

<b>Project Title</b>	Mapping amyloid plaques in whole brains using serial section two photon tomography
<b>Supervisor</b>	Prof Simon Schultz
<b>Theme(s)</b>	Neurotechnology and Robotics
<b>Project Type</b>	Lab Based
<b>Project Description</b>	<p>Alzheimer’s Disease (AD) is the most common type of dementia – accounting for about 70% of the nearly 50 million dementia cases in the world. It is characterised by neuronal degeneration caused by the presence of extracellular amyloid plaques and neurofibrillary tangles in the brain. Genetically modified rodent models have helped advance our understanding of the underlying mechanisms of this disease. One of these models, called 5xFAD, recapitulates many AD-related phenotypes and has a relatively early and aggressive presentation.</p> <p>Amyloid plaques are seen in mice as young as two months of age. However, the degree to which the amyloid plaques affect behavioural performance in these models is still not well known. In this study, high throughput serial two-photon whole brain imaging will be performed in order to map the spatial distribution of amyloid plaques across age in 5xFAD mice, labelled with Methoxy-X04, using the TissueCyte imaging platform. Together with the region-specific progression of plaque densities in critically affected brain structures, these models present an invaluable tool for early intervention and improved pre-clinical assessment of potential therapeutic approaches for AD.</p> <p>This project will involve wet lab work as well as development of Python or MATLAB based image analysis code.</p>