

Maxpar Direct Expansion Panels

For use with Maxpar Direct Immune Profiling Assay

Catalog numbers: 201402, 201403, 201404, 201405, 201406, 201407, 201408, 201409, 201410

Package contents: Each panel contains a collection of preselected Maxpar® antibodies*, suitable for use with 1 Maxpar® Direct™ Immune Profiling Assay™ kit (201334)

* The antibodies are provided in individual tubes, not a pre-mixed cocktail. See tables for individual panel contents.

Reactivity: Human

Formulation: Antibody stabilizer with 0.05% sodium azide or 0.1% preservative (see individual panel contents tables)

Storage: Store at 2–8 °C. Do not freeze.

Application: CyTOF® suspension mass cytometry

Technical Information

Description: Maxpar Direct Expansion Panels are designed to complement the Maxpar Direct Immune Profiling Assay. Each panel consists of a collection of preselected antibodies that fit open channels of the assay with the aim to address deeper profiling of specific immune cell subsets (see [Surface Marker Expansion Panel Populations](#) and [Surface and Intracellular Marker Expansion Panel Populations](#) for an overview of the populations identified by each panel). Additional reagents may be required for specific panels (see [Applicable Protocols](#) for more information).

Recommended use: We recommend titrating the antibodies for optimal performance for each of the desired applications. A suggested starting point is 3 µL of each surface antibody (provided in 100 tests) or 1 µL of each intracellular antibody (provided in 25 tests) per Maxpar Direct Immune Profiling Assay test. Centrifuge the stock antibody at 12,000 × *g* for 5 min to sediment antibody aggregates.

IMPORTANT Contact Technical Support for more detailed guidance on recommended titration protocols and use of the Maxpar Direct Expansion Panels before initiating experiments.

Panel Information

Surface Marker Expansion Panel Contents (201402–201407)

Before using the following panels, refer to the surface staining instructions in the Maxpar Direct Immune Profiling Assay Cell Staining and Data Acquisition User Guide (400286). See also [Applicable Protocols](#) for more information.

NOTE Unless otherwise indicated, antibodies are formulated using antibody stabilizer with 0.05% sodium azide.

Panel Description	Maxpar Antibody	Cat. No.
Maxpar Direct Myeloid and B Cell Expansion Panel 1 (201402) enables deeper phenotyping of myeloid and B cell subsets in conjunction with the Maxpar Direct Immune Profiling Assay. This panel includes markers for monocytic myeloid-derived suppressor cells, B cell regulation and activation, and neutrophil activation and exhaustion.	Anti-Human CD181/CXCR1 (8F1/CXCR1)-142Nd—100 Tests	3142009B
	Anti-Human CD22 (HIB22)-159Tb—100 Tests	3159005B
	Anti-Human CD80/B7-1 (2D10.4)-162Dy—100 Tests	3162010B
	Anti-Human CD163 (GHI/61)-165Ho—100 Tests	3165017B
	Anti-Human CD33 (WM53)-169Tm—100 Tests	3169010B
	Anti-Human CD279/PD-1 (EH12.2H7)-175Lu—100 Tests	3175008B
	Anti-Human CD11b/Mac-1 (ICRF44)-209Bi—100 Tests	3209003B
Maxpar Direct Myeloid and B Cell Expansion Panel 2 (201403) enables deeper phenotyping of B cell and myeloid cell subsets in conjunction with the Maxpar Direct Immune Profiling Assay. Additionally, the panel includes markers for transitional B cells and for monitoring B cell regulation and activation and exhaustion.	Anti-Human CD40 (5C3)-142Nd—100 Tests	3142010B
	Anti-Human CD22 (HIB22)-159Tb—100 Tests	3159005B
	Anti-Human CD80/B7-1 (2D10.4)-162Dy—100 Tests	3162010B
	Anti-Human CD163 (GHI/61)-165Ho—100 Tests	3165017B
	Anti-Human CD24 (ML5)-169Tm—100 Tests	3169004B
	Anti-Human CD279/PD-1 (EH12.2H7)-175Lu—100 Tests	3175008B
	Anti-Human CD11b/Mac-1 (ICRF44)-209Bi—100 Tests	3209003B

