BIOINFORMATICS ASSIGNMENT 2 (Day 6 - 10)

NGS DATA QUALITY CHECK (DAY 6)

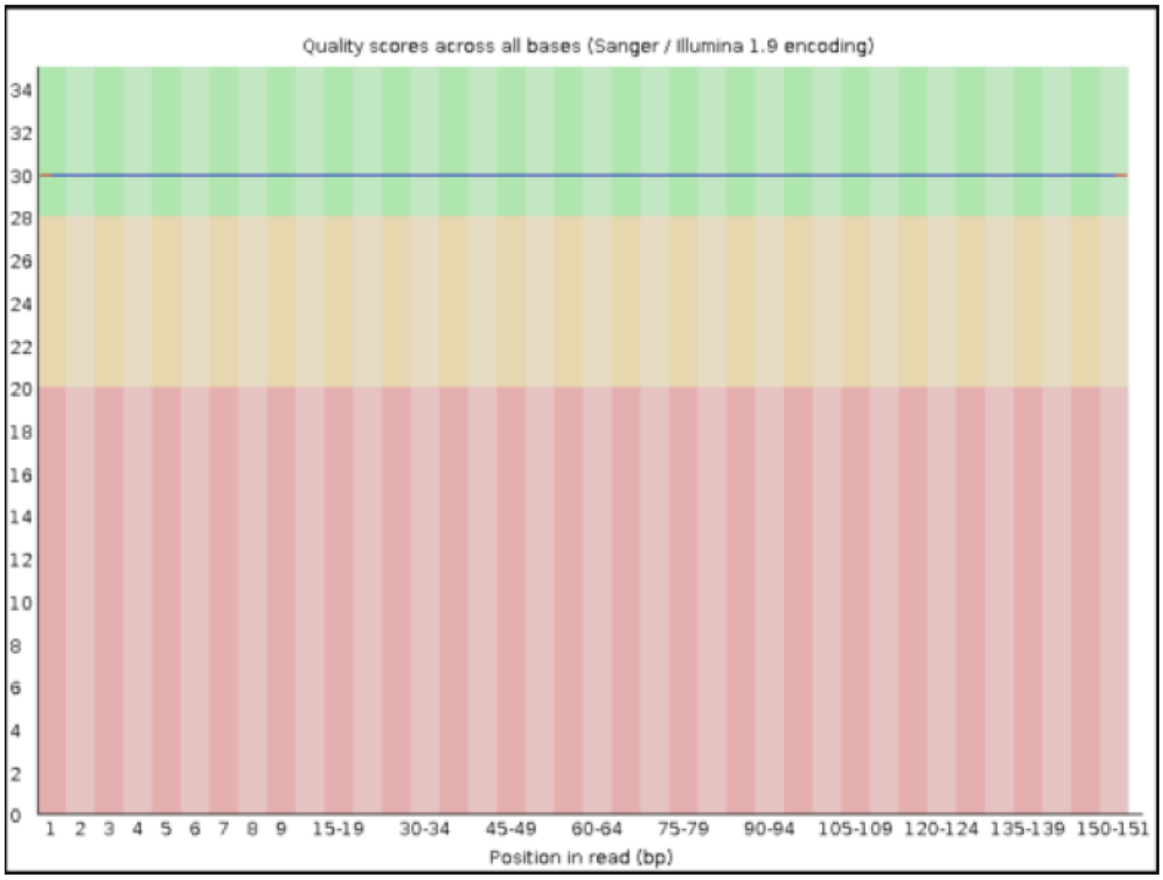
1. SRA accession number: SRR24518778

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]

