#### **BIOINFORMATICS ASSIGNMENT 1 (Day 1 - 5)**

Note: You will be added in a slack community of Bversity for further doubts and communications

- 1. Gene Name:
  - F2 coagulation factor II, thrombin
- 2. Function of the Gene:
  - -The F2 gene helps in formation of blood clots in response to injury.
  - -The F2 gene provides instructions for making a protein called prothrombin (also called coagulation factor II )
- 3. NCBI accession number:

>NC\_000011.10

4. Forward Primer:

**TGAATGGGAGAACTGCTGGT** 

5. Reverse primer:

**TTCACATGCCCTCGGTAGTT** 

- 6. Features of primers:
  - Length of primer 18 to 28 bases
  - GC Content of primer 40% to 60%
  - Melting Temperature of primer (Tm) 65 degree celsius 72 degree celsius
  - Annealing Temperature of primer- 4 degree celsius
- 7. Amplicon length and sequence:

Amplicon Size - 207

Amplicon Sequence - TGAATGGGAGAACTGCTGGTTGCAGAGGAAGAGG

GGCTGGGTGAATGCAGGTTCAGGATTGTGGACCTGCATGAGCTGGGAGGTGGGGGA TAGA

## CAACTTTGCAGGGAGAGAGGAAATAAGTCCCCAGGCTCCAAGGCTGACCGGGGTGGGGTC

### TCCGCAGGTAACTGTGCTGAGGGTCTGGGTACGAACTACCGAGGGCATGTGAA

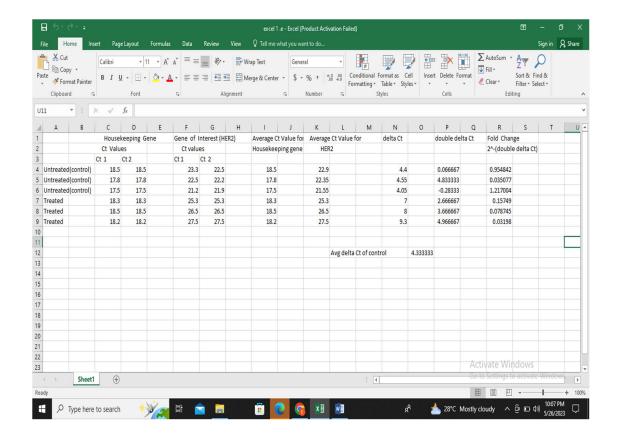
### qPCR Data analysis (DAY 5)

	Ct values			
Housekeeping genes(GAPDH)	Ct 1	Ct 2	Gene of	
Untreated (control)	18.5	18.5	Untreate	
Untreated (control)	17.8	17.8	Untreate	
Untreated (control)	17.5	17.5	Untreate	
Treated	18.3	18.3	Treated	
Treated	18.5	18.5	Treated	
Treated	18.2	18.2	Treated	

		Ct values		
Gene of interest ( HER2)	Ct 1		Ct 1	
Untreated(control)		23.3		22.5
Untreated(control)		22.5		22.2
Untreated(control)		21.2		21.9
Treated		25.3		25.3
Treated		26.5		26.5
Treated		27.5		27.5

The following data are results of qPCR from

cancer cell lines. HER2 stands for human epidermal growth factor. It's healthy in normal amounts, but too much may be a sign of a certain type of breast cancer. Calculate the 2 Delta Ct values for the following data and plot the values on a graph using graphpad prism.



# -Average Ct Value for Housekeeping gene -

18.5

17.8

17.5

18.3

18.5

18.2

# -Average Ct Value for HER2 -

22.9

22.35

21.55

25.3

26.5

0.031980434

### Avg delta Ct of control- 4.333333333 -delta Ct -4.4 4.55 4.05 7 8 9.3 -double delta Ct -0.066666667 4.833333333 -0.283333333 2.666666667 3.666666667 4.96666667 - Fold Change 2^-(double delta Ct) -0.954841604 0.035076939 1.217003514 0.157490131 0.078745066