Luca Berdondini

List of Publications by Year
in descending order

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88 papers	3,245 citations	159585 30 h-index	168389 53 g-index
92 all docs	92 docs citations	92 times ranked	3980 citing authors

#	Article	IF	Citations
1	Active pixel sensor array for high spatio-temporal resolution electrophysiological recordings from single cell to large scale neuronal networks. Lab on A Chip, 2009, 9, 2644.	6.0	300
2	NETWORK DYNAMICS AND SYNCHRONOUS ACTIVITY IN CULTURED CORTICAL NEURONS. International Journal of Neural Systems, 2007, 17, 87-103.	5.2	167
3	Intracellular and Extracellular Recording of Spontaneous Action Potentials in Mammalian Neurons and Cardiac Cells with 3D Plasmonic Nanoelectrodes. Nano Letters, 2017, 17, 3932-3939.	9.1	167
4	Astrocyte deletion of Bmal1 alters daily locomotor activity and cognitive functions via GABA signalling. Nature Communications, 2017, 8, 14336.	12.8	162
5	Large-Scale, High-Resolution Data Acquisition System for Extracellular Recording of Electrophysiological Activity. IEEE Transactions on Biomedical Engineering, 2008, 55, 2064-2073.	4.2	117
6	Dominant Î²-catenin mutations cause intellectual disability with recognizable syndromic features. Journal of Clinical Investigation, 2014, 124, 1468-1482.	8.2	110
7	SiNAPS: An implantable active pixel sensor CMOS-probe for simultaneous large-scale neural recordings. Biosensors and Bioelectronics, 2019, 126, 355-364.	10.1	110
8	High-density electrode array for imaging in vitro electrophysiological activity. Biosensors and Bioelectronics, 2005, 21, 167-174.	10.1	109
9	Following the ontogeny of retinal waves: panâ€retinal recordings of population dynamics in the neonatal mouse. Journal of Physiology, 2014, 592, 1545-1563.	2.9	109
10	Emergent Functional Properties of Neuronal Networks with Controlled Topology. PLoS ONE, 2012, 7, e34648.	2.5	102
11	Spatially, Temporally, and Quantitatively Controlled Delivery of Broad Range of Molecules into Selected Cells through Plasmonic Nanotubes. Advanced Materials, 2015, 27, 7145-7149.	21.0	93
12	Unsupervised Spike Sorting for Large-Scale, High-Density Multielectrode Arrays. Cell Reports, 2017, 18, 2521-2532.	6.4	93
13	A microelectrode array (MEA) integrated with clustering structures for investigating in vitro neurodynamics in confined interconnected sub-populations of neurons. Sensors and Actuators B: Chemical, 2006, 114, 530-541.	7.8	91
14	Electrical Responses and Spontaneous Activity of Human iPS-Derived Neuronal Networks Characterized for 3-month Culture with 4096-Electrode Arrays. Frontiers in Neuroscience, 2016, 10, 121.	2.8	91
15	Large-scale, high-resolution electrophysiological imaging of field potentials in brain slices with microelectronic multielectrode arrays. Frontiers in Neural Circuits, 2012, 6, 80.	2.8	85
16	Selective Targeting of Neurons with Inorganic Nanoparticles: Revealing the Crucial Role of Nanoparticle Surface Charge. ACS Nano, 2017, 11, 6630-6640.	14.6	85
17	3D plasmonic nanoantennas integrated with MEA biosensors. Nanoscale, 2015, 7, 3703-3711.	5.6	76
18	Extracellular recordings from locally dense microelectrode arrays coupled to dissociated cortical cultures. Journal of Neuroscience Methods, 2009, 177, 386-396.	2.5	62

