Sergio Martinoia

List of Publications by Year
in descending order

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130 papers	5,413 citations	71102 41 h-index	91884 69 g-index
131 all docs	131 docs citations	131 times ranked	4005 citing authors

#	Article	IF	Citations
1	Dissociated cortical networks show spontaneously correlated activity patterns during in vitro development. Brain Research, 2006, 1093, 41-53.	2.2	346
2	Self-organization and neuronal avalanches in networks of dissociated cortical neurons. Neuroscience, 2008, 153, 1354-1369.	2.3	331
3	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
4	A novel algorithm for precise identification of spikes in extracellularly recorded neuronal signals. Journal of Neuroscience Methods, 2009, 177, 241-249.	2.5	194
5	NETWORK DYNAMICS AND SYNCHRONOUS ACTIVITY IN CULTURED CORTICAL NEURONS. International Journal of Neural Systems, 2007, 17, 87-103.	5.2	167
6	Evaluation of the Performance of Information Theory-Based Methods and Cross-Correlation to Estimate the Functional Connectivity in Cortical Networks. PLoS ONE, 2009, 4, e6482.	2.5	160
7	A behavioral macromodel of the ISFET in SPICE. Sensors and Actuators B: Chemical, 2000, 62, 182-189.	7.8	157
8	Network dynamics of 3D engineered neuronal cultures: a new experimental model for in-vitro electrophysiology. Scientific Reports, 2014, 4, 5489.	3.3	153
9	Burst detection algorithms for the analysis of spatio-temporal patterns in cortical networks of neurons. Neurocomputing, 2005, 65-66, 653-662.	5.9	124
10	Networks of neurons coupled to microelectrode arrays: a neuronal sensory system for pharmacological applications. Biosensors and Bioelectronics, 2003, 18, 627-634.	10.1	117
11	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
12	Investigating neuronal activity by SPYCODE multi-channel data analyzer. Neural Networks, 2010, 23, 685-697.	5.9	116
13	Network plasticity in cortical assemblies. European Journal of Neuroscience, 2008, 28, 221-237.	2.6	115
14	Development of Micro-Electrode Array Based Tests for Neurotoxicity: Assessment of Interlaboratory Reproducibility with Neuroactive Chemicals. Frontiers in Neuroengineering, 2011, 4, 4.	4.8	113
15	Modeling H/sup +/-sensitive FETs with SPICE. IEEE Transactions on Electron Devices, 1992, 39, 813-819.	3.0	106
16	Opposite Changes in Glutamatergic and GABAergic Transmission Underlie the Diffuse Hyperexcitability of Synapsin Iâ€"Deficient Cortical Networks. Cerebral Cortex, 2009, 19, 1422-1439.	2.9	106
17	A self-adapting approach for the detection of bursts and network bursts in neuronal cultures. Journal of Computational Neuroscience, 2010, 29, 213-229.	1.0	95
18	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

