Alexander Borst

List of Publications by Year
in descending order

147 papers	12,272 citations	26626 56 h-index	30920 102 g-index
154 all docs	154 docs citations	154 times ranked	6595 citing authors

#	Article	IF	Citations
1	A biophysical account of multiplication by a single neuron. Nature, 2022, 603, 119-123.	27.8	54
2	Anatomical distribution and functional roles of electrical synapses in Drosophila. Current Biology, 2022, 32, 2022-2036.e4.	3.9	19
3	Visual Motion Detection in Drosophila. , 2022, , 3568-3581.		0
4	Maximally efficient prediction in the early fly visual system may support evasive flight maneuvers. PLoS Computational Biology, 2021, 17, e1008965.	3.2	9
5	Aerial course stabilization is impaired in motion-blind flies. Journal of Experimental Biology, 2021, 224, .	1.7	11
6	Neural mechanism of spatio-chromatic opponency in the Drosophila amacrine neurons. Current Biology, 2021, 31, 3040-3052.e9.	3.9	16
7	How fly neurons compute the direction of visual motion. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2020, 206, 109-124.	1.6	88
8	Optic flow-based course control in insects. Current Opinion in Neurobiology, 2020, 60, 21-27.	4.2	30
9	The neural network behind the eyes of a fly. Current Opinion in Physiology, 2020, 16, 33-42.	1.8	10
10	Seeing Natural Images through the Eye of a Fly with Remote Focusing Two-Photon Microscopy. IScience, 2020, 23, 101170.	4.1	5
11	Dynamic Signal Compression for Robust Motion Vision in Flies. Current Biology, 2020, 30, 209-221.e8.	3.9	48
12	A combinatorial code of transcription factors specifies subtypes of visual motion-sensing neurons in <i>Drosophila</i>. Development (Cambridge), 2020, 147, .	2.5	17
13	Conditional protein tagging methods reveal highly specific subcellular distribution of ion channels in motion-sensing neurons. ELife, 2020, 9, .	6.0	28
14	Extreme Compartmentalization in a Drosophila Amacrine Cell. Current Biology, 2019, 29, 1545-1550.e2.	3.9	48
15	Transcriptional control of morphological properties of direction-selective T4/T5 neurons in<i>Drosophila</i>. Development (Cambridge), 2019, 146, .	2.5	19
16	Non-uniform weighting of local motion inputs underlies dendritic computation in the fly visual system. Scientific Reports, 2018, 8, 5787.	3.3	3
17	Bi-directional Control of Walking Behavior by Horizontal Optic Flow Sensors. Current Biology, 2018, 28, 4037-4045.e5.	3.9	34
18	Glutamate Signaling in the Fly Visual System. IScience, 2018, 7, 85-95.	4.1	22

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19	A biophysical mechanism for preferred direction enhancement in fly motion vision. PLoS Computational Biology, 2018, 14, e1006240.	3.2	31
20	Transgenic line for the identification of cholinergic release sites in Drosophila melanogaster. Journal of Experimental Biology, 2017, 220, 1405-1410.	1.7	21
21	Visual Circuits for Direction Selectivity. Annual Review of Neuroscience, 2017, 40, 211-230.	10.7	147
22	The Temporal Tuning of the Drosophila Motion Detectors Is Determined by the Dynamics of Their Input Elements. Current Biology, 2017, 27, 929-944.	3.9	107
23	Optogenetic Neuronal Silencing in Drosophila during Visual Processing. Scientific Reports, 2017, 7, 13823.	3.3	53
24	Neural mechanisms underlying sensitivity to reverse-phi motion in the fly. PLoS ONE, 2017, 12, e0189019.	2.5	12
25	Efficient encoding of motion is mediated by gap junctions in the fly visual system. PLoS Computational Biology, 2017, 13, e1005846.	3.2	14
26	A common directional tuning mechanism of Drosophila motion-sensing neurons in the ON and in the OFF pathway. ELife, 2017, 6, .	6.0	39
27	Electrophysiological Recordings from Lobula Plate Tangential Cells in Drosophila. Methods in Molecular Biology, 2016, 1478, 321-332.	0.9	7
28	Comprehensive Characterization of the Major Presynaptic Elements to the Drosophila OFF Motion Detector. Neuron, 2016, 89, 829-841.	8.1	98
29	Asymmetry of Drosophila ON and OFF motion detectors enhances real-world velocity estimation. Nature Neuroscience, 2016, 19, 706-715.	14.8	75
30	RNA-Seq Transcriptome Analysis of Direction-Selective T4/T5 Neurons in Drosophila. PLoS ONE, 2016, 11, e0163986.	2.5	23
31	Complementary mechanisms create direction selectivity in the fly. ELife, 2016, 5, .	6.0	87
32	Local motion detectors are required for the computation of expansion flow-fields. Biology Open, 2015, 4, 1105-1108.	1.2	42
33	Neural Mechanisms for Drosophila Contrast Vision. Neuron, 2015, 88, 1240-1252.	8.1	41
34	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.	1.6	5
35	Neural Circuit to Integrate Opposing Motions in the Visual Field. Cell, 2015, 162, 351-362.	28.9	111
36	Common circuit design in fly and mammalian motion vision. Nature Neuroscience, 2015, 18, 1067-1076.	14.8	191

