Israel Nelken

List of Publications by Year
in descending order

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123 papers	10,630 citations	38720 50 h-index	37183 96 g-index
129 all docs	129 docs citations	129 times ranked	7317 citing authors

#	Article	IF	Citations
1	Processing of low-probability sounds by cortical neurons. Nature Neuroscience, 2003, 6, 391-398.	7.1	906
2	Transient Induced Gamma-Band Response in EEG as a Manifestation of Miniature Saccades. Neuron, 2008, 58, 429-441.	3.8	690
3	Multiple Time Scales of Adaptation in Auditory Cortex Neurons. Journal of Neuroscience, 2004, 24, 10440-10453.	1.7	635
4	Modeling the auditory scene: predictive regularity representations and perceptual objects. Trends in Cognitive Sciences, 2009, 13, 532-540.	4.0	474
5	Functional mapping of single spines in cortical neurons in vivo. Nature, 2011, 475, 501-505.	13.7	360
6	Functional organization and population dynamics in the mouse primary auditory cortex. Nature Neuroscience, 2010, 13, 353-360.	7.1	327
7	Physiological and Anatomical Evidence for Multisensory Interactions in Auditory Cortex. Cerebral Cortex, 2007, 17, 2172-2189.	1.6	317
8	Responses of auditory-cortex neurons to structural features of natural sounds. Nature, 1999, 397, 154-157.	13.7	303
9	Tau impairs neural circuits, dominating amyloid-Î² effects, in Alzheimer models in vivo. Nature Neuroscience, 2019, 22, 57-64.	7.1	278
10	Reverse hierarchies and sensory learning. Philosophical Transactions of the Royal Society B: Biological Sciences, 2009, 364, 285-299.	1.8	240
11	Reduction of Information Redundancy in the Ascending Auditory Pathway. Neuron, 2006, 51, 359-368.	3.8	226
12	Stimulus-Specific Adaptation in the Auditory Thalamus of the Anesthetized Rat. PLoS ONE, 2010, 5, e14071.	1.1	215
13	Stimulus-Specific Adaptation and Deviance Detection in the Rat Auditory Cortex. PLoS ONE, 2011, 6, e23369.	1.1	209
14	Processing of complex stimuli and natural scenes in the auditory cortex. Current Opinion in Neurobiology, 2004, 14, 474-480.	2.0	207
15	Somatosensory effects on neurons in dorsal cochlear nucleus. Journal of Neurophysiology, 1995, 73, 743-765.	0.9	193
16	Functional Organization of Ferret Auditory Cortex. Cerebral Cortex, 2005, 15, 1637-1653.	1.6	189
17	Mismatch Negativity and Stimulus-Specific Adaptation in Animal Models. Journal of Psychophysiology, 2007, 21, 214-223.	0.3	187
18	Rescue of long-range circuit dysfunction in Alzheimer's disease models. Nature Neuroscience, 2015, 18, 1623-1630.	7.1	179

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19	Filters: When, Why, and How (Not) to Use Them. Neuron, 2019, 102, 280-293.	3.8	166
20	Ultra-fine frequency tuning revealed in single neurons of human auditory cortex. Nature, 2008, 451, 197-201.	13.7	157
21	Unraveling the principles of auditory cortical processing: can we learn from the visual system?. Nature Neuroscience, 2009, 12, 698-701.	7.1	145
22	Sensitivity to Complex Statistical Regularities in Rat Auditory Cortex. Neuron, 2012, 76, 603-615.	3.8	141
23	Stimulus-specific adaptation and deviance detection in the auditory system: experiments and models. Biological Cybernetics, 2014, 108, 655-663.	0.6	134
24	Encoding Stimulus Information by Spike Numbers and Mean Response Time in Primary Auditory Cortex. Journal of Computational Neuroscience, 2005, 19, 199-221.	0.6	130
25	Auditory Processing Deficits in Reading Disabled Adults. , 2002, 3, 302-320.		125
26	Primary auditory cortex of cats: feature detection or something else?. Biological Cybernetics, 2003, 89, 397-406.	0.6	124
27	Responses of Neurons in Cat Primary Auditory Cortex to Bird Chirps: Effects of Temporal and Spectral Context. Journal of Neuroscience, 2002, 22, 8619-8632.	1.7	115
28	Responses to linear and logarithmic frequency-modulated sweeps in ferret primary auditory cortex. European Journal of Neuroscience, 2000, 12, 549-562.	1.2	112
29	Local versus global scales of organization in auditory cortex. Trends in Neurosciences, 2014, 37, 502-510.	4.2	105
30	The Claustrum Supports Resilience to Distraction. Current Biology, 2018, 28, 2752-2762.e7.	1.8	105
31	Auditory Edge Detection: A Neural Model for Physiological and Psychoacoustical Responses to Amplitude Transients. Journal of Neurophysiology, 2001, 85, 2303-2323.	0.9	98
32	Low-Level Information and High-Level Perception: The Case of Speech in Noise. PLoS Biology, 2008, 6, e126.	2.6	96
33	Interplay between population firing stability and single neuron dynamics in hippocampal networks. ELife, 2015, 4, .	2.8	95
34	BACE inhibition-dependent repair of Alzheimerâ€™s pathophysiology. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 8631-8636.	3.3	93
35	Processing of complex sounds in the auditory system. Current Opinion in Neurobiology, 2008, 18, 413-417.	2.0	88
36	Responses of Neurons in Primary Auditory Cortex (A1) to Pure Tones in the Halothane-Anesthetized Cat. Journal of Neurophysiology, 2006, 95, 3756-3769.	0.9	85

