

# Brain Mapping Center SEMINAR SERIES

Sponsored by the UCLA Brain Mapping Center Faculty

The focus of these talks is on advancing the use of brain mapping methods in neuroscience with an emphasis on contemporary issues of neuroplasticity, neurodevelopment, and biomarker development in neuropsychiatric disease.

Hosted By: Daniel Tward, PhD, Assistant Professor, Neurology, UCLA

## Molecular and Spatial Transcriptomic Profiling of the Brain



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Tissues such as the mammalian brain are comprised of a multitude of interacting cells representing many transcriptionally distinct cell-types and cell-states. Rapid advances in sequencing and imaging technologies are making it possible to profile the transcriptional states for hundreds to thousands of genes in hundreds to thousands of individual cells and small groups of cells in a spatially resolved manner. Among these approaches, multiplexed error-robust fluorescence in situ hybridization (MERFISH) has achieved spatially resolved RNA quantification at transcriptome scale by massively multiplexing single-molecule FISH measurements. Recently, we increased the gene throughput of MERFISH and demonstrated simultaneous measurements of RNA transcripts from ~10,000 genes in individual cells with ~80% detection efficiency and ~4% misidentification rate. In this talk, I will describe a few recent computational approaches for analyzing such spatially-resolved single-cell transcriptomics data. We anticipate that such spatially resolved transcriptome profiling coupled with spatial computational analyses could help address a wide array of questions ranging from the regulation of gene expression in cells to the development of cell fate and organization in complex tissues such as the brain.

**March 4, 2021 11:00am - 12:00pm PST**

<https://uclahs.zoom.us/meeting/register/tJwvc-uprTgpGdRnWYDwkserf-FrnP4T51FS>

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