BIOINFORMATICS ASSIGNMENT 2 (Day 6 - 10)

NGS DATA QUALITY CHECK (DAY 6)

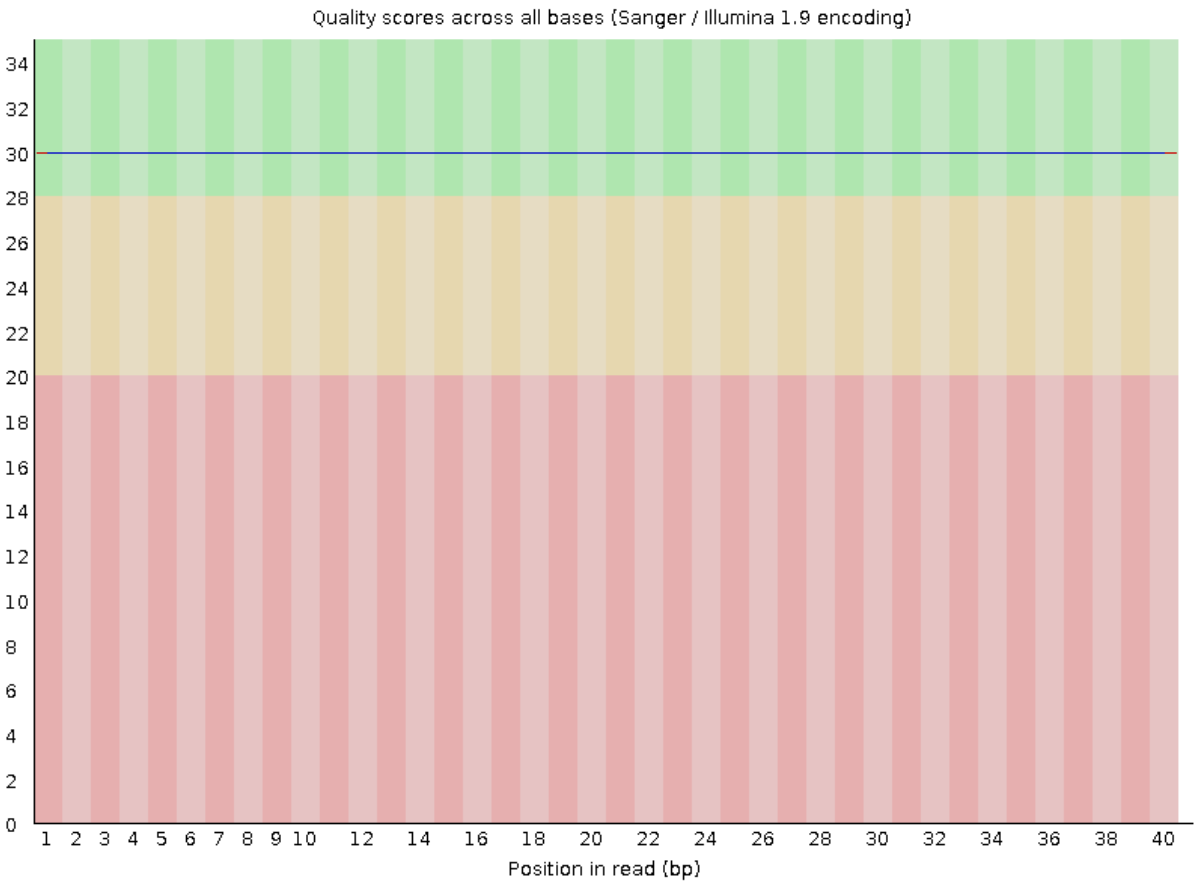
- SRA accession number: SRR18220751
- NGS platform and layout: platform-ILLUMINA illumine Hiseq 2000),layout-single
- Basic statistics: (insert image with summary)

Basic Statistics

Measure	Value
Filename	SRR18220751_fastq_gz.gz
File type	Conventional base calls
Encoding	Sanger / Illumina 1.9
Total Sequences	8221819
Sequences flagged as poor quality	0
Sequence length	40
%GC	44

- base sequence quality: (insert image with summary)

BASE SEQUENCE QUALITY REPRESENTS THE INTER QUARTILE RANGE OF BASE SEQUENCES, CENTRE LINE REPRESENTS THE MEDIAN LINE OR MEDIAN RANGE. THIS IS BASE SEQUENCE QUALITY FOR TRANSCRIPTOMIC GENE FROM TP53 GENNE FROM DANIO RERIO(ZEBRAFISH) RNA SEQUENCE.

