GIULIA PARODI

Ph.D. Student

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RESEARCH ACTIVITY

I am a PhD student in Bioengineering. My research activity fits into the field of neuroengineering, concerning both experimental and data-analysis-related aspects. In this framework, my main research focus on the development of 2D and 3D *in vitro* engineered neuronal networks made up of neurons derived from human induced pluripotent stem cells coupled to electronic devices.

TRACK RECORD

- Co-author of 3 journal article
- Co-author of 1 book chapter
- Co-author of 2 conference proceedings
- Co-author of 7 peer-reviewed abstracts
- Number of citations = 33

EDUCATION AND RESEARCH EXPERIENCE

PhD Student in Bioengineering and Robotics

DIBRIS - UniGe

Nov 2020 – Ongoing Genova, Italy

- Project title: Nano-neuro interfaces for brain-on-a-chip studies.
- Supervisor: Professor Sergio Martinoia
- Expected PhD defense: April 2024

Master's degree in Bioengineering, Curriculum Neuroengineering

DIBRIS - UniGe

Sept 2018 – Oct 2020 Genova, Italy

- Thesis title: Network dynamics and connectivity of *in vitro* neurons derived from human induced pluripotent stem cells of subjects affected by neurodevelopmental or mitochondrial disorders.
- Final degree mark: 110/110

Bachelor's degree in Biomedical Engineering

DIBRIS - UniGe

Sept 2015 – Mar 2019 Genova, Italy

- Thesis title: Study of cortical excitability in Parkinsonian patients: TMS-EEG study.
- Final degree mark: 104/110

PUBLICATIONS

Journal Articles

- Mossink, B., Verboven, A. H., van Hugte, E. J., Gunnewiek, T. M. K., **Parodi, G.**, ... & Frega, M. (2021). Human neuronal networks on micro-electrode arrays are a highly robust tool to study disease-specific genotype-phenotype correlations *in vitro*. Stem cell reports, *16*(9), 2182-2196, IF = 7.294, Q1, Citations = 19.
- **Parodi, G.**, Brofiga, M., Pastore, V.P., Chiappalone, M., & Martinoia, S., Deepening the role of excitation/inhibition balance in human iPSCs derived neuronal networks coupled to MEAs during long term development, Journal of Neural Engineering, IF: 5.043, Q1
- Van Hugte, E., Lewerissa, E., Wu, K.M., **Parodi, G.**, … & Kasri, N.N. SCN1A-deficient excitatory neuronal networks display mutation-specific phenotypes, Brain; a journal of neurology, IF: 15.255, Q1

Books

- Andolfi, A., Brofiga, B., Callegari, C., Dellacasa, E., Lisa, D. D., Massobrio, P., ... **Parodi, G.**, ... & Martinoia, S. (2021). Brain-on-a-chip: Engineered neuronal populations and micro transducer arrays. Patron editore.

Conference Proceedings

- **Parodi, G.**, Chiappalone, M., & Martinoia, S. Development of excitatory neuronal networks derived from human induced pluripotent stem cells, in GNB congress 2023, Padova, Italy.
- Pastore, V.P., **Parodi, G.**, Brofiga, M., Massobrio, P., Chiappalone, M., Odone, F., & Martinoia, S. An efficient deep learning approach to identify dynamics in *in vitro* neural networks, in International Conference of IEEE EMBC Engineering in Medicine and Biology Society, 2023, Sidney, Australia.

Peer-reviewed Abstract

- **Parodi, G.**, Frega, M., & Martinoia, S. Long-term electrophysiological characterization of excitatory neuronal networks derived from human induced pluripotent stem cells, Mea Meeting, 2022, Tubingen, Germany.
- **Parodi, G.**, Chiappalone, M., & Martinoia, S. Long-term characterization of excitatory neuronal networks derived from human induced pluripotent stem cells, In-Vitro 2D & 3D Neuronal Networks MxW Summit, 2023, Zurich, Switzerland.
- **Parodi, G.**, Fioreze, G., Chiappalone, M., & Martinoia, S., Dimensionality of neurospheroids derived from human induced pluripotent stem cells, IBRO word Congress of Neuroscience, 2023, Granada, Spain.
- **Parodi, G.**, Zanini, G., Brofiga, M., Pastore, V.P., Chiappalone, M., and Martinoia, S., Investigating the impact of excitation/inhibition balance in human iPSCs-derived neuronal networks during long-term development on MEAs, SFN Neuroscience Annual Meeting, 2023, Washington, USA.
- Zanini G., **Parodi, G.**, Chiappalone, M., & Martinoia, S. Electrical stimulation of excitatory neuronal networks derived from human induced pluripotent stem cells, JRC Summer School on Non-Animal Approaches in Science, 2023, Ispra, Italy.
- Zanini G., **Parodi, G.**, Chiappalone, M., & Martinoia, S. Investigating the effect of electrical stimulation on glutamatergic neuronal networks derived from h-iPSCs, In-Vitro 2D & 3D Neuronal Networks MxW Summit, 2023, Zurich, Switzerland.
- Zanini G., **Parodi, G.**, Chiappalone, M., & Martinoia, S., Exploring the impact of electrical stimulation on glutamatergic neuronal networks derived from h-IPSCs, SFN Neuroscience Annual Meeting, 2023, Washington, USA.

Journal Articles
Under review

- **Parodi, G.*** & Zanini, G.*, Chiappalone, M., & Martinoia, S., Investigating the reliability of the evoked response in human iPSCs-derived neuronal networks coupled to Micro-Electrode Arrays, APL Bioengineering, IF: 6.586, Q1

  Parodi, G., Zanini, G., Chiappalone, M., & Martinoia, S., Electrical and chemical modulation of homogeneous and heterogeneous human-iPSCs-derived neuronal networks on high density arrays, Frontiers in Molecular Neuroscience, IF: 6.261, Q1

TEACHING ACTIVTY

- Co-advisor of Master's thesis
- Teaching Support in Neural and Brain Computer Interfaces (CFU = 6, 2021-2022), 40 hours
- Teaching Support in Neural and Brain Computer Interfaces (CFU = 6, 2022-2023), 40 hours