# QI WANG, Ph.D.

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## ACADEMIC APPOINTMENT

**Associate Professor** — **Columbia University**
July, 2020 – present — **Department of Biomedical Engineering**
New York, NY USA

**Assistant Professor** — **Columbia University**
January, 2013 – July, 2020 — **Department of Biomedical Engineering**
New York, NY USA

**Research Scientist** — **Georgia Institute of Technology/Emory University**
May, 2008 – Dec., 2012 — **Department of Biomedical Engineering**
Atlanta, GA USA

## EDUCATION/PROFESSIONAL TRAINING

Postdoctoral fellow, **Harvard University**, School of Engineering and Applied Sciences, Cambridge, MA, 2006-2008
Specialization: Neuroscience

Ph.D., **McGill University**, Dept. of Electrical and Computer Engineering
Montreal, Canada, 2002-2006
Specialization: Haptics and Computer-human interaction

Ph.D., **Harbin Institute of Technology**, Robotics Institute
China, 1995-1998
Specialization: Robotics and Control

## GRANTS

**NIH R01AG075114,** *The effects of long-term locus coeruleus stimulation on amyloid/tau pathology, synaptic plasticity, and memory during Alzheimer's disease progression.* (Role: **PI**), 2022-2027

**Air Force OSR FA9550-22-1-0337,** *Center of excellence in neuroscience of decision making.* (Role: **Co-PI**), 2022-2027

**NIH R01NS119813**, *Noradrenergic and cholinergic mechanisms underlying pupil-linked arousal modulation of thalamic sensory processing.* (Role: **PI**), 2021-2026

**DOD DURIP,** *A patch-seq system*. (Role: **PI**), 2024

**NSF TI-2232149,** *I-Corps: Enhancing Sensory Processing via Noninvasive Neuromodulation,* (Role: **PI**), 2022

**NIH R21MH125107***, Cholinergic contribution to pupil-linked arousal.* (Role: **PI**), 2020-2022

**NSF,** *CAREER: Enhancing perception and cognition while minimizing side effects through closed-loop peripheral neural stimulation.* (Role: **PI**), 2019-2024

**NIH R01MH112267**, *The role of the locus coeruleus in mediating pupil-linked arousal*. (Role: **PI**),

2016-2021

**DARPA, TNT Program.** *Optimized learning via peripheral nerve stimulation.* **(**Role: **Columbia PI),** 2016-2018

**Army Research Lab,** *Neural mechanism of uncertainty reduction through optimal fusion of multisensory information.* **(**Role: **PI),** 2015-2016

**NARSAD Young Investigator Grant,** *Neural basis of deficits in multisensory integration in schizophrenia and ASD.* **(**Role: **PI),** 2015-2017

**Sackler Convergence Award,** *Toward understanding neural mechanisms underlying sudden unexpected death in epilepsy*, 2015

**Irving Institute Imaging Pilot Award,** *In-vivo characterization of abnormal cortical sensory processing resulted from mutation in autism-associated genes using voltage sensitive dye imaging.* **(**Role: **PI),** 2014-2015

**Columbia Collaborative and Multidisciplinary Pilot Research Award,** *Development of an fMRI paradigm for the study of multisensory integration in neuropsychiatric disorders.* **(**Role: **Co-PI),** 2014-2015

**NIH R21EB015906,** *Device to mechanically interrogate tissue and skin across research environments*. (Role: **PI**), 2011-2014.

## AWARDS AND HONORS

- **NSF CAREER Award**, NSF, 2019
- **Sackler Convergence Award.** Raymond and Beverly Sackler Center for Convergence of Biomedical, Physical & Engineering Sciences, 2015.
- **Early Career Achievement Award**, IEEE Engineering in Medicine and Biology Society (IEEE EMBS), 2014
- **Best Poster Award,** Kavli Futures Symposium: The Novel Neurotechnologies, 2014
- **NARSAD Young Investigator Award,** The Brain & Behavior Research Foundation, 2014
- **Best Paper Award**, 14th IEEE Symposium on Haptic Interfaces for Virtual Environment and Tele-operator Systems (Haptic Symposium), 2006.
- **Eric L. Adler Fellowship in Engineering**, McGill University, 2004-2006
- **The Principal's Student-Athlete Academic Honor Roll**, McGill University, 2004-2006
- **Precarn Scholarship**, Precarn Institute, Canada, 2003-2005
- **Outstanding Student Scholarship**, Chinese Society for Electrical Engineering, 1990, 1992.

