

Professor Julie McMullen: love what you do, do what you love

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Introduction

Julie McMullen, PhD, heads the Cardiac Hypertrophy Laboratory at the Baker IDI Heart and Diabetes Institute. Associate Professor McMullen graduated from the School of Physiology and Pharmacology at the University of New South Wales. She then trained as a Cardiology Research Fellow at Beth Israel Deaconess Medical Centre and Harvard Medical School in Boston. During this time she gained experience generating and characterizing cardiac specific transgenic mice. In early 2005, Associate Professor McMullen established her own laboratory at Baker IDI. Her research interests include cardiac hypertrophy and failure, specifically focusing on molecular mechanisms responsible for the induction of physiological and pathological cardiac hypertrophy.

In Shanghai University, *Annals of Translational Medicine (ATM)* has the honor to interview Dr. Julie McMullen (Figure 1), whose research interests include cardiac hypertrophy and failure, specifically focusing on molecular mechanisms responsible for the induction of physiological and pathological cardiac hypertrophy.

Interview

ATM: *Could you briefly introduce the IGF1-P13K pathway in heart failure?*

Prof. McMullen: The IGF1-P13K pathway is a pathway which plays a specific role in regulating beneficial exercise-induced heart growth and protection. We think that activating this pathway in a setting of heart failure could represent a promising therapeutic strategy for heart failure.

ATM: *What is the most challenging part about the translational research from mice to humans? How to deal with the challenge?*

Prof. McMullen: We need to recognize there are clear differences between mice and humans. But mechanistic



Figure 1 Prof. McMullen.

studies in humans are obviously very challenging. Studies in genetic mouse models represent a powerful tool to identify key genes responsible for aspects of cardiac disease. So when studying the role of a gene/protein in mice for the first time, it is important to ensure it is also expressed in the human heart, and regulated in a similar manner in a disease setting.

ATM: *Could you share one of the most interesting stories with us during your research?*

Prof. McMullen: I think probably the most interesting story was when I first identified PI3K as a critical regulator of exercise-induced heart growth. When I began in this research field, I was fascinated by the idea that the heart enlarges in elite athletes or those who exercise a lot, and this heart growth is good. On the other hand, the heart also enlarges in people with heart disease or heart failure but this heart growth is bad. At the time, it was not really understood which genes are responsible for good or bad heart growth. To address this question, I had to establish a new model of swim exercise for mice. I discovered that PI3K is absolutely critical for the good heart growth that occurs with exercise. Much of my on-going research has been based on this initial discovery.

ATM: Why did you choose to get into the field of Cardiology?

Prof. McMullen: I think there is a real clinical need to develop new and improved therapies for people with heart disease. Cardiac conditions including heart failure, atrial fibrillation and sudden cardiac death affect people of all ages. These disorders have a significant impact on the physical and mental health of the individual but also have an impact on family and friends.

ATM: Some suggestions for young generation of cardiologist?

Prof. McMullen: It is important to work on a scientific question you are interested in and feel passionate about. There is no substitute for persistence and hard work. If

you love what you are doing, it feels less like hard work. A career in research can be very challenging, and often feels like a rollercoaster ride! Make time to celebrate the successes along the way. Discoveries are special, so enjoy the moments.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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