

**Supplementary Table S1. Information about antibodies and multimers used in flow cytometry staining**

<b>ANTIBODIES</b>					
<b>Fluorochrome</b>	<b>Antigen</b>	<b>Reactivity/Host</b>	<b>Clone</b>	<b>Source</b>	<b>Identifier(Cat#)</b>
Unconjugated	Tcf-1	Human/Rabbit	C63D9	Cell signaling	2203S
BV421	OX40	Human/Mouse	Ber-ACT35	Biologend	350014
BV421	IFN- $\gamma$	Human/Mouse	B27	BD Biosciences	562988
BV421	CD39	Human/Mouse	Tu66	BD Biosciences	563679
BV421	Rabbit IgG	Rabbit/Donkey	Poly4064	Biologend	406410
BV421	PD-1	Human/Mouse	EH12.2H7	Biologend	329910
BV510	CD3	Human/Mouse	OKT3	Biologend	317332
BV510	CD3	Human/Mouse	HIT3a	BD Biosciences	564713
BV605	PD-1	Human/Mouse	EH12.2H7	Biologend	329924
BV605	Ki-67	Human/Mouse	Ki-67	Biologend	350522
BV605	Tim-3	Human/Mouse	F38-2E2	Biologend	345018
BV650	CD39	Human/Mouse	Tu66	BD Biosciences	563681
BV650	4-1BB	Human/Mouse	4B4-1	BD Biosciences	564092
BV650	CD69	Human/Mouse	FN50	Biologend	310934
BV650	PD-1	Human/Mouse	EH12.2H7	Biologend	329950
BV711	CD39	Human/Mouse	Tu66	BD Biosciences	563680
BV711	CD8	Human/Mouse	RPA-T8	BD Biosciences	563677
BB515	CD103	Human/Mouse	Ber-ACT8	BD Biosciences	564578
FITC	CD3	Human/Mouse	HIT3a	BD Biosciences	555339
FITC	CD30	Human/Mouse	Ber-H8	BD Biosciences	555829
FITC	Eomes	Human/Mouse	WD1928	eBiosciences	11-4877-42
FITC	Ki-67	Human/Mouse	11F6	BD Biosciences	151212
FITC	CD8	Human/Mouse	RPA-T8	BD Biosciences	561948
BB700	CD40L	Human/Mouse	TRAP-1	BD Biosciences	745814
PerCP-Cy5.5	7-AAD	Human/Mouse	7-AAD	BD Biosciences	51-68981E
PE	T-bet	Human/Mouse	4B10	eBiosciences	12-5825-82
PE	GITR	Human/Mouse	621	Biologend	311604
PE	Tim-3	Human/Mouse	MBSA43	Biologend	12-9500-42
PE	PD-1	Human/Mouse	EH12.2H7	Biologend	329905
PE	4-1BB	Human/Mouse	4B4-1	BD Biosciences	309804
PE-TR	LIVE/DEAD™ fixable red dead cell stain kit			Invitrogen	L34972
PE-TR	CD14	Human/Mouse	MOP9	BD Biosciences	562335
PE-TR	CD19	Human/Mouse	HIB19	BD Biosciences	562294
PE-Cy7	Eomes	Human/Mouse	WD1928	eBiosciences	25-4877-42
PE-Cy7	CD8	Human/Mouse	RPA-T8	BD Biosciences	557746
PE-Cy7	CD69	Human/Mouse	FN50	BD Biosciences	310912
PE-Cy7	CTLA-4	Human/Mouse	L3D10	Biologend	349914
PE-Cy7	T-bet	Human/Mouse	4B10	eBiosciences	644824
PE-Cy7	CD38	Human/Mouse	HIT2	BD Biosciences	560677
APC	4-1BB	Human/Mouse	4B4-1	BD Biosciences	550890
APC	TNF- $\alpha$	Human/Mouse	MP6-XT22	eBiosciences	17-7321-82
AF700	CD8	Human/Mouse	RPA-T8	BD Biosciences	561453
AF700	CD38	Human/Mouse	HIT2	BD Biosciences	560676
APC-H7	LIVE/DEAD™ fixable near-ir dead cell stain kit			Invitrogen	L34976
APC-H7	CD14	Human/Mouse	MOP9	BD Biosciences	560180
APC-H7	CD19	Human/Mouse	SJ25C1	BD Biosciences	560177
APC-H7	CD39	Human/Mouse	A1	Biologend	328226
APC-H7	HLA-DR	Human/Mouse	LN3	eBiosciences	47-9956-42
APC-H7	CD8	Human/Mouse	SK1	BD Biosciences	557834
<b>Multimers</b>					
<b>Fluorochrome</b>	<b>HLA</b>	<b>Reactivity</b>	<b>Peptide/Antigen</b>	<b>Source</b>	<b>Identifier(Cat#)</b>
PE	HLA-A*0201	Human	SLLMWITQV / NY-ESO-1	Immudex	WB3247-PE-150
PE	HLA-A*0201	Human	KVAELVHFL / MAGE-A3	Immudex	WB3497-PE-150
APC	HLA-A*0201	Human	NLVPMTATV / HCMVpp65	Proimmune	F008-4B
APC	HLA-A*0201	Human	CLGGLTMV / EBV LMP-2	Proimmune	F042-4B