## SERVICES

Community Service:

- Chair, the 48th Northeast Bioengineering Conference, New York, April 23-24, 2022.
- National Science Foundation, Panelist, 2019-2022.
- Associate Editor, IEEE Transactions on Neural Systems & Rehabilitation Engineering (IEEE TNSRE), 2014 – 2018.
- Program Committee: World Haptic Conference 2015, Euro Haptics Conference 2016, World Haptic Conference 2017

University Service:

- Member, Columbia University Institutional Animal Care and Use Committee (IACUC), 2015 – present.
- Member, Columbia University Institutional Biosafety Committee (IBC), 2015 – present.

Reviewer: Nature Neuroscience; Nature Communications, eLife, PNAS, Current Biology, Trends in Neuroscience, Science Advances, Journal of Neuroscience, Cerebral Cortex, Journal of Neural Engineering, IEEE Transactions on Neural Systems and Rehabilitation Engineering, IEEE Transactions on Haptics, Medical Engineering and Physics, ACM T. on Multimedia Computing, Communications & Applications, Biomedical Optics Express, Neuropsychiatric Disease and Treatment.

## PATENTS

- USPTO 8,095,706. Systems and methods for the analysis of mechanical properties of materials. (Granted in November, 2011)
- USPTO 15/153,985. Systems and methods for early detection and monitoring of osteoarthritis. (Pending)
- PCT/US2020/037660. Methods and Devices for Improving Sensory Perception by Tonic Vagus Nerve Stimulation. (Pending)
- PCT/US2021/050805. Methods and Systems for Optimizing Placement of a Nerve Stimulation Device. (Pending)

## PUBLICATIONS

### *Book Chapter:*

1. Charles Rodenkirch, Brian Schriver, and Qi Wang. Brain-Machine Interfaces: Restoring and Establishing Communication Channels, in ***Neural Engineering: From Advanced Biomaterials to 3D Fabrication Techniques***, ed. Lijie Grace Zhang & David L. Kaplan, 2016

### *Journal Articles:*

1. Charles Rodenkirch and Qi Wang. Optimization of Temporal Coding of Tactile Information in Rat Thalamus by Locus Coeruleus Activation. ***Biology****,* 13 (2), 79, 2024.
2. Michael Jigo, Jason Carmel, Qi Wang, and Charles Rodenkirch, Transcutaneous cervical vagus nerve stimulation improves sensory performance in humans: a randomized controlled crossover pilot study. ***Scientific Reports***, 14 (1), 3975, 2024.
3. Shreya Narasimhan, Brian Schriver, and Qi Wang. Adaptive decision-making depends on pupil-linked arousal in rats performing tactile discrimination tasks. ***Journal of Neurophysiology***, 130 (6), 1541-1551, 2023.
4. Evan Weiss, Michael Kann, and Qi Wang. Neuromodulation of Neural Oscillations in Health and Disease. ***Biology (Cover story)***, 12 (3), 371, 2023.
5. Cody Slater, Andy Liu, Evan Weiss, Kunpeng Yu, and Qi Wang. The Neuromodulatory Role of the Noradrenergic and Cholinergic Systems and Their Interplay in Cognitive Functions: A Focused Review, ***Brain Sciences***, 12 (7), 890, 2022.
6. Delis, I., Ince, R. A. A., Sajda, P. & Wang, Q. Neural encoding of active multi-sensing enhances perceptual decision-making via a synergistic cross-modal interaction. ***Journal of Neuroscience***, 42 (11), 2344-2355, 2022.
7. Lapborisuth, P., Koorathota, S., Wang, Q. & Sajda, P. Integrating neural and ocular attention reorienting signals in virtual reality. ***Journal of Neural Engineering***, 18 (6), 066052, 2022.
8. Schroeder, K. E., Perkins, S. M., Wang, Q. & Churchland, M. M. Cortical Control of Virtual Self-

Motion Using Task-Specific Subspaces. ***Journal of Neuroscience***, 42 (2), 220-239, 2022.

