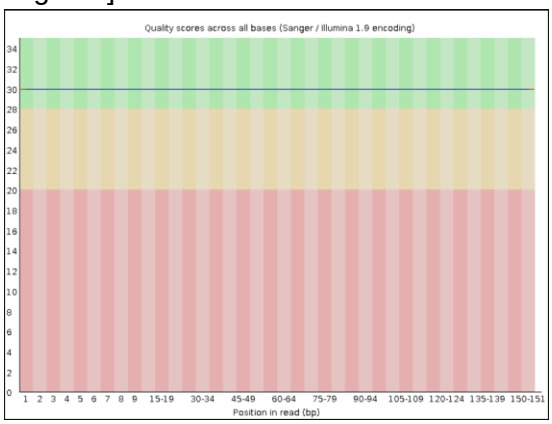
BIOINFORMATICS ASSIGNMENT 2 (Day 6 - 10)

NGS DATA QUALITY CHECK (DAY 6)

1. SRA accession number: SRR24518778
2. NGS platform and layout: Illumina Platform, Paired Layout
3. Basic statistics: (insert image with summary)
   [Gives a quick run through of the name and type of file, total sequences and the GC content]

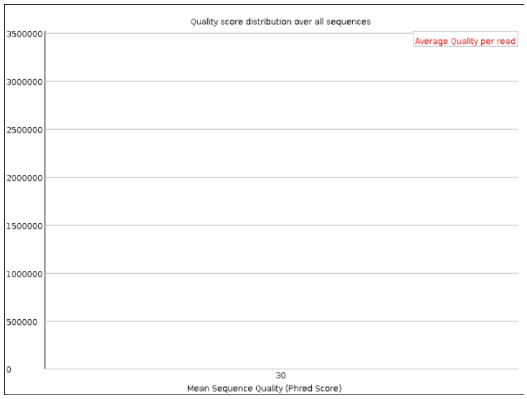
Measure	Value
Filename	SRR24518778_fastq_gz.gz
File type	Conventional base calls
Encoding	Sanger / Illumina 1.9
Total Sequences	3516206
Sequences flagged as poor quality	0
Sequence length	35-151
%GC	38

4. Per Base sequence quality: (insert image with summary)
   [Defines the quality of each single base. The line shows the median value of the read. The line being in the green region signifies that the quality of each single base is good.]



5. Per sequence quality score: (insert image with summary)

   [Calculated with the help of PhredScore. The PhredScore must always be more than 30 (which signifies that for 1000 reads in a sequence, 1 error is acceptable). If the Score exceed 30, it would mean that there are more than 1 errors per 1000 reads, which doesn't signify good quality reading.]

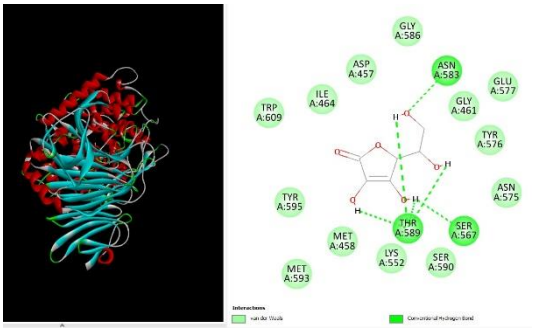
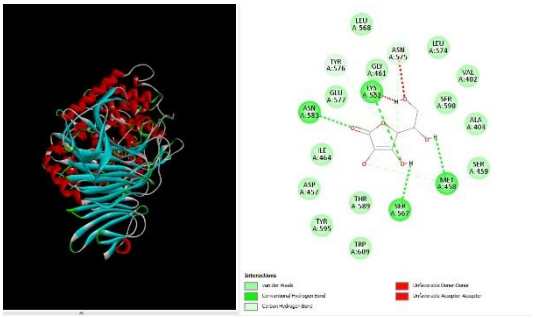
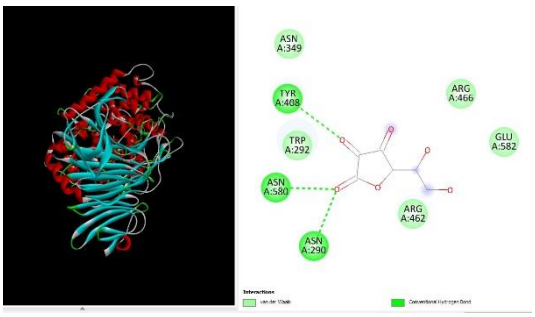


GitHub (DAY 7)

Please paste your GitHub account link - https://github.com/ReeRee6

Molecular Docking (DAY 8 and 9)

Protein Name: Streptococcus pneumoniae HYALURONATE LYASE in complex with HYALURONIC ACID DISACCHARIDE
Protein ID - 1C82

Ligand Name	Ligand ID	Energy value	Dock Image - 2D
D-Ascorbic Acid	54690394	-7.3	
Erythorbic Acid	54675810	-7.3	
Dehydroascorbic Acid	440667	-5.5	

Cancer therapy(DAY 10)

Cancer type	Hallmarks	Drug	Mechanism of drug
Breast Cancer	Uncontrolled growth and proliferation of breast tissue, metastasis, tumour formation	**Trastuzumab**	Binds to HER2 (Human Epidermal Growth Factor Receptor 2) hence blocks the reception of growth signals.
Cervical Cancer	Squamous cell carcinoma, Cervical intraepithelial neoplasia	**Bevacizumab**	It is an mAB (Monoclonal Antibody) which is an anti-VEGF (Vascular Endothelial Growth Factor), thus preventing angiogenesis.
Colorectal Cancer	Uncontrolled multiplication of colorectal cells, development of adenomatous polyps	**5-FluoroUracil**	Interrupts DNA and RNA synthesis in metastatic cells, leading to inhibition in their growth.
Prostate Cancer	Prostatitis (Abnormal enlargement of the prostate gland due to uncontrolled growth of prostate cells)	**Leuprolide/Goserelin acetate**	Lowers the amount of testosterone in the body (which is responsible for the growth of prostate cancer cells).
Skin Cancer	Carcinoma in Basal cells, Squamous cells, Kaposi, Merkel cells, and Sebaceous Glands, Melanoma (melanocyte malignancy)	**Cemiplimab-rwlc**	Binds to PD-1 surface proteins (which help cancer cells suppress immune cells) on T-cells. As a result, T-cells can finally attack cancerous cells.