B-catenin TG project - Ulcerative colitis

Project duration:	10 months
Description:	Ulcerative colitis is a chronic inflammatory condition of the gut. It is associated with an increased risk of colorectal cancer (colitis associated cancer – CAC). Our group has previously demonstrated that a medication called thioguanine, which is sometimes used in the treatment of ulcerative colitis, can prevent CAC in a murine model by inhibition of B-catenin, a transcription factor commonly activated in colon cancers. Molecular modelling indicated that there may be a direct interaction between thioguanine and B-catenin. This project will determine if this interaction can be observed in vitro and in vivo. If the interaction is confirmed this will be mapped and potentially confirmed using structural biology
Expected outcomes and deliverables:	• Determine the binding energy of thioguanine and B-catenin using commercially available products using two complementary methods • Using over-expressed B-catenin introduce point mutations predicted through molecular modelling to be important for binding • Determine the effects of point mutations on B-catenin binding to thioguanine • Introduce the mutated B-catenin into cells to determine the phenotype after thioguanine treatment
Suitable for:	This project would be suitable for an Honours candidate who has taken lab based courses and is familiar with basic laboratory techniques. Prior experience with protein biochemistry is a plus but not required. This project could easily be expanded into a PhD project in the future.
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