

## **BDIAP STUDENT ELECTIVE BURSARY REPORT**

**Name:** Vishal Sridhar

**Year Bursary awarded:** 2025

**Elective completed at:** University of Cambridge

**Topic of Elective:** Neuropathological research

**Department where elective was completed:** Clinical Neurosciences



The project focused on validating antibody markers in postmortem human brain tissue, specifically determining if markers used in in vitro culture models are also suitable for postmortem studies. My initial responsibility was to conduct an extensive literature review to assess how these markers had been used in previous human brain research. Based on my findings, and in collaboration with my team, we selected and ordered the appropriate antibodies for validation.

Under close supervision, I learned and optimized a two-day immunofluorescence staining protocol, performing it independently with guidance as needed. After validating it on foetal brain tissue, I extended testing to postmortem human brain samples. For post processing I used ImageJ and QuPath, which further deepened my understanding of immunofluorescence imaging.

Throughout, my principal investigator provided valuable feedback and encouraged independent exploration, while my daily supervisor offered practical training, assisted with experimental design and data interpretation, and provided insight into scientific research and troubleshooting.

A significant proportion of the project was centered on histopathology, particularly the preparation, staining, and imaging of brain tissue sections to evaluate marker expression. The histopathological techniques, especially immunofluorescence staining, was at the core of the project aims and daily activities.

Aside from the histopathology work, I also participated in omics-focused meetings with an international collaborative team. Omics encompasses large-scale studies of genes, proteins, and other biomolecules. In these meetings, ongoing and completed projects were presented and discussed.

This experience has profoundly transformed my understanding of histopathology and research. While I once viewed histopathology primarily as a means of diagnosis, working on this project uncovered the unique power of neuropathological validation. Unlike clinical examinations and diagnostic tests, which can suggest or infer conclusions, neuropathological analysis provides direct, concrete evidence, shedding light on underlying biological mechanisms that might otherwise remain speculative. Participating in every stage of experimental validation, from protocol optimization to troubleshooting, demonstrated the indispensable role of meticulous tissue analysis in substantiating and advancing scientific knowledge. Neuropathology is a dynamic,

investigative discipline that drives progress in translational neuroscience, bridging the gap between clinical questions and molecular realities.