

Nelson Spruston

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93
papers

10,029
citations

47
h-index

100
g-index

121
ext. papers

11,850
ext. citations

14.5
avg, IF

6.6
L-index

#	Paper	IF	Citations
93	Pyramidal neurons: dendritic structure and synaptic integration. <i>Nature Reviews Neuroscience</i> , 2008 , 9, 206-21	13.5	1082
92	Activity-dependent action potential invasion and calcium influx into hippocampal CA1 dendrites. <i>Science</i> , 1995 , 268, 297-300	33.3	680
91	Diversity and dynamics of dendritic signaling. <i>Science</i> , 2000 , 290, 739-44	33.3	599
90	Action potential initiation and backpropagation in neurons of the mammalian CNS. <i>Trends in Neurosciences</i> , 1997 , 20, 125-31	13.3	579
89	Dendritic spikes as a mechanism for cooperative long-term potentiation. <i>Nature</i> , 2002 , 418, 326-31	50.4	485
88	Determinants of voltage attenuation in neocortical pyramidal neuron dendrites. <i>Journal of Neuroscience</i> , 1998 , 18, 3501-10	6.6	404
87	Dendritic sodium spikes are variable triggers of axonal action potentials in hippocampal CA1 pyramidal neurons. <i>Neuron</i> , 1998 , 21, 1189-200	13.9	304
86	Dendritic calcium spike initiation and repolarization are controlled by distinct potassium channel subtypes in CA1 pyramidal neurons. <i>Journal of Neuroscience</i> , 1999 , 19, 8789-98	6.6	256
85	Dendritic integration: 60 years of progress. <i>Nature Neuroscience</i> , 2015 , 18, 1713-21	25.5	237
84	Dendritic attenuation of synaptic potentials and currents: the role of passive membrane properties. <i>Trends in Neurosciences</i> , 1994 , 17, 161-6	13.3	230
83	Conditional dendritic spike propagation following distal synaptic activation of hippocampal CA1 pyramidal neurons. <i>Nature Neuroscience</i> , 2005 , 8, 1667-76	25.5	211
82	Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons. <i>ELife</i> , 2016 , 5, e14997	8.9	210
81	Prolonged sodium channel inactivation contributes to dendritic action potential attenuation in hippocampal pyramidal neurons. <i>Journal of Neuroscience</i> , 1997 , 17, 6639-46	6.6	191
80	Postsynaptic depolarization requirements for LTP and LTD: a critique of spike timing-dependent plasticity. <i>Nature Neuroscience</i> , 2005 , 8, 839-41	25.5	190
79	Synaptic amplification by dendritic spines enhances input cooperativity. <i>Nature</i> , 2012 , 491, 599-602	50.4	178
78	Spatial Gene-Expression Gradients Underlie Prominent Heterogeneity of CA1 Pyramidal Neurons. <i>Neuron</i> , 2016 , 89, 351-68	13.9	174
77	Reconstruction of 1,000 Projection Neurons Reveals New Cell Types and Organization of Long-Range Connectivity in the Mouse Brain. <i>Cell</i> , 2019 , 179, 268-281.e13	56.2	167