Panel Description	Maxpar Antibody	Cat. No.
Maxpar Direct NK Cell Expansion Panel 1 (201404) enables deeper phenotyping of NK cells in conjunction with the Maxpar Direct Immune Profiling Assay. This panel includes NK regulation and activation and exhaustion markers, which enable deeper profiling of NK subsets.	Anti-Human CD181/CXCR1 (8F1/CXCR1)-142Nd—100 Tests	3142009B
	Anti-Human CD337/NKp30 (Z25)-159Tb—100 Tests	3159017B
	Anti-Human CD335/NKp46 (BAB281)-162Dy—100 Tests	3162021B
	Anti-Human CD279/PD-1 (EH12.2H7)-165Ho—100 Tests	3165042B
	Anti-Human CD159a/NKG2A (Z199)-169Tm—100 Tests	3169013B
	Anti-Human CD278/ICOS (C398.4A)-175Lu—100 Tests	3175039B
	Anti-Human TIGIT (MBSA43)-209Bi—100 Tests	3209013B
Maxpar Direct T Cell Expansion Panel 1 (201405) enables phenotyping of T cell and NK cell exhaustion in conjunction with the Maxpar Direct Immune Profiling Assay. Comprehensive investigation of T cell exhaustion is enabled by the inclusion of 5 inhibitory receptor markers, the collective expression of which may indicate increasingly diminished cellular functions.	Anti-Human CD366/Tim-3 (F38-2E2)-159Tb—100 Tests	3159037B
	Anti-Human CD69 (FN50)-162Dy—100 Tests	3162001B
	Anti-Human CD223/LAG-3 (11C3C65)-165Ho—100 Tests	3165037B
	Anti-Human CD159a/NKG2A (Z199)-169Tm—100 Tests	3169013B
	Anti-Human CD279/PD-1 (EH12.2H7)-175Lu—100 Tests	3175008B
	Anti-Human TIGIT (MBSA43)-209Bi—100 Tests	3209013B
Maxpar Direct T Cell Expansion Panel 2 (201406) enables investigation of T cell migration, activation, and exhaustion in conjunction with the Maxpar Direct Immune Profiling Assay. This panel also enables in-depth assessment of circulating T follicular helper cells and T stem cell memory subset.	Anti-Human CD11a (HI111)-142Nd—100 Tests	3142006B
	Anti-Human CD366/Tim-3 (F38-2E2)-159Tb—100 Tests	3159037B
	Anti-Human CD95/Fas (DX2)-162Dy—100 Tests	3162038B
	Anti-Human CD279/PD-1 (EH12.2H7)-165Ho—100 Tests	3165042B
	Anti-Human CD278/ICOS (C398.4A)-169Tm—100 Tests	3169030B
	Anti-Human CD184/CXCR4 (12G5)-175Lu—100 Tests	3175001B
	Anti-Human TIGIT (MBSA43)-209Bi—100 Tests	3209013B
	Anti-Human CD134/OX40 (ACT35)-142Nd—100 Tests	3142018B
Maxpar Direct T Cell Expansion Panel 3 (201407) enables phenotyping of T cell costimulation and exhaustion in conjunction with the Maxpar Direct Immune Profiling Assay. The panel may also be used to perform cytokine-independent activation-induced marker (AIM) assays to study antigen-specific T cell responses.	Anti-Human TIGIT (MBSA43)-159Tb—100 Tests	3159038B
	Anti-Human CD69 (FN50)-162Dy—100 Tests	3162001B
	Anti-Human CD279/PD-1 (EH12.2H7)-165Ho—100 Tests	3165042B
	Anti-Human CD366/Tim-3 (F38-2E2)-169Tm—100 Tests	3169028B
	Anti-Human CD278/ICOS (C398.4A)-175Lu—100 Tests	3175039B
	Anti-Human CD137/4-1BB (4B4-1)-209Bi—100 Tests	3209015B

Surface Marker Expansion Panel Populations

Table 1. Populations identified with Maxpar Direct surface marker Expansion Panels (Cat. Nos. 201402–201407)

