

Marta Maschietto



Research Assistant

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Education

- 2007** Qualification to Biologist Profession
University of Modena and Reggio Emilia
- 2006** PhD in Genetics and Development Molecular Biology
Dept. Human Anatomy and Physiology/Dept. Biology – University of Padova
Thesis: Influenza di substrati proteici sulla distribuzione di subunità del canale Nav1.2 e sull'adesione cellulare: analisi in cellule CHO-K1 e neuroni tramite microscopia TIRF. *Supervisor:* Prof. Rodolfo Costa
- 2003** Master Degree in Biological Sciences
Dept. Biology – University of Padova
Thesis: Analisi funzionale del dominio longinico e studio della regolazione intramolecolare del prodotto del gene umano SYBL1. *Supervisor:* Prof. Francesco Filippini

Experience

- By 2008** Research Assistant
NeuroChip Laboratory – Dept. Biomedical Sciences - University of Padova
Participating to the European Projects: "RAMP: Real Neurons-nanoelectronics Architecture with Memristive Plasticity"; "RealNet: Realistic Real-time Networks: computation dynamics in the cerebellum"; "CyberRat: A Brain-Chip Interface for High-resolution Bi-directional Communication"
- 2007** Research Collaborator
NeuroChip Laboratory – Dept. Human Anatomy and Physiology - University of Padova
Participating to the Project "PRIN 2005: Imaging di AMP ciclico in plasticità sinaptica su un chip semiconduttore"
- 2003 – 2006** PhD Student and Research Collaborator
NeuroChip Laboratory – Dept. Human Anatomy and Physiology - University of Padova
Participating to the European Project "NaChip: Development of a Neuron-semiconductor Interface with Recombinant Sodium Channels"

Main research topics

- ✓ Characterizing the development of neuronal networks and synaptogenesis on hippocampal neuronal cultures
- ✓ Studying the expression of inhibitory and excitatory receptors in hippocampal neuronal networks *in vitro*
- ✓ Interfacing planar and needle implantable microchips with neuronal cells and cerebral/cerebellar tissues in anesthetized rodents for Local Field Potentials (LFPs) recording and stimulation
- ✓ *In vitro* electroporation of mammalian cells on microchips

Main acquired techniques

Cellular biology:

- ✓ Mammalian cell lines culture
- ✓ Primary neuronal cells isolation and culture (from hippocampus of rat embryos and pups)
- ✓ *In vitro* interface between cell and microchips
- ✓ Immunostaining of cell lines and primary hippocampal cells
- ✓ TIRF and confocal microscopy

- ✓ *In vitro* electroporation of mammalian cells on microchips
- ✓ *In vivo* surgical procedures on anesthetized rat brain and cerebellum
- ✓ *In vivo* acute recording and stimulation with standard Ag/AgCl electrodes and implantable microchips from rodents somatosensory and motor cortexes, cerebellum, hippocampus and trigeminal ganglion
- ✓ Histological techniques for staining of brain slices

Molecular biology:

- ✓ PCR
- ✓ Cloning
- ✓ Agarose-gel electrophoresis
- ✓ Plasmid amplification from bacterial strains
- ✓ *In vitro* transcription
- ✓ Yeast two-hybrid assay

Publications

Galbusera A, De Felice A, Stefano G, Bassetto G, Maschietto M, Nishimori K, Chini B, Papaleo F, Vassanelli S, Gozzi A. Intranasal Oxytocin and Vasopressin Modulate Divergent Brainwide Functional Substrates. *Neuropsychopharmacology*. 2017 Jan 18. doi: 10.1038/npp.2016.283.

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C. Cecchetto, M. Maschietto, P. Boccaccio, S. Vassanelli. (2013) Effect of Low-Frequency and Low-Intensity Magnetic Fields on Potassium Membrane Conductance in CHO-K1 Cells Expressing Kv1.3 Channel. *INFN-LNL-239*: 162-163.

Marta Maschietto, Stefano Girardi, Marco Dal Maschio, Michele Scorzeto, Stefano Vassanelli (2013) Sodium channel $\beta 2$ subunit promotes filopodia-like processes and expansion of the dendritic tree in developing rat hippocampal neurons. *Front. Cell. Neurosci.* 7(2): 1-14.

M. Mahmud, D. Travalin, A. Bertoldo, S. Girardi, M. Maschietto, S. Vassanelli. (2012) An Automated Classification Method for Single Sweep Local Field Potentials Recorded from Rat Barrel Cortex under Mechanical Whisker Stimulation. *J. Med. Biol. Eng.* 32(6): 397-404.

Stefano Vassanelli, Mufti Mahmud, Stefano Girardi, Marta Maschietto (2012) On the Way to Large-Scale and High-Resolution Brain-Chip Interfacing. *Cogn. Comput.* 4: 71–81.

