

Curriculum Vitae

Hiroki Asari, Ph.D.

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Contact Information (Business):

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Education:

The University of Tokyo, Tokyo, Japan
B.S. in Biophysics and Biochemistry
March 31st, 2003.

Watson School of Biological Sciences / Cold Spring Harbor Laboratory, Cold Spring Harbor, NY
Ph.D. in Biological Sciences
Defense: July 2nd, 2007; Completion: July 31st, 2007.
Dissertation: Auditory System Characterization.

Research Experience:

Research Volunteer, The University of Tokyo, Feb 2001 – Mar 2002.
Akiyama Lab: Screening of Proteins Interacting with Endoglin Cytoplasmic Region.

Undergraduate Research Program, Cold Spring Harbor Laboratory, Jun 2002 – Aug 2002.
Hamaguchi Lab: Suppression of DBC2 by RNA Interference.

Undergraduate Thesis Research, The University of Tokyo, Apr 2002 – Mar 2003.
Emori Lab: DNA Methylation and the Regulation of Olfactory Receptor Genes.

Research Assistant, Cold Spring Harbor Laboratory, May 2003 – Jul 2003.
Chklovskii Lab: Approach to find out the rule of cell distribution in the mouse cortex.

Ph.D. Thesis Research, Cold Spring Harbor Laboratory, Jul 2004 – Jul 2007.
Zador Lab: Auditory System Characterization.

Post Graduate Research Assistant, Cold Spring Harbor Laboratory, Aug 2007 – January 2008.
Zador Lab: Sparse Overcomplete Representations as a Principle for Computations in the Brain.

Post-Doctoral Fellow, Harvard University, Feb 2008 – Present.
Meister Lab: Analysis of sensory signal processing and information flow in retinal circuit.

Publications:

- [1] Asari, H., Pearlmutter, B.A., & Zador, A.M. (2006) Sparse Representations for the Cocktail Party Problem. *J. Neurosci.* **26**(28): 7477–7490.
- [2] Asari, H. & Zador, A.M. (submitted) Long-lasting context dependence constrains neural encoding models in rodent auditory cortex.
- [3] Asari, H., Biot, C., & Zador, A.M. (in preparation) Sparse Coding Predicts Noiseless Sensory Representations and Noisy Neurons.

Unpublished Technical Notes, Conference Proceedings, and Book Chapters:

- [1] Asari, H. (2004) Non-negative Matrix Factorization: A possible way to learn sound dictionaries.
- [2] Asari, H. (2005) Technical Notes on Linear Regression and Information Theory.
- [3] Pearlmutter, B.A., Asari, H., & Zador, A.M. (2005) Neuronal Predictions of Sparse Linear Representations. Forum Acusticum 2005, Budapest, Hungary (Distributed on CD-ROM at the conference).
- [4] Asari, H., Olsson, R.K., Pearlmutter, B.A., & Zador, A.M. (2007) Sparsification for Monaural Source Separation. In Makino, S., Lee, T-W., & Sawada, H. (eds.) Blind Speech Separation, Chap.14, pp.387–410, Springer-Verlag. ISBN: 978-1-4020-6478-4

Presentations:

- [1] Pearlmutter, B.A., Asari, H., & Zador, A.M. (2004)
Poster: Sparse Representations for the Cocktail Party Problem.
Gordon Research Conference (Sensory coding and the natural environment), Oxford, U.K.
- [2] Asari, H., Wehr, M.S., & Zador, A.M. (2005)
Poster No.45: Linear Decodability for High-Level Auditory Representation.
Computational and Systems Neuroscience meeting, Salt Lake City, UT
- [3] Asari, H., Oviedo, H., & Zador, A.M. (2006)
Poster No.46: Context Dependence of Neural Responses in Rat Primary Auditory Cortex.
Computational and Systems Neuroscience meeting, Salt Lake City, UT
- [4] Asari, H., Oviedo, H., & Zador, A.M. (2006)
Poster: Context-Dependent Responses in the Rat Auditory Cortex.
Gordon Research Conference (Sensory coding and the natural environment), Big Sky, MT
- [5] Asari, H., Oviedo, H., & Zador, A.M. (2007)
Poster No.II-103: Context-Dependence and Response Predictability in Rat Auditory Cortex.
Computational and Systems Neuroscience meeting, Salt Lake City, UT

- [6] Asari, H., Biot, C., & Zador, A.M. (2008)
Poster No.II-77: Sparse Coding Predicts Noiseless Sensory Representations and Noisy Neurons.
Computational and Systems Neuroscience meeting, Salt Lake City, UT

Awards:

Farish-Gerry Fellowship, Watson School of Biological Sciences, Aug 2003 – Jul 2007.

Other activities:

Student representative:

Executive committee for the Watson School of Biological Sciences, Apr 2005 – Mar 2006.

Teaching experience:

Dolan DNA Learning Center, Cold Spring Harbor, NY, Jan 2004 – May 2004.

Reviewer experience:

IEEE Transactions on Neural Networks.

IEEE Transactions on Audio, Speech and Language Processing.