

Dr Juliana Kwok from the Centre for Vascular Research was awarded the 2005 John Shaw Postdoctoral Fellowship for stem cell research in heart tissue regeneration. She was the highest ranking researcher among the applicants.

"I went into medical research because I've always been interested in how the human body functions and how it is affected by disease," said Juliana Kwok. "The complexity and detail of each system within the human body, and how everything complements everything else never fails to amaze me. I wanted to be able to contribute in a positive way to improving the condition of humans in disease states. Finding out how diseases work and developing therapies to overcome or counteract disease can be very rewarding.

"It is extremely difficult to find support as a young scientist, so it is a great honour to be acknowledged and supported by the National Heart Foundation. More importantly, it will allow me to increase my contribution to the understanding of cardiogenesis and the development of potential stem cell transplantation treatments for heart disease."

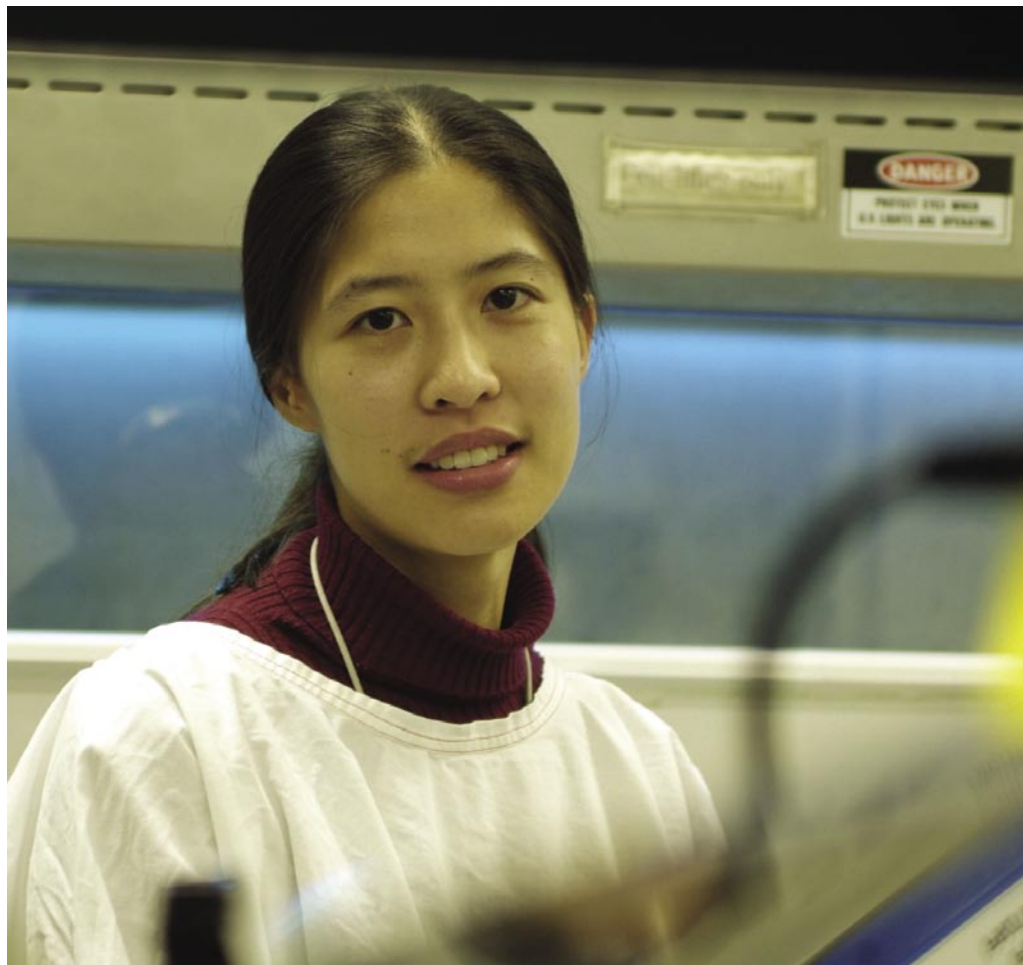
After completing her BSc (Hons) at UNSW in 1999, Juliana undertook a PhD with the Iron Metabolism and Chelation Group at the Children's Cancer Institute Australia, before joining the Centre for Vascular Research at UNSW in March 2004.

"The facilities at UNSW and the St George Hospital campus provide state-of-the-art equipment for molecular and cellular biology, as well as access to nuclear magnetic resonance facilities, microarray and gene sequencing facilities. The availability and accessibility of the vast variety of resources provides a supportive and efficient environment for research."

Juliana's current research examines the molecular mechanisms that control the development of heart cells from stem cells, in particular, the role of transcription factors which are critical in regulating the expression of specific genes at the various stages of heart development.

"Our research will aim to generate a wealth of understanding on the molecular mechanisms of cardiac development. This knowledge forms an important platform on which the pathogenesis of congenital heart disease can be elucidated.

Juliana Kwok



"We will also use the data generated to genetically manipulate stem cells to increase the efficiency at which they differentiate into fully mature and functional heart cells. This represents an invaluable tool in the development of stem cell therapy for the replacement of damaged heart tissue in conditions such as coronary heart disease."

The research is vital as heart disease, particularly coronary heart failure, is a major cause of mortality in the developed world, including nations such as Australia.

"It is crucial that we continue to gain knowledge regarding the differentiation and maturation of cardiac cells. Our aim is to understand the molecular mechanisms involved in cardiac development, and using this information, devise effective strategies to genetically enhance the differentiation of cardiac cells from stem

cells. This is an important step in the development of clinical therapies for congenital heart defects and for the repair of damaged heart tissue."

FUNDING

National Heart Foundation