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19	Emergence of Bursting Activity in Connected Neuronal Sub-Populations. PLoS ONE, 2014, 9, e107400.	2.5	62
20	Multiscale functional connectivity estimation on low-density neuronal cultures recorded by high-density CMOS Micro Electrode Arrays. Journal of Neuroscience Methods, 2012, 207, 161-171.	2.5	60
21	Sloppiness in Spontaneously Active Neuronal Networks. Journal of Neuroscience, 2015, 35, 8480-8492.	3.6	60
22	Tracking burst patterns in hippocampal cultures with high-density CMOS-MEAs. Journal of Neural Engineering, 2010, 7, 056001.	3.5	57
23	Developmental excitatory-to-inhibitory GABA-polarity switch is disrupted in 22q11.2 deletion syndrome: a potential target for clinical therapeutics. Scientific Reports, 2017, 7, 15752.	3.3	51
24	Recurrently connected and localized neuronal communities initiate coordinated spontaneous activity in neuronal networks. PLoS Computational Biology, 2017, 13, e1005672.	3.2	51
25	Addressable Nanoelectrode Membrane Arrays:Â Fabrication and Steady-State Behavior. Analytical Chemistry, 2007, 79, 1474-1484.	6.5	48
26	Spike Detection for Large Neural Populations Using High Density Multielectrode Arrays. Frontiers in Neuroinformatics, 2015, 9, 28.	2.5	48
27	Cell-compatible array of three-dimensional tip electrodes for the detection of nitric oxide release. Biosensors and Bioelectronics, 2005, 20, 1566-1572.	10.1	42
28	Rank Order Coding: a Retinal Information Decoding Strategy Revealed by Large-Scale Multielectrode Array Retinal Recordings. ENeuro, 2016, 3, ENEURO.0134-15.2016.	1.9	36
29	Experimental investigation on spontaneously active hippocampal cultures recorded by means of high-density MEAs: analysis of the spatial resolution effects. Frontiers in Neuroengineering, 2010, 3, 4.	4.8	34
30	High-resolution bioelectrical imaging of Aî²-induced network dysfunction on CMOS-MEAs for neurotoxicity and rescue studies. Scientific Reports, 2017, 7, 2460.	3.3	34
31	Towards an embodied in vitro electrophysiology: the NeuroBIT project. Neurocomputing, 2004, 58-60, 1065-1072.	5.9	32
32	Functional connectivity estimation over large networks at cellular resolution based on electrophysiological recordings and structural prior. Frontiers in Neuroanatomy, 2014, 8, 137.	1.7	32
33	Biofunctionalized 3D Nanopillar Arrays Fostering Cell Guidance and Promoting Synapse Stability and Neuronal Activity in Networks. ACS Applied Materials & Interfaces, 2018, 10, 15207-15215.	8.0	32
34	Microelectronics, bioinformatics and neurocomputation for massive neuronal recordings in brain circuits with large scale multielectrode array probes. Brain Research Bulletin, 2015, 119, 118-126.	3.0	28
35	Development of an electroless post-processing technique for depositing gold as electrode material on CMOS devices. Sensors and Actuators B: Chemical, 2004, 99, 505-510.	7.8	26
36	Electrophysiology Read-Out Tools for Brain-on-Chip Biotechnology. Micromachines, 2021, 12, 124.	2.9	26

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37	Combined optical tweezers and laser dissector for controlled ablation of functional connections in neural networks. Journal of Biomedical Optics, 2011, 16, 051306.	2.6	24
38	Electrical coupling of mammalian neurons to microelectrodes with 3D nanoprotrusions. Microelectronic Engineering, 2013, 111, 384-390.	2.4	24
39	Nano-volume drop patterning for rapid on-chip neuronal connect-ability assays. Lab on A Chip, 2013, 13, 4419.	6.0	22
40	A 5 pJ/pulse at 1-Gpps Pulsed Transmitter Based on Asynchronous Logic Masterâ€“Slave PLL Synthesis. IEEE Transactions on Circuits and Systems I: Regular Papers, 2018, 65, 1096-1109.	5.4	20
41	A Synchronous Neural Recording Platform for Multiple High-Resolution CMOS Probes and Passive Electrode Arrays. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 532-542.	4.0	19
42	Specific Neuron Placement on Gold and Silicon Nitride-Patterned Substrates through a Two-Step Functionalization Method. Langmuir, 2016, 32, 6319-6327.	3.5	17
43	Exploiting All Programmable SoCs in Neural Signal Analysis: A Closed-Loop Control for Large-Scale CMOS Multielectrode Arrays. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 839-850.	4.0	17
44	Generic technological platform for microfabricating silicon nitride micro- and nanopipette arrays. Journal of Micromechanics and Microengineering, 2005, 15, 2372-2378.	2.6	16
45	State-dependent representation of stimulus-evoked activity in high-density recordings of neural cultures. Scientific Reports, 2018, 8, 5578.	3.3	15
46	A 512-channels, whole array readout, CMOS implantable probe for acute recordings from the brain. , 2015, 2015, 877-80.		14
47	Integrated Microanalytical System Coupling Permeation Liquid Membrane and Voltammetry for Trace Metal Speciation. Technical Description and Optimization. Electroanalysis, 2004, 16, 811-820.	2.9	12
48	Investigating the Effects of Mechanical Stimulation on Retinal Ganglion Cell Spontaneous Spiking Activity. Frontiers in Neuroscience, 2019, 13, 1023.	2.8	12
49	Astrocytes and Circadian Rhythms: An Emerging Astrocyteâ€“Neuron Synergy in the Timekeeping System. Methods in Molecular Biology, 2019, 1938, 131-154.	0.9	12
50	Realâ€time signal processing for highâ€density microelectrode array systems. International Journal of Adaptive Control and Signal Processing, 2009, 23, 983-998.	4.1	10
51	Beam induced deposition of 3D electrodes to improve coupling to cells. Microelectronic Engineering, 2012, 97, 365-368.	2.4	10
52	Integration of microstructured scaffolds, neurons, and multielectrode arrays. Progress in Brain Research, 2014, 214, 415-442.	1.4	9
53	High-density MEA recordings unveil the dynamics of bursting events in Cell Cultures. , 2015, 2015, 3763-6.		9
54	26th Annual Computational Neuroscience Meeting (CNS*2017): Part 3. BMC Neuroscience, 2017, 18, .	1.9	7

