UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

Department of Pathology
Te Tari Mātauraka Mate

PRESENTS A SPECIAL SEMINAR:

Using human kidney organoids to study acute kidney injury

Dr Veronika Sander

Department of Molecular Medicine and Pathology, University of Auckland

The kidneys are crucial organs for waste filtration from the blood. As such, they are highly susceptible to toxic injury by common clinical drugs, which can lead to acute kidney injury (AKI). AKI is defined by the rapid decline of kidney function and can predispose patients to chronic kidney dysfunction and kidney failure, both major global healthcare problems. However, there are no targeted therapies for AKI. This is partly due to a lack of clinically-relevant models that are required to elucidate the pathological mechanisms involved in AKI and for the identification of reliable biomarkers to improve diagnostic accuracy of AKI. In recent years, organoids generated from human pluripotent stem cells have revolutionised how organ development and disease are studied. We have established a simple, cost-effective method to generate large numbers of kidney organoids from induced pluripotent stem cells. Our recent work has used these human mini-kidneys to recapitulate AKI caused by the chemotherapeutic drug cisplatin. I will present the outcomes of this study that involved immunohistological labelling for injury markers and cell death, differential gene expression analysis and a comparison of our organoid-derived data to the traditionally used mouse models for AKI. I will discuss the applicability of the organoid system for improving our understanding of AKI pathology and ultimately, developing much-needed new therapies.

Monday 23 November, 11am | D'Ath Lecture Theatre, Department of Pathology