Karel Svoboda

List of Publications by Year
in descending order

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132 papers	50,214 citations	4658 85 h-index	14759 127 g-index
183 all docs	183 docs citations	183 times ranked	32442 citing authors

#	Article	IF	Citations
1	A midbrain-thalamus-cortex circuit reorganizes cortical dynamics to initiate movement. Cell, 2022, 185, 1065-1081.e23.	28.9	83
2	Neural Algorithms and Circuits for Motor Planning. Annual Review of Neuroscience, 2022, 45, 249-271.	10.7	28
3	A hybrid open-top light-sheet microscope for versatile multi-scale imaging of cleared tissues. Nature Methods, 2022, 19, 613-619.	19.0	54
4	Attractor dynamics gate cortical information flow during decision-making. Nature Neuroscience, 2021, 24, 843-850.	14.8	83
5	High-fidelity estimates of spikes and subthreshold waveforms from 1-photon voltage imaging inÂvivo. Cell Reports, 2021, 35, 108954.	6.4	24
6	Neuropixels 2.0: A miniaturized high-density probe for stable, long-term brain recordings. Science, 2021, 372, .	12.6	467
7	Targeted photostimulation uncovers circuit motifs supporting short-term memory. Nature Neuroscience, 2021, 24, 259-265.	14.8	64
8	Accurate Localization of Linear Probe Electrode Arrays across Multiple Brains. ENeuro, 2021, 8, ENEURO.0241-21.2021.	1.9	16
9	EASI-FISH for thick tissue defines lateral hypothalamus spatio-molecular organization. Cell, 2021, 184, 6361-6377.e24.	28.9	72
10	The Mind of a Mouse. Cell, 2020, 182, 1372-1376.	28.9	127
11	A comparison of neuronal population dynamics measured with calcium imaging and electrophysiology. PLoS Computational Biology, 2020, 16, e1008198.	3.2	102
12	Recurrent interactions in local cortical circuits. Nature, 2020, 579, 256-259.	27.8	98
13	A general approach to engineer positive-going eFRET voltage indicators. Nature Communications, 2020, 11, 3444.	12.8	31
14	Rapid mesoscale volumetric imaging of neural activity with synaptic resolution. Nature Methods, 2020, 17, 291-294.	19.0	99
15	High throughput instrument to screen fluorescent proteins under two-photon excitation. Biomedical Optics Express, 2020, 11, 7192.	2.9	4
16	A comparison of neuronal population dynamics measured with calcium imaging and electrophysiology. , 2020, 16, e1008198.		0
17	A comparison of neuronal population dynamics measured with calcium imaging and electrophysiology. , 2020, 16, e1008198.		0
18	A comparison of neuronal population dynamics measured with calcium imaging and electrophysiology. , 2020, 16, e1008198.		0

