Alexander Borst

List of Publications by Year
in descending order

147 papers	12,272 citations	26567 56 h-index	30848 102 g-index
154 all docs	154 docs citations	154 times ranked	6595 citing authors

#	Article	IF	Citations
1	Information theory and neural coding. Nature Neuroscience, 1999, 2, 947-957.	7.1	914
2	<i>Drosophila</i>Mushroom Body Mutants are Deficient in Olfactory Learning. Journal of Neurogenetics, 1985, 2, 1-30.	0.6	664
3	A genetically encoded calcium indicator for chronic in vivo two-photon imaging. Nature Methods, 2008, 5, 805-811.	9.0	458
4	Principles of visual motion detection. Trends in Neurosciences, 1989, 12, 297-306.	4.2	451
5	Fluorescence Changes of Genetic Calcium Indicators and OGB-1 Correlated with Neural Activity and Calcium<i>In Vivo</i>and<i>In Vitro</i>. Journal of Neuroscience, 2008, 28, 7399-7411.	1.7	430
6	One Rule to Grow Them All: A General Theory of Neuronal Branching and Its Practical Application. PLoS Computational Biology, 2010, 6, e1000877.	1.5	340
7	A directional tuning map of Drosophila elementary motion detectors. Nature, 2013, 500, 212-216.	13.7	327
8	Fly Motion Vision. Annual Review of Neuroscience, 2010, 33, 49-70.	5.0	305
9	ON and OFF pathways in Drosophila motion vision. Nature, 2010, 468, 300-304.	13.7	303
10	A FRET-Based Calcium Biosensor with Fast Signal Kinetics and High Fluorescence Change. Biophysical Journal, 2006, 90, 1790-1796.	0.2	276
11	Neural networks in the cockpit of the fly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2002, 188, 419-437.	0.7	242
12	Computational structure of a biological motion-detection system as revealed by local detector analysis in the flyâ€™s nervous system. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1989, 6, 1070.	0.8	240
13	Seeing Things in Motion: Models, Circuits, and Mechanisms. Neuron, 2011, 71, 974-994.	3.8	223
14	Common circuit design in fly and mammalian motion vision. Nature Neuroscience, 2015, 18, 1067-1076.	7.1	191
15	In Vivo Performance of Genetically Encoded Indicators of Neural Activity in Flies. Journal of Neuroscience, 2005, 25, 4766-4778.	1.7	187
16	Response Properties of Motion-Sensitive Visual Interneurons in the Lobula Plate of Drosophila melanogaster. Current Biology, 2008, 18, 368-374.	1.8	186
17	Drosophila's View on Insect Vision. Current Biology, 2009, 19, R36-R47.	1.8	170
18	Transient and steady-state response properties of movement detectors. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1989, 6, 116.	0.8	169

#	Article	IF	Citations
19	Dendritic Integration and Its Role in Computing Image Velocity. , 1998, 281, 1848-1850.		169
20	Internal Structure of the Fly Elementary Motion Detector. Neuron, 2011, 70, 1155-1164.	3.8	159
21	Visual Circuits for Direction Selectivity. Annual Review of Neuroscience, 2017, 40, 211-230.	5.0	147
22	Object tracking in motion-blind flies. Nature Neuroscience, 2013, 16, 730-738.	7.1	146
23	Fly visual course control: behaviour, algorithms and circuits. Nature Reviews Neuroscience, 2014, 15, 590-599.	4.9	135
24	Mechanisms of dendritic integration underlying gain control in fly motion-sensitive interneurons. Journal of Computational Neuroscience, 1995, 2, 5-18.	0.6	116
25	Flight Activity Alters Velocity Tuning of Fly Motion-Sensitive Neurons. Journal of Neuroscience, 2011, 31, 9231-9237.	1.7	114
26	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: I. Passive membrane properties. Journal of Computational Neuroscience, 1996, 3, 313-336.	0.6	111
27	Neural Circuit to Integrate Opposing Motions in the Visual Field. Cell, 2015, 162, 351-362.	13.5	111
28	Adaptation without parameter change: Dynamic gain control in motion detection. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 6172-6176.	3.3	107
29	The Temporal Tuning of the Drosophila Motion Detectors Is Determined by the Dynamics of Their Input Elements. Current Biology, 2017, 27, 929-944.	1.8	107
30	Osmotropotaxis inDrosophila melanogaster. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1982, 147, 479-484.	0.7	103
31	Amplification of high-frequency synaptic inputs by active dendritic membrane processes. Nature, 1996, 379, 639-641.	13.7	99
32	Columnar cells necessary for motion responses of wide-field visual interneurons in Drosophila. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2012, 198, 389-395.	0.7	99
33	Heterogeneity in synaptic transmission along a Drosophila larval motor axon. Nature Neuroscience, 2005, 8, 1188-1196.	7.1	98
34	Comprehensive Characterization of the Major Presynaptic Elements to the Drosophila OFF Motion Detector. Neuron, 2016, 89, 829-841.	3.8	98
35	Neural mechanism underlying complex receptive field properties of motion-sensitive interneurons. Nature Neuroscience, 2004, 7, 628-634.	7.1	97
36	Visualizing retinotopic half-wave rectified input to the motion detection circuitry of Drosophila. Nature Neuroscience, 2010, 13, 973-978.	7.1	95

