

Jan Kubanek

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Positions

University of Utah
Assistant Professor in Biomedical Engineering 2018

Stanford University School of Medicine
Postdoctoral research in Neuromodulation

Washington University School of Medicine
Ph.D. in Neuroscience 2013

Active Research Support

- **NIH K99/R00, National Institute of Neurological Disorders and Stroke**
\$924,444. Role: PI
2017-2022
Ultrasonic neuromodulation: From mechanism to optimal applications

Completed Research Support

- **Stanford University School of Medicine Dean's Postdoctoral Fellowship**
2015-2016
- **McDonnell Center for Systems Neuroscience Pilot Grant**
2013-2014

Selected Invited Talks

Annual Symposium of the International Society for Therapeutic Ultrasound.
Ultrasound for neural interventions. *Barcelona, Spain, June 14, 2019.*

Neurology Grand Rounds. Focused Ultrasound for Targeted Noninvasive Treatments of Brain Disorders. *University of Utah, March 6, 2019.*

3rd International Brain Stimulation Conference. Transcranial ultrasound selectively biases decision-making in primates. *Vancouver, Canada, February 27, 2019.*

Neurosurgery Grand Rounds. Focused Ultrasound for Targeted Noninvasive Therapies. *University of Utah, January 23, 2019.*

Society for Neuroscience Press Conference. Transcranial ultrasound impacts primate choice behavior. *Washington, DC, November 14, 2017.*

- [scientificamerican.com/article/ultrasound-could-offer-noninvasive-treatment-for-parkinsons-and-depression](https://www.scientificamerican.com/article/ultrasound-could-offer-noninvasive-treatment-for-parkinsons-and-depression)

Cell Symposia: Big Questions in Neuroscience. Focused ultrasound biases monkey choice behavior. *Washington, DC, November 9, 2017.*

Peer-reviewed Original Articles (16 published; 940 citations)

17. **Kubaneck J.**, Brown J., Ye P., Butts Pauly K., Moore T., Newsome W. Transcranial ultrasound selectively biases decision-making in primates. *BioRxiv* 486134 (2019).
16. **Kubaneck J.**, Shukla P., Das A., Baccus S., Goodman M. Ultrasound elicits behavioral responses through mechanical effects on neurons and ion channels in a simple nervous system. *The Journal of Neuroscience*, 1458-17 (2018).
15. **Kubaneck J.** Neuromodulation with transcranial focused ultrasound. *Neurosurgical Focus* 44 (2018).
14. **Kubaneck J.** Optimal decision-making and matching are tied through diminishing returns. *PNAS*, doi:10.1073/pnas.1703440114 (2017).
13. **Kubaneck J.**, Shi J., Marsh J., Chen D., Deng C., Cui J. Ultrasound modulates ion channel currents. *Scientific Reports* 6 (2016).
12. **Kubaneck J.**, Li J., Snyder L.H. Motor role of parietal cortex in a monkey model of hemispatial neglect. *PNAS*. 112, E2067-72 (2015).
11. **Kubaneck J.**, Snyder L.H. Reward-based Decision Signals in Parietal Cortex Are Partially Embodied. *The Journal of Neuroscience*, 35(12):4869–81 (2015).
10. **Kubaneck J.**, Snyder L.H. Reward size governs repeat-switch decisions and strongly modulates the activity of neurons in parietal cortex. *Cerebral Cortex* (2015).
9. **Kubaneck J.**, Schalk G. NeuralAct: A tool to visualize electrocorticographic (ECoG) activity on a three-dimensional model of the cortex. *Neuroinformatics*, 13, 167-74 (2015).
8. **Kubaneck J.**, Snyder L.H., Abrams R.A. Rewards and punishments act as distinct factors in guiding behavior. *Cognition*, 139, 154–167 (2015).
7. **Kubaneck J.**, Snyder L.H. Matching Behavior as a Tradeoff Between Reward Maximization and Demands on Neural Computation. *F1000Research* (2015).
6. **Kubaneck J.**, Hill J., Snyder L.H, Schalk G. Cortical alpha activity reflects the degree of confidence in committing to an action. *Frontiers in Neuroscience* 9, 243 (2015).
5. **Kubaneck J.**, Snyder L.H., Brunton B.W., Brody C., Schalk G. A low frequency oscillatory neural signal in humans encodes a developing decision variable. *NeuroImage*, 83, 795808 (2013).
4. **Kubaneck J.**, Wang C., Snyder L.H. Neuronal responses to target onset in oculomotor and somatomotor parietal circuits differ markedly in a choice task. *Journal of Neurophysiology* 110.10, 2247-2256 (2013).
3. **Kubaneck J.**, Brunner P., Gunduz A., Poeppel D., Schalk G. The Tracking of Speech Envelope in the Human Cortex. *PLOS ONE* 8, no. 1 (2013).
2. **Kubaneck J.**, Miller K.J., Ojemann J.G., Wolpaw J.R., Schalk G. Decoding flexion of individual fingers using electrocorticographic signals in humans. *Journal of Neural Engineering*, vol. 6 pp. 66001 (2009).
1. Schalk G., **Kubaneck J.**, Miller K.J., Anderson N., Leuthardt E.C., Ojemann J.G., Limbrick D., Moran D., Gerhardt L.A., Wolpaw J.R. Decoding Two-Dimensional Movement Trajectories Using Electrocorticographic Signals in Humans. *Journal of Neural Engineering*, 4, 264-275 (2007).

Journal reviewer

- eLife
- Journal of Neural Engineering
- Human Brain Mapping
- Brain Stimulation
- IEEE Transactions on Biomedical Engineering

Grant reviewer

- Focused Ultrasound Foundation

Selected Awards

- NIH K99/R00 Award. 2017-2022.
- Stanford University School of Medicine Dean's Postdoctoral Fellowship. 2015-2016.
- Granted U.S. permanent residency as a scientist with exceptional ability. 2015.
- McDonnell Center for Systems Neuroscience Pilot Grant. 2013-2014.
- Merlie Fellowship for advanced training in neuroscience. Washington University. 2010.
- Ambassadorial Scholar of the Czech Republic in the United States. Rotary Foundation. 2007–2008.
- Dean's Award. Czech Technical University in Prague. 2007.

Mentoring and Teaching

University of Utah

Co-lecturer in Bioen 5480 - Ultrasound

Aug 2019–Dec 2019

I am expanding this course to include new therapeutic applications of ultrasound. Work is underway to cross-list the course also in Mechanical Engineering and the Neuroscience Program.

University of Utah

Mentor

Oct 2018–present

I have recruited 1 postdoc, 3 PhD students, 1 MS student, and 1 undergraduate student. I devised a clear plan for the students and mentor them on effectively executing the plan.

University of Utah

Guest lecturer

Oct 2018, Jan 2019

I gave guest lectures in

- Bioen 6440 - Neural Engineering
- Bioen 3091 - Current Research in Bioengineering

University of Utah

Lecturer

Sep 2018–present

I provide seminars to show international students how to self-petition for U.S. permanent residency through the National Interest Waiver program. The goal of these free seminars is to widen the pool of promising researchers in the U.S. to include nationalities that may be under-represented.

Open-source Software

NeuralAct: A tool to visualize cortical activity on a three-dimensional model of brain surface.

- Available at www.neuralgate.org/software

Languages

- Machine languages: Matlab, C/C++, Java, L^AT_EX
- Human languages: English (fluent), German (fluent), Spanish (fluent), French (intermediate), Czech (native)