

# Logan Grosenick, PhD

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## Education

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2015 PhD in Neurosciences (Advisors: Karl Deisseroth and Patrick Suppes), Stanford University  
2008 MSc in Statistics (Advisors: Bradley Efron and Jonathan Taylor), Stanford University  
2005 BS in Biology (Advisor: Russell Fernald), Stanford University  
2005 BA in Psychology (Advisor: Ewart A. C. Thomas), Stanford University

## Research Positions

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2016-present Post-Doctoral Fellow, Simons Society of Fellows Junior Fellow, Columbia Department of Statistics  
2015-2016 Post-Doctoral Scholar, Columbia Department of Statistics (Advisor: Liam Paninski)

## Publications

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2018  
**Logan Grosenick**, Tracey C Shi, Faith Gunning, Marc J Dubin, Jonathan Downar, and Conor Liston. Functional and optogenetic approaches to discovering stable subtype-specific circuit mechanisms in depression. *bioRxiv*, 2018.  
Sean J Reed, Christopher K Lafferty, Jesse A Mendoza, Angela K Yang, Thomas J Davidson, **Logan Grosenick**, Karl Deisseroth, and Jonathan P Britt. Coordinated reductions in excitatory input to the nucleus accumbens underlie food consumption. *Neuron*, In Press, 2018.  
Thu N Huynh, Emanuela Santini, Edward Mojica, Ann E Fink, Baila S Hall, Robert N Fetcho, **Logan Grosenick**, Karl Deisseroth, Joseph E LeDoux, Conor Liston, and Eric Klann. Activation of a novel p70 s6 kinase 1-dependent intracellular cascade in the basolateral nucleus of the amygdala is required for the acquisition of extinction memory. *Mol Psychiatry*, 23(6):1394–1401, 2018.

2017  
**Logan Grosenick**, Michael Broxton, Christina K. Kim, Conor Liston, Ben Poole, Samuel Yang, Aaron S. Andalman, Edward Scharff, Noy Cohen, Ofer Yizhar, Charu Ramakrishnan, Surya Ganguli, Patrick Suppes, Marc Levoy, and Karl Deisseroth. Identification of cellular-activity dynamics across large tissue volumes in the mammalian brain. *bioRxiv*, 2017.  
Andrew T Drysdale, **Logan Grosenick**, Jonathan Downar, Katharine Dunlop, Farrokh Mansouri, Yue Meng, Robert N Fetcho, Benjamin Zebley, Desmond J Oathes, Amit Etkin, Alan F Schatzberg, Keith Sudheimer, Jennifer Keller, Helen S Mayberg, Faith M Gunning, George S Alexopoulos, Michael D Fox, Alvaro Pascual-Leone, Henning U Voss, BJ Casey, Marc J Dubin, and Conor Liston. Resting-state connectivity biomarkers define neurophysiological subtypes of depression. *Nature Medicine*, 23(1):28–38, 2017.

2016

Annegret L Falkner, **Logan Grosenick**, Thomas J. Davidson, Karl Deisseroth, and Dayu Lin. Hypothalamic control of male aggression-seeking behavior. *Nature Neuroscience*, 19:596–604, 2016.

Emily A. Ferenczi, Kelly A. Zalocusky, Conor Liston, **Logan Grosenick**, Melissa R. Warden, Debha Amatyia, Kiefer Katovich, Hershel Mehta, Brian Patenaude, Charu Ramakrishnan, Paul Kalanithi, Amit Etkin, Brian Knutson, Gary H. Glover, and Karl Deisseroth. Prefrontal cortical regulation of brainwide circuit dynamics and reward-related behavior. *Science*, 351(6268), 2016.

2015

Kate L Montgomery, Alexander J Yeh, John S Ho, Vivien Tsao, Shrivats Mohan Iyer, **Logan Grosenick**, Emily A Ferenczi, Yuji Tanabe, Karl Deisseroth, Scott L Delp, et al. Wirelessly powered, fully internal optogenetics for brain, spinal and peripheral circuits in mice. *Nature Methods*, 2015.

Raju Tomer, Matthew Lovett-Barron, Isaac Kauvar, Aaron Andalman, Vanessa M Burns, Sethuraman Sankaran, **Logan Grosenick**, Michael Broxton, Samuel Yang, and Karl Deisseroth. Sped light sheet microscopy: Fast mapping of biological system structure and function. *Cell*, 163(7):1796–1806, 2015.