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37	Functional Specialization of Neural Input Elements to the Drosophila ON Motion Detector. Current Biology, 2015, 25, 2247-2253.	3.9	57
38	Neural Circuits for Motion Vision in the Fly. Cold Spring Harbor Symposia on Quantitative Biology, 2014, 79, 131-139.	1.1	15
39	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.	1.6	20
40	Neural Circuit Components of the Drosophila OFF Motion Vision Pathway. Current Biology, 2014, 24, 385-392.	3.9	60
41	Neural Circuits for Elementary Motion Detection. Journal of Neurogenetics, 2014, 28, 361-373.	1.4	13
42	Optogenetic and Pharmacologic Dissection of Feedforward Inhibition in<i>Drosophila</i>Motion Vision. Journal of Neuroscience, 2014, 34, 2254-2263.	3.6	94
43	In search of the holy grail of fly motion vision. European Journal of Neuroscience, 2014, 40, 3285-3293.	2.6	26
44	Fly visual course control: behaviour, algorithms and circuits. Nature Reviews Neuroscience, 2014, 15, 590-599.	10.2	135
45	A directional tuning map of Drosophila elementary motion detectors. Nature, 2013, 500, 212-216.	27.8	327
46	Optogenetic Control of Fly Optomotor Responses. Journal of Neuroscience, 2013, 33, 13927-13934.	3.6	83
47	Dendritic End Inhibition in Large-Field Visual Neurons of the Fly. Journal of Neuroscience, 2013, 33, 3659-3667.	3.6	5
48	Object tracking in motion-blind flies. Nature Neuroscience, 2013, 16, 730-738.	14.8	146
49	Functional Specialization of Parallel Motion Detection Circuits in the Fly. Journal of Neuroscience, 2013, 33, 902-905.	3.6	63
50	Preserving Neural Function under Extreme Scaling. PLoS ONE, 2013, 8, e71540.	2.5	31
51	Visual Motion Detection in Drosophila. , 2013, , 1-15.		0
52	Visual Flight Control of a Quadrotor Using Bioinspired Motion Detector. International Journal of Navigation and Observation, 2012, 2012, 1-9.	0.8	5
53	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.	1.6	18
54	Insect-inspired high-speed motion vision system for robot control. Biological Cybernetics, 2012, 106, 453-463.	1.3	11

