# Mouse Normal Brain

Study Purpose

Using the SMI platform, we collected spatially resolved single-cell data from two 5 µm thick fresh frozen, serial whole coronal mouse brain sections from a young adult male mouse and identified 42 cell types. The distribution of these cell types and their marker genes is well aligned with previous reports, and their discrimination enables numerous possibilities for biological inquiry thanks to the high plex panel used that covers robust neural and glial cell typing, neurodegeneration, neurodevelopment, and key aspects of cell state and signaling, including numerous ligands and receptors involved in neuron-glia communication. For example, microglia, the innate immune cell of the brain, surveil and respond to signals from neighboring cells. SMI recapitulates the diverse range of microglial phenotypes, which are highly dependent on the activity of other cells within their local environment.

Study Summary

| Tissue Type	FF Mouse Brain
Panel	894 gene targets
Segmentation Markers	18S rRNA3/4, GFAP, DAPI
Total tissue area analyzed	~ 94 mm^2
Cells analyzed	165,961
% Cells passed QC	99.5
Number of Genes detected above background	502
% of transcripts assigned a cell	43.74
Mean total transcripts/cell	423
Maximum transcripts/ cell	2625
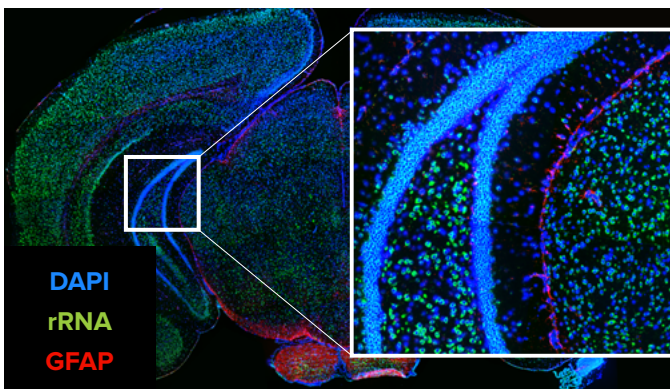
Nuclear, RNA, and protein staining are useful for cell segmentation and field-of-view selection
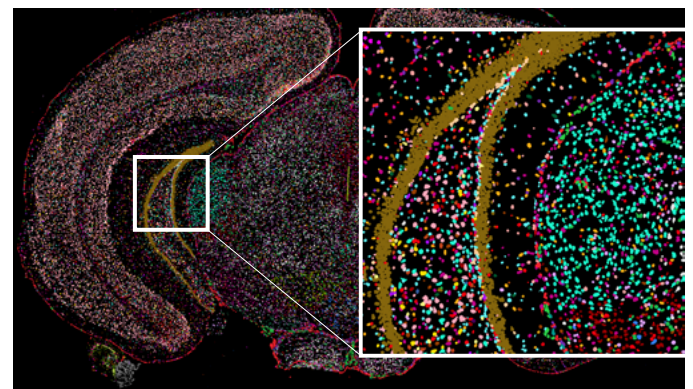
The physical distribution of typed cells strongly correlates with the biologically expected location
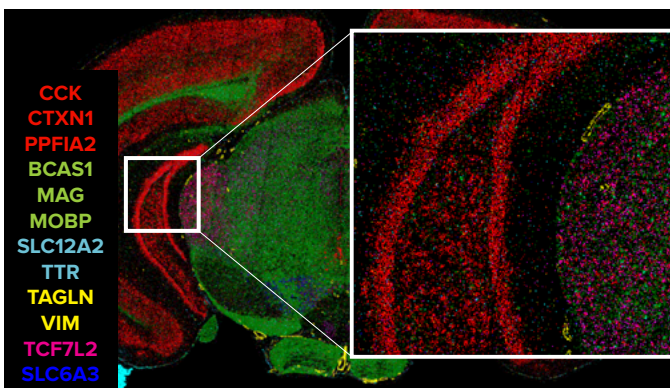
CosMx detection of genes of key genes
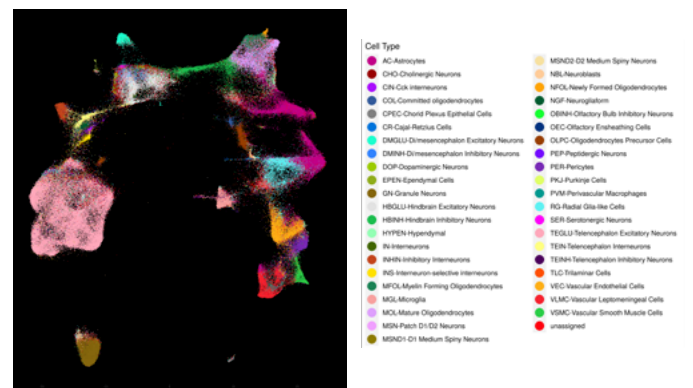
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