

Interleukin 6 and Prostate Cancer Cell growth

Host School/Institute: ANZAC Research Institute

Project Code: ANZAC4

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Description of Project:

Breast and prostate cancer are common malignancies in population and has a high propensity to metastasise to the skeleton where the bone microenvironment appears to support metastatic cancer cell growth. Preliminary data from our group indicate that in breast cancer, increasing or decreasing bone resorption results in corresponding changes in tumour interleukin 6 (IL-6) expression and tumour proliferation, providing evidence that IL-6 expression by cancer cells could have an eminent role in sustaining breast cancer growth in bone. As prostate and breast cancers share common biological characteristics, we believe that tumour-derived IL-6 will also modulate prostate tumour behaviour.

In this project you will study the role of tumour derived IL-6 on bone metastatic cancer growth. IL-6 expression levels in prostate cancer cell lines will be knocked-down using RNA interference (RNAi) technology. You will characterize proliferation, apoptosis and invasiveness *in vitro* on the cells with normal or silenced IL-6 expression and help evaluate the cell growth *in vivo*.

The techniques involved in this project are:

- 1) *Cell culture* to characterise the tumour cells without IL-6 expression.
- 2) *RNA extraction* (from cells with or without IL-6 expression)
- 3) *Real time PCR* (for gene expression profile)
- 4) *Tissue sectioning* (paraffin) to generate tissue sections for histological analysis (microtome use and handling of paraffin sections)
- 5) *Basic histology staining techniques* like hematoxylin and eosin staining for analysis of cellular structures within tissue (staining methods and microscopy)
- 6) *Immunohistochemistry* for detection of structural and functional protein expression within tissue (use of antibodies in detection of cellular proteins)

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