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## BIOGRAPHICAL SKETCH

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NAME Gabriel Kreiman	POSITION TITLE Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) <b>gkreim</b>	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
University of Buenos Aires	Licenciado	08/1996	Physical Chemistry
California Institute of Technology (Caltech)	M.Sc.	06/2002	Computation & Neural Systems
California Institute of Technology (Caltech)	Ph.D.	06/2002	Biology
Massachusetts Institute of Technology (MIT)	Postdoc	08/2006	Computational Neuroscience

### A. Personal Statement

The Kreiman laboratory combines neurophysiological recordings, behavioral measurements and computational models to investigate how neuronal circuits store, represent and process information in the human brain.

### B. Positions and Honors

#### Positions

1996-2002 Graduate Student, California Institute of Technology (Caltech)  
1999-2002 Visiting Scientist, University of California at Los Angeles (UCLA)  
2001-2002 Research Scientist, Genomics Institute of the Novartis Research Foundation (GNF)  
2002-2005 Whiteman Science Fellow, Massachusetts Institute of Technology (MIT)  
2005-2006 McGovern Fellow, MIT  
2006-present Visiting Scientist, MIT  
2006-present Assistant Professor  
Department of Ophthalmology and Department of Neurology, Harvard Medical School  
Children's Hospital Boston, Harvard Medical School  
Swartz Center for Theoretical Neuroscience, Harvard University  
Center for Brain Science, Harvard University  
Mind, Brain and Behavior (MBB), Harvard University  
2012-present Associate Professor  
Department of Ophthalmology and Department of Neurology, Harvard Medical School

#### Other Experience

2006-present NSF Peer Review Committee, Robust Intelligence Panel, CRCNS panel, Cognitive Neuroscience Panel  
2009-present Associate Editor, Frontiers Journal  
2009-present Board of Advisors, Medical Plexus  
2007-2010 Editor, Psyche Journal

#### Honors and Awards

1984 Metropolitan Chess Champion K14, Buenos Aires, Argentina.  
1990 Sub-champion, National Math Olympiads, Argentina.  
1994 Outstanding Youth Award, Buenos Aires Stock Exchange Foundation.  
1995 A. Luna Honor Award, Dow Chemical Company.  
1997 Argentine Chemistry Association, Best B.Sc. in Physical Chemistry.  
2000 Everhart Distinguished Graduate Student Lecture Award, Caltech.  
2002 Lawrence L. and Audrey W. Ferguzon Prize, Caltech. Best Biology Ph.D. Thesis.  
2002 Milton and Francis Clauser Doctoral Prize, Caltech. Best Ph.D. Thesis.  
2002 MIT Dean of Science Whiteman Fellowship  
2007 Harvard Medical School Career Development Award  
2008 Klingenstein Fund Award  
2009 NIH New Innovator Award

2010 NSF Career Award  
2010 Society for Neuroscience Career Development Award

### C. Peer-reviewed Publications

#### Most relevant to current application

1. 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**. 08:3073-3086.
2. Fried I, Mukamel R, Kreiman G. (2011). Internally Generated Preactivation of Single Neurons in Human Medial Frontal Cortex Predicts Volition. **Neuron**. 69: 548-562.
3. Liu H, Agam Y, Madsen J, Kreiman G. (2009) Timing, timing, timing: Fast decoding of object information from intracranial field potentials in human visual cortex. **Neuron** 62:281-290.
4. Kreiman G, Koch C, Fried I (2000). Imagery neurons in the human brain. **Nature**, 408:357-361.
5. Kreiman G, Koch C, Fried I (2000). Category-specific visual responses of single neurons in the human medial temporal lobe. **Nature Neuroscience**, 3:946-953.

