Gabriel Kreiman http://klab.tch.harvard.edu

Professor
Children's Hospital Boston, Harvard Medical School
Center for Brain Science, Harvard University
Center for Brains, Minds and Machines
Kempner Institute for the Study of Natural and Artificial Intelligence
Gabriel.Kreiman@tch.harvard.edu
http://klab.tch.harvard.edu

Education

1991-1996	**B.Sc.** University of Buenos Aires. *Physical Chemistry* *(Argentine Chemistry Association summa cum laude)*
1998-2002	**M.Sc.** California Institute of Technology. *Computation and Neural Systems*. Advisor = Professor Christof Koch
1996-2002	**Ph.D.** California Institute of Technology. *Biology Division*. Advisor = Professor Christof Koch (Caltech best Ph.D. Award and Caltech best biology Ph.D. Award)
2002-2006	**Whiteman Science Fellow and McGovern Institute Fellow**. Massachusetts Institute of Technology. Dept. of Brain and Cognitive Science and Computation and Systems Biology Initiative. Advisor = Professor Tomaso Poggio.

Selected awards and honors

2000	Everhart Distinguished Graduate Student Lecture Award. Caltech.
2002	Lawrence L. and Audrey W. Ferguson Prize, Caltech. Best Biology Ph.D. Thesis.
2002	Milton and Francis Clauser Doctoral Prize, Caltech. Best Ph.D. Thesis.
2003	MIT Dean of Science Whiteman Fellowship
2007	Children's Hospital Boston Career Development Award
2008	Klingenstein Fund Award
2008	Whitehall Foundation Award
2009	NIH New Innovator Award
2010	NSF Career Award
2010	Career Development Award, Society for Neuroscience
2015	Pisart Award for Vision Research
2017	McKnight Award for Neuroscience

Publications

Google scholar: https://scholar.google.com/citations?user=WxZ_6nsAAAAJ&hl=en

Books

1. Kreiman G. **Biological and Computer Vision**. Cambridge University Press, 2021.
2. Fried I, Rutishauser U, Cerf M and Kreiman G, editors. **Single neuron studies of the human brain. Probing cognition**. MIT Press, 2014.
3. Kriegeskorte N and Kreiman G, editors. **Understanding visual population codes**. MIT Press, 2011.

Peer-reviewed primary publications

1. Hidalgo D, Dellaferrera G, Xiao W, Papadopouli M, Smirnakis S, Kreiman G. **Trial-by-trial inter-areal interactions in visual cortex in the presence or absence of visual stimulation**. *eLife*.
2. Zhang M, Dellaferrera G, Sikarwar A, Armendariz M, Mudrik N, Agrawal P, Madan S, Barbu A, Yang H, Kumar T, Sadwani M, Dellaferrera S, Pizzochero M, Pfister H, Kreiman G. **Can machines imitate humans? Integrative Turing tests for vision and language demonstrate a narrowing gap**. *Nature Human Behavior*, under review.
3. Casile A, Cordier A, Kim JG, Cometa A, Madsen JR, Stone S, Ben-Yosef G, Ullman S, Anderson W, Kreiman (2025). **Neural correlates of minimal recognizable configurations in the human brain**. *Cell Reports, 44:115429*.

4. Ferrante O, Gorska U, Henin S, Hirschhorn R, Khalaf A, Lepauvre A, Liu L, Richter D, Vidal Y, Bonacchi N, Brown T, Sripad P, Armendariz M, Bendtz K, Ghafari T, Hetenyi D, Jeschke J, Kozma C, Mazumder DR, Montenegro S, Seedat A, Sharafeldin A, Yang, S, Baillet S, Chalmers DJ, Cichy RM, Fallon F, Panagiotaropoulos TI, Blumenfeld H, de Lange FP, Devore S, Jensen O, Kreiman G, Luo H, Boly M, Dehaene S, Koch C, Tononi G, Pitts M, Mudrik L, Melloni L (2025). **An adversarial collaboration to critically evaluate theories of consciousness**. *Nature, In Press.*
5. Talbot, MB, Zawar R, Badkundri R, Zhang M, Kreiman G. (2025). **Tuned compositional feature replays for efficient stream learning**. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS) 36(2):3300-3314*
6. Shang J, Kreiman G, Sompolinsky H (2025). **Unraveling the geometry of visual relational reasoning**. *arXiv* 2502.17382
7. Melloni L, Lepauvre A, Seedat A, Jeschke J, Gorska-Klimowska U, Armendariz M, Bendtz K, Henin S, Hirschhorn JN, Brown T, Jensen E, Kozma C, Mazumder D, Montenegro S, Yu L, Bonacchi N, Das D, Kahraman K, Sripad P, Taheriyan F, Devinsky O, Dugan P, Doyle W, Flinker A, Friedman D, Lake W, Pitts M, Mudrik L, Boly M, Devore S, Kreiman G (2025). **Open multi-center intracranial electroencephalography dataset with task probing conscious visual perception**. *Scientific Data*, In Press.
8. Bono S, Madan S, Grover I, Yasueda M, Breazeal C, Pfister H, Kreiman G (2025). **The indoor training effect: unexpected gains from distribution shifts in the transition function**. *AAAI Conference on Artificial Intelligence*.
9. Talbot MB, Kreiman G, DiCarlo JJ, Gaziv G (2025). **L-WISE: Boosting human image category learning through model-based image selection and enhancement**. *International Conference on Learning Representations* (ICLR)
10. Xiao W, Sharma S, Kreiman G, Livingstone MS (2024) **Feature-selective responses in macaque visual cortex follow eye movements during natural vision**. *Nature Neuroscience* 6:1157-1166
11. Li C, Kreiman G, Ramanathan S (2024). **Discovering neural policies to drive behavior by integrating deep reinforcement learning agents with biological neural networks**. *Nature Machine Intelligence*, 6:726–738
12. Madan S, Xiao W, Cao M, Pfister H, Livingstone M, Kreiman G. (2024). **Benchmarking out-of-distribution generalization capabilities of DNN-based encoding models for the ventral visual cortex**. *NeurIPS*.
13. Wang C, Yaari A, Singh A, Subramaniam V, Rosenfarb D, Misra P, Madsen J, Stone S, Kreiman G, Katz B, Cases I, Barbu A (2024). **Brain treebank: Large-scale intracranial recordings from naturalistic language stimuli**. *NeurIPS*.
14. Zheng J, Yebra M, Schjetnan AGP, Mosher C, Kalia A, Chung JM, Reed CM, Valiante TA, Mamelak A, Kreiman G, Rutishauser U (2024). **Theta phase precession supports memory formation and retrieval of naturalistic experience in humans**. *Nature Human Behavior*
15. Li C, Brenner JW, Boesky A, Ramanathan S, Kreiman G (2024). **Neuron-level prediction and noise can implement flexible reward-seeking behavior**. *bioRxiv* 2024.05.22.595306
16. Subramaniam V, Conwell C, Wang C, Kreiman G, Katz B, Cases I, Barbu A (2024). **Revealing vision-language integration in the brain with multimodal networks**. *International Conference on Machine Learning (ICML).*
17. Djambazovska S, Zafer A, Ramezanpour H, Kreiman G, Kar K (2024). **The impact of scene context on visual object recognition: comparing humans, monkeys, and computational models**. *bioRxiv* 2024.05.27.596127
18. Hidalgo D, Dellaferrera G, Xiao W. Papadopouli M, Smirnakis SM, Kreiman G (2024). **Trial-by-trial inter-areal interactions in visual cortex in the presence or absence of visual stimulation**. *bioRxiv*, 2024.12.05.626981
19. Misra P, Shih Y, Yu H, Weisholtz D, Madsen J, Sceillig, S, Kreiman G (2024). **Invariant neural representation of parts of speech in the human brain**. *bioRxiv* 2024.01.15.575788.
20. Srinivasan RF, Mignacco F, Sorboro M, Refinetti M, Cooper A, Kreiman G, Dellaferrera G. (2024). **Forward learning with top-down feedback: empirical and analytical characterization**. *International Conference on Learning Representations (ICLR)*.
21. Madan S, Li Y, Zhang M, Pfister H, Kreiman G. (2024). **Improving generalization by mimicking the human visual diet**. *bioRxiv* 2206.07802
22. Singh P, Li Y, Sikarwar A, Lei W, Gao D, Talbot MB, Sun Y, Shou MZ, Kreiman G, Zhang M. (2023). Learning to Learn: **How to Continuously Teach Humans and Machines**. *International Conference on Computer Vision (ICCV)*.
23. Aghajan Z, Kreiman G, Fried I (2023). **Minute-scale periodicity of neuronal firing in the human**

