BIOINFORMATICS ASSIGNMENT 1 (Day 1 - 5)

1. Gene Name: HER2
2. Function of the Gene:

Enables DNA-binding transcription factor activity, RNA polymerase II-specific. Involved in negative regulation of transcription by RNA polymerase II. Acts upstream of or within negative regulation of neuron differentiation; negative regulation of transcription, DNA-templated; and neurogenesis. Is active in chromatin. Is expressed in several structures, including central nervous system; ciliary marginal zone; neural keel; posterior neural rod; and spinal cord neural tube. Orthologous to human HES5 (hes family bHLH transcription factor 5).

3. NCBI accession number: NC_007122.7

4. Forward Primer: GATTGTGGAGACCCTGGTGA

5. Reverse primer: AGAAACGTACTGAGGTGCCA

6. Features of primers:

	START	MELTING TEMPERATURE	GC%	LENGTH	TEMPLATE STRAND
FORWARD PRIMER	3379	59.02	55.00	20	PLUS
REVERSE PRIMER	3603	58.95	50.00	20	MINUS

7. Amplicon length and sequence:

GATTGTGGAGACCCTGGTGACCTTTCTTAATTAAAGCCAAAC

GTGTTGTTTTTATAAAACGTCGACGTAGACAGCAGCTGTCCTGACGCATAGAATGTACAA

GTCTACCCCATGTCTGAGTCTGAGAGCACCTGTATATCTATTGCTTTACTTCACGCGCGT

GGAGATGAACTTTTATTTACATATTGTAAAAATGAGGGTTATATGGCACCTCAGTACGTT
TCT

AMPLICON SIZE: 3726bp

qPCR Data analysis (DAY 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 graph pad prism.

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

	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

	HOUSEKEEPING GENE		GENE OF INTEREST		AVERAGE CT VALUE	AVERAGE CT VALUE	Δ Ct	Δ Δ Ct	FOLD CHANGE
	CT1	**CT2**	**CT1**	**CT2**					
Control (untreated)	17.5	17.5	21.2	21.9	17.5	21.55	4.05	0	1
Sample 1	18.3	18.3	25.3	25.3	18.3	25.3	7	2.95	0.129408115
Sample 2	18.5	18.5	26.5	26.5	18.5	26.5	8	3.95	0.064704058
Sample 3	18.9	18.2	27.5	27.5	18.55	27.5	8.95	4.9	0.033492921