Jill L. Silverman, Ph.D.

Research/Academic Interests

The overarching goal of Dr. Silverman's research is to apply her 20 years of training and experience with rodent model systems to design and implement effective translation strategies for discovering medical treatments for neurodevelopmental disorders and intellectual disability. Her research projects have employed a multi-tiered comprehensive phenotyping strategy that has led to the discovery of clinically relevant phenotypes in mutant rodent models of genetic diseases associated with autism spectrum disorders (ASD), Fragile X syndrome, 22q13 deletion (Phelan-McDermid), Angelman, Prader-Willi and Duplication 15q syndromes.

In 2015, she was awarded resources to develop her own laboratory research program on rare genetic developmental disorders characterized intellectual disabilities and pediatric epilepsies. Specifically, her laboratory has a large sub-focus on genetic disorders of the chromosomal region 15q11.2-q13. Dup15q Syndrome is a maternally derived duplication of the 15q11.2-q13 region. It is the second most common genetic variation associated with ASD and a common cause of intellectual disability (ID) (~1:250-500 of ASD cases; ~1:584 cases of ID).

In 2017, she was awarded an NIH R01 Research Project Grant focused on identifying the phenotypes associated with isoform specific Ube3a overexpression in neurons (NS097808). This is the only NIH-funded work focused on splice variants of the Ube3a gene in vivo.

While gaining recognition in the 15q11.2-q13 community, Dr. Silverman expanded her breadth of in vivo phenotypes to include comprehensive analysis of behavioral seizures, electroencephalographic (EEG) hyper-excitability, sleep and circadian outcomes. Her laboratory now routinely collects wireless (untethered) EEG in awake, behaving genetically altered rodent models of UBE3A-related disorders.

Title Associate Professor
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Education Ph.D., University of Maryland, Baltimore, Maryland, 2007

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Postdoctoral Training, NIMH, Bethesda, MD, 2007-2012
B.A., Rutgers University, New Brunswick, New Jersey, 1999

Professional Memberships

International Behavioral Neuroscience Society
International Society for Autism Research
Society for Neuroscience
Women in Neuroscience

Honors and Awards

Fellow, International Behavioral Neuroscience Society, 2018
Academic Senate Research Travel Award Program UC Davis Office of Research, 2015, 2016
Joe P. Tupin Research Awards Program in Psychiatry, 2015
NIH Performance Award for Research Excellence, 2008-2012
Howard Hughes Medical Institute Student Internship Mentor Award, 2008-2011

Select Recent Publications

G, Super CE, Lammers SH, Modi ME, Silverman JL, Dreier JR, Kwiatkowski DJ, Rotenberg A, and Sahin M. (2017) mGluR5 Modulation of Behavioral and Epileptic Phenotypes in a Mouse Model of Tuberous Sclerosis Complex. Neuropsychopharmacology. Dec 5. [Epub ahead of print]

Adhikari A, Copping NA, Onaga B, Pride MC, Coulson R, Yasui D, LaSalle JM, Yang M, and Silverman JL* (2018) Cognitive Deficits in the Snord116 Deletion Mouse Model for Prader-Willi Syndrome. Neurobiol Learn Mem. 2018 May 23. (18)30119-9. doi: 10.1016/j.nlm.2018.05.011.

Matt L, Kirk LM, Chenaux G, Speca DJ, Puhger KR, Pride MC, Qneibi M, Haham T, Plambeck KE, Stern-Bach Y, Silverman JL, Crawley JN, Hell JW, Díaz E (2018) SynDIG4/Prrt1 Is Required for Excitatory Synapse Development and Plasticity Underlying Cognitive Function. Cell Reports. Feb 27;22(9):2246-2253.

Silverman JL* and Ellegood J (2018) Behavioral and Neuroanatomical Approaches in Models of Neurodevelopmental Disorders: Opportunities for Translation. Current Opinion in Neurology. Apr;31(2):126-133.

Berg EL, Pride MC, Rivera JK, Careaga M, Lein PJ, Harony-Nicolas H, Buxbaum JD, Ellegood J, Lerch, JP, Wohr M and Silverman JL* (2018) Developmental Social Communication Deficits in the

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Shank3 deficient Rat Model of Phelan-McDermid Syndrome and Autism Spectrum Disorder. Autism Res. 2018 Jan 29. [Epub ahead of print] * Equally contributing senior authors.

Copping NA, Christen SB, Buscher N, Black S, Ellegood J, LaSalle JM, Lerch, J, Dindot SV, and Silverman JL (2017) Selective Neuronal Forebrain Overexpression of Ube3a isoform 2 Causes Cognitive Impairments and Hippocampal Pathology. Human Molecular Genetics. October 15; 26 (20):3995-4010.

Gompers AL, Su-Feher L, Ellegood J, Copping NA, Stradleigh TW, Zdilar I, Copping NA, Pride MC, Schaffler MD, Asrafuzzaman M, Gaurav Kaushik R, Mannion B, Plajzer-Frick I, Afzal V, Visel A, Pennacchio LA, Dickel D, Lerch JP, Crawley JN, Zarbalis KS, Silverman JL, Nord AS (2017) Germline Chd8 haploinsufficiency alters brain development in mouse. Nature Neuroscience. June 2017.

Dhamne SC#, Silverman JL#, Super C; Lammers S, Hameed M, Modi M, Copping NA, Pride MC; Smith D, Rotenberg A, Crawley JN*, and Sahin M* (2017) Replicable in vivo physiological and behavioral phenotypes of the Shank3B null mutant mouse model of autism Molecular Autism. Accepted. # Co-First authors * Equally contributing senior authors

Flannery BM, Bruun DA, Rowland DJ, Banks CN, Austin AT, Kukis DL, Li Y, Ford BD, Tancredi DJ, Silverman JL, Cherry SR, Lein PJ (2016) Persistent Neuroinflammation and Cognitive Impairment in a Rat Model of Acute Diisopropylfluorophosphate Intoxication. Journal of Neuroinflammation. Oct 12;13(1):267.

Copping NA, Berg E, Foley GM, Onaga B, Silverman JL *, Yang M* (2016) Higher-order learning deficits and normal social approach behavior in the Shank3B haploinsufficent mouse model of Phelan-McDermid Syndrome and autism. Neuroscience. May 14 [epub] * Equally contributing senior authors

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Leach PT, Hayes JE, Pride MC, Silverman JL, and Crawley JN (2016) Normal performance of Fmr1 mice on a touchscreen delayed non-matching to position working memory task' eNeuro, an open-access journal from the Society for Neuroscience (SFN). ENEURO.0143-15.2016. doi: 10.1523 /ENEURO.0143-15.2016. eCollection 2016 Jan-Feb.

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