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19	A comparison of neuronal population dynamics measured with calcium imaging and electrophysiology. , 2020, 16, e1008198.		0
20	Response to â€œFallacies of Mice Experimentsâ€• Neuroinformatics, 2019, 17, 475-478.	2.8	5
21	Bright and photostable chemigenetic indicators for extended in vivo voltage imaging. Science, 2019, 365, 699-704.	12.6	362
22	Kilohertz frame-rate two-photon tomography. Nature Methods, 2019, 16, 778-786.	19.0	122
23	Recruitment of GABAergic Interneurons in the Barrel Cortex during Active Tactile Behavior. Neuron, 2019, 104, 412-427.e4.	8.1	150
24	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.	28.9	352
25	High-performance calcium sensors for imaging activity in neuronal populations and microcompartments. Nature Methods, 2019, 16, 649-657.	19.0	843
26	Prediction of Choice from Competing Mechanosensory and Choice-Memory Cues during Active Tactile Decision Making. Journal of Neuroscience, 2019, 39, 3921-3933.	3.6	28
27	Discrete attractor dynamics underlies persistent activity in the frontal cortex. Nature, 2019, 566, 212-217.	27.8	235
28	An orderly single-trial organization of population dynamics in premotor cortex predicts behavioral variability. Nature Communications, 2019, 10, 216.	12.8	26
29	Functional clustering of dendritic activity during decision-making. ELife, 2019, 8, .	6.0	115
30	Spatiotemporal constraints on optogenetic inactivation in cortical circuits. ELife, 2019, 8, .	6.0	150
31	Genetic Dissection of Neural Circuits: A Decade of Progress. Neuron, 2018, 98, 256-281.	8.1	374
32	Low-Dimensional and Monotonic Preparatory Activity in Mouse Anterior Lateral Motor Cortex. Journal of Neuroscience, 2018, 38, 4163-4185.	3.6	83
33	Circuits in the Rodent Brainstem that Control Whisking in Concert with Other Orofacial Motor Actions. Neuroscience, 2018, 368, 152-170.	2.3	57
34	Neural mechanisms of movement planning: motor cortex and beyond. Current Opinion in Neurobiology, 2018, 49, 33-41.	4.2	259
35	Thy1 transgenic mice expressing the red fluorescent calcium indicator jRGECO1a for neuronal population imaging in vivo. PLoS ONE, 2018, 13, e0205444.	2.5	73
36	A cortico-cerebellar loop for motor planning. Nature, 2018, 563, 113-116.	27.8	321

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37	Distinct descending motor cortex pathways and their roles in movement. Nature, 2018, 563, 79-84.	27.8	320
38	Shared and distinct transcriptomic cell types across neocortical areas. Nature, 2018, 563, 72-78.	27.8	1,323
39	Anterolateral Motor Cortex Connects with a Medial Subdivision of Ventromedial Thalamus through Cell Type-Specific Circuits, Forming an Excitatory Thalamo-Cortico-Thalamic Loop via Layer 1 Apical Tuft Dendrites of Layer 5B Pyramidal Tract Type Neurons. Journal of Neuroscience, 2018, 38, 8787-8797.	3.6	56
40	Dynamic cues for whisker-based object localization: An analytical solution to vibration during active whisker touch. PLoS Computational Biology, 2018, 14, e1006032.	3.2	10
41	Maintenance of persistent activity in a frontal thalamocortical loop. Nature, 2017, 545, 181-186.	27.8	428
42	A Map of Anticipatory Activity in Mouse Motor Cortex. Neuron, 2017, 94, 866-879.e4.	8.1	204
43	Neural signatures of dynamic stimulus selection in Drosophila. Nature Neuroscience, 2017, 20, 1104-1113.	14.8	113
44	Fully integrated silicon probes for high-density recording of neural activity. Nature, 2017, 551, 232-236.	27.8	1,531
45	An International Laboratory for Systems and Computational Neuroscience. Neuron, 2017, 96, 1213-1218.	8.1	60
46	Mechanisms underlying a thalamocortical transformation during active tactile sensation. PLoS Computational Biology, 2017, 13, e1005576.	3.2	41
47	Sensitive red protein calcium indicators for imaging neural activity. ELife, 2016, 5, .	6.0	813
48	A large field of view two-photon mesoscope with subcellular resolution for in vivo imaging. ELife, 2016, 5, .	6.0	495
49	Robust neuronal dynamics in premotor cortex during motor planning. Nature, 2016, 532, 459-464.	27.8	380
50	Flow of Information Underlying a Tactile Decision in Mice. Research and Perspectives in Neurosciences, 2016, , 35-41.	0.4	0
51	Layer 4 fast-spiking interneurons filter thalamocortical signals during active somatosensation. Nature Neuroscience, 2016, 19, 1647-1657.	14.8	104
52	A platform for brain-wide imaging and reconstruction of individual neurons. ELife, 2016, 5, e10566.	6.0	355
53	Imaging the Neural Symphony. Cerebrum: the Dana Forum on Brain Science, 2016, 2016, .	0.1	2
54	Whisking. Current Biology, 2015, 25, R137-R140.	3.9	60

