WESTERN SYDNEY UNIVERSITY

Nanoscale Organisation and Dynamics Group

Role of tachykinin neuropeptides as synaptic copper chaperones

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Abstract

Copper is a metal that has important roles in the normal physiology of our brain. It is a key cofactor in antioxidants and enzymes that synthesise neurotransmitters and it can bind to receptors to modulate their signalling. The ability of copper to redox cycle ($Cu^{2+/+}$) underlies most of its biological function yet the oxidative stress this can cause is also thought to contribute to toxicity observed in several neurodegenerative disorders including Alzheimer's, Parkinson's and prion disorders. Many years of research has established that copper is tightly regulated to minimise the possibility of uncontrolled redox cycling. An orchestrated pathway involving chaperone proteins ensures that copper is never 'free' to undergo the uncontrolled redox cycling that leads to the generation of reactive oxygen and nitrogen species. In contrast to our understanding of copper metabolism in organs outside the brain, the mechanisms the central nervous system uses to control copper are not well known. In this talk I will outline our work investigating the role of peptide neurotransmitters in neuronal copper metabolism.

Profile

Chris is a bioinorganic chemist who has had a long interest in metal metabolism, particularly copper. His scientific research uses a range of biophysical and biochemical methods to investigate metallo-neuropeptide structure and function. The ultimate aim is to link the inorganic chemistry to effects at the cellular level to contribute to our understanding of normal brain metallo-neurobiology. At WSU he is currently the Director of Academic Program for Medical Science.

Staff and students at all levels are welcome to attend.

Venue and Time:
Thursday 1 November at 11 am at the Campbelltown Campus in Building 21, Lecture Theatre 5 (CA.21.G.03).

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