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Board Number: **VV84**

**VESICULAR TRANSPORTER PLASTICITY FOLLOWING STIMULATION OF NEURONS IN DISSOCIATED CULTURE** Anthony Krantis<sup>1,2</sup> Queade Di Ilio<sup>3</sup>, Susan VandenHoek<sup>3</sup>, Babben Tinner<sup>3</sup> 1. Dept. of Cell. and Mol. Med., 2. Centre for Res. in Biopharmaceutics and Biotech., Univ. of Ottawa, Ottawa, ON, Canada 3. QBM Cell Science, Ottawa, ON, Canada

We set out to determine if neurotransmitter specific vesicular transport proteins could be used as a measure to indicate short or long term changes in the activity of neurons in culture. Cryopreserved rat cortical neurons were thawed and plated onto 96 well plates or coverslips in 24 well plates in neurobasal medium with B27 supplement. After 20 to 23 days cultures were treated with high potassium 35 to 50 mM for 15 minutes or with low dose kainic acid (10  $\mu$ M). After intervals of from one to 36 hours the plates were fixed and stained for immunofluorescence using antibodies against the glutamatergic vesicular transporter vGLUT1, synapsin and tubulin. Preliminary data show an increase in vGlut1 staining 6 hours after treatment with kainic acid whereas at later time points there is a decrease in intensity returning to control values. There is no significant trend in the intensity of synapsin immunoreactivity at the same time points. With a high potassium treatment we observe a clear time dependant decrease in vGlut1 appearing after one hour and by 6 hours vGlut1 is significantly reduced. The same observation is seen in synapsin intensity after the high potassium treatment. These data indicate that changes in the immunoreactivity for vGLUT1 may be used as a reporter of neuronal activity in tissue culture with synapsin serving as a relatively stable control marker within the same synapses. In our hands, kainic acid was a successful stimulator of neuronal activity but even brief exposure to moderately high potassium led to neuronal degeneration.