

Transform single cell immune profiling with a high-throughput, multiomic solution

Single Cell Immune Profiling HT

The spectacular diversity of the adaptive immune system requires massive cell throughput to understand. Take your immune repertoire profiling further by expanding your high-throughput (HT) capabilities using Single Cell Immune Profiling HT. Leveraging proven technology, this HT assay enables molecular profiling of hundreds of thousands of cells with simultaneous detection of full-length, paired immune receptor sequences, gene and protein expression, and antigen specificity for up to 16 samples at once. Bring a comprehensive understanding of immune complexity within reach.

Highlights

- Achieve economy of scale for studies that range from thousands to hundreds of thousands of cells
- Perform antibody and TCR discovery for rare clonotypes through profiling of hundreds of thousands of cells
- Detect ultra-rare cell populations with increased throughput and multiomic readouts of gene and cell surface protein expression and full-length B- or T-cell receptor pairings
- Profile the complete immune repertoire response to infection and disease through massively scaled experiments and up to 16 samples per chip

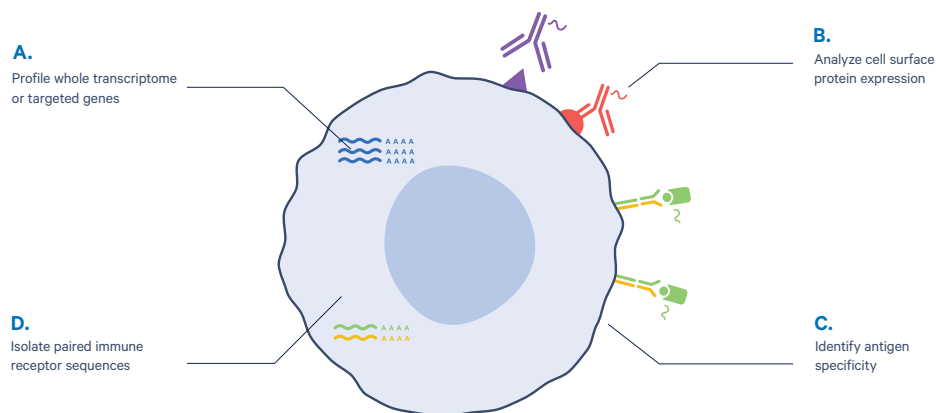


Figure 1. Fully characterize the adaptive immune response with high-throughput multiomic profiling, including immune receptor mapping.

Detect whole transcriptome or targeted gene expression, along with cell surface proteins; paired, full-length receptor sequences of T or B cells; and antigen specificity. **A.** Chromium Single Cell Immune Profiling HT provides sensitive whole transcriptome or targeted gene expression analysis at the single cell level, for thousands to tens of thousands of cells per reaction. **B.** Measure up to hundreds of cell surface proteins at single cell resolution with Feature Barcode technology. **C.** Feature Barcode technology allows screening of the antigen specificity of T and B cells. **D.** Identify distinct clonotypes through corresponding paired, full-length immune receptor sequences.

Product features

- Profile gene expression for thousands to hundreds of thousands of single cells by barcoding mRNA at the 5' end, allowing unbiased characterization of cell types and states
- Simultaneously profile paired, full-length immune receptor sequences from T and/or B cells (BCR/TCR) plus gene expression from the same cell to correlate clonotype with cell subtype
- Combine high-throughput capabilities with multiomic readouts of gene expression, detection of cell surface proteins, and antigen specificity for comprehensive cellular phenotyping
- Combine with Targeted Gene Expression Panels to focus on the genes that matter most, reduce sequencing costs, and accelerate your studies into actionable insights
- Achieve low multiplet rates to maximize the return on your single cell experiment
- Follow a ready-to-use, robust workflow with demonstrated protocols for diverse sample types, including cell lines, primary cells, and dissociated tissue