John S Ho, Yuji Tanabe, Shrivats Mohan Iyer, Amelia J Christensen, **Logan Grosenick**, Karl Deisseroth, Scott L Delp, and Ada SY Poon. Self-tracking energy transfer for neural stimulation in untethered mice. *arXiv preprint arXiv:1503.01493*, 2015.

Sophie Aimon, Takeo Katsuki, **Logan Grosenick**, Michael Broxton, Karl Deisseroth, and Ralph J Greenspan. Activity sources from fast large-scale brain recordings in adult drosophila. *bioRxiv*, 2015.

**Logan Grosenick\***, James H. Marshal\*, and Karl Deisseroth. Closed-loop and activity-guided optogenetic control. *Neuron*, 86(1):106–39, 2015 (\*equal contributors).

2014

Leif E. Fenno\*, Joanna Mattis\*, Charu Ramakrishnan\*, Minsuk Hyun, Soo Yeun Lee, Miao He, Jason Tucciarone, Aslihan Selimbeyoglu, Andre Berndt, **Logan Grosenick**, Kelly A. Zalocusky, Hannah Bernstein, Haley Swanson, Chelsey Perry, Ilka Diester, Frederick Boyce, Caroline E. Bass, Rachel Neve, Z. Josh Huang, and Karl Deisseroth. Targeting cells with single vectors using multiple-feature Boolean logic. *Nature Methods*, 11:763–772, 2014 (\*equal contributors).

Genevera I. Allen, **Logan Grosenick**, and Jonathan E. Taylor. A generalized least squares matrix decomposition. *Journal of the American Statistical Association*, 109:145–159, 2014.

Lisa A. Gunaydin\*, **Logan Grosenick\***, Joel C. Finkelstein\*, Isaac V. Kauvar\*, Lief E. Fenno, Avishek Adhikari, Stephan Lammel, Julie J. Mirzabekov, Raag D. Airan, Kelly A. Zalocusky, Kay M. Tye, Polina Anikeeva, Rob C. Malenka, and Karl Deisseroth. Natural neural projection dynamics underlying social behavior. *Cell*, 157:1535–1551, 2014 (\*equal contributors).

Noy Cohen, Samuel Yang, Aaron Andalman, Michael Broxton, **Logan Grosenick**, Karl Deisseroth, and Marc Levoy. Enhancing the performance of the light field microscope using wavefront coding. *Optics Express*, 22(20):24817–24839, 2014.

2013

Kwanghun Chung, Jenelle Wallace, Sung-Yon Kim, Sandhiya Kalyanasundaram, Aaron S. Andalman, Tom J. Davidson, Julie J. Mirzabekov, Kelly A. Zalocusky, Joanna Mattis, Aleksandra K. Denisin, Sally Pak, Hannah Bernstein, Charu Ramakrishnan, **Logan Grosenick**, Viviana Gradinaru, and Karl Deisseroth. Structural and molecular interrogation of intact biological systems. *Nature*, 497:332–337, 2013.

Randal Burns, William G. Roncal, Dean Kleissas, Kunal Lillaney, Priya Manavalan, Eric Perlman, Daniel R. Berger, Davi D. Bock, Kwanghun Chung, **Logan Grosenick**, Narayanan Kasthuri, Nick C. Weiler, Karl Deisseroth, Michael Kazhdan, Jeff Lichtman, R. Clay Reid, Stephen J. Smith, Alexander S. Szalay, Joshua T. Vogelstein, and R. Jacob Vogelstein. The Open Connectome Project data cluster: scalable analysis and vision for high-throughput neuroscience. *Proceedings of the 25th International Conference on Scientific and Statistical Database Management (SSDBM)*, Article No. 27, 2013.

**Logan Grosenick**, Brad Klingenberg, Jonathan E. Taylor, and Brian Knutson. Interpretable whole-brain prediction analysis with GraphNet. *NeuroImage*, 72(15):304–321, 2013.

Michael Broxton, **Logan Grosenick**, Samuel Yang, Noy Cohen, Andaman Andalman, Karl Deisseroth, and Marc Levoy. Wave optics theory and 3-D deconvolution for the light field microscope. *Optics Express*, 21(21):25418–25439, 2013.

