Deciphering Amino Acid Sequence from mRNA Cheat Sheet

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INTRODUCTION

In this lab, we will delve into the process of deciphering amino acid sequences in polypeptides from a given mRNA nucleotide sequence. The mRNA sequence contains information that directs the synthesis of proteins, and we will use our understanding of the genetic code to convert this information into the corresponding amino acid sequence.

OBJECTIVES

- ☐ Comprehend the relationship between mRNA and amino acids.
- ☐ Learn how to utilize a genetic code chart.
- ☐ Decode a provided mRNA sequence to determine the amino acid sequence in the resulting polypeptide.

MATERIALS

mRNA sequence: GCUAUGCCGAAUGUAUUCGGCCAU

Computer with internet access (for codon table reference)

Amino acid chart (codon table)

PROCEDURE

Step 1: mRNA Sequence Analysis	Examine the given mRNA sequence: GCUAUGCCGAAUGUAUUCGGCCAU
Step 2: Identifying Codons	Divide the mRNA sequence into codons (sets of three nucleotides): GCU-AUG-CCG-AAU-GUA-UUC-GGC-CAU
Step 3: Utilizing the Codon Table	Refer to the codon table to find the corresponding amino acid for each codon.
Step 4: Translating Codons	Translate the codons using the codon table to determine the amino acid sequence: Ala-Met-Pro-Asn-Val-Phe-Gly-His.
Step 5: Assembling Amino Acid Sequence	Record the amino acids derived from each codon: Ala-Met-Pro-Asn-Val-Phe-Gly-His.
Step 6: Analysis and Conclusion	Analyze the obtained amino acid sequence to gain insights into the potential protein's properties.

RESULTS

Using the mRNA sequence GCUAUGCCGAAUGUAUUCGGCCAU, the translated amino acid sequence is Ala-Met-Pro-Asn-Val-Phe--Gly-His.

CONCLUSION

In this example, we used the provided mRNA sequence to decode the amino acid sequence. The lab procedure provides a structured approach for students to follow, helping them grasp the concept of translating mRNA into a polypeptide's amino acid sequence.

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