John J. Tukker

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Curriculum vitae

since 2014	Postdoctoral fellow (Advisor: D. Schmitz), Charité Univ Medicine, Berlin, Germany
2012 – 2013	Paternity leave (~6 months)
2009 – 2014	Postdoctoral fellow (Advisor: M. Brecht), Humboldt University, Berlin, Germany
2005 – 2009	PhD thesis (Supervisors: P. Somogyi, T. Klausberger), MRC Anatomical Neuropharmacology Unit, University of Oxford, UK
2004 – 2005	Studies in Neuroscience, Int. Max Planck Res. School, Göttingen, Germany
2002 – 2004	Research Assistant, University of Pennsylvania, USA
2002	OSIRIS helpdesk operator/ software tester, Utrecht University, the Netherlands
1996 – 2001	Studies in Cognitive Artificial Intelligence, Utrecht University, the Netherlands

Research fields

My goal is to link (properties of) neural circuits, single neurons, and behavior. By connecting these different levels of description, I hope to understand how neurons can work together to produce behavior, and the internal representations of the world that guide behavior.

I am convinced that more precise knowledge of the neural circuits underlying specific behaviors will enable the development of more specific, and ultimately more successful, therapeutic strategies for diseases such as Alzheimer's.

My present efforts are aimed at elucidating neural circuit function in the parahippocampal region during a navigational task. We use the following methods:

- extracellular silicone probe recordings of neuronal activity and cortical oscillations in head-fixed mice (including APP-PS1 model of Alzheimer's Disease) navigating in a virtual reality paradigm.
- chemo- and optogenetics to identify and/or manipulate specific cell-types in the medial septum and their projections to the parahippocampal area

Teaching/ Student Supervision

Currently supervising 1 PhD Student.

Supervised several Lab Rotations, 1 MSc Thesis.

Present teaching:

- supervision of Problem Oriented Learning (POL) medical case studies
- assistant practical course CNS histology
- seminars on connective tissue, heart biomechanics

Past: lectures in Spatial Memory, Alzheimer's Disease; seminar & practical course Animal Physiology

Selected publications

* indicates corresponding author

Tang Q, Burgalossi A, Ebbesen CL, Sanguinetti-Scheck JI, Schmidt H, **Tukker JJ**, Naumann R, Ray S, Preston-Ferrer P, Schmitz D, Brecht M (in press) Functional architecture of the rat parasubiculum. J Neurosci

Tukker JJ*, Tang Q, Burgalossi A, Brecht M (2015) Head-directional tuning and theta-modulation of anatomically identified neurons in the presubiculum. J Neurosci 35:15391-5.

Viney TJ, Lasztóczi B, Katona L, Crump MG, **Tukker JJ**, Klausberger T, Somogyi P (2013) Network state-dependent inhibition of identified hippocampal CA3 axo-axonic cells in vivo. Nat Neurosci 16: 1802-11.

Tukker JJ*, Lasztóczi B, Katona L, Roberts JD, Pissadaki EK, Dalezios Y, Márton L, Zhang L, Klausberger T, Somogyi P (2013) Distinct dendritic arborization and in vivo firing patterns of parvalbumin-expressing basket cells in the hippocampal area CA3. J Neurosci 33: 6809-25.

Herfst L, Burgalossi A, Haskic K, **Tukker JJ**, Schmidt M, Brecht M (2012) Friction-based stabilization of juxtacellular recordings in freely moving rats. J Neurophysiol 108: 697-707.

Lasztóczi B, **Tukker JJ**, Somogyi P, Klausberger T (2011) Terminal field and firing selectivity of cholecystokinin-expressing interneurons in the hippocampal CA3 area. J Neurosci 31: 18073-93.

Tukker JJ, Fuentealba P, Hartwich K, Somogyi P, Klausberger T (2007) Cell type-specific tuning of hippocampal interneuron firing during gamma oscillations in vivo. J Neurosci 27: 8184-8189.

Tukker JJ, Taylor RW, Smith RG (2004) Direction selectivity in a model of the starburst amacrine cell. Vis Neurosci 21: 611-625