2012

Hatef Monajemi, Sina Jafarpour, Matan Gavish, Stat 330/CME 362 Collaboration\*, David L. Donoho, and (\*Stat 330/CME 362 Collaboration is S Ambikasaran, S Bacallado, D Bharadia, Y Chen, Y Choi, M Chowdhury, S Chowdhury, A Damle, W Fithian, G Goetz, **L Grosenick**, S Gross, G Hills, M Hornstein, M Lakkam, J Lee, J Li, L Liu, C Sing-Long, M Marx, A Mittal, H Monajemi, A No, R Omrani, L Pekelis, J Qin, KS Raines, E Ryu, A Saxe, D Shi, K Siilats, D Strauss, G Tang, C Wang, Z Zhou, and Z Zhu). Deterministic matrices matching the compressed sensing phase transitions of Gaussian random matrices. *PNAS*, 110(4):1181–1186, 2012.

2011

Kay M. Tye\*, Rohit Prakash\*, Sung-Yon Kim\*, Leif E. Fenno\*, **Logan Grosenick**, Hosniya Zarabi, Kimberly R. Thompson, Viviana Gradinaru, Charu Ramakrishnan, and Karl Deisseroth. Amygdala circuitry mediating reversible and bidirectional control of anxiety. *Nature*, 471:358–362, 2011 (\*equal contributors).

Polina Anikeeva, Aaron S. Andalman, Illana Witten, Warden Melissa, Inbal Goshen, **Logan Grosenick**, Lisa Gunaydin, Loren M. Frank, and Karl Deisseroth. Optetrode: A multichannel readout for optogenetic control in freely moving mice. *Nature Neuroscience*, 15:163–170, 2011.

2009

**Logan Grosenick**, Todd Anderson, and Stephen J. Smith. Elastic Source Selection for in vivo imaging of neuronal ensembles. *Proceedings of the 6th IEEE International Symposium on Biomedical Imaging*, pages 1263–1266, 2009.

Claudio G. Carvalhaes, Marcos Perreau Guimaraes, **Logan Grosenick**, and Patrick Suppes. EEG classification by ICA source selection of laplacian-filtered data. *Proceedings of the 6th IEEE International Symposium on Biomedical Imaging*, pages 1003–1006, 2009.

2008

**Logan Grosenick**, Stephanie Greer, and Brian Knutson. Interpretable classifiers for FMRI improve prediction of purchases. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 16(6):539–549, 2008.

2007

**Logan Grosenick**, Tricia S. Clement, and Russell D. Fernald. Fish can infer social rank by observation alone. *Nature*, 445:429–432, 2007.

Dik Kin Wong\*, **Logan Grosenick**\*, Tim Uy, Marcos Perreau Guimaraes, Claudio G. Carvalhaes, Peter Desain, and Patrick Suppes. Quantifying inter-subject agreement in brain-imaging analyses. *NeuroImage*, 39(3):1051–1063, 2007 (\*equal contributors).

Colleen A. Flanagan, Chun-Chun Chen, Marla Coetsee, Siphon Mamputha, Kathleen E. Whitlock, Nicholas Breidenkamp, **Logan Grosenick**, Russell D. Fernald, and Nicola Illing. Expression, structure, function, and evolution of gonadotropin-releasing hormone (GnRH) receptors GnRH-R1SHS and GnRH-R2PEY in the teleost, *Astatotilapia burtoni*. *Endocrinology*, 148(10):5060–5071, 2007.

Marcos Perreau Guimaraes, Dik Kin Wong, E. Uy, Timothy, **Logan Grosenick**, and Patrick Suppes. Single-trial classification of MEG recordings. *IEEE Transactions on Biomedical Engineering*, 54(3):436–443, 2007.

2006

Dik Kin Wong, Marcos Perreau Guimaraes, E. Uy, Timothy, **Logan Grosenick**, and Patrick Suppes. Multichannel classification of single EEG trials with Independent Component Analysis. In J. Wang et al., editor, *Advances in Neural Networks*, pages 541–547. Springer, Berlin/Heidelberg, 2006.

## Selected Conference Posters

2017

Sophie Aimon, Takeo Katsuki, **Logan Grosenick**, Michael Broxton, Karl Deisseroth, Terrence Sejnowski, and Ralph Greenspan. Ultra-fast whole brain imaging during behavior in adult drosophila. *COSYNE*, 2017.

2016

Sophie Aimon, Takeo Katsuki, **Logan Grosenick**, Michael Broxton, Karl Deisseroth, Terrance Sejnowski, and Ralph J. Greenspan. Probing large-scale network dynamics at high speed in the brain of behaving flies. *Society for Neuroscience (SfN)*, 2016.

