Seminar/Talk

Mind the gap: Structural snapshots of synaptic organizing proteins in action

Jonathan Elegheert
University of Oxford

Host:

The human brain consists of billions of neuronal cells assembled into networks that support cognitive functions such as learning and memory formation. Dedicated cellular junctions, termed synapses, form the basic units of communication between these neurons.
At synaptic sites, neurotransmitter receptors are integrated into synapse-spanning protein complexes; these large assemblies support fundamental processes such as synapse formation, expression of synaptic plasticity, and receptor signaling.
In this talk, I will focus on the three-dimensional structure determination of the prototypical complex formed between pre-synaptic neurexin (NRX), the soluble synapse organizer cerebellin (Cbln) and the post-synaptic ionotropic glutamate receptor (iGluR) Delta-2 (GluD2). I will discuss how this complex determines both synapse formation and agonist-dependent metabotropic GluD2 signaling in the cerebellum.
This work provides the first structural snapshots of a synaptic organizer protein captured in an encounter complex with its neurotransmitter receptor, and underscores that synergy between protein and small molecule ligands for receptor activation constitutes a principle that is likely recapitulated throughout the brain.

Reference: Structural basis for integration of GluD receptors within synaptic organizer complexes. Elegheert J et al. Science. 2016 Jul 15;353(6296):295-9

Wednesday, March 22, 2017 09:45am - 10:45am
Mondi Seminar Room 2, Central Building

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