

## BIOGRAPHICAL SKETCH

NAME: Umberto Olcese

POSITION TITLE: Associate professor

### A. Education/training

Dates	January 2011
Title of qualification awarded	PhD – <i>Diploma di Perfezionamento</i>
Title of dissertation	The role of sleep in learning mechanisms of natural and artificial systems
Supervisors	Prof. Giulio Tononi, Prof. Massimo Bergamasco
Name of organisation	Scuola Superiore Sant'Anna, Pisa, Italy
Graduate Program	Innovative Technologies of Information & Computer Engineering and Robotics
Level in national classification	100/100 cum laude
Date	July 2007
Title of qualification awarded	MSc in Biomedical Engineering – <i>Laurea Magistrale</i>
Title of dissertation	States of vigilance and brain connectivity: Analysis of a model of the thalamocortical system
Supervisors	Prof. Giulio Tononi, Prof. Maria Chiara Carrozza
Name of organisation	Universita' di Pisa, Pisa, Italy
Level in national classification	110/110 cum laude
Date	July 2005
Title of qualification awarded	BSc in Biomedical Engineering – <i>Laurea</i>
Title of dissertation	Control of servomotors for endoscopic applications
Supervisors	Prof. Alberto Landi, Prof. Arianna Menciassi
Name of organisation	Universita' di Pisa, Pisa, Italy
Level in national classification	110/110 cum laude

### Positions and Employment

Dates	October 2020 – present day
Occupation or position held	Associate Professor (tenured)
Main activities and responsibilities	Autonomous research activities, teaching at BSc, MSc and PhD level
Research group	Cognitive and Systems Neuroscience Group
Name and address of employer	Swammerdam Institute for Life Sciences, University of Amsterdam, Amsterdam, The Netherlands
Dates	November 2013 – September 2020
Occupation or position held	Assistant Professor
Main activities and responsibilities	Autonomous research activities, teaching at BSc, MSc and PhD level
Research group	Cognitive and Systems Neuroscience Group
Name and address of employer	Swammerdam Institute for Life Sciences, University of Amsterdam, Amsterdam, The Netherlands
Dates	January 2011 –October 2013
Occupation or position held	PostDoctoral Researcher
Main activities and responsibilities	Autonomous research activities: in vivo imaging and electrophysiology
Supervisor	Dott. Paolo Medini
Name and address of employer	Neuroscience and Brain Technologies Department, Italian Institute of Technology, Genova, Italy

## Honors and awards

- Selected as a member of the Amsterdam Young Academy since 2018
- Winner of the 2006 Biorobotic Award for the best dissertation in biorobotics by a student of Scuola Superiore Sant'Anna – Pisa, Italy, with a dissertation entitled "Servomotor control for endoscopic applications"

