



## ***HBIGS Lecture***

*by*

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### ***„Exocytosis of synaptic vesicles in neurons“***

***Date: Wednesday, 04 May 2011***

***Start of Lecture: 17:00 s.t.***

***Venue: INF 282 (ZMBH), R001***

***Abstract:***

Neurotransmitter release is mediated by  $\text{Ca}^{2+}$ -dependent exocytosis of synaptic vesicles. Exocytotic membrane fusion is mediated by the SNARE proteins synaptobrevin/VAMP, syntaxin 1, and SNAP-25 that are the only substrates of the Tetanus and Botulinum neurotoxin proteases. Upon membrane contact, the vesicular SNARE synaptobrevin forms complexes with the plasma membrane-resident SNAREs SNAP-25 and syntaxin 1, which pulls the membranes together and initiates fusion. SNARE assembly is controlled by several additional proteins including the calcium sensor synaptotagmin, complexin, and the SM protein Munc-18. We have focused on understanding the mechanisms of SNARE assembly and SNARE-induced fusion using structural and biochemical approaches and in-vitro fusion reactions with native and artificial membranes. Furthermore, we use quantitative approaches for studying the composition of synaptic vesicles and the presynaptic plasma membrane.