

## 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: Streptococcus suis hylA gene for hyaluronidase, serotype 2, strain P1/7
2. Function of the Gene : Hyaluronate lyase catalyses the degradation of hyaluronic acid (HA) and can be extracted from several pathogenic streptococcal species. This specific gene has been isolated and purified from hyaluronate lyase from the zoonotic pig pathogen Streptococcus suis. Hyaluronate lyase activity is required for S. suis to use HA polymer as a carbon source and that supplying exogenous recombinant hyaluronate lyase to all S. suis strains tested allowed fermentation of the resultant HA breakdown products. Hyaluronate lyase activity is not present in all disease isolates of S. suis. Hyaluronate lyase activity is always associated with the presence of protein of the expected size, whereas lack of hyaluronate lyase activity is due to truncation or absence of the enzyme.
3. NCBI accession number: AJ308330.1
4. Forward Primer: GCTGTTCAGGCGACAAAAGA
5. Reverse primer: GTCCCTCATCAATGCGAACC
6. Features of primers:

	(Sequence 5' >> 3')	Template strand	Length	Start	Stop	Tm	GC%
<b>Forward Primer</b>	<b>GCTGTTCAGGCGACAAAAGA</b>	Plus	20	307	327	59.06	50.00%
<b>Reverse Primer</b>	<b>GTCCCTCATCAATGCGAACC</b>	Minus	20	475	495	58.98	55.00%

7. Amplicon length and sequence: 169

GCTGTTCAGGCGACAAAAGAAGAAGAGAAGAACCTAGTAGCCAACGGGGAGTTCGCCA  
GTACAACAGCAGCATCAGGAAATTGGGCAGATCCGGCAGCTACAAACTGGGAAACATG  
GATTCCTGCAAATGTGAAGAAAGAAAACGGACAGGTTCGCATTGATGAGGGAC

### qPCR Data analysis (DAY 5)

	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

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.

Answer –

	House keepin g	Ge ne s	Gen es of	Inte res t	Average ct value (HG)	Average ct value (GOI)	Δct valu e	ΔΔct valu e	Fold Chan ge
	R1	R2	R1	R2					
Con trol	17.93	17.93	22.33	22.2	17.93	22.26	4.33	0	1
Sam ple 1	18.3	18.3	25.3	25.3	18.3	25.3	7	2.67	0.1571
Sam ple 2	18.5	18.5	26.5	26.5	18.5	26.5	8	3.67	0.0785
Sam ple 3	18.2	18.2	27.5	27.5	18.2	27.5	9.3	4.63	0.0403

