

**Project Title**

Lateral-Flow Assay Based Catecholamine Metabolite Detection in Neuroblastoma

**Supervisor(s)**

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**Project Description**

Neuroblastoma is the most common extra-cranial solid tumour in children and accounts for around 15% of all childhood cancer-related deaths. Catecholamine metabolites are elevated in 80% of neuroblastoma cases. Concentrations of catecholamine metabolites in urine are useful in the diagnosis and monitoring of neuroblastoma patients. To date, several assays have been developed for their detection. However, these methods are high cost, time-consuming and require trained professionals and complex equipment. Lateral flow assays (LFAs) are cheap (10 pence per device) and rapid (10-30 minutes) point-of-care devices which allow for the detection of analytes in biological samples.

The aim of this project is to develop a lateral-flow assay (LFA) for catecholamine metabolites, which will allow for significant improvement in diagnosis of neuroblastoma, and therefore earlier implementation of interventions, thus reducing the morbidity and mortality associated with neuroblastoma. A method will be developed to conjugate rapidly the antibodies to gold nanoparticles, which will be used to detect the analyte in the sample.

In this project, students will develop critical research skills and contribute to the design of this novel LFA, which can be used for the detection of biomarkers in neuroblastoma.