9. Cody Slater and Qi Wang. Alzheimer's Disease: an evolving understanding of noradrenergic involvement and the promising future of electroceutical therapies. ***Clinical and Translational Medicine***. 11 (4), e397, 2021.
10. Yuxiang Liu, Shreya Narasimhan, Brian J. Schriver, and Qi Wang. Perceptual behavior depends differently on pupil-linked arousal and heartbeat dynamics-linked arousal in rats performing tactile discrimination tasks. ***Frontiers in Systems Neuroscience***, 14:614248, 2020.
11. Charles Rodenkirch and Qi Wang. Rapid and transient enhancement of thalamic information transmission induced by vagus nerve stimulation. ***Journal of Neural Engineering***. 17:026027, 2020.
12. Brian Schriver, Sean Perkins, Paul Sajda, and Qi Wang. Interplay between components of pupil-linked phasic arousal and its role in driving behavioral choice in Go/No-Go perceptual decision-making. ***Psychophysiology***. 57:e13565, 2020
13. Charles Rodenkirch, Yang Liu, Brian J Schriver, and Qi Wang. Locus coeruleus activation enhances thalamic feature selectivity via norepinephrine regulation of intrathalamic circuit dynamics. ***Nature Neuroscience***, 22(1):120-133, 2019. *Also featured in Nature Neuroscience* *News & Views*.
14. Brian Schriver, Svetlana Bagdasarov, and Qi Wang. Pupil-linked arousal modulates behavior in rats performing a whisker deflection direction discrimination task. ***Journal of Neurophysiology***, 120(4):1655-1670, 2018
15. Ioannis Delis, Jacek Dmochowski, Paul Sajda, and Qi Wang. Correlation of Neural Activity with Behavioral Kinematics Reveals Distinct Sensory Encoding and Evidence Accumulation Processes During Active Tactile Sensing. ***NeuroImage***, 175:12-21, 2018.
16. Matthew Downs, Stephen Lee, Georgiana Yang, Seaok Kim, Qi Wang, and Elisa E Konofagou. Non-invasive peripheral nerve stimulation via focused ultrasound in vivo. ***Physics in Medicine & Biology***, 63(3):035011, 2018.
17. Yang Liu, Charles Rodenkirch, Nicole Moskowitz, and Qi Wang. Dynamic lateralization of pupil dilation evoked by locus coeruleus activation results from sympathetic, not parasympathetic, contributions. ***Cell Reports***, 20:3099-3112, 2017.
18. Jacob Reimer, Matthew McGinley, Yang Liu, Charles Rodenkirch, Qi Wang, David A. McCormick, and Andreas S. Tolias, Pupil fluctuations track rapid changes in adrenergic and cholinergic activity in cortex. ***Nature Communications***, 7:13289, 2016.
19. Hermes Kamimura, Shutao Wang, Hong Chen, Qi Wang, Christian Aurup, Camilo Acostaa, Antonio Carneiro, and Elisa Konofagou, Focused ultrasound neuromodulation of cortical and subcortical brain structures using 1.9 MHz, ***Medical Physics***, 43(10):5730–5735, 2016.
20. He Zheng, Qi Wang, and Garrett Stanley, Adaptive Shaping of Cortical Response Selectivity in the Vibrissa Pathway, ***Journal of Neurophysiology***, 113(10): 3850–3865, 2015.
21. Douglas Ollerenshaw, He Zheng, Daniel Millard, Qi Wang, and Garrett Stanley, The Adaptive Trade-off between detection and discrimination in cortical representations and behavior. ***Neuron (Cover story)***, 81(5): 1152–1164, 2014.
22. Sean Kelly, Jens Kremkow, Jianzhong Jin, Yushi Wang, Qi Wang, Jose-Manuel Alonso, Garrett Stanley, The Role of Thalamic Population Synchrony In the Emergence of Cortical Feature Selectivity. ***PLOS Computational Biology***, 10(1):e1003418, 2014.
23. Daniel Millard, Qi Wang, Clare Gollnick, and Garrett Stanley, System identification of the nonlinear dynamics in the thalamocortical circuit in response to patterned thalamic microstimulation in-vivo. ***Journal of Neural Engineering,*** 10(6):066011, 2013.
24. Bilal Bari, Douglas Ollerenshaw, Daniel Millard, Qi Wang and Garrett Stanley, Behavioral and Electrophysiological Effects of Cortical Microstimulation Parameters. ***PLOS One***, 8(12):e82170, 2013.
25. Qi Wang, Daniel Millard, He Zheng, and Garrett Stanley, Voltage Sensitive Dye Imaging Reveals Improved Topographic Activation of Cortex in Response to Manipulation of Thalamic

