**FENS Forum 2010 - Amsterdam**

- Posters: to be on display from 8:00 to 13:15 in the morning and from 13:30 to 18:45 in the afternoon. Poster sessions run from 09:30 to 13:15 in the morning and from 13:30 to 17:30 in the afternoon. A one hour time block is dedicated to discussion with the authors (authors should be in attendance at their posters as from the time indicated.)
- For other sessions, time indicates the beginning and end of the sessions.

**First author** Contestabile, Andrea (poster)

Poster board C68 - Tue 06/07/2010, 11:15 - Hall 1
Session 134 - Alzheimer's 2
Abstract n° 134.10
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**Title** Neurogenesis as therapeutic target to rescue hippocampal-mediated learning and memory deficits in a mouse model of Down syndrome

**Text** Down syndrome (DS) is the most frequent cause of cognitive disability in children and adults. It has been reported that defects in neurogenesis occur both during development and adulthood and possibly underlie cognitive dysfunction associated with DS. Recent studies have taken advantage of mouse models reproducing essential genetic and cognitive features of the disease to highlight key pathological mechanisms. Adult neurogenesis in the dentate gyrus (DG) of rodents has been associated to memory formation and hippocampus-dependent learning. It has been proposed that the impaired performance in learning and memory tasks of adult DS mouse models is due to decreased DG neurogenesis. Lithium is an extensively used mood stabilizer that also stimulates neurogenesis in the mammalian brain. In view of identifying an effective pharmacological treatment to alleviate DS cognitive impairment, we assessed whether lithium treatment could enhance neurogenesis, synaptic plasticity and cognitive performance in the Ts65Dn mouse model of DS. Lithium was administered to mice in the food (2.4 g/kg of chow) for 1 month. BrdU was administered at the end of the treatment to quantify neuronal precursor proliferation by immunohistochemistry. Long term potentation (LTP) was evaluated by field recordings in the DG of hippocampal slices from treated and untreated mice. Functional effects of lithium treatment on learning and memory have been evaluated using the novel object recognition test.
Initial results showed that chronic lithium treatment effectively promoted neurogenesis in the DG of Ts65Dn mice and restored both synaptic plasticity and memory functions. Further analyses are ongoing to unravel molecular mechanisms underlying lithium effects on neurogenesis and cognition.

**Theme** C - Disorders of the nervous system
Alzheimer's disease and other dementias - Therapeutic strategies