

Curriculum Vitae

Name	Position title
Laura Ballerini 	Full Professor of Physiology International School for Advanced Studies SISSA-ISAS Trieste via Bonomea, 265 - 34136 Trieste ITALY laura.ballerini@sissa.it tel +39 040 3787 779 room 542 orcid.org/0000-0001-8420-0787

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Florence School of Medicine, Italy	MD <i>cum laude</i>	1988	Medicine
University of Florence School of Medicine, Italy	PDF	1988-1992	Electrophysiology
University of Florence School of Medicine, Italy	Specialization <i>cum laude</i>	1992	Neuropharmacology
Full General Medical Council, UK	Registration	1992	Medicine

Laura Ballerini graduated (MD) at the Florence School of Medicine, Università di Firenze, Italy in 1988. She was a Postdoctoral fellow (*Physiology Department*) at UCL (London, UK) from 1991 and later became assistant professor of Physiology at the *Biophysics Sector* of the International School for Advanced Studies (SISSA-ISAS) of Trieste, Italy in 1995. In 2002 Laura Ballerini became associate professor of Physiology at the *Life Science Department*, Università di Trieste, Italy. From 2012 she became full professor of Physiology, at the *Life Science Department*, Università di Trieste, Italy. Since January 2016 she has an appointment as full professor of physiology at SISSA.


She has been working for several years on the physiology of spinal cord neurons/spinal cord networks and has vast experience in using a variety of experimental electrophysiological techniques and in vitro model systems. LB has provided important contribution to the understanding of spinal network physiology, plasticity and development. In her laboratory she developed and is currently using the organotypic slice cultures from the rat/mouse spinal cord as a model system. Using this model, where spinal 3D segments are maintained in culture for weeks, and using single cell patch clamp recordings, multi unit recordings, calcium imaging, immunofluorescence, electron (transmission and scanning) and confocal microscopies, LB described the presence of dynamic changes in motor synaptic networks aimed at preserving network excitability during development. Recently, LB has been working on the interactions between living neurons and micro-nano fabricated substrates or bioactive-composite containing carbon nanotubes. The scientific strategy at the core of these activities is the convergence between nanotechnology, chemistry and neurobiology. Such convergence, beyond helping understand the functioning and malfunctioning of the brain, can stimulate further research in this area and may ultimately lead to a new generation of nanomedicine applications in neurology.

Citations and H-index ID SCOPUS:

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Web pages: <http://loop.frontiersin.org/people/1325/overview>
<http://phdneurobiology.sissa.it/eng/faculty/associated/laura-ballerini.aspx>

List of Publications and submitted MS in 2018 (updated at July 2018)

1. Pampaloni, N.P., Lottner, M., Giugliano, M., Matruglio, A., D'Amico, F., Prato, M., Garrido, J.A., Ballerini, L., Scaini, D. Single-layer graphene modulates neuronal communication and augments membrane ion currents (2018) **Nature Nanotechnology** <https://doi.org/10.1038/s41565-018-0163-6>
2. Bengt Fadeel et al. Disentangling structure-activity relationships for graphene-based materials (2018) **ACS Nano (submitted)**
3. Rossana Rauti, Ph.D; Mattia Musto; Susanna Bosi; Maurizio Prato; Laura Ballerini Carbon nanomaterials for brain interfaces (2018) **CARBON (submitted)**
4. Scaini, D., Ballerini, L. Nanomaterials at the neural interface (2018) **Current Opinion in Neurobiology**, 50, pp. 50-55.
5. Niccolò Paolo Pampaloni, Michele Giugliano, Denis Scaini, Laura Ballerini, Rossana Rauti Nanoscale Tools for Neuroscience: Nanomaterials and Neurons (2018) **Frontiers In Neuroscience (submitted)**
6. Medelin, M., Porrelli, D., Aurand, E.R., Scaini, D., Travan, A., Borgogna, M.A., Cok, M., Donati, I., Marsich, E., Scopa, C., Scardigli, R., Paoletti, S., Ballerini, L. Exploiting natural polysaccharides to enhance in vitro bio-constructs of primary neurons and progenitor cells (2018) **Acta Biomaterialia**, 73, pp. 285-301.
7. Aurand, E.R., Usmani, S., Medelin, M., Scaini, D., Bosi, S., Rosselli, F.B., Donato, S., Tromba, G., Prato, M., Ballerini, L. Nanostructures to Engineer 3D Neural-Interfaces: Directing Axonal Navigation toward Successful Bridging of Spinal Segments (2018) **Advanced Functional Materials**, 28 (12), art. no. 1700550
8. Vallejo-Giraldo, C., Pampaloni, N.P., Pallipurath, A.R., Mokarian-Tabari, P., O'Connell, J., Holmes, J.D., Trotier, A., Krukiewicz, K., Orpella-Aceret, G., Pugliese, E., Ballerini, L., Kilcoyne, M., Dowd, E., Quinlan, L.R., Pandit, A., Kavanagh, P., Biggs, M.J.P. Preparation of Cytocompatible ITO Neuroelectrodes with Enhanced Electrochemical Characteristics Using a Facile Anodic Oxidation Process (2018) **Advanced Functional Materials**, 28 (12), art. no. 1605035
9. Medelin, M., Giacco, V., Aldinucci, A., Castronovo, G., Bonechi, E., Sibilla, A., Tanturli, M., Torcia, M., Ballerini, L., Cozzolino, F., Ballerini, C. Bridging pro-inflammatory signals, synaptic transmission and protection in spinal explants in vitro (2018) **Molecular Brain**, 11 (1), art. no. 3