Aaron S Andalman, Vanessa M Burns, Michael Broxton, Ben Poole, Sam J Yang, **Logan Grosenick**, Matthew Lovett-Barron, Talia Lerner, Nandini Pichamoorthy, Phillippe Mourrain, Marc Levoy, and Karl Deisseroth. Probing the brain-wide neural dynamics of passive coping behavior. *Society for Neuroscience (SfN)*, 2016.

2015

Benjamin Poole, **Logan Grosenick**, Michael Broxton, Karl Deisseroth, and Surya Ganguli. Robust non-rigid alignment of volumetric calcium imaging data. *COSYNE*, 2015.

2014

**Logan Grosenick\***, Michael Broxton\*, Christina K. Kim\*, Conor Liston\*, Ben Poole, Paul Kalanathi, Emily Ferenczi, Samuel Yang, Aaron Andalman, Todd Anderson, Louis Leung, Edward Scharff, Joshua T. Vogelstein, Noy Cohen, Romaine Madelaine, Zhengyun Zhang, Ofer Yizhar, Anselm Levskaya, Charu Ramakrishnan, Surya Ganguli, Akira Muto, Koichi Kawakami, Philippe Mourrain, Stephen J. Smith, Patrick Suppes, Marc Levoy, and Karl Deisseroth. Identification of cellular-activity timing relationships spanning large tissue volumes during behavior. *Society for Neuroscience (SfN)*, 2014 (\*equal contributors).

Tom J. Davidson, Anderson E. B., Talia N. Lerner, Charu Ramakrishnan, Joanna Mattis, **Logan Grosenick**, Isaac Kauvar, Loren M. Frank, and Karl Deisseroth. Subsecond cholinergic dynamics underlying hippocampal network state in freely-behaving rats. *Society for Neuroscience (SfN)*, 2014.

Sophie Aimon, Takeo Katsuki, **Logan Grosenick**, Michael Broxton, Karl Deisseroth, and Ralph Greenspan. Fruit fly functional imaging. *Society for Neuroscience (SfN)*, 2014.

Alexander Yeh, Kate Montgomery, John Ho, Vivien Tsao, Emily Ferenczi, Shrivats Iyer, **Logan Grosenick**, Yuji Tanabe, Karl Deisseroth, Scott Delp, and Ada Poon. Fully internal wireless optogenetics for truly untethered stimulation. *Society for Neuroscience (SfN)*, 2014.

Emily Ferenczi, Conor Liston, Kelly Zalocusky, Kiefer Katovich, Melissa Warden, Debha Amatya, Brian Patenaude, **Logan Grosenick**, Charu Ramakrishnan, Paul Kalanathi, Amit Etkin, Brian Knutson, Gary Glover, and Karl Deisseroth. Brain-wide imaging of an anhedonic state using awake optogenetic functional MRI (ofMRI). *Society for Neuroscience (SfN)*, 2014.

2013

**Logan Grosenick\***, Michael Broxton\*, Christina K. Kim\*, Conor Liston\*, Samuel Yang, Aaron Andalman, Noy Cohen, Louis Leung, Ben Poole, Joshua T. Vogelstein, Todd Anderson, Zhengyun Zhang, Ofer Yizhar, Brian Grone, Charu Ramakrishnan, Akira Muto, Koichi Kawakami, Philippe Mourrain, Stephen J. Smith, Patrick Suppes, Marc Levoy, and Karl Deisseroth. Synchronous 3-D imaging of large neural populations with single-neuron resolution at video rates in vitro and in vivo with light field microscopy. *Society for Neuroscience (SfN)*, 2013 (\*equal contributors).

Lisa A. Gunaydin\*, Isaac V. Kauvar\*, **Logan Grosenick\***, and Karl Deisseroth. Real-time optical measurement of projection activity: dynamics of genetically- and anatomically-defined neuronal afferents predict social behavior in freely moving mice. *Society for Neuroscience (SfN)*, 2013 (\*equal contributors).

Aaron S. Andalman\*, Vanessa M. Burns\*, **Logan Grosenick**, Michael Broxton, Samuel Yang, Noy Cohen, Louis C. Leung, Roman Madelaine, Brian Grone, Philippe Mourrain, Marc Levoy, and Karl Deisseroth. Whole-brain calcium imaging during contextual fear learning in juvenile zebrafish using light field tomography. *Society for Neuroscience (SfN)*, 2013 (\*equal contributors).

