Nelson Spruston

List of Publications by Year
in descending order

94 papers	12,908 citations	44042 48 h-index	49868 87 g-index
121 all docs	121 docs citations	121 times ranked	9945 citing authors

#	Article	IF	Citations
1	Pyramidal neurons: dendritic structure and synaptic integration. Nature Reviews Neuroscience, 2008, 9, 206-221.	4.9	1,381
2	Activity-dependent action potential invasion and calcium influx into hippocampal CA1 dendrites. Science, 1995, 268, 297-300.	6.0	757
3	Diversity and Dynamics of Dendritic Signaling. Science, 2000, 290, 739-744.	6.0	700
4	Action potential initiation and backpropagation in neurons of the mammalian CNS. Trends in Neurosciences, 1997, 20, 125-131.	4.2	671
5	Dendritic spikes as a mechanism for cooperative long-term potentiation. Nature, 2002, 418, 326-331.	13.7	582
6	Determinants of Voltage Attenuation in Neocortical Pyramidal Neuron Dendrites. Journal of Neuroscience, 1998, 18, 3501-3510.	1.7	456
7	Dendritic integration: 60 years of progress. Nature Neuroscience, 2015, 18, 1713-1721.	7.1	379
8	Dendritic Sodium Spikes Are Variable Triggers of Axonal Action Potentials in Hippocampal CA1 Pyramidal Neurons. Neuron, 1998, 21, 1189-1200.	3.8	358
9	Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons. ELife, 2016, 5, e14997.	2.8	355
10	Reconstruction of 1,000 Projection Neurons Reveals New Cell Types and Organization of Long-Range Connectivity in the Mouse Brain. Cell, 2019, 179, 268-281.e13.	13.5	352
11	Dendritic Calcium Spike Initiation and Repolarization Are Controlled by Distinct Potassium Channel Subtypes in CA1 Pyramidal Neurons. Journal of Neuroscience, 1999, 19, 8789-8798.	1.7	296
12	Spatial Gene-Expression Gradients Underlie Prominent Heterogeneity of CA1 Pyramidal Neurons. Neuron, 2016, 89, 351-368.	3.8	270
13	Conditional dendritic spike propagation following distal synaptic activation of hippocampal CA1 pyramidal neurons. Nature Neuroscience, 2005, 8, 1667-1676.	7.1	267
14	Dendritic attenuation of synaptic potentials and currents: the role of passive membrane properties. Trends in Neurosciences, 1994, 17, 161-166.	4.2	249
15	Synaptic amplification by dendritic spines enhances input cooperativity. Nature, 2012, 491, 599-602.	13.7	244
16	Postsynaptic depolarization requirements for LTP and LTD: a critique of spike timing-dependent plasticity. Nature Neuroscience, 2005, 8, 839-841.	7.1	224
17	Prolonged Sodium Channel Inactivation Contributes to Dendritic Action Potential Attenuation in Hippocampal Pyramidal Neurons. Journal of Neuroscience, 1997, 17, 6639-6646.	1.7	208
18	BigNeuron: Large-Scale 3D Neuron Reconstruction from Optical Microscopy Images. Neuron, 2015, 87, 252-256.	3.8	202

