

# Neuroscience Colloquium Summer Semester 2011

## Shigeo Takamori

Laboratory of Molecular Neurobiology  
Faculty of Life and Medical Sciences  
Doshisha University

### Molecular mechanism of glutamate transport into synaptic vesicles

Glutamate is the major excitatory neurotransmitter in the mammalian CNS, and is stored in synaptic vesicles for exocytic release. Since accumulating evidence has revealed that postsynaptic receptors are not usually saturated by neurotransmitters released from a single synaptic vesicle at variety of synapses in mammalian CNS, alterations in glutamate content in a synaptic vesicle would have impact on efficacy of glutamatergic neurotransmission. Therefore, it is important to understand how synaptic vesicles are filled with glutamate and how this process is regulated. In this seminar, I would like to introduce molecular machinery responsible for vesicle loading process, physiological functions of these proteins, and finally our current understanding of the regulation.

#### References

- Schenck S., et al., A chloride conductance in VGLUT1 underlies maximal glutamate loading into synaptic vesicles. *Nat. Neurosci.* 12, 156-162, 2009.
- Takamori S., et al., Molecular anatomy of a trafficking organelle. *Cell* 127, 831-846, 2006.
- Stobrawa S.M., et al., Disruption of CIC-3, a chloride channel expressed on synaptic vesicles, leads to a loss of the hippocampus. *Neuron* 29, 185-196, 2001.
- Takamori S., et al., Identification of a vesicular glutamate transporter that defines a glutamatergic phenotype in neurons. *Nature* 407, 189-194, 2000.

**Location:** BCCN lecture theater,  
Bernstein Center for Computational Neuroscience  
Humboldt-Universität zu Berlin  
Philippstr. 13, Haus 6

**Date:** Friday, July 8<sup>st</sup>, 4:00 p.m.

**Host:** Christian Rosenmund

The Neuroscience Colloquium is supported by:  
**SFB 665** "Developmental Disturbances in the Nervous System";  
**GRK 1123** "Cellular Mechanisms of Learning and Memory Consolidation in the Hippocampal Formation";  
**SFB-TRR 43** "The Brain as a Target of Inflammatory Processes";  
Cluster of Excellence **NeuroCure**;  
Center for Stroke Research Berlin (**CSB**).  
Organized by the Christian Rosenmund lab; Contact: ari.liebkowsky@charite.de