SUPPLEMENTARY MATERIAL

Table S1 Gene probes differentially regulated in non-naive relative to naive cells

Gene probes differentially regulated in non-naive cells relative to naive cells

genes upregulated in non-naive cells				genes downregulated in non-naive cells			
Gene Probe	fold change	Gene Probe	fold change	Gene Probe	fold change	Gene Probe	fold change
A_23_P421323	10.5	HLA-DQB1	3.2	A_23_P103951	-4.3	MKRN1	-3.5
A_23_P57836	4.0	HLA-DQB1	5.7	A_24_P212605	-3.2	MLLT3	-3.4
A_24_P101561	3.8	HLA-DQB1	11.6	A_24_P238868	-3.4	MLXIP	-3.2
A_24_P118472	3.3	HLA-DRA	41.7	A_24_P679984	-6.9	MPP5	-3.4
A_24_P52168	5.8	HLA-DRB3	3.2	A_24_P7820	-3.1	MRPL24	-3.1
A_24_P67063	3.5	HLA-DRB3	4.1	A_24_P783433	-3.6	MRPL3	-4.3
A_24_P902195	12.4	HLA-DRB4	14.5	A_24_P916299	-4.1	MRPL33	-3.2
A_24_P913190	3.7	HLA-DRB5	15.4	A_24_P919142	-3.3	MRPL55	-3.1
A_24_P918561	8.7	HOP	8.1	A_24_P921633	-4.0	MRPS18C	-3.1
A_24_P934214	3.4	IDH2	3.6	A_32_P180185	-16.1	MRPS30	-3.9
A_32_P1076	5.3	IFI16	3.6	A_32_P192354	-5.3	MYC	-3.7
A_32_P113404	12.2	IFNG	9.1	A_32_P22578	-7.3	N69806	-3.5
A_32_P178724	7.8	IL18R1	3.6	A_32_P61708	-5.1	NARG1L	-3.0
A_32_P183519	3.3	IL2RB	3.0	A_32_P89277	-6.2	NDFIP1	-4.2
A_32_P21742	3.4	INTS7	3.1	AA969200	-3.9	NDFIP1	-3.9
A_32_P331700	3.2	IQSEC1	3.1	ACAT1	-3.5	NDFIP1	-3.4
A_32_P35839	3.6	IRF4	4.0	ACTN1	-13.3	NEK4	-3.4
A_32_P58029	3.4	ITGAL	3.3	ACTN1	-8.5	NELL2	-12.6
A_32_P64894	8.0	ITGAM	11.7	AF086045	-3.4	NFKB1	-3.3
A2M	8.4	ITGB1	3.9	AF116618	-4.1	NIT2	-3.3
AA343139	3.5	ITGB1	8.7	AF116652	-4.2	NKAP	-4.0
AA455656	3.0	ITGB1	10.4	AF131782	-3.2	NR3C2	-3.5
AA609065	5.0	ITGB1	14.6	AGMAT	-3.8	NUCB2	-3.8
AA687366	3.2	JAZF1	3.0	AI061292	-3.8	NY-REN-7	-15.4
AA902595	4.0	JMJD2A	3.5	AI278811	-10.8	NY-REN-7	-4.2
AA991488	29.5	KIAA0182	3.3	AI308948	-11.6	OBSCN	-4.5
ACOT9	7.9	KIAA1109	4.1	AIF1	-6.2	PAIP2B	-4.4
ACTN4	5.4	KIAA1949	3.4	AK001829	-3.5	PCSK5	-8.3
ACTN4	9.9	KIF21A	3.6	AK022346	-6.0	PDK1	-9.5
ADAM8	4.3	KLF10	3.4	AK024870	-3.6	PFAS	-3.2
AF090898	3.0	KLRB1	11.8	AK026295	-4.4	PHF17	-5.2
AF130051	3.3	KLRC1	4.7	AK056689	-3.3	PITPNM2	-4.4
AF220234	6.7	KLRC1	9.0	AK075484	-3.3	PLAG1	-13.4
AF227517	4.0	KLRC2	4.0	AK091132	-5.6	PLEKHB1	-7.7
AGPAT4	7.0	KLRC3	4.1	AK092450	-3.3	PLK2	-3.2
AHNAK	4.1	KLRD1	25.8	AK095904	-3.4	PLXNA4A	-3.2
AHNAK	4.4	KLRG1	7.1	AK123264	-3.0	POLR3B	-3.4
AHNAK	5.7	LAG3	3.9	AK131288	-3.4	PPFIBP2	-4.1
AI207522	20.8	LGALS3	5.5	ALDH5A1	-3.9	PPFIBP2	-3.2
AI379175	3.6	LOC285412	3.5	ALKBH2	-3.5	PPP1R3E	-3.8
AK000119	3.2	LOC339745	4.5	ALS2CR13	-4.1	PSIP1	-4.1
AK023756	6.6	LOC343981	7.5	ALS2CR13	-3.9	PUS3	-3.2
AK055214	3.6	LOC401708	3.9	AMICA1	-3.3	RAB43	-6.6
