



Institute colloquium

Institute Colloquium: The more the merrier complement family of synaptic organizers

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Host:

Recent two-photon confocal laser microscopic imaging *in vivo* has provided evidence that excitatory synapses are rapidly generated or eliminated in the CNS in response to neuronal activity, not only during development but also throughout adulthood. The mechanisms that govern these processes are fundamental to our understanding of neural plasticity involved in learning and memory. In the last decade, many molecules that directly regulate the formation and maturation of synapses, which are collectively referred to as synaptic organizers, have been identified. However, it has been unclear how various synaptic organizers operate to organize different aspects of synapse formation and differentiation *in vivo*.

We have recently identified a new class of synaptic organizers that belong to the C1q family. C1q is a target recognition protein of the classical complement pathway in the innate immune system. C1q family proteins, which share the C-terminal globular domain of C1q, are mostly secreted and involved in various intercellular signaling. We found that Cbln1 is secreted from cerebellar granule cells and binds to its presynaptic receptor neurexin located on granule cell axons and its postsynaptic receptor the delta2 glutamate receptor (GluD2) on dendritic spines of Purkinje cells. The neurexin/Cbln1/GluD2 tripartite complex serves as a unique bidirectional synaptic organizer in the cerebellum. In addition, Cbln1 and its family members, Cbln2 Cbln4, are expressed in various regions of developing and mature brains. Furthermore, a related family C1ql1-C1ql4 is highly expressed in various brain regions. In this talk, I would like to introduce and discuss some of our recent findings on the C1q family proteins.

Monday, May 19, 2014 04:30pm - 05:30pm

Raiffeisen Lecture Hall, Central Building



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