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37	Representation of Tone in Fluctuating Maskers in the Ascending Auditory System. Journal of Neuroscience, 2005, 25, 1503-1513.	1.7	84
38	Population responses to multifrequency sounds in the cat auditory cortex: One- and two-parameter families of sounds. Hearing Research, 1994, 72, 206-222.	0.9	82
39	Detecting the unexpected. Current Opinion in Neurobiology, 2015, 35, 142-147.	2.0	79
40	Large-Scale Organization of Ferret Auditory Cortex Revealed Using Continuous Acquisition of Intrinsic Optical Signals. Journal of Neurophysiology, 2004, 92, 2574-2588.	0.9	73
41	Physiology of MPTP Tremor. Movement Disorders, 1998, 13, 29-34.	2.2	71
42	Auditory Neuroscience. , 2010, , .		70
43	The Representation of Prediction Error in Auditory Cortex. PLoS Computational Biology, 2016, 12, e1005058.	1.5	68
44	Intracellular Correlates of Stimulus-Specific Adaptation. Journal of Neuroscience, 2014, 34, 3303-3319.	1.7	66
45	Cortical processing of complex sound: a way forward?. Trends in Neurosciences, 2004, 27, 181-185.	4.2	65
46	Neurons and objects: the case of auditory cortex. Frontiers in Neuroscience, 2008, 2, 107-114.	1.4	62
47	Frequency discrimination and stimulus deviance in the inferior colliculus and cochlear nucleus. Frontiers in Neural Circuits, 2012, 6, 119.	1.4	62
48	Single neuron and population coding of natural sounds in auditory cortex. Current Opinion in Neurobiology, 2014, 24, 103-110.	2.0	62
49	Spectral Integration by Type II Interneurons in Dorsal Cochlear Nucleus. Journal of Neurophysiology, 1999, 82, 648-663.	0.9	61
50	Responses of Auditory Cortex to Complex Stimuli: Functional Organization Revealed Using Intrinsic Optical Signals. Journal of Neurophysiology, 2008, 99, 1928-1941.	0.9	60
51	Soundâ€evoked network calcium transients in mouse auditory cortex in vivo. Journal of Physiology, 2012, 590, 899-918.	1.3	60
52	Stimulus-specific adaptation in a recurrent network model of primary auditory cortex. PLoS Computational Biology, 2017, 13, e1005437.	1.5	60
53	Frequency Tuning in the Behaving Mouse: Different Bandwidths for Discrimination and Generalization. PLoS ONE, 2014, 9, e91676.	1.1	59
54	Linear and Nonlinear Spectral Integration in Type IV Neurons of the Dorsal Cochlear Nucleus. II. Predicting Responses With the Use of Nonlinear Models. Journal of Neurophysiology, 1997, 78, 800-811.	0.9	54

