Geoffrey J Goodhill

List of Publications by Year
in descending order

114 papers	5,050 citations	126708 33 h-index	143772 57 g-index
159 all docs	159 docs citations	159 times ranked	6676 citing authors

#	Article	IF	Citations
1	Induction of epithelialâ€“mesenchymal transition (EMT) in breast cancer cells is calcium signal dependent. Oncogene, 2014, 33, 2307-2316.	2.6	290
2	A new chemotaxis assay shows the extreme sensitivity of axons to molecular gradients. Nature Neuroscience, 2004, 7, 678-682.	7.1	255
3	Scaling and brain connectivity. Nature, 1994, 369, 448-449.	13.7	158
4	Growth cone chemotaxis. Trends in Neurosciences, 2008, 31, 90-98.	4.2	151
5	Topography and ocular dominance: a model exploring positive correlations. Biological Cybernetics, 1993, 69, 109-118.	0.6	127
6	A Bayesian model predicts the response of axons to molecular gradients. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 10296-10301.	3.3	123
7	Diffusion in Axon Guidance. European Journal of Neuroscience, 1997, 9, 1414-1421.	1.2	109
8	Balanced Interhemispheric Cortical Activity Is Required for Correct Targeting of the Corpus Callosum. Neuron, 2014, 82, 1289-1298.	3.8	106
9	Retinotectal maps: molecules, models and misplaced data. Trends in Neurosciences, 1999, 22, 529-534.	4.2	96
10	Contributions of Theoretical Modeling to the Understanding of Neural Map Development. Neuron, 2007, 56, 301-311.	3.8	93
11	Altered brain-wide auditory networks in a zebrafish model of fragile X syndrome. BMC Biology, 2020, 18, 125.	1.7	92
12	A Boolean Model of the Gene Regulatory Network Underlying Mammalian Cortical Area Development. PLoS Computational Biology, 2010, 6, e1000936.	1.5	87
13	Netrin-DCC Signaling Regulates Corpus Callosum Formation Through Attraction of Pioneering Axons and by Modulating Slit2-Mediated Repulsion. Cerebral Cortex, 2014, 24, 1138-1151.	1.6	86
14	Mathematical guidance for axons. Trends in Neurosciences, 1998, 21, 226-231.	4.2	81
15	Theoretical analysis of gradient detection by growth cones. , 1999, 41, 230-241.		72
16	Spontaneous Activity in the Zebrafish Tectum Reorganizes over Development and Is Influenced by Visual Experience. Current Biology, 2017, 27, 2407-2419.e4.	1.8	72
17	A Computational Model for the Development of Multiple Maps in Primary Visual Cortex. Cerebral Cortex, 2005, 15, 1222-1233.	1.6	68
18	Axon guidance by growth-rate modulation. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 5202-5207.	3.3	67

