

High Resolution Profiling of Adaptive Immune Repertoire and Cellular Context

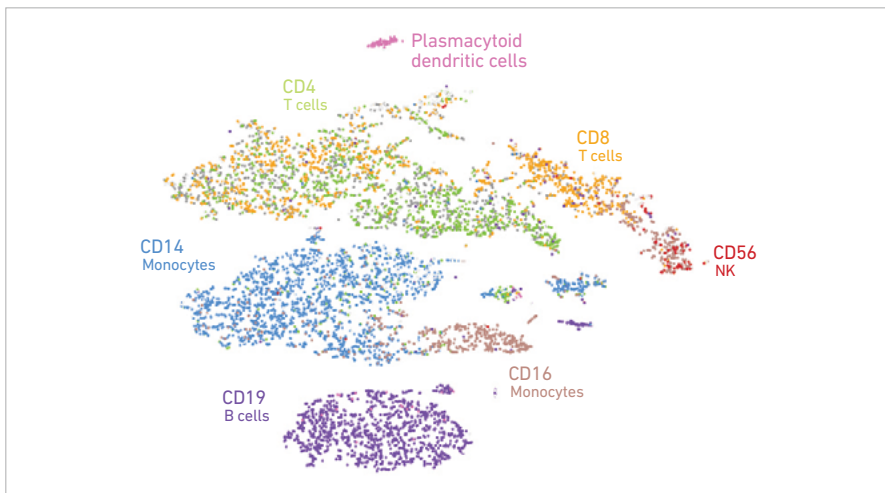
THE CHROMIUM SINGLE CELL IMMUNE PROFILING SOLUTION

The Chromium Single Cell Immune Profiling Solution is a comprehensive approach to simultaneously examine the cellular context of the adaptive immune response and the immune repertoires of hundreds to millions of T and B cells on a cell-by-cell basis. From translational immunology and immuno-oncology, to infectious disease research—these technological advancements, along with our intuitive software analysis and visualization tools, will accelerate the understanding of the adaptive immune system.

HIGHLIGHTS

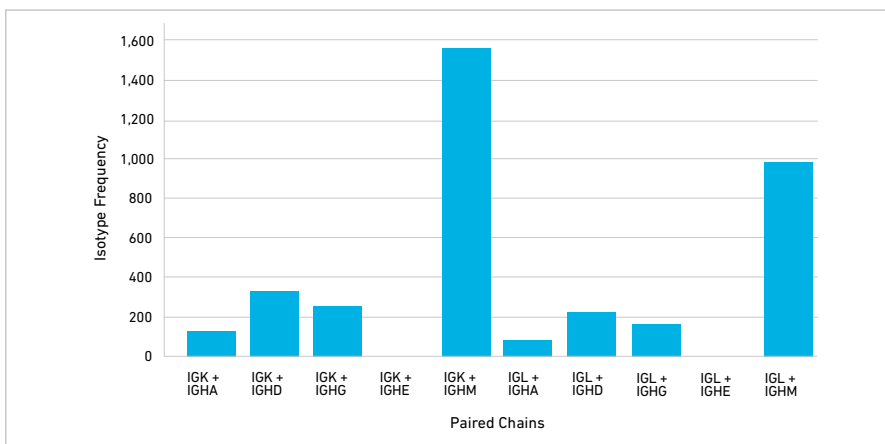
- Partition 100 – 80,000+ cells in <7 minutes
- Perform single cell 5' gene expression profiling
- Assemble and annotate full-length V(D)J segments
- Pair alpha and beta chain T-cell receptor (TCR) sequences from individual T cells
- Pair heavy and light chain Immunoglobulin (Ig) sequences from individual B cells with full isotype resolution
- Simultaneously measure TCR, B cell Ig, and 5' gene expression in the same sample
- Reveal the clonality, diversity, and cellular context of the immune repertoire using Cell Ranger Analysis Pipelines and the new Loupe V(D)J Browser

Single cell profiling of ~8,000 peripheral blood mononuclear cells (PBMCs) from a healthy donor



Loupe Cell Browser t-SNE projection of ~8,000 PBMCs from a healthy donor. Major subpopulations are classified by well-characterized cell markers within a heterogeneous PBMC sample.

Isotype frequency of paired Ig heavy and light chains



Isotype frequency of paired Ig heavy and light chains from ~4,300 CD19+ B cells isolated from PBMCs from a healthy donor.

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Typical data: paired adaptive immune repertoire profiling

	Estimated Number of Cells Loaded	Estimated Number of Cells Recovered	Paired Clonotype Diversity	Cells with Productive V-J Spanning Pair	
TCR	Pan T cells	3,480	1,838	1,327	77%
	CD8+ T cells	3,480	1,955	851	82%
	CD4+ T cells	3,480	1,398	774	58%
	PBMCs*	10,440	2,051	1,169	68%
B cell Ig	B-lymphoblastoid cell line (BLCL)	1,740	783	1	93%
	CD19+ B cells	8,700	4,383	3,871	92%
	PBMCs*	17,400	858	715	86%

Paired adaptive immune repertoire of high diversity and low diversity T and B cell samples are successfully profiled. Estimated Number of Cells Loaded is the number of cells loaded into each reaction and is influenced by cell count accuracy. Estimated Number of Cells Recovered is influenced by cell count accuracy, cell viability, capture efficiency, and TCR/Ig-expressing cell fraction. Paired Clonotype Diversity is computed as the Inverse Simpson Index of the clonotype frequencies observed in any sample. A value of 1 indicates a minimally diverse sample, where only one distinct clonotype was detected, whereas a value equal to the estimated number of cells indicates a maximally diverse sample. Cells with Productive V-J Spanning Pairs is the percentage of cell-associated barcodes with at least one contig for each chain of the receptor pair satisfying the following: the contig annotations span the 5' end of the V region and the 3' end of the J region of the chain, a start codon was found in the expected part of the V sequence, an in-frame CDR3 amino acid motif was found with no stop codons located within the V-J region.

* In PBMCs, the expected cell type frequencies are 50-70% for T cells and 10-20% for B cells.

APPLICATIONS

- Clonotype Characterization
- Tumor-Infiltrating Lymphocytes
- Disease-Associated Lymphocytes
- Context of the Immune Response

RESEARCH AREAS

- Basic & Translational Immunology
- Immuno-Oncology & Immunotherapy
- Autoimmune Disorders & Inflammatory Diseases
- Infectious Disease & Vaccine Research
- Transplant & Immune Reconstitution

PRODUCTS	PRODUCT CODE
Chromium Single Cell 5' Library & Gel Bead Kit, 16 rxns	1000006
Chromium Single Cell 5' Library & Gel Bead Kit, 4 rxns	1000014
Chromium Single Cell A Chip Kit, 48 rxns	120236
Chromium Single Cell A Chip Kit, 16 rxns	1000009
Chromium i7 Multiplex Kit, 96 rxns	120262
Chromium Single Cell V(D)J Enrichment Kit, Human T Cell, 96 rxns	1000005
Chromium Single Cell V(D)J Enrichment Kit, Human B Cell, 96 rxns	1000016
Chromium Single Cell 3'/5' Library Construction Kit, 16 rxns	1000020
Chromium Single Cell Controller & Accessory Kit, 12 Mo. Warranty	120263
Chromium Single Cell Controller & Accessory Kit, 24 Mo. Warranty	120212
Chromium Controller & Accessory Kit, 24 Mo. Warranty	120246
Chromium Controller & Accessory Kit, 12 Mo. Warranty	120223
Cell Ranger Analysis Pipelines go.10xgenomics.com/vdj/cell-ranger	DOWNLOAD
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