Identified Populations		Maxpar Direct Surface Marker Expansion Panels					
Base Maxpar Direct Population	New Expansion Panel Population	Myeloid and B Cell Panel 1 (201402)	Myeloid and B Cell Panel 2 (201403)	NK Cell Panel 1 (201404)	T Cell Panel 1 (201405)	T Cell Panel 2 (201406)	T Cell Panel 3 (201407)
Monocytes	Monocytic myeloid-derived suppressor cells (MDSCs)	CD11b CD33	CD11b				
	Immunoregulatory monocytes	CD163	CD163				
Neutrophils	Neutrophil migration	CD181		CD181			
B cells	Transitional B cells		CD24				
	Inhibitory B cells	CD22	CD22				
B cells Dendritic cells	Activated antigen-presenting cells (APCs)	CD80	CD40 CD80				
Natural killer (NK) cells	Activated NK subsets			ICOS NKp30 NKp46	CD69	ICOS	CD69 ICOS
	Exhausted NK subsets			NKG2A PD-1 TIGIT	NKG2A PD-1 TIGIT Tim-3	PD-1 TIGIT Tim-3	PD-1 TIGIT Tim-3
CXCR5+ CD4 T cells	Circulating T follicular helper (Tfh) cells	PD-1	PD-1	ICOS PD-1	PD-1	ICOS PD-1	ICOS PD-1
CD3 T cells CD4 T cells CD8 T cells	Activated T cells			ICOS	CD69	CD11a ICOS	4-1BB CD69 ICOS OX40
	T cell migration					CD11a CXCR4	
	Exhausted T cells	PD-1	PD-1		LAG-3 NKG2a PD-1 TIGIT Tim-3	PD-1 TIGIT Tim-3	PD-1 TIGIT Tim-3
CD27+CD28+ CD3 T cells	Stem cell memory T (Tscm) cells					CD95 (Fas)	

NOTE The Maxpar Direct Basic Activation Expansion Panel (201408, see [Surface and Intracellular Marker Expansion Panel Contents](#)) is designed to be compatible with any of the 6 Maxpar Direct surface marker Expansion Panels (201402–201407) and can be used for further panel customization, including cytokine profiling in new populations identified with these panels, as shown above.

Surface and Intracellular Marker Expansion Panel Contents (201408–201410)

Before using the following panels, refer to the surface staining (for antibodies provided in 100 tests) and intracellular staining (for antibodies provided in 25 tests) instructions in the Maxpar Direct Immune Profiling Assay Cell Staining and Data Acquisition User Guide (400286). See also [Applicable Protocols](#) for more information.

NOTE Where indicated (*), antibodies are formulated using antibody stabilizer with 0.1% preservative.

