Jesse D. Marshall

Harvard University, Department of Organismic and Evolutionary Biology

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EDUCATION

Stanford University: PhD, Physics 2016

Stanford University: MS, Physics 2010

University of Chicago: BA Physics (Honors), BS Mathematics (Honors) 2009

University High School, Tucson AZ: Diploma 2005

EXPERIENCE

Helen Hay Whitney Postdoctoral Fellow. 2016-Present

Harvard University, Department of Organismic and Evolutionary Biology. Supervisor Bence Ölveczky.

Howard Hughes Medical Institute Research Associate. 2016

Stanford University Department of Biology. Advisor Mark Schnitzer.

Graduate Research Assistant. 2010 – 2015

Stanford University Department of Physics. Advisor Mark Schnitzer.

Thesis Title: 'Illuminated Algorithms: Expanding neural recordings in space, time and specificity.'

Thesis Committee: Steven Chu, David Prince, Michael Z. Lin, Luis de Lecea, Surya Ganguli.

Undergraduate Research Assistant -- Astrophysics. 2006-2009

University of Chicago and Max Planck Institute for Nuclear Physics. Supervisors Dietrich Müller, Paolo Privitera, Werner Hofmann.

PUBLICATIONS

1. Parker, J.G.*, **Marshall, J.D.***, Ahanonu, B., Wu, Y., Kim, T.H., Grewe, B., Zhang, Y., Li, J.Z., Ding, J.B., Ehlers, M. D., Schnitzer, M.J. (2018). Diametric neural ensemble dynamics in parkinsonian and dyskinetic states. *Nature*, In Press (* designates co-first authors).
2. Grewe, B. F., Gründemann, J., Kitch, L.J., Lecoq, J.A., Parker, J.G., **Marshall, J.D.**, Larkin, M.C., et al. "Neural ensemble dynamics underlying a long-term associative memory." *Nature* 543, no. 7647 (2017): 670-675.
3. **Marshall, J. D.**, Li, J. Z., Zhang, Y., Gong, Y., St-Pierre, F., Lin, M. Z., & Schnitzer, M. J. (2016). Cell-Type-Specific Optical Recording of Membrane Voltage Dynamics in Freely Moving Mice. *Cell*, *167*(6), 1650-1662.
4. St-Pierre, F., **Marshall, J. D.**, Yang, Y., Gong, Y., Schnitzer, M. J., & Lin, M. Z. (2014). High-fidelity optical reporting of neuronal electrical activity with an ultrafast fluorescent voltage sensor. *Nature neuroscience*, *17*(6), 884-889.
5. **Marshall, J.D.** and Schnitzer, M.J. (2013). Optical Strategies for Sensing Neuronal Voltage Using Quantum Dots and Other Semiconductor Nanocrystals. *ACS Nano, 7 (5)*.
6. Lam, A. J., St-Pierre, F., Gong, Y., **Marshall, J. D.**, Cranfill, P. J., Baird, M. A., McKeown, M.R., Wiedenmann, J., Davidson, M.W., Schnitzer, M.J., Tsien, R.Y., Lin, M. Z. (2012). Improving FRET dynamic range with bright green and red fluorescent proteins. *Nature methods*, *9*(10), 1005-1012.
7. Ave, M., Boyle, P. J. Höppner, C., **Marshall, J.** and Müller, D. (2009). Propagation and Source Energy Spectra of Cosmic Ray Nuclei at High Energies. *Astrophysical Journal*, 697, 106.

PATENTS

1. **Marshall, Jesse D.**, and Mark J. Schnitzer. "Method and apparatus for optical recording of biological parameters in freely moving animals." U.S. Patent Application No. 14/939,637.

AWARDS AND HONORS

Helen Hay Whitney Fellowship	2017-present
Stanford Graduate Fellowship	2010-2013
Grainger Foundation Fellowship (Full Tuition)	2008
Enrico Fermi Institute's Nathan Sugarman Award	2008
Phi Beta Kappa (Junior Year)	2008
University of Chicago Student Marshal (highest academic honors)	2008
National Merit Scholarship	2005-2009
National AP Scholar	2005

OUTREACH & EXTRACURRICULAR

Outreach

• Stanford Splash: 2010-2015. Designed and taught courses to >250 K-12 students in the chemistry of cooking, brain disorders, optical illusions, the neuroscience of taste, and genomics.

Extracurricular

- Captain, University of Chicago Ultimate Frisbee, 2007-2008.
- 1-W Jazz Club (trumpet), 2008-2009. Recorded 1 EP '*Daylight Savings*'.
- Hobbies: road biking, swimming, birding, cooking.