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:
Developing a human pre-cancer atlas of colonic polyps for predicting future risk of colorectal cancer or polyps

The development of a colorectal cancer (CRC) is usually preceded by pre-cursor/pre-malignant lesion called a polyp. There are two major types of polyp defined by histological features namely the adenomatous polyp and the serrated polyp. It is now thought that both adenomatous polyps and a subset of serrated polyps are precursors to CRC. One in two Australians will develop at least one colorectal adenomatous polyp (adenomas) by 60 years of age, with, on average two adenomas detected per person. When an adenoma/serrated polyp is detected in the colon, it is generally removed by colonoscopic polypectomy and evaluated histologically. People with an adenoma are at a six-fold increased risk of developing a subsequent adenoma or CRC (metachronous colonic neoplasia). We propose to build a human pre-cancer polyp atlas through comprehensive genomic, methylomic, transcriptomic and microbiome profiling to investigate mechanisms that predispose to and influence the development of pre-malignant polyps in the colon and that ultimately lead to their transformation to CRC. We hypothesize that this pre-cancer atlas will identify features associated with a high risk of metachronous colonic neoplasia. This project will develop expertise in genomics, molecular biology, histology, bioinformatic and statistical analysis. A stipend is available to the selected student.

Contact us
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