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19	Modeling the neuron-microtransducer junction: from extracellular to patch recording. IEEE Transactions on Biomedical Engineering, 1993, 40, 35-41.	4.2	87
20	Development of ISFET array-based microsystems for bioelectrochemical measurements of cell populations. Biosensors and Bioelectronics, 2001, 16, 1043-1050.	10.1	87
21	Self-organized criticality in cortical assemblies occurs in concurrent scale-free and small-world networks. Scientific Reports, 2015, 5, 10578.	3.3	81
22	Cultured Neurons Coupled to Microelectrode Arrays: Circuit Models, Simulations and Experimental Data. IEEE Transactions on Biomedical Engineering, 2004, 51, 859-864.	4.2	73
23	A multi-laboratory evaluation of microelectrode array-based measurements of neural network activity for acute neurotoxicity testing. NeuroToxicology, 2017, 60, 280-292.	3.0	72
24	In vitro cortical neuronal networks as a new high-sensitive system for biosensing applications. Biosensors and Bioelectronics, 2005, 20, 2071-2078.	10.1	70
25	Functional connectivity and dynamics of corticalâ€“thalamic networks co-cultured in a dual compartment device. Journal of Neural Engineering, 2012, 9, 036010.	3.5	69
26	Low-frequency stimulation enhances burst activity in cortical cultures during development. Neuroscience, 2010, 165, 692-704.	2.3	66
27	Identification of excitatory-inhibitory links and network topology in large-scale neuronal assemblies from multi-electrode recordings. PLoS Computational Biology, 2018, 14, e1006381.	3.2	66
28	Soft chitosan microbeads scaffold for 3D functional neuronal networks. Biomaterials, 2018, 156, 159-171.	11.4	65
29	Extracellular recordings from locally dense microelectrode arrays coupled to dissociated cortical cultures. Journal of Neuroscience Methods, 2009, 177, 386-396.	2.5	62
30	Modeling ISFET microsensor and ISFET-based microsystems: a review. Sensors and Actuators B: Chemical, 2005, 105, 14-27.	7.8	60
31	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
32	Low-Frequency Stimulation Induces Stable Transitions in Stereotypical Activity in Cortical Networks. Biophysical Journal, 2008, 94, 5028-5039.	0.5	59
33	Modular Neuronal Assemblies Embodied in a Closed-Loop Environment: Toward Future Integration of Brains and Machines. Frontiers in Neural Circuits, 2012, 6, 99.	2.8	59
34	An array of Pt-tip microelectrodes for extracellular monitoring of activity of brain slices1This paper was presented at the Fifth World Congress on Biosensors, Berlin, Germany, 3â€“5 June 1998.1. Biosensors and Bioelectronics, 1999, 14, 61-65.	10.1	57
35	Tracking burst patterns in hippocampal cultures with high-density CMOS-MEAs. Journal of Neural Engineering, 2010, 7, 056001.	3.5	57
36	Dual-compartment neurofluidic system for electrophysiological measurements in physically segregated and functionally connected neuronal cell culture. Frontiers in Neuroengineering, 2011, 4, 13.	4.8	57

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37	Bioelectrochemical signal monitoring of in-vitro cultured cells by means of an automated microsystem based on solid state sensor-array. Biosensors and Bioelectronics, 2003, 18, 621-626.	10.1	56
38	A simple microfluidic system for patterning populations of neurons on silicon micromachined substrates. Journal of Neuroscience Methods, 1999, 87, 35-44.	2.5	55
39	Interfacing Cultured Neurons to Microtransducers Arrays: A Review of the Neuro-Electronic Junction Models. Frontiers in Neuroscience, 2016, 10, 282.	2.8	51
40	Interfacing cultured neurons to planar substrate microelectrodes: characterization of the neuron-to-microelectrode junction. Bioelectrochemistry, 1995, 38, 255-265.	1.0	49
41	Comparison between a LAPS and an FET-based sensor for cell-metabolism detection. Sensors and Actuators B: Chemical, 1996, 32, 41-48.	7.8	47
42	Temperature effects on the ISFET behaviour: simulations and measurements. Sensors and Actuators B: Chemical, 1998, 50, 60-68.	7.8	40
43	From functional to structural connectivity using partial correlation in neuronal assemblies. Journal of Neural Engineering, 2016, 13, 026023.	3.5	39
44	Acoustic stimulation can induce a selective neural network response mediated by piezoelectric nanoparticles. Journal of Neural Engineering, 2018, 15, 036016.	3.5	38
45	Coupling of Organotypic Brain Slice Cultures to Silicon-Based Arrays of Electrodes. Methods, 1999, 18, 160-172.	3.8	35
46	An automated microdrop delivery system for neuronal network patterning on microelectrode arrays. Journal of Neuroscience Methods, 2007, 161, 88-95.	2.5	35
47	Charge sensing by organic charge-modulated field effect transistors: application to the detection of bio-related effects. Journal of Materials Chemistry B, 2013, 1, 3811.	5.8	35
48	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
49	A general-purpose system for long-term recording from a microelectrode array coupled to excitable cells. Journal of Neuroscience Methods, 1993, 48, 115-121.	2.5	33
50	Towards an embodied in vitro electrophysiology: the NeuroBIT project. Neurocomputing, 2004, 58-60, 1065-1072.	5.9	32
51	pH-dependent charge density at the insulator-electrolyte interface probed by a scanning force microscope. Biosensors and Bioelectronics, 1996, 11, 1009-1017.	10.1	31
52	A new integrated system combining atomic force microscopy and micro-electrode array for measuring the mechanical properties of living cardiac myocytes. Biomedical Microdevices, 2011, 13, 613-621.	2.8	31
53	Stimulation triggers endogenous activity patterns in cultured cortical networks. Scientific Reports, 2017, 7, 9080.	3.3	31
54	Modeling the Neuron-Carbon Nanotube-ISFET Junction to Investigate the Electrophysiological Neuronal Activity. Nano Letters, 2008, 8, 4433-4440.	9.1	30