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19	A Unifying Objective Function for Topographic Mappings. Neural Computation, 1997, 9, 1291-1303.	1.3	64
20	Calcium signaling in axon guidance. Trends in Neurosciences, 2014, 37, 424-432.	4.2	64
21	Subdiffractional tracking of internalized molecules reveals heterogeneous motion states of synaptic vesicles. Journal of Cell Biology, 2016, 215, 277-292.	2.3	64
22	Application of the elastic net algorithm to the formation of ocular dominance stripes. Network: Computation in Neural Systems, 1990, 1, 41-59.	2.2	63
23	The development of retinotectal maps: A review of models based on molecular gradients. Network: Computation in Neural Systems, 2005, 16, 5-34.	2.2	59
24	The Role of Weight Normalization in Competitive Learning. Neural Computation, 1994, 6, 255-269.	1.3	57
25	In vivo single-molecule imaging of syntaxin1A reveals polyphosphoinositide- and activity-dependent trapping in presynaptic nanoclusters. Nature Communications, 2016, 7, 13660.	5.8	55
26	Calcium and cAMP Levels Interact to Determine Attraction versus Repulsion in Axon Guidance. Neuron, 2012, 74, 490-503.	3.8	54
27	Can Molecular Gradients Wire the Brain?. Trends in Neurosciences, 2016, 39, 202-211.	4.2	49
28	Probabilistic Encoding Models for Multivariate Neural Data. Frontiers in Neural Circuits, 2019, 13, 1.	1.4	49
29	Visualizing endocytic recycling and trafficking in live neurons by subdiffractional tracking of internalized molecules. Nature Protocols, 2017, 12, 2590-2622.	5.5	48
30	Predicting Axonal Response to Molecular Gradients with a Computational Model of Filopodial Dynamics. Neural Computation, 2004, 16, 2221-2243.	1.3	44
31	Analysis of the growth cone turning assay for studying axon guidance. Journal of Neuroscience Methods, 2008, 170, 220-228.	1.3	44
32	Axon Guidance: Stretching Gradients to the Limit. Neural Computation, 1998, 10, 521-527.	1.3	43
33	Influence of Lateral Connections on the Structure of Cortical Maps. Journal of Neurophysiology, 2004, 92, 2947-2959.	0.9	40
34	Chapter 1 Theoretical Models of Neural Circuit Development. Current Topics in Developmental Biology, 2009, 87, 1-51.	1.0	37
35	Topographic wiring of the retinotectal connection in zebrafish. Developmental Neurobiology, 2015, 75, 542-556.	1.5	36
36	Elastic Net Model of Ocular Dominance: Overall Stripe Pattern and Monocular Deprivation. Neural Computation, 1994, 6, 615-621.	1.3	35

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37	Theory meets experiment: correlated neural activity helps determine ocular dominance column periodicity. Trends in Neurosciences, 1995, 18, 437-439.	4.2	33
38	Sparse Coding Can Predict Primary Visual Cortex Receptive Field Changes Induced by Abnormal Visual Input. PLoS Computational Biology, 2013, 9, e1003005.	1.5	32
39	Analysis of the elastic net model applied to the formation of ocular dominance and orientation columns. Network: Computation in Neural Systems, 2000, 11, 153-168.	2.2	31
40	Adaptation is not required to explain the long-term response of axons to molecular gradients. Development (Cambridge), 2005, 132, 4545-4552.	1.2	31
41	Modular transient nanoclustering of activated Î²2-adrenergic receptors revealed by single-molecule tracking of conformation-specific nanobodies. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 30476-30487.	3.3	29
42	The dynamics of growth cone morphology. BMC Biology, 2015, 13, 10.	1.7	28
43	Detecting neural assemblies in calcium imaging data. BMC Biology, 2018, 16, 143.	1.7	27
44	Emergence of spontaneous assembly activity in developing neural networks without afferent input. PLoS Computational Biology, 2018, 14, e1006421.	1.5	27
45	Sensory experience modifies feature map relationships in visual cortex. ELife, 2016, 5, .	2.8	27
46	A quantitative analysis of branching, growth cone turning, and directed growth in zebrafish retinotectal axon guidance. Journal of Comparative Neurology, 2013, 521, 1409-1429.	0.9	22
47	Assays for Eukaryotic Cell Chemotaxis. Combinatorial Chemistry and High Throughput Screening, 2009, 12, 580-588.	0.6	21
48	Statistical structure of lateral connections in the primary visual cortex. Neural Systems & Circuits, 2011, 1, 3.	1.8	21
49	Limitations of Neural Map Topography for Decoding Spatial Information. Journal of Neuroscience, 2016, 36, 5385-5396.	1.7	21
50	A Theoretical Model of Axon Guidance by the Robo Code. Neural Computation, 2003, 15, 549-564.	1.3	20
51	The influence of restricted orientation rearing on map structure in primary visual cortex. NeuroImage, 2010, 52, 875-883.	2.1	20
52	Principles of Functional Circuit Connectivity: Insights From Spontaneous Activity in the Zebrafish Optic Tectum. Frontiers in Neural Circuits, 2018, 12, 46.	1.4	20
53	A simple model can unify a broad range of phenomena in retinotectal map development. Biological Cybernetics, 2011, 104, 9-29.	0.6	19
54	Bayes-Optimal Chemotaxis. Neural Computation, 2011, 23, 336-373.	1.3	19