Microstimulation Parameters, ***Journal of Neural Engineering,*** 9:026008, 2012.

26. Garrett B. Stanley, Jianzhong Jin, Yushi Wang, Gaelle Desbordes, Qi Wang, Michael J. Black, and Jose-Manuel Alonso. Visual Orientation and Directional Selectivity through Thalamic Synchrony, ***Journal of Neuroscience****,* 32(26): 9073-9088, 2012.
27. Douglas Ollerenshaw, Bilal Bari, Daniel Millard, Lauren Orr, Qi Wang, and Garrett Stanley, Detection of Tactile Inputs in the Rat Vibrissa Pathway, ***Journal of Neurophysiology***, 108(2): 479-90, 2012.
28. M-C Ding, Qi Wang, Eng H. Lo, and Garrett B. Stanley, Cortical Excitation and Inhibition Following Focal Traumatic Brain Injury, ***Journal of Neuroscience*****,** 31(40): 14085-14094, 2011.
29. Qi Wang, Roxanna Webber, and Garrett Stanley, Thalamic Synchrony and the Adaptive Gating of Information Flow to Cortex, ***Nature Neuroscience***, 13(12): 1534 – 1541, 2010.
30. Qi Wang and Vincent Hayward, Biomechanically Optimized Distributed Tactile Transducer Based on Lateral Skin Deformation, ***International Journal of Robotics Research*****,** 29(4):323-335, 2010.
31. Talia Konkle, Qi Wang, Vincent Hayward and Christopher I. Moore, Motion aftereffects transfer between touch and vision, ***Current Biology***, 19(9):745-750, 2009.
32. Olivia Carter, Talia Konkle, Qi Wang, Vincent Hayward, Christopher I. Moore, Tactile Rivalry Demonstrated with an Ambiguous Apparent-Motion Quartet. ***Current Biology***, 18(4):1050-1054, 2008.
33. Qi Wang and Vincent Hayward, Tactile Synthesis and Perceptual Inverse Problems Seen from the View Point of Contact Mechanics, ***ACM Transactions on Applied Perception***, 5(2):1-19, 2008.
34. Qi Wang and Vincent Hayward, In Vivo Biomechanics of the Fingerpad Skin Under Local Tangential Traction**,** ***Journal of Biomechanics***, 40(4):851-860, 2007.
35. J. Pasquero, J. Luk, V. Levesque, Qi Wang, V. Hayward, and K. E. MacLean, Haptically Enabled Handheld Information Display with Distributed Tactile Transducer. ***IEEE Transactions on Multimedia***, 9(4):746-753, 2006.

