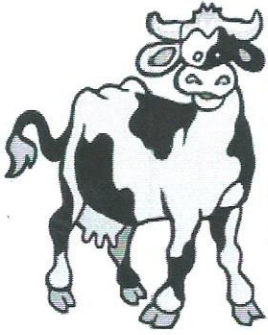


Name: KEY Date: _____ Per: _____**How DNA Controls the Workings of a Cell**

Objective: SWBAT transcribe and translate a DNA sequence in order to determine the amino acid sequence.

Engagement: in the box below write at least 5 words that you can associate with the word protein

- amino acid	- genetic trait	- control of cell functions
- polypeptide	- muscles	

Exploration: Below are two partial sequences of DNA bases, sequence 1 is from a human and sequence 2 is from a cow. In both humans and cows, this sequence is part of a set of instructions for controlling a body function. In this case, the sequence contains the gene to make the protein insulin. Insulin is necessary for the uptake of sugar from the blood. Without insulin, a person cannot use digested sugars the same way others can, and have a disease called diabetes.

- Using the DNA sequence make a complimentary RNA strand for both the human and the cow. Write the RNA directly below the DNA strand (remember to substitute U's for T's in RNA)
- Use the codon table to determine what amino acids are assembled to make the insulin protein in both the cow and the human. Write your amino acid chain directly below the RNA sequence.

Sequence 1 - Human

CCATAGCACGTTACAACGTGAAGGTAA

RNA: GGU|AUC|GU|G|CAA|UGU|UG|CAC|U|ACC|AAUAmino Acids: glycine - isoleucine - valine - glutamine - cysteine -
cysteine - threonine - serine - isoleucine**Sequence 2 - Cow**

CCGTAGCATGTTACAACGCGAAGGCAC

RNA: GGCAUC|GU|G|CAA|UGU|UG|G|G|CAC|U|CC|GUGAmino Acids: glycine - isoleucine - valine - glutamine - cysteine -
cysteine - alanine - serine - valine