

Justin O'Hare, Ph.D.

3227 Broadway, L5-055 / L7-024, New York, NY 10027
jo2546@columbia.edu · (812) 878-0690

Education

Northwestern University- Evanston, IL

- Bachelor of Arts in Biological Sciences and Cognitive Science- June 2012
- Cumulative GPA 3.52/4.00

Duke University- Durham, NC

- Ph.D. in Neurobiology- May 2017 (thesis defense 3/20/2017)
- Cumulative GPA 3.91/4.0

Marine Biological Laboratory- Woods Hole, MA

- Neurobiology Course- June – July 2013
- Grass Fellowship- June – August 2016

Research Experience

Allada Laboratory – Northwestern University – Evanston, IL

09/09 – 06/12

- Developed and implemented high-throughput behavioral assay for ethanol response in *Drosophila melanogaster*.
- Designed and executed forward insertional mutagenesis screen for genes involved in anesthetic and ethanol response, sleep behavior, and circadian rhythmicity, following up findings at molecular-genetic level.
- Discovered uncharacterized genes critical for normal VGA and ethanol response in *Drosophila melanogaster*.

Paller Laboratory – Northwestern University – Evanston, IL

06/10 – 09/10

- Collaborated in a study which discovered a novel method for improving music-based motor performance during sleep in humans.

West Laboratory – Duke University – Durham, NC

01/13 – 04/13

- Investigated addiction-related plasticity mechanisms in mice via brain region- and cell type-specific transcriptional profiling.

Calakos Laboratory – Duke University – Durham, NC

07/12 – 12/12; 05/13 – 06/17

- Developed and implemented analyses for two-photon calcium imaging of large populations of neurons.
- Found cell type-specific substrates for habitual behavior in mouse corticostriatal circuitry.
- Identified striatal microcircuit mechanism for observed circuit-level habit substrates and demonstrated its necessity *in vivo*.

Grass Laboratory – Marine Biological Laboratory – Woods Hole, MA

06/16 – 09/16

- Independently designed and implemented a research plan to locate the corticostriatal memory trace for a habit and target it for *in vivo* manipulation.

Polleux & Losonczy Laboratories – Columbia University – New York, NY

11/18 – present

- Investigating role of dendritic calcium dynamics in learning and memory at the cellular, circuit, and behavior levels in hippocampal area CA1 pyramidal neurons with particular interest in ER-mitochondria contacts as an endogenous regulator of cytosolic calcium dynamics and as a tool to specifically manipulate calcium.

Honors and Awards

BRAIN Initiative Fellowship (F32) – 2018-2021

Bill Hall Prize for Excellence in Graduate Student Research – 2016

Grass Fellowship – 2016

Ruth K. Broad Research Award for Graduate Students – 2014-2015

NSF Graduate Research Fellowship Honorable Mention – 2014

AAAS/Science Program for Excellence in Science – 2014-2016

Weinberg Academic Year Research Grant – 2012

Weinberg Summer Research Grant – 2011

Summer Undergraduate Research Grant – 2010

Publications

Turi, G.F.; Li, W.K.; Chavlis, S.; Pandi, I; **O'Hare, J.K.**; Priestley, J.B.; Grosmark, A.D.; Liao, Z.; Ladow, M.; Zhang, J.F.; Zemelman, B.V.; Poirazi, P.; Losonczy, A. (2019) "Vasoactive Intestinal Polypeptide-Expressing Interneurons in the Hippocampus Support Goal-Oriented Spatial Learning." *Neuron*, 101(6). PMID: 30713030.

O'Hare, J.K.; Calakos, N.; Yin, H.H. (2018) "Recent Insights into Corticostriatal Circuit Mechanisms underlying Habits." *Curr. Opin. Behav. Sci.*, 20. PMID: 29450220.

Wang, X.; Gallegos, D.A.; Pogorelov, V.M.; **O'Hare, J.K.;** Calakos, N.; Wetself, W.C.; West, A.E. (2018) "Parvalbumin interneurons of the mouse Nucleus Accumbens are required for amphetamine-induced locomotor sensitization and conditioned place preference." *Neuropsychopharmacology*, 43(5). PMID: 28840858.

O'Hare, J.K.; Ade, K.K.; Gaidis, E.; Li, H.; Kim, N.; Yin, H.H.; Calakos, N. (2017) "Striatal fast-spiking interneurons selectively modulate circuit output and are required for habitual behavior." *eLife*, Sept. 5;6. PMID: 28871960.

O'Hare, J.K.; Ade, K.K.; Sukharnikova, T.; Van Hooser, S.D.; Palmeri, M.L.; Yin, H.H.; Calakos, N. (2016) "Pathway-Specific Striatal Substrates for Habitual Behavior." *Neuron*, 89(3). PMID: 26804995.

Ade, K.K.; Wan, Y.; Hamman, H.C.; Guo, W.; **O'Hare, J.K.;** Quian, A.; Van Hooser, S.D.; Palmeri, M.L.; Wetsel, W.C.; Conn, P.J.; Huber, K.M.; Calakos, N. (2016) "Increased mGluR5 signaling underlies OCD-like behavioral and striatal circuit abnormalities in mice." *Biological Psychiatry*, 80(7). PMID: 27436084.

Antony, J.W.; Gobel, E.W.; **O'Hare, J.K.;** Reber, P.J.; Paller, K.A. (2012) "Cued memory reactivation during sleep influences skill learning." *Nature Neuroscience*, 15(8). PMID: 22751035.