***Peer-reviewed Conference Papers:***

1. Ioannis Delis, Robin Ince, Paul Sajda, Qi Wang. Information-theoretic characterization of the neural mechanisms of active multisensory decision making. ***International Conference on NeuroRehabilitation***, 2018
2. Ioannis Delis, Jacek Dmochowski, Paul Sajda, Qi Wang. Correlations of Neural Activity with Behavioral Kinematics during Active Tactile Decision Making. ***The 10th Hellenic Conference on Artificial Intelligence***, 2018
3. Zhewei Jiang, Joao Pedro Cerqueira, Seongjong Kim, Qi Wang, Mingoo Seok, "1.74-uW/ch, 95.3%-Accurate Spike-Sorting Hardware based on Bayesian Decision" ***Proc. IEEE Symposium on VLSI Circuits***, 2016,
4. Hermes Kamimura, Shutao Wang, Hong Chen, Qi Wang, Christian Aurup, Camilo Acosta, Antonio Carneiro, Elisa Konofagou "Pupil dilation and motor response elicitation by ultrasound neurostimulation", ***Proc. IEEE International Ultrasonics Symposium***, 2015
5. Beinuo Zhang, Zhewei Jiang, Qi Wang, Jae-Sun Seo, Mingoo Seok, "A Neuromorphic Neural Spike Clustering Processor for Deep-Brain Sensing and Stimulation Systems," ***Proc. ACM/IEEE International Symposium on Low Power Electronics and Design***, 2015
6. Hermes Kamimura, Shutao Wang, Hong Chen, Qi Wang, Christian Aurup, Kathtleen Fan, Antonio Carneiro, Elisa Konofagou, "Ipsi- and Contralateral Motor Response Using Ultrasound-induced Neurostimulation in Deeply Anesthetized Mice", ***Proc. 2015 ICU International Congress on Ultrasonics***, 2015
7. Zhewei Jiang, Qi Wang and Mingoo Seok, A Low Power Unsupervised Spike Sorting Accelerator Insensitive to Clustering Initialization in Sub-optimal Feature Space, ***Proc. 52nd Annual Design Automation Conference***, 2015.

8. Daniel Millard, Qi Wang and Garrett Stanley, Nonlinear System Identification of the Thalamocortical Circuit in Response to Thalamic Microstimulation, ***Proc. 5th International IEEE EMBS Neural Engineering Conference***, pp.1-4, 2011.
9. Qi Wang, L. Kong, S. Sprigle, and Vincent Hayward, Portable Gage for Pressure Ulcer Detection. ***Proc. IEEE Engineering in Medicine and Biology Society Conference, EMBC06***, pp.5997-6000, 2006.
10. Qi Wang and Vincent Hayward, Compact, Portable, Modular, High-performance Distributed Tactile Display Device Based on Lateral Skin Deformation**, *Proc. 14th IEEE Symposium on Haptic Interfaces For Virtual Environment And Tele-operator Systems, IEEE VR 2006***, pp. 67-72, 2006. (**Best Paper Award**)
11. Qi Wang, Vincent Levesque, Jerome Pasquero, and Vincent Hayward, A Haptic Memory Game using the STReSS$^2$ Tactile Display**, *Proc. of the 2006 ACM Conference on Human Factors in Computing Systems, CHI 2006***. pp. 271-274, 2006.
12. Gianni Campion, **Qi Wang**, and Vincent Hayward. The Pantograph Mk-II: A Haptic Instrument. ***Proc. 2005 IEEE/RSJ Int. Conf. Intelligent Robots and Systems (IROS)***, pp. 723-728, 2005.
13. Qi Wang, Vincent Hayward, and Allan M. Smith, A New Technique for the Controlled Stimulation of the Skin. ***Proc. Canadian Medical and Biological Engineering Society Conference***, 2004.
14. Qi Wang, Yongsheng Ou, and Yangsheng Xu, A Prototype of Virtual Haptic Bronchoscope, ***Proc. 2002 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)***, pp.1361-1366, 2002.
15. Wenjie Dong, Yangsheng Xu, and **Qi Wang**, On Tracking control of Mobile Manipulator, ***Proc. Of 2000 IEEE International Conference on Robotics and Automation***, pp.3455-3460, 2000.
16. Qi Wang, Q. Tao, L. Hou, and H. Cai, On-line Learning Neural Network Controller for Pneumatic Robot Position Control, ***Proc. of IEEE International Conference for System, Man and Cybernetics***, pp.3437-3441, 1998.
17. Qi Wang, Q. Tao, L. Hou, and H. Cai, Fuzzy Control of Pneumatic Robot Position Servo System By Electro-Pneumatic On-Off Valves, ***Proc. of International Conference on Artificial Intelligence for Engineering***, pp.645-648, 1998.
18. Qi Wang, D. Wang, W. Chen, and L. Hou, A Digital Pneumatic Position Servo Unit, ***Proc. of 5th China National Conference on Robotics***, 413-417, 1997.
19. L. Hou, Qi Wang, Z. Li, Q. Yang, and W. Chen, On Pneumatic Robot Position Control System, ***Proc. of 5th China National Conference on Robotics***, pp.418-423, 1997.
20. L. Hou, Qi Wang, Q. Li, and Q. Tao, Experimental Study on Pneumatic Position Servo Control Using PCM, ***Proc. of 7th International Manufacturing Conference***, pp.480-483, 1997.

