Secret Pseudo-Protein Code

Use the Secret Pseudo-Protein Code to decode the answers to the two jokes below. The table shows the secret pseudo-protein code.

To decode the symbol CGU: (1.) Follow down the leftmost column labeled “First base” until you find the letter C. All codes in this four by four block begin with the letter C. (2.) Go across the row until you are in the “Second Base” column labeled lined up with the letter G. All codes in this column have G as their second letter. (3.) Scan the “Third base” column on the far right until you find the letter U. (4.) You should now be pointing at the letter “Y.” The code CGU stands for “Y.”

To encode the letter “ñ:” (1.) Find the letter “ñ.” (2.) Look to the left to find the first code letter, A. (3.) Look up to find the second code letter, G. (4.) Look to the right to find the third and last code letter, C. The letter “ñ” is coded as AGC.

Hints: Every message must begin with START. Every message ends when a STOP punctuation mark appears. Good luck.

1) **Pretend you’re in a jungle and a tiger is chasing after you. What should you do?**

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AUG CAG AAA GCA UAU GGG GCG CAA AUC AAA AUC GCU CUG

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

UCA GCU GUA UAA

2) **I made a DNA joke in my Biology class but not one laughed…**

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

AUG GUC GAU AUC AAU AAU GGG ACA CGC

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

GGG AAA UCU CGC ACA UCA GCU AUC GGG UGU UUC AAU

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

GGG GCA GUU GUU UGA

3) **What was the biologist wearing on his first date?**

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AUG CUA AUC AAU UCA GUA GCU AUC CAA GGG GUA AUC

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

GCU AUC AAU UGA

Create your own question about DNA or an *appropriate* joke. Remember: Every message must begin with START. Every message ends when a STOP punctuation mark appears.

Write your question or joke on the line below.

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Write out your Protein Code below. Have a fellow student figure out the answer to your question.

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AUG

\_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_

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Answer the following questions using complete sentences.

1) How many different characters are coded for using the 3-letter word (codon)/4-letter alphabet (UCAG) Secret Pseudo-Protein Code? (Hint: Look at the table.)

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2.) If you were to make up a new code using the same 4-letter alphabet (UCAG), but only 2-letter words (codons) could be made, how many different characters could you code for? Show all the possibilities. (Hint: The answer is somewhere between 4 and 40.)

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3) Would the 2-letter word (codon)/4-letter alphabet (UCAG) code be sufficient to encode only the 26 capital letters of the alphabet? Why or why not?

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4) The protein synthesis code is redundant. For example, UCA, UCC, UCG, and UCU all code for the amino acid called serine. How could this redundancy reduce the number of errors made at the ribosome during protein synthesis?

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