Mahmud M, Bertoldo A, Girardi S, Maschietto M, Vassanelli S (2012) SigMate: A Matlab-based automated tool for extracellular neuronal signal processing and analysis. *J Neurosci Methods* 207: 97-112.

Giacomello M, Girardi S, Scorzeto M, Peruffo A, Maschietto M, Cozzi B, Vassanelli S. (2011) Stimulation of Ca(2+) signals in neurons by electrically coupled electrolyte-oxide-semiconductor capacitors. *J Neurosci. Methods* 198: 1-7.

Mahmud M, Pasqualotto E, Bertoldo A, Girardi S, Maschietto M, Vassanelli S. (2011) An automated method for detection of layer activation order in information processing pathway of rat barrel cortex under mechanical whisker stimulation. *J Neurosci Methods.* 196:141-150.

L. Medlam, M. Maschietto, T. Minelli, P. Boccaccio, G. Moschini, S. Vassanelli (2009) Increased and Persistent Potassium Conductance in CHO Transfected Cells Following Exposure to Low Frequency and Low-Intensity Magnetic Field. *INFN-LNL-226*: 78-79.

Vassanelli S, Bandiera L, Borgo M, Cellere G, Santoni L, Bersani C, Salamon M, Zaccolo M, Lorenzelli L, Girardi S, Maschietto M, Dal Maschio M, Paccagnella A. (2008) Space and time-resolved gene expression experiments on cultured mammalian cells by a single-cell electroporation microarray. *N. Biotechnol.* 25(1): 55-67.

Martelli L, Ragazzi E, Di Mario F, Martelli M, Castagliuolo I, Dal Maschio M, Palù G, Maschietto M, Scorzeto M, Vassanelli S & Brun P. (2007) A potential role for the vanilloid receptor TRPV1 in the therapeutic effect of curcumin in dinitrobenzene sulphonic acid-induced colitis in mice. *Neurogastroenterol. Motil.* 19(8): 668-674.

Conference proceedings

Frank Kupfer, Silvia M. Lattanzio, Marta Maschietto, Andrés Botos, Marlies Mahnkopf, Jürgen Bruns, Matthias Schreiter, Stefano Vassanelli, Roland Thewes (2015) A Si-chip-based system for highly parallel electroporation of cells. 6th IEEE International Workshop on Advances in Sensors and Interfaces (IWASI) (June 18 - June 19, 2015, Gallipoli, Italy) pp. 25-30.

Marta Maschietto, Stefano Girardi, Florian Felderer, Elisabetta Pasqualotto, Stefano Vassanelli. (2012) High resolution recordings of local field potentials with transistor needle chips in rat somatosensory and motor cortexes. *Proceedings of MEA Meeting 2012 - 8th Int. Meeting on Substrate-Integrated Microelectrode Arrays* (July 10 - July 13, 2012, Reutlingen, Germany), pp. 361-363.

Alessandra Brocca, Marta Maschietto, Stefano Girardi, Stefano Vassanelli (2012) Microdevices for adherent mammalian cells electroporation by means of electrolyte oxide semiconductor capacitors. *Proceedings of MEA Meeting 2012 - 8th Int. Meeting on Substrate-Integrated Microelectrode Arrays* (July 10 - July 13, 2012, Reutlingen, Germany), pp. 202-203.

Mahmud M, Girardi S, Maschietto M, Vassanelli S, "An Automated Method to Remove Artifacts Induced by Microstimulation in Local Field Potentials Recorded from Rat Somatosensory Cortex," *The 3rd IEEE ISSNIP Biosignals and Biorobotics conference (BRC2012)*, Manaus, Brazil, January 9-12, 2012.

Mahmud M, Girardi S, Maschietto M, Vassanelli S, "A MATLAB Based Tool for Cortical Layer Activation Order Detection through Latency Calculation in Local Field Potentials Recorded from Rat Barrel Cortex by Brain-Chip Interface," *The 3rd IEEE ISSNIP Biosignals and Biorobotics conference (BRC2012)*, Manaus, Brazil, January 9-12, 2012.

E. Pasqualotto, A. Ferrario, M. Scaramuzza, A. De Toni, M. Maschietto (2012) Monitoring electropermeabilization of adherent mammalian cells through electrochemical impedance spectroscopy. *Procedia Chemistry* 6: 79 – 88. 2nd International Conference on Bio-Sensing Technology.

Mahmud M, Bertoldo A, Girardi S, Maschietto M, Vassanelli S, (2012) SigMate: An Automated Comprehensive Software Tool for Analysis of Neuronal Signals. *Clin EEG Neurosci* 43: 238. *Proceedings of the Australasian Cognitive Neuroscience Conference 2011 (ACNC2011)*, Sydney, Australia, December 9-12, 2011.