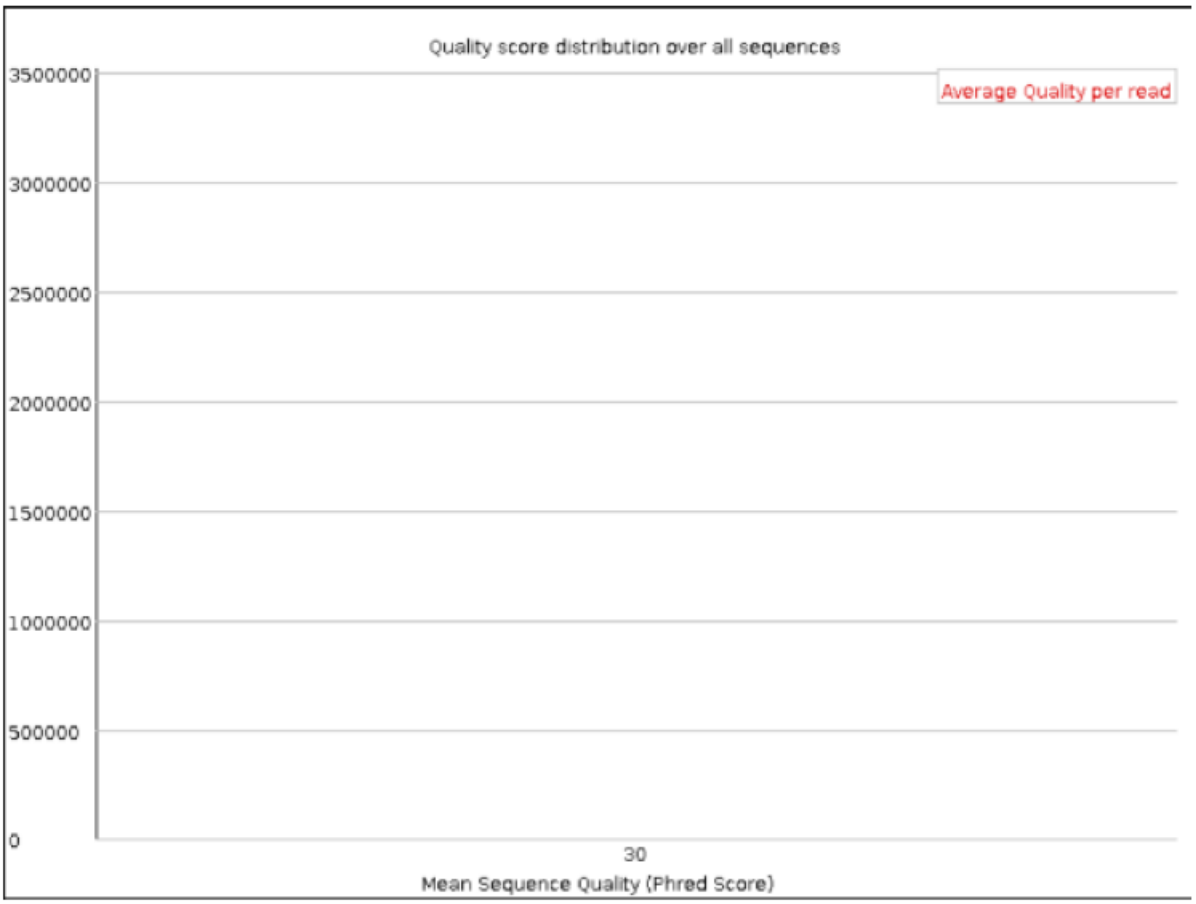
Measure	Value
Filename	SRR24518778_fastq_gz.gz
File type	Conventional base calls
Encoding	Sanger / Illumina 1.9
Total Sequences	3516206
Sequences flagged as poor quality	0
Sequence length	35-151
%GC	38

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.]

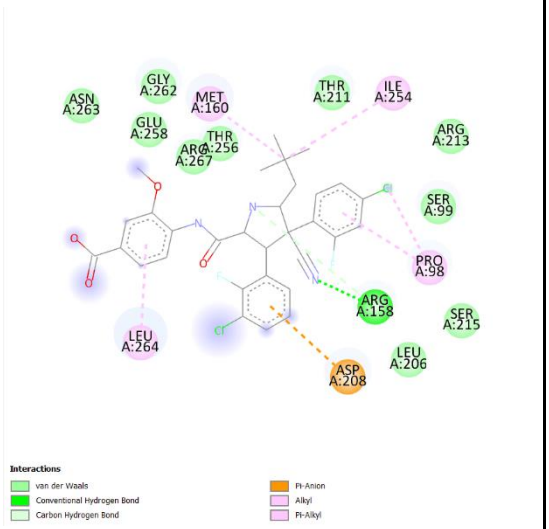
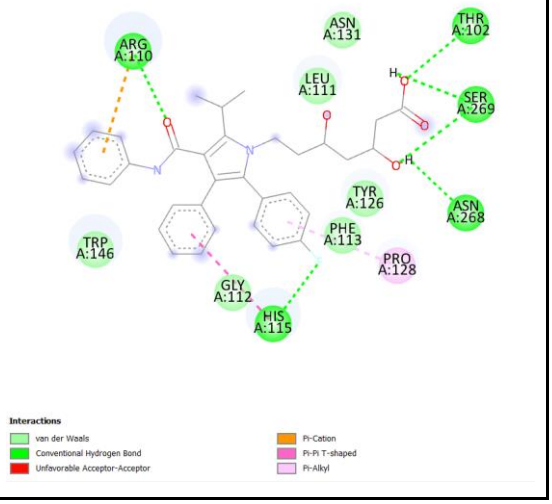
GitHub (DAY 7)