AK093222	3.1	LOC51255	4.0	ANKRD26	-4.7	RAB43	-4.8
AK098835	19.9	LRP5L	3.6	APBA2	-6.0	RAB43	-3.5
AK123704	4.9	LYAR	7.1	APBA2	-3.5	RAB6IP1	-5.2
AK124426	5.0	LYST	3.7	APEX1	-3.5	RABL4	-4.1
AK124806	8.3	M27126	9.1	AQP3	-3.6	RAD51L3	-3.2
AK124806	18.9	MAN1A1	3.5	AREG	-3.0	RAG1AP1	-3.7
AK129547	3.6	MAP3K8	4.6	ARMETL1	-3.4	RALA	-3.1
AL137318	3.0	MCOLN2	6.9	ARRB1	-4.6	REG4	-3.1
ALOX5AP	5.9	MCTP2	3.8	ATHL1	-3.1	RGS10	-5.5
ANKRD32	3.5	MEGF9	3.8	ATIC	-3.4	RNASEN	-4.7
ANXA2	6.4	MGC14376	4.1	ATP5S	-3.0	RNF144	-5.5
ANXA2	22.6	MGC4677	3.8	AV756170	-5.2	RNF157	-6.9
ANXA2P1	9.4	MGC4677	17.6	AW751256	-3.1	RNF185	-3.8
ANXA2P3	14.4	MGC61571	4.4	AW952039	-12.4	RP11-327P2.4	-3.1
ANXA5	4.1	MIAT	6.7	AY358241	-3.1	RPL22	-3.3
APOB48R	4.6	MIAT	8.7	BACH2	-7.9	RPL28	-3.6
APOBEC3C	4.5	MINK1	3.0	BC013025	-3.4	RPS14	-5.4
APOBEC3F	4.6	MIR16	6.1	BC029907	-3.8	RPS5	-3.2
APOBEC3G	11.5	MLSTD2	3.1	BC031316	-3.4	RSL1D1	-3.9
APOBEC3G	14.5	MRPL10	3.3	BC041926	-3.5	RSL1D1	-3.2
APOBEC3H	8.6	MSC	5.7	BCAS4	-7.3	RWDD3	-4.8
ARHGAP11A	5.4	MXRA7	7.6	BCLAF1	-3.2	S100B	-4.6
ARID5B	3.1	MYBL1	3.3	BE044472	-4.3	SATB1	-6.8
ARID5B	15.1	MYBL1	4.5	BEX2	-4.6	SCML1	-14.3
ARPC5L	4.0	MYBL1	5.1	BG011034	-3.9	SCML1	-6.9
ATG4B	4.1	MYD88	4.0	BG695979	-11.0	SCYE1	-3.0
ATP2B4	10.2	MYO1F	5.6	BM091498	-5.3	SDCCAG8	-3.4
ATP2B4	18.4	MYO1F	9.1	BM676597	-4.0	SELL	-6.1
ATP6V1C2	3.4	MYO5A	5.1	BRWD1	-3.5	SEPT8	-3.1
ATXN1	3.7	NDRG1	3.1	BTBD11	-3.6	SERPINB6	-8.4
AU144988	3.3	NFKBIB	3.9	BU633484	-3.0	SFXN1	-3.6
AUTS2	3.9	NPC1	8.3	C11orf1	-3.3	SH3BGRL2	-3.6
AW002417	4.1	NUSAP1	3.3	C11orf17	-3.5	SH3YL1	-5.1
AW276186	8.9	OSBPL3	3.3	C12orf24	-3.7	SLC12A6	-3.6
AYTL2	28.3	OSBPL3	7.6	C12orf47	-3.4	SMYD4	-3.6
B4GALT5	5.9	OXSR1	3.1	C12orf65	-3.2	SNED1	-4.0
B4GALT5	7.0	P2RY5	4.2	C13orf24	-4.1	SNED1	-3.2
BC019824	8.5	PAFAH2	3.2	C16orf30	-3.3	SNN	-9.3
BC021055	4.7	PAM	3.0	C16orf58	-3.3	SNX9	-9.8
BC022398	19.3	PAM	3.8	C17orf48	-3.2	SNX9	-8.4
BC041007	4.1	PARP14	3.0	C1orf162	-5.7	SOX12	-3.5
BC078172	3.6	PBEF1	3.5	C21orf105	-4.3	SOX4	-3.0
BE926212	4.4	PDZD4	4.0	C22orf32	-4.6	STRBP	-5.4
BF195626	3.6	PDZD8	3.6	C4orf14	-3.3	SUSD3	-3.3
BF337308	4.8	PDZD8	3.8	C6orf105	-5.0	SUZ12P	-3.4
BF366211	7.5	PHF21A	3.0	C7orf23	-8.3	T12590	-3.2
BF432354	4.4	PHLDA1	4.7	C9orf72	-3.6	TAF9	-4.3
BHLHB2	19.4	PICALM	3.7	CA6	-14.9	TAF9	-4.3
BI836739	4.1	PIK3R1	3.1	CACNA1I	-3.1	TANC2	-3.1
BQ002790	3.1	PLXND1	22.5	CASP10	-5.0	TAP2	-3.1
BQ379494	7.9	PMAIP1	3.1	CATSPER1	-3.6	TBC1D4	-7.0
BTG3	3.8	PON2	3.4	CCDC25	-8.0	TCEA3	-21.9
BU632168	6.4	PPP1R16B	3.6	CCL28	-3.7	TCEA3	-3.2
BU674073	3.5	PRDM9	4.0	CCR7	-10.0	TGFBR2	-5.2

