

STEVE WOHN CHUL CHANG

Center for Cognitive Neuroscience
Department of Neurobiology
Duke Institute for Brain Sciences
Duke University School of Medicine

steve dot chang at duke.edu

POSITIONS

Post-Doctoral Research Associate Duke University Advisor: Dr. Michael L. Platt	9/2009 - present
Post-Doctoral Research Associate (in transition) Washington University in St. Louis Advisor: Dr. Lawrence H. Snyder	5/2009 - 7/2009

EDUCATION

Ph.D., Neurosciences Washington University in Saint Louis Thesis Advisor: Dr. Lawrence H. Snyder. Thesis: Sensorimotor Transformation in the Macaque Parietal Reach Region (Defended on March 20, 2009)	8/2003 - 5/2009
A.B., Psychology, Magna Cum Laude Washington University	8/1999 - 5/2003
Pomfret School, Pomfret, CT	1996 - 1999

GRANTS

NIH T32 Postdoctoral Training Grant in Fundamental & Translational Neuroscience Duke University Dept. of Neurobiology	2011 - 2012
Ruth K. Broad Biomedical Research Foundation, Inc. Postdoctoral Fellowship Duke University	2010 - 2011
HHMI Undergraduate Research Fellowship HHMI & Washington University Dept. of Biology	2002

AWARDS & HONORS

Workshop on the Biology of Prosocial Behavior at Emory Travel Award	2011
Advances in Computational Motor Control Travel Award (Society for Neuroscience Satellite)	2008
Gordon Research Conference Travel Award	2007
Kauffman Life Science Entrepreneur Fellowship Ewing Marion Kauffman Foundation	2006
Lucille P. Markey Pathway Fellowship in Human Pathobiology	2004 - 2006

Washington University School of Medicine

John A. Stern Undergraduate Research Award to
a Graduating Psychology Major

2003

PAPERS

Chang SW and Snyder LH (2012) The representations of reach endpoints in posterior parietal cortex depend on which hand does the reaching. *J. Neurophysiol.*, in press.

Chang SW, Barter JW, Ebitz RB, Watson KK and Platt ML (2012) Inhaled oxytocin amplifies both vicarious reinforcement and self reinforcement in rhesus macaques (*Macaca mulatta*). *Proc Natl Acad Sci*, 109, 959–964.

Chang SW, Winecoff AA, and Platt ML (2011) Vicarious reinforcement in rhesus macaques (*Macaca mulatta*). *Front. Neurosci.*, 5, 27.

Chang SW and Snyder LH (2010) Idiosyncratic and systematic aspects of spatial representations in the macaque parietal cortex. *Proc Natl Acad Sci*, 107, 7951–7956.

Churchland MM, Yu BM, Cunningham JP, Sugrue LP, Cohen MR, Corrado GS, Newsome WT, Clark AM, Hosseini P, Scott BB, Bradley DC, Smith MA, Kohn A, Movshon JA, Armstrong KM, Moore T, **Chang SW**, Snyder LH, Lisberger SG, Priebe NJ, Finn IM, Ferster D, Ryu, SI, Santhanam G, Sahani M, and Shenoy KV (2010) *Stimulus onset quenches neural variability: a widespread cortical phenomenon. Nature Neurosci.*, 13, 369-378.

Chang SW, Papadimitriou C, and Snyder LH (2009) Using a compound gain field to compute a reach plan. *Neuron*, 64, 744-755.

Chang SW, Dickinson AR and Snyder LH (2008) Limb-specific representations of reaching in the posterior parietal cortex. *J. Neurosci.*, 28, 6128-6140.

Chang SW and Abrams RA (2004) Hand movements deviate toward distracters in the absence of response competition. *J. General Psych.: Special Issue on Movement, Attention, and Perception*, 131(4), 328-344.

MEETING ABSTRACTS

Chang SW and Platt ML.

Differential coding of egocentric and allocentric reward outcomes during social interaction in primate ACC and OFC.

Society for Neuroscience (Washington, DC), 2011 (Talk)

Chang SW, Barter JW, Ebitz RB, Watson KK and Platt ML.

Oxytocin promotes prosocial decisions in rhesus macaques.

Society for Neuroscience (Washington, DC), 2011 (Poster)

Chang SW and Snyder LH.

The representations of reach endpoints in posterior parietal cortex depend on which hand does the reaching.

Advances in Computational Motor Control X, ISSN xxx-xxx

Proceedings of the Annual Symposium

Society for Neuroscience (Washington, DC), 2011 (Poster)

Chang SW, Barter JW, Ebitz RB, Watson KK and Platt ML.

Inhaled oxytocin amplifies both vicarious reinforcement and self reinforcement in rhesus macaques (*Macaca mulatta*).

Workshop on the Biology of Prosocial Behavior at Emory University (*Atlanta, GA*), 2011 (*Poster*)

Chang SW and Snyder LH.

Spatial and non-spatial representations in the parietal reach region are systematically organized.
COSYNE (Salt Lake City, Utah), 2011 (Poster)

Chang SW and Platt ML.

Social Context Gates Other-Regarding Preferences in Rhesus Macaques (*Macaca mulatta*).
Society for Neuroscience (San Diego, CA), 2010 (Poster)

Chang SW and Snyder LH.

