Immunophenotyping - one panel CCP_IMM_001

Purpose

This test differentiates immune cell sub-populations via flow cytometry in one panel.

Experimental Design

- **Minimum number:** 7M + 7F
- **Age at test:** Week 16
- **Sex:** Both (sexually dimorphic)

Equipment

Reagents and equipment for sample preparation

- Spleen Dissociation Kit (Miltenyi Biotec)
- gentleMACS Dissociator (Miltenyi Biotec)
- gentleMACS C Tubes (Miltenyi Biotec)
- FACS buffer: 2% Fetal Bovine Serum, 10mM HEPES, 2mM EDTA in HBSS without Ca2+ and Mg2+
- ACK Lysis buffer: 150mM NH4Cl, 10mM KHCO3, 0.1mM Na2EDTA in H2O
- CellTrics filters 100m (Sysmex)
- BD Horizon Brilliant Stain Buffer Plus
- Anti-CD16/CD32 antibody - Fc block (BD Biosciences)

Procedure

Sample preparation

- Dissociate spleens enzymatically in gentleMACS C Tubes according to the Spleen Dissociation Kit protocol.
- Fill the tubes with cell suspensions up to 10 mL with FACS buffer and transfer the suspensions through 100 m cell strainer into 15mL tubes.
- Centrifuge samples at 400 g for 8 minutes at 4°C.
- Resuspend pellets in 1 mL of ACK Lysis buffer and incubate for 3 minutes at room temperature.
- Add FACS buffer up to 5 mL and filter cell suspension through the 100 m cell strainer.
- Count total number of live cells using Trypan Blue stain and Cellometer Auto T4 with Nexcelom cell counting chambers.
- Transfer 2.5x106 of live cells per well into a 96-well U bottom plate. Centrifuge plate at 400 g for 4 minutes at 4°C.
- Discard supernatant and proceed with staining.

Staining and data acquisition

- Resuspend pellets in 50 L of staining cocktail (antibodies including Fc block (1:200) in FACS buffer containing 20% of Brilliant stain buffer):

Specificity	Fluorochrome	Clone	Catalog #	Manufacturer	Dilution
CD8a	BUV395	53-6.7	563786	BD Biosciences	1:200
CD4	BUV496	RM4-5	741050	BD Biosciences	1:400
F4/80	BUV563	T45-2342	749284	BD Biosciences	1:400
CD19	BUV615	1D3	751213	BD Biosciences	1:800
TCR	BUV661	GL3	750410	BD Biosciences	1:200
CD21/CD35	BUV737	7G6	612810	BD Biosciences	1:2000
CD44	BUV805	IM7	741921	BD Biosciences	1:400
CD5	BV421	53-7.3	562739	BD Biosciences	1:400
Viability	SYTOX Blue	-	S34857	Invitrogen	1:40000
CD11c	BV605	N418	117334	BioLegend	1:400
Ly6G	BV650	1A8	740554	BD Biosciences	1:400
BST2 (CD317)	BV711	927	747604	BD Biosciences	1:400
Ly6C	FITC	AL-21	553104	BD Biosciences	1:800
MHCII	BB630	M5/114.15.2	624294	BD Biosciences	1:800
KLRG1	BB700	2F1	742199	BD Biosciences	1:400
CD49d	BB790	R1-2	624296	BD Biosciences	1:800
CD23	PE	B3B4	101607	BioLegend	1:800
CD161	PE-CF594	PK136	562864	BD Biosciences	1:800
CD25	PE-Cy7	PC61	552880	BD Biosciences	1:400
GITR (CD357)	APC	DTA-1	624346	BD Biosciences	1:800
CD11b	APC-R700	M1/70	564985	BD Biosciences	1:2000
CD62L	APC-Cy7	MEL-14	560514	BD Biosciences	1:2000

- Incubate samples for 30 minutes in dark on ice.
- Wash samples with 200 L of FACS buffer and centrifuge for 4 minutes at 400 g at 4 °C.
- Discard supernatant and resuspend pellets in 150 L of FACS buffer containing SYTOX Blue (diluted 1:40 000).
- Acquire 500 000 live cells.

