Matthew T Tegtmeyer, PhD

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RESEARCH INTERESTS

Genetics; genomics; stem cells; neuroscience; single-cell transcriptomics, high-content morphological screening; translational genomics; experimental systems development; psychiatric disease; genome-engineering; ancestry; pharmaco-genomics; gene-by-environment interactions; sociogenomics

ACADEMIC POSITIONS

Assistant Professor of Neurogenetics — Jan 2024 - Present
Department of Biological Sciences
Purdue University, West Lafayette, IN

Adjunct Assistant Professor of Psychiatry — Jan 2024 - Present
Department of Psychiatry
Indiana University School of Medicine, Indianapolis, IN

Assistant Investigator — Jan 2024 - Present
Indiana Biosciences Research Institute, Indianapolis, IN

Research Fellow in Life Sciences and Manufacturing — Jan 2024 - Present
AnalytiXIN

Visiting Scientist, Stanley Center for Psychiatric Research — Jan 2024 - Present
Broad Institute of MIT and Harvard, Cambridge, MA

Visiting Scholar, Stanley Center for Psychiatric Research — Oct 2017 – Oct 2023
Broad Institute of MIT and Harvard, Cambridge, MA

Visiting Scholar, Department for Stem Cell and Regenerative Biology — Oct 2017 – Oct 2023
Harvard University, Cambridge, MA

NON-ACADEMIC POSITIONS

Consultant Scientist, Quiver Biosciences, Cambridge, MA — Oct 2017 – Oct 2023

EDUCATION

***Doctor of Philosophy*, Neurogenetics** — Oct 2019 – Oct 2023
Centre for Gene Therapy and Regenerative Medicine
King's College London, United Kingdom

***Master of Science*, Neuroscience: Nervous system repair** — Aug 2016 – Aug 2017
Institute of Psychology, Psychiatry, and Neuroscience
King's College London, United Kingdom

***Bachelor of Science*, Political Science** — May 2010 – May 2014
Miami University, Oxford, Ohio, USA

PUBLICATIONS

Xu Y, Fleming S, Tegtmeyer M, McCarroll S, Babadi M., "Modeling interpretable correspondence between cell state and perturbation response with CellCap." *biorxiv*, Mar 2024.

Anton Bolanos N*, Faravelli I*, Faits T, Andreadis S, Trattaro S, Kastli R, Adiconis X, Di Bella D, Tegtmeyer M, Nehme R, Levin J, Regev A, Arlotta P., "Multi-donor human cortical Chimeroids reveal individual susceptibility to neurotoxic triggers." *biorxiv*, Oct 2023.

Lakes Y, Move S, Mo J, Tegtmeyer M, Nehme R, Salinas G, McKay R, Eggan K, Charlton M, Le L. ,"Econazole selectively induces cell death in NF1-homozygous mutant tumor cells." *Cell Reports Medicine*, Dec 19;4(12):101309. doi: 10.1016/j.xcrm.2023.101309

Gazestani V, Kamath T, Nadaf NM, Burris SJ, Rooney B, Junkkari A, Vanderburg C, Rauramaa T, Therrien M, Tegtmeyer M, Herukka SK, Abdulraouf A, Marsh S, Malm T, Hiltunen M, Nehme R, Stevens B, Leinonen V, Macosko EZ., "Early Alzheimer's disease pathology in human cortex is associated with a transient phase of distinct cell states." *Cell*, Sep 28;186(20):4438-4453.e23. doi: 10.1016/j.cell.2023.08.005

Tegtmeyer M*, Asgari S*, Arora J*, Cimini B, Peirent E, Liyanage D, Way G, Weisbart E, Nathan A, Amariuta T, Eggan K, Haghighi M, McCarroll S, Carpenter A, Singh S, Nehme R, Raychaudhuri S., "High-dimensional phenotyping to define the genetic basis of cellular morphology." *Nature Communications*, Jan 6;15(1):347. doi: 10.1038/s41467-023-44045-w

Berryer M*, Tegtmeyer M*, Binan L, Valakh V, Nathanson A, Trendafilova D, Crouse E, Klein J, Meyer D, Pietilainen O, Rapino F, Farhi S, Rubin L, McCarroll S, Nehme R, Barrett L., "Robust induction of functional astrocytes using NGN2 expression in human pluripotent stem cells." *iScience*, May 30;26(7):106995. doi: 10.1016/j.isci.2023.106995

Wells MF, Nemesh J, Ghosh S, Mitchell JM, Salick MR, Mello CJ, Meyer D, Pietilainen O, Piccioni F, Guss EJ, Raghunathan K, Tegtmeyer M, Hawes D, Neumann A, Worringer KA, Ho D, Kommineni S, Chan K, Peterson BK, Raymond JJ, Gold JT, Siekmann MT, Zuccaro E, Nehme R, Kaykas A, Eggan K, McCarroll SA., "Natural variation in gene expression and viral susceptibility revealed by neural progenitor cell villages." *Cell Stem Cell*, Mar 2;30(3):312-332.e13. doi: 10.1016/j.stem.2023.01.010

