Medicine, Nursing and Health Sciences

Biomedicine Discovery Seminar

Monash Biomedicine Discovery Institute

Role of excitatory state in visual cortical plasticity

Tuesday 13th December, 2016

12:00 – 13:00pm

M2 Lecture Theatre
37 Rainforest Walk
Clayton campus

Presenter

Professor Ulf Eysel

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Abstract

The balance between cortical excitation and inhibition defines the excitatory state which appears to be critical for cortical plasticity. In the adult visual cortex retinal lesions induce a transient state of increased excitability that facilitates neuronal plasticity and the reorganization of cortical representations. A sequence of functional and structural changes indicates a leading role of decreased inhibition followed by an increase in excitability. Currently we investigate the influence of transcranial magnetic stimulation (TMS) on the cortical excitatory state and cortical plasticity visualized by voltage sensitive dye imaging. Characteristically, 10 Hz TMS increases cortical excitability and reduces inhibition, while 1 Hz TMS strengthens intracortical inhibition. After conditioning with 10 Hz TMS we demonstrate a significant increase of adult cortical plasticity in response to specific visual stimulation.

About the presenter

Prof. Ulf Eysel is widely recognised for his extensive work on the structure, function, and plasticity of the visual system. He received his degree in Medicine in 1971 (Berlin) and became an Associate professor at the Institute of Physiology, University of Essen in 1976. He has since held a range of distinguished positions, including Chair of Neurophysiology at Ruhr University, Dean of the Faculty of Medicine, memberships in the Russian Academy of Sciences and the German National Academy of Sciences, and is a former President of the German Neuroscience Society. His long-standing contribution to Australian neuroscience continues with his current position on the Advisory Board for the Australian Centre of Excellence for Integrative Brain Function

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