



Project Title: Understanding the role of CTCF genetic deletion in aggressive endometrial cancer		Code: CENT2
Host School / Institute: Centenary Institute		Address: Royal Prince Alfred Hospital Grounds, Missenden Road, Camperdown NSW
Certificates & Clearances required: No		
Primary Supervisor: Dr Charles Bailey		
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Co-Supervisor/team: Professor John Rasko , Gene & Stem Cell Therapy Program, Centenary Institute		
Project Type: Laboratory based		
Project Category: Cancer; Genetics		
Skills / Attributes of a successful student: The successful student should be motivated and enthusiastic, and have a capacity to think critically and independently. They should have a realistic expectation to achieve publishable results in the eight-week project timeframe.		
Project Keywords: Endometrial cancer; mutation; tumour suppressor; transcription factor		
<p>Project Description: CTCF is an essential gene for the normal organisation of DNA in cells. Our team has discovered that CTCF is genetically deleted at high rates in the most aggressive and deadly types of endometrial cancer (Marshall, et al., 2017). CTCF deletion predominantly occurs in the Type II serous subtype of endometrial cancer and is associated with poorer overall survival in patients with serous tumours. Additionally we have shown that CTCF deletions also occur in the clear cell subtype and this may be associated with tumour relapse and/or metastasis. Our culturing of endometrial cancer cell-lines as 3D spheroids has shown that a functional consequence of CTCF deletion in results in a loss of cell polarity – an early event in endometrial cancer pathology. Analysis of gene expression data in CTCF heterozygous endometrial tumours has revealed a widespread dysregulation of transcription.</p> <p>In this project we will those examine genes and biochemical pathways that are dysregulated in CTCF mutant endometrial cancers including tumour suppressor genes and hormone-responsive genes. This will give important insights into early pathophysiological events underlying endometrial cancer.</p> <p>Skills/Tools: Mammalian cell culture, spheroid culture, retroviral gene transfer, RT-qPCR, cell biology assays, shRNA knockdown or CRISPR/Cas9 gene editing, flow cytometry, Western blotting, mouse work (Ctcf+/- mice), immunofluorescence, analysis of mutation databases (COSMIC, TCGA).</p> <p>Publications: Data generated by the student in this project will directly contribute to a publication.</p>		