entorhinal cortex. *Cell Reports 42, 113271*.

24. Xiao Y, Sanchez Lopez P, Wu R, Wei PH, Shan YZ, Weisholtz D, Cosgrove GR, Madsen JR, Stone S, Zhao GG, Kreiman G (2023). **Integration of recognition, episodic, and associative memories during complex human behavior**. *bioRxiv* 2023.03.27.534384
25. Bricken T, Davies A, Singh D, Krotov D, Kreiman G. (2023) **Sparse distributed memory is a continual learner**. *International Conference on Learning Representations (ICLR)*
26. Wang C, Subramaniam V, Yaari A, Kreiman G, Katz B, Cases I, Barbu A. (2023). **BrainBERT: Self-supervised representation learning for Intracranial Electrodes**. *International Conference on Learning Representations (ICLR)*
27. Bricken T, Schaeffer R, Olshausen B, Kreiman G. (2023) **Emergence of Sparse Representations from Noise**. *International Conference on Machine Learning (ICML)*
28. Xiao Y, Chou C, Cosgrove GR, Crone NE, Stone S, Madsen JR, Reucroft I, Weisholtz D, Shih YC, Yu HY, Anderson WS, Kreiman G (2023) **Cross-task specificity and within-task invariance of cognitive control processes**. *Cell Reports* 42:111919
29. Zhang Y, Aghajan ZM, Ison M, Lu Q, Tang H, Kalender G, Monsoor T, Zheng J, Kreiman G, Roychowdhury V, Fried I (2023). **Decoding of human identity by computer vision and neuronal vision**. *Scientific Reports* 13:651
30. Melloni L, Mudrik L, Pitts M, Bentz K, Ferrante O, Gorska U, Hirschhorn R, Khalaf A, Kozma C, Lepauvre A, Liu L, Mazumder D, Richter D, Zhou H, Blumenfeld H, Chalmers DJ, Devore S, Fallon F, de Lange F, Jensen O, Kreiman G, Luo H, Dehaene S, Koch C, Tononi G (2023). **An adversarial collaboration protocol for testing contrasting predictions of global neuronal workspace and integrated information theory**. *PLoS One*
31. Casper S, Nadeau M, Kreiman G. (2022). ***Robust feature-level adversaries are interpretability tools***. *NeurIPS 35, 33093-33106*
32. Zhang M, Dellaferrera G, Sikarwar A, Armendariz M, Mudrik N, Agrawal P, Madan S, Barbu A, Yang H, Kumar T, Sadwani M, Dellaferrera S, Pizzochero M, Pfister H, Kreiman G (2022). **Human or Machine? Turing Tests for Vision and Language**. *arXiv* 2211.13087
33. Liu X, Sikarwar A, Lim JH, Kreiman G, Shi Z, Zhang M (2022). **Reason from context with self-supervised learning**. *arXiv* 2211.12817
34. Ding Z, Ren X, David E, Vo Melissa, Kreiman G, Zhang M (2022). **Efficient Zero-shot Visual Search via Target and Context-aware Transformer**. *arXiv* 2211.13470
35. Bardon A, Xiao W, Ponce CR, Livingstone MS, Kreiman G (2022). **Face neurons encode nonsemantic features**. *Proceedings of the National Academy of Sciences of the United States of America* 119, e2118705119, doi:10.1073/pnas.2118705119.
36. Zhang M, Armendariz M, Xiao W, Rose O, Bendtz K, Livingstone M, Ponce CR, Kreiman G (2022). **Look Twice: A Computational Model of Return Fixations across Tasks and Species**. *PLoS Comp Bio* 18(11):e1010654
37. Zheng J, Schjetnan AGP, Yebra M, Mosher C, Kalia S, Valiante TA, Mamelak A, Kreiman G, Rutishauser U (2022). **Cognitive boundary signals in the human medial temporal lobe shape episodic memory representation**. *Nature Neuroscience* 25:358-368
38. Hoogsteen KMP, Szpiro S, Kreiman G, Peli E (2022). **Beyond the Cane: Describing Urban Scenes to Blind People for Mobility Tasks**. *ACM Transactions on Accessible Computing* 2022-09-3
39. Shaham N, Chandra J, Kreiman G, Sompolinsky H (2022). **Stochastic consolidation of lifelong memory**. *Scientific Reports*, 12:13107
40. Murugan R, Kreiman G (2022). **Multiple transcription autoregulatory loops act as robust oscillators and decision making motifs**. *Computational and Structural Biotechnology Journal* 20:5115-5135
41. Dellaferrera G, Kreiman G (2022). **Error-driven Input Modulation: Solving the Credit Assignment Problem without a Backward Pass**. *International Conference on Machine Learning (ICML)*. 162:4937-4955
42. Sikarwar, A, Kreiman G (2022). **On the efficacy of co-attention transformer layers in visual question answering**. *arXiv* 2201.03965.
43. Gupta SK, Zhang M, Wu CC, Wolfe JM, Kreiman G (2021). **Visual Search Asymmetry: Deep Nets and Humans Share Similar Inherent Biases**. *NeurIPS* 34:6946-6959
44. Weisholtz, DS, Kreiman G, Silbersweig DA, Stern E, Cha B, Butler T (2021). **Localized Task-Invariant Emotional Valence Encoding Revealed by Intracranial Recordings**. *Soc Cogn Affect Neurosci*, doi:10.1093/scan/nsab134
45. Wang J, Tao A, Anderson WS, Madsen JR, Kreiman G (2021). **Mesoscopic physiological interactions in the human brain reveal small world properties**. *Cell Reports* 36 (8) 109585
46. Bomatter P, Zhang M, Karev D, Madan S, Tseng C, Kreiman G (2021). **When Pigs Fly: Contextual**

