Guangying Wu

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Education

2004-2009 **Ph.D.** Neuroscience, University of Southern California (USC)
2002-2004 Graduate Program in Neural Engineering, University of Illinois, Chicago (UIC)
1998-2002 **B.Sc.** Biomedical Engineering, Huazhong University of Science and Technology (HUST)

Current Position

2012- Assistant Professor of Cognitive Neuroscience
Department of Psychology & George Washington Institute for Neuroscience
The George Washington University

Academic Appointment

2009-2012 Principal Investigator and Broad Senior Research Fellow in Brain Circuitry
Laboratory of Auditory Processing and Behaviors
California Institute of Technology (Caltech)

Research Experience

2004-2009 Research Assistant, Lab of Li I. Zhang, Keck School of Medicine at USC
Project: Function and development of neural circuitry in auditory cortex.
Techniques: *In vivo* whole cell voltage-clamp recording, cortical silencing

2004-2004 Research Assistant, Lab of Jeannie Chen, School of Medicine at USC
Project: Roles of Calmodulin in the adaptation of vision in retina.
Techniques: DNA purification, electroporation, electrophoresis

2002-2004 Research Assistant, Lab of David M. Schneeweis, UIC
Project: Function of rod bipolar cells in visual pathways of night vision.
Techniques: Slice recording, organotypic culture and immunocytochemistry.

2001-2002 Undergraduate Researcher, Lab of Jia-rui Lin, HUST
Project: Modeling of gating mechanism of Ca^{2+} channels in rat DRG cells.
Techniques: Visual Basic, C programming, MatLab.

Teaching Experience

2012- Instructor, PSYC2015, Biological Psychology, GW
2010-2011 Co-Instructor, Bi/CNS162, Cellular and Systems Neuroscience, Caltech
1999-2000 Teaching Assistant, British and American Culture, HUST

Past Grant

2009-2012 Agency: the Broad Foundation and Caltech
Program: Broad Fellowship in Brain Circuitry
Program Director: Christof Koch
Title: Synaptic Mechanisms for Hearing-related Behaviors
Total Cost: $300,000 (direct cost, excluding salaries)
Role: PI

Awards & Honors

2010 Semifinalist, Career Award at Scientific Interface, Burroughs Wellcome Fund
2008 Broad Fellowship in Brain Circuitry, Caltech
2004 Provost's Neuroscience Advisory Group Fellowship, USC
1998 University Freshman Scholarship, HUST

Publications

Research Articles

Kuo R.I., and Wu G.K.† (2012) The Generation of Direction Selectivity in the Auditory System. ***Neuron*** 73, 1016-1027. (†corresponding author)

Sun Y., Wu G.K., Liu B., Li P., Zhou M., Xiao Z., Tao H.W. and Zhang L.I. (2010) Fine-Tuning of Pre-Balanced Excitation and Inhibition during Auditory Cortical Development. ***Nature*** 465, 927-931.

Zhou Y., Liu B., Wu G.K., Kim Y., Xiao Z., Tao H.W. and Zhang L.I. (2010) Preceding Inhibition Silences Layer 6 Neurons in Auditory Cortex. ***Neuron*** 65, 706-717.

Wu G.K.*, Arbuckle R.A.*, Liu B., Tao H.W. and Zhang L.I. (2008) Lateral Sharpening of Cortical Frequency Tuning by Approximate Balanced Inhibition. ***Neuron*** 58, 132-143. (* equal contribution)

Liu B.*, Wu G.K.*, Arbuckle R., Tao H.W., and Zhang L.I. (2007) Defining Cortical Frequency Tuning with Recurrent Excitatory Circuitry. ***Nature Neurosci.*** 10, 1594-1600. (* equal contribution)

Wu G.K., Li P., Tao H.W., and Zhang L.I. (2006). Nonmonotonic Synaptic Excitation and Imbalanced Inhibition Underlying Cortical Intensity Tuning. ***Neuron*** 52, 705-715.

Review Articles

Wu G.K. (2012) Direction Selectivity in the Auditory System. ***Cell. Mol. Life Sci.*** (In preparation)

Wu G.K., Tao H.W. and Zhang L.I. (2011) From Elementary Synaptic Circuits to Information Processing in Auditory Cortex. ***Neurosci. Biobehav. Rev.*** 35, 2094-2104.

In preparation

Wu G.K. † and Konishi M. (2011) Presynaptic Mechanisms underlying the Filter of Timing Information in the Brainstem. Submitted. (†corresponding author)

Conference Abstracts

Wu G.K., Zhou M., Liu B., Tao H.W., and Zhang L.I. (2009). Inhibitory scale defines two complementary mechanisms for sound duration coding. ***Soc. Neurosci. Abstract,*** 69.7/V17.

Zhou Y., Wu G.K., Liu B., Tao H.W., Xiao Z., and Zhang L.I. (2009). Dominant preceding inhibition silences spike output in layer 6 of auditory cortex. ***Soc. Neurosci. Abstract,*** 452.16/X29.

Sun Y., Wu G.K., Li P., Tao H.W., Zhang L.I. (2009). Balanced excitation and inhibition in developing auditory cortex. ***Soc. Neurosci. Abstract,*** 813.7/B55.

Wu G.K., Arbuckle R.A., Liu B., Tao H.W., and Zhang L.I. (2008). Lateral sharpening of cortical frequency tuning by approximately balanced inhibition. ***Soc. Neurosci. Abstract,*** 68.8/JJ19.

Liu B., Wu G.K., Tao H.W., and Zhang L.I. (2007). Thalamocortical defining and intracortical enhancing of frequency tuning in primary auditory cortex. ***Soc. Neurosci. Abstract,*** 389.2/FF25.

Wu G.K., Li P., Tao H.W., and Zhang L.I. (2006). Temporal shaping of intensity tuning by imbalanced inhibition in auditory cortex. ***Soc. Neurosci. Abstract,*** 799.24/E25.

Invited Talks

2012	University of California, Irvine
2012	Cornell University, NY
2012	Northwestern University, IL
2012	The George Washington University, DC
2012	University of Wisconsin at Madison, WI
2011	University of Iowa, IA
2011	Tsinghua University, Beijing, China
2011	Lehigh University, PA
2011	Nanyang Technological University, Singapore
2011	Max Planck Florida Institute Research Group Leader Symposium, Germany
2011	Caltech Neurolunch (faculty presentation)
2010	The 1st Annual Southern California Hearing Conference. Irvine, CA.
2008	Broad Fellows Seminar Series, California Institute of Technology. Pasadena, CA.
2006	USC Physiology & Biophysics Annual Symposium. Pasadena, CA.

Services & Others

Graduate/Undergraduate Mentored at Caltech & USC

2011	*Jeff Lin*, Undergraduate, UC Irvine
2010	*Masha Belyi*, Undergraduate, Caltech
2010	*Richard I. Kuo*, Undergraduate, Columbia

Seminar Hosted at Caltech

04/26/2010	*Eric Knudsen*, Stanford
05/18/2009	*Yang Dan*, UC Berkeley/HHMI

Other Experience

2000-2002	*Biomedical Instrument Engineer,* Sun Yat-Sen Memorial General Hospital, China
1999-2001	*Web site designer and manager* College of Life Science & Technology and International Exchange Offices, HUST