BX095032	3.2	PRF1	7.4	CCT8	-5.0	THC2507925	-4.4
BX100717	3.9	PRO1880	3.2	CD55	-4.6	THC2526537	-3.3
BX111257	4.5	PRR14	3.1	CDC37L1	-3.7	THC2577186	-3.4
BX379032	9.6	PTPN22	4.3	CEP170	-3.2	THC2596775	-3.3
C12orf33	4.7	PTPRC	6.4	CHD7	-3.5	THC2632923	-5.2
C14orf145	7.1	PTPRJ	6.1	CHKA	-4.6	THC2641179	-3.3
C17orf66	3.1	PTPRJ	7.7	CHMP7	-7.1	THC2650720	-4.5
C1orf21	7.7	PYHIN1	11.5	CHMP7	-3.6	THC2657781	-3.2
C20orf24	3.6	RAB27A	4.7	CK818527	-4.5	THC2663167	-3.6
C20orf24	4.3	RAB27A	6.3	CLN3	-3.1	THC2671169	-3.1
C20orf3	4.6	RABGAP1L	3.8	CLOCK	-3.2	THC2675069	-3.4
C20orf3	5.6	RAPGEF1	3.5	CNOT7	-3.4	THC2676657	-3.2
C6orf51	3.3	RCOR1	3.3	COPG2	-3.3	THC2695418	-3.2
CASP8	3.9	RDH10	7.2	CPSF3	-3.2	THC2696722	-3.5
CCDC97	3.0	REEP5	6.1	CR610892	-3.5	THC2699247	-3.2
CCL3L3	3.8	RGS1	5.1	CRTC3	-4.9	THC2713715	-7.8
CCL4	12.2	RHD	4.2	CTSA	-3.3	THC2719486	-7.9
CCL5	36.5	RHD	4.3	CYLD	-3.1	THC2724906	-5.9
CCRN4L	3.0	RHOQ	3.2	DB111455	-3.7	THC2732032	-7.0
CD160	3.5	RNF19	4.5	DCTD	-4.2	THC2780391	-3.8
CD300A	8.3	RUNX1	3.6	DHX32	-3.2	THC2781306	-3.3
CD74	4.0	S100A11	3.6	DNPEP	-3.7	TMCC1	-3.7
CD81	5.1	S100A11	4.7	DOCK9	-3.5	TMEM123	-3.1
CD84	3.5	SAMD3	6.5	DPP4	-11.4	TMEM18	-3.1
CD99	6.8	SCAMP2	3.0	DSCR1L2	-6.9	TOP1MT	-8.5
CDRT4	3.2	SH2D1A	4.2	DSCR1L2	-6.4	TPCN1	-3.5
CFLAR	3.1	SH2D1A	4.4	EID2	-3.6	TRAK2	-3.4
CFLAR	5.4	SH3BP5	4.8	EIF3S5	-3.1	TRAPPC2L	-3.1
CHP	4.8	SLAMF6	3.6	EMG1	-3.8	TSGA14	-3.4
CHST11	3.6	SLC15A4	3.1	ENST00000265149	-4.9	TSPAN32	-4.0
CLIC1	5.5	SLC1A5	3.9	ENST00000307214	-3.0	TUBD1	-3.3
COMMD1	3.1	SLC35E1	4.7	ENST00000316577	-4.2	TXK	-18.3
CSRP1	3.2	SLC6A6	4.6	ENST00000335459	-18.6	TXK	-11.9
CST7	66.8	SLC7A5	3.2	ENST00000335459	-17.9	TXNL4B	-3.2
CTSC	6.9	SLFN11	4.1	ENST00000340158	-3.4	UBASH3A	-4.2
DENND3	4.7	SLFN13	3.0	ENST00000366784	-7.7	UBTF	-3.2
DLG5	3.9	SLFN13	3.1	ENST00000379606	-3.7	UTP14A	-4.7
DNAJB11	3.1	SMAD7	4.0	ENST00000381298	-5.1	UTP18	-3.6
DNAJC14	3.1	SMC4	4.4	ENST00000390350	-7.8	VIPR1	-11.5
DOK2	7.0	SOX13	5.2	ENST00000390369	-5.9	VPS52	-3.0
DR1	3.8	SPN	6.4	ENST00000390382	-8.5	WDR27	-3.0
DUSP4	3.4	SPON2	3.1	ERGIC1	-3.3	WDR36	-3.7
DUSP5	9.8	SPPL2A	3.4	ESD	-3.9	WDR54	-3.1
DUSP5P	4.0	SRGAP2	8.7	FAM134B	-8.4	WHDC1L1	-4.7
EDG8	42.5	SRXN1	3.7	FAM134B	-5.3	WHSC1L1	-3.3
EFHD2	5.8	STOM	3.7	FAM44C	-3.2	ZFYVE9	-3.0
EID1	3.9	SYNE1	3.2	FAM80B	-3.6	ZMAT1	-4.7
EIF2C4	3.7	SYNE1	8.7	FAM82A	-3.6	ZNF134	-4.3
EIF2C4	4.9	SYNE2	3.0	FASTKD5	-4.0	ZNF238	-3.3