#	Article	IF	Citations
55	26th Annual Computational Neuroscience Meeting (CNS*2017): Part 2. BMC Neuroscience, 2017, 18, .	1.9	7
56	Surfaceâ€Functionalized Selfâ€Standing Microdevices Exhibit Predictive Localization and Seamless Integration in 3D Neural Spheroids. Advanced Biology, 2020, 4, 2000114.	3.0	7
57	Brain Function: Novel Technologies Driving Novel Understanding. , 2014, , 299-334.		6
58	On-FPGA real-time processing of biological signals from high-density MEAs: a design space exploration. , 2017, , .		5
59	Active High-Density Electrode Arrays: Technology and Applications in Neuronal Cell Cultures. Advances in Neurobiology, 2019, 22, 253-273.	1.8	5
60	A 0.34 mm² 1 Gb/s Non-Coherent UWB Receiver Architecture With Pulse Enhancement and Double PLL Clock/Data Packet Recovery. IEEE Transactions on Circuits and Systems I: Regular Papers, 2019, 66, 2735-2748.	5.4	5
61	Voltammetric Microsystem for Trace Elements Monitoring. Analytical Letters, 2003, 36, 1835-1849.	1.8	4
62	High-resolution MEA platform for in-vitro electrogenic cell networks imaging. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 6086-9.	0.5	4
63	Fabrication of Multielectrode Arrays for Neurobiology Applications. Methods in Molecular Biology, 2018, 1771, 147-157.	0.9	4
64	A joint structural and functional analysis of in-vitro neuronal networks. , 2012, , .		3
65	Bridging the gap in connectomic studies: A particle filtering framework for estimating structural connectivity at network scale. Medical Image Analysis, 2015, 21, 1-14.	11.6	3
66	A 1 Gpps asynchronous logic OOK IR-UWB transmitter based on master-slave PLL synthesis. , 2017, , .		3
67	Modeling a population of retinal ganglion cells with restricted Boltzmann machines. Scientific Reports, 2020, 10, 16549.	3.3	3
68	Neuronal network structural connectivity estimation by probabilistic features and graph heat kernels. , 2013, , .		2
69	Novel 3D plasmonic nano-electrodes for cellular investigations and neural interfaces. Proceedings of SPIE, 2014, , .	0.8	2
70	Investigating cell culture dynamics combining high density recordings with dimensional reduction techniques. , 2015, 2015, 3759-62.		2
71	High-density MEAs reveal lognormal firing patterns in neuronal networks for short and long term recordings. , 2015, , .		2
72	A 1 Gbps UWB OOK Receiver with Double PLL All-Digital CDR and Data Packet Re-Synchronizer. , 2018, , .		2

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73	$mu ext{Radio}$: First Characterization Results Towards a $100 mumathrm{m}imes 100 mu mathrm{m}$ Monolithic Radio with Bio-Electrical Interface. , 2019, , .		2
74	Integrated Micro-Devices for a Lab-in-Organoid Technology Platform: Current Status and Future Perspectives. Frontiers in Neuroscience, 2022, 16, 842265.	2.8	2
75	Analysis of simultaneous multielectrode recordings with 4,096 channels: changing dynamics of spontaneous activity in the developing retina. BMC Neuroscience, 2011, 12, .	1.9	1
76	Homeostasis in large networks of neurons through the Ising model - do higher order interactions matter?. BMC Neuroscience, 2013, 14, .	1.9	1
77	A scalable high performance client/server framework to manage and analyze high dimensional datasets recorded by 4096 CMOS-MEAs. , 2015, , .		1
78	A computational model of cell culture dynamics: the role of connectivity and synaptic receptors in the appearance of synchronized bursting events. BMC Neuroscience, 2015, 16, .	1.9	1
79	Multifunctional biosensing with three-dimensional plasmonic nanoantennas. Proceedings of SPIE, 2015, , .	0.8	1
80	A Closed-Loop System Processing High-Density Electrical Recordings and Visual Stimuli to Study Retinal Circuits Properties. , 2019, , .		1
81	Fabrication of nano-interdigitated electrodes. , 2003, , .		0
82	Combining Optical Tweezers, Laser Microdissectors and Multichannel Electrophysiology for the Non-Invasive Tracing and Manipulation of Neural Activity on Single Cell and Network Level. Biophysical Journal, 2010, 98, 138a.	0.5	0
83	What can MaxEnt reveal about high-density recordings and what can high-density recordings reveal about MaxEnt?. BMC Neuroscience, 2011, 12, .	1.9	0
84	3D plasmonic hollow nanoantennas as tools for neuroscience applications. , 2014, , .		0
85	A New Assay to Quantify the Connect-Ability of Neurons and the Neurite Extensions. Biophysical Journal, 2014, 106, 793a.	0.5	0
86	Investigating intrinsic and evoked activities in cultured neuronal networks by dimensional reduction techniques and high-density MEAs. BMC Neuroscience, 2015, 16, .	1.9	0
87	Role of major burst leaders in modular hippocampal networks. , 2015, , .		0
88	A closed-loop system for neural networks analysis through high density MEAs. , 2017, , .		0