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55	A motor cortex circuit for motor planning and movement. Nature, 2015, 519, 51-56.	27.8	474
56	A Cellular Resolution Map of Barrel Cortex Activity during Tactile Behavior. Neuron, 2015, 86, 783-799.	8.1	304
57	Comprehensive imaging of cortical networks. Current Opinion in Neurobiology, 2015, 32, 115-123.	4.2	109
58	Dual-Channel Circuit Mapping Reveals Sensorimotor Convergence in the Primary Motor Cortex. Journal of Neuroscience, 2015, 35, 4418-4426.	3.6	87
59	Low-noise encoding of active touch by layer 4 in the somatosensory cortex. ELife, 2015, 4, .	6.0	74
60	Neural coding in barrel cortex during whisker-guided locomotion. ELife, 2015, 4, .	6.0	93
61	Procedures for Behavioral Experiments in Head-Fixed Mice. PLoS ONE, 2014, 9, e88678.	2.5	371
62	Flow of Cortical Activity Underlying a Tactile Decision in Mice. Neuron, 2014, 81, 179-194.	8.1	622
63	Natural Whisker-Guided Behavior by Head-Fixed Mice in Tactile Virtual Reality. Journal of Neuroscience, 2014, 34, 9537-9550.	3.6	129
64	Structural Plasticity within the Barrel Cortex during Initial Phases of Whisker-Dependent Learning. Journal of Neuroscience, 2014, 34, 6078-6083.	3.6	51
65	Thy1-GCaMP6 Transgenic Mice for Neuronal Population Imaging In Vivo. PLoS ONE, 2014, 9, e108697.	2.5	506
66	Ultrasensitive fluorescent proteins for imaging neuronal activity. Nature, 2013, 499, 295-300.	27.8	5,490
67	The Mechanical Variables Underlying Object Localization along the Axis of the Whisker. Journal of Neuroscience, 2013, 33, 6726-6741.	3.6	126
68	Organization of Cortical and Thalamic Input to Pyramidal Neurons in Mouse Motor Cortex. Journal of Neuroscience, 2013, 33, 748-760.	3.6	313
69	Neural coding during active somatosensation revealed using illusory touch. Nature Neuroscience, 2013, 16, 958-965.	14.8	228
70	Tapered whiskers are required for active tactile sensation. ELife, 2013, 2, e01350.	6.0	64
71	A Neuron-Based Screening Platform for Optimizing Genetically-Encoded Calcium Indicators. PLoS ONE, 2013, 8, e77728.	2.5	66
72	A Cre-Dependent GCaMP3 Reporter Mouse for Neuronal ImagingIn Vivo. Journal of Neuroscience, 2012, 32, 3131-3141.	3.6	341

