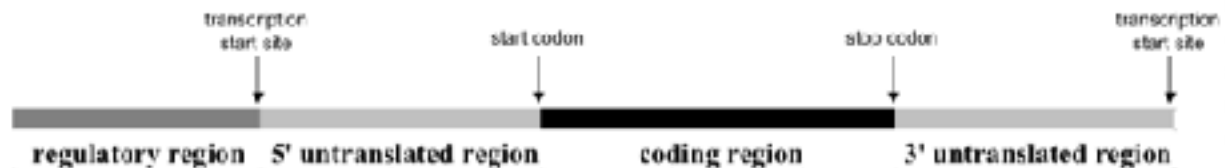


5. For the following mRNA sequence, can you extract its 5' UTR, 3' UTR and the protein sequence?

ACTTGTCATGGTAACTCCGTCGTACCAGTAGGTCATG

UTR = untranslated region



ATG is the start codon

TAA, TAG, TGA are stop codons

ACTTGTC**ATG**GTA ACTCCGTCGTACCAGTAGGTCATG

From the **start codon**, we have the following groupings of 3:

GTA

ACT

CCG

TCG

TAC

CAG

TAG — — Notice the stop codon here

GTC

ATG

Assuming we have no regulatory region for this problem (unlikely, as that isn't discussed until chapter 10), we have:

5' untranslated region: ACTTGTC

Coding region: ATGGTAACTCCGTCGTACCAGTAG

3' untranslated region: GTCATG

Are the start and stop codons included as part of the coding region? I'm assuming yes, but that could be wrong.