EIF2C4	15.7	SYNE2	3.2	FCER1G	-4.3	ZNF274	-3.5
EIF4EBP2	3.4	SYNE2	3.4	FHIT	-4.2	ZNF329	-5.6
ENC1	13.6	SYTL2	5.4	FLJ22222	-3.3	ZNF419	-3.5
ENC1	16.9	TARP	16.8	FLNB	-5.2	ZNF516	-3.8
ENST00000308604	18.0	TBX19	4.5	FLT3LG	-3.7	ZNF549	-4.4
ENST00000308819	3.2	TGFBR3	10.0	FOXP1	-3.1	ZNF609	-3.0
ENST00000310995	14.7	THC2524570	3.0	GNAQ	-5.3	ZNF721	-3.7
ENST00000357138	3.3	THC2529191	5.3	GORASP1	-3.5	ZNF770	-5.2
ENST00000378953	4.2	THC2533833	3.3	GTF2H5	-3.1	ZRANB3	-3.5
ENST00000380946	3.7	THC2535753	5.2	HIPK2	-3.9	ZSCAN18	-8.8
ERN1	4.2	THC2545454	4.7	HK2	-3.6	ZSCAN18	-6.7
F2R	8.0	THC2551927	3.0	HLA-DOA	-4.9	ZSCAN29	-4.7
F2RL2	4.4	THC2556753	4.7	HPCAL4	-4.3		
FAM120B	3.2	THC2559651	3.4	HSF2	-3.6		
FAM129A	22.0	THC2560357	4.4	ICA1L	-3.8		
FAM129A	25.2	THC2564393	3.8	IGBP1	-4.1		
FAM46C	4.6	THC2565151	3.4	IGBP1	-3.2		
FAM46C	8.9	THC2632039	3.1	IGF1R	-13.8		
FAM53B	6.9	THC2632286	3.1	IKBKE	-3.1		
FANCA	4.7	THC2648833	3.2	IL3RA	-3.5		
FCGR3A	17.3	THC2657597	3.3	IL6R	-9.3		
FCGR3B	28.3	THC2662033	3.4	IL6ST	-3.7		
FCRL3	4.2	THC2676284	3.6	IL6ST	-3.3		
FGFBP2	3.7	THC2683212	4.1	INADL	-3.5		
FGFBP2	12.3	THC2686151	3.3	INADL	-3.1		
FLJ14213	6.2	THC2689155	9.5	INPP5A	-6.5		
FLJ14213	6.9	THC2689970	3.7	IRS2	-6.4		
FLJ38984	4.4	THC2691419	18.3	ITGA6	-3.7		
FLNA	3.7	THC2694420	3.1	JDP2	-3.2		
FOSL2	3.4	THC2701422	6.8	JMJD1C	-3.9		
FOSL2	8.6	THC2716965	3.3	KLF7	-7.3		
GAB3	17.7	THC2761472	3.4	KLHL20	-3.1		
GARNL4	8.9	THC2781073	3.1	LDLRAP1	-7.1		
GBP4	4.0	THC2788875	4.6	LDLRAP1	-3.4		
GBP5	4.5	TIFA	3.1	LEF1	-10.6		
GCH1	3.7	TLN1	3.5	LEF1	-9.5		
GGA2	3.6	TMEM111	3.1	LOC202134	-6.4		
GK5	3.6	TMEM127	3.0	LOC399491	-3.1		
GK5	8.0	TMEM49	3.6	LOC402425	-4.2		
GNG2	3.1	TMEM49	4.3	LOC439949	-5.6		
GNG2	4.0	TNFRSF1B	22.4	LOC641518	-13.8		
GNLY	9.7	TOX	3.3	LOC650392	-3.9		
GPR114	8.2	TPP1	4.0	LRRC16	-4.2		
GPR56	21.9	TSEN54	7.0	LRRC23	-4.0		
GRLF1	8.6	TUBA1C	3.2	LRRN3	-3.2		
GZMA	40.2	TXNDC13	4.4	LSM5	-3.7		
GZMB	3.7	TXNDC13	4.6	LTA4H	-3.4		
GZMK	13.2	VCL	3.4	MAL	-5.8		
HAVCR2	3.1	VSIG9	3.3	MAML2	-5.7		
HAVCR2	4.7	X12544	6.4	MAP2K5	-3.6		
HIP1	5.3	XCL1	4.8	MAP9	-3.3		
HLA-DMB	4.7	XCL2	6.0	MARCH3	-3.9		
HLA-DPA1	14.0	YWHAQ	3.1	MAX	-3.0		
HLA-DPA1	16.7	ZEB2	6.0	MED8	-3.1		
HLA-DPB1	3.7	ZFP42	4.7	MED9	-3.9		
HLA-DPB1	4.1	ZFYVE28	4.1	MEIS3P1	-9.0		
HLA-DQA1	3.8	ZFYVE28	7.2	MEIS3P1	-3.5		
HLA-DQA1	4.4			MGC33556	-6.9		
HLA-DQA1	6.6			MINA	-4.4		
HLA-DQA2	3.2			MIS12	-3.2		

