Poster Presentation

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Molecular insights into intracellular trafficking in NMDA receptor homeostasis

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The delicate balance between endocytosis and recycling of the cell surface receptors (NMDAR and AMPAR) is essential for controlling their surface levels and degradation, and is regulated by numerous processes including lateral membrane diffusion, scaffolding protein interactions and posttranslational modifications. Generally the NMDARs undergo activity-dependent endocytosis within clathrin-coated vesicles. They then enter the endosomal system where they are either sorted into the degradative lysosomal pathway, or are replenished via endosomal recycling. Defects in endosomal trafficking therefore lead to perturbed homeostasis of NMDARs.

Our recent findings provide a comprehensive understanding of how post-translational modifications of NMDAR define an extended electrostatic peptide code for cargo sorting and influence their interactions with the trafficking machinery. Currently, I am trying to understand the mechanistic basis of intracellular trafficking in NMDAR receptor homeostasis. In my talk, I will be discussing about some of our efforts in the basic studies of the structure and function of SNX27, a unique member of PX-FERM module, that control membrane trafficking. Additionally, I will highlight the novel role for phosphorylation of the NMDARs in promoting SNX27-retromer interactions, which may have significant implications for activity-dependent trafficking of NMDARs during synaptic potentiation.

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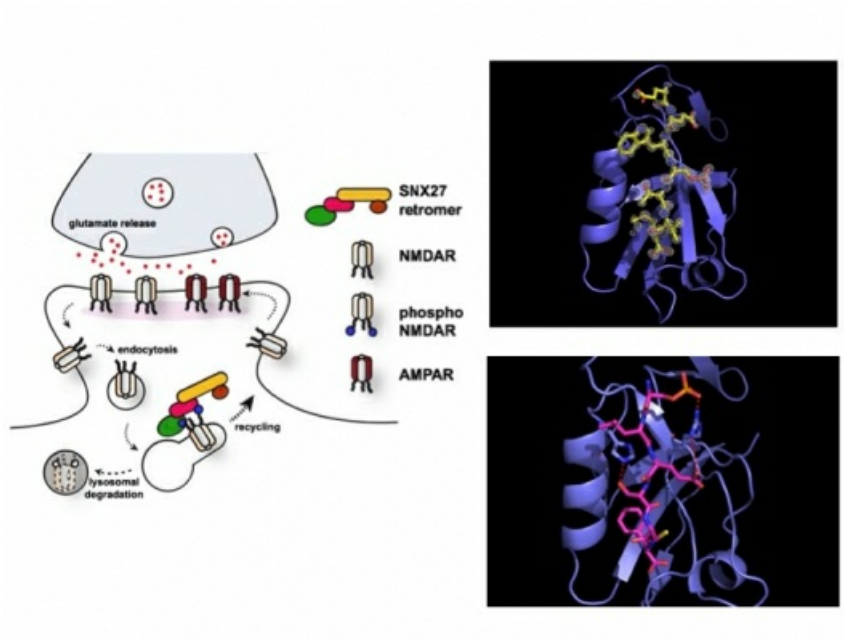

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