Notes

Parameters and Metadata

Spleen weight CCP_IMM_001_002 | v2.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: g

Live leukocytes - % of total events CCP_IMM_002_002 | v2.0

simpleParameter

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Unit Measured: %

T cells - % of live leukocytes CCP_IMM_003_002 | v2.0

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NKT cells - % of live leukocytes CCP_IMM_004_002 | v2.0

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NK cells - % of live leukocytes CCP_IMM_005_002 | v2.0

simpleParameter

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Unit Measured: %

CD4 T cells - % of live leukocytes CCP_IMM_007_002 | v2.0

simpleParameter

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Unit Measured: %

CD8+ T cells - % of live leukocytes CCP_IMM_008_002 | v2.0

simpleParameter

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CD4+ NKT cells - % of live leukocytes CCP_IMM_011_002 | v2.0
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Unit Measured: %

CD4- NKT cells - % of live leukocytes CCP_IMM_013_002 | v2.0
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Treg cells - % of live leukocytes CCP_IMM_014_002 | v2.0
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Unit Measured: %

CD4+ T helper cells - % of live leukocytes CCP_IMM_015_002 | v2.0

simpleParameter

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Total events CCP_IMM_026_002 | v2.0

simpleParameter

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Effector CD4+ T helper cells - % of live leukocytes CCP_IMM_028_002 | v2.0

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Unit Measured: %

Resting CD4+ T helper cells - % of live leukocytes CCP_IMM_029_002 | v2.0

simpleParameter

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Unit Measured: %

Effector CD8+ T cells - % of live leukocytes CCP_IMM_032_002 | v2.0

simpleParameter

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Unit Measured: %

NaÃÂ¯ve CD8+ T cells - % of live leukocytes CCP_IMM_033_002 | v2.0

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Unit Measured: %

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Unit Measured: %

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Unit Measured: %

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Unit Measured: %

Resting CD4- NKT cells - % of live leukocytes CCP_IMM_047_002 | v2.0

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Granulocytes - % of live leukocytes CCP_IMM_050_002 | v2.0

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Monocytes - % of live leukocytes CCP_IMM_051_002 | v2.0

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Unit Measured: %

Eosinophils - % of live leukocytes CCP_IMM_052_002 | v2.0
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Ly6C+ CD11b- NK cells - % of live leukocytes CCP_IMM_054_002 | v2.0
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CD11b- NK cells - % of live leukocytes CCP_IMM_056_002 | v2.0

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CD11b+ NK cells - % of live leukocytes CCP_IMM_057_002 | v2.0

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Ly6C+ NKT cells - % of live leukocytes CCP_IMM_059_002 | v2.0

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B cells - % of live leukocytes CCP_IMM_063_002 | v2.0

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Follicular B cells - % of B cells CCP_IMM_067_002 | v2.0

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Marginal zone B cells - % of B cells CCP_IMM_071_002 | v2.0

simpleParameter

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Conventional DC - % of live leukocytes CCP_IMM_072_002 | v2.0

simpleParameter

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Unit Measured: %

Plasmacytoid DC- % of live leukocytes CCP_IMM_074_002 | v2.0
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Macrophages- % of live leukocytes CCP_IMM_075_002 | v2.0
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Unit Measured: %

Equipment name CCP_IMM_077_002 | v2.0
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Equipment manufacturer CCP_IMM_078_002 | v2.0

