
Rose F. Kennedy Intellectual and Developmental Disabilities Research Center (IDDRC)
Seminar Series

Director: Steven U. Walkley, DVM., Ph.D.

Associate Director: John J. Foxe, Ph.D.

Why education and mental stimulation protect the brain: The role of noradrenaline in cognitive reserve

**Ian Robertson, Ph.D.***Visiting Professor of Neurology at Columbia University, New York*
*Professor of Psychology at Trinity College Dublin, Ireland***Van Etten (1C-1):**
12:30pm, Wednesday, November 21st, 2012

Biographical note: Ian Robertson, currently Visiting Professor of Neurology at Columbia University, New York, is Professor of Psychology at Trinity College Dublin and was founding Director of Trinity College Institute of Neuroscience and a member of the Royal Irish Academy. He is director of the NIEL programme (Neuroenhancement for Inequalities in Elder Lives - www.tcd.ie/neuroscience/niel). Previously a senior scientist at the MRC Cognition and Brain Sciences Unit in Cambridge, where he was also a fellow at Hughes Hall, Ian Robertson continues to be a Visiting Professor at University College London, a Visiting Professor at University of Wales at Bangor and is a Visiting Scientist at the Rotman Research Institute, University of Toronto. A graduate of Glasgow University, he gained his Masters (Clinical Psychology, Institute of Psychiatry) and Doctoral (neuropsychology) degrees at the University of London. His research focuses on the neuropsychology of attention and frontal lobe function, brain and cognitive rehabilitation and aging: he has more than 200 published books and articles in this field, including in *Nature*, *Brain*, *Journal of Neuroscience* and *Psychological Bulletin*. A former science writer for the *London Times*, his most recent multiply-translated popular science book has just been published in the USA: *The Winner Effect: The Neuroscience of Success and Failure*. NY: St Martin's Press. www.thewinnereffect.com twitter: @ihrobertson.

Abstract: The gap between symptoms and pathology in a number of brain conditions, particularly Alzheimer's Disease, has been explained by the hypothetical construct of 'cognitive reserve' – a set of variables including education, intelligence and mental stimulation which putatively allow the brain to adapt to – and hence mask – underlying pathologies by maintaining cognitive function in spite of underlying neural changes. This talk proposes a hypothesis that a biological mechanism may mediate between these social/psychological processes on the one hand, and apparently reduced disease impact on the other, namely repeated activation of the noradrenergic system over a lifetime by the processes implicated in cognitive reserve. Noradrenaline's neuroprotective effects both in vivo and in vitro, and its key role in mediating the neuroprotective effects of environmental enrichment on the brain, make NA's role in mediating cognitive reserve a viable hypothesis.