



## RACP Foundation Research Awards

### YEAR 1 PROGRESS REPORT

<b>Project Title</b>	Defining the role of kidney CD103+ dendritic cells in kidney disease for potential therapies	
<b>Name</b>	Dr Titi Chen	
<b>Award Received</b>	2017 RACP Jacquot NHMRC Award for Excellence	
<b>Report Date</b>	8 February 2018	
<b>Chief Investigator / Supervisor</b>	Professor David Harris	
<b>Administering Institution</b>	The University of Sydney	
<b>Funding Period</b>	Start Date:	4 July 2016
	Finish Date:	1 July 2019

#### PROJECT SUMMARY

Chronic Kidney Disease is an incurable condition that is a major cause of death and morbidity in Australia and worldwide. The prevalence of kidney disease is increasing dramatically and the cost of treating this growing epidemic represents an enormous burden on healthcare systems. Currently, treatments for chronic kidney disease are very limited and are of limited efficacy. Novel drugs are therefore urgently needed to halt the disease progression. Dendritic cells are the guards of human immune system, which play a central role in the development and progression of chronic kidney disease. This research is based on our recent novel finding in which a special subset of dendritic cells called CD103 dendritic cells have been defined, for the first time, as a major subset of kidney dendritic cells, and shown to be pathogenic in many kidney diseases. We will use cutting edge research techniques to further investigate the role of CD103+ DCs in various types of chronic kidney disease in both animal models and in humans. Once the effects of CD103+ DCs are defined, novel therapeutic strategies to effectively target CD103+ DCs to treat chronic kidney disease will be developed.

#### PROJECT AIMS / OBJECTIVES

1. To define the role and mechanisms of CD103+ DCs in CKD.
2. To explore the therapeutic potential of targeting CD103+ DCs in CKD.

### **SIGNIFICANCE AND OUTCOMES**

This project will provide a wealth of basic scientific information about DC biology and their manipulation in CKD, and this can be rapidly translated to human kidney disease as there is a homologous population of human dendritic cells, which allows development of novel therapeutic strategies to treat CKD.

Chronic kidney disease is a global health problem. World-wide prevalence of adult chronic kidney disease is approximately 10%; reaching up to 50% in high-risk populations such as the Australian Aboriginal community. The prevalence of kidney disease is increasing dramatically and the cost of treating this growing epidemic represents an enormous burden on healthcare systems. Success in research in this area will not only benefit millions of patients worldwide who have kidney disease, but will also benefit the wider society through the health care expenditure saved.

### **PUBLICATIONS / PRESENTATIONS**

2017 "Renal CD141+ Dendritic cell infiltration in IgA nephropathy" Chen T, Cao Q, Rao P, Wang Y, Zheng G, Harris D. Presented at American Society of Nephrology Kidney Week 2017.

2017 "Flt3 inhibitor attenuates renal injury in Adriamycin nephropathy by suppressing CD103+ DC-mediated T cell activation" Cao Q, Chen T, Lee V, Zheng G, Wang Y, Harris D. Presented at American Society of Nephrology Kidney Week 2017.

2017 "Renal dendritic cell infiltration in crescentic glomerulonephritis in humans and mice" Chen T, Cao Q, Rao P, Wang Y, Zheng G, Harris D. Presented at American Society of Nephrology Kidney Week 2017.