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Equipment model CCP_IMM_079_002 | v2.0

procedureMetadata

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Options: Aurora,

CS&T Bead lot CCP_IMM_080_002 | v2.0

procedureMetadata

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Options: 2000,

Anesthesia CCP_IMM_081_002 | v2.0

procedureMetadata

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Cell digestion CCP_IMM_082_002 | v2.0

procedureMetadata

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Cell digestion agent CCP_IMM_083_002 | v2.0

procedureMetadata

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Cell digestion agent manufacturer CCP_IMM_084_002 | v2.0

procedureMetadata

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Options: Miltenyi Biotec,

Cell digestion agent catalog number CCP_IMM_085_002 | v2.0

procedureMetadata

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Options: 130-095-926,

Cell counting performed CCP_IMM_086_002 | v2.0

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Cell counting equipment manufacturer CCP_IMM_087_002 | v2.0

procedureMetadata

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Options: Nextcelom,

Cell counting equipment model CCP_IMM_088_002 | v2.0

procedureMetadata

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Cell counting equipment name CCP_IMM_089_002 | v2.0

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Cell lysis buffer manufacturer CCP_IMM_090_002 | v2.0

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Date and time of sacrifice CCP_IMM_092_002 | v2.0

procedureMetadata

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Sample storage temperature until analysis (in Celsius) CCP

_IMM_094_002 | v2.0

procedureMetadata

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Options: 8,

Balanced salt solution type CCP_IMM_096_002 | v2.0

procedureMetadata

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Options: HBSS,

Balanced salt solution manufacturer CCP_IMM_097_002 | v2.0

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Options: home brew,

Balanced salt solution catalog number CCP_IMM_098_002 | v2.0
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RPMI manufacturer CCP_IMM_099_002 | v2.0
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RPMI catalog number CCP_IMM_100_002 | v2.0
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Options: none used,

DNAse I manufacturer CCP_IMM_101_002 | v2.0

procedureMetadata

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DNAse I catalog number CCP_IMM_102_002 | v2.0

procedureMetadata

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Options: none used,

Dead cell exclusion dye CCP_IMM_103_002 | v2.0

procedureMetadata

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Options: SYTOX Blue nucleic acid stain,

Dead cell exclusion dye manufacturer CCP_IMM_104_002 | v2.0

procedureMetadata

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Options: Invitrogen by Thermo Fisher,

Dead cell exclusion dye catalog number CCP_IMM_105_002 | v2.0

procedureMetadata

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Options: S11348,

Cell digestion temperature (in Celsius) CCP_IMM_106_002 | v2.0

procedureMetadata

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Options: 37,

Automated analysis CCP_IMM_109_002 | v2.0

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Collection buffer manufacturer CCP_IMM_110_002 | v2.0

procedureMetadata

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Options: home brew,

Collection buffer catalog number number CCP_IMM_111_002 | v2.0

procedureMetadata

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Options: home brew,

FACS buffer manufacturer CCP_IMM_112_002 | v2.0

procedureMetadata

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Options: home brew,

FACS buffer catalog number CCP_IMM_113_002 | v2.0

procedureMetadata

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Options: home brew,

Enzyme buffer manufacturer CCP_IMM_114_002 | v2.0

procedureMetadata

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Options: Miltenyi Biotec,

Enzyme buffer catalog number CCP_IMM_115_002 | v2.0

procedureMetadata

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Clog- events CCP_IMM_117_001 | v1.0

simpleParameter

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Effector NK cells - % of live leukocytes CCP_IMM_119_001 | v1.0

simpleParameter

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Unit Measured: %

Effector Treg cells - % of live leukocytes CCP_IMM_120_001 | v1.0

simpleParameter

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Unit Measured: %

Effector T cells - % of live leukocytes CCP_IMM_121_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ CD4- NKT cells - % of live leukocytes CCP_IMM_122_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ CD4+ NKT cells - % of live leukocytes CCP_IMM_123_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ CD4+ T helper cells - % of live leukocytes CCP_IMM_124_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ CD8 T cells - % of live leukocytes CCP_IMM_125_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ NK cells - % of live leukocytes CCP_IMM_126_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ Treg cells - % of live leukocytes CCP_IMM_127_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ T cells - % of live leukocytes CCP_IMM_128_001 | v1.0

