

# Homework 1

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**Problem 1**

For the following mRNA sequence, can you extract its 5' UTR, 3' UTR and the protein sequence? ACTTGTCATGGTAACTCCGTCGTACCAGTAGGTCATG

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So the above is actually DNA, since it has T's. So we assume that the T's are actually U's.

So in RNA we have: ACUUGUCAUGGUAACUCCGUCGUACCAGUAGGUCAUG

We then look for the start codon (Met) which is AUG. So we get:

ACUUGUC AUG GUA ACU CCG UCG UAC CAG UAG GUC AUG

The 5' UTR is everything left of the first AUG which is: ACUUGUC. The stop codons are either UAA, UAG, or UGA. We see UAG, so the 3' UTR is everything right of this: GUCAUG

Thus our coding region is:

AUG GUA ACU CCG UCG UAC CAG UAG → MET VAL THR PRO SER TYR GLN Stop