Curriculum Vitae

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Education:

1999	Ph.D. in Behavioral and Neural Sciences, Rutgers University, USA Thesis title: Population patterns in hippocampal local circuits.
1993-99	Rutgers University, Newark, USA, Behavioral and Neuroscience Graduate Program. Advisor: Prof. Gyorgy Buzsaki
1993	Diploma degree in Informatics (equivalent of M.Sc.), Technical University of Budapest, Hungary
1988-93	Technical University of Budapest, Faculty of Electrical Engineering and Informatics, Budapest, Hungary

Research Experience:

2011-	Professor, Institute of Science and Technology, Austria
2008- 2011	MRC Senior Scientist (tenured), MRC Anatomical Neuropharmacology Unit, University of Oxford, UK
2003-08	MRC Senior Scientist (tenure track), MRC Anatomical Neuropharmacology Unit, University of Oxford, UK
2001-02	Research Associate, Center for Behavioral and Molecular Neuroscience, Rutgers University, USA
1999-01	Postdoctoral Fellow, Center for Behavioral and Molecular Neuroscience, Rutgers University, USA
1993-99	Graduate Assistant, Center for Behavioral and Molecular Neuroscience, Rutgers University, USA

Selected Awards and Distinctions

2011-2016	ERC Starting Grant
2010-2011	Title of *Ad Hominem* Professor of Neuroscience at the University of Oxford

Teaching:

Postdoctoral fellows:

Federico Stella 2014-
Krisztián Kovács 2013-
Peter Baracskay 2013-
Charlotte Boccara 2012-
Karel Blahna 2012-
Charlotte Boccara 2012-
Desiree Dickerson 2012-2013

Philipp Schönenberger 2011-2014
Alice Alvernhe 2010-2013
Joseph O'Neill 2008-
David Dupret 2007-2011
John Huxter 2005-2008

Phd and DPhil students:

Karola Käfer 2013-
Dámaris Rangel 2013-
Igor Gridchyn 2012-
Haibing Xu 2011-
Alessia Manganaro 2009-2014
Barty Pleydell-Bouverie 2006-2010
Timothy Senior 2004-2008
Kevin Allen 2004-2008
Joseph O'Neill 2003-2007

MSc Thesis:

Hanne Stensland 2008
Tor Kirkesola 2008
Jagdish Patel 2005
Timothy Senior 2004

Recent lectures for students:
Systems Neuroscience Course at IST Austria 2014-
Introduction to Neuroscience Course at IST Austria 2011-13
FHS of Medical Sciences Neuroscience Course 2010
Neuroscience MSc course at the University of Oxford, 2009-10

Grants:
Austrian Science Fund (FWF) grant "Interneuron Synaptic Plasticity" DFG-For2143 - FWF project FWF01_I2072, 2014-1017, €255,000

EU MC-ITN Grant "*INSENS*" FP7-PEOPLE-2013 (607616), 2013-2017, €240,000

2011-2016 ERC Starting Grant "Memory-Related Information Processing in Neuronal Circuits of the Hippocampus and Entorhinal Cortex" €1,441,119

MRC intramural research programme grant 2009-2014 Title "Synchronisation of Cell Assemblies in Hippocampo-Entorhinal Circuits" £847,000 (since 2011 not a PI on this grant)

MRC intramural research programme grant 2003-2008 Title "Study of hippocampal local circuits during behaviour" £588,000

Wellcome Trust Studentship grants for T. Senior, K. Allen, and B Pleydell-Bouverie: each grant covered university fees, stipend and additional £36,000 consumable costs

Service at IST Austria

2016- Head of Animal Welfare Council
2015- Member of IST Fellow Committee
2014- Chair of the Internal Events Committee
2012-2014 Head of Scientific Service Unit "Machine Shop"
2013- Member of the Interdisciplinary committee
2012 Member of IST Fellow Committee
2011- Member of the Professorial Committee

Other Professional Service Activities
2016 Cajal course co-director, "The Hippocampus: from Circuits to Cognition" in Bordeaux
2014 Ad-hoc committee member for Wellcome Trust UK Senior Fellow Interview Panel
2011 -2013 Member of ANR (French National Research Agency) Neuroscience Grant Committee
2008-2010 Organising seminar series for the 'OXION' group at the University of Oxford
2008-2010 Organising Open Day for local high school students visiting the Unit
2009 Organising talk session at the Hungarian Neuroscience Meeting