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55	The effects of background noise on the neural responses to natural sounds in cat primary auditory cortex. Frontiers in Computational Neuroscience, 2007, 1, 3.	1.2	54
56	Information theory in auditory research. Hearing Research, 2007, 229, 94-105.	0.9	53
57	Primary Auditory Cortex is Required for Anticipatory Motor Response. Cerebral Cortex, 2017, 27, 3254-3271.	1.6	53
58	Sound-Localization Experiments with Barn Owls in Virtual Space: Influence of Interaural Time Difference on Head-Turning Behavior. , 2001, 2, 1-21.		51
59	Processing of sounds by population spikes in a model of primary auditory cortex. Frontiers in Neuroscience, 2007, 1, 197-209.	1.4	49
60	In search of the best stimulus: An optimization procedure for finding efficient stimuli in the cat auditory cortex. Hearing Research, 1994, 72, 237-253.	0.9	44
61	Auditory abstraction from spectro-temporal features to coding auditory entities. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 18968-18973.	3.3	43
62	Early indices of deviance detection in humans and animal models. Biological Psychology, 2016, 116, 23-27.	1.1	43
63	InÂVivo Functional Mapping of a Cortical Column at Single-Neuron Resolution. Cell Reports, 2019, 27, 1319-1326.e5.	2.9	43
64	Elevated Correlations in Neuronal Ensembles of Mouse Auditory Cortex Following Parturition. Journal of Neuroscience, 2013, 33, 12851-12861.	1.7	40
65	Neural Model for Physiological Responses to Frequency and Amplitude Transitions Uncovers Topographical Order in the Auditory Cortex. Journal of Neurophysiology, 2003, 90, 3663-3678.	0.9	37
66	Relating cluster and population responses to natural sounds and tonal stimuli in cat primary auditory cortex. Hearing Research, 2001, 152, 110-127.	0.9	35
67	First Spike Latency Code for Interaural Phase Difference Discrimination in the Guinea Pig Inferior Colliculus. Journal of Neuroscience, 2011, 31, 9192-9204.	1.7	33
68	Population responses to multifrequency sounds in the cat auditory cortex: Four-tone complexes. Hearing Research, 1994, 72, 223-236.	0.9	32
69	Deviance sensitivity in the auditory cortex of freely moving rats. PLoS ONE, 2018, 13, e0197678.	1.1	32
70	Multiple Timescales Account for Adaptive Responses across Sensory Cortices. Journal of Neuroscience, 2019, 39, 10019-10033.	1.7	31
71	WHY DO CATS NEED A DORSAL COCHLEAR NUCLEUS?. Journal of Basic and Clinical Physiology and Pharmacology, 1996, 7, 199-220.	0.7	29
72	Blocking c-Fos Expression Reveals the Role of Auditory Cortex Plasticity in Sound Frequency Discrimination Learning. Cerebral Cortex, 2018, 28, 1645-1655.	1.6	29

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73	Single-neuron representation of learned complex sounds in the auditory cortex. Nature Communications, 2020, 11, 4361.	5.8	29
74	Stimulus uncertainty and perceptual learning: Similar principles govern auditory and visual learning. Vision Research, 2010, 50, 391-401.	0.7	28
75	Stimulus-Specific Adaptation Beyond Pure Tones. Advances in Experimental Medicine and Biology, 2013, 787, 411-418.	0.8	27
76	Linear and Nonlinear Spectral Integration in Type IV Neurons of the Dorsal Cochlear Nucleus. I. Regions of Linear Interaction. Journal of Neurophysiology, 1997, 78, 790-799.	0.9	26
77	Functional Gradients of Auditory Sensitivity along the Anterior Ectosylvian Sulcus of the Cat. Journal of Neuroscience, 2008, 28, 3657-3667.	1.7	23
78	Early multisensory integration of self and source motion in the auditory system. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 8308-8313.	3.3	20
79	Auditory Cortical Processing in Real-World Listening: The Auditory System Going Real. Journal of Neuroscience, 2014, 34, 15135-15138.	1.7	19
80	Context-Dependent Inhibitory Control of Stimulus-Specific Adaptation. Journal of Neuroscience, 2022, 42, 4629-4651.	1.7	19
81	Analysis of the activity of single neurons in stochastic settings. Biological Cybernetics, 1988, 59, 201-215.	0.6	17
82	An ear for statistics. Nature Neuroscience, 2013, 16, 381-382.	7.1	16
83	Responses of neurons in the inferior colliculus to binaural disparities: Insights from the use of Fisher information and mutual information. Journal of Neuroscience Methods, 2008, 169, 391-404.	1.3	14
84	Predictive information processing in the brain: The neural perspective. International Journal of Psychophysiology, 2012, 83, 253-255.	0.5	14
85	Emergence of abstract sound representations in the ascending auditory system. Progress in Neurobiology, 2021, 202, 102049.	2.8	14
86	â€˜Dynamics of neuronal interactionsâ€™ cannot be explained by â€˜neuronal transientsâ€™. Proceedings of the Royal Society B: Biological Sciences, 1995, 261, 407-410.	1.2	13
87	Using Tweedie distributions for fitting spike count data. Journal of Neuroscience Methods, 2014, 225, 13-28.	1.3	12
88	Stimulus-specific adaptation to behaviorally-relevant sounds in awake rats. PLoS ONE, 2020, 15, e0221541.	1.1	12
89	Feature Detection by the Auditory Cortex. Springer Handbook of Auditory Research, 2002, , 358-416.	0.3	12
90	The Neural Code That Makes Us Human. Science, 2014, 343, 978-979.	6.0	11