Mahmud M, Bertoldo A, Girardi S, Maschietto M and Vassanelli S. (2011) A MATLAB Based Toolbox for Processing and Analysis of Multichannel, Multisource Cortical Local Field Potentials. *Front. Neuroinform. Conference Abstract: 4th INCF Congress of Neuroinformatics*, 4 – 6 Sep, 2011, Boston, USA.

Mahmud M, Girardi S, Maschietto M, Pasqualotto E, Vassanelli S. (2011) An automated method to determine angular preferentiality using LFPs recorded from rat barrel cortex by brain-chip interface under mechanical whisker stimulation. *Conf Proc IEEE Eng Med Biol Soc.* 2011:2307-2310.

Ferrario, A.; Scaramuzza, M.; Pasqualotto, E.; De Toni, A.; Paccagnella, A.; Maschietto, M.; Vassanelli, S. (2011), "Electrochemical impedance spectroscopy study of the cells adhesion over microelectrodes array," 2011 7th Conference on Ph.D. Research in Microelectronics and Electronics (PRIME), pp.57-60, July 3-7, 2011, Madonna di Campiglio, Trento – Italy.

M. Mahmud, A. Bertoldo, S. Girardi, M. Maschietto, E. Pasqualotto, S. Vassanelli (2011) SigMate: A Comprehensive Software Package for Extracellular Neuronal Signal Processing and Analysis. *Proceedings of the 5th International IEEE EMBS Conference on Neural Engineering (IEEE EMBS-NER2011)*, pp. 88-91. Cancun, Mexico, April 27 - May 1, 2011.

S. Girardi, M. Maschietto, R. Zeitler, M. Mahmud, S. Vassanelli (2011) High Resolution Cortical Imaging Using Electrolyte-(Metal)-Oxide-Semiconductor Field Effect Transistors. 5th International IEEE EMBS Conference on Neural Engineering (IEEE EMBS-NER2011), pp. 269-272. Cancun, Mexico, April 27 - May 1, 2011.

Mahmud M, Travalin D, Bertoldo A, Girardi S, Maschietto M, Vassanelli S (2011) An Automated Method for Clustering Single Sweep Local Field Potentials Recorded from Rat Barrel Cortex. Proceedings of the ISSNIP Biosignals and Biorobotics Conference 2011 (BRC2011), pp. 1-5, Vitoria, Brazil, 6-8 January 2011.

Mahmud M, Travalin D, Bertoldo A, Girardi S, Maschietto M, Vassanelli S (2010) A Contour Based Automatic Method to Classify Local Field Potentials Recorded from Rat Barrel Cortex. Proceedings of the 5th Cairo International Conference on Biomedical Engineering (CIBEC2010), Cairo, Egypt, 16-18 December 2010, pp. 163-166.

Mahmud M., Bertoldo A., Maschietto M., Girardi S., Vassanelli S. (2010) Automatic detection of layer activation order in information processing pathways of rat barrel cortex under mechanical whisker stimulation. Conf. Proc. IEEE Eng. Med. Biol. Soc. 2010: 6095-6098.

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M. Maschietto, S. Girardi, M. Dal Maschio and S. Vassanelli (2009) Microchip-Integrated EOSCs (Electrolyte Oxide Semiconductor Capacitors) as Devices for High Efficiency and Selective Electroporation of Mammalian Cells. IFMBE Proceedings - World Congress on Medical Physics and Biomedical Engineering (WC 2009), 25/VIII: 321-324.

M. Mahmud, S. Girardi, M. Maschietto, M. M. Rahman, A. Bertoldo, and S. Vassanelli (2009) Slow Stimulus Artifact Removal through Peak-Valley Detection of Neuronal Signals Recorded from Somatosensory Cortex by High Resolution Brain-Chip Interface. IFMBE Proceedings - World Congress on Medical Physics and Biomedical Engineering (WC 2009), 25/IV: 2062-2065.

Mufti Mahmud, Stefano Girardi, Marta Maschietto, M. Mostafizur Rahman, Alessandra Bertoldo, and Stefano Vassanelli (2009) Noise Characterization of Electrophysiological Signals Recorded from High Resolution Brain-Chip Interface. Proceedings of 2009 International Symposium on Bioelectronics & Bioinformatics (ISBB09), 84-87.

Marta Maschietto, Mufti Mahmud, Stefano Girardi, Stefano Vassanelli (2009) A high resolution bi-directional communication through a brain-chip interface. Proceedings of the 2009 ECSIS Symposium on Advanced Technologies for Enhanced Quality of Life (AT-EQUAL 2009): 32-35.