



High Resolution Profiling of Adaptive Immune Repertoire and Cellular Context

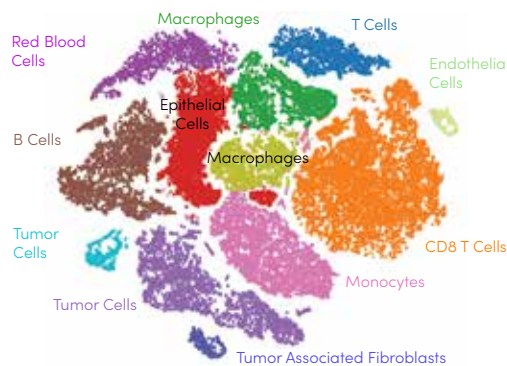
The Chromium Single Cell Immune Profiling Solution (with Next GEM technology)

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

Highlights

- Profile human or mouse cells on a single cell level
- 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 assess TCR, Ig, and 5' gene expression in the same cell
- Reveal the clonality, diversity, and cellular context of the immune repertoire using Cell Ranger Analysis Pipelines, Loupe V(D)J Browser and Loupe Cell Browser
- Partition 100 - 80,000+ cells efficiently
- Recover up to 65% of all loaded cells
- Low doublet rate: 0.9% per 1,000 cells
- Based on Next GEM technology

Profile Sample Heterogeneity



tSNE projections of ovarian cancer cells output by Cell Ranger and visualized using Loupe Cell Browser. Cells are grouped together based on gene expression profiles. Cell cluster classification was performed by manual curation.

Simultaneously Assess V(D)J Repertoire & Gene Expression



TRA Chain (α)

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GGGGGCCCTATGAGGCAAGTGGCGAGAGTGATCGTGTCTCTGACCCCTGAGTACTTTGAGCCTTGCTA
AGACCACCCAGCCCTTCCATGGACTCATATGAGTGGCAGTGTGCTGGGCTCATTGACGCTGACACA
CAGCAAAAGAGCCTAGACACTGGGCTCTAGTTGTCACCTAGAGAGACAAGAGTGAACATAACCTGTAGC
CACAACAACATTGCTACA AATGATTATACAGTGGTACCAACAGTTTCCAGCCAGGACCAAGATTAT
TATTCAGGATACAAGCAAAAGTTACA AAGGAAGTGGCTCCCTGTTTATCCCTGCCAGCAAGAGTC
CAGCACTTGAGCCTGCCCGGGTTTCCCTGAGGCACTGCTGTACTACTGCTCGGGTGACATA
ATGAACAGAGATGACAAGATCATTTTGGAAAGGGACACGACTTCATATTTCCCAATATCCAGAAC
CCTGACCCCTCCGTACAGCTGAGAGACTTAATCCAGTGAACAATGCTGCTGCTATTACCCGATTTT
GATTCTCAAACAATGTGTCAAAAGTAAGGATCTGTGTGTATATCAGACAAAACCTGTCTAGACAT
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TRB Chain (β)

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GGGGATCCCTTCAGCTCTG CAGGACAGGTAGAGACTCCAGGATCATCCACTGAGCACTGACATAAGGAAG
GCTCATGTGGGAGACTCAGGACAGTACATCACAGGATACCCCTCTTATAGAAATGAAAGCCGAGAT
TCACTGGCTCTTCCCAAGAGGACCAAGCCGTAATCAGGTGCACTGCTGCTGCCCACTGGCCATG
GGCCCTGGGCTCTCTGCTGGGTCTGTTTGTCTCTGGGAGCAGCTGTCTCTGCGCATTTATTTG
GATTGAACTCTGGGAAAGGCGTCCCTCTCTGAGGAGGCTCTGGGCCCCAGGAGGAGAAAT
GAGGTCTCAGAATGACTTCCTTGGAGTCTGTCCCTTTTCATCAATGCACAGATACAAGAACCCCTC
CGTCTGGAGCAGCTGCCATGAGCATCAGCTCTGCTGTGTCAGCCTTCTCTCTGTGGGACAGTCTC
CAGTGAATGCTGTGTCTACTCAGACCCCAAAATTTCCGATCTGAAGATAGGACAGAGATCACTG
CAGTGTACCCAGGATATGACCAATAACTACATGACTCTGTATCGACAAGACCAGCCAGCATGGGGCTGAAGCT
GATTTATTCAGTGTGGTGTGACTACTGTAAGGAAGGAGTCCGACATGGTACACACTGCTCAGAT
CAACCACAGAGGATTTCCCGCTCAGGCTGGAGTTGGCTGCTCCCTCCAGACATCTGTACTCTGTGC
CAGCAGTTCATCAATGAGCAGTCTCTGGCCAGGACACCGCTCACCGTCTAGAGGACCTGAAAAC
GTGTTCCACCCAGAGTGTGCTGTGTTGGCCATAGAGACAGAGATCTCCACACCAAAAGGCCACT
GGTGTGCTGCCACAGCTTCTACCCGACACAGTGGAGCTGACTGCTGGGTGTAATGGGAAGGAGTG
CACAGTGGGTCAGCAGACCCGACCCCTCAAGGAGCAGCCGCTCAATGACTCAGATAGTCTGCTGA
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	V	D	J	C
α	TRAV-4	-	TRAJ-30	TRAC
β	TRBV6-6	-	TRBJ2-1	TRBC2

