

DANDRITE/PROMEMO Lecture

Wednesday 19 April 2023
14.00 – 15.00

The MBG Auditorium, building 1871, room 120
Universitetsbyen 81, 8000 Aarhus C



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Create and maintain fear memories in the neuronal network

Understanding how memories are created and maintained over time is a fundamental problem in neuroscience. Our data show that a memory can be artificially created through the precise co-activation of brain regions that process olfactory inputs with regions that process affective valence, in the complete absence of any sensory experience. This study emphasizes both the critical role of sensory input in establishing highly specific memories, as well as the need for coordinated activity of neural networks in memory.

The neural networks of co-active brain regions that support memory recall are here investigated. Within such networks, highly connected hub regions are assumed to disproportionately influence behavioral output. We tested this hypothesis by chemogenetically silencing hub or non-hub regions and assess the effects on long-term memory recall. Our data show that inhibition of hub regions impaired memory performances, in contrast with non-hub regions. The graph theory analysis of memory networks opens new doors in the discovery of brain regions and pathways involved in memory performance. Moreover, the network-based approach is a powerful tool that can provide testable predictions about the regions that may be impaired in cognitive disease. Subsequent manipulations of these pathways can provide causal evidences of their involvement in the disease.

Host: Macarena Gomez de Salazar

***NB!** Gisella Vetere will give a talk at a YoDA Career Café regarding her career path, after the lecture. All students and young researchers are welcome to join.*