Table S1 Gene probes of peripheral blood cells found to be up- or downregulated in non-naive T-cells relative to naive T-cells. Values represent the fold change (TIM3 = HAVCR2).

Table S2 Gene probes differentially regulated in tumor-specific rel. to EBV-specific cells

Gene probes differentially regulated in tumor-specific rel. to EBV-specific cells					
genes upregulated in tumor-specfic cells				genes downregulated in tumor-specfic cells	
Gene Probe	fold change	Gene Probe	fold change	Gene Probe	fold change
A_24_P622697	4.3	IER3IP1	3.4	A_23_P399604	-3.2
A_24_P911071	4.3	IL6R	3.6	A_24_P676566	-3.7
A_24_P913961	3.5	INPP4A	3.1	A_24_P844100	-3.3
A_24_P915079	3.3	IQWD1	4.3	A_24_P918677	-5.0
A_24_P924777	5.3	ITGAM	3.1	A_24_P919168	-5.0
A_32_P108420	4.3	ITGB1	6.7	A_24_P924783	-3.2
A_32_P136477	3.5	ITGB1	5.8	A_32_P448975	-4.9
A_32_P147297	3.2	ITGB1	5.3	A_32_P73143	-3.6
A_32_P53670	3.8	ITGB1	4.6	AA687366	-3.3
ACTR1A	3.2	KIAA1632	3.1	ACADSB	-3.3
ACYP2	3.1	KIR2DL2	4.8	AF116641	-3.2
ADI1	3.0	KIR2DS4	7.1	AF116661	-4.8
AF130051	3.8	KIR3DX1	3.3	AF161344	-4.5
AF130062	3.1	KLHDC3	9.8	AFTPH	-3.3
AGA	4.1	KLHDC3	6.5	AI911989	-4.5
AGER	4.5	KLRC1	4.8	AK098835	-4.5
AI123606	3.9	LIN54	3.8	AK124847	-4.7
AI241366	3.5	LNPEP	3.4	ARL1	-3.1
AI676130	3.1	LOC202459	3.6	ATP11C	-4.0
AK024127	3.5	LOC284441	3.0	BC029473	-3.2
AK094415	6.0	LOC285412	3.2	BC032332	-3.0
AK123083	3.9	LOC439949	4.3	BG777521	-3.1
AK123438	3.7	LOC497661	4.5	BQ183759	-7.1
AL541613	3.1	LPAL2	4.0	C12orf41	-3.1
AMIGO2	3.7	LRP5L	3.4	C4orf16	-3.1
ANAPC7	3.2	LYCAT	3.8	C7orf23	-3.4
ANKMY1	5.6	M6PR	5.6	CA945082	-5.0
ANKRD28	5.0	MAP3K2	3.1	CD160	-17.1
ANXA2P3	3.6	MAPKAPK2	3.3	CD244	-4.1
AP1S1	3.3	MEGF9	4.0	CEP152	-4.3
APP	3.6	MIA3	3.2	CK820941	-3.5
ARFIP1	3.7	MIR16	5.3	CMTM3	-3.4
ARHGEF6	4.1	MOCS2	5.3	CR739254	-3.2
ARHGEF6	3.4	MRPL51	6.7	CRTAM	-10.3
ARMCX3	3.2	MRPS27	3.9	CTPS	-3.5
ATG4C	3.8	MTERFD3	4.3	DA422275	-3.2
ATP11B	3.5	MTPN	3.2	DB340110	-3.6
ATP2B1	3.9	NBR1	3.2	DDHD1	-3.3
AU156529	3.5	NDUFA5	3.2	DPH1	-4.9
AW292854	3.6	NIPA1	7.7	ELMO2	-3.3
AW386276	4.1	NOB1	3.3	ENST00000294383	-3.6
AY117690	3.9	OGDH	5.2	ENST00000303521	-3.0