Panel Description	Maxpar Antibody	Cat. No.
Maxpar Direct Basic Activation Expansion Panel (201408) enables phenotyping of immune cell activation in conjunction with the Maxpar Direct Immune Profiling Assay. The panel may be used to study antigen-specific T cell responses and measure cytotoxic potential in both T and natural killer (NK) cells with intracellular markers. This panel is designed to be compatible with any of the 6 Maxpar Direct surface marker Expansion Panels (Cat. Nos. 201402–201407) for further customization, including cytokine profiling in new populations identified with these panels, such as circulating T follicular helper (Tfh) cells and NK subsets and enabling cytokine-independent activation-induced marker (AIM) assays in conjunction with cytokine expression profiles (see Table 1).	Anti-Human CD107a/LAMP1 (H4A3)-106Cd—100 Tests	3106002B
	Anti-Human/Mouse Granzyme B (GB11)-198Pt—25 Tests	3198002C
	Anti-Human IFN γ (B27)-116Cd—25 Tests*	3116002C
	Anti-Human IL-2 (MQ1-17H12)-112Cd—25 Tests*	3112002C
	Anti-Human Perforin (B-D48)-196Pt—25 Tests	3196002C
	Anti-Human TNF α (MAb11)-114Cd—25 Tests*	3114002C
Maxpar Direct T Cell Activation Expansion Panel (201409) enables deep phenotyping and functional characterization of T cell activation and exhaustion in conjunction with the Maxpar Direct Immune Profiling Assay. The panel includes intracellular cytokine markers, which may be used to study the phenotype of cells responding to a particular treatment or stimulant and can also be used to identify the frequency of antigen-specific T cell responses after natural infection or vaccination. Additional markers included support the measurement of cytotoxic potential in T and natural killer (NK) cells and identification of activated T helper cell populations.	Anti-Human CD69 (FN50)-113Cd—100 Tests*	3113002B
	Anti-Human CD107a/LAMP1 (H4A3)-106Cd—100 Tests*	3106002B
	Anti-Human CD152/CTLA-4 (14D3)-162Dy—25 Tests	3162039C
	Anti-Human/Mouse Granzyme B (GB11)-198Pt—25 Tests	3198002C
	Anti-Human IFN γ (B27)-116Cd—25 Tests*	3116002C
	Anti-Human IL-2 (MQ1-17H12)-112Cd—25 Tests*	3112002C
	Anti-Human IL-4 (MP4-25D2)-142Nd—25 Tests	3142002C
	Anti-Human IL-10 (JES3-9D7)-165Ho—25 Tests	3165044C
	Anti-Human IL-17A (BL168)-169Tm—25 Tests	3169006C
	Anti-Human Perforin (B-D48)-196Pt—25 Tests	3196002C
Anti-Human TNF α (MAb11)-114Cd—25 Tests*	3114002C	
Maxpar Direct Myeloid and Lymphoid Activation Expansion Panel (201410) enables phenotyping and intracellular cytokine profiling of myeloid and lymphoid cell subsets in conjunction with the Maxpar Direct Immune Profiling Assay. The panel supports the functional characterization of cell types by including markers of inflammatory and suppressed monocytes, B cell regulation and activation, and T cell activation and exhaustion.	Anti-Human CD33 (WM53)-169Tm—100 Tests	3169010B
	Anti-Human CD40 (5C3)-142Nd—100 Tests	3142010B
	Anti-Human CD69 (FN50)-113Cd—100 Tests*	3113002B
	Anti-Human CD80/B7.1 (2D10.4)-162Dy—100 Tests	3162010B
	Anti-Human GM-CSF (BVD2-21C11)-159Tb—25 Tests	3159008C
	Anti-Human IL-1 β (CRM56)-209Bi—25 Tests	3209016C
	Anti-Human IL-6 (MQ2-13A5)-106Cd—25 Tests*	3106003C
	Anti-Human IL-10 (JES3-9D7)-165Ho—25 Tests	3165044C
	Anti-Human CD279/PD-1 (EH12.2H7)-175Lu—100 Tests	3175008B
	Anti-Human TNF α (MAb11)-114Cd—25 Tests*	3114002C

Surface and Intracellular Marker Expansion Panel Populations

Table 2. Gates used to distinguish cell populations stained by the Maxpar Direct Basic Activation Expansion Panel (201408).