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73	Activity in motorâ€“sensory projections reveals distributed coding in somatosensation. Nature, 2012, 489, 299-303.	27.8	314
74	Optimization of a GCaMP Calcium Indicator for Neural Activity Imaging. Journal of Neuroscience, 2012, 32, 13819-13840.	3.6	1,099
75	Nonlinear dendritic integration of sensory and motor input during an active sensing task. Nature, 2012, 492, 247-251.	27.8	464
76	Automated Tracking of Whiskers in Videos of Head Fixed Rodents. PLoS Computational Biology, 2012, 8, e1002591.	3.2	149
77	A toolbox of Cre-dependent optogenetic transgenic mice for light-induced activation and silencing. Nature Neuroscience, 2012, 15, 793-802.	14.8	1,153
78	Imaging Neocortical Neurons through a Chronic Cranial Window. Cold Spring Harbor Protocols, 2012, 2012, pdb.prot069617-pdb.prot069617.	0.3	44
79	Long-Range Neuronal Circuits Underlying the Interaction between Sensory and Motor Cortex. Neuron, 2011, 72, 111-123.	8.1	447
80	The Past, Present, and Future of Single Neuron Reconstruction. Neuroinformatics, 2011, 9, 97-98.	2.8	49
81	DIADEMchallenge.Org: A Compendium of Resources Fostering the Continuous Development of Automated Neuronal Reconstruction. Neuroinformatics, 2011, 9, 303-304.	2.8	31
82	Multiple new site-specific recombinases for use in manipulating animal genomes. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 14198-14203.	7.1	154
83	Laminar Analysis of Excitatory Local Circuits in Vibrissal Motor and Sensory Cortical Areas. PLoS Biology, 2011, 9, e1000572.	5.6	204
84	Neural Activity in Barrel Cortex Underlying Vibrissa-Based Object Localization in Mice. Neuron, 2010, 67, 1048-1061.	8.1	444
85	Learning-related fine-scale specificity imaged in motor cortex circuits of behaving mice. Nature, 2010, 464, 1182-1186.	27.8	409
86	Ephus: multipurpose data acquisition software for neuroscience experiments. Frontiers in Neural Circuits, 2010, 4, 100.	2.8	247
87	Vibrissa-Based Object Localization in Head-Fixed Mice. Journal of Neuroscience, 2010, 30, 1947-1967.	3.6	297
88	The Functional Properties of Barrel Cortex Neurons Projecting to the Primary Motor Cortex. Journal of Neuroscience, 2010, 30, 4256-4260.	3.6	88
89	The subcellular organization of neocortical excitatory connections. Nature, 2009, 457, 1142-1145.	27.8	903
90	Reverse engineering the mouse brain. Nature, 2009, 461, 923-929.	27.8	127

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91	Imaging neural activity in worms, flies and mice with improved GCaMP calcium indicators. Nature Methods, 2009, 6, 875-881.	19.0	1,759
92	Long-term, high-resolution imaging in the mouse neocortex through a chronic cranial window. Nature Protocols, 2009, 4, 1128-1144.	12.0	894
93	Experience-dependent structural synaptic plasticity in the mammalian brain. Nature Reviews Neuroscience, 2009, 10, 647-658.	10.2	1,569
94	Subcellular Dynamics of Type II PKA in Neurons. Neuron, 2009, 62, 363-374.	8.1	103
95	Sparse optical microstimulation in barrel cortex drives learned behaviour in freely moving mice. Nature, 2008, 451, 61-64.	27.8	488
96	The Spread of Ras Activity Triggered by Activation of a Single Dendritic Spine. Science, 2008, 321, 136-140.	12.6	377
97	[PL06]: Illuminating cortical synapses and circuits. International Journal of Developmental Neuroscience, 2008, 26, 828-828.	1.6	0
98	Genetic Dissection of Neural Circuits. Neuron, 2008, 57, 634-660.	8.1	714
99	Characterization and Subcellular Targeting of GCaMP-Type Genetically-Encoded Calcium Indicators. PLoS ONE, 2008, 3, e1796.	2.5	139
100	The Functional Microarchitecture of the Mouse Barrel Cortex. PLoS Biology, 2007, 5, e189.	5.6	199
101	Channelrhodopsin-2â€“assisted circuit mapping of long-range callosal projections. Nature Neuroscience, 2007, 10, 663-668.	14.8	846
102	Locally dynamic synaptic learning rules in pyramidal neuron dendrites. Nature, 2007, 450, 1195-1200.	27.8	531
103	Cell Type-Specific Structural Plasticity of Axonal Branches and Boutons in the Adult Neocortex. Neuron, 2006, 49, 861-875.	8.1	376
104	Principles of Two-Photon Excitation Microscopy and Its Applications to Neuroscience. Neuron, 2006, 50, 823-839.	8.1	923
105	Supersensitive Ras activation in dendrites and spines revealed by two-photon fluorescence lifetime imaging. Nature Neuroscience, 2006, 9, 283-291.	14.8	246
106	Spine growth precedes synapse formation in the adult neocortex in vivo. Nature Neuroscience, 2006, 9, 1117-1124.	14.8	506
107	Experience-dependent and cell-type-specific spine growth in the neocortex. Nature, 2006, 441, 979-983.	27.8	562
108	Rapid Redistribution of Synaptic PSD-95 in the Neocortex In Vivo. PLoS Biology, 2006, 4, e370.	5.6	308

