

# Assoc. Prof. Timothy J Sargeant



**Affiliation:** SAHMRI/University of Adelaide

**Title:** Advances in human autophagy monitoring

**Summary:** Autophagy slows biological ageing and age-related disease in animal models, and has tremendous clinical potential. However, progress of autophagy-related interventions into advanced clinical trials has been slow. We have identified a lack of tools with which to measure physiological autophagy in humans as a key barrier to translation, and have focused our research on overcoming this barrier. During this presentation, I will discuss development of a method for the measurement of autophagy in whole human blood. We have used this tool to show that physiologically-relevant human autophagy changes with ageing, and have data suggesting that it can be increased with intermittent fasting. We have further demonstrated the importance of measuring autophagy in an organotypic system, and have refined this tool for measurement of physiologically relevant human autophagy in single cell types. For ease of clinical application, we are also attempting to identify autophagy biomarkers. This presentation will focus on basic methodology and insights we have gained into measuring physiological human autophagy. The goal of this research is to enable rapid translation of autophagy for the prevention of age-related disease.

**Biography :** Assoc. Prof. Timothy J Sargeant Sargeant did his PhD at Victoria University of Wellington (NZ) (2005-2008) before holding two postdoctoral research positions at the University of Cambridge at the Department of Medicine (2008-2012) and the Department of Pathology (2012-2014), where he researched lysosomal storage disease and mechanisms of cell death. He moved to SAHMRI (Australia) (2015-present) to research the links between the lysosomal system (the cell's recycling centre) and Alzheimer disease. His research has contributed insights into the genetic link between Alzheimer disease and the lysosomal system, and autophagic clearance of tau. His recent work has focused on developing measurement tools for human autophagy. This work is important because it aims to accelerate translation of autophagy research into humans for the prevention of age-related disease.