

Single Cell Sequencing for Unique Biological Insight



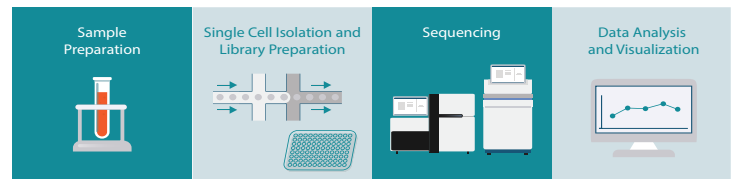
Sample heterogeneity is an important challenge when sequencing cells from tissue or blood samples. Traditional bulk RNAseq methods may mask important differences between individual cells within a heterogeneous population. Single cell RNA sequencing (scRNAseq) is a solution which provides expression profiles of individual cells. By partnering 10x Genomics Chromium-based scRNAseq and complimentary immune profiling and chromatin accessibility assays with our advanced analytics and artificial intelligence (AI) capabilities, we enable deeper insights into the biology of samples - revealing an understanding into immune repertoire, novel cell types, biomarkers, gene regulatory mechanisms, and cell diversity.

Single Cell Assays Available

- Immune Profiling: TCR and BCR
- Gene Expression
- ATAC
- Contact us to discuss your specific scRNAseq needs.

Applications

- Immunology and inflammation research
- Immuno-oncology research
- Neuroscience research
- Cardiovascular research
- Metabolic research
- Infectious disease research



Genuity Science, a 10x Genomics Certified Service Provider, is your partner for your scRNAseq needs. Our CAP-accredited laboratory offers full workflow support from sample preparation through analysis. Our high-quality standards and high-touch partnership approach deliver results you can count on.



Services

Sample Types

- PBMCs: $>1 \times 10^7$ cells in 1 ml of solution
- Fresh frozen tissue
- Interested in other sample types? Ask us.

Data Pre-Processing and Secondary Analysis

Our bioinformatics team utilizes 10x Genomics Cell Ranger software to provide you with clarity and resolution into the cell types present in samples.

Pre-Processing includes:

- Barcode and unique molecular identifier (UMI) processing
- Alignment
- Quality control/filtering
- Normalization

Secondary Analysis includes:

- Dimensionality reduction
- Clustering
- Visualization (t-SNE plots)
- Differential expression analysis

We provide you with a web summary report and accompanying data files.

Single Cell Transcriptome Analysis

- Cell line and tissue heterogeneity studies
- Detection of rare subpopulations
- Drug response studies

Utilizing 10x Genomics high-throughput scRNAseq technology, we provide single cell expression profiles that enable discovery of gene expression dynamics and molecular profiling of individual cell types.

Single Cell V(D)J Analysis

- Single cell immune profiling
- Immune response studies
- Clonal dynamics

Enables assembly of full-length V(D)J sequences on a cell-by-cell basis, providing high resolution insights into the adaptive immune system.

Single Cell Epigenome Analysis

- Assess chromatin accessibility

Profile chromatin landscape simultaneously with gene expression using the 10x Genomics Multiome assay to reveal insights on gene regulatory mechanisms.

For more information: www.genuitysci.com



Advanced Analytics and AI: from data to insights

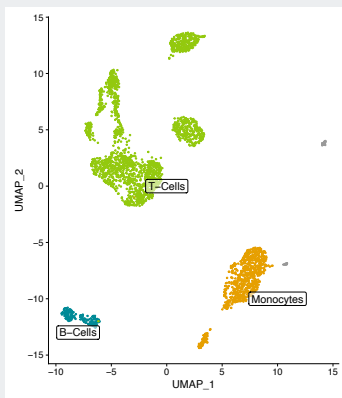
As an additional service, senior members of our artificial intelligence (AI)/machine learning (ML) team with advanced biology domain, bioinformatics, and computational statistical expertise personally consult with you. Together, they will create tailored, statistically valid experimental designs, which employ cutting-edge, scientifically validated deep learning strategies. From secondary analyses to the latest AI/ML approaches, we can generate robust working hypotheses and glean meaningful information from your data. Examples of our single cell AI/ML methods include:

- Generative AI strategies for unsupervised cell clustering
- Supervised ensemble AI/ML classification strategies
- Directed cell differentiation trajectory networks for time series data
- Zero-inflated negative binomial models for differential gene expression analysis
- Structural causal modeling for directed gene dependency networks
- Nested functional enrichment of gene ontology (GO) terms

10x Chromium Single Cell Immune Profiling

One sample, three types of analyses

Single-cell gene expression



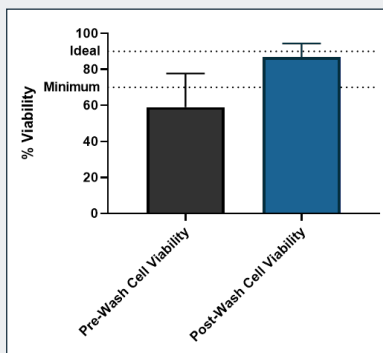
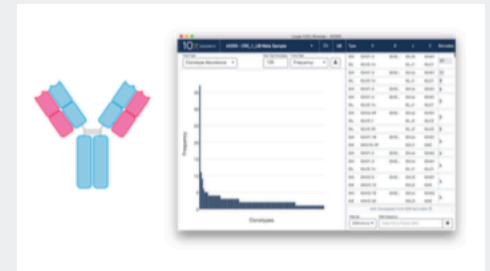
Single-cell T-cell repertoire profiling

Paired (TCR α/β) full-length V(D)J clonotypes

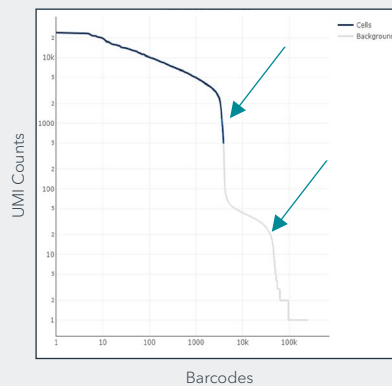


Single-cell B-cell repertoire profiling

Paired (BCR H/L) full-length V(D)J clonotypes

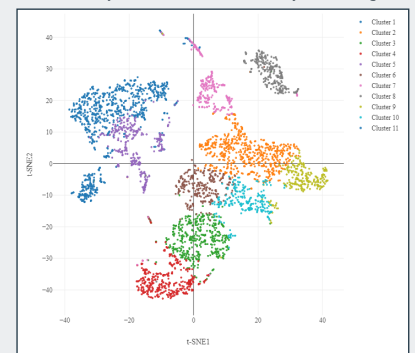


Our optimized cell cleanup methods improve viability and remove cellular debris



High quality sample processing is confirmed in Barcode Rank plots showing minimal background

t-SNE Projection of Cells Colored by Clustering



Well-defined cell clusters based on gene expression profiles