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55	The limits of chemosensation vary across dimensions. Nature Communications, 2015, 6, 7468.	5.8	19
56	Code Under Construction: Neural Coding Over Development. Trends in Neurosciences, 2018, 41, 599-609.	4.2	19
57	Spontaneous and evoked activity patterns diverge over development. ELife, 2021, 10, .	2.8	19
58	Auto-SOM: Recursive Parameter Estimation for Guidance of Self-Organizing Feature Maps. Neural Computation, 2001, 13, 595-619.	1.3	18
59	Cyclic nucleotide-dependent switching of mammalian axon guidance depends on gradient steepness. Molecular and Cellular Neurosciences, 2011, 47, 45-52.	1.0	18
60	A Three-Layer Network Model of Direction Selective Circuits in the Optic Tectum. Frontiers in Neural Circuits, 2017, 11, 88.	1.4	18
61	Behavioral Signatures of a Developing Neural Code. Current Biology, 2020, 30, 3352-3363.e5.	1.8	18
62	Unsupervised quantification of naturalistic animal behaviors for gaining insight into the brain. Current Opinion in Neurobiology, 2021, 70, 89-100.	2.0	16
63	Influences on the global structure of cortical maps. Proceedings of the Royal Society B: Biological Sciences, 1997, 264, 649-655.	1.2	15
64	Optimizing chemotaxis by measuring unboundâ€“bound transitions. Physica D: Nonlinear Phenomena, 2010, 239, 477-484.	1.3	14
65	The Response of Dorsal Root Ganglion Axons to Nerve Growth Factor Gradients Depends on Spinal Level. Journal of Neurotrauma, 2010, 27, 1379-1386.	1.7	14
66	The influence of activity on axon pathfinding in the optic tectum. Developmental Neurobiology, 2015, 75, 608-620.	1.5	14
67	The interdependent roles of Ca²⁺ and cAMP in axon guidance. Developmental Neurobiology, 2015, 75, 402-410.	1.5	14
68	Theoretical Models of Neural Development. IScience, 2018, 8, 183-199.	1.9	14
69	Analysis of the elastic net model applied to the formation of ocular dominance and orientation columns. , 0, .		14
70	Model-based decoupling of evoked and spontaneous neural activity in calcium imaging data. PLoS Computational Biology, 2020, 16, e1008330.	1.5	14
71	Emergence of ion channel modal gating from independent subunit kinetics. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E5288-97.	3.3	13
72	A dual compartment diffusion chamber for studying axonal chemotaxis in 3D collagen. Journal of Neuroscience Methods, 2013, 215, 53-59.	1.3	12

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73	Are Visual Cortex Maps Optimized for Coverage?. Neural Computation, 2002, 14, 1545-1560.	1.3	10
74	The Effect of Angioscotomas on Map Structure in Primary Visual Cortex. Journal of Neuroscience, 2007, 27, 4935-4946.	1.7	10
75	Natural scene statistics and the structure of orientation maps in the visual cortex. NeuroImage, 2009, 47, 157-172.	2.1	10
76	Axon growth regulation by a bistable molecular switch. Proceedings of the Royal Society B: Biological Sciences, 2018, 285, 20172618.	1.2	10
77	Control of neurite growth and guidance by an inhibitory cell-body signal. PLoS Computational Biology, 2018, 14, e1006218.	1.5	10
78	Sparse Coding on the Spot: Spontaneous Retinal Waves Suffice for Orientation Selectivity. Neural Computation, 2012, 24, 2422-2433.	1.3	9
79	Analyzing neurite outgrowth from explants by fitting ellipses. Journal of Neuroscience Methods, 2010, 187, 52-58.	1.3	8
80	The Combinatorics of Neurite Self-Avoidance. Neural Computation, 2011, 23, 2746-2769.	1.3	8
81	Practical costs of data sharing. Nature, 2014, 509, 33-33.	13.7	8
82	Chemotactic responses of growing neurites to precisely controlled gradients of nerve growth factor. Scientific Data, 2018, 5, 180183.	2.4	8
83	Optimality and Saturation in Axonal Chemotaxis. Neural Computation, 2013, 25, 833-853.	1.3	7
84	The influence of neural activity and intracortical connectivity on the periodicity of ocular dominance stripes. Network: Computation in Neural Systems, 1998, 9, 419-432.	2.2	5
85	Dating Behavior of the Retinal Ganglion Cell. Neuron, 2000, 25, 501-503.	3.8	5
86	Randomly oriented edge arrangements dominate naturalistic arrangements in binocular rivalry. Vision Research, 2012, 64, 49-55.	0.7	5
87	A computational model of the effect of gene misexpression on the development of cortical areas. Biological Cybernetics, 2014, 108, 203-221.	0.6	5
88	Quantitative Analysis of Axonal Branch Dynamics in the Developing Nervous System. PLoS Computational Biology, 2016, 12, e1004813.	1.5	5
89	Limitations to Estimating Mutual Information in Large Neural Populations. Entropy, 2020, 22, 490.	1.1	4
90	Zebrafish Chromosome 14 Gene Differential Expression in the fmr1hu2787 Model of Fragile X Syndrome. Frontiers in Genetics, 2021, 12, 625466.	1.1	4

