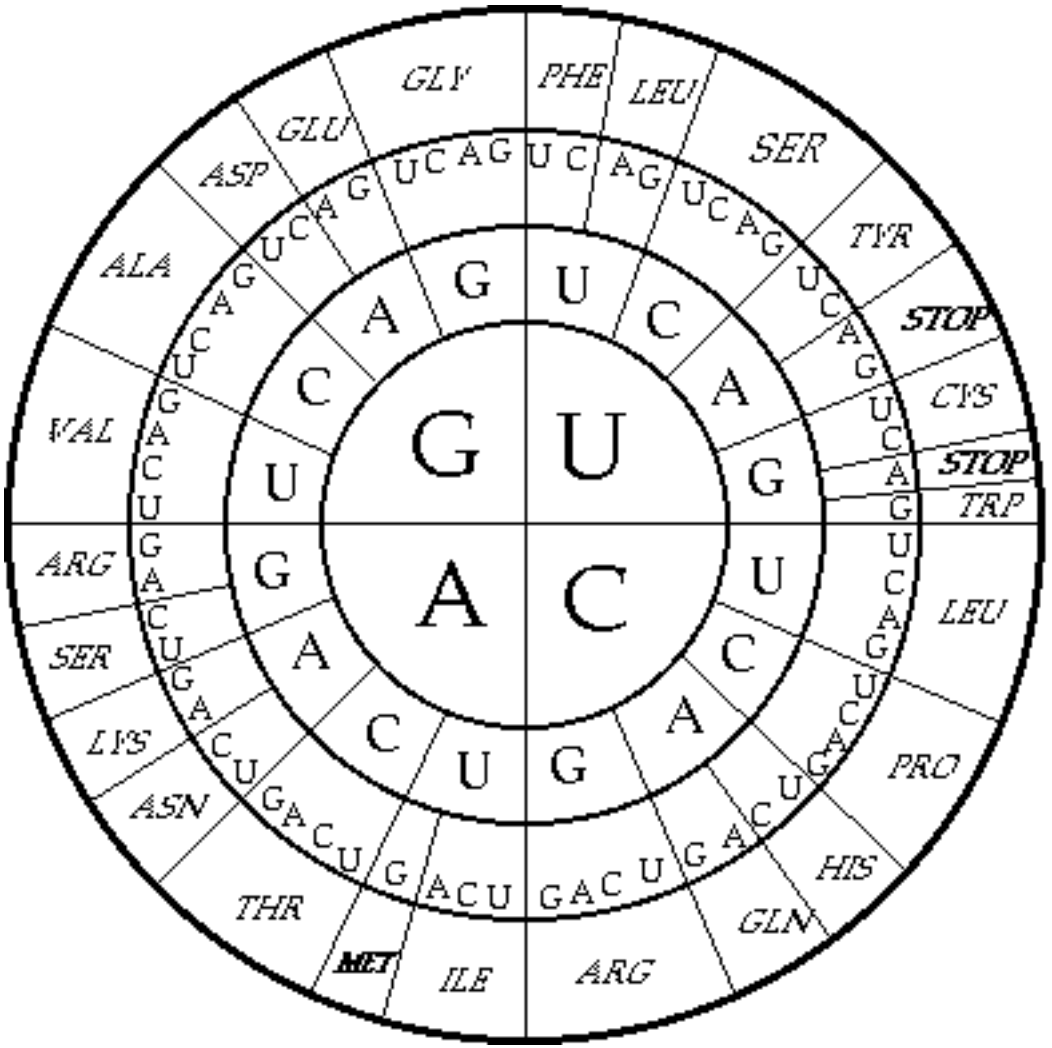
DNA – TACCCTTCCAAAGCTAGCTAGACGTTTATTTACCGGATAGCTATCTACCTGGTCAAGACT

mRNA –

Protein –

Message –

METHIONINE (MET) - (START)
ALANINE (ALA) – A
THREONINE (THR) – B
CYSTEINE (CYS) – C
ARGININE (ARG) – E
ASPARTATE (ASP) – F
GLYCINE (GLY) – G
HISTIDINE (HIS) – H
ISOLEUCINE (ILE) – I
LEUCINE (LEU) – L
TRYPTOPHAN (TRP) – M
PHENYLALANINE (PHE) – N
ASPARAGNINE (ASN) – O
PROLINE (PRO) – P
TYROSINE (TYR) – R
LYSINE (LYS) - S
SERINE (SER) – T
GLUTAMINE (GLN) – U
VALINE (VAL) – V
GLUTAMATE (GLU) – Y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