Comprehensive panel curated for immunology

Accelerate immunology research with Targeted Gene Expression

Containing over 1,000 genes and a range of lineage and tissue markers, the Human Immunology Panel is designed to accelerate your understanding of the complexity of the immune system. Efficiently decipher the activity of immune cells and key molecular signaling pathways in heterogeneous tissue contexts, including the tumor microenvironment, and tissues affected by infection, chronic inflammation, or autoimmune disorders.

Compatible with Chromium Single Cell Gene Expression and Single Cell Immune Profiling, as well as Visium Spatial Gene Expression, the Human Immunology Panel enables comprehensive and efficient characterization of your immune samples.

Highlights

- Profile innate and adaptive immunity, inflammation, and immuno-oncology with 1,056 genes curated from established databases and recent publications
- Customize panel content by adding up to 200 additional genes using our Custom Panel Designer
- Recover transcripts effectively with full tiling of probes across gene transcripts

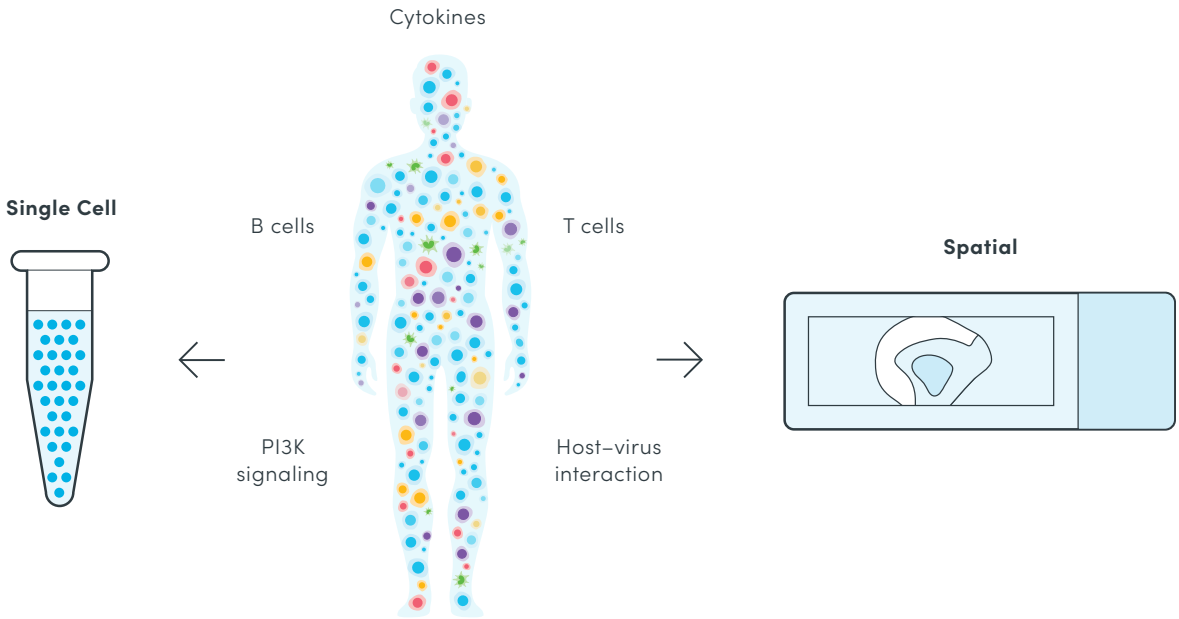

Figure 1. Accelerate your immunology research with a comprehensive and curated gene panel. The Human Immunology Panel is compatible with Single Cell Gene Expression, Single Cell Immune Profiling, and Spatial Gene Expression. Highlighted here are just a few of the pathways, cell types, and cellular processes included in the panel content.

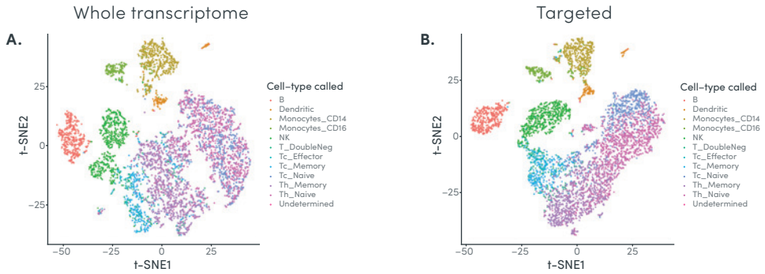

Figure 2. Targeted Gene Expression with the Human Immunology Panel preserves cell-type clustering and annotation of single cell data. Representative data from 6,000 human PBMCs from a healthy donor transcriptionally profiled with Single Cell Gene Expression. A. Cell clustering and annotation based on capture of mRNA from the whole transcriptome, sequenced at 100,000 reads per cell. B. The same library underwent target enrichment using the 10x Genomics Human Immunology Panel and was sequenced and subsampled to 2,000 reads per cell. All major cell subpopulations were preserved compared to the whole transcriptome parent sample.

