



# CDB SEMINAR

**Speaker:** **Toshihisa Ohtsuka**

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**Title: “ Molecular mechanisms of the presynaptic active zone structure and function “**

**Date:** **Tuesday, October 5**

**Time:** **14:00 P.M. ~ 15:00 P.M.**

**Place:** **7th floor Conference Room of Building A, CDB**

## **Summary**

The presynaptic active zone is a specialized site in the nerve terminal, and plays crucial roles not only in neurotransmitter release process but also in presynaptic terminal differentiation. Recently, we have identified a novel active zone-specific protein named CAST(Cytomatrix at the Active zone-associated SStructural protein). CAST consists of at least two closely related members, CAST1 and CAST2a, both of which are mainly expressed in the brain. CASTs consist of four coiled-coil regions and a putative COOH-terminal consensus motif for binding to PDZ domains. At the active zone, CASTs form a large molecular complex with other active zone proteins including RIMs, Munc13-1, Bassoon, and Piccolo. Indeed, disruption of the binding of CAST1 with these active zone proteins significantly impairs synaptic transmission in cultured neurons, indicating that this CAST-mediated large molecular complex plays a physiologically important role in the nerve terminal. More recently, we have also identified an active zone-associated serine/threonine kinase in the mammalian brain, which is known to be involved in the synapse development in *C.elegans*.

In my talk, I would like to overview and discuss the possible role of CAST family in neurotransmitter release process and the formation of the presynaptic active zone. Further, an unique molecular linkage between protein phosphorylation and the active zone function is also going to be presented.

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