Institute colloquium

Structural synaptic plasticity as a basis for spaced learning

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Host: Peter Jonas

The postsynaptic density comprises regions associated with presynaptic docked vesicles in the active zones (AZ), and nascent zones (NZ) without presynaptic vesicles. Induction of LTP recruits presynaptic vesicles to the NZs, converting them to AZs thereby stabilizing new nanocolumns between vesicles and postsynaptic receptors. Later, new NZs are built allowing augmentation of LTP as a mechanism for the advantage of spaced over massed learning.

Relevant publications:

- Jung JH, Kirk LM, Bourne JN, Harris KM (2021) Shortened tethering filaments stabilize presynaptic vesicles in support of elevated release probability during LTP in rat hippocampus. PNAS, 118 (17):e2018653118. (PDF)
- Chirillo MA, Waters MS, Lindsey LF, Bourne JN, Harris KM (2019) Local resources of polyribosomes and SER promote synapse enlargement and spine clustering after long-term potentiation in adult rat hippocampus. Scientific Reports, 9(1):3861. PMCID: PMC6405867. (PDF)
- Bell ME, Bourne JN, Chirillo MA, Mendenhall JM, Kuwajima M, Harris KM (2014) Dynamics of nascent and active zone ultrastructure as synapses enlarge during long-term potentiation in mature hippocampus. J Comp Neurol, 522(17):3861-84. PMCID: PMC4167938. (2MB PDF)

Monday, September 19, 2022 11:30am - 12:30pm

ISTA Campus Raiffeisen Lecture Hall

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