

## 2017 Seminar Series – PhD Oration



**Wednesday 2<sup>nd</sup> of August  
12-1pm**

**Bio21 Institute Auditorium  
30 Flemington Road, Parkville**

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### ***Investigating common mechanisms associated with PrP and $\alpha$ -synuclein misfolding***

Neurodegenerative proteinopathies (NDP) are a group of disorders distinguished by the intra- or extracellular accumulation of specific proteins in the central nervous system and associated neuronal vulnerability. They include Alzheimer's disease, synucleinopathies (the most common of which is Parkinson's disease, PD) and the prion diseases, among others. The unusual mechanisms governing the infectious nature of prion diseases are particularly striking, where the causative agent of disease is the prion or 'proteinacious infectious particle' that is composed almost entirely of PrP<sup>Sc</sup>, a misfolded form of a normal cellular protein PrP<sup>C</sup>. Over recent years numerous data suggest proteins associated with other NDPs share conserved properties with PrP<sup>Sc</sup> that influences how they misfold, aggregate and propagate in disease. This has led to proposals for expansion the prion concept, however due to inadequacies in current systems to study the pathogenicity of relatable proteins, it remains a matter of conjecture. Some of the strongest evidence of prion-like behaviour exists of  $\alpha$ -synuclein ( $\alpha$ syn), the protein implicated in synucleinopathies. This project explored the pathogenic properties of PrP<sup>Sc</sup> and  $\alpha$ syn using novel systems to produce misfolded protein and organotypic brain slices to model disease. These studies identified pathogenic processes associated with these misfolded proteins and their likeness studied using a conformation-specific compound that recognises a misfolded structure of both proteins. Findings from this work contributes to our general understanding on these proteins in disease and the delineation of the prion concept.

*ALL WELCOME. Please join us for Pizza to celebrate this PhD Oration!  
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