BAG3	12.3	PAICS	4.6	ENST00000390426	-5.1
BC034827	3.0	PCGF6	3.7	FAM102A	-3.2
BC038559	3.1	PDCD6IP	4.1	FAM134A	-3.5
BC063022	3.3	PDZD4	3.6	FANCA	-4.6
BCL2L11	3.1	PFDN1	4.5	FCRL3	-10.9
BE093050	4.5	PIP5K2B	3.5	FLJ30934	-4.2
BECN1	3.2	PLEKHA3	4.1	FLJ32255	-3.6
BF928446	3.6	PLEKHG3	3.9	FLJ38773	-3.8
BLCAP	4.5	POGZ	3.3	FVT1	-3.2
BQ045216	3.4	POLR1E	5.2	GAPVD1	-4.3
BQ072652	3.7	PPME1	4.8	GZMK	-7.7
BRCC3	3.2	PPP2R2D	3.1	HIP1R	-3.9
BRP44	3.2	PQLC3	3.4	HIST1H4H	-4.6
BRWD2	3.3	PRPF18	4.3	IER3	-3.3
BX455755	3.3	PRPF4B	3.8	IGFBP4	-3.5
C16orf80	3.7	PRSS23	6.8	INADL	-3.6
C17orf67	3.2	PTPN18	5.6	INPP5B	-3.1
C1orf142	4.5	PYCR2	9.8	INPP5B	-7.0
C1orf58	3.2	QKI	6.0	ITCH	-3.1
C1orf80	3.3	RAB24	6.2	KIAA0999	-5.0
C6orf115	4.0	RANBP5	7.0	KLHL15	-5.2
C6orf134	3.0	RCSD1	4.1	LOC150759	-3.3
C6orf35	5.0	RDH10	3.9	LOC254128	-4.3
CA503034	3.8	RFX5	3.7	LOC283551	-4.8
CARS	4.0	RGS9	3.6	LOC646561	-3.2
CASP10	7.6	RNF34	3.3	LOC91316	-3.4
CASP10	4.3	RNF8	6.1	LRRC23	-5.9
CBR4	3.4	RPL31	3.1	MAN2A1	-5.0
CCDC107	3.4	RPS19BP1	3.7	MAPKAP1	-3.8
CCDC6	5.3	RUNX2	6.1	MBD1	-3.5
CD226	4.8	RUNX2	3.3	MGC61571	-9.5
CDC2L2	3.3	S100A11	6.0	MX1	-3.9
CDC2L5	4.3	S100A11	5.6	NF2	-4.3
CEP78	3.1	S100A4	3.4	PAM	-3.4
CHAF1A	3.4	S67659	3.9	PDE4B	-3.2
ChGn	4.0	SDHC	8.0	PDHA1	-3.5
CLK3	3.1	SIGLEC10	3.5	PGRMC2	-4.6
COG2	3.1	SLAMF1	3.5	PHC3	-4.3
COG3	3.4	SLC27A2	4.1	PIGL	-3.1
CPSF3	3.8	SLC35A1	3.1	PIGY	-3.9
CRKL	3.4	SMC4	3.2	POLE4	-4.0
CSNK1G1	3.4	SMURF2	3.3	POLE4	-6.0
CTLA4	3.6	SOX13	4.1	POLR3E	-4.4
CX3CR1	3.2	SPRY1	3.2	PPAPDC1B	-3.1
CXorf10	3.3	STARD3	3.3	REL	-4.4
CYB5B	7.0	STX6	3.4	RICTOR	-3.7
D4S234E	3.4	SUV420H1	6.0	RIF1	-3.2
DBI	3.9	T87820	3.7	RIF1	-3.9
DC2	4.3	TAGAP	3.4	RNF103	-4.7
DDX46	9.6	TATDN2	4.8	RNF12	-3.3
DERL2	6.6	TBCA	4.5	RNF135	-3.9
DKFZP564J0863	3.9	TBL1XR1	3.0	RNF43	-4.2
DNAJC19	3.3	THC2468883	3.1	RYK	-3.0
DNASE2	3.1	THC2487053	3.6	S72478	-3.7
DTWD1	3.1	THC2495068	3.3	SERTAD1	-3.1
DUSP18	3.9	THC2502237	7.5	SETX	-6.3
DYNLL1	5.3	THC2513935	9.6	SFMBT2	-6.5
DYNLL1	4.2	THC2520017	3.2	SH3TC1	-3.4
EIF2B4	3.2	THC2560357	4.2	SIDT2	-3.3
EIF4E2	3.6	THC2563387	3.4	SLC23A2	-3.6
ELAC2	3.9	THC2564025	5.7	SLC35E1	-4.2