Overlay of gene expression and TCR clonotypes for ovarian cancer cells visualized using Loupe Cell Browser. Light blue dots indicate an TCR clonotype call. Dark blue dots show the location of the most prevalent TCR clonotype in the CD8+ T cell cluster, with the table outlining the gene calls for the alpha (α) and beta (β) light chain. The paired α and β chain V(D)J sequences are shown to the right and corresponding V(D)J nucleotides are color-coded (5'UTR: gray, V: red, D: yellow, J: green, C: blue).

Gene Expression & Immune Repertoire Profiling

Reagent Kits	Product Code
Chromium Next GEM Single Cell 5' Library & Gel Bead Kit v1.1, 16 rxns ¹	1000165
Chromium Next GEM Single Cell 5' Library & Gel Bead Kit v1.1, 4 rxns ¹	1000167
Chromium Next GEM Single Cell G Chip Kit, 48 rxns ¹	1000120
Chromium Next GEM Single Cell G Chip Kit, 16 rxns ¹	1000127
Chromium i7 Multiplex Kit, 96 rxns	120262
Chromium Single Cell 5' Library Construction Kit, 16 rxns*	1000020
Target Enrichment Kits	See Enrichment Kits

* Library & Gel Bead Kit contains reagents to generate one library type (Gene Expression, TCR or Ig) from one Gel Bead reaction. Each additional library type from the same Gel Bead reaction requires additional reactions from the 5' Library Construction Kit.

Immune Repertoire Profiling

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Chromium i7 Multiplex Kit, 96 rxns	120262
Target Enrichment Kits	See Enrichment Kits

¹Next GEM reagents are specific to Next GEM products and should not be used interchangeably with non-Next GEM reagents.

Research Areas

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

Target Enrichment Kits

Species & Target	Enrichments Kits	Product Code
Human T cells	Chromium Single Cell V(D)J Enrichment Kit, Human T Cell, 96 rxns	1000005
Human B Cells	Chromium Single Cell V(D)J Enrichment Kit, Human B Cell, 96 rxns	1000016
Mouse T Cells	Chromium Single Cell V(D)J Enrichment Kit, Mouse T Cell, 96 rxns	1000071
Mouse B Cells	Chromium Single Cell V(D)J Enrichment Kit, Mouse B Cell, 96 rxns	1000072

Controllers & Software	Product Code
Chromium Controller & Next GEM Accessory Kit, 12 Mo. Warranty ¹	1000202
Chromium Controller & Next GEM Accessory Kit, 24 Mo. Warranty ¹	1000204
Cell Ranger Analysis Pipelines go.10xgenomics.com/vdj/cell-ranger	Downloads
Loupe V(D)J Browser go.10xgenomics.com/vdj/loupe-vdj	Download
Loupe Cell Browser go.10xgenomics.com/vdj/loupe-cell	Download

Additional Resources

Datasets	go.10xgenomics.com/vdj/datasets
Seminars	go.10xgenomics.com/vdj/seminars
Application Notes	go.10xgenomics.com/vdj/app-notes
Technical Support	go.10xgenomics.com/vdj/support
Publications	go.10xgenomics.com/vdj/pubs