Spatial reference frame and limb specificity in macaque posterior parietal cortex.
Society for Neuroscience (San Diego, CA), 2010 (Poster)

Chang SW and Platt ML.

Social Context Gates Other-Regarding Preferences in Rhesus Macaques (*Macaca mulatta*).
A Brain Research meeting: *The Emerging Neuroscience of Autism Spectrum Disorders (San Diego, CA), 2010 (Poster)*

Chang SW and Snyder LH.

Idiosyncratic and systematic features of spatial representations in the macaque PRR.
COSYNE (Salt Lake City, Utah), 2010 (Poster)

Chang SW, Papadimitriou C, and Snyder LH.

Equal and opposite eye and hand gain fields for reaching in PRR.
Society for Neuroscience (Chicago, IL), 2009 (Poster)

Churchland MM, Yu BM, Cunningham JP, Sugrue LP, Cohen MR, Corrado GS, Newsome WT, Clark AM, Hosseini P, Scott BB, Bradley DC, Smith MA, Kohn A, Movshon JA, Armstrong KM, Moore T, Chang SW, Snyder LH, Ryu, SI, Santhanam G, Sahani M, and Shenoy KV.
Stimulus onset quenches neural variability: a widespread cortical phenomenon.
COSYNE (Salt Lake City, Utah), 2008 (Poster)

Chang SW and Snyder LH.

Gain fields for the distance between the ocular fixation point and the arm.
Advances in Computational Motor Control VII, ISSN 1944-4001
Proceedings of the Annual Symposium
Society for Neuroscience (Washington, DC), 2008 (Talk)

Churchland MM, Yu BM, Cunningham JP, Sugrue LP, Cohen MR, Corrado GS, Newsome WT, Clark AM, Hosseini P, Scott BB, Bradley DC, Smith MA, Kohn A, Movshon JA, Armstrong KM, Moore T, Chang SW, Snyder LH, Ryu, SI, Santhanam G, Sahani M, and Shenoy KV.
A widespread stimulus-driven reduction in cortical variability.
Dynamical Neuroscience XVI: Neuronal Variability and Its Functional Significance at the Society for Neuroscience (Washington, DC), 2008

Chang SW and Snyder LH.

The distance between the (initial) eye and arm position is coded in PPC using a gain field.
The 4th International Statistical Analysis of Neuronal Data (SAND) meeting, University of Pittsburgh (Dept. of Statistics), 2008 (Talk)

Chang SW and Snyder LH.

Diverse frames of reference in the parietal reach region (PRR).
Society for Neuroscience (San Diego, CA), 2007 (Poster)

Chang SW and Snyder LH.

Neurons in the Parietal Reach Region of monkeys plan contralateral but not ipsilateral arm movements.

The Gordon Research Conferences, Oculomotor System Biology (Lewiston, ME), 2007 (Poster)

Chang SW, Dickinson AR and Snyder LH.
Arm selectivity during reach planning in macaque posterior parietal cortex.
Society for Neuroscience (Washington, DC), 2005 (Talk)

Chang SW, Dickinson AR and Snyder LH.
Reaching with the right or the left arm: Neuronal activity in parietal reach region of monkey posterior parietal cortex - How specific are neurons in posterior parietal cortex in sensorimotor transformation?
The 2002 HHMI / Washington University Fellow Symposium (2002, Saint Louis, MO) (Talk)

Chang SW.
Detecting a target versus reaching out to it: The influence of visual detection on reaching.
The Annual Undergraduate - "Psymposium" in Washington University Department of Psychology (2002, Saint Louis, MO) (Talk)

FEATURED HIGHLIGHTS BY OTHERS

Blohm G and Crawford JD (2009) Fields of gain in the brain. *Neuron*, 64:744-55.

Whalley K (2012) Social neuroscience: Oxytocin boosts social awareness. *Nature Reviews Neuroscience*, 13 [Epub ahead of print].

INVITED LECTURES AND PRESENTATIONS

Animal Law Symposium (03/17/2012)
University of North Carolina in Chapel Hill School of Law

TEACHING EXPERIENCE

Teaching Assistantship in Medical Student Neuroscience course (Spring 2004)
Washington University in St. Louis School of Medicine

Teaching Assistantship in Sensation & Perception (Fall 2001)
Washington University in St. Louis

MEDIA

National Geographic, Daily News (Jan 9th, 2012)
"Exposure to "Love Hormone" Increases Prosocial Behavior in Monkeys" ([link](#))

US News (HealthDay) (Jan 10th, 2012)
"Monkeys Treated With 'Love Hormone' Show More Kindness" ([link](#))

abc News (Jan 11th, 2012)
"A Love Drug? Oxytocin Hormone Makes Mothers Kinder" ([link](#))

EurekAlert! (AAAS) (Jan 5th, 2012)
"Whiff of 'love hormone' helps monkeys show a little kindness" ([link](#))

OTHER INVOLVEMENT

Society for Neuroscience *NeurOnLine* 2011 - present
Role: "Champion" in Motor Systems Neuroscience
Online Community

Social Neuroscience Journal Club Organizer 2010 - present
Duke University

Center for Neuroeconomics retreat committee 2010

Duke University

Visuomotor Journal Club Organizer
Washington University

2006 - 2008

Society for Neuroscience member

2003 - present

Society for Neuroeconomics member

2011 - present

Weimaraner rescue volunteer (Wonderweims Resuce)

2007 - 2009