L F Abbott

List of Publications by Year
in descending order

92 papers	21,839 citations	31902 53 h-index	51492 86 g-index
95 all docs	95 docs citations	95 times ranked	13748 citing authors

#	Article	IF	Citations
1	Meta-learning synaptic plasticity and memory addressing for continual familiarity detection. Neuron, 2022, 110, 544-557.e8.	3.8	17
2	Sparse balance: Excitatory-inhibitory networks with small bias currents and broadly distributed synaptic weights. PLoS Computational Biology, 2022, 18, e1008836.	1.5	6
3	Building an allocentric travelling direction signal via vector computation. Nature, 2022, 601, 92-97.	13.7	92
4	Thalamic control of cortical dynamics in a model of flexible motor sequencing. Cell Reports, 2021, 35, 109090.	2.9	60
5	Evolving the olfactory system with machine learning. Neuron, 2021, 109, 3879-3892.e5.	3.8	20
6	Flexible filtering by neural inputs supports motion computation across states and stimuli. Current Biology, 2021, 31, 5249-5260.e5.	1.8	18
7	Olfactory landmarks and path integration converge to form a cognitive spatial map. Neuron, 2021, 109, 4036-4049.e5.	3.8	28
8	Neural population geometry: An approach for understanding biological and artificial neural networks. Current Opinion in Neurobiology, 2021, 70, 137-144.	2.0	112
9	Transient and Persistent Representations of Odor Value in Prefrontal Cortex. Neuron, 2020, 108, 209-224.e6.	3.8	50
10	Neural Trajectories in the Supplementary Motor Area and Motor Cortex Exhibit Distinct Geometries, Compatible with Different Classes of Computation. Neuron, 2020, 107, 745-758.e6.	3.8	90
11	A model for focal seizure onset, propagation, evolution, and progression. ELife, 2020, 9, .	2.8	62
12	Training dynamically balanced excitatory-inhibitory networks. PLoS ONE, 2019, 14, e0220547.	1.1	37
13	Heading direction with respect to a reference point modulates place-cell activity. Nature Communications, 2019, 10, 2333.	5.8	40
14	Positional Strategies for Connection Specificity and Synaptic Organization in Spinal Sensory-Motor Circuits. Neuron, 2019, 102, 1143-1156.e4.	3.8	55
15	Continual Learning in a Multi-Layer Network of an Electric Fish. Cell, 2019, 179, 1382-1392.e10.	13.5	20
16	Generation of stable heading representations in diverse visual scenes. Nature, 2019, 576, 126-131.	13.7	127
17	Generalization of learned responses in the mormyrid electrosensory lobe. ELife, 2019, 8, .	2.8	9
18	Odor Perception on the Two Sides of the Brain: Consistency Despite Randomness. Neuron, 2018, 98, 736-742.e3.	3.8	47

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19	Inferring single-trial neural population dynamics using sequential auto-encoders. Nature Methods, 2018, 15, 805-815.	9.0	388
20	A transformation from temporal to ensemble coding in a model of piriform cortex. ELife, 2018, 7, .	2.8	38
21	Internally Generated Predictions Enhance Neural and Behavioral Detection of Sensory Stimuli in an Electric Fish. Neuron, 2018, 99, 135-146.e3.	3.8	33
22	full-FORCE: A target-based method for training recurrent networks. PLoS ONE, 2018, 13, e0191527.	1.1	90
23	Optimal Degrees of Synaptic Connectivity. Neuron, 2017, 93, 1153-1164.e7.	3.8	267
24	Representations of Novelty and Familiarity in a Mushroom Body Compartment. Cell, 2017, 169, 956-969.e17.	13.5	113
25	Balanced excitation and inhibition are required for high-capacity, noise-robust neuronal selectivity. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E9366-E9375.	3.3	88
26	The complete connectome of a learning and memory centre in an insect brain. Nature, 2017, 548, 175-182.	13.7	424
27	Stability and Competition in Multi-spike Models of Spike-Timing Dependent Plasticity. PLoS Computational Biology, 2016, 12, e1004750.	1.5	23
28	Building functional networks of spiking model neurons. Nature Neuroscience, 2016, 19, 350-355.	7.1	163
29	Conceptual and technical advances define a key moment for theoretical neuroscience. Nature Neuroscience, 2016, 19, 348-349.	7.1	29
30	Bayesian Sparse Regression Analysis Documents the Diversity of Spinal Inhibitory Interneurons. Cell, 2016, 165, 220-233.	13.5	59
31	Tuning Curves for Arm Posture Control in Motor Cortex Are Consistent with Random Connectivity. PLoS Computational Biology, 2016, 12, e1004910.	1.5	10
32	Activity Regulates the Incidence of Heteronymous Sensory-Motor Connections. Neuron, 2015, 87, 111-123.	3.8	52
33	Strength in more than numbers. Nature Neuroscience, 2015, 18, 614-616.	7.1	0
34	Dynamics of random neural networks with bistable units. Physical Review E, 2014, 90, 062710.	0.8	78
35	Presynaptic inhibition of spinal sensory feedback ensures smooth movement. Nature, 2014, 509, 43-48.	13.7	207
36	A temporal basis for predicting the sensory consequences of motor commands in an electric fish. Nature Neuroscience, 2014, 17, 416-422.	7.1	155