simpleParameter

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Unit Measured: %

Resting NK cells - % of live leukocytes CCP_IMM_129_001 | v1.0
simpleParameter

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Unit Measured: %

Resting Treg cells - % of live leukocytes CCP_IMM_130_001 | v1.0
simpleParameter

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Unit Measured: %

Resting T cells - % of live leukocytes CCP_IMM_131_001 | v1.0
simpleParameter

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Unit Measured: %

T cells - % of live leukocytes CCP_IMM_133_001 | v1.0

simpleParameter

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Unit Measured: %

CD4- NKT cells - % of NKT cells CCP_IMM_134_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: %

CD4+ NKT cells - % of NKT cells CCP_IMM_135_001 | v1.0

simpleParameter

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Unit Measured: %

CD4+ T cells - % of T cells CCP_IMM_136_001 | v1.0

simpleParameter

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Unit Measured: %

CD4+ T helper cells - % of CD4 T cells CCP_IMM_137_001 | v1.0

simpleParameter

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Unit Measured: %

CD8+ T cells - % of T cells CCP_IMM_138_001 | v1.0

simpleParameter

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Unit Measured: %

Effector CD4- NKT cells - % of CD4- NKT cells CCP_IMM_139_001 | v1.0

simpleParameter

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Effector CD4+ NKT cells - % of CD4+ NKT cells CCP_IMM_140_001 | v1.0
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Effector CD4+ T helper cells - % of CD4+ T helper cells CCP_IMM_141_001 | v1.0
simpleParameter

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Unit Measured: %

Effector CD8+ T cells - % of CD8+ T cells CCP_IMM_142_001 | v1.0
simpleParameter

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Unit Measured: %

Effector NK cells - % of NK cells CCP_IMM_143_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Effector Treg cells - % of Treg cells CCP_IMM_144_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Effector T cells - % of T cells CCP_IMM_145_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Klrg1+ CD4- NKT cells - % of CD4- NKT cells CCP_IMM_146_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ CD4+ NKT cells - % of CD4+ NKT cells CCP_IMM_147_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Klrg1+ CD4+ T helper cells - % of CD4+ T helper cells CCP_IMM_148_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Klrg1+ CD8 T cells - % of CD8+ T cells CCP_IMM_149_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Klrg1+ NK cells - % of NK cells CCP_IMM_150_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Klrg1+ Treg cells - % of Treg cells CCP_IMM_151_001 | v1.0

simpleParameter

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Unit Measured: %

Klrg1+ T cells - % of T cells CCP_IMM_152_001 | v1.0

simpleParameter

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Unit Measured: %

Naïve CD8+ T cells - % of CD8+ T cells CCP_IMM_153_001 | v1.0
simpleParameter

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Unit Measured: %

Resting CD4- NKT cells - % of CD4- NKT cells CCP_IMM_154_001 | v1.0
simpleParameter

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Unit Measured: %

Resting CD4+ NKT cells - % of CD4+ NKT cells CCP_IMM_155_001 | v1.0
simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: %

Resting CD4+ T helper cells - % of CD4+ T helper cells CCP _IMM_156_001 | v1.0

simpleParameter

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Unit Measured: %

Resting CD8+ T cells - % of CD8+ T cells CCP_IMM_157_001 | v1.0

simpleParameter

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Unit Measured: %

Resting NK cells - % of NK cells CCP_IMM_158_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Resting Treg cells - % of Treg cells CCP_IMM_159_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Resting T cells - % of T cells CCP_IMM_160_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Treg cells - % of CD4 T cells CCP_IMM_161_001 | v1.0
simpleParameter