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19	Factors mediating powerful voltage attenuation along CA1 pyramidal neuron dendrites. Journal of Physiology, 2005, 568, 69-82.	1.3	187
20	Resting and Active Properties of Pyramidal Neurons in Subiculum and CA1 of Rat Hippocampus. Journal of Neurophysiology, 2000, 84, 2398-2408.	0.9	185
21	Dichotomy of Action-Potential Backpropagation in CA1 Pyramidal Neuron Dendrites. Journal of Neurophysiology, 2001, 86, 2998-3010.	0.9	181
22	Distance-Dependent Differences in Synapse Number and AMPA Receptor Expression in Hippocampal CA1 Pyramidal Neurons. Neuron, 2006, 50, 431-442.	3.8	171
23	Heterogeneity within classical cell types is the rule: lessons from hippocampal pyramidal neurons. Nature Reviews Neuroscience, 2019, 20, 193-204.	4.9	171
24	Hippocampal Pyramidal Neurons Comprise Two Distinct Cell Types that Are Countermodulated by Metabotropic Receptors. Neuron, 2012, 76, 776-789.	3.8	168
25	Gamma-frequency oscillations: a neuronal population phenomenon, regulated by synaptic and intrinsic cellular processes, and inducing synaptic plasticity. Progress in Neurobiology, 1998, 55, 563-575.	2.8	156
26	Dendritic spikes induce single-burst long-term potentiation. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 17192-17197.	3.3	156
27	R-Type Calcium Channels Contribute to Afterdepolarization and Bursting in Hippocampal CA1 Pyramidal Neurons. Journal of Neuroscience, 2005, 25, 5763-5773.	1.7	152
28	Dissociable Structural and Functional Hippocampal Outputs via Distinct Subiculum Cell Classes. Cell, 2018, 173, 1280-1292.e18.	13.5	152
29	Mechanisms shaping glutamate-mediated excitatory postsynaptic currents in the CNS. Current Opinion in Neurobiology, 1994, 4, 366-372.	2.0	148
30	Synapse Distribution Suggests a Two-Stage Model of Dendritic Integration in CA1 Pyramidal Neurons. Neuron, 2009, 63, 171-177.	3.8	148
31	Serotonin Receptor Activation Inhibits Sodium Current and Dendritic Excitability in Prefrontal Cortex via a Protein Kinase C-Dependent Mechanism. Journal of Neuroscience, 2002, 22, 6846-6855.	1.7	146
32	Dendritic patch-clamp recording. Nature Protocols, 2006, 1, 1235-1247.	5.5	146
33	Specialized Electrophysiological Properties of Anatomically Identified Neurons in the Hilar Region of the Rat Fascia Dentata. Journal of Neurophysiology, 1998, 79, 1518-1534.	0.9	132
34	Structured Dendritic Inhibition Supports Branch-Selective Integration in CA1 Pyramidal Cells. Neuron, 2016, 89, 1016-1030.	3.8	130
35	Properties of Slow, Cumulative Sodium Channel Inactivation in Rat Hippocampal CA1 Pyramidal Neurons. Biophysical Journal, 1999, 76, 846-860.	0.2	129
36	Slow integration leads to persistent action potential firing in distal axons of coupled interneurons. Nature Neuroscience, 2011, 14, 200-207.	7.1	117

