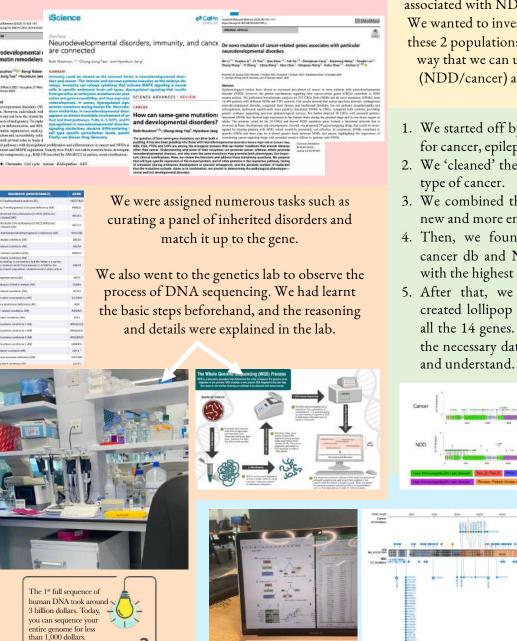
MBRU: GENETICS – RESEARCH

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Our program took place at the Genome Centre at MBRU. We were briefed about the projects in progress. We were also given articles to read about neurodevelopmental disorders, cancers and mutations, the basis of our project.



Our main project was to find the link on a genetic level, between cancer and various neurodevelopmental disorders (NDDs).

Hypothesis \rightarrow A trend was observed where variants associated with NDD and cancer were on the same genes. We wanted to investigate the exact genes are common to these 2 populations. We also wanted to see if there is any way that we can understand/predict what phenotype (NDD/cancer) a variant in these genes will produce.

- 1. We started off by analysing the existing databases (db) for cancer, epilepsy, and autism.
- 2. We 'cleaned' the cancer db, organizing it based on the type of cancer.
- 3. We combined the epilepsy and autism db to create a new and more enriched database set for NDDs.
- 4. Then, we found the common genes between the cancer db and NDD db. We used the first 14 genes with the highest frequencies.
- 5. After that, we statistically analysed the data. We created lollipop plots for both cancer and NDDs for all the 14 genes. We were unsure as to how to display the necessary data in a manner that is easy to visualize and understand.



The images show two types of lollipop plots for the same gene (TTN), presenting both cancer and NDDs.

REFLECTION

DID YOU KNOW

We were able to bring back the knowledge learnt in Semester 3 during the genetics course and apply it in a real-life situation. The project was very fulfilling because it required us to build extensively on what we already knew. We were thoroughly immersed in researching in order to stay on track because we interacted with those who were fluent in the work they were doing.

The QR code portrays the details regarding the project. It lasted around two months and towards the end, we had to present all our findings so the project can now work towards publication.