Rapino F, Natoli T, Limone F, O'Connor E, Blank J, Tegtmeyer M, Chen W, Norabuena E, Narula J, Hazelbaker D, Angelini G, Barrett L, O'Neil A, Beattie UK, Thanos JM, de Rivera H, Sheridan SD, Perlis RH, McCarroll SA, Stevens B, Subramanian A, Nehme R, Rubin LL., "Small-molecule screen reveals pathways that regulate C4 secretion in stem cell-derived astrocytes." *Stem Cell Reports*, Jan 10;18(1):237-253. doi: 10.1016/j.stemcr.2022.11.018

Nehme R, Pietiläinen O, Artomov M, Tegtmeyer M, Valakh V, Lehtonen L, Bell C, Singh T, Trehan A, Sherwood J, Manning D, Peirent E, Malik R, Guss EJ, Hawes D, Beccard A, Bara AM, Hazelbaker DZ, Zuccaro E, Genovese G, Loboda AA, Neumann A, Lilliehook C, Kuismin O, Hamalainen E, Kurki M, Hultman CM, Kähler AK, Paulo JA, Ganna A, Madison J, Cohen B, McPhie D, Adolfsson R, Perlis R, Dolmetsch R, Farhi S, McCarroll S, Hyman S, Neale B, Barrett LE, Harper W, Palotie A, Daly M, Eggan K., "The 22q11.2 region regulates presynaptic gene-products linked to schizophrenia." *Nature Communications*, Jun 27;13(1):3690. doi: 10.1038/s41467-022-31436-8

Mitchell J*, Nemesh J*, Tegtmeyer M*, Handsaker R, Ghosh S, Mello C, Meyer D, Raghunathan K, de Rivera H, Hawes D, Neumann A, Nehme R, Eggan K, McCarroll S., "Mapping genetic effects on cellular phenotypes with Census-seq." *biorxiv, revised version to be submitted*, Jun 2020.

Tegtmeyer M, Nehme R., "Leveraging the Genetic Diversity of Human Stem Cells in Therapeutic Approaches.," *Journal of Molecular Biology*, Feb 15;434(3):167221. doi: 10.1016/j.jmb.2021.167221

IN PREPARATION

Tegtmeyer M, Hun Y, Pei R, Tromans-Coia C, Boit K, Liyanage D, Alimova M, Cimini B, Carpenter A, Singh S, Nehme R.,"High dimensional morphological phenotyping with NeuroProfiler reveals morphological signatures in 22q11.2 deletion syndrome." Jan 2024.

Tegtmeyer M, Nemesh J, Pettina N, Liyanage D, Gebre H, Hawes D, Xu Y, Meyer D, Hogan M, Ichihara K, Babadi M, Nehme R, McCarroll S.,"Astrocyte-neuron interactions, and their dynamic responses to antipsychotic medications." Feb 2024.

Tegtmeyer M, Nemesh J, Pettina N, Gebre H, Xu Y, Meyer D, Hogan M, Ichihara K, Babadi M, Nehme R, McCarroll S.,"Pharmacogenomics in cell villages of diverse neural cell types reveals convergent and divergent perturbation responses." Feb 2024.

INVITED TALKS

"*Statistical and functional convergence of genetic risk factors for neurodevelopmental disorders"*

Purdue Autism Research Center Annual Conference

Purdue University, West Lafayette, IN, USA

	"*High-dimensional phenotyping to investigate genetic influences on cell morphology in health and disease*" Diversity in a Dish: Pluripotent Stem Cells in Genetic Analysis and Modeling, The Jackson Laboratory, Bar Harbor, ME, USA	*May 2023*
	"*Astrocyte-neuron interactions and their dynamic responses to anti psychotic medications.*" Scientific Advisory Board, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA	May 2023
	"*Population scale pharmacogenomics for redefining therapeutics.*" NIMH Convergent Neuroscience Annual Consortium Meeting, National Institutes of Mental Health University of California, San Francisco, San Francisco, California, USA	Nov 2022
	"*Cellular and genomic architecture in 22q11.2 deletion syndrome.*" Stanley Center Program Meeting, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA	Sep 2022
	"*Unpacking the biology of psychiatric genetics using Cell Painting*" Stanley Center Program Meeting, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA	Oct 2021
	"*Leveraging mosaic chromosomal alterations in iPSCs to unveil molecular signatures of psychiatric risk variants*" National Cooperative Reprogrammed Cell Research Groups and Convergent Neuroscience, National Institutes of Mental Health	*Nov 2021*
	"*Approaches to investigating the genetics of complex traits using hPSC-derived excitatory neurons.*" Stanley Center Program Meeting, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA	*May 2021*
	"*The Stanley Center human pluripotent stem cell repository: how it's fueling technology and science at the Broad Institute.*" Stanley Center Program Meeting, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA	*Sep 2019*
	"*Pluripotent stem cells as a model for common genetic variation in neuropsychiatric disorders.*" Lunch and Learn Stemcell Technologies, Cambridge, Massachusetts, USA	*Apr 2018*
TEACHING	**Head Teaching Fellow**, Program in General Education Harvard University, Cambridge, MA 02139	Oct 2019 – Oct 2023
	Research Assistant, Program in General Education Harvard University, Cambridge, MA 02139	Oct 2021 – Oct 2022
	Teaching Fellow, Program in General Education Harvard University, Cambridge, MA 02139	Oct 2018 – Oct 2019
PROFESSIONAL AFFILIATIONS & ACTIVITIES	**International Neuroethics Society** Member	2019 – Present

International Society for Stem Cell Research 2017 – Present
Member

The Royal Society of 2017 – Present
Member