

Name:

Name of group members:

Understanding Concepts Exercise

CMPSC/BIO 300

Fall 2017

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The DNA sequence below represents the first part of the wild-type human CFTR coding sequence. The sequence shown is the **non-template** strand and is written from **3' → 5'**.

3' CTTTTTTTCAAACCTCTGTTGCGACCGGAAAAGGTCTCCGCTGGAGACGTA

1) DNA Manipulation Algorithm:

Please run the input sequence above through the DNA manipulation algorithm by hand. What is the output of the algorithm, given the parameters (i.e., template and orientation)? Indicate which algorithm step was taken to return the output.

2) Given the sequence you obtained from the previous step, write the mRNA following the base-pairing rules (Transcription algorithm). Describe how this step is performed.

3) Given the mRNA you obtained, use the genetic code table presented in class to translate your mRNA into protein using the one-letter amino-acid code (Translation algorithm). Describe how this step is performed.