76	Resting and active properties of pyramidal neurons in subiculum and CA1 of rat hippocampus. <i>Journal of Neurophysiology</i> , 2000 , 84, 2398-408	3.2	163
75	Factors mediating powerful voltage attenuation along CA1 pyramidal neuron dendrites. <i>Journal of Physiology</i> , 2005 , 568, 69-82	3.9	155
74	Distance-dependent differences in synapse number and AMPA receptor expression in hippocampal CA1 pyramidal neurons. <i>Neuron</i> , 2006 , 50, 431-42	13.9	148
73	BigNeuron: Large-Scale 3D Neuron Reconstruction from Optical Microscopy Images. <i>Neuron</i> , 2015 , 87, 252-6	13.9	147
72	Dichotomy of action-potential backpropagation in CA1 pyramidal neuron dendrites. <i>Journal of Neurophysiology</i> , 2001 , 86, 2998-3010	3.2	146
71	R-type calcium channels contribute to afterdepolarization and bursting in hippocampal CA1 pyramidal neurons. <i>Journal of Neuroscience</i> , 2005 , 25, 5763-73	6.6	141
70	Mechanisms shaping glutamate-mediated excitatory postsynaptic currents in the CNS. <i>Current Opinion in Neurobiology</i> , 1994 , 4, 366-72	7.6	139
69	Serotonin receptor activation inhibits sodium current and dendritic excitability in prefrontal cortex via a protein kinase C-dependent mechanism. <i>Journal of Neuroscience</i> , 2002 , 22, 6846-55	6.6	138
68	Gamma-frequency oscillations: a neuronal population phenomenon, regulated by synaptic and intrinsic cellular processes, and inducing synaptic plasticity. <i>Progress in Neurobiology</i> , 1998 , 55, 563-75	10.9	135
67	Dendritic patch-clamp recording. <i>Nature Protocols</i> , 2006 , 1, 1235-47	18.8	123
66	Hippocampal pyramidal neurons comprise two distinct cell types that are countermodulated by metabotropic receptors. <i>Neuron</i> , 2012 , 76, 776-89	13.9	122
65	Synapse distribution suggests a two-stage model of dendritic integration in CA1 pyramidal neurons. <i>Neuron</i> , 2009 , 63, 171-7	13.9	117
64	Dendritic spikes induce single-burst long-term potentiation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2007 , 104, 17192-7	11.5	116
63	Properties of slow, cumulative sodium channel inactivation in rat hippocampal CA1 pyramidal neurons. <i>Biophysical Journal</i> , 1999 , 76, 846-60	2.9	113
62	Specialized electrophysiological properties of anatomically identified neurons in the hilar region of the rat fascia dentata. <i>Journal of Neurophysiology</i> , 1998 , 79, 1518-34	3.2	110
61	Action potential bursting in subicular pyramidal neurons is driven by a calcium tail current. <i>Journal of Neuroscience</i> , 2001 , 21, 3312-21	6.6	100
60	Dissociable Structural and Functional Hippocampal Outputs via Distinct Subiculum Cell Classes. <i>Cell</i> , 2018 , 173, 1280-1292.e18	56.2	97
59	Slow integration leads to persistent action potential firing in distal axons of coupled interneurons. <i>Nature Neuroscience</i> , 2011 , 14, 200-7	25.5	90