Reasoning in Synthetic and Natural Scenes. *International Conference on Computer Vision (ICCV)*

47. Casper S, Boix X, D'Amario V, Guo L, Schrimpf M, Vinken K, Kreiman G. (2021). **Frivolous Units: Wider Networks are not really that Wide**. *AAAI Conference on Artificial Intelligence*
48. Vinken K, Boix X, Kreiman G (2020). **Incorporating intrinsic suppression in deep neural network models captures dynamics of adaptation in neurophysiology and perception**. *Science Advances*, 6: eabd4205
49. Xiao W. and Kreiman G. (2020). **XDream: Finding preferred stimuli for visual neurons using generative networks and gradient-free optimization**. *PLoS Computational Biology* 16(6): e1007973
50. Lotter W, Kreiman G, Cox D. (2020) **A neural network trained to predict future video frames mimics critical properties of biological neuronal responses and perception**. *Nature Machine Intelligence*, 2:210-219
51. Zhang M, Tseng C, Kreiman G. (2020) **Putting visual object recognition in context**. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)* 12985-12994.
52. Jacquot V, Ying J, Kreiman G. (2020) **Can Deep Learning Recognize Subtle Human Activities?** *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)* 14244-14253.
53. Ben-Yosef G, Kreiman G, Ullman S. (2020) **Minimal videos: Trade-off between spatial and temporal information in human and machine vision**. *Cognition* 201:104263.
54. Yuan L, Xiao W, Kreiman G, Tay FEH, Feng, JL, Livingstone, M (2020). **Adversarial images for the primate brain**. *arXiv*. 2011.05623
55. Olson J, Kreiman G. (2020). **Simple learning rules generate complex canonical circuits**. *arXiv*:2009.06118
56. Ponce C.R., Xiao W., Schade P.F., Hartmann T.S., Kreiman G., Livingstone M. (2019). **Evolving Images for Visual Neurons Using a Deep Generative Network Reveals Coding Principles and Neuronal Preferences.** *Cell*, 177:999-1009.
57. Madhavan R, Bansal AK, Madsen JR, Golby AJ, Tierney TS, Eskandar EN, Anderson WS, Kreiman G (2019). **Neural interactions underlying visuomotor associations in the human brain**. *Cerebral Cortex*, 29:4551-4567
58. O'Connel TP, Chun MM, Kreiman G. (2019) **Zero-shot neural decoding of visual categories without prior exemplars**. *bioRxiv* 10.1101/700344
59. Zhang M, Tseng C, Montejo K, Kwon J, Kreiman G. **Lift-the-flap: what, where and when for context reasoning**. *arXiv* 1902.00163
60. Misra P, Marconi A, Kreiman G. (2018) **Minimal memory for details in real life events**. *Scientific Reports*, 8, 16701.
61. Tang H, Schrimpf M, Lotter W, Moerman C, Paredes A, Ortega Caro J, Hardesty W, Cox D, Kreiman G. (2018) **Recurrent computations for visual pattern completion**. *PNAS*, 115:8835-884.
62. Zhang M, Feng J, Ma KT, Lim JH, Zhao Q, Kreiman G. (2018) **Finding any Waldo: zero-shot invariant and efficient visual search**. *Nature Communications*, 9:3730.
63. Zhang M, Feng J, Lim JH, Zhao Q, Kreiman G. (2018) **What am I searching for?** *arXiv* 1807.11926
64. Palepu A, Premananthan CS, Azhar F, Vendrame M, Loddenkemper T, Reinsberger C, Kreiman G, Parkerson K, Sarma VS, Anderson WS (2018). **Development of automated interictal spike detector**. *IEEE Engineering in Medicine and Biology Society*.
65. Wu K, Wu E, Kreiman G (2018). **Learning scene gist with convolutional neural networks to improve object recognition**. *IEEE Information Sciences and Systems*.
66. Isik I, Singer J, Madsen JR, Kanwisher N, Kreiman G (2018). **What is changing when: Decoding visual information in movies from human intracranial recordings**. *Neuroimage*, 180:147-159.
67. Lotter, W, Kreiman, G, Cox, D. (2017) **Deep Predictive Coding Networks for Video Prediction and Unsupervised Learning**. *International Conference on Learning Representations (ICLR).*
68. Cheney N, Schrimpf M, Kreiman G. (2017) **On the Robustness of Convolutional Neural Networks to Internal Architecture and Weight Perturbations**. *arXiv*:1703.08245v1
69. Gomez-Laberge C, Smolyanskaya S, Nassi JJ, Kreiman G, Born R (2016). **Bottom-up and Top-down Input Augment the Variability of Cortical Neurons**. *Neuron*, 91:540-547.
70. Kreiman G. (2016). **A null model for cortical representations with grandmothers galore**. *Language, Cognition and Neuroscience*, 32, 274-285.
71. Tang H, Singer J, Ison M, Pivazyan G, Romaine M, Frias R, Meller E, Boulin A, Carroll J Perron V, Dowcett S, Arellano M, Kreiman G (2016). **Predicting episodic memory formation for movie events**. *Scientific Reports*, 6:30175.
72. Lotter W, Kreiman G, Cox D (2016). **Unsupervised Learning of Visual Structure using Predictive Generative Networks**. *International Conference on Learning Representations (ICLR)*