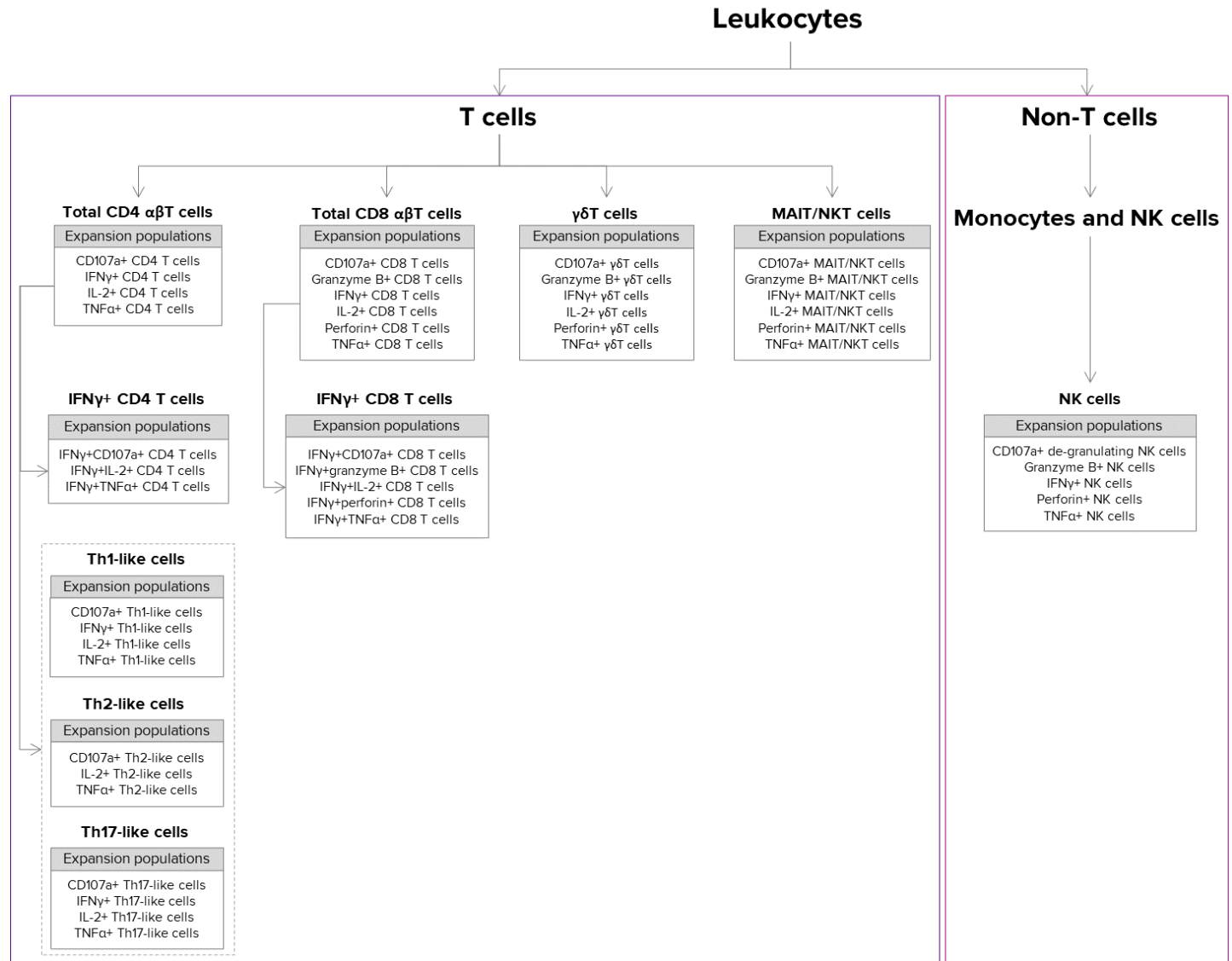


Table 3. Gates used to distinguish cell populations stained by the Maxpar Direct T Cell Activation Expansion Panel (201409).

