

# **Bioinformatics project**

**Submitted to: Dr. Samina Shakeel**

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**Department: Biochemistry Bs 7<sup>th</sup> Morning**

## **Task No: 2**

### **RNA Analysis:**

#### **1. DNA To RNA Conversion:**

AUGGGAUGCUCCACCAGUACUCACACCUCCGGAGUGGAUCCGAGCAGACC  
GAGCACCAAACCGGAGGAGAGCAACGGGGCCAGCACACAGGGGCGGCCC  
ACGAGAACGGAA AUGUAGCUGAGGACACUGAAACGCUCCCCGAUGAGACA  
CCUACUGGAGGCACUGUGGCAGAAC CUGCAGCAGAUGCAACAU CUGCACA  
GCCCCACAGCAGGGGUGGAACC UCCACCUGCAGCUGCAGCAGCAC CUGUAG  
AGGCAACACCACCUGCAGAACAGGCAACGCCCC CUGCAGAAGAAGCAGCU  
CCACCUGCAGAAGAGGU AACACCACCUGCAGAAGAGGCAGCACCACCUGC  
AGAAGAAGCAGCACCAGCAGCAGAAAAGCCUUCAGAGGCUGCAACACAAG  
AAGCACCAGCAGCUGCAGAGCCAGGGAGCGAGGCCACAGCAGCUGACUCA  
GCAGAAGCACCAGCUCCCAGUGAGUGA

#### **2. Manual UTR Identification Results:**

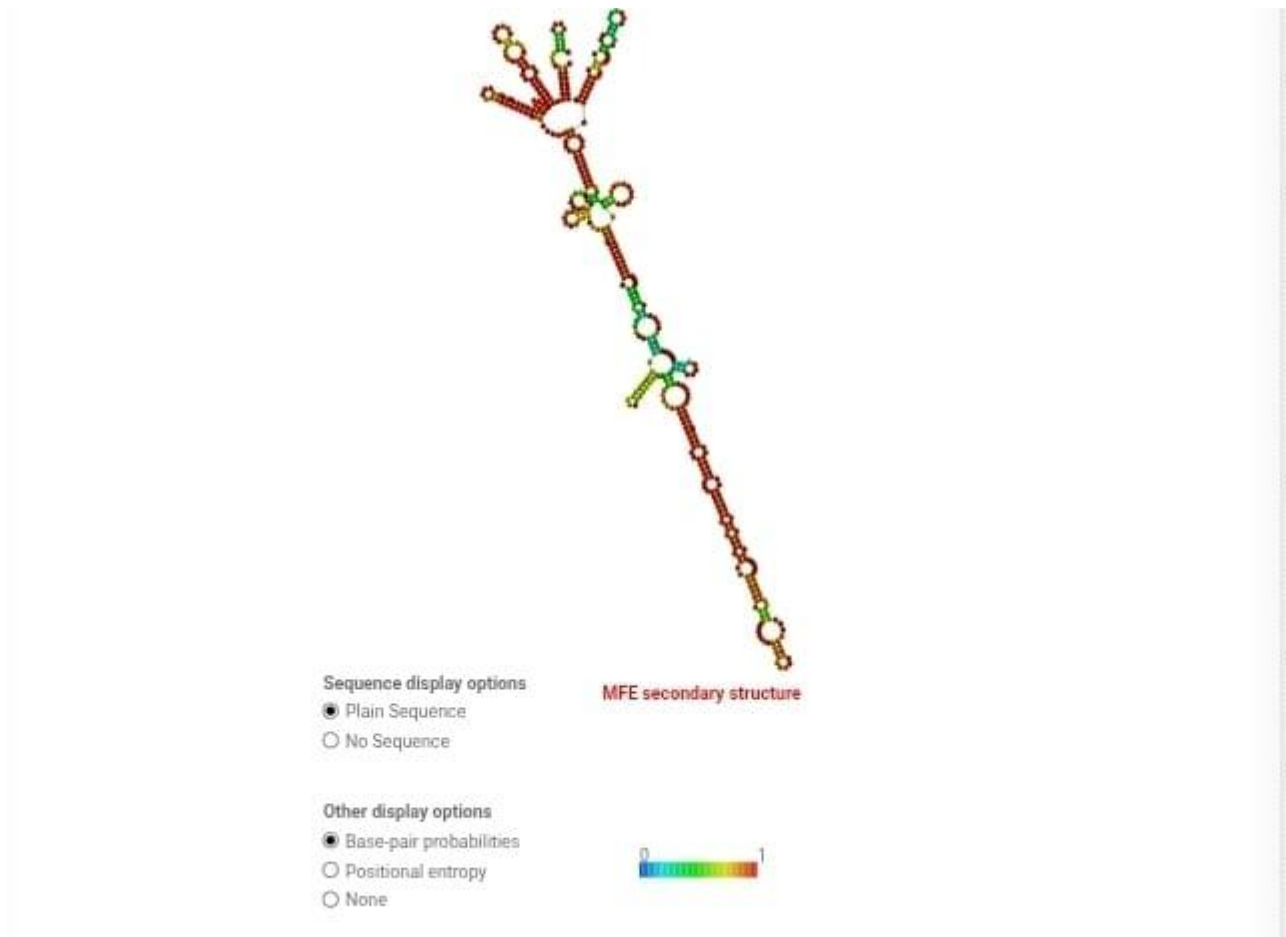
The UTRScan and other prediction servers were not opening, then I identified the UTR regions manually from the above RNA sequence.

This is the part of the sequence before the first 'AUG' (Start Codon). It helps the cell start making protein.

This is the part of the sequence after the 'UGA' (Stop Codon). It helps keep the RNA stable.

### 3. RNA fold image:

You may look at the interactive drawing of the MFE structure below. If you do not see the interactive drawing and you are using Internet Explorer, please install the [Adobe SVG plugin](#). **A note on base-pairing probabilities:** The structure below is colored by base-pairing probabilities. For unpaired regions the color denotes the probability of being unpaired.



### MFE Value:

The Minimum Free Energy (MFE) is -180.39 kcal/mol. This indicates a stable RNA structure."

### Stability Reason:

Because my sequence has a low negative MFE and many stems, it is a stable structure. This stability is important because it allows the mRNA to stay intact long enough to be translated into a protein.