58	Distribution of bursting neurons in the CA1 region and the subiculum of the rat hippocampus. <i>Journal of Comparative Neurology</i> , 2008 , 506, 535-47	3.4	89
57	Heterogeneity within classical cell types is the rule: lessons from hippocampal pyramidal neurons. <i>Nature Reviews Neuroscience</i> , 2019 , 20, 193-204	13.5	83
56	Structured Dendritic Inhibition Supports Branch-Selective Integration in CA1 Pyramidal Cells. <i>Neuron</i> , 2016 , 89, 1016-30	13.9	74
55	Target-specific output patterns are predicted by the distribution of regular-spiking and bursting pyramidal neurons in the subiculum. <i>Hippocampus</i> , 2012 , 22, 693-706	3.5	62
54	Questions about STDP as a General Model of Synaptic Plasticity. <i>Frontiers in Synaptic Neuroscience</i> , 2010 , 2, 140	3.5	61
53	Stability and plasticity of intrinsic membrane properties in hippocampal CA1 pyramidal neurons: effects of internal anions. <i>Journal of Physiology</i> , 2007 , 578, 799-818	3.9	58
52	Intracellular correlate of EPSP-spike potentiation in CA1 pyramidal neurons is controlled by GABAergic modulation. <i>Hippocampus</i> , 2003 , 13, 801-5	3.5	55
51	Single excitatory axons form clustered synapses onto CA1 pyramidal cell dendrites. <i>Nature Neuroscience</i> , 2018 , 21, 353-363	25.5	53
50	Dendritic sodium spikes are required for long-term potentiation at distal synapses on hippocampal pyramidal neurons. <i>ELife</i> , 2015 , 4,	8.9	50
49	Dendritic D-type potassium currents inhibit the spike afterdepolarization in rat hippocampal CA1 pyramidal neurons. <i>Journal of Physiology</i> , 2007 , 581, 175-87	3.9	49
48	Synaptic depolarization is more effective than back-propagating action potentials during induction of associative long-term potentiation in hippocampal pyramidal neurons. <i>Journal of Neuroscience</i> , 2009 , 29, 3233-41	6.6	48
47	Astrocytes integrate and drive action potential firing in inhibitory subnetworks. <i>Nature Communications</i> , 2018 , 9, 4336	17.4	47
46	Interneurons in the stratum lucidum of the rat hippocampus: An anatomical and electrophysiological characterization 1997 , 385, 427-440		46
45	The subiculum is a patchwork of discrete subregions. <i>ELife</i> , 2018 , 7,	8.9	38
44	Functional clustering of dendritic activity during decision-making. <i>ELife</i> , 2019 , 8,	8.9	38
43	A post-burst after depolarization is mediated by group I metabotropic glutamate receptor-dependent upregulation of Ca(v)2.3 R-type calcium channels in CA1 pyramidal neurons. <i>PLoS Biology</i> , 2010 , 8, e1000534	9.7	35
42	To the Cloud! A Grassroots Proposal to Accelerate Brain Science Discovery. <i>Neuron</i> , 2016 , 92, 622-627	13.9	34
41	A novel pyramidal cell type promotes sharp-wave synchronization in the hippocampus. <i>Nature Neuroscience</i> , 2018 , 21, 985-995	25.5	34

40	A state-mutating genetic algorithm to design ion-channel models. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009 , 106, 16829-34	11.5	34
39	Psychostimulant-induced plasticity of intrinsic neuronal excitability in ventral subiculum. <i>Journal of Neuroscience</i> , 2003 , 23, 9937-46	6.6	34
38	Plasticity of burst firing induced by synergistic activation of metabotropic glutamate and acetylcholine receptors. <i>Neuron</i> , 2009 , 61, 287-300	13.9	32
37	Mapping the transcriptional diversity of genetically and anatomically defined cell populations in the mouse brain. <i>ELife</i> , 2019 , 8,	8.9	32
36	Output-mode transitions are controlled by prolonged inactivation of sodium channels in pyramidal neurons of subiculum. <i>PLoS Biology</i> , 2005 , 3, e175	9.7	31
35	Synergistic actions of metabotropic acetylcholine and glutamate receptors on the excitability of hippocampal CA1 pyramidal neurons. <i>Journal of Neuroscience</i> , 2012 , 32, 6081-91	6.6	29
34	Balanced synaptic impact via distance-dependent synapse distribution and complementary expression of AMPARs and NMDARs in hippocampal dendrites. <i>Neuron</i> , 2013 , 80, 1451-63	13.9	27
33	Coincidence detection of place and temporal context in a network model of spiking hippocampal neurons. <i>PLoS Computational Biology</i> , 2007 , 3, e234	5	26
32	A Sparse, Spatially Biased Subtype of Mature Granule Cell Dominates Recruitment in Hippocampal-Associated Behaviors. <i>Cell Reports</i> , 2020 , 31, 107551	10.6	25
31	Persistent Sodium Current Mediates the Steep Voltage Dependence of Spatial Coding in Hippocampal Pyramidal Neurons. <i>Neuron</i> , 2018 , 99, 147-162.e8	13.9	23
30	Probing dendritic function with patch pipettes. <i>Current Opinion in Neurobiology</i> , 1995 , 5, 389-94	7.6	23
29	Brain-derived neurotrophic factor differentially modulates excitability of two classes of hippocampal output neurons. <i>Journal of Neurophysiology</i> , 2016 , 116, 466-71	3.2	21
28	Membrane potential dynamics underlying context-dependent sensory responses in the hippocampus. <i>Nature Neuroscience</i> , 2020 , 23, 881-891	25.5	18
27	Mechanisms of retroaxonal barrage firing in hippocampal interneurons. <i>Journal of Physiology</i> , 2013 , 591, 4793-805	3.9	17
26	Changes in dendritic structure and function following hippocampal lesions: correlations with developmental events?. <i>Progress in Neurobiology</i> , 1998 , 55, 641-50	10.9	17
25	Integrating Results across Methodologies Is Essential for Producing Robust Neuronal Taxonomies. <i>Neuron</i> , 2017 , 94, 747-751.e1	13.9	13
24	Slow sodium channel inactivation in CA1 pyramidal cells. <i>Annals of the New York Academy of Sciences</i> , 1999 , 868, 97-101	6.5	13
23	Information Processing in Dendrites and Spines 2013 , 231-260		10