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91	The Development of Topography and Ocular Dominance. , 1991, , 338-349.		4
92	Development of Columnar Structures in Visual Cortex. , 0, , 337-358.		4
93	Limitations on detection of gradients of diffusible chemicals by axons. Neurocomputing, 1999, 26-27, 39-43.	3.5	3
94	Dynamics of cortical map development in the elastic net model. Neurocomputing, 2000, 32-33, 83-90.	3.5	3
95	Segmenting Neuronal Growth Cones Using Deep Convolutional Neural Networks. , 2016, , .		3
96	Stripe-rearing changes multiple aspects of the structure of primary visual cortex. NeuroImage, 2014, 95, 305-319.	2.1	2
97	Axon Guidance Studies Using a Microfluidics-Based Chemotropic Gradient Generator. Methods in Molecular Biology, 2016, 1407, 273-285.	0.4	2
98	Estimating Cortical Feature Maps with Dependent Gaussian Processes. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2017, 39, 1918-1928.	9.7	2
99	Cortical construction: from molecules to models. Nature Neuroscience, 2001, 4, 13-13.	7.1	1
100	Quantitative Studies of Neuronal Chemotaxis in 3D. Methods in Molecular Biology, 2009, 571, 239-254.	0.4	1
101	Objective Functions for Topography: A Comparison of Optimal Maps. Perspectives in Neural Computing, 1998, , 73-83.	0.1	1
102	Computational Maps in the Visual Cortex. Clinical and Experimental Ophthalmology, 2006, 34, 705-706.	1.3	0
103	Editorial: Welcome to the new Network. Network: Computation in Neural Systems, 2006, 17, 1-2.	2.2	0
104	The error bars on impact. Network: Computation in Neural Systems, 2009, 20, 47-48.	2.2	0
105	Computational modeling of neuronal map development: insights into disease. Future Neurology, 2011, 6, 339-349.	0.9	0
106	Axonal Growth and Targeting. , 2012, , 429-458.		0
107	Introduction to the special issue on from maps to circuits: Models and mechanisms for generating neural connections. Developmental Neurobiology, 2015, 75, 539-541.	1.5	0
108	Optimizing the Representation of Orientation Preference Maps in Visual Cortex. Neural Computation, 2015, 27, 32-41.	1.3	0

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109	Inference of Multiplicative Factors Underlying Neural Variability in Calcium Imaging Data. Neural Computation, 2022, , 1-27.	1.3	0
110	Model-based decoupling of evoked and spontaneous neural activity in calcium imaging data. , 2020, 16, e1008330.		0
111	Model-based decoupling of evoked and spontaneous neural activity in calcium imaging data. , 2020, 16, e1008330.		0
112	Model-based decoupling of evoked and spontaneous neural activity in calcium imaging data. , 2020, 16, e1008330.		0
113	Model-based decoupling of evoked and spontaneous neural activity in calcium imaging data. , 2020, 16, e1008330.		0
114	Cortical Maps, Intrinsic Processes. , 2022, , 1059-1061.		0