ELSC-ICNC Seminar: Hanoch Kaphzan

May 23, 2013

On the topic of: "Novel homeostatic mechanisms in a neurodevelopmental mice model of Angelman syndrome"

ELSC & ICNC cordially invite you
to the lecture given by:

Hanoch Kaphzan
The Lab for Neurobiology of Psychiatric Disorders.
Sagol Department of Neurobiology, University of Haifa

On the topic of:

"Novel homeostatic mechanisms in a neurodevelopmental mice model of Angelman syndrome"

The lecture will be held on Thursday, May 23, 2013
at 17:00, at ELSC-ICNC: Silverman Bldg., 3rd Wing, 6th Floor, Edmond J. Safra Campus

Light refreshments at 16:45

Abstract:

Angelman syndrome (AS) is a human neuropsychiatric disorder associated with autism, mental retardation, motor dysfunction, and epilepsy. In most cases, AS is caused by the deletion of small portions of chromosome 15, which includes the UBE3A gene. The UBE3A gene encodes an enzyme termed ubiquitin ligase E3A. A mouse model of AS has been generated and these mice exhibit abnormalities that correlate with neurological alterations observed in humans with AS. One of the prominent affected brain regions in AS is the hippocampus. We characterized the CA1 pyramidal neurons in the AS mice, and observed alterations in the intrinsic membrane properties of these cells between AS mice and their wild-type littermates. These alterations were correlated with increased expression of specific proteins, mainly related to the axon initial segment (AIS). Furthermore, the AIS morphology of these neurons in the AS mice was also found to be altered. By determining the temporal sequence for the increased expression of these proteins we have discovered the precipitating event for the observed AIS alterations which coincides with the homeostatic model of the neuron. Finally, we rescued the hippocampal pathology via a genetic manipulation based on this understanding. Taken together, our findings are the first to suggest that AIS plasticity alterations exist in mammalian brain in-vivo and could be involved in neuropsychiatric disorders such as AS. They also offer a novel conceptualization of neuropsychiatric disorders and propose the option for an innovative therapeutic strategy.
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