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37	A Computational Model of Motor Neuron Degeneration. Neuron, 2014, 83, 975-988.	3.8	145
38	Temporal Responses of C.Âelegans Chemosensory Neurons Are Preserved in Behavioral Dynamics. Neuron, 2014, 81, 616-628.	3.8	110
39	The neuronal architecture of the mushroom body provides a logic for associative learning. ELife, 2014, 3, e04577.	2.8	833
40	From fixed points to chaos: Three models of delayed discrimination. Progress in Neurobiology, 2013, 103, 214-222.	2.8	151
41	Random convergence of olfactory inputs in the Drosophila mushroom body. Nature, 2013, 497, 113-117.	13.7	373
42	Pairwise Analysis Can Account for Network Structures Arising from Spike-Timing Dependent Plasticity. PLoS Computational Biology, 2013, 9, e1002906.	1.5	43
43	Transferring Learning from External to Internal Weights in Echo-State Networks with Sparse Connectivity. PLoS ONE, 2012, 7, e37372.	1.1	30
44	Beyond the edge of chaos: Amplification and temporal integration by recurrent networks in the chaotic regime. Physical Review E, 2011, 84, 051908.	0.8	95
45	Intrinsic Stability of Temporally Shifted Spike-Timing Dependent Plasticity. PLoS Computational Biology, 2010, 6, e1000961.	1.5	51
46	Gating multiple signals through detailed balance of excitation and inhibition in spiking networks. Nature Neuroscience, 2009, 12, 483-491.	7.1	331
47	Generating Coherent Patterns of Activity from Chaotic Neural Networks. Neuron, 2009, 63, 544-557.	3.8	834
48	Mechanism of gain modulation at single neuron and network levels. Journal of Computational Neuroscience, 2008, 25, 158-168.	0.6	31
49	Theoretical Neuroscience Rising. Neuron, 2008, 60, 489-495.	3.8	127
50	Synaptic Democracy in Active Dendrites. Journal of Neurophysiology, 2006, 96, 2307-2318.	0.9	56
51	Extending the effects of spike-timing-dependent plasticity to behavioral timescales. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 8876-8881.	3.3	97
52	CAUSALITY AND LEARNING IN NEURAL SYSTEMS. , 2006, , .		0
53	NEURAL NETWORK DYNAMICS. Annual Review of Neuroscience, 2005, 28, 357-376.	5.0	407
54	Supervised Learning Through Neuronal Response Modulation. Neural Computation, 2005, 17, 609-631.	1.3	16