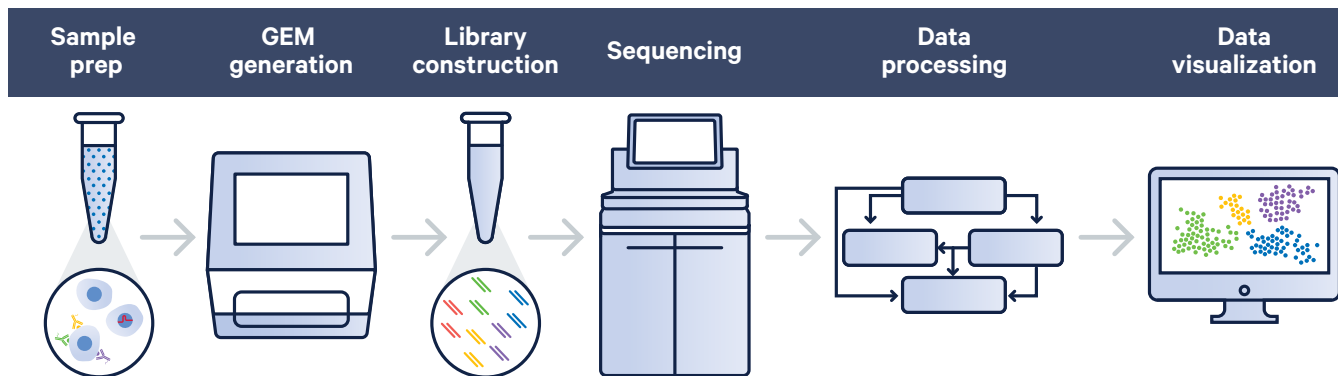
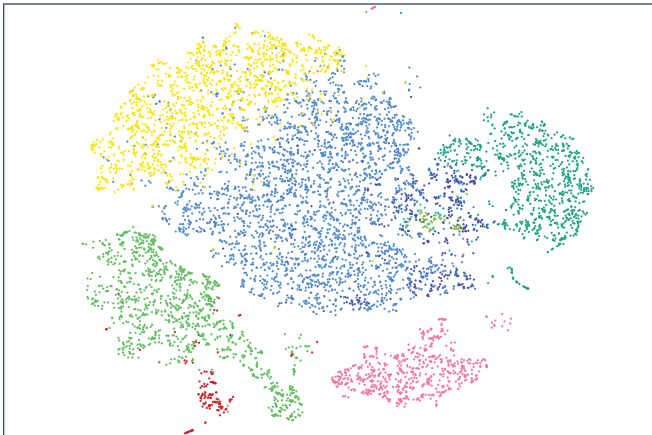
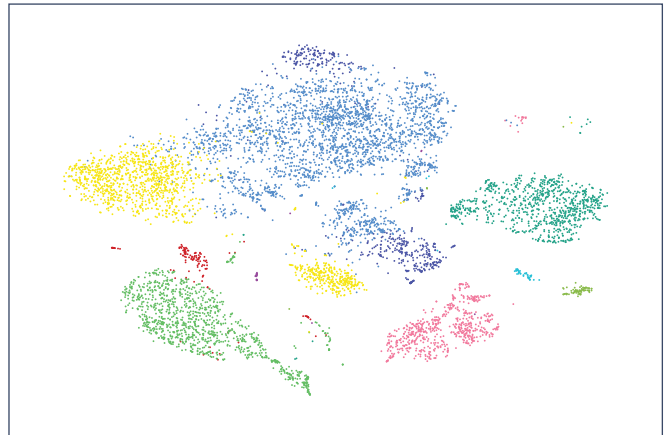


Figure 2. Efficient and streamlined workflow for high-throughput multiomic profiling of the immune system. Start with a single cell suspension of unlabeled cells, oligo-conjugated antibody-labeled cells, or cells bound to oligo-conjugated MHCs. After GEM generation using Chromium X, up to four separate libraries can be constructed from a single sample, providing multiple readouts that can each be linked back to the same single cell. Process data with Cell Ranger and visualize sample heterogeneity and clonal expansion with Loupe Browser or Loupe V(D)J Browser, our fully integrated and easy-to-use analysis and visualization software tools

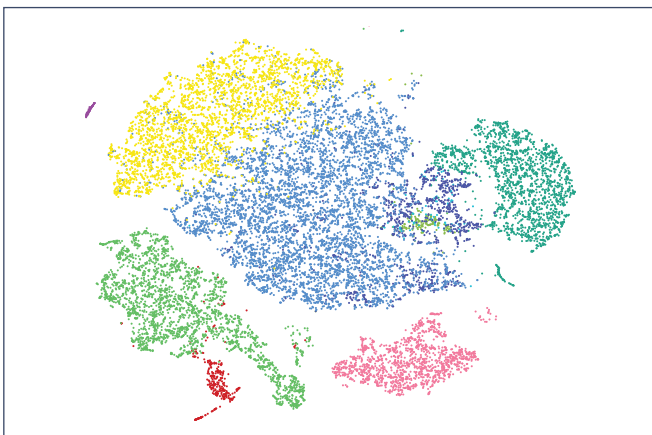
A. Single Cell Immune Profiling (standard) gene expression t-SNE



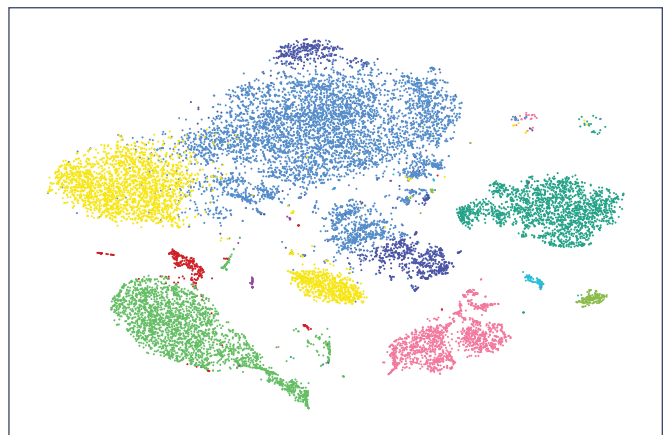
B. Single Cell Immune Profiling (standard) cell surface protein t-SNE