#	Article	IF	Citations
37	Optogenetic and Pharmacologic Dissection of Feedforward Inhibition in<i>Drosophila</i>Motion Vision. Journal of Neuroscience, 2014, 34, 2254-2263.	1.7	94
38	Encoding of Visual Motion Information and Reliability in Spiking and Graded Potential Neurons. Journal of Neuroscience, 1997, 17, 4809-4819.	1.7	93
39	The Morphological Identity of Insect Dendrites. PLoS Computational Biology, 2008, 4, e1000251.	1.5	92
40	How fly neurons compute the direction of visual motion. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2020, 206, 109-124.	0.7	88
41	Complementary mechanisms create direction selectivity in the fly. ELife, 2016, 5, .	2.8	87
42	Optogenetic Control of Fly Optomotor Responses. Journal of Neuroscience, 2013, 33, 13927-13934.	1.7	83
43	Dendritic Computation of Direction Selectivity and Gain Control in Visual Interneurons. Journal of Neuroscience, 1997, 17, 6023-6030.	1.7	81
44	Quantifying variability in neural responses and its application for the validation of model predictions. Network: Computation in Neural Systems, 2004, 15, 91-109.	2.2	80
45	Integration of Lobula Plate Output Signals by DNOVS1, an Identified Premotor Descending Neuron. Journal of Neuroscience, 2007, 27, 1992-2000.	1.7	78
46	Asymmetry of Drosophila ON and OFF motion detectors enhances real-world velocity estimation. Nature Neuroscience, 2016, 19, 706-715.	7.1	75
47	The TREES Toolboxâ€"Probing the Basis of Axonal and Dendritic Branching. Neuroinformatics, 2011, 9, 91-96.	1.5	73
48	Recurrent Network Interactions Underlying Flow-Field Selectivity of Visual Interneurons. Journal of Neuroscience, 2001, 21, 5685-5692.	1.7	68
49	Central gating of fly optomotor response. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 20104-20109.	3.3	67
50	Adaptation of response transients in fly motion vision. II: Model studies. Vision Research, 2003, 43, 1311-1324.	0.7	66
51	Dendritic integration of motion information in visual interneurons of the blowfly. Neuroscience Letters, 1992, 140, 173-176.	1.0	65
52	Dendro-Dendritic Interactions between Motion-Sensitive Large-Field Neurons in the Fly. Journal of Neuroscience, 2002, 22, 3227-3233.	1.7	63
53	Functional Specialization of Parallel Motion Detection Circuits in the Fly. Journal of Neuroscience, 2013, 33, 902-905.	1.7	63
54	Active Membrane Properties and Signal Encoding in Graded Potential Neurons. Journal of Neuroscience, 1998, 18, 7972-7986.	1.7	62

