

**Biomedicine Seminar Series**  
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**NMDA receptor dependent long term potentiation: the synaptic basis of memory and learning**

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Long-term potentiation (LTP) has been extensively studied with the belief that the mechanisms involved in its generation are essentially the same as those that underlie the synaptic basis of memory encoding. Thus by understanding LTP one might start to understand the molecular basis of learning and memory.

This seminar will address NMDA receptor dependent LTP of glutamatergic synaptic transmission in area CA1 of the hippocampus, a brain structure intimately involved in the encoding of declarative memory. I will briefly review LTP as a phenomenon and explain why its discovery created such a wonderful excitement. We will look into functional properties of the NMDA receptors and their role in the induction of LTP. Discuss synaptic mechanisms involved in the expression of LTP and how various forms of LTP might coexist in synapses and be involved in shaping different aspects synaptic transfer functions. Finally I will address the role of LTP in Alzheimer's disease and discuss the complications involved in the studies of LTP in a transgenic animal model of the disease.