

Understanding the Stem Cell Niche – and malignant cell hijack

Project Title:	Understanding the Stem Cell Niche – and malignant cell hijack
Project duration:	HDR 3 year project
Availability:	Start date late 2020 or early 2021
Description:	<p>Most organs contain Stem cells—yet we still do not fully understand how Stem Cells are normally controlled in the body, or what stops them from becoming malignant.</p> <p>Our team's focus is on how the micro-environment (or niche) tells stem cell what they can and cannot do in the body.</p> <p>We believe the identification and targeting of such niche factors will lead towards the discovery of novel therapeutics to further enhance the efficacy of cancer therapy, alleviate cancer therapy side-effects improve stem cell transplant outcomes and reverse stem cell aging.</p> <p>Our team's research has already been recognised among ten of the best research projects in Australia (NHMRC) and led to publications in Nature series journals, five patents and clinical trials (two phase III trials underway with commercial industry partners).</p> <p>Our team has two potential research projects suitable for HDR student—one on understanding normal stem cell regulation (and malignant cell niche hijack) while the other on Alleviating cancer therapy side-effects.</p>
Research Project 1. <u>Understanding haematopoietic Stem Cell self-renewal and oncogenic transformation during ageing.</u>	Anticipated outcomes of this research project will include strategies to improve cancer therapy outcomes and/or dampen chronic diseases of ageing.
Research Project 2. <u>New strategy to alleviate cancer therapy side-effects</u> (mucosal, neurological and immune side-effects).	Anticipated outcomes of this research project will include strategies to alleviate the life-threatening side-effects of cancer therapy. This project is based on our vascular stem cell niche research and preclinical mouse models of mucositis, neuropathy and chemotherapy-induced immune suppression.

Expected outcomes and deliverables:	<p>Anticipated Gains:</p> <ul style="list-style-type: none"> - In-depth expertise in Stem Cell Biology and malignant transformation - New ideas and collaborators including stem cell researchers, clinicians, immunologists and industry partners - Mentorship and supportive lab team environment - Expertise using preclinical mouse models of disease and bridging between basic biological research discoveries and translational clinical research - Mastering a wide range of technologies including immunological, serological and molecular.
Suitable for:	<p>These research projects involve preclinical mouse models of disease and treatment. Although preclinical research is highly rewarding and clinically relevant, they also require commitment to ensuring your animals are fine as well as strong creative thinking and critical evaluation skills.</p>
Primary Supervisor:	<p>A/Prof Ingrid Winkler</p>
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