Gabriel Kreiman
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Erdős number: 4 [Chui->Mhaskar->Poggio and also McElice->Harel->Koch]

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

TLDR (too-long didn’t read), 5 selected publications

- **Category-specific visual responses of single neurons in the human medial temporal lobe.** G Kreiman, C Koch, I Fried. (2000) Nature Neuroscience 3:946-953
- **Internally generated preactivation of single neurons in human medial frontal cortex predicts volition.** I Fried, R Mukamel, G Kreiman (2011). Neuron 69:548-562
- **Timing, timing, timing: fast decoding of object information from intracranial field potentials in human visual cortex.** H Liu, Y Agam, JR Madsen, G Kreiman (2009). Neuron 62:281-290.
- **Recurrent computations for visual pattern completion.** Tang H, Schrimpf M, Lotter W, Moerman C, Paredes A, Ortega Caro J, Hardesty W, Cox D, Kreiman G. (2018) PNAS, 115:8835-884.
- **A neural network trained for prediction mimics diverse features of biological neurons and perception.** W Lotter, G Kreiman, D Cox (2020). Nature Machine Intelligence 2:210-219

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. 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
2. 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
3. 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.
4. 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.
5. 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, Ghafani T, Hetenyi D, Jeschke J, Kozma C, Mazurend DR, Montenegro S, Seedar 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, Tonon Gi, Pitts M, Mudrik L, Melloni L (2023). An adversarial collaboration to critically evaluate theories of consciousness. Nature, In Press.
6. Zheng J, Yebra M, Schjetnan AGP, Mosher C, Kalia A, Chung JM, Reed CM, Valiante TA, Mamela A, Kreiman G, Rutishauser U (2024). Theta Phase Precession Supports Memory Formation and Retrieval of Naturalistic Experience in Humans. Nature Human Behavior.
7. 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
8. 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).
9. Djambezovska 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
10. Bono S, Madan S, Grover I, Yasueda M, Breazeal C, Pfister H, Kreiman G (2024). Look Around! Unexpected gains from training on environments in the vicinity of the target. arXiv 2401.15856.
11. Misra P, Shih Y, Yu H, Weisholtz D, Madsen J, Scebilli C, Kreiman G (2024). Invariant Neural Representation of Parts of Speech in the Human Brain. bioRxiv 2024.01.15.575788.
12. Srinivasan RF, Mignacco FR, 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).
13. Madan S, Li Y, Zhang M, Pfister H, Kreiman G. (2024). Improving generalization by mimicking the human visual diet. bioRxiv 2206.07802
14. Singh P, Li Y, Sikawar 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).
15. Aghajan Z, Kreiman G, Fried I (2023). Minute-scale periodicity of neuronal firing in the human entorhinal cortex. Cell Reports 42, 113271.
16. 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
17. Bricken T, Davies A, Singh D, Krotov D, Kreiman G. (2023) Sparse distributed memory is a continual learner. International Conference on Learning Representations (ICLR).
18. 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).
19. Bricken T, Schaeffer R, Olshausen B, Kreiman G. (2023) Emergence of Sparse Representations from Noise. International Conference on Machine Learning (ICML).
20. Xiao Y, Chou C, Cosgrove GR, Crone NE, Stone S, Madsen JR, Reucroft I, Weisholtz D, Shih YC, Yu...
45. 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) 12985-12994.

46. 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.

47. Yuan L, Xiao W, Kreiman G, Tay FEH, Feng, JL, Livingstone, M (2020). Adversarial images for the primate brain. arXiv. 2011.05623

48. Olson J, Kreiman G. (2020). Simple learning rules generate complex canonical circuits. arXiv:2009.06118

49. 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.

50. 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

51. O’Connel TP, Chun MM, Kreiman G. (2019) Zero-shot neural decoding of visual categories without prior exemplars. bioRxiv 10.1101/700344

52. Zhang M, Tseng C, Montejo K, Kwon J, Kreiman G. Lift-the-flap: what, where and when for context reasoning. arXiv 1902.00163

53. Misra P, Marconi A, Kreiman G. (2018) Minimal memory for details in real life events. Scientific Reports, 8, 16701.

54. 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, 115:8835-8844.

55. 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.

56. Zhang M, Feng J, Lim JH, Zhao Q, Kreiman G. (2018) What am I searching for? arXiv 1807.11926

57. 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.

58. Wu K, Wu E, Kreiman G (2018). Learning scene gist with convolutional neural networks to improve object recognition. IEEE Information Sciences and Systems.

59. 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.

60. Lotter, W, Kreiman, G, Cox, D. (2017) Deep Predictive Coding Networks for Video Prediction and Unsupervised Learning. International Conference on Learning Representations (ICLR).

61. Cheney N, Schrimpf M, Kreiman G. (2017) On the Robustness of Convolutional Neural Networks to Internal Architecture and Weight Perturbations. arXiv:1703.08245v1

62. 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.

63. Kreiman G. (2016). A null model for cortical representations with grandmothers galore. Language, Cognition and Neuroscience, 32, 274-285.

64. 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.

65. Lotter W, Kreiman G, Cox D (2016). Unsupervised Learning of Visual Structure using Predictive Generative Networks. International Conference on Learning Representations (ICLR)

66. 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.

67. 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.

68. Miconi T., Gromes L & Kreiman G (2016). There’s Waldo! A Normalization Model of Visual Search Predicts Single-Trail Human Fixations in an Object Search Task. Cerebral Cortex, 26:3064-82

69. 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.

