James Goodman

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Education

Sep.2013– Dec.2018 **Ph.D. in Computational Neuroscience**, *The University of Chicago*, Chicago, IL.
Dissertation: Representations of the hand in primate sensorimotor cortex
Advisor: Prof. Sliman Bensmaia

Sep.2008– Jun.2013 **B.S. / M.S. in Biomedical Engineering**, *Drexel University*, Philadelphia, PA.
Master's Thesis: Control of isometric hindlimb ground reaction forces with acute epidural spinal cord and cauda equina stimulation in the rat
Advisor: Prof. Karen Moxon

Research Experience

Nov.2019– Present **Post-Doctoral Scientist**, *Deutsches Primatenzentrum, GmbH*, Department of Neurobiology, Scherberger Group.
Research on neural responses in the fronto-parietal cortical grasping network, at both the single-neuron and population levels, when performing hand movements and during observation of others' hand movements.

Jan.2018– Oct.2019 **Post-Doctoral Scientist**, *The University of Chicago*, Bensmaia Lab.
Continued research on the postural nature of proprioceptive and motor cortical representations of hand postures.

Sept.2013– Dec.2018 **Graduate Student**, *The University of Chicago*, Bensmaia Lab.
Research on the postural nature of proprioceptive and motor cortical representations of hand postures.

Jun.2009– Jun.2013 **Undergraduate Researcher**, *Drexel University*, Moxon Lab.
Research on the topic of reliably recruiting different hindlimb muscle groups via epidural spinal cord stimulation in a rodent model.

Grants and Awards

2015 Graduate Assistance in Areas of National Need (GAANN) Fellowship in Integrative Neuromechanics

First-Author Publications

** indicates equal contribution*

1. Suresh, A.K.*, **Goodman, J.M.*,** Okorokova, E.V., Kaufman, M.T., Hatsopoulos, N.G., & Bensmaia, S.J. (2020). Neural population dynamics in motor cortex are different for reach and grasp. *eLife* 9, e58848. Pre-print.

2. **Goodman, J.M.,** Tabot, G.A., Lee, A.S., Suresh, A.K., Rajan, A.T., Hatsopoulos, N.G., & Bensmaia, S.J. (2019). Postural Representations of the Hand in Primate Sensorimotor Cortex. *Neuron* 104(5), 1000–1009.e7.

3. **Goodman, J.M.,** & Bensmaia, S.J. (2018). The neural basis of haptic perception. In: The Stevens Handbook of Experimental Psychology and Cognitive Neuroscience. Fourth Edition. Volume 2: Sensation, Perception, & Attention. Eds. Wixted, J.T. and Serences, J.T. John Wiley & Sons, New York, NY.

4. **Goodman, J.M.,** & Bensmaia, S.J. (2017). A variation code accounts for the perceived roughness of coarsely textured surfaces. *Scientific Reports* 7.

5. Dougherty, J.B.*, **Goodman, J.M.*,** Knudsen, E.B., & Moxon, K.A. (2012). Controlled unilateral isometric force generated by epidural spinal cord stimulation in the rat hindlimb. *IEEE Transatctions on Neural Systems and Rehabilitation Engineering (TNSRE)* 20(4), 549–556.

Other Publications

1. Okorokova, E.V., **Goodman, J.M.,** Hatsopoulos, N.G., & Bensmaia, S.J. (2020). Decoding hand kinematics from population responses in sensorimotor cortex during grasping. *Journal of Neural Engineering* 17(4).

2. Yan, Y., **Goodman, J.M.,** Moore, D.D., Solla, S.A., & Bensmaia, S.J. (2020). Unexpected complexity of everyday manual behaviors. *Nature Communications* 11(1).

3. Prendergast, B., Brooks, J., **Goodman, J.M.,** Boyarinova, M., Winberry, J.E., & Bensmaia, S.J. (2019). Finger Posture and Finger Load are Perceived Independently. *Scientific Reports* 9.

4. Dougherty, J.B., Knudsen, E.B., **Goodman, J.M.,** & Moxon, K.A. (2011). Response mapping for epidural spinal stimulation for the restoration of controlled hindlimb movement after spinal cord injury. *2011 5th International IEEE/EMBS Conference on Neural Engineering* Cancun, 338–341.

Conference Presentations

1. **Goodman, J.M.**, Schaffelhofer, S., & Scherberger, H. (October 2020). Grip-specific dynamics are not shared between action and observation in the frontoparietal cortical grasping network. Interactive talk. Neuromatch, Online.

2. **Goodman, J.M.**, Schaffelhofer, S., & Scherberger, H. (October 2020). Population-level signatures of action and observation in the frontoparietal grasping network. Virtual Poster. Bernstein Conference, Online.

3. **Goodman, J.M.**, Suresh, A.K., Okorokova, E.V., Hatsopoulos, N.G., & Bensmaia, S.J. (October 2019). Primary motor cortex does not exhibit orderly dynamics during grasp. Nanosymposium talk. Society for Neuroscience, Chicago, IL. [Abstracts of the Society for Neuroscience 49: 722.08]

4. **Goodman, J.M.**, Lee, A.S., Okorokova, E.V., Suresh, A.K., Hatsopoulos, N.G., & Bensmaia, S.J. (November 2018). Neurons in somatosensory and motor cortices encode hand postures, not joint velocities. Poster. Society for Neuroscience, San Diego, CA. [Abstracts of the Society for Neuroscience 48: 310.12]

5. **Goodman, J.M.**, Lee, A.S., Suresh, A.K., Hatsopoulos, N.G., & Bensmaia, S.J. (May 2018). The representation of hand postures and movements in somatosensory cortex. Poster. Janelia conference on the Mechanisms of Dexterous Behavior, Ashburn, VA.

6. **Goodman, J.M.**, Tabot, G.A., Suresh, A.K., Hatsopoulos, N.G., & Bensmaia, S.J. (May 2017). No evidence for hand synergies in sensorimotor cortices of macaques. Poster. Meeting of the Society for the Neural Control of Movement (NCM), Dublin, Ireland.

7. **Goodman, J.M.**, Tabot, G.A., Suresh, A.K., Hatsopoulos, N.G., & Bensmaia, S.J. (November 2016). High-dimensional representation of hand movements in sensory and motor cortices. Poster. Society for Neuroscience, San Diego, CA. [Abstracts of the Society for Neuroscience 46: 151.11]

8. **Goodman, J.M.**, Tabot, G.A., Rajan, A.S., Suresh, A.K., Hatsopoulos, N.G., & Bensmaia, S.J. (October 2015). Do proprioceptive neurons in somatosensory cortex encode muscle length? Poster. Society for Neuroscience, Chicago, IL. [Abstracts of the Society for Neuroscience 45: 706.22]

9. **Goodman, J.M.**, Lieber, J.D., Saal, H.P., & Bensmaia, S.J. (November 2014). Spatial variation of simulated slowly adapting type 1 afferent responses to embossed dot patterns predicts perceived roughness. Poster. Society for Neuroscience, Washington, D.C. [Abstracts of the Society for Neuroscience 44: 441.16]