#	Article	IF	Citations
55	Contour-propagation algorithms for semi-automated reconstruction of neural processes. Journal of Neuroscience Methods, 2008, 167, 349-357.	1.3	61
56	Neural Circuit Components of the Drosophila OFF Motion Vision Pathway. Current Biology, 2014, 24, 385-392.	1.8	60
57	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: III. Visual response properties. Journal of Computational Neuroscience, 1999, 7, 213-234.	0.6	59
58	Nonlinear, binocular interactions underlying flow field selectivity of a motion-sensitive neuron. Nature Neuroscience, 2006, 9, 1312-1320.	7.1	59
59	Candidate Glutamatergic Neurons in the Visual System of Drosophila. PLoS ONE, 2011, 6, e19472.	1.1	59
60	How Do Flies Land?. BioScience, 1990, 40, 292-299.	2.2	58
61	Are there separate ON and OFF channels in fly motion vision?. Visual Neuroscience, 1992, 8, 151-164.	0.5	58
62	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: II. Active membrane properties. Journal of Computational Neuroscience, 1997, 4, 349-368.	0.6	58
63	Functional Specialization of Neural Input Elements to the Drosophila ON Motion Detector. Current Biology, 2015, 25, 2247-2253.	1.8	57
64	Nonlinear Integration of Binocular Optic Flow by DNOVS2, A Descending Neuron of the Fly. Journal of Neuroscience, 2008, 28, 3131-3140.	1.7	56
65	Different receptive fields in axons and dendrites underlie robust coding in motion-sensitive neurons. Nature Neuroscience, 2009, 12, 327-332.	7.1	54
66	A biophysical account of multiplication by a single neuron. Nature, 2022, 603, 119-123.	13.7	54
67	Visual information processing in the fly's landing system. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1988, 163, 167-173.	0.7	53
68	Robust coding of flow-field parameters by axo-axonal gap junctions between fly visual interneurons. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 10229-10233.	3.3	53
69	Optogenetic Neuronal Silencing in Drosophila during Visual Processing. Scientific Reports, 2017, 7, 13823.	1.6	53
70	Sharing Receptive Fields with Your Neighbors: Tuning the Vertical System Cells to Wide Field Motion. Journal of Neuroscience, 2005, 25, 3985-3993.	1.7	52
71	The role of GABA in detecting visual motion. Brain Research, 1990, 509, 156-160.	1.1	49
72	Effects of mean firing on neural information rate. , 2001, 10, 213-221.		48

#	Article	IF	Citations
73	Extreme Compartmentalization in a Drosophila Amacrine Cell. Current Biology, 2019, 29, 1545-1550.e2.	1.8	48
74	Dynamic Signal Compression for Robust Motion Vision in Flies. Current Biology, 2020, 30, 209-221.e8.	1.8	48
75	Computation of olfactory signals inDrosophila melanogaster. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1983, 152, 373-383.	0.7	43
76	Synaptic organization of lobula plate tangential cells inDrosophila: Î3-Aminobutyric acid receptors and chemical release sites. Journal of Comparative Neurology, 2007, 502, 598-610.	0.9	43
77	Quantifying variability in neural responses and its application for the validation of model predictions. Network: Computation in Neural Systems, 2004, 15, 91-109.	2.2	43
78	Spatial Distribution and Characteristics of Voltage-Gated Calcium Signals Within Visual Interneurons. Journal of Neurophysiology, 2000, 83, 1039-1051.	0.9	42
79	Spatial Distribution of Low- and High-Voltage-Activated Calcium Currents in Neurons of the Deep Cerebellar Nuclei. Journal of Neuroscience, 2001, 21, RC158-RC158.	1.7	42
80	Neural image processing by dendritic networks. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 11082-11085.	3.3	42
81	Robust Coding of Ego-Motion in Descending Neurons of the Fly. Journal of Neuroscience, 2009, 29, 14993-15000.	1.7	42
82	Local motion detectors are required for the computation of expansion flow-fields. Biology Open, 2015, 4, 1105-1108.	0.6	42
83	Synapse distribution on VCH, an inhibitory, motion-sensitive interneuron in the fly visual system. Journal of Comparative Neurology, 1997, 381, 489-499.	0.9	41
84	Dye-coupling visualizes networks of large-field motion-sensitive neurons in the fly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2005, 191, 445-454.	0.7	41
85	Neural Mechanisms for Drosophila Contrast Vision. Neuron, 2015, 88, 1240-1252.	3.8	41
86	Dendritic processing of synaptic information by sensory interneurons. Trends in Neurosciences, 1994, 17, 257-263.	4.2	40
87	A common directional tuning mechanism of Drosophila motion-sensing neurons in the ON and in the OFF pathway. ELife, 2017, 6, .	2.8	39
88	Local and global motion preferences in descending neurons of the fly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2009, 195, 1107-20.	0.7	38
89	Correlation versus gradient type motion detectors: the pros and cons. Philosophical Transactions of the Royal Society B: Biological Sciences, 2007, 362, 369-374.	1.8	37
90	Models of motion detection. Nature Neuroscience, 2000, 3, 1168-1168.	7.1	36