73. Tang S, Hemberg M, Cansizoglu E, Belin S, Kosik K, Kreiman G, Steen H, Steen J. (2016) **f-divergence Cutoff Index to Simultaneously Identify Differential Expression in the Integrated Transcriptome and Proteome**. *Nucleic Acids Research*. 44:e97.
74. Tang H, Yu H, Chou C, Crone N, Masen J, Anderson W, Kreiman G (2016) **Cascade of neural processing orchestrates cognitive control in human frontal cortex**. *eLife* e123532.
75. Miconi T., Groomes L. & Kreiman G (2016). **There's Waldo! A Normalization Model of Visual Search Predicts Single-Trial Human Fixations in an Object Search Task**. *Cerebral Cortex*, 26:3064-82
76. Madhavan R, Millman D, Tang H, Crone NE, Lenz FA, Tierney TS, Madsen JR, Kreiman G, Anderson WS. (2015). **Decrease in gamma-band activity tracks sequence learning**. *Front Syst Neurosci*. 8:222.
77. Singer JM, Madsen JR, Anderson WS, Kreiman G. (2015). **Sensitivity to timing and order in human visual cortex**. *Journal of Neurophysiology* 113:1656-69
78. Prabakaran S, Hemberg M, Chauhan R, Winter D, Tweedie-Cullen RY, Dittrich C, Hong E, Gunawardena J, Steen H, Kreiman G, Steen JA. (2014). **Quantitative profiling of peptides from RNAs classified as noncoding**. *Nature Communications*. 18;5:5429.
79. Singer JM, Kreiman G. (2014). **Short temporal asynchrony disrupts visual object recognition**. Journal of Vision 14:7.
80. Tang H, Buia C, Madhavan R, Crone NE, Madsen JR, Anderson WS, Kreiman G. (2014) **Spatiotemporal dynamics underlying object completion in human ventral visual cortex**. *Neuron, 6:736-748*.
81. Bansal A, Madhavan R, Agam Y, Golby A, Madsen J and Kreiman G (2014). **Neural dynamics underlying target detection in the human brain**. *Journal of Neuroscience*, 34:3042-3055
82. Nassi J, Gomez-Laberge C, Kreiman G, Born R (2014). **Corticocortical feedback increases the spatial extent of normalization**. *Frontiers in Systems Neuroscience*, 8:105.
83. Singer JM, Kreiman G (2014). **Short temporal asynchrony disrupts visual object recognition**. *Journal of Vision*, 12:14
84. Murugan R and Kreiman G (2012). **Theory on the coupled stochastic dynamics of transcription and splice-site recognition**. *PLoS Computational Biology*, 8:1-13.
85. Bansal, A, Singer J, Anderon WS, Golby, A, Madsen JR, Kreiman G (2012). **Temporal stability of visually selective responses in intracranial field potentials recorded from human occipital and temporal lobes**. *Journal of Neurophysiology,* 108:3073-3086.
86. Hemberg M, Gray JM, Cloonan N, Kuersten S, Grimmond S, Greenberg ME, Kreiman G (2012). **Integrated genome analysis suggests that most conserved non-coding sequences are regulatory factor binding sites**. Nucleic Acids Research, 40:7858-7869.
87. Burbank K and Kreiman G (2012). **Depression-biased reverse plasticity rule is required for stable learning at top-down connections**. *PLOS Computational Biology*, 8:1-16.
88. Fried I, Mukamel R, Kreiman G (2011). **Internally generated preactivation of single neurons in human medial frontal cortex predicts volition**. *Neuron*, 69: 548-562.
89. Kreiman G and Maunsell J (2011). **Nine criteria for a measure of scientific output**. *Frontiers in Computational Neuroscience*, 2011. 5:48.
90. Murugan R and Kreiman G (2011). **On the minimization of fluctuations in the response times of autoregulatory gene networks**. *Biophysical Journal*, 101: 1297-1306.
91. Hemberg M and Kreiman G (2011). **Conservation of transcription factor binding events predicts gene expression across species**. *Nucleic Acids Research,* 39:7092-7102.
92. Agam Y, Liu H, Pappanastassiou A, Buia C, Golby AJ, Madsen JR, Kreiman G (2010). **Robust selectivity to two-object images in human visual cortex**. *Current Biology,* 20:872-879.
93. Kim TK*, Hemberg M*, Gray JM*, Costa A, Bear DM, Wu J, Harmin DA, Laptewicz, M, Barbara-Haley K, Kuersten S, Markenscoff-Papadimitriou E, Kuhl D, Bito H, Worley PF, Kreiman G, Greenberg ME (2010). **Widespread transcription at thousands of enhancers during activity-dependent gene expression in neurons**. (* = equal contribution) *Nature*, 465:182-187.
94. Rasch M, Logothetis NK, Kreiman G (2009). **From neurons to circuits: linear estimation of local field potentials**. *Journal of Neuroscience* 29:13785-13796
95. Horng S, Kreiman G, Ellsworth C, Page D, Blank M, Millen K, Sur M (2009). **Differential Gene Expression in the Developing Lateral Geniculate Nucleus and Medial Geniculate Nucleus Reveals Novel Roles for Zic4 and Foxp2 in Visual and Auditory Pathway Development**. *Journal of Neuroscience,* 29:13672-13683
96. Liu H, Agam Y, Madsen JR, Kreiman G (2009). **Timing, timing, timing: Fast decoding of object information from intracranial field potentials in human visual cortex**. *Neuron* 62:281-290
97. Meyers E, Freedman D, Kreiman G, Miller E, Poggio T (2008). **Dynamic Population Coding of Category Information in ITC and PFC**. *Journal of Neurophysiology,* 100: 1407-1419
98. Leamey C., Glendining K., Kreiman G., Kang N., Kuan H., Fassler R., Sawatari A., Tonegawa S., and Sur

M (2008). **Differential Gene Expression between Sensory Neocortical Areas: Potential Roles for Ten_m3 and Bcl6 in Patterning Visual and Somatosensory Pathways**. *Cerebral Cortex* 18:53-66

99. Tropea D, Kreiman G, Lyckman AW, Mukherjee S, Yu H, Horng S, Sur M (2006). **Distinct gene systems mediating activity-dependent plasticity in visual cortex**. *Nature Neuroscience 9:660-668*

100. Kreiman G*, Hung C*, Kraskov A, Quiroga R, Poggio T, DiCarlo J (2006). **Object selectivity by local field potentials in the macaque inferior temporal cortex**. *Neuron 49:433-445* (*=equal contribution)

101. Hung C*, Kreiman G*, Poggio T, DiCarlo J (2005). **Fast read-out of object identity from macaque inferior temporal cortex**. *Science 310:863-866.* (*=equal contribution)

102. Quian-Quiroga R, Reddy L, Kreiman G, Koch C, Fried I (2005). **Invariant visual representation by single neurons in the human brain**. *Nature 435:1102-1107*

103. Kreiman G (2004). **Identification of sparsely distributed clusters of cis-regulatory elements in sets of co-expressed genes**. *Nucleic Acids Research* 32:2889-2900

104. Su AI, Wiltshire T, Batalov S, Lapp H, Ching KA, Block D, Zhang J, Soden R, Hayakawa M, Kreiman G, Cooke MP, Walker JR and Hogenesch JB (2004). **A gene atlas of the mouse and human protein-encoding transcriptomes**. *PNAS* 101:6062-6067

105. Yeo G., Holste D., Kreiman G. and Burge C (2004). **Variation in alternative splicing across human tissues**. *Genome Biology*, 5:R74

106. Kreiman G, Fried I, Koch C (2002). **Single neuron responses in the human brain during flash suppression**. *PNAS* 99:8378-8383

107. Krahe R., Kreiman G**.**, Gabbiani F., Koch C. and Metzner W (2002). **Stimulus encoding and feature extraction by multiple pyramidal cells in the hindbrain of weakly electric fish**. *J. Neuroscience* 22:2374-2382

108. Zirlinger M., Kreiman G**.** and Anderson D (2001). **Amygdala-enriched genes identified by microarray technology are restricted to specific amygdaloid sub-nuclei**. *PNAS* 98**:**5270-5275

109. Kreiman G**.**, Koch C. and Fried I (2000). **Imagery neurons in the human brain**. *Nature* 408**:**357-361.

110. Kreiman G**.**, Krahe R., Metzner W., Koch C. and Gabbiani F (2000). **Robustness and variability of neuronal coding by amplitude sensitive afferents in the weakly electric fish *Eigenmannia***. *J. Neurophysiology* 84**:**189-204

111. Kreiman G**.**, Koch C. and Fried I (2000). **Category-specific visual responses of single neurons in the human medial temporal lobe**. *Nature Neuroscience* 3**:**946-953

112. Ouyang Y., Rosenstein A., Kreiman G., Schuman E. M. and Kennedy M. B (1999). **Tetanic stimulation leads to increased accumulation of CaMKII via dendritic protein synthesis in hippocampal neurons**. *Journal of Neuroscience* 19**:**7823-7833.