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55	Selective pharmacological manipulation of corticalâ€“thalamic co-cultures in a dual-compartment device. Journal of Neuroscience Methods, 2013, 214, 1-8.	2.5	30
56	Light-addressable chemical sensors: Modelling and computer simulations. Sensors and Actuators B: Chemical, 1992, 7, 484-487.	7.8	25
57	ISFETâ€“neuron junction: circuit models and extracellular signal simulations. Biosensors and Bioelectronics, 2004, 19, 1487-1496.	10.1	25
58	ToolConnect: A Functional Connectivity Toolbox for In vitro Networks. Frontiers in Neuroinformatics, 2016, 10, 13.	2.5	25
59	Multi-program approach for simulating recorded extracellular signals generated by neurons coupled to microelectrode arrays. Neurocomputing, 2007, 70, 2467-2476.	5.9	23
60	Equivalent Circuit of the Neuro-Electronic Junction for Signal Recordings From Planar and Engulfed Micro-Nano-Electrodes. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 3-12.	4.0	23
61	Electrophysiological activity modulation by chemical stimulation in networks of cortical neurons coupled to microelectrode arrays: A biosensor for neuropharmacological applications. Sensors and Actuators B: Chemical, 2005, 108, 589-596.	7.8	21
62	Coding and decoding of information in a bi-directional neural interface. Neurocomputing, 2005, 65-66, 783-792.	5.9	21
63	Analysis of the signals generated by networks of neurons coupled to planar arrays of microtransducers in simulated experiments. Biosensors and Bioelectronics, 1998, 13, 601-612.	10.1	20
64	A three-dimensional micro-electrode array for in-vitro neuronal interfacing. Journal of Neural Engineering, 2020, 17, 036033.	3.5	20
65	Realistic simulations of neurons by means of an ad hoc modified version of SPICE. Biological Cybernetics, 1994, 71, 137-145.	1.3	19
66	Modelling non-ideal behaviours in H+-sensitive FETs with SPICE. Sensors and Actuators B: Chemical, 1992, 7, 561-564.	7.8	16
67	Helix neuronal ensembles with controlled cell type composition and placement develop functional polysynaptic circuits on Micro-Electrode Arrays. Neuroscience Letters, 2009, 467, 121-126.	2.1	15
68	Selective modulation of chemical and electrical synapses of Helix neuronal networks during in vitro development. BMC Neuroscience, 2013, 14, 22.	1.9	14
69	Axon-somatic back-propagation in detailed models of spinal alpha motoneurons. Frontiers in Computational Neuroscience, 2015, 9, 15.	2.1	14
70	A topological study of repetitive co-activation networks inin vitrocortical assemblies. Physical Biology, 2015, 12, 016007.	1.8	14
71	Computer simulations of the responses of passive and active integrated microbiosensors to cell activity. Sensors and Actuators B: Chemical, 1991, 4, 261-265.	7.8	12
72	High resolution electrophysiological activity imaging of in-vitro neuronal networks. , 0, , .		12