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109	Nonlinear [Ca2+] Signaling in Dendrites and Spines Caused by Activity-Dependent Depression of Ca2+ Extrusion. Journal of Neuroscience, 2006, 26, 8183-8194.	3.6	101
110	Geometric and functional organization of cortical circuits. Nature Neuroscience, 2005, 8, 782-790.	14.8	236
111	Diverse Modes of Axon Elaboration in the Developing Neocortex. PLoS Biology, 2005, 3, e272.	5.6	204
112	Transient and Persistent Dendritic Spines in the Neocortex In Vivo. Neuron, 2005, 45, 279-291.	8.1	1,003
113	NMDA Receptor Subunit-Dependent [Ca2+] Signaling in Individual Hippocampal Dendritic Spines. Journal of Neuroscience, 2005, 25, 6037-6046.	3.6	239
114	Monitoring Neural Activity and [Ca2+] with Genetically Encoded Ca2+ Indicators. Journal of Neuroscience, 2004, 24, 9572-9579.	3.6	218
115	Precise Development of Functional and Anatomical Columns in the Neocortex. Neuron, 2004, 42, 789-801.	8.1	138
116	Induction of Spine Growth and Synapse Formation by Regulation of the Spine Actin Cytoskeleton. Neuron, 2004, 44, 321-334.	8.1	178
117	ScanImage: Flexible software for operating laser scanning microscopes. BioMedical Engineering OnLine, 2003, 2, 13.	2.7	1,126
118	Circuit Analysis of Experience-Dependent Plasticity in the Developing Rat Barrel Cortex. Neuron, 2003, 38, 277-289.	8.1	296
119	Structure and Function of Dendritic Spines. Annual Review of Physiology, 2002, 64, 313-353.	13.1	1,050
120	The Life Cycle of Ca2+ Ions in Dendritic Spines. Neuron, 2002, 33, 439-452.	8.1	652
121	Long-term in vivo imaging of experience-dependent synaptic plasticity in adult cortex. Nature, 2002, 420, 788-794.	27.8	1,706
122	Facilitation at single synapses probed with optical quantal analysis. Nature Neuroscience, 2002, 5, 657-664.	14.8	290
123	Rapid Development and Plasticity of Layer 2/3 Maps in Rat Barrel Cortex In Vivo. Neuron, 2001, 31, 305-315.	8.1	241
124	Experience-dependent plasticity of dendritic spines in the developing rat barrel cortex in vivo. Nature, 2000, 404, 876-881.	27.8	712
125	Analysis of calcium channels in single spines using optical fluctuation analysis. Nature, 2000, 408, 589-593.	27.8	255
126	Synaptic calcium transients in single spines indicate that NMDA receptors are not saturated. Nature, 1999, 399, 151-155.	27.8	293

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127	In vivo dendritic calcium dynamics in deep-layer cortical pyramidal neurons. Nature Neuroscience, 1999, 2, 989-996.	14.8	352
128	Spread of dendritic excitation in layer 2/3 pyramidal neurons in rat barrel cortex in vivo. Nature Neuroscience, 1999, 2, 65-73.	14.8	244
129	Rapid Spine Delivery and Redistribution of AMPA Receptors After Synaptic NMDA Receptor Activation. Science, 1999, 284, 1811-1816.	12.6	1,186
130	Photon Upmanship: Why Multiphoton Imaging Is More than a Gimmick. Neuron, 1997, 18, 351-357.	8.1	646
131	In vivo dendritic calcium dynamics in neocortical pyramidal neurons. Nature, 1997, 385, 161-165.	27.8	795
132	Reconstruction of 1,000 Projection Neurons Reveals New Cell Types and Organization of Long-Range Connectivity in the Mouse Brain. SSRN Electronic Journal, 0, , .	0.4	1