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Unit Measured: %

B1a cells - % of B cells CCP_IMM_164_001 | v1.0
simpleParameter

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Unit Measured: %

CD11b-high cDC - % of conventional DC CCP_IMM_166_001 | v1.0
simpleParameter

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Unit Measured: %

CD11b-low cDC - % of conventional DC CCP_IMM_167_001 | v1.0
simpleParameter

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Unit Measured: %

CD161+ B cells - % of live leukocytes CCP_IMM_168_001 | v1.0
simpleParameter

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Unit Measured: %

CD11b- NK cells - % of NK cells CCP_IMM_171_001 | v1.0

simpleParameter

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Unit Measured: %

CD11b+ NK cells - % of NK cells CCP_IMM_172_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

CD161+ B cells - % of B cells CCP_IMM_173_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Follicular B cells - % of B cells CCP_IMM_174_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Ly6C+ CD11b- NK cells - % of NK cells CCP_IMM_175_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Ly6C+ CD11b+ NK cells - % of NK cells CCP_IMM_176_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Ly6C+ NKT cells - % of NKT cells CCP_IMM_177_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

Marginal zone B cells - % of B cells CCP_IMM_178_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: %

T cells - cell count CCP_IMM_181_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

CD8+ T cells - cell count CCP_IMM_183_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Effector CD8+ T cells - cell count CCP_IMM_184_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Resting CD8+ T cells - cell count CCP_IMM_185_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Naïve CD8+ T cells - cell count CCP_IMM_186_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Klrg1+ CD8 T cells - cell count CCP_IMM_187_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

CD4 T cells - cell count CCP_IMM_188_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

CD4+ T helper cells - cell count CCP_IMM_189_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Effector CD4+ T helper cells - cell count CCP_IMM_190_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Resting CD4+ T helper cells - cell count CCP_IMM_191_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Klrg1+ CD4+ T helper cells - cell count CCP_IMM_192_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Treg cells - cell count CCP_IMM_193_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Effector Treg cells - cell count CCP_IMM_194_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Resting Treg cells - cell count CCP_IMM_195_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Klrg1+ Treg cells - cell count CCP_IMM_196_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

T cells - cell count CCP_IMM_197_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Effector T cells - cell count CCP_IMM_198_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Resting T cells - cell count CCP_IMM_199_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Klrg1+ T cells - cell count CCP_IMM_200_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

NKT cells (panel A) - cell count CCP_IMM_201_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

CD4+ NKT cells - cell count CCP_IMM_202_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Effector CD4+ NKT cells - cell count CCP_IMM_203_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Resting CD4+ NKT cells - cell count CCP_IMM_204_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Klrg1+ CD4+ NKT cells - cell count CCP_IMM_205_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD4- NKT cells - cell count CCP_IMM_206_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Effector CD4- NKT cells - cell count CCP_IMM_207_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Resting CD4- NKT cells - cell count CCP_IMM_208_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Klrg1+ CD4- NKT cells - cell count CCP_IMM_209_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

NK cells - cell count CCP_IMM_210_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Effector NK cells - cell count CCP_IMM_211_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Resting NK cells - cell count CCP_IMM_212_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Klrg1+ NK cells - cell count CCP_IMM_213_001 | v1.0

simpleParameter

Req. Analysis: false　　　**Req. Upload:** false　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Ly6C+ NKT cells - cell count CCP_IMM_216_001 | v1.0

simpleParameter

Req. Analysis: false　　　**Req. Upload:** false　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD11b- NK cells - cell count CCP_IMM_218_001 | v1.0

simpleParameter

Req. Analysis: false　　　**Req. Upload:** false　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Ly6C+ CD11b- NK cells - cell count CCP_IMM_219_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD11b+ NK cells - cell count CCP_IMM_220_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Ly6C+ CD11b+ NK cells - cell count CCP_IMM_221_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

B cells - cell count CCP_IMM_222_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

B1a cells - cell count CCP_IMM_223_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Follicular B cells - cell count CCP_IMM_225_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Marginal zone B cells - cell count CCP_IMM_226_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD161+ B cells - cell count CCP_IMM_229_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Conventional DC - cell count CCP_IMM_230_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD11b-low cDC - cell count CCP_IMM_231_001 | v1.0
simpleParameter

