

## **Technologies for Single-cell Genomics and Proteomics**

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Life is encoded digitally by the genomes and manifested by decoding the genomic DNA into RNA and protein molecules. Despite the recent technological advances, our ability to accurately sequence genomes, and to precisely enumerate or quantitatively measure RNA and protein molecules in cells or biological samples remains highly inadequate. To address some of the technological challenges, my laboratory has been developing technologies for single-cell genomics and proteomics. I will present our work on molecular technologies and microfluidic devices for sorting and processing of single cells and biomolecules, ultraaccurate single-cell human genome sequencing, digital counting of RNA molecules in single cells, and high-density antibody arrays for protein analysis. I will also present our recent theoretical and experimental work on highly accurate sequencing of genomes, and direct single-molecule identification and counting of protein molecules using molecular and nano devices.