ELF4	3.9	THC2651751	3.8	SLC4A4	-3.5
ENST00000361500	3.7	THC2663361	8.8	SYAP1	-3.0
ENST00000377607	3.8	THC2676741	4.1	TAS2R45	-3.5
ENST00000390350	4.2	THC2683069	3.7	TCEAL3	-3.9
ENST00000390353	8.4	THC2726754	3.8	TCEAL6	-3.1
ENST00000390369	3.5	THC2731105	3.6	THC2632039	-4.0
ENST00000390437	7.7	THC2742572	3.1	THC2654381	-3.4
ENST00000390458	4.5	THC2756393	4.6	THC2667549	-3.2
ENST00000390610	4.1	TLN1	4.3	THC2683231	-6.6
ERH	3.3	TMEM111	4.3	THC2719547	-4.5
FBXW11	3.8	TMEM129	3.6	THC2775001	-3.9
FCGR3A	7.5	TMEM173	4.1	TINF2	-4.5
FCGR3B	4.4	TMEM185A	3.5	TM2D2	-4.1
FGFBP2	4.5	TOB1	3.6	TRAT1	-3.7
FKBP3	3.7	TOB1	3.2	TRIP12	-3.1
FLJ11151	5.2	TRAF3IP3	3.6	TSPYL1	-6.2
FOXRED1	3.1	TSNAX	3.5	U1SNRNPBP	-3.7
GALM	4.2	TUBB	4.2	U88898	-3.7
GNA15	3.7	TXNDC5	4.9	UBXD7	-4.7
GNLY	10.1	UBE1DC1	4.2	USP36	-5.7
GNPNAT1	4.9	USP10	3.6	USP42	-3.3
GNPTAB	3.2	VBP1	4.2	WDR21B	-4.4
GPR56	4.7	VCL	4.8	WHDC1	-3.3
GRAMD1B	3.5	VPS39	4.1	WHSC1L1	-3.9
GTF2H2	5.0	YTHDF1	3.4	XCL1	-4.4
GUSB	3.7	ZBTB34	3.7	XCL2	-5.6
GZMB	6.8	ZBTB7B	5.4	YPEL1	-4.2
HAVCR2	13.7	ZC3H13	3.8	ZFAND5	-4.1
HAVCR2	12.2	ZDHHC17	3.4	ZFP90	-4.9
HAVCR2	8.2	ZDHHC20	3.1	ZNF331	-3.3
HSPA1A	3.3	ZNF354A	3.1	ZNF44	-3.4
HSPC157	3.5	ZNF580	3.8		
IARS2	5.5				

Table S2 Gene probes of peripheral blood cells found to be up- or downregulated in tumor-specific T-cells relative to EBV-specific T-cells. Values represent the fold change (2B4 = CD244; TIM3 = HAVCR2).

Table S3 Gene probes differentially regulated in tumor-specific rel. to CMV-specific cells

Gene probes differentially regulated in tumor-specific rel. to CMV-specific cells

genes upregulated in tumor-specific cells				genes downregulated in tumor-specific cells			
Gene Probe	fold change	Gene Probe	fold change	Gene Probe	fold change	Gene Probe	fold change
A_23_P392897	3.3	RUNX1	6.0	A_24_P676566	-5.1	GTF2IRD2	-8.0
A_24_P349489	15.7	SENP3	5.7	A_24_P752999	-3.8	HDGF	-10.2
A_24_P400616	4.2	SERBP1	13.8	A_32_P94521	-5.3	IKBKB	-6.6
A_24_P856273	4.7	SLC25A5	13.3	ADAR	-6.6	IXL	-8.4
AF116708	6.3	ST3GAL4	3.1	AGTPBP1	-3.9	KIAA0323	-5.3
AK056396	3.9	THC2509446	5.5	AI056689	-4.4	KIAA1627	-5.6
APH1A	5.5	THC2541607	3.1	AI942297	-4.6	LASP1	-5.6
AW751256	9.6	THC2725153	3.1	AK058041	-4.8	LGR6	-3.7
BC008618	14.4	THRAP4	3.9	AK074670	-5.5	LILRB1	-7.1
BLMH	3.6	TMEM66	8.0	AK092264	-3.4	LIN7C	-4.4
C10orf64	3.6	TOR3A	4.2	AK093202	-8.9	LOC148413	-22.9
C22orf13	3.9	TXN	9.2	AK093628	-5.7	LOC150759	-3.5
CCDC12	3.4	TXN	5.5	AK094846	-6.3	LOC731789	-7.7
CCDC16	6.8	UBE2B	9.2	AK123704	-3.6	MDFIC	-9.9
CLPX	4.6	UQCRQ	5.9	AK131430	-8.8	METTL3	-9.7
CTLA4	6.7	USP5	3.1	AL582976	-6.7	MGC5457	-7.8
DERL1	9.7	WDR26	5.3	ANKRD11	-6.3	MRFAP1L1	-7.4
DERL2	7.4			APOL2	-4.8	NBPF3	-5.3
DUSP10	6.8			ARID1B	-3.4	NFAT5	-4.6
DUSP18	6.6			ARRDC3	-6.2	OCIAD1	-4.6
ECD	4.2			ASB16	-6.4	PDPK1	-5.9
EIF4E2	4.9			AW361634	-7.7	PIAS1	-4.0
ENST00000390437	12.2			BC031342	-8.1	PIK3IP1	-5.0
FBXO3	5.8			BE049564	-4.0	PISD	-9.5
GCH1	8.7			BG950086	-4.3	POP5	-7.9
GINS4	6.2			BQ002790	-6.5	PRDX1	-8.2
HAVCR2	7.2			BTN3A1	-3.1	PSMC6	-4.2
HLA-DOA	4.5			BTN3A2	-5.0	PTCH1	-8.5
INPP5D	6.6			BTN3A3	-4.3	PTGER2	-5.1
JARID1A	10.0			C19orf56	-8.9	RREB1	-6.4
JHDM1D	11.6			C1orf108	-5.7	SMUG1	-4.8
KCNN1	3.4			C6orf70	-20.1	SPATA20	-3.3
KIAA0157	5.6			CA314451	-5.6	SSU72	-4.3
KLRC3	7.2			CCT6A	-3.6	TAP1	-7.9
LOC442308	4.3			CD160	-20.2	TCEAL3	-14.6
LOC552889	5.3			CD244	-4.6	TCEAL6	-9.9
LOC650517	4.9			CDC40	-4.9	TEX261	-4.2
LOC732221	4.0			CENTB1	-4.8	THC2484329	-5.0
LRRC47	9.2			CKLF	-16.1	THC2487640	-4.8
LRRC47	6.8			CN272797	-4.0	THC2657597	-4.0
MAP3K2	15.2			CREB3	-13.3	THC2658419	-6.6
MIB1	4.2			DDX52	-3.9	THC2671048	-5.5
MSH3	4.8			DENND4A	-13.6	THC2737770	-4.6
NDUFS8	5.3			DNAH1	-3.5	TM7SF3	-7.6
NR3C1	10.0			EDG8	-9.5	TMEM115	-9.9
OGDH	6.3			EEA1	-5.6	TNFRSF14	-4.7
PDCD2	6.6			ENST00000375284	-3.7	UBE1L	-8.0
PHKB	7.8			ERF	-8.8	YPEL5	-5.3
POLR1D	10.1			ETS1	-4.3	ZBTB37	-7.7
PRKAR2A	3.5			FBXW5	-4.7	ZC3H11A	-6.4
PSMA2	7.8			FCRL3	-11.1	ZMIZ2	-8.2
PSMD3	9.3			FGR	-6.2	ZNF253	-3.4
QARS	8.4			FRAT1	-5.8	ZNF395	-5.1
RAB11B	6.9			GDF11	-5.8	ZNF493	-3.4
RBPJ	8.8			GIMAP5	-13.1	ZNF626	-4.1
RNASEH2B	11.3			GSR	-4.0	ZNF641	-8.8
RPL13	5.9			GTF2IRD2	-6.3		