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73	Interaction of electrically evoked responses in networks of dissociated cortical neurons. Physical Review E, 2009, 80, 031906.	2.1	12
74	Interfacing 3D Engineered Neuronal Cultures to Micro-Electrode Arrays: An Innovative In Vitro Experimental Model. Journal of Visualized Experiments, 2015, , e53080.	0.3	12
75	SpiCoDyn: A Toolbox for the Analysis of Neuronal Network Dynamics and Connectivity from Multi-Site Spike Signal Recordings. Neuroinformatics, 2018, 16, 15-30.	2.8	12
76	A â€œSpike-Basedâ€•Grammar Underlies Directional Modification in Network Connectivity: Effect on Bursting Activity and Implications for Bio-Hybrids Systems. PLoS ONE, 2012, 7, e49299.	2.5	12
77	Modelling recurrent discharge in the spinal Î±-motoneuron: Reappraisal of the F wave. Clinical Neurophysiology, 2014, 125, 427-429.	1.5	11
78	The neuron-transistor junction: linking equivalent electric circuit models to microscopic descriptions. Thin Solid Films, 1996, 284-285, 772-775.	1.8	10
79	Modelling small-patterned neuronal networks coupled to microelectrode arrays. Journal of Neural Engineering, 2008, 5, 350-359.	3.5	10
80	Neural Signal Manager: a collection of classical and innovative tools for multiâ€channel spike train analysis. International Journal of Adaptive Control and Signal Processing, 2009, 23, 999-1013.	4.1	10
81	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
82	An H+-FET-based system for on-line detection of microorganisms in waters. Sensors and Actuators B: Chemical, 1996, 34, 245-251.	7.8	9
83	Detection of cell activity via ISFET devices: Modelling and computer simulations. Sensors and Actuators B: Chemical, 1990, 1, 373-379.	7.8	8
84	Low-noise low-power CMOS preamplifier for multisite extracellular neuronal recordings. Microelectronics Journal, 2009, 40, 1779-1787.	2.0	8
85	A simulated neuro-robotic environment for bi-directional closed-loop experiments. Paladyn, 2010, 1, .	2.7	8
86	Rapid generation of functional engineered 3D human neuronal assemblies: network dynamics evaluated by Micro-Electrodes Arrays. Journal of Neural Engineering, 2021, 18, .	3.5	8
87	An ISFET model for CAD applications. Sensors and Actuators B: Chemical, 1992, 8, 261-265.	7.8	7
88	Modelling the ISFET behaviour under temperature variations using BIOSPICE. Electronics Letters, 1996, 32, 936.	1.0	7
89	26th Annual Computational Neuroscience Meeting (CNS*2017): Part 3. BMC Neuroscience, 2017, 18, .	1.9	7
90	Three-Dimensional Microelectrodes Array Based on Vertically Stacked Beads For Mapping Neuronsâ€™ Electrophysiological Activity. , 2019, , .		7

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91	Silicon neuron simulation with SPICE: tool for neurobiology and neural networks. Medical and Biological Engineering and Computing, 1995, 33, 533-536.	2.8	6
92	Effects of NMDA and non-NMDA receptors antagonists on the dynamic behavior of cultured cortical networks. Neurocomputing, 2006, 69, 1897-1903.	5.9	6
93	An array of H+ FETs for space-resolved electrochemical measurements in microenvironments. Sensors and Actuators B: Chemical, 1995, 24, 218-221.	7.8	5
94	Optimization of the interaction between ethylenevinyl alcohol copolymers and human endothelial cells. Journal of Materials Science: Materials in Medicine, 1996, 7, 8-12.	3.6	5
95	An experimental approach towards the development of an in vitro cortical-thalamic co-culture model. , 2011, 2011, 648-51.		5
96	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
97	Activity modulation elicited by electrical stimulation in networks of dissociated cortical neurons. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 3008-11.	0.5	4
98	Partial correlation analysis for functional connectivity studies in cortical networks. BMC Neuroscience, 2014, 15, .	1.9	4
99	Chitosan biopolymer: Alternative adhesion factor and scaffold matrix for 2D and 3D neuronal cultures. Biomedical Science and Engineering, 2020, , .	0.0	4
100	Nanomaterial-Assisted Acoustic Neural Stimulation. , 2020, , 347-363.		4
101	Cell metabolism measurements in culture via microelectronic biosensors. Cytotechnology, 1991, 5, 57-58.	1.6	3
102	The neuro-electronic interface: measurements and model predictions. Journal of Materials Science: Materials in Medicine, 1996, 7, 363-366.	3.6	3
103	Integrated low noise low power interface for neural bio-potentials recording and conditioning. , 2005, , .		3
104	Modeling and simulation of silicon neuron-to-ISFET junction. Journal of Computational Electronics, 2007, 6, 431-437.	2.5	3
105	Imaging extracellular neuronal signaling on high resolution microelectrode arrays (MEAs) Hippocampal cultures coupled with a high resolution neuroelectronic interface. , 2009, , .		3
106	Motivations and APS-based solution for high-resolution extracellular recording from in-vitro neuronal networks. , 2007, , .		2
107	Investigation of Extracellular Signal Shapes Recorded by Planar Metal Microelectrodes Covered With Carbon Nanotubes: Modeling and Simulations. IEEE Nanotechnology Magazine, 2011, 10, 1328-1336.	2.0	2
108	Characterization of the spiking and bursting activity of the subthalamic nucleus in patients with Parkinson's disease. , 2015, , .		2