70. Singer JM, Madsen JR, Anderson WS, Kreiman G. (2015). Sensitivity to timing and order in human visual cortex. Journal of Neurophysiology 113:1656-69

71. 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

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noncoding. Nature Communications. 18:5:5429.
72. Singer JM, Kreiman G. (2014). Short temporal asynchrony disrupts visual object recognition. Journal of Vision 14:7.
73. 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.
74. 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
75. Nassi J, Gomez-Laberge C, Kreiman G, Born R (2014). Corticocortical feedback increases the spatial extent of normalization. Frontiers in Systems Neuroscience, 8:105.
76. Singer JM, Kreiman G (2014). Short temporal asynchrony disrupts visual object recognition. Journal of Vision, 12:14
77. Murugan R and Kreiman G (2012). Theory on the coupled stochastic dynamics of transcription and splice-site recognition. PLoS Computational Biology, 8:1-13.
78. 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.
79. 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.
80. 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.
81. Fried I, Mukamel R, Kreiman G (2011). Internally generated preactivation of single neurons in human medial frontal cortex predicts volition. Neuron, 69: 548-562.
82. Kreiman G and Maunsell J (2011). Nine criteria for a measure of scientific output. Frontiers in Computational Neuroscience, 2011: 5:48.
83. Murugan R and Kreiman G (2011). On the minimization of fluctuations in the response times of autoregulatory gene networks. Biophysical Journal, 101: 1297-1306.
84. Hemberg M and Kreiman G (2011). Conservation of transcription factor binding events predicts gene expression across species. Nucleic Acids Research, 39:7092-7102.
85. 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.
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87. Rasch M, Logothetis NK, Kreiman G (2009). From neurons to circuits: linear estimation of local field potentials. Journal of Neuroscience 29:13785-13796
88. 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
89. 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
90. 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
91. 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
92. 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
93. 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)
94. 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)
95. 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
96. Kreiman G (2004). Identification of sparsely distributed clusters of cis-regulatory elements in sets of co-expressed genes. Nucleic Acids Research 32:2889-2900

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What is the intention to move and when does it occur?

Reviews

1. Triggiani, A., 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. 2023.15199
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., & Kreiman, G. (2010). How cortical neurons help us see: visual recognition in the human brain. Journal of Clinical Investigation 120:3054-3063.
4. Quiroga, R., & Kreiman, G. (2010). Measuring sparseness in the brain. Psych. Reviews, 17:291-297
5. 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: 33-55.
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., & 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 Neuroursegesons, 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 Gobran 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. Anderson WS, Kreiman G (2011). What we cannot model, we cannot understand. Current Biology. 21:R124-R125.
10. Singer J, Kreiman G (2009). Toward unmasking the dynamics of visual perception. Neuron. 64:446-447.
11. Tsuchiya N, Kreiman G. (2008). Psyche, attention and consciousness. Psyche 14, 1-2.
12. Kreiman G. (2008). Biological object recognition. Scholarpedia 3, 2667.
13. Kreiman G, (2007) Neuroscience: from the very large to the very small. Current Biology, 17:R768-R770
14. Kreiman G. (2001). Moveo ergo sum. BioEssays 23:662.

Theses
1. Kreiman G. (2001). On the neuronal activity in the human brain during visual recognition, imagery and binocular rivalry. California Institute of Technology. (Ph.D. Thesis)
2. Kreiman G. (2001). Neural coding and feature extraction of time-varying signals. California Institute of Technology. (M.Sc. Thesis)
Teaching

2018-2024  Harvard, HMS 140/240, Biological and Artificial Intelligence
2014-2024  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

TLDR, 5 selected mentees:

William Anderson (now: Associate Professor, Johns Hopkins School of Medicine)
Arjun Bansal (now: co-founder and vice-president, Nervana Systems/Intel/Log10)
Martin Hemberg (now: Associate Professor, Harvard Medical School)
Leyla Isik (now: Assistant Professor, Johns Hopkins University)
Hanlin Tang (now: Founder and CTO, MosaicML)

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: Associate 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 Sziro (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 Dellaferera (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), Aurélie Cordier, Sara Djambazovska, Camille Gollety, Stéphan Grzelkowski, Marana Hakobyan, Eleonora Iaselli (now: Technology consulting analyst, Accenture), Vincent Jacquot (Engineer, Merck Group), Alexandre Luster, Charlotte Moermann

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(Clinical affairs manager, Compreium), 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 Grooms, 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, Gnei 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 Mellor, 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 Kulatlalaka, 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 (Grad. Student, University of Cambridge), Tais Alemar (Grad. Student, St. John’s University), Pamela Aridzzone, Marlise Arelanno, Emma Barker, James Carroll, Sarah Dowcett, Katherine Fazioli (Research Assistant, Harvard Medical School), Wendy Fernandez, Melanie Fu, Meron Girmaia (Program Coordinator at Ascentria Care Alliance), Caroline Harley, Kalev Jenny, Rohil Badkundy, 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), Alice Motschi (now: PhD student, Medical University of Vienna), Zihao Xu.

**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 on 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 Recherche (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**

Gabriel.kreiman@tch.harvard.edu  http://klab.tch.harvard.edu
Selected Invited talks

UCBerkeley, 2024 | MIT Museum of Science 2024 | Forth Symposium, Greece 2024. Haar workshop, Sestri Levante, Italy, 2024 | Computational neuroscience, Heraklion, Greece, 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 | Votlitional 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 | Neurophilosophy 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 | Klingenfstein 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. Rovereto, 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, Rovereto, 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 | Harvard 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

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