



THE UNIVERSITY OF
MELBOURNE

Faculty of Medicine,
Dentistry and Health
Sciences

Colorectal Oncogenomics Group

Identifying and investigating subtypes of colorectal cancer.

The Colorectal Oncogenomics Group's research program is focused on the identification of clinically and biologically relevant subtypes of colorectal cancer including hereditary colorectal cancer and polyposis syndromes. The Colorectal Oncogenomics Group uses genomic, epigenomic and transcriptomic profiling integrated with immune cell profiling, histopathological characterisation, environmental/lifestyle risk factors and clinical data to determine the underlying aetiology of colorectal tumourigenesis so that greater steps can be made towards personalised risk stratification for early detection and prevention of this disease.

Opportunity for PhD, Honours or Masters:

Building a Tumourigenesis Atlas for Lynch syndrome related-colorectal cancer

Lynch syndrome is one of the most common hereditary cancer syndromes caused by autosomal dominant inheritance of germline mutations in one of the DNA mismatch repair (MMR) genes, MLH1, MSH2, MSH6 or PMS2. Mutation carriers are at a significantly increased risk of colorectal cancer (CRC). Recent studies hypothesize the existence of multiple pathways of tumourigenesis which is thought to underlie the molecular heterogeneity of CRCs in Lynch syndrome, however, this is yet to be validated. The aim of this project is to build a tumorigenesis atlas for Lynch syndrome encompassing normal colonic mucosa, adenoma and carcinoma tissue to elucidate the pathways of tumorigenesis and the molecular features associated with CRC development, including for interval and metachronous CRCs. The project will

involve genomic, epigenomic, microbiome and immune profiling of pre-malignant and malignant tissue from individuals with Lynch syndrome, to identify the key molecular features of CRC initiation and progression. This project will develop expertise in genomics, molecular biology, histology, bioinformatics and statistical analysis. Outcomes of the project will have significant international impact through the development of a novel tumourigenesis atlas for Lynch syndrome related-colorectal cancer. A stipend for this project is available to the selected student.



Contact us

Colorectal Oncogenomics Group
Associate Professor Daniel Buchanan

University of Melbourne
Department of Clinical Pathology
Victorian Comprehensive Cancer
Centre
Level 10, 305 Grattan Street
Melbourne, Victoria 3000

+61 3 8559 6142
clinical-pathology@unimelb.edu.au

For more information, visit medicine.unimelb.edu.au/clinical-pathology