
**The Faculty of Medicine of Harvard University
Curriculum Vitae**

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Place of Birth: Bethesda, MD

Education:

2008	B.S.	Biopsychology	University of California Santa Barbara
2015	Ph.D.	Cognitive Science Advisor: Jaime A. Pineda, Ph.D.	University of California San Diego

Postdoctoral Training:

10/15–3/17	Postdoctoral Researcher	Neuroscience (PI: Eric Courchesne, Ph.D.)	University of California, San Diego
4/17–8/18	Postdoctoral Research Associate	Neuroscience (PI: Judson Brewer, M.D., Ph.D.)	University of Massachusetts Medical School
9/18 –	Postdoctoral Research Fellow	Neuroscience (PIs: Zev Schuman-Olivier, M.D.; Vitaly Napadow, Ph.D.; Gaelle Desbordes, Ph.D.)	Cambridge Health Alliance and Massachusetts General Hospital

Faculty Academic Appointments:

7/14 – 9/16	Associate Lecturer	Cognitive Science	University of California San Diego
4/15 – 6/15	Associate Lecturer	Psychology	University of California San Diego

Professional Societies:

2008 –	Society for Neuroscience	Member
2013 –	Cognitive Neuroscience Society	Member
2019 –	Organization for Human Brain Mapping	Member

Editorial Activities:

Ad hoc Reviewer

Biological Psychiatry	Cognitive Neurodynamics
Autism Research	European Journal of Neuroscience
Biological Psychology	Journal of Autism and Developmental Disorders
Brain Connectivity	Translational Psychiatry
Brain Research	ASN Neuro

Report of Local Teaching and Training

Teaching of Students in Courses:

2013	Altered States of Consciousness “Meditation and the Brain” Upper Division Undergraduates	UC San Diego Single Invited Lecture
2014-2016	Drugs: Brain, Mind, and Culture Upper Division Undergraduates	UC San Diego, Dept. of Cognitive Science 3 lecture hours/week, 10 weeks/quarter, 4 quarters over 3 years
2015	Introduction to Cognitive Science “Social Cognition and Autism” 1 st year undergraduates	UC San Diego Single Invited Lecture
2015	Cognitive Neuroscience Seminar Series “Mirror, mirror: social cognition, action perception, and the brain” 1 st year undergraduates	UC San Diego Single Invited Lecture
2015	Drugs, Addiction, and Mental Disorders Upper Division Undergraduates	UC San Diego, Dept. of Psychology 3 lecture hours/week, 10 weeks
2016	Introduction to Cognitive Science “Drugs and the Brain” 1 st year undergraduates	UC San Diego Single Invited Lecture

Laboratory and Other Research Supervisory and Training Responsibilities:

2010-2015	Mentoring and training undergraduate research assistants in clinical electrophysiology research (PI: Jaime A. Pineda, PhD)	3-4 hours per week
2014-2015	Head Teaching Assistant, Department of Cognitive Science, UC San Diego	Leading orientations each quarter, mentoring teaching and instructional assistants as needed

Other Mentored Trainees and Faculty:

- 2012 Karen Carrasco, B.S. Cognitive Science
Mentored in collection and analysis of EEG data, led to peer-reviewed publication in *Phil. Trans. Royal Soc. London B*.
- 2015 Nicolle Woo, B.S. Bioengineering, Engineering Consultant at Azzur Group.
Mentored as Faculty Advisor for Academic Internship Program, UC San Diego.
Internship program counselor: Madhvi Acharya.

Local Invited Presentations:

No presentations below were sponsored by outside entities

- 2013 "Meditation and the Brain."
Invited talk for Center for Science and Education of Empathy and Compassion at UC San Diego. April 2013. La Jolla, California.

National

- 2012 **Datko, M.**; Pineda, J.A. Changing the Dynamics of the Mirror Neuron System Through Neurofeedback: Effects on ASD Behavior, Electrophysiology, and Functional Neuroanatomy. Society for Advancement of Brain Analysis (SABA). June 2012. San Diego, California.
- 2014 **Datko, M.**; Fishman, I; Cabrera, Y; Carper, R; Müller, RA. White matter compromise accompanies functional overconnectivity within the imitation network in children with autism. Nanosymposium talk at Society for Neuroscience, November 2014, Washington, D.C.
- 2015 **Datko, M.**; Gougelet, R; Metke, M.; Donoghue, T.; Kirchgessner, M.; Castro, N.; Huang, M.X.; Pineda, J.A. MEG source modeling during imitation, observation, and resting state in children on the autism spectrum. Nanosymposium talk at Society for Neuroscience, October 2015, Chicago, Illinois.

