

HERBERT M. LACHMAN, M.D.

Positions:

Professor, Departments of Psychiatry and of Medicine
Associate Professor, Departments of Neuroscience and of Genetics
Director, Program of Behavioral Genetics
Albert Einstein College of Medicine

Research interests:

Our main research interest is to use patient-specific induced pluripotent stem cells (iPSCs) for disease modeling in schizophrenia (SZ). To reduce genetic heterogeneity, we are focusing on patients who have deletions on 22q11.2, which is found in ~1% of patients. RNA-Seq and microRNA-Seq are being carried out to identify common molecular pathways that might be involved in disease pathogenesis. In addition, we are knocking down the expression of several candidate SZ candidate genes that function as regulators of gene expression (A2BP1 and ZNF804A) to identify common downstream targets. We are also developing iPSCs from dental pulp to develop a program for in vitro modeling of autism (deciduous teeth are easier to obtain from autistic children than skin biopsies).

Current grant funding:

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| R01 MH099427 (Lachman) NIMH | 08/15/2013 – 07/31/2019 Monoallelic expression in neurons derived from induced pluripotent stem cells |
| Low Syndrome Association (Lachman) | 07/01/2018 – 06/30/2019 Establishing an iPSC cell model for PPM1D deficiency |

Five recent publications:

1. Lin M, Pedrosa E, Shah, AK, Hrabovsky A, Maqbool S, Zheng D, Lachman HM. Deep sequencing transcriptome analysis of human neurons derived from induced pluripotent stem cells identifies candidate long non-coding RNAs involved in neurogenesis and neuropsychiatric disorders. *PLoS One*, 2011, 6(9):e23356.
2. Lin M, Hrabovsky A, Pedrosa E, Wang T, Zheng D, Lachman HM. Allele-biased expression in differentiating human neurons: Implications for neuropsychiatric disorders. *PLoS One*, 2012;7(8):e44017. Epub 2012 Aug 30.
3. Mingyan Lin, Dejian Zhao, Anastasia Hrabovsky, Erika Pedrosa, Deyou Zheng, Herbert M. Lachman. Gene expression profiling in an induced pluripotent stem cell model of the developing human telencephalon: effects of heat shock and its potential consequences in the development of neuropsychiatric disorders. *PLoS One*. 2014 Apr 15;9(4):e94968. doi: 10.1371/journal.pone.0094968. eCollection 2014.
4. Mingyan Lin, Erika Pedrosa, Ryan Mokhtari, Anastasia Hrabovsky, Jian Chen, Benjamin R. Puliafito, Stephanie R Gilbert, Deyou Zheng, Herbert M. Lachman. Integrative Transcriptome Network Analysis of iPSC-derived Neurons from Schizophrenia and Schizoaffective Disorder Patients with 22q11.2 Deletion. *BMC Syst Biol*. 2016 Nov 15;10(1):105.
5. Ping Wang, Ryan Mokhtari, Erika Pedrosa, Michael Kirschenbaum, Can Bayrak, Deyou Zheng, Herbert M. Lachman. CRISPR-Cas9 mediated knockout of the autism gene CHD8 and characterization of its transcriptional networks in cerebral organoids derived from iPSC cells. *Mol Autism*. 2017 Mar 20;8:11. doi: 10.1186/s13229-017-0124-1