



SEMINARIO PRESENCIAL

Jueves, 23 de Noviembre de 2023
12:30 h. Instituto Cajal (CSIC) Madrid

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TOWARDS UNDERSTANDING MOLECULAR MECHANISMS OF MEMORY

Abstract

How proteins with a limited half-life can help in maintaining memory over a lifetime is one of the central questions in understanding the molecular mechanism of memory. Previously a protein synthesis regulator CPEB was implicated in this process. CPEB behaves like a functional prion and was shown to be essential for the maintenance of long-term facilitation in *Aplysia*. It was further suggested this prion-like behavior helps CPEB to maintain the altered state of synapse and long-term memory. The *Drosophila* homolog of CPEB, Orb2 was found to exhibit prion-like properties, and blocking its prion-like oligomerization interfered with the persistence of memory. Orb2 is one of the first identified physiologically beneficial functional prions. Since this prion-like oligomerization of Orb2 is the key to regulating the persistence of memory, it is very important to understand how this oligomerization is regulated in the brain. In my talk, I will discuss our findings on this question.

Related publications with the topic:

Desai M, Hemant, Deo A, Naik J, Bose T, **Majumdar A** (2022). Mrj an Hsp40 family chaperone regulates the oligomerization of Orb2 and long-term memory. *bioRxiv* 2022.10.16.512122; doi: <https://doi.org/10.1101/2022.10.16.512122>

Majumdar A, Cesario WC, White-Grindley E, Jiang H, Ren F, Khan MR, Li L, Choi EM, Kannan K, Guo F, Unruh J, Slaughter B, Si K. (2012). Critical role of amyloid-like oligomers of *Drosophila* Orb2 in the persistence of memory. *Cell*. 148:515-29. doi: 10.1016/j.cell.2012.01.004. Epub 2012 Jan 26.

Si K, Choi YB, White-Grindley E, **Majumdar A**, Kandel ER (2010) *Aplysia* CPEB can form prion-like multimers in sensory neurons that contribute to long-term facilitation. *Cell* 140:421-35. doi: 10.1016/j.cell.2010.01.008.