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**veski
innovation
fellow**

**Dr
Mark Dawson**

research project

Targeting epigenetic readers in acute myeloid leukaemia

project summary

Epigenetics is one of the most active topics in cancer research with the potential to deliver a significant impact on a disease like acute myeloid leukaemia (AML), which has a very poor prognosis.

Current chemotherapies and supportive care still fail to cure the majority of patients with AML, and more than 70 per cent of patients still succumb to the heterogeneous disease, which is driven by various acquired mutations in the DNA of blood cells. A new approach is urgently required.

Epigenetic therapies which target proteins that package and regulate DNA have shown remarkable promise in the treatment of AML. Dr Mark Dawson's project aims to study the most common subtype of AML and establish a novel targeted epigenetic therapy against this disease.

Epigenetics broadly describes the study of chromatin biology. Chromatin, a complex made up of DNA and histone proteins, provides the context for the regulation of all DNA templated processes such as transcription, repair and replication. Therefore mutations in chromatin/epigenetic regulators may induce and/or maintain various cancers including AML.

The dynamic plasticity of the epigenome lends itself well to therapeutic manipulation and Dr Dawson has recently demonstrated this process with a small molecule (IBET151) that inhibits the bromodomain and extra terminal (BET) family of proteins. These chromatin 'reader' proteins survey the epigenetic landscape and function as transcriptional co-activators.

Mark will build on these initial studies, aiming to translate important basic science discoveries made in the laboratory into innovative and targeted cancer therapies at the Peter MacCallum Cancer Centre and will build on previous collaborations with international pharmaceutical company GlaxoSmithKline.

personal history

Dr Mark Dawson is one of Australia's most promising and talented clinician-researchers specialising in the fields of haematology and epigenetics. The high quality of his research is evidenced by the significant project grants and personal fellowships he has secured and the variety of publications and invitations to present at international conferences.

Throughout his career he has gained broad exposure to both translational research and basic molecular biology. These skills are invaluable in his new role at the Peter MacCallum Cancer Centre where, as well as his clinical role as a consultant haematologist, he is leading a group of researchers in the newly established Cancer Epigenetics Laboratory.

Prior to returning to Victoria, Dr Dawson was a consultant haematologist in the Department of Haematology, Addenbrooke's Hospital University of Cambridge. He was also a Wellcome Trust – Beit Intermediate Clinical Fellow within the Cambridge Institute for Medical Research and Gurdon Institute.

He completed a Bachelor of Medicine and Surgery with Honours at the University of Melbourne and the St Vincent's Hospital Clinical School.

Dr Mark Dawson

“As a clinician-researcher, my ultimate goal is to translate my work in the laboratory to patients in the clinic; with the support of industry, government and other funders, we can make real differences for people with cancer.”

other innovation fellowship recipients

background information

In 2006 he was one of eight Australians and the first clinician to be awarded the General Sir John Monash Fellowship in recognition of academic achievement, community service and leadership qualities and potential. At the same time, he was awarded a Cambridge Commonwealth Trust Fellowship and used these prestigious fellowships to commence his PhD at the University of Cambridge.

In 2010 he was awarded the inaugural Wellcome-Beit Fellowship for the top-scoring early-career scientist interviewed for the Wellcome Trust's Research Career Development Fellowships and Intermediate Clinical Fellowships. In the same year, he secured a Wellcome Trust Intermediate Clinical Fellowship worth more than £1.3 million.

Dr Dawson is also actively involved in the review of grants for a range of prestigious bodies including the NHMRC, and reviews manuscripts for publication in several leading clinical and scientific journals on a regular basis.

He has returned to Victoria with his wife, Dr Sarah-Jane Dawson, also a leading clinician-researcher. She is also working at the Peter MacCallum Cancer Centre.

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veski delivers a range of Victoria's most prestigious science and innovation programs including the **veski** innovation fellowships which bring world-leading scientists and researchers back to Victoria.

Since 2004, 20 **veski** innovation fellows have returned to Victoria with funding worth more than \$4 million delivering a return on investment in excess of \$45 million. Their research covers semiconductors, epigenetics, audiology, optics and nanotechnology, enzymes, dengue, malaria, cancer, inflammatory diseases, musculoskeletal health, geothermal energy and obesity.

veski is supported by the State Government of Victoria.

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