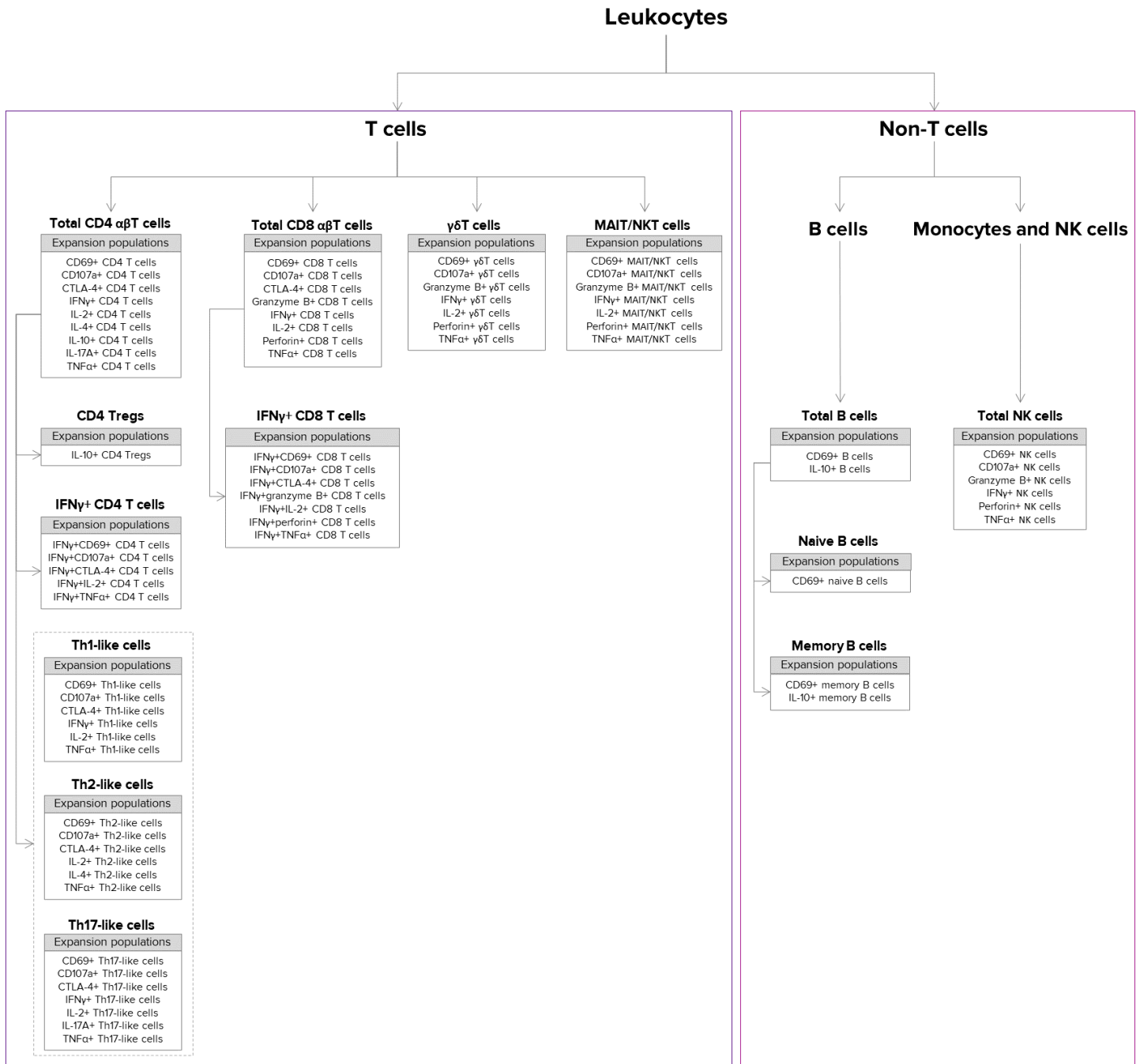
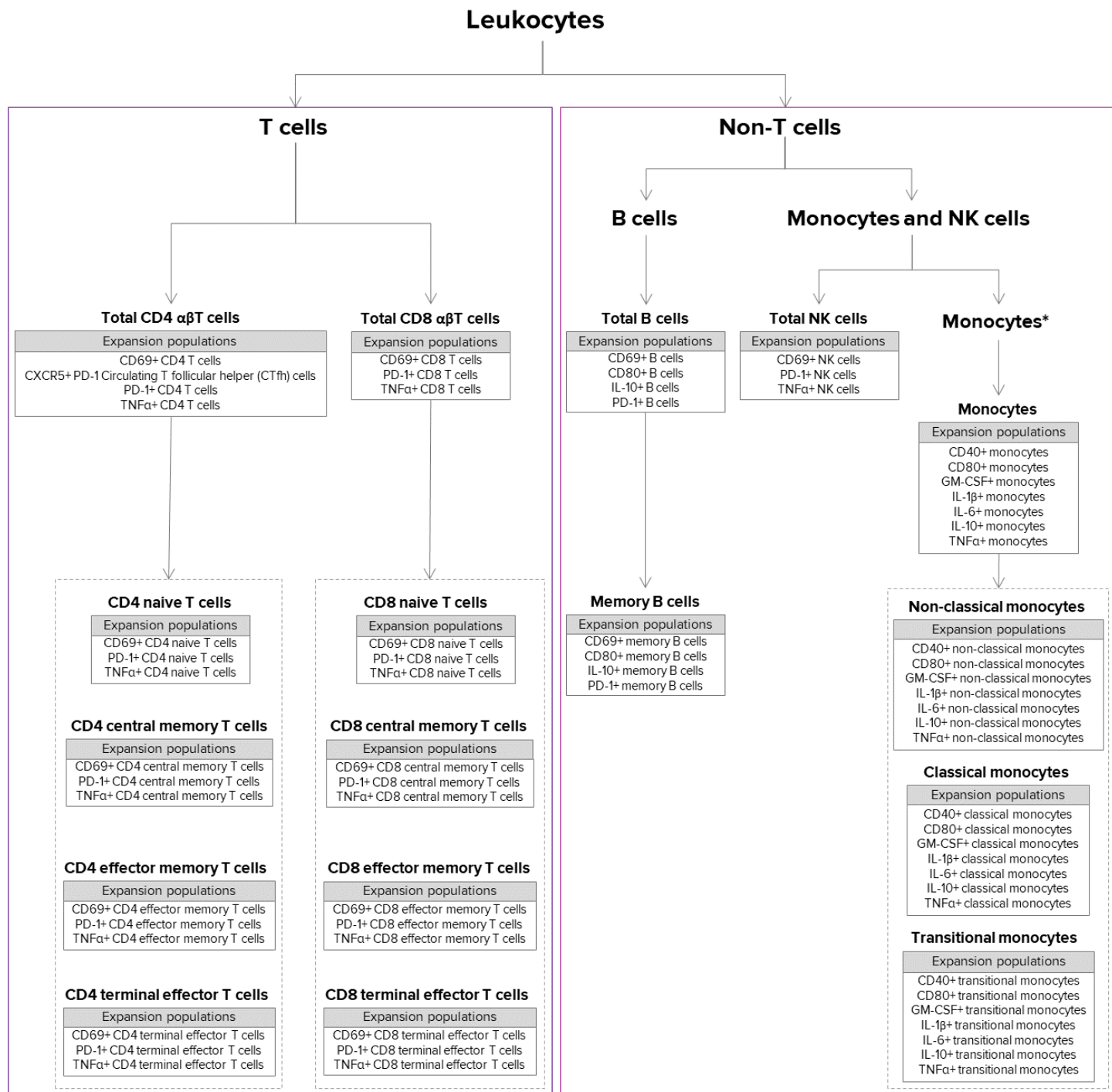