International

- 2012 **Datko, M.**; Pineda, J.A.; Müller, R.A. Functional Neuroanatomical Changes Produced by Mu-Based Neurofeedback Training in Children on the Autism Spectrum. Talk given at International Meeting for Autism Research (IMFAR), May 2012. Toronto, Canada.

Report of Education of Patients and Service to the Community

No presentations below were sponsored by outside entities

Activities

- 2014 Reuben H. Fleet Science Center
- “Sex in the Lab: the Neurophysiology of Attraction, Love, and Sex.” Invited talk for the Ruben H. Fleet Science Center's "Science on the Rocks" event series. Organizer: Andrea Decker (adecker@rhfleet.org). May 2014. San Diego, California.
- 2015 Pint of Science Festival
- Sex in the Lab: The Neurobiology of Attraction and Love. Invited talk for Pint of Science event at Turquoise Cellars. May 2015. San Diego, California.
- 2015 La Jolla Playhouse
- Speaker for Discovery Sunday event at the La Jolla Playhouse. Discussion on the neurobiology of attraction and love. Organizer: Steve McCormick. August 31, 2015. La Jolla, California.
- 2016 San Diego Repertory Theater
- Speaker for panel discussion “Love and Neuroscience”, prior to a production called "Outside Mullingar." Organizer, host, and artistic director: Sam Woodhouse. January 28th, 2016. San Diego, California.
- 2016 Reuben H. Fleet Science Center
- Speaker for *Suds and Science*, a series of scientific talks open to the public. Organizer: Andrea Decker (adecker@rhfleet.org). June 6, 2016. The Rose Wine Bar, San Diego, California.

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Research Investigations

Janes, A.C., **Datko, M.**, Roy, A., Barton, B., Druker, S., Neal, C., Ohashi, K., Benoit, H., van Lutterveld, R. and Brewer, J.A., 2019. Quitting starts in the brain: a randomized controlled trial of app-based mindfulness shows decreases in neural responses to smoking cues that predict reductions in smoking. *Neuropsychopharmacology*, 44, 1631–1638.

- Pal, P, Theisen, D.L., **Datko, M.**, Van Lutterveld, R., Roy, A., Ruf, A., Brewer, J.A. 2018. From research to clinic: A sensor reduction method for high-density EEG neurofeedback systems. *Clinical Neurophysiology*.
- Datko, M.**, Pineda, J.A., Müller, R.A., 2017. Positive effects of neurofeedback on autism symptoms correlate with brain activation during imitation and observation. *Eur. J. Neurosci*.
- Datko, M.**, Hu, J.H., Williams, M., Reyes, C.M., Lominac, K.D., Von Jonquieres, G., Klugmann, M., Worley, P., Szumlinski, K.K. 2017. Behavioral and neurochemical phenotyping of mice incapable of Homer1a induction. *Frontiers in Behavioral Neuroscience*.
- Datko, M.**, Gougelet, R., Huang, M.-X., Pineda, J.A., 2016. Resting State Functional Connectivity MRI among Spectral MEG Current Sources in Children on the Autism Spectrum. *Front. Neurosci.* 10, 258.
- Keown, C.L., **Datko, M.C.**, Chen, C.P., Maximo, J.O., Jahedi, A., Müller, R.A., 2016. Network Organization is Globally Atypical in Autism: A Graph Theory Study of Intrinsic Functional Connectivity. *Biol. Psychiatry Cogn. Neurosci. Neuroimaging*.
- Falahpour, M., Thompson, W.K., Abbott, A.E., Jahedi, A., Mulvey, M.E., **Datko, M.**, Liu, T.T., Müller, R.A., 2016. Underconnected, But Not Broken? Dynamic Functional Connectivity MRI Shows Underconnectivity in Autism Is Linked to Increased Intra-Individual Variability Across Time. *Brain Connect.* 6, 403-414.
- Abbott, A.E., Nair, A., Keown, C.L., **Datko, M.**, Jahedi, A., Fishman, I., Müller, R.A., 2016. Patterns of Atypical Functional Connectivity and Behavioral Links in Autism Differ Between Default, Salience, and Executive Networks. *Cereb. Cortex* 26, 4034-4045.
- Fishman, I., **Datko, M.**, Cabrera, Y., Carper, R.A., Müller, R.A., 2015. Reduced integration and differentiation of the imitation network in autism: A combined functional connectivity magnetic resonance imaging and diffusion-weighted imaging study. *Ann. Neurol.* 78, 958-969.
- Nair, A., Carper, R.A., Abbott, A.E., Chen, C.P., Solders, S., Nakutin, S., **Datko, M.C.**, Fishman, I., Müller, R.A., 2015. Regional specificity of aberrant thalamocortical connectivity in autism. *Hum. Brain Mapp.* 36, 4497-4511.
- Khan, A.J., Nair, A., Keown, C.L., **Datko, M.C.**, Lincoln, A.J., Müller, R.A., 2015. Cerebro-cerebellar resting-state functional connectivity in children and adolescents with autism spectrum disorder. *Biol. Psychiatry* 78, 625-634.
- Nair, A., Keown, C.L., **Datko, M.**, Shih, P., Keehn, B., Müller, R.A., 2014. Impact of methodological variables on functional connectivity findings in autism spectrum disorders. *Hum. Brain Mapp.* 35, 4035-4048.
- Pineda, J.A., Carrasco, K., **Datko, M.**, Pillen, S., Schalles, M., 2014. Neurofeedback training produces normalization in behavioural and electrophysiological measures of high-functioning autism. *Philos. Trans. R. Soc. Lond. B. Biol. Sci.* 369, 20130183.
- Park, J.M., Hu, J.H., Milshteyn, A., Zhang, P.W., Moore, C.G., Park, S., **Datko, M.C.**, Domingo, R.D., Reyes, C.M., Wang, X.J., Etzkorn, F.A., Xiao, B., Szumlinski, K.K., Kern, D., Linden, D.J., Worley,