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37	Functional clustering of dendritic activity during decision-making. ELife, 2019, 8, .	2.8	115
38	Action Potential Bursting in Subicular Pyramidal Neurons Is Driven by a Calcium Tail Current. Journal of Neuroscience, 2001, 21, 3312-3321.	1.7	107
39	Distribution of bursting neurons in the CA1 region and the subiculum of the rat hippocampus. Journal of Comparative Neurology, 2008, 506, 535-547.	0.9	103
40	Single excitatory axons form clustered synapses onto CA1 pyramidal cell dendrites. Nature Neuroscience, 2018, 21, 353-363.	7.1	103
41	Astrocytes integrate and drive action potential firing in inhibitory subnetworks. Nature Communications, 2018, 9, 4336.	5.8	95
42	Targetâ€specific output patterns are predicted by the distribution of regularâ€spiking and bursting pyramidal neurons in the subiculum. Hippocampus, 2012, 22, 693-706.	0.9	80
43	Questions about STDP as a General Model of Synaptic Plasticity. Frontiers in Synaptic Neuroscience, 2010, 2, 140.	1.3	79
44	Dendritic sodium spikes are required for long-term potentiation at distal synapses on hippocampal pyramidal neurons. ELife, 2015, 4, .	2.8	77
45	The subiculum is a patchwork of discrete subregions. ELife, 2018, 7, .	2.8	70
46	Synaptic Depolarization Is More Effective than Back-Propagating Action Potentials during Induction of Associative Long-Term Potentiation in Hippocampal Pyramidal Neurons. Journal of Neuroscience, 2009, 29, 3233-3241.	1.7	68
47	Stability and plasticity of intrinsic membrane properties in hippocampal CA1 pyramidal neurons: effects of internal anions. Journal of Physiology, 2007, 578, 799-818.	1.3	66
48	A novel pyramidal cell type promotes sharp-wave synchronization in the hippocampus. Nature Neuroscience, 2018, 21, 985-995.	7.1	65
49	Intracellular correlate of EPSP-spike potentiation in CA1 pyramidal neurons is controlled by GABAergic modulation. Hippocampus, 2003, 13, 801-805.	0.9	59
50	Mapping the transcriptional diversity of genetically and anatomically defined cell populations in the mouse brain. ELife, 2019, 8, .	2.8	59
51	A Sparse, Spatially Biased Subtype of Mature Granule Cell Dominates Recruitment in Hippocampal-Associated Behaviors. Cell Reports, 2020, 31, 107551.	2.9	55
52	Dendritic D-type potassium currents inhibit the spike afterdepolarization in rat hippocampal CA1 pyramidal neurons. Journal of Physiology, 2007, 581, 175-187.	1.3	54
53	Membrane potential dynamics underlying context-dependent sensory responses in the hippocampus. Nature Neuroscience, 2020, 23, 881-891.	7.1	54
54	Interneurons in the stratum lucidum of the rat hippocampus: An anatomical and electrophysiological characterization. , 1997, 385, 427-440.		51

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55	Persistent Sodium Current Mediates the Steep Voltage Dependence of Spatial Coding in Hippocampal Pyramidal Neurons. Neuron, 2018, 99, 147-162.e8.	3.8	48
56	Dendritic arithmetic. Nature Neuroscience, 2004, 7, 567-569.	7.1	47
57	To the Cloud! A Grassroots Proposal to Accelerate Brain Science Discovery. Neuron, 2016, 92, 622-627.	3.8	46
58	A state-mutating genetic algorithm to design ion-channel models. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 16829-16834.	3.3	45
59	A Post-Burst Afterdepolarization Is Mediated by Group I Metabotropic Glutamate Receptor-Dependent Upregulation of Cav2.3 R-Type Calcium Channels in CA1 Pyramidal Neurons. PLoS Biology, 2010, 8, e1000534.	2.6	41
60	Output-Mode Transitions Are Controlled by Prolonged Inactivation of Sodium Channels in Pyramidal Neurons of Subiculum. PLoS Biology, 2005, 3, e175.	2.6	38
61	Balanced Synaptic Impact via Distance-Dependent Synapse Distribution and Complementary Expression of AMPARs and NMDARs in Hippocampal Dendrites. Neuron, 2013, 80, 1451-1463.	3.8	37
62	Plasticity of Burst Firing Induced by Synergistic Activation of Metabotropic Glutamate and Acetylcholine Receptors. Neuron, 2009, 61, 287-300.	3.8	35
63	Synergistic Actions of Metabotropic Acetylcholine and Glutamate Receptors on the Excitability of Hippocampal CA1 Pyramidal Neurons. Journal of Neuroscience, 2012, 32, 6081-6091.	1.7	35
64	Psychostimulant-Induced Plasticity of Intrinsic Neuronal Excitability in Ventral Subiculum. Journal of Neuroscience, 2003, 23, 9937-9946.	1.7	34
65	Rapid synaptic plasticity contributes to a learned conjunctive code of position and choice-related information in the hippocampus. Neuron, 2022, 110, 96-108.e4.	3.8	33
66	Coincidence Detection of Place and Temporal Context in a Network Model of Spiking Hippocampal Neurons. PLoS Computational Biology, 2007, 3, e234.	1.5	29
67	Brain-derived neurotrophic factor differentially modulates excitability of two classes of hippocampal output neurons. Journal of Neurophysiology, 2016, 116, 466-471.	0.9	28
68	Mechanisms of retroaxonal barrage firing in hippocampal interneurons. Journal of Physiology, 2013, 591, 4793-4805.	1.3	26
69	Principles of dendritic integration. , 2016, , 351-398.		24
70	Invited commentary. Current Opinion in Neurobiology, 1995, 5, 389-394.	2.0	23
71	Changes in Dendritic structure and function following Hippocampal Lesions: correlations with developmental events?. Progress in Neurobiology, 1998, 55, 641-650.	2.8	20
72	Information Processing in Dendrites and Spines. , 2013, , 231-260.		19

