

# Influences of clonal haematopoiesis in allogeneic bone marrow transplantation

Dr Paul Yeh / Professor Mark Dawson

Grant-in-Aid 2018 ongoing

Co-funded with the Snowdome Foundation





Dr Dr Paul Yeh

Dr Paul Yeh's research focusses on using genetic testing to study clonal haematopoiesis (CH) and how it influences therapies in bone marrow failure. CH is a phenomenon that occurs when a genetic mutation is acquired in the haematopoietic (blood forming) stem cells of healthy individuals. At least 10-15% of 'healthy' people over 60 years of age have CH, and presence indicates increased risk of developing haematological malignancies and also Bone Marrow Failure Syndromes, as well as an increased risk of heart disease, stroke and death from other cancers. The first stage of Dr Yeh's research has used highly sensitive and targeted genetic sequencing to determine if CH influences bone marrow transplant outcomes.

"Bone marrow transplantation is one of the only potential curative strategies for Bone Marrow Failure Syndromes. However, the procedure carries a significant risk of death. Also, transplant resources are extremely precious and there is a need to find better ways of improving transplant outcomes. I am using sophisticated genetic sequencing techniques to look for CH in stem cell transplant donors. I will then look to see if the presence of CH can predict the outcome of the stem cell transplant."

The first part of Dr Yeh's research focussed on CH and stem cell transplantation. Importantly, CH itself

can be part of, or can evolve to, Bone Marrow Failure Syndromes. Not all individuals with CH will develop or progress, and it is not precisely understood how CH leads to bone marrow failure. The next steps of his research are to explore these unanswered questions, ultimately creating a better biological understanding of how CH evolves into bone marrow failure. Much of the genetic testing component of the research has already been completed and Dr Yeh is now focussed on how this has affected stem cell transplantation. There is a large amount of data that has been generated via the genomic sequencing of samples, which requires analysis and integration with carefully curated clinical transplant databases.

Dr Yeh is the recipient of a prestigious National Health and Medical Research Council Investigator Grant, Medical Research Future Fund Priority Round 2020. As his mentor and supervisor Professor Mark Dawson commented "Paul is definitely one of our finest next generation clinician-scientists, and we are very proud of him." Maddie's Vision and Snowdome similarly share this pride as he toils to discover factors that can predict transplant outcomes, significantly impacting on the lives of patients with Bone Marrow Failure Syndromes by both improving outcomes and also providing better allocation of valuable transplant resources.