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55	Disentangling the functional consequences of the connectivity between optic-flow processing neurons. Nature Neuroscience, 2012, 15, 441-448.	14.8	24
56	Das Bewegungssehen der Fliege: vom optischen Fluss zur visuellen Kurskontrolle. E-Neuroforum, 2012, 18, 246-253.	0.1	0
57	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.	1.6	99
58	Bio-inspired visual ego-rotation sensor for MAVs. Biological Cybernetics, 2012, 106, 51-63.	1.3	35
59	Internal Structure of the Fly Elementary Motion Detector. Neuron, 2011, 70, 1155-1164.	8.1	159
60	Seeing Things in Motion: Models, Circuits, and Mechanisms. Neuron, 2011, 71, 974-994.	8.1	223
61	ON and OFF Pathways in Drosophila Motion Detection. E-Neuroforum, 2011, 17, 30-32.	0.1	2
62	Candidate Glutamatergic Neurons in the Visual System of Drosophila. PLoS ONE, 2011, 6, e19472.	2.5	59
63	The TREES Toolboxâ€"Probing the Basis of Axonal and Dendritic Branching. Neuroinformatics, 2011, 9, 91-96.	2.8	73
64	Neurons with cholinergic phenotype in the visual system of <i>Drosophila</i>. Journal of Comparative Neurology, 2011, 519, 162-176.	1.6	34
65	Flight Activity Alters Velocity Tuning of Fly Motion-Sensitive Neurons. Journal of Neuroscience, 2011, 31, 9231-9237.	3.6	114
66	Neural Action Fields for Optic Flow Based Navigation: A Simulation Study of the Fly Lobula Plate Network. PLoS ONE, 2011, 6, e16303.	2.5	30
67	Neurophysiology: Recording from Neurons in Action. Current Biology, 2010, 20, R679-R680.	3.9	0
68	ON and OFF pathways in Drosophila motion vision. Nature, 2010, 468, 300-304.	27.8	303
69	Visualizing retinotopic half-wave rectified input to the motion detection circuitry of Drosophila. Nature Neuroscience, 2010, 13, 973-978.	14.8	95
70	Central gating of fly optomotor response. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 20104-20109.	7.1	67
71	Coding Efficiency of Fly Motion Processing Is Set by Firing Rate, Not Firing Precision. PLoS Computational Biology, 2010, 6, e1000860.	3.2	18
72	One Rule to Grow Them All: A General Theory of Neuronal Branching and Its Practical Application. PLoS Computational Biology, 2010, 6, e1000877.	3.2	340

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73	Fly Motion Vision. Annual Review of Neuroscience, 2010, 33, 49-70.	10.7	305
74	Spatiotemporal Response Properties of Optic-Flow Processing Neurons. Neuron, 2010, 67, 629-642.	8.1	19
75	Robust Coding of Ego-Motion in Descending Neurons of the Fly. Journal of Neuroscience, 2009, 29, 14993-15000.	3.6	42
76	Drosophila's View on Insect Vision. Current Biology, 2009, 19, R36-R47.	3.9	170
77	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.	1.6	38
78	Different receptive fields in axons and dendrites underlie robust coding in motion-sensitive neurons. Nature Neuroscience, 2009, 12, 327-332.	14.8	54
79	Synaptic Organization of Lobula Plate Tangential Cells in<i>Drosophila:</i>DÎ±7 Cholinergic Receptors. Journal of Neurogenetics, 2009, 23, 200-209.	1.4	29
80	Contour-propagation algorithms for semi-automated reconstruction of neural processes. Journal of Neuroscience Methods, 2008, 167, 349-357.	2.5	61
81	An FPGA implementation of insect-inspired motion detector for high-speed vision systems. , 2008, , .		28
82	A genetically encoded calcium indicator for chronic in vivo two-photon imaging. Nature Methods, 2008, 5, 805-811.	19.0	458
83	Response Properties of Motion-Sensitive Visual Interneurons in the Lobula Plate of Drosophila melanogaster. Current Biology, 2008, 18, 368-374.	3.9	186
84	Nonlinear Integration of Binocular Optic Flow by DNOVS2, A Descending Neuron of the Fly. Journal of Neuroscience, 2008, 28, 3131-3140.	3.6	56
85	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.	3.6	430
86	Electrical Coupling of Lobula Plate Tangential Cells to a Heterolateral Motion-Sensitive Neuron in the Fly. Journal of Neuroscience, 2008, 28, 14435-14442.	3.6	23
87	The Morphological Identity of Insect Dendrites. PLoS Computational Biology, 2008, 4, e1000251.	3.2	92
88	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.	7.1	53
89	Integration of Lobula Plate Output Signals by DNOVS1, an Identified Premotor Descending Neuron. Journal of Neuroscience, 2007, 27, 1992-2000.	3.6	78
90	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.	8.1	2

