

## **Lay Summary**

**BRAIN UK Ref: 17/004**

**Single-cell phenotyping technique applied to glioblastoma tumour samples as compared to normal brain tissue.**

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Malignant gliomas are highly invasive primary brain tumours. Glioblastoma is the most common of these tumours and is often resistant to treatment as it cannot be completely removed with surgery, and conventional anticancer treatments, such as chemo- and radiotherapy, have limited efficacy.

I study the epigenetics of glioblastoma. Epigenetics describes the biological mechanisms that switch genes on and off. All the cells in our bodies have the same genes, but what makes a brain cell different from a skin cell is which of these genes are turned on.

Glioblastoma develops from normal neural stem cells. Within these normal cells there have been both genetic mutations and problems with the epigenetic machinery, which leads to the development of brain tumours. I am trying to shed light on some of these problems.

This project will use state of the art tissue clearing techniques to look at brain tumour cells in fine detail and in 3D within their native environment. We want to do this to try and better understand the ways some of these epigenetic mechanisms contribute to brain tumour development, with the final aim to develop more effective treatments for patients who suffer from this terrible disease.