Roland Rabl et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

A dry land behavioral test to analyze Alzheimer's disease mouse models for spatial learning deficits

Roland Rabl, Stephan Kurat, Iera Hernandez, Estibaliz Santiago Stefanie Flunkert and **Birgit Hutter-Paier**
QPS Austria GmbH, Austria

Alzheimer's disease (AD) is a progressive neurodegenerative disease that manifests as memory loss, cognitive dysfunction and dementia. Spatial learning and memory of AD rodent models is often assessed via navigational cues in mazes, most popular are the Morris water maze and the dry-land Barnes maze. Improved performance over sessions or trials is thought to reflect learning and memory. The Barnes maze is considered less stressful compared to water mazes and also useful for rodent models with minor motor deficits. The Barnes maze is a circular platform top with several holes equally spaced around the perimeter edge. Symptomatic animals of two transgenic AD mouse models were analyzed in the Barnes maze test using a hippocampal learning protocol. Barnes maze results were analyzed for escape latency, speed, distance traversed, number of target entries, and the abidance in the target quadrant during the probe trial. Data of different models were compared. Our data show that the dry-land behavioural test apparatus of the Barnes maze is a valuable tool to analyse learning and memory deficits of different rodent AD models. This method might be an effective alternative to the Morris water maze while causing less stress to the animals.

Recent Publications:

1. Kutzsche J, Schemmert S, Tusche M, Neddens J, Rabl R, et al. (2017) Large-scale oral treatment study with the four most promising D3-derivatives for the treatment of Alzheimer's disease. Molecules 22(10).
2. Rabl R, Breitschaedel C, Flunkert S, Duller S, Amschl D, et al. (2017) Early start of progressive motor deficits in line 61 α-synuclein transgenic mice. BMC Neurosci. 18(1):22.
3. Rabl R, Horvath A, Breitschaedel C, Flunkert S, Roemer H, et al. (2016) Quantitative evaluation of orofacial motor function in mice: The pasta gnawing test, a voluntary and stress-free behavior test. J Neurosci Methods. 274:125–130.
4. Amschl D, Neddens J, Havas D, Flunkert S, Rabl R, et al. (2013) Time course and progression of wild type α-synuclein accumulation in a transgenic mouse model. BMC Neurosci. 14:6.
5. Flunkert S, Hierzer M, Löffler T, Rabl R, Neddens J, et al. (2013) Elevated levels of soluble total and hyperphosphorylated tau result in early behavioral deficits and distinct changes in brain pathology in a new tau transgenic mouse model. Neurodegener Dis. 11(4):194–205.

Biography

Roland Rabl is a student of Biology at the University of Graz, Austria. In parallel, he pursued a career as Behavioral Test Expert, Preclinical Research Associate and Deputy Researcher of the in vivo Research Team at QPS Austria since 2007. He is the First Author of two and Co-author of three publications in reputed journals. He has participated in several international conferences by presenting his research in oral (ADPD 2013, Florence, Italy) and poster presentations.

roland.rabl@qps.com

Notes: