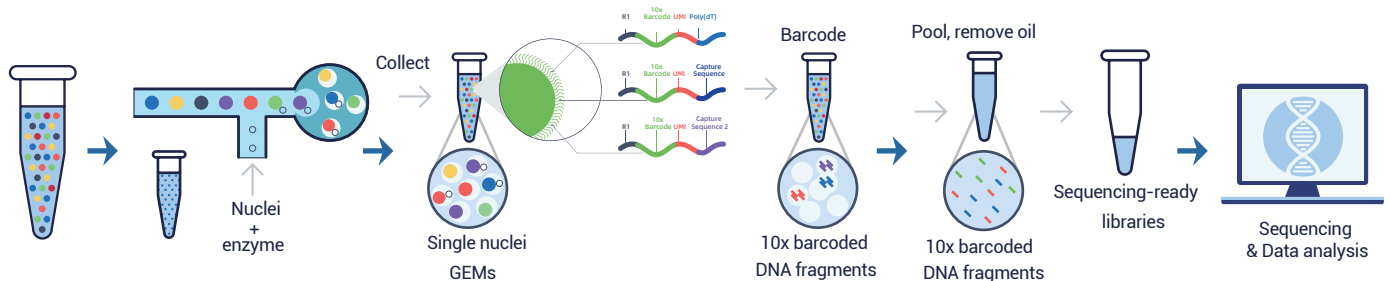


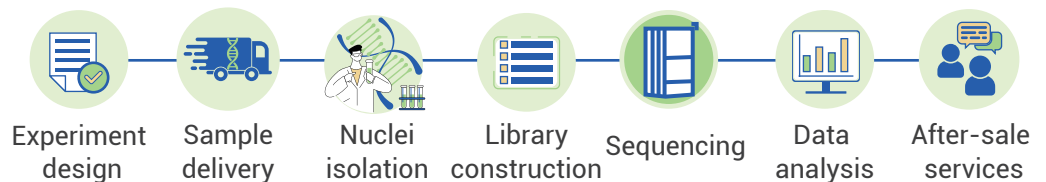
Single-nuclei RNA Sequencing

Advancements in single cell capturing and individual library construction techniques, combined with high-throughput sequencing, have revolutionized gene expression studies on a cell-by-cell basis. This approach allows for a comprehensive analysis of complex cell populations, avoiding the masking of heterogeneity that occurs when taking the average of all cells. In cases where certain cells cannot be processed into single-cell suspensions, nucleus extraction from tissues and single-nuclei suspension preparation for single-cell sequencing is necessary. BMKGENE offers the 10× Genomics Chromium™ based single-nuclei RNA sequencing service, which is widely utilized in scientific research, like immune cell differentiation, tumor heterogeneity, and tissue development.

Technical Workflow



Service Workflow



Bioinformatics

➤ Data Quality Control

- Raw data quality assessment
- Library quality control: data saturation, gene expression quantification
- Statistics on single nuclei counts and read counts per nucleus

➤ Inner / Inter Sample Analysis

- Gene expression matrix based cell clustering
- **Gene expression analysis:** gene expression quantification and distribution
- **Differential expression analysis:** marker gene identification, known cell type identification

- Protein interaction on marker genes of each cluster
- Hierarchical clustering on DEGs
- Prediction on TF of DEGs
- Protein interaction analysis of DEGs
- Annotation of DEGs on disease database
- Functional annotation and enrichment of DEGs of each cluster

How to Choose? Single-nuclei VS Single-cell

Single-nuclei	Single-cell
Unlimited cell diameter	Cell diameter: 10-40 μm
Frozen tissue acceptable	Fresh tissue preferred
Low stress of frozen cells	Enzyme treatment may cause cell stress reaction
No red blood cells need to be removed	Red blood cells need to be removed
mRNA in single-nuclei	mRNA in Single cell

Application

- Frozen samples (due to unavailability of fresh tissue)
- Large cells like Muscle cells, Megakaryocytes, and adipose tissues
- Fragile tissues difficult to dissociate, such as Liver
- Tissues that may alter gene expression profiles, like Neuronal cells and Brain
- Tissues rich in endogenous enzymes impacting single cell suspension production, such as Pancreas and Thyroid

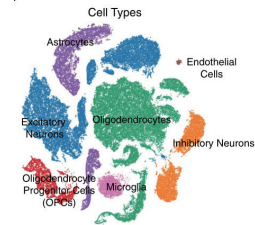
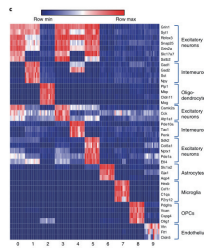
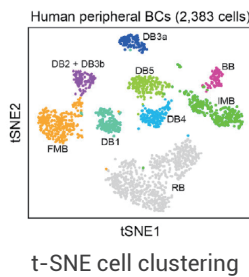
Service Specifications

Library	Platform	Data Volume
10× Genomics snRNA-seq	10× Genomics Illumina PE150	100,000 reads/cell approx. 100-200 Gb

Sample Requirements

Tissue
Animal: ≥ 200 mg Plant: ≥ 400 mg

Demo Results



Featured Publications

Year	Journal	Title
2024	New phytologist	Cell-type-aware regulatory landscapes governing monoterpene indole alkaloid biosynthesis in the medicinal plant Catharanthus roseus
2024	Neuro-Oncology	Integrating single-cell and spatial transcriptomics reveals endoplasmic reticulum stress-related CAF subpopulations associated with chcrdoma progression
2024	Journal of Hepatology	Thyroid hormone receptor-beta agonist HSK31679 alleviates MASLD by modulating gut microbial sphingolipids



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