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

CD11b-high cDC - cell count CCP_IMM_232_001 | v1.0
simpleParameter

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Plasmacytoid DC - cell count CCP_IMM_233_001 | v1.0
simpleParameter

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Macrophages - cell count CCP_IMM_234_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Monocytes - cell count CCP_IMM_235_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Granulocytes - cell count CCP_IMM_236_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

Eosinophils - cell count CCP_IMM_237_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Unit Measured: count

Derivation: unimplemented()

IMPC Panel anti-CD5 clone CCP_IMM_238_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 53-7.3,

IMPC Panel anti-CD5 fluorochrome CCP_IMM_239_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BV421,

IMPC Panel anti-CD5 RRID CCP_IMM_240_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2737758,

IMPC Panel anti-CD4 clone CCP_IMM_241_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: RM4-5,

IMPC Panel anti-CD4 fluorochrome CCP_IMM_242_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV496,

IMPC Panel anti-CD4 RRID CCP_IMM_243_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2870665,

IMPC Panel anti-CD44 clone CCP_IMM_244_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: IM7,

IMPC Panel anti-CD44 fluorochrome CCP_IMM_245_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV805,

IMPC Panel anti-CD44 RRID CCP_IMM_246_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2871234,

IMPC Panel anti-CD8a clone CCP_IMM_247_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 53-6.7,

IMPC Panel anti-CD8a fluorochrome CCP_IMM_248_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV395,

IMPC Panel anti-CD8a RRID CCP_IMM_249_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2732919,

IMPC Panel anti-CD25 clone CCP_IMM_250_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: PC61,

IMPC Panel anti-CD25 fluorochrome CCP_IMM_251_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: PE-Cy7,

IMPC Panel anti-CD25 RRID CCP_IMM_252_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_394509,

IMPC Panel anti-CD161 clone CCP_IMM_253_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: PK136,

IMPC Panel anti-CD161 fluorochrome CCP_IMM_254_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: PE-CF594,

IMPC Panel anti-CD161 RRID CCP_IMM_255_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2737850,

IMPC Panel anti-CD62L clone CCP_IMM_256_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: MEL-14,

IMPC Panel anti-CD62L fluorochrome CCP_IMM_257_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: APC-Cy7,

IMPC Panel anti-CD62L RRID CCP_IMM_258_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_10611861,

IMPC Panel Live/Dead stain CCP_IMM_259_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: SYTOX Blue nucleic acid stain,

IMPC Panel additional maker 1 name CCP_IMM_260_001 | v1.0

procedureMetadata

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

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IMPC Panel additional marker 1 clone CCP_IMM_261_001 | v1.0

procedureMetadata

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

Options: GL3,

IMPC Panel additional marker 1 fluorochrome CCP_IMM_262_0 01 | v1.0

procedureMetadata

Req. Analysis: false　　　　**Req. Upload:** false　　　　**Is Annotated:** false

Options: BUV661,

IMPC Panel additional marker 1 RRID CCP_IMM_263_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2874580,

IMPC Panel additional maker 2 name CCP_IMM_264_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 2 clone CCP_IMM_265_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: R1-2,

IMPC Panel additional marker 2 fluorochrome CCP_IMM_266_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BB790,

IMPC Panel additional marker 2 RRID CCP_IMM_267_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional maker 3 name CCP_IMM_268_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 3 clone CCP_IMM_269_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 2F1,

IMPC Panel additional marker 3 fluorochrome CCP_IMM_270_0 01 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BB700,

IMPC Panel additional marker 3 RRID CCP_IMM_271_001 | v1.0
procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2871424,

IMPC Panel additional maker 4 name CCP_IMM_272_001 | v1.0
procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 4 clone CCP_IMM_273_001 | v1.0
procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: DTA-1,