P.F., 2013. A prolyl-isomerase mediates dopamine-dependent plasticity and cocaine motor sensitization. *Cell* 154, 637-650.

Non-peer reviewed scholarship in print or other media:

Reviews, chapters, monographs and editorials

Pineda, J.A., Juavinett, A., **Datko, M.**, 2014. Rationale for Neurofeedback Training in Children with Autism, in: Patel, V.B. (Ed.), *Comprehensive Guide to Autism*. Springer US, New York City, pp. 439-460.

Pineda, J.A., Juavinett, A., **Datko, M.**, 2012. Self-regulation of brain oscillations as a treatment for aberrant brain connections in children with autism. *Med. Hypotheses* 79, 790-798.

Doctoral Thesis:

Datko, M. C. (2015). *Functional and Structural Connectivity, and the Effects of Neurofeedback Training, in Imitation-Related Brain Networks in Autism* (Doctoral dissertation, UC San Diego).

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

Datko, M., Lutz, J, Gawande, R, To, MN, Desel, T, Napadow, V, King, J, Britton, W, Loucks, E, Schuman-Olivier, Z, Desbordes, G. June 2019. Effects of 8-week Mindfulness training on BOLD fMRI response during interoceptive awareness task. Poster presented at the annual meeting of the Organization for Human Brain Mapping. Rome, Italy.

Datko, M., Eyler, LT, Lombardo, MV, Campbell, K, Barnes, CC, Pierce, K, Courchesne, E. Imbalanced within-network and between-network functional connectivity among toddlers with autism. Poster presented at the International Meeting for Autism Research. May 2017. San Francisco, California.

Narrative Report

My research has focused on how integrative cognitive or behavioral training targeting neural mechanisms of self-regulation and attention may influence the dynamics of functional brain networks. My doctoral dissertation examined structural and resting state connectivity of networks involved in social cognition and imitation, as well as the default mode network, in individuals with autism spectrum disorders (ASD). As part of that work, I studied the effects of neurofeedback as a novel non-pharmacological intervention for social behavioral symptoms in ASD.

More recently, I worked on integrating source-estimated EEG neurofeedback from the posterior cingulate cortex as a supplement to a standard mindfulness-based stress reduction program. On a recent study of cigarette smokers who were attempting to quit, I found decreased fMRI BOLD response to visual smoking cues in those who used a mindfulness-based smoking cessation smartphone app compared to those who used a control app.

I am currently using task-based and functional connectivity MRI to measure hypothesized changes in self-regulation and attention networks resulting from a mindfulness-based training program that has been integrated into primary care for patients with anxiety and depression. I am also using high-field MRI (7-tesla) to measure changes in brainstem, somatosensory, and central autonomic networks in patients with chronic migraines who undergo a combination of mindfulness meditation training and treatment with respiratory-gated transcutaneous vagus nerve stimulation.