#	Article	IF	Citations
91	Bio-inspired visual ego-rotation sensor for MAVs. Biological Cybernetics, 2012, 106, 51-63.	0.6	35
92	Neurons with cholinergic phenotype in the visual system of <i>Drosophila</i>. Journal of Comparative Neurology, 2011, 519, 162-176.	0.9	34
93	Bi-directional Control of Walking Behavior by Horizontal Optic Flow Sensors. Current Biology, 2018, 28, 4037-4045.e5.	1.8	34
94	Input Organization of Multifunctional Motion-Sensitive Neurons in the Blowfly. Journal of Neuroscience, 2003, 23, 9805-9811.	1.7	33
95	Mechanisms of Dendritic Calcium Signaling in Fly Neurons. Journal of Neurophysiology, 2001, 85, 439-447.	0.9	32
96	Different Mechanisms of Calcium Entry Within Different Dendritic Compartments. Journal of Neurophysiology, 2002, 87, 1616-1624.	0.9	32
97	A biophysical mechanism for preferred direction enhancement in fly motion vision. PLoS Computational Biology, 2018, 14, e1006240.	1.5	31
98	Preserving Neural Function under Extreme Scaling. PLoS ONE, 2013, 8, e71540.	1.1	31
99	Optic flow-based course control in insects. Current Opinion in Neurobiology, 2020, 60, 21-27.	2.0	30
100	Neural Action Fields for Optic Flow Based Navigation: A Simulation Study of the Fly Lobula Plate Network. PLoS ONE, 2011, 6, e16303.	1.1	30
101	Synaptic Organization of Lobula Plate Tangential Cells in<i>Drosophila:</i>DÎ±7 Cholinergic Receptors. Journal of Neurogenetics, 2009, 23, 200-209.	0.6	29
102	An FPGA implementation of insect-inspired motion detector for high-speed vision systems. , 2008, , .		28
103	Conditional protein tagging methods reveal highly specific subcellular distribution of ion channels in motion-sensing neurons. ELife, 2020, 9, .	2.8	28
104	In search of the holy grail of fly motion vision. European Journal of Neuroscience, 2014, 40, 3285-3293.	1.2	26
105	Cholinergic and GABAergic pathways in fly motion vision. BMC Neuroscience, 2001, 2, 1.	0.8	24
106	Noise, not stimulus entropy, determines neural information rate. Journal of Computational Neuroscience, 2003, 14, 23-31.	0.6	24
107	Disentangling the functional consequences of the connectivity between optic-flow processing neurons. Nature Neuroscience, 2012, 15, 441-448.	7.1	24
108	Electrical Coupling of Lobula Plate Tangential Cells to a Heterolateral Motion-Sensitive Neuron in the Fly. Journal of Neuroscience, 2008, 28, 14435-14442.	1.7	23