Reviews
Ad hoc reviewer: Nature, Science, Neuron, PLOS Biology, Nature Neuroscience, PNAS, Journal of Neuroscience, PLOS One, PLOS Computational Biology European Journal of Neuroscience, Hippocampus, TINS, Journal of Neurophysiology, Journal of Physiology, Journal of Neuroscience Methods
Grant reviewer: MRC(UK) , BBRC(UK), Wellcome Trust(UK), HFSP, DFG(Germany), ZonMw(Nederland), ISF (Israel), FRM (France), GIF (The German Israeli Foundation)

Recent invited talks/seminars:
2014 ECE 2014 summer school "Memory and Mind: Perspectives from Philosophy and Neuroscience" Bochum, Germany
2014 Gordon Research Conference on Synaptic Transmission, Waterville, USA
2014 FENS Meeting, Session: Gamma oscillations and cognitive processing: linking coordination of individual neurons to behavior, Milan, Italy
2014 Workshop in Memory of Professor Rita Levi-Montalcini "Engrams and Memory Traces" Rome Italy
2014 Workshop on Synaptic Microcircuits, Bonn, Germany
2014 Kavli Program on 'Neurophysics of Space, Time and Learning'. Santa Barbara, USA
2014 Space Brain Meeting, Tel Aviv, Israel
2013 Multi-Electrode Workshop, Bordeaux France
2013 Oxford Oscillations Workshop, Oxford, UK
2013 Hippocampal Spring Conference, Taormina, Italy
2013 French Neuroscience Meeting, Cells and circuits coding for spatial maps, Lyon, France
2013 German Neuroscience meeting Practically profiting from the complexity of massively parallel electrophysiological data, Goettingen, Germnay
2013 92nd Annual Meeting of the German Physiological Society
2013 Royal society Theo Murphy Meeting: Space in the brain: cells, circuits, codes and cognition, Chicheley Hall, UK
2013 EEG Rhythms of Health and Disease States, Cardiff, UK

Publications *(some of the significant papers highlighted in bold)***:**
Schoenenberger P, O'Neill J, Csicsvari J (2016) Activity-dependent plasticity of hippocampal place maps, *Nature Communications*, in press

Dupret D, **Csicsvari J** (2015) Reorganization of hippocampal place-selective patterns during goal-directed learning and their reactivation during sleep. In Tatsuno M (Ed.) Analysis and Modeling of Coordinated Multi-neuronal Activity, Springer Series in Computational Neuroscience Vol.12.

O'Neill J, **Csicsvari J** (2014) Learning by example in the hippocampus. *Neuron*, 83:8-10 (*preview*)

Dupret D, **Csicsvari J** (1014) Turning heads to remember places. *Nat Neurosci*, 17:643-4. (*preview*)

Csicsvari J, Dupret D. (2014) Sharp wave/ripple network oscillations and learning-associated hippocampal maps. *Phil Trans R Soc B* 369:20120528.

Csicsvari J, Dupret D (2013) Sharp wave/ripple network oscillations and learning-associated hippocampal maps. *Neuron*, 369:20120528. (*preview*)

Dupret D, **Csicsvari J**. (2012) The medial entorhinal cortex keeps Up. *Nat Neurosci.* 15(11):1471-2

Dupret D, O'Neill J, Csicsvari J (2013) Dynamic reconfiguration of hippocampal interneuron circuits during spatial learning. *Neuron*, 78:166-80.

Allen K, Rawlins J, Bannerman D, **Csicsvari J** (2012) Hippocampal place cells can encode multiple trial-dependent features through rate remapping. *J Neurosci*, 32:14752-66.

Sullivan D, **Csicsvari J**, Mizuseki K, Montgomery S, Diba K, Buzsáki G. (2011) Relationships between hippocampal sharp waves, ripples, and fast gamma oscillation: influence of dentate and entorhinal cortical activity. *J Neurosci*, 31:8605-16.

Dupret D, Pleydell-Bouverie B, **Csicsvari J** (2010), Rate Remapping: When the Code Goes beyond Space, *Neuron*, 68:1015-6. (*preview*)

O'Neill, J, Pleydell-Bouverie B, Dupret D, Csicsvari J, (2010) Play it again: reactivation of waking experience and memory. TINS, 33 220-229.

