Nelson Spruston

List of Publications by Year in Descending Order

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	Hippocampal and thalamic afferents form distinct synaptic microcircuits in the mouse infralimbic frontal cortex. *Cell Reports*, **2021**, 37, 109837	10.6	0
92	Rapid synaptic plasticity contributes to a learned conjunctive code of position and choice-related information in the hippocampus. *Neuron*, **2021**,	13.9	5
91	Bursting potentiates the neuro-AI connection. *Nature Neuroscience*, **2021**, 24, 905-906	25.5	0
90	A Sparse, Spatially Biased Subtype of Mature Granule Cell Dominates Recruitment in Hippocampal-Associated Behaviors. *Cell Reports*, **2020**, 31, 107551	10.6	25
89	Transcriptional corepressor SIN3A regulates hippocampal synaptic plasticity via Homer1/mGluR5 signaling. *JCI Insight*, **2020**, 5,	9.9	7
88	Membrane potential dynamics underlying context-dependent sensory responses in the hippocampus. *Nature Neuroscience*, **2020**, 23, 881-891	25.5	18
87	Linking axon morphology to gene expression: a strategy for neuronal cell-type classification. *Current Opinion in Neurobiology*, **2020**, 65, 70-76	7.6	3
86	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	56.2	167
85	ShuTu: Open-Source Software for Efficient and Accurate Reconstruction of Dendritic Morphology. *Frontiers in Neuroinformatics*, **2019**, 13, 68	3.9	6
84	Mapping the transcriptional diversity of genetically and anatomically defined cell populations in the mouse brain. *ELife*, **2019**, 8,	8.9	32
83	Functional clustering of dendritic activity during decision-making. *ELife*, **2019**, 8,	8.9	38
82	Heterogeneity within classical cell types is the rule: lessons from hippocampal pyramidal neurons. *Nature Reviews Neuroscience*, **2019**, 20, 193-204	13.5	83
81	Dissociable Structural and Functional Hippocampal Outputs via Distinct Subiculum Cell Classes. *Cell* , **2018**, 173, 1280-1292.e18	56.2	97
80	Single excitatory axons form clustered synapses onto CA1 pyramidal cell dendrites. *Nature Neuroscience*, **2018**, 21, 353-363	25.5	53
79	Persistent Sodium Current Mediates the Steep Voltage Dependence of Spatial Coding in Hippocampal Pyramidal Neurons. *Neuron*, **2018**, 99, 147-162.e8	13.9	23
78	A novel pyramidal cell type promotes sharp-wave synchronization in the hippocampus. *Nature Neuroscience*, **2018**, 21, 985-995	25.5	34
77	The subiculum is a patchwork of discrete subregions. *ELife*, **2018**, 7,	8.9	38

76	Astrocytes integrate and drive action potential firing in inhibitory subnetworks. *Nature Communications*, **2018**, 9, 4336	17.4	47
75	Integrating Results across Methodologies Is Essential for Producing Robust Neuronal Taxonomies. *Neuron*, **2017**, 94, 747-751.e1	13.9	13
74	Illuminating the Neuronal Architecture Underlying Context in Fear Memory. *Cell*, **2016**, 167, 888-889	56.2	2
73	To the Cloud! A Grassroots Proposal to Accelerate Brain Science Discovery. *Neuron*, **2016**, 92, 622-627	13.9	34
72	Brain-derived neurotrophic factor differentially modulates excitability of two classes of hippocampal output neurons. *Journal of Neurophysiology*, **2016**, 116, 466-71	3.2	21
71	Spatial Gene-Expression Gradients Underlie Prominent Heterogeneity of CA1 Pyramidal Neurons. *Neuron*, **2016**, 89, 351-68	13.9	174
70	Structured Dendritic Inhibition Supports Branch-Selective Integration in CA1 Pyramidal Cells. *Neuron*, **2016**, 89, 1016-30	13.9	74
69	Author response: Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons **2016**,		3
68	Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons. *ELife*, **2016**, 5, e14997	8.9	210
67	Principles of dendritic integration **2016**, 351-398		10
66	BigNeuron: Large-Scale 3D Neuron Reconstruction from Optical Microscopy Images. *Neuron*, **2015**, 87, 252-6	13.9	147
65	Dendritic integration: 60 years of progress. *Nature Neuroscience*, **2015**, 18, 1713-21	25.5	237
64	Age-dependent changes in intrinsic neuronal excitability in subiculum after status epilepticus. *PLoS ONE*, **2015**, 10, e0119411	3.7	4
63	Dendritic sodium spikes are required for long-term potentiation at distal synapses on hippocampal pyramidal neurons. *ELife*, **2015**, 4,	8.9	50
62	Assembling cell ensembles. *Cell*, **2014**, 157, 1502-4	56.2	1
61	Balanced synaptic impact via distance-dependent synapse distribution and complementary expression of AMPARs and NMDARs in hippocampal dendrites. *Neuron*, **2013**, 80, 1451-63	13.9	27
60	Mechanisms of retroaxonal barrage firing in hippocampal interneurons. *Journal of Physiology*, **2013**, 591, 4793-805	3.9	17
59	Information Processing in Dendrites and Spines **2013**, 231-260		10