113. Inon de Iannino N., Briones G., Kreiman G. and Ugalde R (1996). **Characterization of the biosynthesis of β(1-2) cyclic glucan in *R. Freddii*.** *Cell. Mol.. Biol.* 42**:**617-629

Reviews

1. Triggiani, AI, Kreiman G, Lewis C, Maoz U, Mele A, Mudrik L, Roskies A, Schurger A, Hallett M (2023). **What is the intention to move and when does it occur?** *Neuroscience and Behavioral Reviews,* 105199
2. Kreiman G and Serre T (2020). **Beyond the feedforward sweep: feedback computations in the visual cortex**. *Ann N Y Acad Sci*. 1464:222-241.
3. Blumberg J. and Kreiman, G. (2010). **How cortical neurons help us see: visual recognition in the human brain**. *Journal of Clinical Investigation* 120:3054-3063.
4. Quian Quiroga R, Kreiman G (2010). **Measuring sparseness in the brain**. *Psych. Reviews*, 17:291-297
5. Quian Quiroga R, Kreiman G, Koch C, Fried I. (2008). **Sparse but not 'Grandmother-cell' coding in the medial temporal lobe**. *Trends in Cognitive Science* 12, 87-91
6. Kreiman G (2007). **Single neuron approaches to human vision and memory**. *Current Opinion in Neurobiology* 17:471-475
7. Serre T, Kreiman G, Kouh M, Cadieu C, Knoblich U, Poggio T (2007). **A quantitative theory of immediate visual recognition**. *Progress In Brain Research* 165C: 33-56.
8. Serre T, Kouh M, Cadieu C, Knoblich U, Kreiman G, Poggio T. (2005) A theory of object recognition **MIT AI Memo** 2005-036.
9. Crick F, Koch C, Kreiman G, Fried I (2004). **Consciousness and neurosurgery**. *Neurosurgery* 55*:273-282*
10. Kreiman G (2004). Neural coding: computational and biophysical perspectives. *Physics of Life Reviews*, 2:71-102.
11. Rees G., Kreiman G**.** and Koch C (2002). **Neural correlates of consciousness in humans**. *Nature*

Reviews Neuroscience 3:261-270

Book chapters

1. Xiao W, Zhang M, Kreiman G (2023). **Artificial intelligence in neuroscience**. Chater 10 in Neuroscience for Neurousrgeons, edited by Akter F, Emptage N, Engert F, and Berger M. Cambridge University Press.
2. Kreiman G (2019). **What do neurons really want? The role of semantics in cortical representations**. In Psychology of Learning and Motivation, Volume 70. Chapter 8.
3. Tang H, Kreiman G. (2017). **Recognition of occluded objects**. In Computational and Cognitive Neuroscience of Vision. (ed Zhao, Q). Singapore: Springer-Verlag.
4. Rutishauser U., Cerf M. & Kreiman G. **Data analysis techniques for human microwire recordings: spike detection and sorting, decoding, relation between units and local field potentials**. In Single neuron studies of the human brain. Probing cognition. (eds I Fried, U Rutishauser, M Cerf, & G Kreiman) Ch 6, (MIT Press, 2014).
5. Mormann F, Ison M, Quiroga RQ, Koch C, Fried I, Kreiman G. **Visual cognitive adventures of single neurons in the human medial temporal lobe**. In Single neuron studies of the human brain. Probing cognition. (eds I Fried, U Rutishauser, M Cerf, & G Kreiman) Ch. 8, (MIT Press, 2014).
6. Kreiman G., Rutishauser U, Cerf M. & Fried I. **The next ten years and beyond. In Single neuron studies of the human brain**. Probing cognition. (eds I Fried, U Rutishauser, M Cerf, & G Kreiman) Ch. 19, (MIT Press, 2014).
7. Kreiman G. **Neural correlates of consciousness: perception and volition**. In Cognitive Neuroscience Vol. V (ed M Gazzaniga) (MIT Press, In Press).
8. Kreiman G. **Computational Models of Visual Object Recognition**. In Principles of neural coding (eds S Panzeri & R Quiroga) (CRC Press, 2013).
9. Burbank K, Kreiman G. **Introduction to the Anatomy and Function of Visual Cortex** (Chapter 17). In Kriegeskorte N and Kreiman G, eds. Understanding visual population codes. MIT Press. 2011
10. Singer J, Kreiman G. **Introduction to Statistical Learning and Pattern Classification** (Chapter 18). In Kriegeskorte N and Kreiman G, eds. Understanding visual population codes. MIT Press. 2011
11. Meyers E, Kreiman G. **Tutorial on Pattern Classification in Cell Recording** (Chapter 19). In Kriegeskorte N and Kreiman G, eds. Understanding visual population codes. MIT Press. 2011
12. Kreiman G. **Models of visual recognition**. (Chapter 29) In "Principles of neural coding', edited by Quiroga and Panzeri. CRC Press, 2013.
13. Kreiman G, Fried I, Koch C. (2005) **Responses of single neurons in the human brain during flash suppression**. Ch.12, "*Binocular Rivalry*", edited by Alais/Blake, ***MIT Press***. [Book chapter]
14. Kreiman G. **Single cell studies, human**. In Encyclopedia of Consciousness, P. Wilken, ed. (Oxford, Oxford University Press). 2010

Commentaries

1. Kreiman G (2023). **Neural coding: Stimulating cortex to alter visual perception**. 33, R117-R118. *Current Biology* 33:R117-R118
2. Armendariz M, Xiao W, Vinken K, Kreiman G (2022). **Do computational models of vision need shape-based representations? Evidence from an individual with intriguing visual perceptions**. *Cognitive Neuropsychology* 39:75-77.
3. Zhang M and Kreiman G. (2021) **Beauty is in the eye of the machine**. *Nature Human Behavior*, 5(6): 675-676
4. Kreiman G. (2019) **It's a small dimensional world after all**. Comment on "The unreasonable effectiveness of small neural ensembles in high-dimensional brains" by Gorban et al. *Physics of Life Reviews* 29:96-97.
5. Kreiman G (2013). **Mind the quantum?** *Trends in Cognitive Science*, 17(3): 109
6. Kreiman G. **Literary inspiration**. *Nature*, 2011. **475**:453-454.
7. Tang H, Kreiman G (2011). **Face Recognition: Vision and Emotions beyond the Bubble**. Current Biology 21:R888-890
8. Anderson WS and Kreiman G. (2011). **Neuroscience: What We Cannot Model, We Do Not Understand**. Current Biology. 21: R124-R125.
9. Singer J, Kreiman G (2009). **Toward unmasking the dynamics of visual perception**. *Neuron*. 64:446-447.
10. Tsuchiya N, Kreiman G. (2008). **Psyche, attention and consciousness**. *Psyche* 14, 1-2.

