

ENP 2011
9th Dutch Endo-Neuro-Psycho Meeting
Lunteren, 30 May - 1 June 2011

<http://www.enpmeeting.org>

Parallel Sessions E

The significance of free exploration to understand emotion and cognition of rodents

1 June 2011, 09:00

Early changes in spontaneous behaviour of mouse models for human neurodegenerative diseases

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Studies of the behaviour of transgenic mice modelling human neurodegenerative diseases like Alzheimer's disease (AD), Parkinson's disease (PD) or Huntington's disease (HD), have increased our knowledge of the role of specific genes in the development of those diseases. However, properly studying the effects of genetic modifications on the behaviour of transgenic animals demands insight in naturally occurring differences among strains. For instance, arousal, emotional state and motor activity are strongly linked to cognition and differences in spontaneous exploration between strains and may influence results concerning cognitive performance. We studied genetic models for AD (APP85SwePS1dE9 and 3xTg-AD) and HD (R6/2) in the home cage and spontaneous activity as well as cognitive performance in automated cognitive tests were monitored over a series of days. The same cohorts were repeatedly tested at different ages, allowing behavioural characterization of early signs of the respective disease. Compared to wildtype littermates, female AD-mice of the APP85SwePS1dE9-strain showed a significant *increase* in activity and changes in the circadian rhythmicity at the age of 4 months, whereas HD-mice showed a *decrease* already at the age of 4 weeks. We will discuss the importance of the early onset indicators and the relevance of correlating differences in spontaneous activity with the performance in the automated cognitive tests.