#	ARTICLE	IF	CITATIONS
109	RNA-Seq Transcriptome Analysis of Direction-Selective T4/T5 Neurons in Drosophila. PLoS ONE, 2016, 11, e0163986.	1.1	23
110	Reciprocal inhibitory connections within a neural network for rotational optic-flow processing. Frontiers in Neuroscience, 2007, 1, 111-121.	1.4	22
111	Glutamate Signaling in the Fly Visual System. IScience, 2018, 7, 85-95.	1.9	22
112	Transgenic line for the identification of cholinergic release sites in Drosophila melanogaster. Journal of Experimental Biology, 2017, 220, 1405-1410.	0.8	21
113	Subcellular mapping of dendritic activity in optic flow processing neurons. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2014, 200, 359-370.	0.7	20
114	Spatiotemporal Response Properties of Optic-Flow Processing Neurons. Neuron, 2010, 67, 629-642.	3.8	19
115	Transcriptional control of morphological properties of direction-selective T4/T5 neurons in<i>Drosophila</i>. Development (Cambridge), 2019, 146, .	1.2	19
116	Anatomical distribution and functional roles of electrical synapses in Drosophila. Current Biology, 2022, 32, 2022-2036.e4.	1.8	19
117	Local current spread in electrically compact neurons of the fly. Neuroscience Letters, 2000, 285, 123-126.	1.0	18
118	Coding Efficiency of Fly Motion Processing Is Set by Firing Rate, Not Firing Precision. PLoS Computational Biology, 2010, 6, e1000860.	1.5	18
119	Integration of binocular optic flow in cervical neck motor neurons of the fly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2012, 198, 655-668.	0.7	18
120	Adaptation and Information Transmission in Fly Motion Detection. Journal of Neurophysiology, 2007, 98, 3309-3320.	0.9	17
121	A combinatorial code of transcription factors specifies subtypes of visual motion-sensing neurons in <i>Drosophila</i>. Development (Cambridge), 2020, 147, .	1.2	17
122	Neural mechanism of spatio-chromatic opponency in the Drosophila amacrine neurons. Current Biology, 2021, 31, 3040-3052.e9.	1.8	16
123	Relating a calcium indicator signal to the unperturbed calcium concentration time-course. Theoretical Biology and Medical Modelling, 2007, 4, 7.	2.1	15
124	Neural Circuits for Motion Vision in the Fly. Cold Spring Harbor Symposia on Quantitative Biology, 2014, 79, 131-139.	2.0	15
125	Efficient encoding of motion is mediated by gap junctions in the fly visual system. PLoS Computational Biology, 2017, 13, e1005846.	1.5	14
126	Neural Circuits for Elementary Motion Detection. Journal of Neurogenetics, 2014, 28, 361-373.	0.6	13

#	Article	IF	Citations
127	Neural mechanisms underlying sensitivity to reverse-phi motion in the fly. PLoS ONE, 2017, 12, e0189019.	1.1	12
128	Insect-inspired high-speed motion vision system for robot control. Biological Cybernetics, 2012, 106, 453-463.	0.6	11
129	Aerial course stabilization is impaired in motion-blind flies. Journal of Experimental Biology, 2021, 224, .	0.8	11
130	The neural network behind the eyes of a fly. Current Opinion in Physiology, 2020, 16, 33-42.	0.9	10
131	Maximally efficient prediction in the early fly visual system may support evasive flight maneuvers. PLoS Computational Biology, 2021, 17, e1008965.	1.5	9
132	Direction selectivity in ganglion cells: pre or post?. Nature Neuroscience, 2001, 4, 119-120.	7.1	7
133	Electrophysiological Recordings from Lobula Plate Tangential Cells in Drosophila. Methods in Molecular Biology, 2016, 1478, 321-332.	0.4	7
134	Propagation of photon noise and information transfer in visual motion detection. Journal of Computational Neuroscience, 2006, 20, 167-178.	0.6	6
135	Visual Flight Control of a Quadrotor Using Bioinspired Motion Detector. International Journal of Navigation and Observation, 2012, 2012, 1-9.	0.8	5
136	Dendritic End Inhibition in Large-Field Visual Neurons of the Fly. Journal of Neuroscience, 2013, 33, 3659-3667.	1.7	5
137	Complementary motion tuning in frontal nerve motor neurons of the blowfly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2015, 201, 411-426.	0.7	5
138	Seeing Natural Images through the Eye of a Fly with Remote Focusing Two-Photon Microscopy. IScience, 2020, 23, 101170.	1.9	5
139	Non-uniform weighting of local motion inputs underlies dendritic computation in the fly visual system. Scientific Reports, 2018, 8, 5787.	1.6	3
140	The Broader, the Better? Drosophila Olfactory Interneurons Are Found to Respond to a Wider Range of Odorants Than Their Immediate Sensory Input. Neuron, 2007, 54, 6-8.	3.8	2
141	ON and OFF Pathways in Drosophila Motion Detection. E-Neuroforum, 2011, 17, 30-32.	0.2	2
142	Motion Vision in Arthropods. , 0, , 319-344.		2
143	Neurophysiology: Recording from Neurons in Action. Current Biology, 2010, 20, R679-R680.	1.8	0
144	Correlation versus gradient type motion detectors: the pros and cons. , 0, , 63-73.		0

#	Article	IF	Citations
145	Das Bewegungssehen der Fliege: vom optischen Fluss zur visuellen Kurskontrolle. E-Neuroforum, 2012, 18, 246-253.	0.2	0
146	Visual Motion Detection in Drosophila. , 2013, , 1-15.		0
147	Visual Motion Detection in Drosophila. , 2022, , 3568-3581.		0