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91	Correlation versus gradient type motion detectors: the pros and cons. Philosophical Transactions of the Royal Society B: Biological Sciences, 2007, 362, 369-374.	4.0	37
92	Reciprocal inhibitory connections within a neural network for rotational optic-flow processing. Frontiers in Neuroscience, 2007, 1, 111-121.	2.8	22
93	Adaptation and Information Transmission in Fly Motion Detection. Journal of Neurophysiology, 2007, 98, 3309-3320.	1.8	17
94	Synaptic organization of lobula plate tangential cells inDrosophila: Î³-Aminobutyric acid receptors and chemical release sites. Journal of Comparative Neurology, 2007, 502, 598-610.	1.6	43
95	Relating a calcium indicator signal to the unperturbed calcium concentration time-course. Theoretical Biology and Medical Modelling, 2007, 4, 7.	2.1	15
96	A FRET-Based Calcium Biosensor with Fast Signal Kinetics and High Fluorescence Change. Biophysical Journal, 2006, 90, 1790-1796.	0.5	276
97	Nonlinear, binocular interactions underlying flow field selectivity of a motion-sensitive neuron. Nature Neuroscience, 2006, 9, 1312-1320.	14.8	59
98	Propagation of photon noise and information transfer in visual motion detection. Journal of Computational Neuroscience, 2006, 20, 167-178.	1.0	6
99	Heterogeneity in synaptic transmission along a Drosophila larval motor axon. Nature Neuroscience, 2005, 8, 1188-1196.	14.8	98
100	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.	1.6	41
101	Sharing Receptive Fields with Your Neighbors: Tuning the Vertical System Cells to Wide Field Motion. Journal of Neuroscience, 2005, 25, 3985-3993.	3.6	52
102	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.	7.1	107
103	In Vivo Performance of Genetically Encoded Indicators of Neural Activity in Flies. Journal of Neuroscience, 2005, 25, 4766-4778.	3.6	187
104	Neural mechanism underlying complex receptive field properties of motion-sensitive interneurons. Nature Neuroscience, 2004, 7, 628-634.	14.8	97
105	Quantifying variability in neural responses and its application for the validation of model predictions. Network: Computation in Neural Systems, 2004, 15, 91-109.	3.6	80
106	Quantifying variability in neural responses and its application for the validation of model predictions. Network: Computation in Neural Systems, 2004, 15, 91-109.	3.6	43
107	Noise, not stimulus entropy, determines neural information rate. Journal of Computational Neuroscience, 2003, 14, 23-31.	1.0	24
108	Adaptation of response transients in fly motion vision. II: Model studies. Vision Research, 2003, 43, 1311-1324.	1.4	66