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109	Emergence of critical dynamics in large-scale in vitro cortical networks. , 2015, 2015, 4737-40.		2
110	Coupling of Networks of Neurons to Substrate Planar Microtransducers. , 1996, , 251-264.		2
111	A novel algorithm for burst and network burst detection Application to wild-type and SynI knockout mice cultures for the study of epileptogenesis. , 2009, , .		1
112	A neuro-robotic system to investigate the computational properties of neuronal assemblies. , 2012, , .		1
113	A new connectivity toolbox to infer topological features of in-vitro neural networks. , 2015, 2015, 2832-5.		1
114	3D engineered neural networks coupled to Micro-Electrode based devices: a new experimental model for neurophysiological applications. , 2015, , .		1
115	Structurally and functionally interconnected 3D in vitro neuronal assemblies coupled to Micro-Electrode Arrays. , 2017, , .		1
116	A toolbox for dynamic and connectivity analysis of neuronal spike trains data. , 2017, , .		1
117	Brain-on-a-Chip: A Human 3D Model for Clinical Application. Studies in Health Technology and Informatics, 2019, 261, 274-279.	0.3	1
118	Interfacing biological membranes to silicon devices. , 1992, , .		0
119	Transduction Mechanisms From Biological Membranes to Silicon Sensors : Modelling and Computer Simulations. Molecular Crystals and Liquid Crystals, 1993, 236, 105-112.	0.3	0
120	Modulating neural networks dynamics: multi-site electrical stimulation of in-vitro cortical neurons coupled to MEA devices. , 0, , .		0
121	Correction to â€œEffect of Skull Resistivity on the Spatial Resolutions of EEG and MEGâ€• IEEE Transactions on Biomedical Engineering, 2004, 51, 1295-1295.	4.2	0
122	Towards Natural Computation: Reactive Control of a Mobile Robot by a Population of Cultured Neurons. , 0, , .		0
123	Modulation of Electrophysiological Activity in Neural Networks: Toward a Bioartificial Living System. , 0, , 29-40.		0
124	Modeling the neuron-to-carbon nanotubes interface. , 2009, , .		0
125	A Novel AFM-MEA Platform for Studying the Real Time Mechano-Electrical Behavior of Cardiac Myocytes. Materials Research Society Symposia Proceedings, 2010, 1261, 40901.	0.1	0
126	Quantitative Estimation of the Nonstationary Behavior of Neural Spontaneous Activity. Computational Intelligence and Neuroscience, 2010, 2010, 1-9.	1.7	0

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127	In vitro homogeneous and heterogeneous interconnected neuronal cultures: Exploring expressed dynamics and functional connectivity. , 2013, , .		0
128	3D engineered neural networks coupled to Micro-Electrode Arrays: Development of an innovative in-vitro experimental model for neurophysiological studies. , 2013, , .		0
129	Functional connectivity in cultured cortical networks during development: Comparison between correlation and information theory-based algorithms. , 2015, , .		0
130	From MEAs to MOAs: The Next Generation of Bioelectronic Interfaces for Neuronal Cultures. Advances in Neurobiology, 2019, 22, 155-167.	1.8	0