Charlene C. Wu, **Logan Grosenick**, and Brian Knutson. Multiple neural circuits predict different types of financial risk taking. *Society for Neuroscience (SfN)*, 2013.

2011

Genevera I. Allen, **Logan Grosenick**, and Jonathan Taylor. Whole-brain spatio-temporal dimension reduction via Sparse Generalized PCA. *Organization of Human Brain Mapping (OHBM)*, 2011.

2010

**Logan Grosenick**, Brad Klingenberg, Brian Knutson, and Jonathan Taylor. Interpretable multivariate models for whole-brain fMRI. *Organization of Human Brain Mapping (OHBM)*, 2010.

Kay M. Tye, Fenno Lief E., Sung-Yon Kim, Rohit Prakash, Hosnia Zarabi, Kimberly Thompson, **Logan Grosenick**, Viviana Gradinaru, Charu Ramakrishnan, and Karl Deisseroth. Endogenous anxiolytic mechanisms identified by projection-specific optogenetic control of amygdala microcircuitry. *Society for Neuroscience (SfN)*, 2010.

2009

**Logan Grosenick**, David Brynjar Franzson, Marcos Perreau Guimaraes, Lene Harbott, and Patrick Suppes. Single-trial classification and representation of melody in the brain. *Association for Psychological Science (APS)*, 2009.

**Logan Grosenick**, Brad Klingenberg, Stephanie Greer, Jonathan Taylor, and Brian Knutson. Whole-brain sparse penalized discriminant analysis for predicting choice. *Organization of Human Brain Mapping (OHBM)*, 2009.

Nick C. Weiler, Brad Busse, **Logan Grosenick**, Nancy O'Rourke, Kristina Micheva, and Stephen J. Smith. Single synapse classification in the cerebral cortex using array tomography. *Society for Neuroscience (SfN)*, 2009.

## Grants and Awards

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2016	Simons Foundation Junior Fellowship
2016	Bernstein-Sloan Swartz Travel Award
2014	FENS Spring Brain Conference Travel Award
2014	CNRS Jacques Monod Conference Travel Award
2011	Organization for Human Brain Mapping Trainee Abstract Award
2008	Graduate Fellowship (IGERT), National Science Foundation
2005	Firestone Medal for Excellence in Undergraduate Research, Stanford
2005	Honors, Department of Biological Sciences, Stanford
2004	Ethical Dimensions in Neuroscience Award, Stanford BioX Initiative, Stanford

## Selected Conference Talks

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2016	Bernstein Conference, Berlin
2015	CodeNeuro Conference, San Francisco
2014	NIPS workshop: Large Scale Optical Physiology, Montreal
2014	Olympus Fifth Annual Neuroimaging Symposium at SfN, Washington DC
2014	CNRS Jacques Monod Conference, Brittany
2014	FENS Spring Brain Conference, Copenhagen
2013	Olympus Fourth Annual Neuroimaging Symposium at SfN, San Diego
2012	Redwood Center for Theoretical Neuroscience, Berkeley
2011	COSYNE Workshops, Snowbird
2010	Organization for Human Brain Mapping (OHBM), Barcelona
2010	Columbia Department of Statistics, New York
2010	Johns Hopkins Whiting School of Engineering, Baltimore
2009	IEEE International Symposium on Biomedical Imaging, Boston

## Teaching

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2011-2013	Volunteer SAT Tutor with Boys and Girls Club of the Peninsula
2005-2007	Princeton Review Tutor: Individual SAT Tutor
2002-2005	Princeton Review Instructor: SAT, SATII (Class size 10-30 students).

## Professional Activities

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### Affiliations

Simons Foundation  
American Association for the Advancement of Science (AAAS)  
Institute of Electrical and Electronics Engineers (IEEE), Member  
Institute of Mathematical Statistics (IMS)  
Organization for Human Brain Mapping (OHBM)  
Society for Neuroscience (SfN)

### Ad-Hoc Reviewer

Animal Behavior  
Communications in Nonlinear Science and Numerical Simulation  
IEEE Trans Medical Imaging  
Journal of Computational and Graphical Statistics  
Nature Scientific Reports  
NeuroImage  
Pattern Recognition  
Pattern Recognition in NeuroImaging  
Statistical Analysis and Data Mining

## References

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