## B. Selected peer-reviewed publications

- Lohuis, M.N.O., Marchesi, P., Pennartz, C.M. and Olcese, U.†, *Functional (ir)relevance of posterior parietal cortex during audiovisual change detection*. **J Neurosci**, 42 (26), 5229-5245 (2022).
- Lohuis, M.N.O., Pie, J.L., Marchesi, P., Montijn, J.S., de Kock, C.P., Pennartz, C.M.\* and Olcese, U.\*†, *Task complexity temporally extends the causal requirement for visual cortex in perception*. **Nat Commun**, 13 (1), 1-19 (2022).
- Lohuis, M.N.O., Canton, A.C., Pennartz, C.M. and Olcese, U.†, *Higher Order Visual Areas Enhance Stimulus Responsiveness in Mouse Primary Visual Cortex*. **Cerebral Cortex**, 32 (15), 3269-3288 (2022).
- Homborg, J.R., Adan, R.A., Alenina, N., Asiminas, A., Bader, M., Beckers, T., Begg, D.P., Blokland, A., Burger, M.E., van Dijk, G. and Eisel, U.L., ... Olcese, U., ..., et al. *The continued need for animals to advance brain research*. **Neuron**, 109(15), pp.2374-2379 (2021).
- Sikkens, T., Bosman Vittini, C.A. & Olcese, U.†, *The role of top-down modulation in shaping sensory processing across brain states: implications for consciousness*, **Front Syst Neurosci**, 13:31 (2019).
- Meijer, G., Mertens, P., Pennartz, C.M.A., Olcese, U.† & Lansink, C.S.†, *Cortical networks for multisensory processing: distinct functions sharing a common circuitry*, **Progr Neurobiol**, 174:1-15 (2019).
- Olcese, U., oude Lohuis, M. & Pennartz, C.M.A.†, *Sensory processing across conscious and nonconscious brain states: from single neurons to distributed networks*, **Front Syst Neurosci**, 12:49 (2018).
- Olcese, U.†, Bos, J.J.\*, Vinck, M.\*, & Pennartz, C.M.A.†, *Functional determinants of enhanced and depressed inter-areal information flow in NREM sleep between neuronal ensembles in rat cortex and hippocampus*, **SLEEP**, 41(11) (2018).
- Storm, J. F., Boly, M., Casali, A. G., Massimini, M., Olcese, U., Pennartz, C.M.A., & Wilke, M., *Consciousness Regained: Disentangling Mechanisms, Brain Systems, and Behavioral Responses*. **J Neurosci**, 37(45), 10882-10893 (2017).
- Montijn, J.S., Olcese, U. & Pennartz, C.M.A., *Visual stimulus detection correlates with the consistency of temporal sequences within stereotyped events of V1 neuronal population activity*, **J Neurosci**, 36 (33), 8624-8640 (2016).
- Olcese, U.\*, Bos, J.J.\*, Vinck, M.\*, Lankelma, J.V., van Mourik-Donga, L.B., Schlumm, F. & Pennartz, C.M.A., *Spike-based functional connectivity in cerebral cortex and hippocampus: loss of global connectivity is coupled to preservation of local connectivity during non-REM sleep*, **J Neurosci**, 36 (29), 7676-7692 (2016).
- Petrini, E.M., Ravasenga, T., Hausrat, T., Iurilli, G., Olcese, U., Racine, V., Sibarita, J.B., Jacob, T., Moss, S., Benfenati, F., Medini, P., Kneussel, M. and Barberis, A., *Synaptic recruitment of gephyrin regulates surface GABA<sub>A</sub> receptors dynamics for the expression of inhibitory LTP*, **Nat Commun**, 5, art. n. 3921, doi:10.1038/ncomms4921 (2014).
- Pietrasanta, M., Restani, L. Cerri, C., Olcese, U., Medini P. and Caleo, M., *A switch from inter-ocular to inter-hemispheric suppression following monocular deprivation in the rat visual cortex*, **Eur J Neurosci**, 40 (1), 2283-2292 (2014).
- Iurilli, G.\*, Olcese, U.\* and Medini, P., *Preserved excitatory-inhibitory balance of cortical synaptic responses to amblyopic eye stimulation after prolonged monocular deprivation in rats*, **Plos ONE**, doi: 10.1371/journal.pone.0082044 (2013).
- Olcese, U.\*, Iurilli, G.\* and Medini, P., *Cellular and synaptic architecture of multisensory integration in the mouse neocortex*, **Neuron**, 79, 579-593 (2013).
- Nere, A.\*, Olcese, U.\*, Balduzzi, D. and Tononi, G., *A Neuromorphic Architecture for Object Recognition and Motion Anticipation Using Burst-STDP*, **Plos ONE**, doi: 10.1371/journal.pone.0036958 (2012).
- Bonfiglio, L., Olcese, U., Rossi, B., Frisoli, A., Arrighi, P., Greco, G., Carozzo, S., Andre, P., Bergamasco, M. and Carboncini, M.C., *Cortical source of blink-related delta oscillations and their correlation with levels of consciousness*, **Hum Brain Mapp**, 34 (9), 2178-2189 (2012).
- Iurilli, G., Ghezzi, D.\*, Olcese, U.\*, Lassi, G., Nazzaro, C., Tonini, R., Tucci, V., Benfenati, F. and Medini, P., *Sound-Driven Synaptic Inhibition in Primary Visual Cortex*, **Neuron** 73, 814-828 (2012).
- Vyazovskiy, V.V., Olcese, U., Hanlon, E.C., Nir, Y., Cirelli, C. and Tononi, G., *Local sleep in awake rats*, **Nature**, 28:472(7344):443-7 (2011).
- Olcese, U., Esser, S.K. and Tononi, G., *Sleep and synaptic renormalization: a computational study*, **J Neurophysiol**, 104(6):3476-93 (2010).
- Leemburg, S., Vyazovskiy, V.V., Olcese, U., Bassetti, C.L., Tononi, G. and Cirelli, C., *Sleep homeostasis in the rat is preserved during chronic sleep restriction*, **Proc Natl Acad Sci USA** 107 (36), 15939-44 (2010).
- Vyazovskiy, V.V., Olcese, U., Lazimy, Y.M., Faraguna, U., Esser, S.K., Williams, J.C., Cirelli, C. and Tononi, G., *Cortical firing and sleep homeostasis*, **Neuron** 63, 865-878 (2009).