

2021 Chen Institute Symposium

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Talk Title: Understanding Brain Cell Type Diversity

Abstract: To understand the function of the brain and how its dysfunction leads to brain diseases, it is essential to have a deep understanding of the cell type composition of the brain, how the cell types are connected with each other and what their roles are in circuit function. At the Allen Institute, we have built multiple platforms, including single-cell transcriptomics, spatial transcriptomics, single and multi-patching electrophysiology, 3D reconstruction of neuronal morphology, and high throughput brain-wide connectivity mapping, to characterize the transcriptomic, physiological, morphological, and connectional properties of different types of neurons in a standardized manner, towards a multi-modal taxonomy and atlas of cell types for the mouse and human brain. These studies reveal extraordinary cellular diversity and a series of rules underlying brain organization, and lay the foundation for unraveling mechanisms of circuit function.