58	Target-specific output patterns are predicted by the distribution of regular-spiking and bursting pyramidal neurons in the subiculum. *Hippocampus*, **2012**, 22, 693-706	3.5	62
57	Synaptic amplification by dendritic spines enhances input cooperativity. *Nature*, **2012**, 491, 599-602	50.4	178
56	Synergistic actions of metabotropic acetylcholine and glutamate receptors on the excitability of hippocampal CA1 pyramidal neurons. *Journal of Neuroscience*, **2012**, 32, 6081-91	6.6	29
55	Hippocampal pyramidal neurons comprise two distinct cell types that are countermodulated by metabotropic receptors. *Neuron*, **2012**, 76, 776-89	13.9	122
54	Slow integration leads to persistent action potential firing in distal axons of coupled interneurons. *Nature Neuroscience*, **2011**, 14, 200-7	25.5	90
53	Questions about STDP as a General Model of Synaptic Plasticity. *Frontiers in Synaptic Neuroscience*, **2010**, 2, 140	3.5	61
52	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. *PLoS Biology*, **2010**, 8, e1000534	9.7	35
51	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, 3233-41	6.6	48
50	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, 16829-34	11.5	34
49	Plasticity of burst firing induced by synergistic activation of metabotropic glutamate and acetylcholine receptors. *Neuron*, **2009**, 61, 287-300	13.9	32
48	Synapse distribution suggests a two-stage model of dendritic integration in CA1 pyramidal neurons. *Neuron*, **2009**, 63, 171-7	13.9	117
47	Pyramidal neuron. *Scholarpedia Journal*, **2009**, 4, 6130	1.5	8
46	Pyramidal neurons: dendritic structure and synaptic integration. *Nature Reviews Neuroscience*, **2008** , 9, 206-21	13.5	1082
45	Compartmental neural simulations with spatial adaptivity. *Journal of Computational Neuroscience*, **2008**, 25, 465-80	1.4	8
44	Distribution of bursting neurons in the CA1 region and the subiculum of the rat hippocampus. *Journal of Comparative Neurology*, **2008**, 506, 535-47	3.4	89
43	Stability and plasticity of intrinsic membrane properties in hippocampal CA1 pyramidal neurons: effects of internal anions. *Journal of Physiology*, **2007**, 578, 799-818	3.9	58
42	Dendritic D-type potassium currents inhibit the spike afterdepolarization in rat hippocampal CA1 pyramidal neurons. *Journal of Physiology*, **2007**, 581, 175-87	3.9	49
41	Coincidence detection of place and temporal context in a network model of spiking hippocampal neurons. *PLoS Computational Biology*, **2007**, 3, e234	5	26

40	Dendritic spikes induce single-burst long-term potentiation. *Proceedings of the National Academy of Sciences of the United States of America*, **2007**, 104, 17192-7	11.5	116
39	Dendritic integration **2007**, 350-399		5
38	Distance-dependent differences in synapse number and AMPA receptor expression in hippocampal CA1 pyramidal neurons. *Neuron*, **2006**, 50, 431-42	13.9	148
37	Dendritic patch-clamp recording. *Nature Protocols*, **2006**, 1, 1235-47	18.8	123
36	Postsynaptic depolarization requirements for LTP and LTD: a critique of spike timing-dependent plasticity. *Nature Neuroscience*, **2005**, 8, 839-41	25.5	190
35	Conditional dendritic spike propagation following distal synaptic activation of hippocampal CA1 pyramidal neurons. *Nature Neuroscience*, **2005**, 8, 1667-76	25.5	211
34	Factors mediating powerful voltage attenuation along CA1 pyramidal neuron dendrites. *Journal of Physiology*, **2005**, 568, 69-82	3.9	155
33	Output-mode transitions are controlled by prolonged inactivation of sodium channels in pyramidal neurons of subiculum. *PLoS Biology*, **2005**, 3, e175	9.7	31
32	R-type calcium channels contribute to afterdepolarization and bursting in hippocampal CA1 pyramidal neurons. *Journal of Neuroscience*, **2005**, 25, 5763-73	6.6	141
31	Coincidence Detection of Place and Temporal Context in a Network Model of Spiking Hippocampal Neurons. *PLoS Computational Biology*, **2005**, preprint, e234	5	
30	Psychostimulant-induced plasticity of intrinsic neuronal excitability in ventral subiculum. *Journal of Neuroscience*, **2003**, 23, 9937-46	6.6	34
29	Branching out: a new idea for dendritic function. Focus on "Coincidence detection in pyramidal neurons is tuned by their dendritic branching pattern". *Journal of Neurophysiology*, **2003**, 89, 2887-8	3.2	2
28	Intracellular correlate of EPSP-spike potentiation in CA1 pyramidal neurons is controlled by GABAergic modulation. *Hippocampus*, **2003**, 13, 801-5	3.5	55
27	Dendritic spikes as a mechanism for cooperative long-term potentiation. *Nature*, **2002**, 418, 326-31	50.4	485
26	Serotonin receptor activation inhibits sodium current and dendritic excitability in prefrontal cortex via a protein kinase C-dependent mechanism. *Journal of Neuroscience*, **2002**, 22, 6846-55	6.6	138
25	Axonal gap junctions send ripples through the hippocampus. *Neuron*, **2001**, 31, 669-71	13.9	10
24	Dichotomy of action-potential backpropagation in CA1 pyramidal neuron dendrites. *Journal of Neurophysiology*, **2001**, 86, 2998-3010	3.2	146
23	Action potential bursting in subicular pyramidal neurons is driven by a calcium tail current. *Journal of Neuroscience*, **2001**, 21, 3312-21	6.6	100

