



VANDERBILT
School of Medicine Basic Sciences
Department of Pharmacology

2024 - 2025 Seminar Series

Genetic, cellular and intercellular strategies of human brain development

Our goal is to understand developmental mechanisms through which stem cells of the developing brain give rise to the complex cells of the human neocortex. Last year, we have explored the differentiation of neural stem and progenitor cells using massively parallel lineage tracing and uncovered novel patterns of cell lineage differentiation. Subsequently, we have explored how mutations in genes implicated in Autism interfere with normal development and disrupt protein-protein interactions, uncovering an exemplar mutation in FOXP1 that alters interactions with its endogenous transcriptional co-factors and leading to altered trajectory of cortical neurons. Finally, we have used gene expression analysis to identify developing human thalamus as a brain region enriched for expression of high confidence Autism risk genes. By modeling the development of this region using stem cell derived organoids, we revealed unexpected disruptions in the axonogenesis of thalamic neurons as a new candidate phenotype associated with neurodevelopmental disorders.



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**Monday,
4 November 2024**

4:00 PM

202 Light Hall

Host: Shan Meltzer