Dupret D, O'Neill J, Pleydell-Bouverie B, Csicsvari J (2010) The reorganization and reactivation of hippocampal maps predict spatial memory performance. *Nature Neurosci.*, 13: 995-1002. (Discussed in the News and Views section of the journal by Jeffery and Cacucci)

Jiruska P, **Csicsvari J**, Powell A, Fox J, Chang W, Vreugdenhil M,Li X,, Palus M,Fernandez A, Dearden R, Jefferys J (2010) High-frequency network activity, global increase in neuronal activity and synchrony expansion precede epileptic seizures in vitro. *J Neurosc,* 30, 5690-5701.

Remy S, **Csicsvari J**, Beck H (2009) Activity-dependent control of neuronal output by local and global dendritic spike attenuation. *Neuron*, 61:906-16.

Dupret D, Pleydell-Bouverie B, **Csicsvari J** (2008) Inhibitory interneurons and network oscillations. *PNAS*: 105:18079-80. (*preview*)

Huxter JR, Senior TJ, Allen K, Csicsvari J (2008). Theta phase-specific codes for two-dimensional position, trajectory and heading in the hippocampus. *Nature Neurosci*. 11:587-594.

Senior TJ, Huxter JR, O'Neill J, Allen K, Csicsvari J (2008) Gamma Oscillatory Firing Reveals Distinct Populations of Pyramidal Cells in the CA1 Region of the Hippocampus. *J Neurosci*, 28:2274-86 (selected as *This Week in the Journal*).

O'Neill J, Senior TJ, Allen K, Huxter JR, Csicsvari J (2008) Reactivation of experience-dependent cell assembly patterns in the hippocampus. *Nature Neurosci*. 11:209-215. (Discussed in the News and Views section of the journal by Nitz and Coven and Journal Cover illustration).

Mallet N, Pogosyan A, Sharott A, **Csicsvari J**, Bolam JP, Brown P, Magill PJ (2008) Disrupted dopamine transmission and the emergence of exaggerated beta oscillations in subthalamic nucleus and cerebral cortex. J. Neurosci. 28:4795-4806.

Fuentealba P, Begum R, Capogna M, Jinno S, Marton LF, **Csicsvari J**, Thomson A, Somogyi P, and Klausberger T (2008) Ivy cells: a population of nitric-oxide-producing, slow-spiking GABAergic neurons and their involvement in hippocampal network activity. *Neuron* 57:917-929.

Csicsvari J, O'Neill J, Allen K, Senior T (2007) Place-Selective Firing Contributes to the Reverse Order Reactivation of CA1 Pyramidal Cells during Sharp Waves in Open Field Exploration. *Eur J Neurosci*, 26:704-716.

O'Neill J, Senior TJ, Csicsvari J (2006) Place-selective firing of CA1 pyramidal cells during sharp wave/ripple

network patterns in exploratory behaviour. *Neuron* 49:143-55.

Magill PJ, Pogosyan A, Sharott A, **Csicsvari J**, Bolam JP, Brown P (2006) Changes in functional connectivity within the rat striatopallidal axis during global brain activation in vivo. *J Neurosci* 26:6318-29.

Klausberger T, Marton LF, O'Neill J, Huck JH, Dalezios Y, Fuentealba P, Suen WY, Papp E, Kaneko T, Watanabe M, **Csicsvari J**, Somogyi P (2005) Complementary roles of cholecystokinin- and parvalbumin-expressing GABAergic neurons in hippocampal network oscillations. *J Neurosci* 25:9782-93.

Csicsvari J, Henze DA, Jamieson B, Harris KD, Sirota A, Wise KD, Buzsáki G (2003) Massively-parallel recording of unit and local field potentials with silicon-based electrodes. *J Neurophysiol* 90:1314-23.

Harris KD, Csicsvari J, Hirase H, Dragoi G, Buzsaki G (2003) Organization of cell assemblies in the hippocampus. *Nature* 424:552-6.

Sirota A, **Csicsvari J**, Buhl D, Buzsaki G (2003) Communication between neocortex and hippocampus during sleep in rodents. *Proc Natl Acad Sci USA* 100:2065-9.