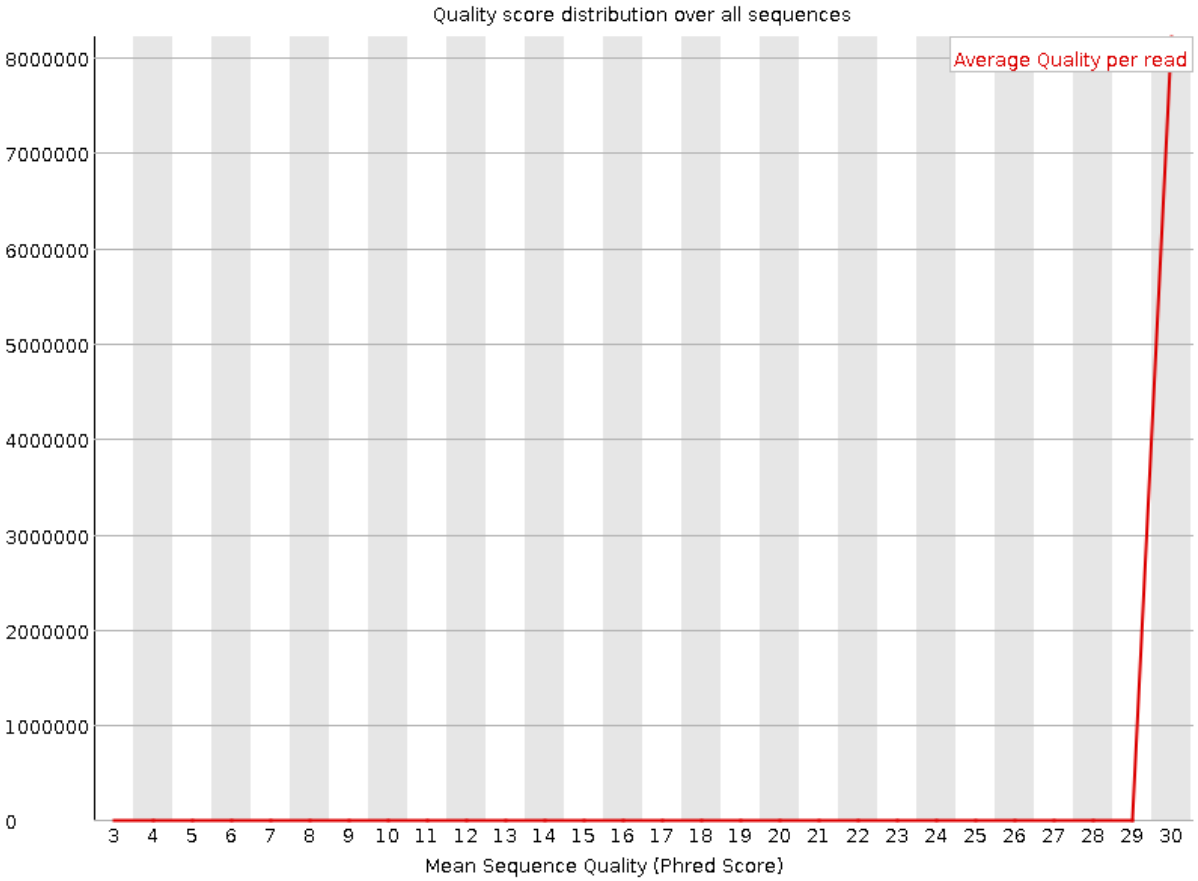


- Per sequence quality score: (insert image with summary

PER SEQUENCE QUALITY IS BASED UPON FREDD'S SCODE
EACH BASE HAS QUALITY
THIS CHART BOT REPRESENTS THE PROPORTIONS OF THE EACH BASE WHICH INDICATES THE AMOUNT OF BASE PRESENT IN PARTICULAR SEQUENCE.

THIS IS ALSO REPRESENTS THE EQUAL DISTIRBUTION OF BASE SEQUENCE IS OCCURRED.