C. Single Cell Immune Profiling HT gene expression t-SNE



D. Single Cell Immune Profiling HT cell surface protein t-SNE



E. TCR Clonotype Comparison

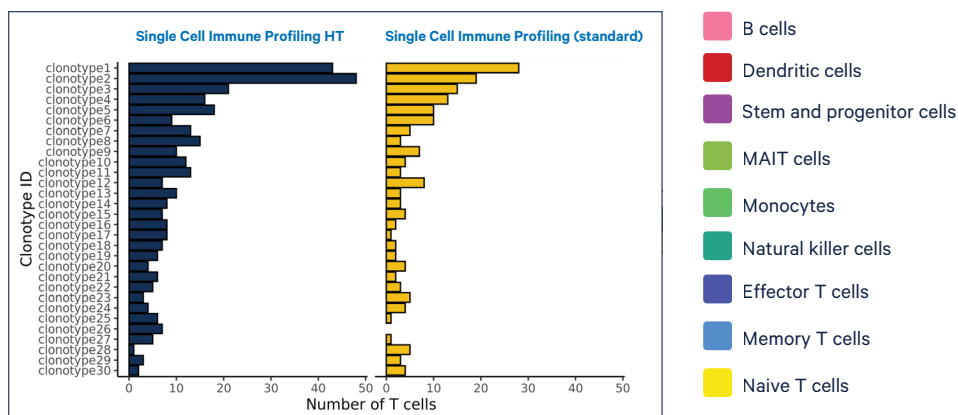


Figure 3: Explore even further with Chromium Single Cell Immune Profiling HT. Single Cell Immune Profiling HT produces data comparable to that of the standard assay, with twice the cell number at reduced cost per cell. Bone marrow mononuclear cell (BMMC) samples were split and processed with both standard and HT. Sequencing data was analyzed in Cell Ranger and manually annotated in Loupe Browser. **A.** t-SNE projection of approximately 10,000 BMNCs recovered using standard Single Cell Immune Profiling, based on whole transcriptome gene expression. **B.** t-SNE projection of the same dataset, based on cell surface protein expression. **C.** t-SNE projection of approximately 20,000 BMNCs recovered using Single Cell Immune Profiling HT, based on whole transcriptome gene expression. **D.** t-SNE projection of the same dataset, based on cell surface protein expression. **E.** Comparison of TCR clonotype overlap between standard and HT datasets. A high degree of overlap is observed between the two assays, indicating comparable performance. Increased cell recovery seen with Single Cell Immune Profiling HT allows for deeper understanding of cellular biology and complex pathways.

Product specifications

- Efficiently partition 2,000–20,000 cells per channel, for a total of 320,000 cells per chip
- Cell size flexibility, no lower limits
- Cell capture rates of up to 65%
- Low doublet rates of 0.4% per 1,000 cells
- Compatible with whole cells and nuclei
- Based on Next GEM technology

HT Immune Profiling Products	Product code
Chromium Next GEM Single Cell 5' HT Kit v2, 8 rxns (includes 1 chip)	1000374
Chromium Next GEM Single Cell 5' HT Kit v2, 48 rxns (includes 5 chips)	1000356
Library Construction Kit, 48 rxns	1000352
Dual Index Kit TT Set A, 96 rxns	1000215
Chromium Next GEM Chip N Single Cell Kit, 16 rxns (includes 1 chip)	1000375
V(D)J Amplification Kits	Product code
Chromium Single Cell Human TCR Amplification Kit, 16 rxns	1000252
Chromium Single Cell Human BCR Amplification Kit, 16 rxns	1000253
Chromium Single Cell Mouse TCR Amplification Kit, 16 rxns	1000254
Chromium Single Cell Mouse BCR Amplification Kit, 16 rxns	1000255
Feature Barcode Technology Products	Product code
5' Feature Barcode Kit, 16 rxns*	1000256
Dual Index Kit TN Set A, 96 rxns	1000250
Instrument Compatibility	Product code
Chromium X & Accessory Kit, 12 Mo. Warranty	1000331
Chromium X & Accessory Kit, 24 Mo. Warranty	1000332
Software	
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Compatible Partner Product: Immudex dCODE Dextramers® go.10xgenomics.com/dCODE-Dextramers	Learn More

*One HT reaction requires two Feature Barcode reactions.

Contact us

10xgenomics.com | info@10xgenomics.com