**Construction of 3D single-cell maps of human organs**

**Abstract:** Detailed characterization of the cell types comprising the highly complex human organs is essential to understanding their functions. Such tasks require highly scalable experimental approaches to examine different aspects of the molecular state of individual cells, registering cells to 3D coordinates, as well as the computational integration to produce unified cell state annotations. To this end, we have established experimental platforms and computational pipelines for constructing 3D single-cell maps for human adult organs. In this talk I will present our recent results on the creation of a integrative single-cell transcriptome and chromatin accessibility maps of selected human brain regions, and discuss our on-going efforts for building whole-organ maps for human brain, lung and kidney.