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73	Transcriptional corepressor SIN3A regulates hippocampal synaptic plasticity via Homer1/mGluR5 signaling. JCI Insight, 2020, 5, .	2.3	17
74	Out of control in the dendrites. Nature Neuroscience, 2008, 11, 733-734.	7.1	16
75	Slow Sodium Channel Inactivation in CA1 Pyramidal Cells. Annals of the New York Academy of Sciences, 1999, 868, 97-101.	1.8	14
76	ShuTu: Open-Source Software for Efficient and Accurate Reconstruction of Dendritic Morphology. Frontiers in Neuroinformatics, 2019, 13, 68.	1.3	14
77	Integrating Results across Methodologies Is Essential for Producing Robust Neuronal Taxonomies. Neuron, 2017, 94, 747-751.e1.	3.8	13
78	Distant synapses raise their voices. Nature Neuroscience, 2000, 3, 849-851.	7.1	10
79	Axonal Gap Junctions Send Ripples through the Hippocampus. Neuron, 2001, 31, 669-671.	3.8	10
80	Timing isn't everything. Nature Neuroscience, 2010, 13, 277-279.	7.1	10
81	Pyramidal neuron. Scholarpedia Journal, 2009, 4, 6130.	0.3	10
82	Compartmental neural simulations with spatial adaptivity. Journal of Computational Neuroscience, 2008, 25, 465-480.	0.6	9
83	Strength in numbers. Nature, 2008, 452, 420-421.	13.7	8
84	Linking axon morphology to gene expression: a strategy for neuronal cell-type classification. Current Opinion in Neurobiology, 2020, 65, 70-76.	2.0	8
85	Hippocampal and thalamic afferents form distinct synaptic microcircuits in the mouse infralimbic frontal cortex. Cell Reports, 2021, 37, 109837.	2.9	8
86	Age-Dependent Changes in Intrinsic Neuronal Excitability in Subiculum after Status Epilepticus. PLoS ONE, 2015, 10, e0119411.	1.1	6
87	Illuminating the Neuronal Architecture Underlying Context in Fear Memory. Cell, 2016, 167, 888-889.	13.5	5
88	Dendritic integration. , 2007, , 350-399.		5
89	Branching Out: A New Idea for Dendritic Function. Focus on â€œCoincidence Detection in Pyramidal Neurons Is Tuned by Their Dendritic Branching Patternâ€• Journal of Neurophysiology, 2003, 89, 2887-2888.	0.9	2
90	Bursting potentiates the neuroâ€“AI connection. Nature Neuroscience, 2021, 24, 905-906.	7.1	2

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91	Assembling Cell Ensembles. Cell, 2014, 157, 1502-1504.	13.5	1
92	Reconstruction of 1,000 Projection Neurons Reveals New Cell Types and Organization of Long-Range Connectivity in the Mouse Brain. SSRN Electronic Journal, 0, , .	0.4	1
93	Coincidence Detection of Place and Temporal Context in a Network Model of Spiking Hippocampal Neurons. PLoS Computational Biology, 2005, preprint, e234.	1.5	0
94	The future of dendrite research. , 2016, , 703-708.		0