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55	Drivers and modulators from push-pull and balanced synaptic input. Progress in Brain Research, 2005, 149, 147-155.	0.9	135
56	Synaptic computation. Nature, 2004, 431, 796-803.	13.7	1,367
57	The dynamic clamp comes of age. Trends in Neurosciences, 2004, 27, 218-224.	4.2	260
58	Synaptic computation. Nature, 2004, 431, 796-803.	13.7	734
59	Balancing homeostasis and learning in neural circuits. Zoology, 2003, 106, 365-371.	0.6	17
60	Gain Modulation from Background Synaptic Input. Neuron, 2002, 35, 773-782.	3.8	866
61	Redundancy Reduction and Sustained Firing with Stochastic Depressing Synapses. Journal of Neuroscience, 2002, 22, 584-591.	1.7	100
62	Cortical Development and Remapping through Spike Timing-Dependent Plasticity. Neuron, 2001, 32, 339-350.	3.8	433
63	The timing game. Nature Neuroscience, 2001, 4, 115-116.	7.1	11
64	Divisive inhibition in recurrent networks. Network: Computation in Neural Systems, 2000, 11, 119-129.	2.2	40
65	Competitive Hebbian learning through spike-timing-dependent synaptic plasticity. Nature Neuroscience, 2000, 3, 919-926.	7.1	2,193
66	Synaptic plasticity: taming the beast. Nature Neuroscience, 2000, 3, 1178-1183.	7.1	1,822
67	Complex cells as cortically amplified simple cells. Nature Neuroscience, 1999, 2, 277-282.	7.1	179
68	The Effect of Correlated Variability on the Accuracy of a Population Code. Neural Computation, 1999, 11, 91-101.	1.3	729
69	Synaptic Depression and the Temporal Response Characteristics of V1 Cells. Journal of Neuroscience, 1998, 18, 4785-4799.	1.7	352
70	Temporal Dynamics of Convergent Modulation at a Crustacean Neuromuscular Junction. Journal of Neurophysiology, 1998, 80, 2559-2570.	0.9	84
71	Temporal Characteristics of V1 Cells Arising from Synaptic Depression. , 1998, , 143-148.		1
72	Synaptic Depression and Cortical Gain Control. Science, 1997, 275, 221-224.	6.0	1,377

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73	Invariant Visual Responses From Attentional Gain Fields. Journal of Neurophysiology, 1997, 77, 3267-3272.	0.9	123
74	A Quantitative Description of Short-Term Plasticity at Excitatory Synapses in Layer 2/3 of Rat Primary Visual Cortex. Journal of Neuroscience, 1997, 17, 7926-7940.	1.7	527
75	Learning navigational maps through potentiation and modulation of hippocampal place cells. , 1997, 4, 79-94.		100
76	A Model of Spatial Map Formation in the Hippocampus of the Rat. Neural Computation, 1996, 8, 85-93.	1.3	333
77	Decoding Synapses. Journal of Neuroscience, 1996, 16, 6307-6318.	1.7	61
78	A model of multiplicative neural responses in parietal cortex.. Proceedings of the National Academy of Sciences of the United States of America, 1996, 93, 11956-11961.	3.3	298
79	Representational Capacity of Face Coding in Monkeys. Cerebral Cortex, 1996, 6, 498-505.	1.6	166
80	Functional Significance of Long-Term Potentiation for Sequence Learning and Prediction. Cerebral Cortex, 1996, 6, 406-416.	1.6	285
81	Transfer of coded information from sensory to motor networks. Journal of Neuroscience, 1995, 15, 6461-6474.	1.7	240
82	Reduced Representation by Neural Networks with Restricted Receptive Fields. Neural Computation, 1995, 7, 507-517.	1.3	3
83	Theory in motion. Current Opinion in Neurobiology, 1995, 5, 832-840.	2.0	38
84	Decoding Vectorial Information from Firing Rates. , 1995, , 299-304.		0
85	When inhibition not excitation synchronizes neural firing. Journal of Computational Neuroscience, 1994, 1, 313-321.	0.6	696
86	Vector reconstruction from firing rates. Journal of Computational Neuroscience, 1994, 1, 89-107.	0.6	434
87	Decoding neuronal firing and modelling neural networks. Quarterly Reviews of Biophysics, 1994, 27, 291-331.	2.4	115
88	The dynamic clamp: artificial conductances in biological neurons. Trends in Neurosciences, 1993, 16, 389-394.	4.2	278
89	Self-Sustained Firing in Populations of Integrate-and-Fire Neurons. SIAM Journal on Applied Mathematics, 1993, 53, 253-264.	0.8	41
90	Asynchronous states in networks of pulse-coupled oscillators. Physical Review E, 1993, 48, 1483-1490.	0.8	424

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91	A network of oscillators. Journal of Physics A, 1990, 23, 3835-3859.	1.6	95
92	Divisive inhibition in recurrent networks. , 0, .		24