ELSC Seminar: Edward Stern

May 8, 2014

On the topic of: Effects of Alzheimer's Disease neuropathology on neocortical cellular and network function

ELSC cordially invite you

to the lecture given by:

Edward A. Stern
Brain Research Center, Bar-Ilan University and MassGeneral Institute for Neurodegenerative Disease, Dept. Of Neurology, Massachusetts General Hospital

On the topic of:

Effects of Alzheimer's Disease neuropathology on neocortical cellular and network function

The lecture will be held on Thursday, May 8, 2014
at 17:00, at ELSC: Silverman Bldg., 3rd Wing, 6th Floor, Edmond J. Safra Campus

Light refreshments at 16:45

Abstract:

Although much progress has been made in the understanding of Alzheimer's Disease, the effects of the disease-associated protein accumulation and aggregation on neuronal function remain unclear. We used in vivo intracellular recordings from neocortical neurons in transgenic mouse models to compare the activity in the neurons in the neuropathological brain to that in healthy controls. We recorded the activity separately in models in which amyloid-\(\beta\) and tau accumulate and aggregate, and measured the effects of the overexpression on spontaneous ongoing activity in frontal cortical neurons. Both forms of the neuropathology affect the spontaneous activity of the neurons in different ways: A\(\beta\) affects intrinsic electrophysiological excitability differentially prior to and following plaque aggregation as well as altering synaptic input properties, while tau primarily reduces afferent synaptic activity in a progressive, age-dependent manner. We suggest that the deficits in cellular function are amplified downstream as activity propagates through the cortical network, thus causing general failure in neocortical function.
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