***Conference Posters:***

1. Ioannis Delis, Jacek Dmochowski, Paul Sajda, and Qi Wang, “Neural correlates of visual-haptic decision making in a texture discrimination task”, ***Society for Neuroscience Annual Meeting***. 2016
2. Matt Downs, G Yang, Qi Wang, & Elisa Konofagou. “Peripheral nerve stimulation in mice via non-invasive focused ultrasound”, ***Society for Neuroscience Annual Meeting***. 2016
3. Charlie Rodenkirch, Yang Liu, and Qi Wang, “Modulation of coding properties in the ventral posteromedial nucleus of the thalamus of the rat vibrissae pathway by LC activity patterns” ***Society for Neuroscience Annual Meeting***. 2015
4. Brian Schriver, Svetlana Bagdasarov, and Qi Wang “Pupillary dynamics reflect behavioral states in head-fixed rats performing whisker direction discrimination tasks”, ***Society for Neuroscience Annual Meeting***. 2015

5. Qi Wang, Edward Li, Yang Liu, Charles Rodenkirch and Nicole C Moskowitz, Bayesian inference of Locus Coeruleus activity from pupil dilation, ***IEEE EMBS BRAIN Grand Challenge Workshop***, 2014.
6. Yang Liu, Charles Rodenkirch, Nicole C Moskowitz, Edward Li and Qi Wang, Dynamic pupillary response to tonic and phasic patterns of Locus Coeruleus activity. ***Society for Neuroscience Annual Meeting***, 2014
7. Hermes Kamimura, Shutao Wang, Antonio Carneiro, Qi Wang, and Elisa Konofagou, Computational Simulations for Ultrasound Neurostimulation, ***Kavli Futures Symposium: The Novel Neurotechnologies***, 2014
8. Douglas Ollerenshaw, He Zheng, Qi Wang, Garrett Stanley, The adaptive trade-off between discriminability and detectability in the vibrissa system, ***Annual Computational and Systems Neuroscience meeting (COSYNE),*** Salt Lake City, 2013.
9. He Zheng, Douglas Ollerenshaw, Qi Wang, Garrett Stanley, Adaptive shaping of feature selectivity in the rodent vibrissa system. ***Annual Computational and Systems Neuroscience meeting (COSYNE),*** Salt Lake City, 2013.
10. Sean Kelly, Jens Kremkow, Jianzhong Jin, Yushi Wang, Qi Wang, Jose-Manuel Alonso, Garrett Stanley, Thalamic synchrony drives cortical feature selectivity in standard and novel visual stimuli. ***Annual Computational and Systems Neuroscience meeting (COSYNE),*** Salt Lake City, 2013.
11. Douglas Ollerenshaw, Bilal Bari, Chris Pace, Daniel Millard, He Zheng, Qi Wang, and Garrett Stanley, Detection and classification performance in the whisker system of awake, behaving rats, ***Society for Neuroscience Annual Meeting***, New Orleans, 2012.
12. He Zheng, Douglas Ollerenshaw, Clare Gollnick, Daniel Millard, Qi Wang, Garrett Stanley Properties of adapting stimuli differentially influence decoding of sensory stimuli from voltage-sensitive dye imaging in rat barrel cortex, ***Society for Neuroscience Annual Meeting***, New Orleans, 2012.