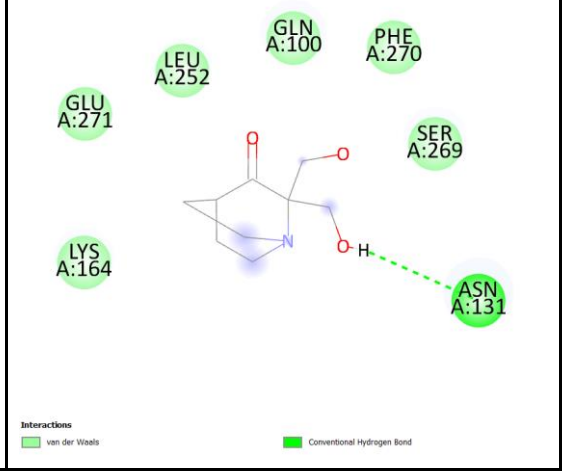
Please paste your GitHub account link - https://github.com/Gaurav15SS/Project-works.git

Molecular Docking (DAY 8 and 9)

Protein Name: TUMOR SUPPRESSOR P53 COMPLEXED WITH DNA

Protein ID - 1TUP

Ligand Name	Ligand ID	Energy value	Dock Image - 2D
IDASANUTLIN	53358942	-7.2	
ATORVASTANIN	60823	-7.8	

PRIMA 1	322968	-4.7	

<u>Cancer therapy</u>(DAY 10)

Cancer type	Hallmarks	Drug	Mechanism of drug
Leukemia (Chronic Myeloid Leukemia - CML)	Abnormal proliferation of white blood cells in the bone marrow, potential infiltration into other organs, and impaired production of normal blood cells.	Imatinib	Imatinib is a tyrosine kinase inhibitor that specifically targets the BCR-ABL fusion protein, which is characteristic of CML. By inhibiting the activity of this abnormal protein, imatinib prevents the uncontrolled proliferation of white blood cells, leading to the suppression of CML.
Breast Cancer	Uncontrolled cell growth and division, invasion into surrounding tissues, and the potential to metastasize to other organs.	Tamoxifen	Tamoxifen is a selective estrogen receptor modulator (SERM) that works by binding to the estrogen receptors in breast cancer cells, blocking the

			estrogen signaling pathway. This helps prevent the growth and division of hormone-sensitive breast cancer cells.
Melanoma	Uncontrolled growth of melanocytes, invasion into the skin, and potential spread to other organs.	Pembrolizumab	Pembrolizumab is an immune checkpoint inhibitor that targets the programmed cell death protein 1 (PD-1) on immune cells. By blocking the PD-1 pathway, pembrolizumab helps to restore and enhance the anti-tumor immune response against melanoma cells.
Lymphoma (Hodgkin's Lymphoma)	Abnormal growth of lymphocytes in lymph nodes, potential spread to other lymphoid tissues, and the presence of Reed-Sternberg cells.	Brentuximab vedotin	Brentuximab vedotin is an antibody-drug conjugate that selectively targets CD30, a protein expressed on Hodgkin's lymphoma cells. The antibody portion binds to CD30, delivering a potent cytotoxic agent (monomethyl auristatin E) that disrupts microtubule formation, leading to cell cycle arrest and apoptosis in lymphoma cells.
Lung Cancer	Uncontrolled cell growth, invasion into lung tissues, and the ability to spread to other parts of the	Erlotinib	Erlotinib is a tyrosine kinase inhibitor (TKI) that targets the epidermal growth factor receptor

	body.		(EGFR). By inhibiting EGFR, erlotinib interferes with the signaling pathways that promote cell growth and division in lung cancer cells.