11. Kreiman G. (2008). **Biological object recognition**. *Scholarpedia* 3, 2667.
12. Kreiman G, (2007) **Neuroscience: from the very large to the very small**. *Current Biology*, 17:R768-R770
13. Kreiman G. (2001). **Moveo ergo sum**. *BioEssays* 23:662.

Teaching

2018-2025	Harvard. HMS 140/240. Biological and Artificial Intelligence
2014-2025	MBL, Woods. Brains, Minds and Machines Summer Course
2007-2024	Harvard. HMS 130/230. Visual Object Recognition
2010-2024	Harvard Biophysics 300
2022, 2024	Harvard HMS MedSci302qc. Responsible conduct in science
2009-2012	Harvard HMS204. Neurophysiology of Central Circuits. (Wilson, Born)
2008-2012	Harvard. MCB145 (Uchida)
2004-2005	MIT IAP class: The quest for consciousness
2003	MIT 7.3444 Genomics and bioinformatics of transcription (with U.Ohler)
1998-1999	Caltech CNS/Bi 163

Patents

20090297573 Identifying and Modulating Molecular Pathways that Mediate Nervous System Plasticity (with Mriganka Sur and Daniela Tropea)

Mentorship

Full list (current position when known, faculty, start-up, other)

Postdocs: Yigal Agam (now: Associate Director of Bioinformatics, Fluent Biosciences), William Anderson (now: Associate Professor, Johns Hopkins School of Medicine), Marcelo Armendariz (current), Frederico Azevedo (now: Postdoc, MIT), Feraz Azhar (now: Assistant Professor, University of Notre Dame), Arjun Bansal (now: co-founder and vice-president, Nervana Systems/Intel/Log10), Katarina Bendtz (now: R&D at Novatron Fusion Group), Xavier Boix (now: Research Scientist, Fujitsu), Calin Buia (now: GM Pace Consulting), Kendra Burbank (now: Assistant Senior Instructional Professor, University of Chicago), Camille Gomez-Laberge (now: Associate Teaching Professor, Northeastern University), Martin Hemberg (now: Associate Professor, Harvard Medical School), Leyla Isik (now: Assistant Professor, Johns Hopkins University), Jiye Kim (now: Research Scientist, DeepHealth), Hesheng Liu (now: Assosciate Professor, MGH), Radhika Madhavan (now: Senior Scientist, GE Global Research), Thomas Miconi (now: Research Leader, Uber AI), Rajamanickam Murugan (now: Professor, IIT Madras), Carlos Ponce (now: Assistant Professor, Harvard Medical School), Nimrod Shaham (now: Research leader, MobileEye), Jed Singer (now: Data Scientist, Infinite Analytics), Sarit Szpiro (now: Assistant Professor, University of Haifa), Kasper Vinken (now: Senior Researcher, Fujitsu Research), Daniel Weisholtz (now: Instructor, Harvard Medical School), Mengmi Zhang (now: Assistant Professor, University of Singapore), Jie Zheng (now: Assistant Professor, University of California, Davis).

Ph.D. students: Trenton Bricken (current), Julie Blumberg (U. Freiburg, now: Instructor, University of Freiburg), Giorgia Dellaferrera (now: McKinsey Consulting), Emma Giles (now: Founder and CEO, SoWork), Dianna Hidalgo (current), William Lotter (now: Founder DeepHealth, Assistant Professor, Harvard Medical School), Chenguang Li (current), Spandan Madan (current), David Mazumder (now: graduate student at HMS), Ethan Meyers (now Assistant Professor, Hampshire College and Visiting Professor, Yale University), Kim Minnyung (current), Pranav Misra (current), Joseph Olson (now: Postdoc, U. Alabama), Elisa Pavarino (current), Leonardo Pollina (current), Shane Shang (current), Morgan Talbot (current), Hanlin Tang (now: Founder and CTO, MosaicML), Jerry Wang (now: Postdoc, Boehringer, Germany), Yuchen Xiao (now: Assistant Professor, Westlake University), Will Xiao (now: Postdoc, Harvard Medical School), Mengmi Zhang (now: Assistant Professor, University of Singapore),

Masters students: Phillipe Bommater, Serena Bono (now: PhD student, MIT), Aurelie Cordier, Sara Djambazovska, Camille Gollety, Stephan Grzelkowski, Marana Hakobyan, Eleonora Iaselli (now: Technology consulting analyst, Accenture), Vincent Jacquot (Engineer, Merck Group), Alexandre Luster, Charlotte Moermann (Clinical affairs manager, Compremium), Alice Motschi (now: PhD student, Medical University of Vienna), Leonardo Pollina (now: PhD student, EPFL), Yael Porte (now: Clinical evaluator, Biotronik), Paula Sanchez

Lopez, Martin Schrimpf (now: Assistant Professor, EPFL), Ravi Srinivasan (now: PhD student, UC Berkeley), Matthias Tsai (now: PhD student, University of Bern), Eric Wu, Kevin Wu, Zihao Xu.

MD students: Laura Groomes, Wui Ip, Nambi Nallasamy,

Undergraduate students (selected list) from Harvard, MIT, Boston College, Emmanuel College, Northeastern University, Caltech, Princeton, Johns Hopkins University (including current position where known): Stephen Casper, Alexander Davies, Victoria Eisenhauer, Ilai Gavish, Deepak Singh, Warren Sunada-Wong, Arielle Benico, Josiah Ryan, Allison Rosenberg, Joanna Li, Iulia Neagu (Grad. Student, Harvard University), Brenda Li, Jasmine Yan, Ben Tsuda (Associate Computational Biologist, Broad Institute), Enrique Tobis (Tools Developer, Two Sigma Investments), Vanesa Tan (Engineer Manager, Quora), Andre Souffrant (Quality Assurance Automation Engineer, HealthFortis), Melissa Romaine, Gnel Pivazyan (MD student, Keck School of Medicine), Patricia Pedreira (Research Assistant, University of Miami), Jessie Pascal, Nida Nashaud, Nambi Nallasami (Ophthalmology Resident, Duke Medical School), Elizabeth Meller, Daniel Lopez Martinez (Grad. Student at MIT, Dept. of CBE), Frank Maldonado (Analyst at Peter J Solomon Company), Randall Lin (Research Engineer at Halo Neuroscience), Hoey Lim, Ishika Kulatilaka, Phil Kuhnke (Grad. Student at University of Trento, Program in Cognitive Neuroscience), Andrew Kim, Tessa Kaslewicz (Neurologic Music Therapist, MT-BC), Sandra Hernandez, Rosa Frias (Research Technician, MGH), McKayla Finneran (Clinical Assistant, Dana Farber Cancer Institute), Sheila Drakeley (Research Assistant, Boston Children's Hospital), Danielle Christy (Mental Health Worker at Monte Nido & Affiliates), Veronica Camara (Grad. Student, Regis College), Adrianna Boulin (Founder, Jamakin Me Smart), Amir Bitran (Grad. Student, Harvard University), Katelyn Barry, Asante Badu, Walter Hardesty (MD student, The Ohio State University College of Medicine), Candace Ross (Grad. Student, MIT), Nicholas Knouf (Assistant Professor, Wellesley College), Angela Yu (Associate Professor, UCSD), Stacey Emile, Garrett Lam (Rhodes Scholar), Ege Yumusak (Grat. Student, University of Cambridge), Tais Alemar (Grad. Student, St. John's University), Pamela Ardizzone, Marlise Arlellano, Emma Barker, James Carroll, Sarah Dowcett, Katherine Fazioli (Research Assistant, Harvard Medical School), Wendy Fernandez, Melanie Fu, Meron Girmaiy (Program Coordinator at Ascentria Care Alliance), Caroline Harley, Kaley Jenny, Rohil Badkundry, Nicholas Lavorna, Christina Leahy (Emergency Room Technician, Brigham and Women's Hospital), Ana Paredes, Josue Ortega (Grad. Student, Baylor College of Medicine), Ayotunde Odejayi (Xeon Phi Design Verification Intern at Intel), Victoria Perron, Justin Sanchez, Jacky Sarette, Duncan Stothers, Claire Tseng, RunLin Wang, Michelle Lim, Grant Chau, Jay Chandra, Leonard Tang, Annabelle Tao, Gabriela Taveras, Tuyen Tran, Katterin Vargas, Pricila Vieria-Gameiro, Ziyi Zhu (Rochester).