22	Axonal gap junctions send ripples through the hippocampus. <i>Neuron</i> , 2001 , 31, 669-71	13.9	10
21	Principles of dendritic integration 2016 , 351-398		10
20	Compartmental neural simulations with spatial adaptivity. <i>Journal of Computational Neuroscience</i> , 2008 , 25, 465-80	1.4	8
19	Pyramidal neuron. <i>Scholarpedia Journal</i> , 2009 , 4, 6130	1.5	8
18	Transcriptional corepressor SIN3A regulates hippocampal synaptic plasticity via Homer1/mGluR5 signaling. <i>JCI Insight</i> , 2020 , 5,	9.9	7
17	ShuTu: Open-Source Software for Efficient and Accurate Reconstruction of Dendritic Morphology. <i>Frontiers in Neuroinformatics</i> , 2019 , 13, 68	3.9	6
16	Rapid synaptic plasticity contributes to a learned conjunctive code of position and choice-related information in the hippocampus. <i>Neuron</i> , 2021 ,	13.9	5
15	Dendritic integration 2007 , 350-399		5
14	Functional clustering of dendritic activity during decision-making		5
13	Age-dependent changes in intrinsic neuronal excitability in subiculum after status epilepticus. <i>PLoS ONE</i> , 2015 , 10, e0119411	3.7	4
12	Author response: Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons 2016 ,		3
11	Reconstruction of 1,000 projection neurons reveals new cell types and organization of long-range connectivity in the mouse brain		3
10	Linking axon morphology to gene expression: a strategy for neuronal cell-type classification. <i>Current Opinion in Neurobiology</i> , 2020 , 65, 70-76	7.6	3
9	Illuminating the Neuronal Architecture Underlying Context in Fear Memory. <i>Cell</i> , 2016 , 167, 888-889	56.2	2
8	Branching out: a new idea for dendritic function. Focus on "Coincidence detection in pyramidal neurons is tuned by their dendritic branching pattern". <i>Journal of Neurophysiology</i> , 2003 , 89, 2887-8	3.2	2
7	Synaptic mechanisms of context-dependent sensory responses in the hippocampus		2
6	A sparse, spatially biased subtype of mature granule cell is preferentially recruited in hippocampal-associated behaviors		2
5	Assembling cell ensembles. <i>Cell</i> , 2014 , 157, 1502-4	56.2	1

4	ShuTu: Open-Source Software for Efficient and Accurate Reconstruction of Dendritic Morphology	1
3	Hippocampal and thalamic afferents form distinct synaptic microcircuits in the mouse infralimbic frontal cortex. <i>Cell Reports</i> , 2021 , 37, 109837	10.6 0
2	Bursting potentiates the neuro-AI connection. <i>Nature Neuroscience</i> , 2021 , 24, 905-906	25.5 0
1	Coincidence Detection of Place and Temporal Context in a Network Model of Spiking Hippocampal Neurons. <i>PLoS Computational Biology</i> , 2005 , preprint, e234	5