Table 4. Gates used to distinguish cell populations stained by the Maxpar Direct Myeloid and Lymphoid Activation Expansion Panel (201410).



* CD33 is used as a selection marker for monocytes with this panel

Surface and Intracellular Marker Expansion Panel Marker Information

Table 5. Markers included in the Maxpar Direct surface and intracellular marker Expansion Panels (Cat. Nos. 201408–201410), their primary purpose, and recommended staining (surface or intracellular).

Marker	Channel	Primary Purpose of Marker	Staining	Basic Activation (201408)	T Cell Activation (201409)	Myeloid and Lymphoid (201410)
CD33	169Tm	Lineage marker for myeloid populations	Surface			✓
CD40	142Nd	APC costimulatory molecule	Surface			✓
CD69	113Cd	Early activation marker	Surface		✓	✓
CD80	162Dy	APC costimulatory molecule	Surface			✓
CD107a	106Cd	Cytotoxic degranulation marker	Surface	✓	✓	
CTLA-4	162Dy	T cell exhaustion marker	Intracellular		✓	
GM-CSF	159Tb	Growth factor, pro-inflammatory cytokine	Intracellular			✓
Granzyme B	198Pt	Cytotoxicity marker	Intracellular	✓	✓	
IFN γ	116Cd	Anti-viral and immunoregulatory cytokine	Intracellular	✓	✓	
IL-1 β	209Bi	Pro-inflammatory cytokine	Intracellular			✓
IL-2	112Cd	Pleiotropic cytokine	Intracellular	✓	✓	
IL-4	142Nd	Anti-inflammatory Th2 cytokine	Intracellular		✓	
IL-6	106Cd	Pleiotropic cytokine	Intracellular			✓
IL-10	165Ho	Regulatory cytokine	Intracellular		✓	✓
IL-17A	169Tm	Pro-inflammatory Th17 cytokine	Intracellular		✓	
PD-1	175Lu	Immune cell exhaustion marker	Surface			✓
Perforin	196Pt	Cytotoxicity marker	Intracellular	✓	✓	
TNF α	114Cd	Pro-inflammatory cytokine	Intracellular	✓	✓	✓

Applicable Protocols

Before using this product, refer to the instructions in the Antibody Selection and Optimization: Customize the Maxpar Direct Immune Profiling Assay User Guide (FLDM-00229). For more information, see the Maxpar Direct Immune Profiling Assay Cell Staining and Data Acquisition User Guide (400286).

Safety

Use standard laboratory safety protocols. Read and understand the safety data sheets (SDSs) before handling chemicals. To obtain SDSs for chemicals ordered from Standard BioTools™, go to store.fluidigm.com and search using either the product name or the catalog number.

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