Per sequence quality scores

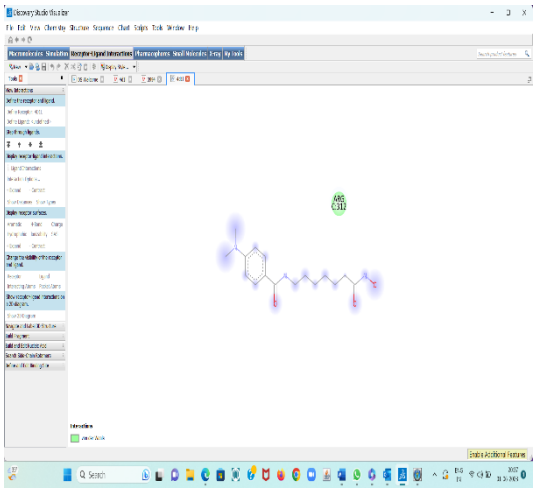
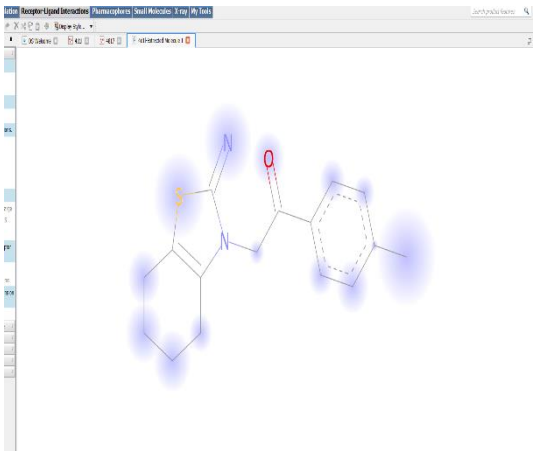
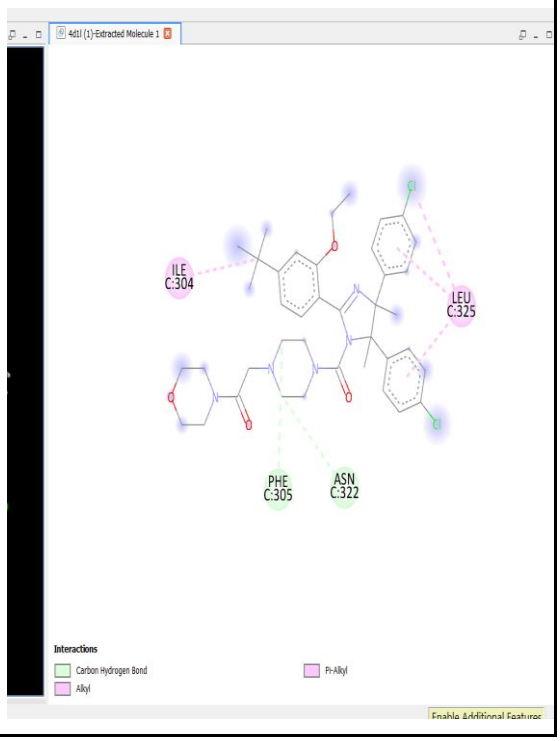


GitHub (DAY 7)

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

Molecular Docking (DAY 8 and 9)

Protein Name: tetramerization domain of zebrafish p53 (crystal form1)
Protein ID – 4D1L

Ligand Name	Ligand ID	Energy value	Dock Image - 2D
PIFITHRIN	4817	-5.4	
HISTONE DEACETYLASE INHIBITOR 3	3994	-5,6	
P53-MDM2 INHIBITOR	17754765	-7.8	

Cancer therapy(DAY 10)

Cancer type	Hallmarks	Drug	Mechanism of drugs
Cholangiocarcinoma	➢ Cholangiocarcinoma is a rare cancer that develops in the bile ducts. It is characterized by uncontrolled cell growth, invasion, and metastasis. Genetic mutations and chronic inflammation are common underlying factors.	Gemcitabine, cisplatin, infigratinib, ivosidenib.	Chemotherapy drugs like gemcitabine and cisplatin are commonly used to treat cholangiocarcinoma. Targeted therapies that inhibit specific signaling pathways, such as FGFR inhibitors (e.g., infigratinib) or IDH inhibitors (e.g., ivosidenib), are also being explored.
GIST (Gastrointestinal Stromal Tumor)	Gastrointestinal stromal tumors (GISTs) are rare tumors that occur in the digestive tract, usually in the stomach or small intestine. GISTs are typically driven by mutations in the KIT or PDGFRA genes, leading to uncontrolled cell growth.	Imatinib, sunitinib, regorafenib.	Targeted therapy drugs called tyrosine kinase inhibitors (TKIs) are the primary treatment for GISTs. Imatinib, sunitinib, and regorafenib are examples of TKIs commonly used to inhibit the abnormal signaling pathways in GIST cells.
Mesothelioma	Mesothelioma is a rare cancer that affects the lining of the lungs, abdomen, or heart. It is primarily caused by asbestos exposure. Mesothelioma is characterized by uncontrolled cell growth, invasion, and the formation of fluid-filled tumors.	Pemetrexed, cisplatin.	Treatment options for mesothelioma include surgery, radiation therapy, and chemotherapy. Pemetrexed and cisplatin are commonly used in combination as first-line chemotherapy for

			mesothelioma
Merkel Cell Carcinoma	Merkel cell carcinoma is a rare and aggressive skin cancer. It is associated with the Merkel cell polyomavirus and ultraviolet radiation exposure. It is characterized by rapid cell growth and metastasis.	Pembrolizumab, avelumab	Immunotherapy drugs, particularly immune checkpoint inhibitors like pembrolizumab and avelumab, have shown promising results in treating Merkel cell carcinoma by enhancing the immune system's ability to target cancer cells.
Ovarian cancer	• Platinum-Based Chemotherapy: Cisplatin, carboplatin. • Taxanes: Paclitaxel, docetaxel. • PARP Inhibitors: Olaparib, niraparib, rucaparib. • Angiogenesis Inhibitors: Bevacizumab. • Immune Checkpoint Inhibitor: Pembrolizumab.	Cisplatin, carboplatin. Bevacizumab Pembrolizumab	• Genetic Mutations: Ovarian cancer often involves mutations in tumor suppressor genes (such as BRCA1 and BRCA2) and oncogenes (such as TP53), contributing to uncontrolled cell growth. Metastasis: Ovarian cancer has a tendency to spread to the peritoneal cavity and nearby organs.