22	Resting and active properties of pyramidal neurons in subiculum and CA1 of rat hippocampus. *Journal of Neurophysiology*, **2000**, 84, 2398-408	3.2	163
21	Diversity and dynamics of dendritic signaling. *Science*, **2000**, 290, 739-44	33.3	599
20	Dendritic calcium spike initiation and repolarization are controlled by distinct potassium channel subtypes in CA1 pyramidal neurons. *Journal of Neuroscience*, **1999**, 19, 8789-98	6.6	256
19	Slow sodium channel inactivation in CA1 pyramidal cells. *Annals of the New York Academy of Sciences*, **1999**, 868, 97-101	6.5	13
18	Properties of slow, cumulative sodium channel inactivation in rat hippocampal CA1 pyramidal neurons. *Biophysical Journal*, **1999**, 76, 846-60	2.9	113
17	Gamma-frequency oscillations: a neuronal population phenomenon, regulated by synaptic and intrinsic cellular processes, and inducing synaptic plasticity. *Progress in Neurobiology*, **1998**, 55, 563-75	10.9	135
16	Changes in dendritic structure and function following hippocampal lesions: correlations with developmental events?. *Progress in Neurobiology*, **1998**, 55, 641-50	10.9	17
15	Dendritic sodium spikes are variable triggers of axonal action potentials in hippocampal CA1 pyramidal neurons. *Neuron*, **1998**, 21, 1189-200	13.9	304
14	Determinants of voltage attenuation in neocortical pyramidal neuron dendrites. *Journal of Neuroscience*, **1998**, 18, 3501-10	6.6	404
13	Specialized electrophysiological properties of anatomically identified neurons in the hilar region of the rat fascia dentata. *Journal of Neurophysiology*, **1998**, 79, 1518-34	3.2	110
12	Action potential initiation and backpropagation in neurons of the mammalian CNS. *Trends in Neurosciences*, **1997**, 20, 125-31	13.3	579
11	Prolonged sodium channel inactivation contributes to dendritic action potential attenuation in hippocampal pyramidal neurons. *Journal of Neuroscience*, **1997**, 17, 6639-46	6.6	191
10	Interneurons in the stratum lucidum of the rat hippocampus: An anatomical and electrophysiological characterization **1997**, 385, 427-440		46
9	Activity-dependent action potential invasion and calcium influx into hippocampal CA1 dendrites. *Science*, **1995**, 268, 297-300	33.3	680
8	Probing dendritic function with patch pipettes. *Current Opinion in Neurobiology*, **1995**, 5, 389-94	7.6	23
7	Mechanisms shaping glutamate-mediated excitatory postsynaptic currents in the CNS. *Current Opinion in Neurobiology*, **1994**, 4, 366-72	7.6	139
6	Dendritic attenuation of synaptic potentials and currents: the role of passive membrane properties. *Trends in Neurosciences*, **1994**, 17, 161-6	13.3	230
5	ShuTu: Open-Source Software for Efficient and Accurate Reconstruction of Dendritic Morphology		1

List of Publications

4	Functional clustering of dendritic activity during decision-making	5
3	Reconstruction of 1,000 projection neurons reveals new cell types and organization of long-range connectivity in the mouse brain	3
2	Synaptic mechanisms of context-dependent sensory responses in the hippocampus	2
1	A sparse, spatially biased subtype of mature granule cell is preferentially recruited in hippocampal-associated behaviors	2