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109	Neural image processing by dendritic networks. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 11082-11085.	7.1	42
110	Input Organization of Multifunctional Motion-Sensitive Neurons in the Blowfly. Journal of Neuroscience, 2003, 23, 9805-9811.	3.6	33
111	Dendro-Dendritic Interactions between Motion-Sensitive Large-Field Neurons in the Fly. Journal of Neuroscience, 2002, 22, 3227-3233.	3.6	63
112	Different Mechanisms of Calcium Entry Within Different Dendritic Compartments. Journal of Neurophysiology, 2002, 87, 1616-1624.	1.8	32
113	Neural networks in the cockpit of the fly. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2002, 188, 419-437.	1.6	242
114	Spatial Distribution of Low- and High-Voltage-Activated Calcium Currents in Neurons of the Deep Cerebellar Nuclei. Journal of Neuroscience, 2001, 21, RC158-RC158.	3.6	42
115	Mechanisms of Dendritic Calcium Signaling in Fly Neurons. Journal of Neurophysiology, 2001, 85, 439-447.	1.8	32
116	Recurrent Network Interactions Underlying Flow-Field Selectivity of Visual Interneurons. Journal of Neuroscience, 2001, 21, 5685-5692.	3.6	68
117	Effects of mean firing on neural information rate. Journal of Computational Neuroscience, 2001, 10, 213-221.	1.0	48
118	Direction selectivity in ganglion cells: pre or post?. Nature Neuroscience, 2001, 4, 119-120.	14.8	7
119	Cholinergic and GABAergic pathways in fly motion vision. BMC Neuroscience, 2001, 2, 1.	1.9	24
120	Models of motion detection. Nature Neuroscience, 2000, 3, 1168-1168.	14.8	36
121	Spatial Distribution and Characteristics of Voltage-Gated Calcium Signals Within Visual Interneurons. Journal of Neurophysiology, 2000, 83, 1039-1051.	1.8	42
122	Local current spread in electrically compact neurons of the fly. Neuroscience Letters, 2000, 285, 123-126.	2.1	18
123	Information theory and neural coding. Nature Neuroscience, 1999, 2, 947-957.	14.8	914
124	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: III. Visual response properties. Journal of Computational Neuroscience, 1999, 7, 213-234.	1.0	59
125	Dendritic Integration and Its Role in Computing Image Velocity. , 1998, 281, 1848-1850.		169
126	Active Membrane Properties and Signal Encoding in Graded Potential Neurons. Journal of Neuroscience, 1998, 18, 7972-7986.	3.6	62

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127	Dendritic Computation of Direction Selectivity and Gain Control in Visual Interneurons. Journal of Neuroscience, 1997, 17, 6023-6030.	3.6	81
128	Encoding of Visual Motion Information and Reliability in Spiking and Graded Potential Neurons. Journal of Neuroscience, 1997, 17, 4809-4819.	3.6	93
129	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: II. Active membrane properties. Journal of Computational Neuroscience, 1997, 4, 349-368.	1.0	58
130	Synapse distribution on VCH, an inhibitory, motion-sensitive interneuron in the fly visual system. Journal of Comparative Neurology, 1997, 381, 489-499.	1.6	41
131	The intrinsic electrophysiological characteristics of fly lobula plate tangential cells: I. Passive membrane properties. Journal of Computational Neuroscience, 1996, 3, 313-336.	1.0	111
132	Amplification of high-frequency synaptic inputs by active dendritic membrane processes. Nature, 1996, 379, 639-641.	27.8	99
133	Mechanisms of dendritic integration underlying gain control in fly motion-sensitive interneurons. Journal of Computational Neuroscience, 1995, 2, 5-18.	1.0	116
134	Dendritic processing of synaptic information by sensory interneurons. Trends in Neurosciences, 1994, 17, 257-263.	8.6	40
135	Are there separate ON and OFF channels in fly motion vision?. Visual Neuroscience, 1992, 8, 151-164.	1.0	58
136	Dendritic integration of motion information in visual interneurons of the blowfly. Neuroscience Letters, 1992, 140, 173-176.	2.1	65
137	How Do Flies Land?. BioScience, 1990, 40, 292-299.	4.9	58
138	The role of GABA in detecting visual motion. Brain Research, 1990, 509, 156-160.	2.2	49
139	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.	1.5	169
140	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.	1.5	240
141	Principles of visual motion detection. Trends in Neurosciences, 1989, 12, 297-306.	8.6	451
142	Visual information processing in the fly's landing system. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1988, 163, 167-173.	1.6	53
143	<i>Drosophila</i>Mushroom Body Mutants are Deficient in Olfactory Learning. Journal of Neurogenetics, 1985, 2, 1-30.	1.4	664
144	Computation of olfactory signals inDrosophila melanogaster. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1983, 152, 373-383.	1.6	43

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145	Osmotropotaxis inDrosophila melanogaster. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1982, 147, 479-484.	1.6	103
146	Correlation versus gradient type motion detectors: the pros and cons. , 0, , 63-73.		0
147	Motion Vision in Arthropods. , 0, , 319-344.		2