#### Additional recent publications

6. Murugan R, Kreiman G (2012). Theory on the coupled stochastic dynamics of transcription and splice-site recognition. **PLoS Comput Biol**. 8:e1002747
7. 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.
8. Burbank K, Kreiman G (2012) Depression-biased reverse plasticity rule is required for stable learning at top-down connections. **PLoS Computational Biology**, 8:16.
9. Kriegeskorte N, Kreiman G (2011). Visual Population Codes. Cambridge: MIT Press. [edited book]
10. Murugan R, Kreiman G (2011) On the minimization of fluctuations in the response times of autoregulatory gene networks. **Biophysical Journal** 101: 1297-1306.
11. Kreiman G, Maunsell JH. (2011) Nine criteria for a measure of scientific output. **Frontiers in Computational Neuroscience** 5:48.
12. Hemberg M, Kreiman G (2011). Conservation of transcription factor binding events predicts gene expression across species. **Nucleic Acids Research**. 39:7092-7102.
13. Blumberg J, Kreiman G. (2010). How cortical neurons help us see: visual recognition in the human brain. **Journal of Clinical Investigation** 120:3054-3063. [review]
14. 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
15. 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.
16. Quian Quiroga R, Kreiman G (2010). Measuring sparseness in the brain. **Psychological Reviews**, 17:291-297.
17. Liu H, Agam Y, Madsen J, Kreiman G. (2009) Timing, timing, timing: Fast decoding of object information from intracranial field potentials in human visual cortex. **Neuron** 62:281-290.
18. Rasch M, Logothetis NK, Kreiman G (2009). From neurons to circuits: linear estimation of local field potentials. **Journal of Neuroscience** 29:13785-13796.
19. Horng S, Kreiman G, Ellsworth C, Page D, Blank M, Milen 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.
20. 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
21. Quian Quiroga R, Kreiman G, Koch C, Fried I (2008), **Trends in Cognitive Science** 12:87-91 [Review]
22. Leamey C, Glendining K, Kreiman G, Kang N, Kuan H, Fassler R, Sawatari A, Tonegawa S, 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
23. Kreiman G (2007). Single neuron approaches to human vision and memories. **Current Opinion in Neurobiology**, 17:471-475. [review]
  24. 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.
  25. Tropea D, Kreiman G, Lyckman A, Mukherjee S, Yu H, Horng S, Sur M. (2006) Distinct gene systems mediating activity-dependent plasticity in visual cortex. **Nature Neuroscience** 9:660-668
  26. Kreiman G\*, Hung C\*, Quiroga R, Kraskov A, Poggio T., DiCarlo J. (2006). Object selectivity of local field potentials and spikes in the macaque inferior temporal cortex **Neuron** 49:433-445 (\*=equal contribution)
  27. Hung C\*, Kreiman G\*, Poggio T, DiCarlo J. (2005) Fast read-out of object information in inferior temporal cortex. **Science**, 310:863-866. (\*=equal contribution)
  28. 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
  29. Crick F, Koch C, Kreiman G, Fried I (2004) Consciousness and Neurosurgery. **Neurosurgery** 55:272-282. [review]
  30. Yeo G, Holste D, Kreiman G, Burge C (2004). Variation in alternative splicing across human tissues. **Genome Biology** 5:R74.
  31. Kreiman G (2004). Neural coding: computational and biophysical perspectives. **Physics of Life Reviews** 2:71-102. [review]
  32. Kreiman G (2004) Identification of sparsely distributed clusters of cis-regulatory elements in sets of co-expressed genes. **Nucleic Acids Research**, 32:2889-2900.
  33. Su AI, Wiltshire T, Batalov S, Lapp H, Ching KA, Block D, Zhang J, Soden R, Hayakawa M, Kreiman G, Cooke MP, Walker JR, Hogenesch JB (2004) A gene atlas of the mouse and human protein-encoding transcriptomes. **Proceedings of the National Academy of Sciences USA**, 101:6062-6067
  34. Kreiman G, Fried I, Koch C (2002) Single neuron correlates of subjective vision in the human medial temporal lobe. **Proceedings of the National Academy of Sciences USA**, 99:8378-8383.
  35. Rees G, Kreiman G, Koch C (2002). Neural correlates of consciousness in humans. **Nature Reviews Neuroscience**, 3:261-270.
  36. Krahe R, Kreiman G, Gabbiani F, Koch C, Metzner W (2002). Stimulus encoding and feature extraction by multiple pyramidal cells in the hindbrain of weakly electric fish. **Journal of Neuroscience**, 22:2374-2382.
  37. Zirlinger M, Kreiman G, Anderson D (2001). Amygdala-enriched genes identified by microarray technology are restricted to specific amygdaloid sub-nuclei. **Proceedings of the National Academy of Sciences USA**, 98:5270-5275.
  38. Kreiman G, Koch C, Fried I (2000). Imagery neurons in the human brain. **Nature**, 408:357-361.
  39. Kreiman G, Koch C, Fried I (2000). Category-specific visual responses of single neurons in the human medial temporal lobe. **Nature Neuroscience**, 3:946-953.
  40. Kreiman G, Krahe R, Metzner W, Koch C, Gabbiani F (2000). Robustness and Variability of Neuronal Coding by Amplitude Sensitive Afferents in the Weakly Electric Fish *Eigenmannia*. **Journal of Neurophysiology**, 84:189-204.
  41. Ouyang Y, Rosenstein A, Kreiman G, Schuman EM, Kennedy, MB (1999). Tetanic stimulation leads to increased accumulation of Ca<sup>2+</sup> calmodulin-dependent protein kinase II via dendritic protein synthesis in hippocampal neurons. **Journal of Neuroscience**, 19:7823-7833.
  42. Inon de Iannino N, Briones G, Kreiman G, Ugalde, R (1996). Characterization of the biosynthesis of beta(1-2) cyclic glucan in *R. Fredii*. **Cellular and Molecular Biology**, 42:617-629.