Title:	Understandig the role of Dopamine in the trafficking of metabotropic glutamate receptor 5
Authors:	Kulkarni, Mitra
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Abstract:	Glutamate is the major excitatory neurotransmitter in the central nervous system (CNS). There are two types of glutamate receptors - ionotropic glutamate receptors (iGluRs) and metabotropic glutamate receptors (mGluRs). The Group I mGluR family (mGluR1 and mGluR5) have been implicated in various forms of experience-dependent synaptic plasticity, such as learning and memory, and in several neuropsychiatric disorders, such as autism, Fragile X syndrome and schizophrenia, amongst others. Trafficking of Group I mGluRs plays a critical role in controlling the precise spatio-temporal localization and activity of these receptors, both of which contribute to proper downstream signalling. Principally, when glutamate binds to the receptor, subsequent to the activation of the second messenger pathway, the receptor gets desensitized. Desensitization protects the receptor from chronic overstimulation. Following desensitization, the receptor is targeted for internalization. Subsequent to internalization, the receptor could either be targeted for degradation to lysosomes or could recycle back to the surface. There exists a crosstalk between various neuronal pathways and neurotransmitter systems throughout the brain. For example, midbrain dopaminergic projections from the Ventral Tegmental Area (VTA) to the CA1 region play an important role in memory consolidation at the hippocampus. In previous studies, it has been reported that dopamine plays a critical role in mediating the internalization and recycling of serotonin 2A receptor (5HT2A). Recent studies also suggest that transmitter molecules sometimes diffuse long distances to activate receptors in neighbouring synapses, and this transmitter spill-over has important physiological consequences. All these evidences strongly suggest that the dopaminergic system and the glutamatergic system in the hippocampus might be interacting with each other. All these reasons prompted us to study the role of dopamine in the trafficking of mGluR5 and mGluR-mediated AMPA receptor trafficking, if any.
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