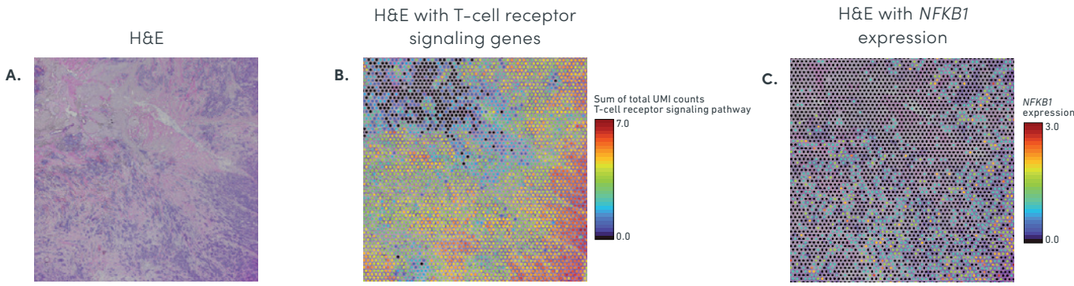

Figure 3. Curated immunology content refines spatial gene expression analysis. A human breast cancer tissue section was H&E stained and processed using the Visium Spatial Gene Expression workflow, then enriched for genes of interest using Targeted Gene Expression with the Human Immunology Panel. Shown are the H&E image (A), H&E image overlaid with total UMI counts for 52 genes related to the T-cell receptor signaling pathway from the Human Immunology Panel (B), and H&E image overlaid with *NFKB1* expression level (C).

Tissue type	Genes
B cell	56
Blood	142
Cord blood	11
Dendritic cell	14
Endothelial cell	11
Foreskin	11
Leukocyte	35
Liver	189
Lung	188
Lymph	68
Lymphocyte	17
Macrophage	9
Monocyte	25
Natural killer cell	11
Neutrophil	15
Pancreas	80
Peripheral blood	40
Plasma	73
Platelet	51
Spleen	122
Synovial membrane tissue	17
T cell	56
Thymus	61
Tonsil	15

Table 1. Panel design highlights: tissue types. Selection of key tissue-type categories included in the Human Immunology Panel.

Functional annotation and process	Genes
Activator	75
Adaptive immunity	75
Antiviral defense	38
Apoptosis	81
Cell adhesion	71
Cell cycle	79
Chemotaxis	60
Complement alternate pathway	11
Cytokine	113
Cytolysis	14
Glycoprotein	485
Host cell receptor for virus entry	27
Host–virus interaction	96
Immunity	238
Inflammatory response	83
Innate immunity	146
MHC I	9
MHC II	12
Proto-oncogene	41
Receptor	223
Secreted	271
Signal	474
Signal-anchor	68
Tyrosine-protein kinase	28

Table 2. Panel design highlights: functional annotation and processes. Selection of key functional annotation and process gene categories included in the Human Immunology Panel.

Pathway	Genes
Antigen processing and presentation	40
B-cell receptor signaling pathway	34
Chemokine signaling pathway	86
Estrogen signaling pathway	16
HIF-1 signaling pathway	25
Jak-STAT signaling pathway	79
MAPK signaling pathway	52
NF-kappa B signaling pathway	61
NOD-like receptor signaling pathway	35
p53 signaling pathway	20
PI3K-Akt signaling pathway	86
Rap1 signaling pathway	33
Ras signaling pathway	35
RIG-I-like receptor signaling pathway	41
Sphingolipid signaling pathway	30
T-cell receptor signaling pathway	52
TNF signaling pathway	60
Toll-like receptor signaling pathway	73
VEGF signaling pathway	14

Table 3. Panel design highlights: pathway genes. Selection of key pathway gene categories included in the Human Immunology Panel.

Products	Product code
Target Hybridization Kit, 16 rxns	1000248
Library Amplification Kit, 16 rxns	1000249
Human Immunology Panel, 4 rxns	1000259
Human Immunology Panel, 16 rxns	1000246
Custom Panel Designer bit.ly/10xgenomics-custom-designer	Visit Designer

Compatible products
Chromium Single Cell Gene Expression 10xgenomics.com/single-cell
Chromium Single Cell Immune Profiling 10xgenomics.com/vdj
Visium Spatial Gene Expression 10xgenomics.com/spatial-gene-expression

Applications

- Profiling immune responses to infection and vaccination
- Biomarker discovery for autoimmune and inflammatory diseases
- Profiling immunity in tumor and tissue microenvironments
- Characterizing mechanism of action for immune checkpoint therapies
- Immune cell reconstitution and response after transplantation
- Immunophenotyping and atlasing of immune cell types and states

Curated content sources

1. V Thorsson et al., The Immune Landscape of Cancer. *Immunity.* 48, 812–830 (2018).

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