Experimental Therapeutics Centre

SEMINAR ANNOUNCEMENT



Speaker: **Prof John A. Carver**
Director, Research School of Chemistry,
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Canberra, Australia

Date: 10 April 2015 (Friday)

Time: 10:30 AM

Venue: Aspiration Theatrette, Level 2M, Matrix

Hosted by: Dr. Brian Chia

Protein aggregation: its involvement with disease and its mitigation

In vivo, protein aggregation and precipitation are often a consequence of the unfolding or incorrect folding of proteins. These processes have been categorised by the term 'protein misfolding'. A diversity of diseases result from protein misfolding including cataract, Alzheimer's, Parkinson's and Huntington's diseases and haemodialysis-related amyloidosis. Different proteins are associated with each of these diseases. There are a variety of cellular mechanisms that minimise protein aggregation. Arguably, the most important of these is the expression of molecular chaperone proteins which interact with partially folded proteins to prevent their aggregation.

In this talk, our work investigating the structure and function of molecular chaperone proteins, particularly small heat-shock proteins such as alpha B-crystallin, and their interactions with aggregating proteins, will be described. The research involves the use of a variety of biophysical, spectroscopic, protein chemical and cell biological techniques, e.g. NMR, circular dichroism and fluorescence spectroscopy, mass spectrometry, dynamic light scattering and electron microscopy, and provides insights into the mechanism of chaperone action in addition to potential avenues for the application of molecular chaperones in the treatment of protein misfolding diseases.

Biography:
John Carver undertook his undergraduate (Honours) degree in Chemistry at the University of Adelaide. In 1983, he was awarded his Ph.D. in Biological Chemistry from the Australian National University and subsequently undertook post-doctoral studies in Biochemistry at the Universities of Oxford and Adelaide. In 1988, John took up a position as Lecturer in Chemistry at the University of Wollongong where he subsequently became an Associate Professor. In early 2004, he returned to the University of Adelaide as Professor of Chemistry and Head of the School of Chemistry & Physics. In 2008, he became the Deputy Executive Dean of the Faculty of Sciences and, for all of 2009, he was also Head of the School of Molecular and Biomedical Science. In July 2013, he was appointed as Director of the Research School of Chemistry at the Australian National University.