High-school students: Eshan Govil, Daniel Hanover, Martin Pleynet, Myles Epstein.

Reviewing

Ad hoc reviewer or Area Chair for the following journals/conferences

AAAI Conference on Artificial Intelligence, Acta Astronomica, Bioinformatics, Biotechniques, BMC Bioinformatics, Brain, Cell Reports, Cerebral Cortex, Comparative Biochemistry and Physiology, Computational Intelligence and Neuroscience, Computational Neuroscience Annual Meeting, Computer Vision and Pattern Recognition (CVPR), Cognitive Computation, Current Biology, Experimental Brain Research, Frontiers in Computational Neuroscience, Frontiers in Perception Science, Frontiers in Neuroscience, Genome Biology, HFSP Journal, IEEE Journal of Selected Topics in Signal Processing, IEEE Spectrum, IEEE Transactions in Computational Biology and Bioinformatics, International Conference on Computer Vision (ICCV), International Conference on Learning Representations (ICLR), International Conference on Machine Learning (ICML), ISMB, Journal of Anatomy, Journal of Cognitive Neuroscience, Journal of Comparative Physiology A, Journal of Computational Neuroscience, Journal of Neural Engineering, Journal of Neurochemistry, Journal of Neuroscience, Journal of Neuroscience Methods, Journal of Neurophysiology, Nature, Nature Communications, Nature Machine Intelligence, Nature Methods, Nature Protocols, Nature Neuroscience, Neural Computation, Neural Networks, Neural Information Processing Systems (NeurIPS), Neurocomputation, Neuroimage, Neuron, Neuroscience, Nucleic Acids Research, PLoS Computational Biology, PLoS Biology, PNAS, RECOMB, Science Advances, Scholarpedia, Trends in Cognitive Science, Trends in Neuroscience.

Grant Review Panels

National Science Foundation (NSF, Robust Intelligence Panel, Collaborative Research in Computational Neuroscience Panel, Cognitive Neuroscience Panel, Graduate Research Fellowship); NIH (SPC, LAM, ZRG1, T32 Study Sections), King Trust, World Class University (Korea), Rappaport Institution, Technion (Israel); Engineering and Physical Sciences Research Council (EPSRC, UK); Agence Nationale de la Reserche (ANR, France); Kolumb program (Poland), US-Israel Binational Science Foundation, FWO (Belgium), NWO (Netherlands), Wellcome Trust (UK).

