

# Novel immunological assessment of Aplastic Anaemia and post transplant graft dysfunction for the purpose of targeted therapeutic intervention

Dr Ashvind Prabahan

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In order to understand Dr Ashvind Prabahan's research, one first needs to understand the process of bone marrow transplantation and its role in the treatment of blood diseases. Bone marrow transplantation is a curative procedure for many blood related diseases and is most commonly used in adults for the treatment of blood cancers. It involves the transplantation of bone marrow from a matched donor into a recipient. The bone marrow is the organ involved in producing blood and

can be a source of many blood cancers. Transplantation allows for the abnormal bone marrow of a recipient to be replaced. The donor bone marrow will also produce important immune cells. These immune cells will hopefully recognise any recipient cancerous cells as abnormal and remove them from the body. Doctors are able to measure how much of a patient's cells are their own and how many are from their donor through a process called chimerism.

After transplantation, patients can have a reduction in blood cell production, leaving them susceptible to fatigue, bleeding and infection. This can occur despite the blood production being of donor origin. This is a condition called poor graft function, a serious complication of transplantation which carries a high mortality rate, and is the focus of Dr Prabahran's research.

Aplastic Anaemia is a rare condition that occurs due to the body's own immune cells turning against the bone marrow, interfering with the bone marrow's ability to produce blood. Dr Prabahran believes the underlying process that leads to Aplastic Anaemia is the same that leads to poor graft function. As poor graft function is more common than Aplastic Anaemia, it can be utilised as a model to study in more detail the cause of both conditions and assess the effectiveness of different therapies.

Dr Prabahran is undertaking a clinical trial with the purpose of trying to understand more about the interactions between immune cells and the bone marrow which ultimately gives rise to poor graft function. Simultaneously, he is applying a cutting-edge method of analysis, called Nanostring Digital Spatial Profiling, to the bone marrow specimens of patients with poor graft function to identify potential targets for treatment. Using this information, he will undertake further clinical studies to study the effectiveness of new therapies in patients with poor graft function and Aplastic Anaemia. He explains, "In order to demonstrate the effectiveness and safety of a therapy, it needs to be tested in clinical trials. As Bone Marrow Failure Syndromes are rare, enrolling adequate numbers of patients with bone marrow failure in clinical trials is difficult. Multiple sites need to collaborate to recruit suitable numbers of patients."

Whilst Maddie's Vision is spending significant energy forging both national and international collaborations, Dr Prabahran's wish is to similarly establish "a national and international trial network with the purpose of evaluating new treatments for the spectrum of bone marrow failure disorders." His interest in this area was piqued as patients with Bone Marrow Failure Syndromes often have difficult journeys and the limited treatments available, such as bone marrow transplantation, are effective but often fraught with risk. For this reason, he became interested in bone marrow failure research because he is intent on improving the safety and effectiveness of treatments.

Dr Prabahran grew up in Melbourne and studied medicine on the Gold Coast at Bond University. He underwent his training in internal medicine at the



Dr Ashvind Prabahran

Royal Melbourne Hospital and his specialty training in haematology across the combined Clinical Haematology Department of The Royal Melbourne Hospital / Peter MacCallum Cancer Centre and Austin Hospital. As part of his fellowship, he is undertaking a PhD through Melbourne University and is currently a member of the Australian Cancer Research Fund (ACRF) Translational Research Laboratory. In his free time he enjoys spending time with his wife and 2 young children, particularly reading, trips to the zoo or pool, and playing with Lego. One of his passions is Capoeira, a unique martial art from Brazil.