Csicsvari J, Jamieson B, Wise K, Buzsaki G (2003) Mechanisms of gamma oscillations in the hippocampus in vivo. *Neuron* 37:311-322. (Cover illustration)

Buzsaki G, **Buhl DL**, Harris KD, Csicsvari J, Czeh B, Morozov A. (2003) Hippocampal network patterns of activity in the mouse. *Neuroscience* 116:201-11.

Buzsaki G, **Csicsvari J**, Dragoi G, Harris K, Henze D, Hirase H (2002) Homeostatic maintenance of neuronal excitability by burst discharges in vivo. *Cereb Cortex* 12:893-9.

Hirase H, Leinekugel X, Czurko A, **Csicsvari J**, Buzsaki G (2001) Firing rates of hippocampal neurons are preserved during subsequent sleep episodes and modified by novel awake experience. *Proc Natl Acad Sci U SA* 98:9386-90.

Hirase H, Leinekugel X, **Csicsvari J**, Czurko A, Buzsaki G. (2001) Behavior-dependent states of the hippocampal network affect functional clustering of neurons. J Neurosci 21:RC145.

Szabo I, Czurko A, **Csicsvari J**, Hirase H, Leinekugel X, Buzsaki G (2001) The application of printed circuit board technology for fabrication of multi-channel micro-drives. *J Neurosci Methods* 105:105-110.

Csicsvari J, Hirase H, Mamiya A, Buzsaki G (2000) Ensemble patterns of hippocampal CA3-CA1 neurons during sharp wave associated population events. *Neuron* 28:585-594.

Henze DA, Borhegyi Z, **Csicsvari J**, Mamiya A, Harris KD, Buzsaki G (2000) Intracellular features predicted by extracellular recordings in the hippocampus in vivo. *J Neurophysiol* 84:390-400.

Harris KD, Henze DA, **Csicsvari J**, Hirase H, Buzsaki G (2000) Accuracy of tetrode spike separation as determined by simultaneous intracellular and extracellular measurements. *J Neurophysiol* 84:401-14.

Csicsvari J, Hirase H, Czurko A, Mamiya A, Buzsaki G (1999) Fast network oscillations in the hippocampal CA1 region of the behaving rat. *J Neurosci* 19:RC20 1-4.

Csicsvari J, Hirase H, Czurko A, Mamiya A, Buzsaki G (1999) Oscilatory coupling of hippocampal pyramidal cells and interneurons in the behaving rat. *J Neurosci* 19:274-287.

Hirase H, Czurko A, **Csicsvari J**, Buzsaki G (1999) Firing rate and theta-phase coding by hippocampal pyramidal neurons during 'space clamping'. *Eur J Neurosci* 11:4373-80.

Penttonen M, Nurminen N, Miettinen R, Sirvio J, Henze DA, **Csicsvari J**, Buzsaki G (1999) Ultra-slow oscillation (0.025 Hz) triggers hippocampal afterdischarges in Wistar rats. *Neuroscience* 94:735-43.

Nadasdy Z, Hirase H, Czurko A, **Csicsvari J**, Buzsaki G (1999) Replay and time compression of recurring spike sequences in the hippocampus. J *Neurosci* 9:9497-507.

Dragoi G, Carpi D, Recce M, **Csicsvari J**, and Buzsaki Gy (1999) Hippocampomedial Septal Interactions during Sharp Waves and Theta Oscillation in the Behaving Rat. *J Neurosci* 19:6191-9.

Czurko A, Hirase H, **Csicsvari J**, Buzsaki G (1999) Sustained activation of hippocampal pyramidal cells by space clamping in a running wheel. *Eur J Neurosci* 11:344-52.

Csicsvari J, Hirase H ,Czurko A , Buzsaki G (1998) Reliability and state-dependence of pyramidal cell-interneuron synapses in the hippocampus: an ensemble approach in the behaving rat. *Neuron* 21: 179-189.

Bragin A, **Csicsvari J**, Penttonen M, Buzsaki G, (1997) Epileptic afterdischarge in the hippocampal-entorhinal system: current source density and unit studies. *Neuroscience* 76:1187-203.

Nadasdy Z, **Csicsvari J**, Penttonen M, Hetke J, Wise K, Buzsaki, G (1998) Extracellular recording and analysis of neuronal activity: from single cells to ensembles. In: Eichenbaum, H. and Davis, J. (Ed.): Large scale recording of

neuronal activity. Wiley, New York.