13. Daniel Millard, Qi Wang, Clare Gollnick, and Garrett Stanley, Characterization of the dynamically varying spatiotemporal cortical response to patterns of sensory and electrical stimulation in the thalamocortical network, ***Society for Neuroscience Annual Meeting***, New Orleans, 2012.
14. Qi Wang, Daniel Millard, He Zheng, and Garrett Stanley, Enhanced cortical specificity of thalamic microstimulation through manipulation of charge delivery, ***Society for Neuroscience Annual Meeting***, Washington DC, 2011.
15. Daniel Millard, Qi Wang, He Zheng, and Garrett Stanley, Optimization of patterned thalamic microstimulation for control of cortical activation, ***Society for Neuroscience Annual Meeting***, Washington DC, 2011.
16. Douglas Ollerenshaw, He Zheng, Bilal Bari, Daniel Millard, Qi Wang, and Garrett Stanley, Sensory adaptation increases discriminability at the expense of detectability in the whisker system of awake, behaving rats, ***Society for Neuroscience Annual Meeting***, Washington DC, 2011.
17. He Zheng, Qi Wang, Daniel Millard, Douglas Ollerenshaw, and Garrett Stanley, Adaptation induces stimulus-specific spatial sharpening of responses in rat primary somatosensory cortex, ***Society for Neuroscience Annual Meeting***, Washington DC, 2011.
18. Sean Kelly, Garrett Stanley, Jianzhong Jin, Yushi Wang, Gaelle Desbordes, Qi Wang, Michael Black, and Jose-Manuel Alonso, Visual orientation and directional selectivity through thalamic synchrony, ***Society for Neuroscience Annual Meeting***, Washington DC, 2011.
19. Qi Wang, Daniel Millard, He Zheng, Clare Gollnick, and Garrett Stanley, Optimal decoding of spatiotemporal cortical activity in rat barrel cortex. ***Society for Neuroscience Annual Meeting***, San Diego, 2010.

20. Clare Gollnick, Qi Wang, Seth Koenig, Daniel Millard, Ravi Bellamkonda, and Garrett Stanley, Can the degradation of perineuronal nets alter the activity of local inhibitory circuits in the barrel cortex? ***Society for Neuroscience Annual Meeting***, San Diego, 2010.
21. Qi Wang and Garrett Stanley, Interactions between Thalamocortical Neurons in Driving Cortical Cells in The Rat Vibrissa System, ***Annual Computational and Systems Neuroscience meeting (COSYNE),*** Salt Lake City, 2008.
22. Qi Wang and Garrett Stanley, Thalamocortical Transformations of Dynamic Stimulus Patterns Explored Through Simultaneous Recordings in VPM and Cortical Layer 4, ***Society for Neuroscience Annual Meeting***, San Diego, 2007.
23. T. Konkle, Qi Wang, V. Hayward, C. I. Moore, Visual Motion Adaptation Induces a Tactile Motion After Effect, ***Society for Neuroscience Annual Meeting***, San Diego, 2007.
24. O. Carter, T. Konkle, J. Snyder, Qi Wang, V. Hayward, C. Moore, and K. Nakayama, Bi-stable Tactile Stimulus Shows Perceptual Rivalry Exists Across the Senses***. 8th International Multisensory Research Forum***, Sydney, Australia, 2007.