



## RACP Foundation Research Awards

### FINAL REPORT

<b>Project / Program Title</b>	Effect of testosterone treatment on bone microarchitecture and regulation of genes in adipose tissue	
<b>Name</b>	Dr Mark Ng Tang Fui	
<b>Award Received</b>	2018 RACP Endocrine Society of Australia (ESA) Research Establishment Fellowship in Endocrinology	
<b>Report Date</b>	23 March 2019	
<b>Chief Investigator / Supervisor</b>	Prof Mathis Grossmann	
<b>Administering Institution</b>	University of Melbourne	
<b>Funding Period</b>	Start Date:	1 January 2018
	Finish Date:	1 January 2019

#### PROJECT SUMMARY

This project enabled me to investigate the role of testosterone treatment on bone structure and function in men with low-normal testosterone levels using the latest 3-dimensional imaging technique and blood tests which assess the formation and degradation of bone structure, using a rigorous study design. (Project A - Testosterone for bone (T4bone))

This award also enabled me to conduct investigate how testosterone treatment leads to reduction of fat mass at the level of individual fat cells in obese men with low testosterone levels. (Project B - Regulation of adipose tissue genes by testosterone)

#### PROJECT AIMS / OBJECTIVES

Project A - Testosterone for bone (T4bone)

The first aim was to assess, in men with borderline-low testosterone levels, the effects of testosterone therapy on bone micro-architecture as measured using the new technique of HR-pQCT. Secondary outcomes are change in bone remodelling markers and bone mineral density. Shortly after the completion of this award period, final data collection was completed.

Project B - Regulation of adipose tissue genes by testosterone

The second aim of the study was to aim to identify testosterone-regulated genes in subcutaneous abdominal fat biopsies from hypogonadal males.

#### SIGNIFICANCE AND OUTCOMES

Project A - Testosterone for bone (T4bone)

As low testosterone is a significant risk factor for osteoporotic fractures in men, better understanding of the effects of testosterone on bone microarchitecture will have a major impact on clinical management of men with borderline low levels of testosterone who would generally not be considered for testosterone treatment.

Project B - Regulation of adipose tissue genes by testosterone

It is important to identify testosterone regulated genes in human fat, as this will lead to a better understanding of the mechanisms how testosterone regulates fat mass, and how testosterone relates to diabetes and cardiovascular disease.

Future research directions in this area include developing a transgenic mouse model to either under- or over-express those genes found to be reduced or increased in the study cohort, respectively.

**PUBLICATIONS / PRESENTATIONS**

To follow upon completion of the individual projects