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91	Synthesizing spatially complex sound in virtual space: an accurate offline algorithm. Journal of Neuroscience Methods, 2001, 106, 29-38.	1.3	10
92	Neural correlates of binaural masking level difference in the inferior colliculus of the barn owl (Tyto alba). European Journal of Neuroscience, 2010, 32, 606-618.	1.2	10
93	Response to Letter: Melloni etÂal., â€œTransient Induced Gamma-Band Response in EEG as a Manifestation ofÂMiniature Saccades.â€•Neuron 58, 429â€“441. Neuron, 2009, 62, 10-12.	3.8	9
94	Evidence for Linear but Not Helical Automatic Representation of Pitch in the Human Auditory System. Journal of Cognitive Neuroscience, 2019, 31, 669-685.	1.1	9
95	Synaptic Recruitment Enhances Gap Termination Responses in Auditory Cortex. Cerebral Cortex, 2020, 30, 4465-4480.	1.6	9
96	Encoding by Response Duration in the Basal Ganglia. Journal of Neurophysiology, 2008, 100, 3244-3252.	0.9	7
97	Across-ear stimulus-specific adaptation in the auditory cortex. Frontiers in Neural Circuits, 2014, 8, 89.	1.4	7
98	The neuro-pianist. Frontiers in Systems Neuroscience, 2013, 7, 35.	1.2	6
99	Detection of Tones Masked by Fluctuating Noise in Rat Auditory Cortex. Cerebral Cortex, 2016, 27, 5130-5143.	1.6	6
100	Context Sensitivity across Multiple Time scales with a Flexible Frequency Bandwidth. Cerebral Cortex, 2021, 32, 158-175.	1.6	6
101	Auditory localization using direction-dependent spectral information. Neurocomputing, 2000, 32-33, 767-773.	3.5	5
102	Music and the Auditory Brain: Where is the Connection?. Frontiers in Human Neuroscience, 2011, 5, 106.	1.0	5
103	The Representation of Interaural Time Differences in High-Frequency Auditory Cortex. Cerebral Cortex, 2016, 26, bhu230.	1.6	5
104	From neurons to behavior: the view from auditory cortex. Current Opinion in Physiology, 2020, 18, 37-41.	0.9	5
105	Value-complexity tradeoff explains mouse navigational learning. PLoS Computational Biology, 2020, 16, e1008497.	1.5	5
106	Extrinsic rewards, intrinsic rewards, and non-optimal behavior. Journal of Computational Neuroscience, 2022, 50, 139-143.	0.6	4
107	Inhibitory Plasticity in Auditory Cortex. Neuron, 2009, 62, 605-607.	3.8	2
108	Acoustic recordings data from an echoic environment and a toolkit for its analysis. Data in Brief, 2018, 21, 1451-1457.	0.5	2

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109	Acoustic calibration in an echoic environment. Journal of Neuroscience Methods, 2018, 309, 60-70.	1.3	2
110	Processing Strategies in Auditory Cortex: Comparison with Other Sensory Modalities. , 2011, , 643-656.		2
111	Transformation of stimulus representations in the ascending auditory system. , 2005, , 264-273.		1
112	DYNAMICS OF COHERENCE IN CORTICAL NEURAL ACTIVITY: EXPERIMENTAL OBSERVATIONS AND FUNCTIONAL INTERPRETATIONS. International Journal of Neural Systems, 1992, 03, 105-114.	3.2	0
113	Recurrence Methods in the Analysis of Learning Processes. Neural Computation, 2001, 13, 1839-1861.	1.3	0
114	Context-Dependent Processing in Auditory Cortex. , 2013, , 1-3.		0
115	Information Processing in the Auditory System. , 2020, , 41-52.		0
116	Context-Dependent Processing in Auditory Cortex. , 2020, , 1-3.		0
117	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
118	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
119	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
120	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
121	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
122	Value-complexity tradeoff explains mouse navigational learning. , 2020, 16, e1008497.		0
123	Context-Dependent Processing in Auditory Cortex. , 2022, , 979-981.		0