

**P022** Systemic Passive Immunization Prevents the Inhibitory Effect of Amyloid Beta Oligomers on Hippocampal LTP *in vivo*  
I. Klyubin 1; D.M. Walsh 3,4 ; R. Anwyl 2; G.M. Shankar 3;  
D.J. Selkoe 3; T. Wisniewski 5; M.J. Rowan 1.  
1. Dept Pharmacol & Therap, 2. Dept Physiol, Trinity Col, Dublin, Ireland 3. Neurology, Harvard Med Sch & Brigham & Women's Hosp, Boston, MA, USA 4. Conway Inst, University Col, Dublin, Ireland 5. Dept Neurol, NYU Sch Med, NY, USA.

Studies in transgenic animal models of Alzheimer's disease (AD) have shown that immunization against amyloid beta-protein (A $\beta$ ) improved learning and memory deficits. We have previously shown that A $\beta$  oligomers in conditioned medium (CM) from CHO cells expressing human amyloid precursor protein (7PA2) potentially blocked LTP in the CA1 area of anaesthetized rats (Walsh *et al.*, Nature 2002). Here we investigated the ability of passively transferred anti-A $\beta$  antibody, 6E10, to prevent inhibition of LTP by A $\beta$  oligomers isolated by size exclusion chromatography of 7PA2 CM. Acute i.c.v. injection of the oligomer-enriched fraction inhibited LTP induced by HFS. Robust LTP was induced after co-injection of the oligomer-enriched fraction with 6E10. A monomer-enriched fraction did not affect LTP. Importantly, intracardiac injection of 6E10 also antagonised the inhibition of LTP by A $\beta$  oligomers. Our data support the idea that passive immunization could provide an effective means to ameliorate mnemonic impairment in patients with early AD.