SCIENTIFIC SEMINAR

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Kinetic dissection of recycling vesicle pool along a close-loop pathway at the Calyx of Held synapses

We studied vesicle recycling under sustained presynaptic stimulation at physiological temperature on calyx of Held synapses. The kinetics of vesicle reuse was revealed by impeding transmitter refilling with folimycin. It was found that about 80% of vesicles in nerve terminals are involved in recycling but they were not homogeneously competent for immediate release. A significant surface pool of vesicles, assayed as an increased membrane capacitance, was detected with different sizes corresponding to different stimulation intensities. We kinetically dissected the recycling vesicle pool as sequentially connected sub-pools, readily priming pool, readily releasable pool, surface pool and post-endocytic pool. The sizes and transition rates among these sub-pools were dynamically regulated by neuronal activity to ensure the efficient synaptic transmission. The depicted kinetic structure of the recycling vesicle pool along a close-loop pathway provided a new insight into the impact of vesicle recycling in stabilizing synaptic transmission and short term plasticity.

Friday, 09.06.2023, 14:00

Host: Nils Brose

Library Lecture Hall
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