IMPC Panel additional marker 4 fluorochrome CCP_IMM_274_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: APC,

IMPC Panel additional marker 4 RRID CCP_IMM_275_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-CD5 clone CCP_IMM_280_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-CD5 fluorochrome CCP_IMM_281_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-CD5 RRID CCP_IMM_282_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-Ly6G clone CCP_IMM_283_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 1A8,

IMPC Panel anti-Ly6G fluorochrome CCP_IMM_284_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BV650,

IMPC Panel anti-Ly6G RRID CCP_IMM_285_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2740255,

IMPC Panel anti-CD19 clone CCP_IMM_286_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 1D3,

IMPC Panel anti-CD19 fluorochrome CCP_IMM_287_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV615,

IMPC Panel anti-CD19 RRID CCP_IMM_288_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2875235,

IMPC Panel anti-Ly6C clone CCP_IMM_289_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AL-21,

IMPC Panel anti-Ly6c fluorochrome CCP_IMM_290_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: FITC,

IMPC Panel anti-Ly6c RRID CCP_IMM_291_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_394628,

IMPC Panel anti-CD21/35 clone CCP_IMM_292_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 7G6,

IMPC Panel anti-CD21/35 fluorochrome CCP_IMM_293_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV737,

IMPC Panel anti-CD21/35 RRID CCP_IMM_294_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2870135,

IMPC Panel anti-CD11b clone CCP_IMM_295_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: M1/70,

IMPC Panel anti-CD11b fluorochrome CCP_IMM_296_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: APC-R700,

IMPC Panel anti-CD11b RRID CCP_IMM_297_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2739033,

IMPC Panel anti-CD11c clone CCP_IMM_298_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: N418,

IMPC Panel anti-CD11c fluorochrome CCP_IMM_299_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BV605,

IMPC Panel anti-CD11c RRID CCP_IMM_300_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2562415,

IMPC Panel anti-CD161 clone CCP_IMM_301_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-CD161 fluorochrome CCP_IMM_302_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-CD161 RRID CCP_IMM_303_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel anti-MHCII clone CCP_IMM_304_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: M5/114.15.2,

IMPC Panel anti-MHCII fluorochrome CCP_IMM_305_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BB630,

IMPC Panel anti-MHCII RRID CCP_IMM_306_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel Live/Dead stain CCP_IMM_307_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional maker 1 name CCP_IMM_308_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 1 clone CCP_IMM_309_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: B3B4,

IMPC Panel additional marker 1 fluorochrome CCP_IMM_310_0 01 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: PE,

IMPC Panel additional marker 1 RRID CCP_IMM_311_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_312832,

IMPC Panel additional maker 2 name CCP_IMM_312_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 2 clone CCP_IMM_313_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: T45-2342,

IMPC Panel additional marker 2 fluorochrome CCP_IMM_314_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BUV563,

IMPC Panel additional marker 2 RRID CCP_IMM_315_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2873659,

IMPC Panel additional maker 3 name CCP_IMM_316_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

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IMPC Panel additional marker 3 clone CCP_IMM_317_001 | v1.0

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: 927,

IMPC Panel additional marker 3 fluorochrome CCP_IMM_318_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: BV711,

IMPC Panel additional marker 3 RRID CCP_IMM_319_001 | v1.0

procedureMetadata

Req. Analysis: false   **Req. Upload:** false   **Is Annotated:** false

Options: AB_2744172,

AIM T cells - % of live leukocytes CCP_IMM_329_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: %

AIM T cells - % of CD8+ T cells CCP_IMM_330_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: %

CD11b-low cDC - % of of live leukocytes CCP_IMM_331_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: %

CD11b-high cDC - % of live leukocytes CCP_IMM_332_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: %

Live cells - cell count CCP_IMM_333_001 | v1.0
simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

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AIM CD8+ Tcells - cell count CCP_IMM_334_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

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B1a cells - % of live CCP_IMM_335_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Unit Measured: %