Patent Review

Patent evaluation for US Patent and Trademark Office

Presentations

Selected Invited talks

Singapore U. 2024 | UCBerkeley, 2024 | MIT Museum of Science 2024 | Forth Symposium, Greece 2024. Haar workshop, Sestri Levante, Italy, 2024 | Computational neuroscience, Heraklion, Greece, 2024 | Trieste, Italy 2024 | NIH Consciousness Symposium, DC, 2023 | A*Star. Singapore 2023 | Janelia Farm, March 2023 | Sigtuna Conference on Free will. Sweden, 2023 | Caltech, Pasadena, 2023 | ASSC, Amsterdam, Netherlands, 2022 | Cleveland Clinic, Cleveland, 2022 | Cognitive Neuroscience Annual Meeting, San Francisco 2022 | Cosyne conference, Lisbon, 2022 | NeurIPS, New Orleans, 2022 | Free will conference, Palm Springs 2022 | Memory and the brain. Tel Aviv, Israel 2022 | Advanced Neuroscience School, Venice, Italy, 2022 | McKnight Foundation Conference, Aspen, 2021 | How to review interdisciplinary work. Berlin, Germany, 2021 | Cognitive Neuroscience Symposium. Tel Aviv, Israel, 2020 | Cosyne conference workshop. Denver, 2020 | Neuroscience-inspired AI vision systems. Kyoto, Japan, 2020 | AI and the brain. Beijing, China, 2020 | Neuroscience-Inspired AI. Seoul, Korea, 2020 | Models of visual recognition. SFN Workshop. 2020 | Volitional decisions and the brain. Sigtuna Conference, Sweden, 2020 | Limitations of Machine Learning. Sestri Levante, Italy. 2019 | ECVP, Belgium. 2019 | AI and Neuroscience. KAIST, South Korea. 2019 | Cosyne conference workshop. Cascais, Portugal. 2019 | BrainMind Summit, Cambridge, MA. 2019 | Google-X Symposium on Brains and Computation. Mountain View, CA. 2018 | University of Pennsylvania, Computational Neuroscience Initiative. Philadelphia, PA. 2018 | IEEE Conference on Information Science and Systems. Princeton, NJ. 2018 | Cognitive Neuroscience Annual Meeting. Boston, MA. 2018 | Vision Sciences Society Annual Meeting. St Pete Beach, FL. 2018 | ModVis Workshop. St Pete Beach, FL. 2018 | University of Washington, Seattle, WA. 2018 | Neurophyilosophy of Free Will Conference. Orange, CA. 2018 | Global Pediatrics Leadership Program. 2018 | Invited talk. Advanced Methods in Theoretical Neuroscience. Goettingen, Germany. 2018 | Invited talk. Sigtuna Foundation. Stockholm, Sweden. 2017 | Invited talk. International Research Center for Neurointelligence. International Symposium. Tokyo, Japan. 2017 | Google-X Symposium on Brains and Computation. Mountain View, CA. 2018 | University of Pennsylvania, Computational Neuroscience Initiative. Philadelphia, PA. 2018 | IEEE Conference on Information Science and Systems. Princeton, NJ. 2018 | Cognitive Neuroscience Annual Meeting. Boston, MA. 2018 | Vision Sciences Society Annual Meeting. Boston, MA. 2018 | Invited keynote talk. AAAI, The science of intelligence. Stanford, CA. 2017 | Computer Vision and Pattern Recognition. Hawaii, HI. 2017 | Caltech Computation and Neural Systems Program. Pasadena, CA. 2017 | Biology of Brain Disorders International Workshop. Dublin, Ireland, 2016 | Brains, Minds and Machines International Workshop. Sestri Levante, Italy, 2016 | Society of Industrial and Applied Mathematics. Recent Advances for Image Classification and Recognition. Albuquerque, 2016 | IEEE Conference on Information Sciences and Systems, Princeton 2016 | Cosyne Workshop. Snowbird, Utah, 2016 | NIPS Symposium. Montreal 2015 | Shilac conference. Puerto Rico 2015 | Science Foo. June 2015 | Renaissance Weekend. June 2015 | Klingenstein Foundation. May 2015 | University of Buenos Aires. April 2015 Singapore A*Star. March 2015 | University of Vanderbilt. March 2015 | Cosyne Workshop, February 2015 | NIH High-Risk High Reward Symposium. November 2014 | Columbia University. November 2014 | Johns Hopkins University. October 2014 | Areadne Computational Neuroscience Conference, June 2014 | Johns Hopkins University, February 2014 | Caltech, Computation and Neural Systems. Feb 2013 | British Neuroscience Association, London, Apr 2013 | Cognitive Neuroscience, Lake Tahoe, Jul 2013 | Bernstein Center for Computational Neuroscience, Germany 2012 | Mini-symposium. Society for Neuroscience, 2012 | MIT Intelligence Initiative. August 2012 | Portuguese Society of Neurology Annual Meeting. Portugal 2012 | University of Chicago. Chicago. 2012 | Brown University. Providence. 2012 | Baylor College of Medicine. Houston, 2011 | NSF/NIH CRCNS Annual Meeting. Princeton 2011 | NIH New Innovator Award Annual Symposium. Washington 2011 | Universita di Trento, Center for Brain/Mind Sciences. Roveretto, Italy. 2011 | Satellite Symposium, ASSC Annual Meeting. Kyoto, Japan. 2011 | RIKEN Institute. Tokyo, Japan. 2011 | NIPS Institute. Okasaka, Japan. 2011 | University of Pennsylvania. Philadelphia. 2011 | University of Leuven, Leuven, Belgium. 2010 | MEEI Annual Meeting, Boston, US. 2010 | International Conference on Cognitive Neuroscience, Beijing, China. 2010 | Computation and Systems Neuroscience conference. Local field potentials workshop. Salt Lake City, US. 2010 | University of Birmingham. Birmingham, UK. 2010 | SFN mini-symposium. Chicago, US. 2009 | ECVP symposium, Regensburg, Germany. 2009 | International Neuropsychology Society, Dubrovnik, Croatia. 2009 | Chinese National Academy of Science, Beijing, China. 2008 | Institute of Neuroscience and Brain Research Center, National Yang Ming University, Taipei, Taiwan. 2008 | MEEI Annual Meeting, Boston, US. 2008 | Cosyne 2008, Decoding Information Workshop, Salt Lake City, US. 2008 | Harvard Vision Lab, Cambridge, US. 2007 | Imperial College London, London, UK. 2007 | University of Leicester, Leicester, UK, 2007 | University of Trento, Roveretto, Italy. 2007 | Workshop "A Journey through computation", Genova, Italy, June 2007 | Visual Sciences Society, Workshop on decoding brain activity. Sarasota, US. 2007 | Janelia Farm, Virginia, US. 2007 | Dana Foundation Conference, Los Angeles, US. 2007 | Center for Cognitive Science, Duke University, Durham, US. 2006 | Department of Bioengineering, Duke University, Durham, US. 2006 | Department of Computer Science, Columbia University, New York, US. 2006 | Department of Bioengineering, Columbia University, New York, US. 2006 | Stanford, Department of Bioengineering, Palo Alto, US 2006 | Children's Hospital Boston, Boston, US. 2006 | Center for Brain Science, Boston, Harvard University, Boston, US. 2006 | Memorial Sloan Kettering, New York, US. 2005 | Stanford, Department of Computer Science, US. 2005 | Institute for Neuroinformatics, Zurich, Switzerland. 2005 | Salk Institute, San Diego, US. 2004 | Harvard Vision Seminar, Cambridge, US. 2004 | Caltech CNSE Special Symposium, Pasadena, US. 2004 | New paradigms in Computational Neuroscience, Cordoba, Argentina. US. 2004 | Computational Systems Biology Symposium 2004. Cambridge, US. 2004 | Methods in Comp. Neuroscience, Marine Biological Laboratory, Woods Hole, US 2003 | Hamburg University, Germany. 2003 | Gottingen Neurobiology Conference, Germany. 2003 | ASSC Annual Meeting, Memphis. 2003 | AAAS Meeting, Denver. 2003 | UC Irvine, Irvine, US. 2002 | Caltech. Everhart Distinguished Graduate Student Lecture. Pasadena, US. 2000

Positions

09/1996 – 08/2002	Graduate student	Computational Neuroscience	Caltech
02/1999 – 08/2002	Visiting Scientist	Neurosurgery	UCLA

09/2002 – 12/2006	Whiteman fellow	Brain and Cognitive Science, CSAIL	MIT
09/2001 – 08/2002	Research Scientist	Genomics Institute	Novartis
09/2008 – 08/2012	Advisory Board	Medical Plexus	
01/2007 – 12/2011	Assistant Professor	Ophthalmology	Harvard Medical School
09/2009 – 06/2013	Faculty	Neurology	Boston Children's Hospital
01/2012 – 12/2018	Associate Professor	Ophthalmology	Harvard Medical School
09/2016 – 08/2022	Advisory Board	Caltech NIMH Brain Initiative	
08/2018 – present	Full Professor	Ophthalmology	Harvard Medical School
01/2007 – present	Faculty	Center for Brain Science	Harvard University / HMS
01/2007 – present	Faculty	Program in Neuroscience	Harvard University / HMS
09/2007 – present	Faculty	Swartz Center for Theoretical Neuroscience	Harvard University
09/2008 – present	Faculty	Mind Brain and Behavior Initiative	Harvard University
09/2008 – present	Faculty	Program in Biophysics	Harvard University
01/2007 – present	Faculty	Program in Neurobiology	Boston Children's Hospital
01/2007 – present	Faculty	Ophthalmology	Boston Children's Hospital
01/2007 – present	Visiting scientist	Brain and Cognitive Science	MIT
09/2013 – present	Associate Director	Center for Brains, Minds and Machines	Harvard/MIT
09/2013 – present	International collaborator	Institute for Infocomm Research	A*Star, Singapore
09/2017 – present	Advisory Board	Zeta Interactive Corporation	
09/2023 – present	Faculty	Kempner institute for the study of natural and artificial intelligence	

Start-up companies (founder)

Antikythera. Co-founder. Antikythera provides a platform for biophysically realistic simulations of neural circuits.

Memorious. Co-founder. Memorious uses AI and large language models to help people with memory deficits.