Table S3 Gene probes of peripheral blood cells found to be up- or downregulated in tumor-specific T-cells relative to CMV-specific T-cells. Values represent the fold change (2B4 = CD244; TIM3 = HAVCR2).

Table S4 Gene probes differentially regulated in tumor-specific cells from TILN relative to circulation

Gene probes differentially regulated in tumor-specific cells from TILN rel. to circulation

genes upregulated in tumor-specific cells from TILN

Gene Probe	fold change	Gene Probe	fold change
A_24_P24332	9.7	HSPD1	5.6
A_24_P722248	3.3	ICOS	4.0
A_24_P916853	4.5	IFNG	6.7
A_24_P918561	15.5	ILF2	7.1
A_24_P922120	4.4	IRF4	3.2
A_24_P929650	9.1	ITGA1	6.2
A_24_P943723	9.6	ITM2A	9.8
A_32_P10665	9.8	JMJD1C	4.9
A_32_P20613	56.5	JTB	10.8
A_32_P223616	3.7	KIAA0319L	7.6
A_32_P26443	5.2	KIAA1627	4.6
A_32_P3048	6.3	KIF3B	6.1
A_32_P35839	19.1	LASP1	4.6
ACOX3	4.1	LIX1L	12.9
AF131762	7.3	LOC148413	14.5
AI718865	7.4	LOC220594	3.2
AI918632	5.6	LOC284454	3.1
AK022346	6.3	LOC442421	3.8
AK022390	3.4	LOC643894	5.8
AK074696	3.9	LOC644422	8.3
AK093729	3.4	LOC647907	6.0
AK093729	3.9	LOC651147	4.6
AK096194	3.4	MAPRE2	6.6
AK098360	6.8	MBNL1	5.2
AK130583	6.8	MCL1	7.5
AK2	6.2	MCM6	6.2
AKR1A1	4.5	MYO7A	13.1
AL133570	3.3	NDFIP1	10.3
ALG10B	3.8	NDUFC2	3.8
ANGPTL6	3.9	NEIL2	5.8
APEH	6.9	NFAT5	5.3
ATF3	6.4	NOD2	3.2
ATF3	9.6	NPLOC4	6.5
ATF4	3.8	OTUD7B	6.8
AW361634	7.7	PARVB	7.1
BC038559	4.7	PARVG	8.7
BC041926	4.4	PBEF1	9.1
BE008305	9.4	PCBP2	6.0
BE739632	5.8	PES1	5.9
BE839843	5.7	PHLDA1	7.7
BECN1	9.9	PIK3IP1	3.6
BF088423	3.7	PKM2	5.5
BF475893	10.0	PKM2	10.1
BG190831	11.7	PPP1CC	6.8
BG950086	3.7	PPP1R2	5.0
BQ002790	7.5	PRDX5	4.4
BST2	6.0	PSENEN	6.2
BX095032	5.0	PTPRJ	20.4
BX360933	11.1	RAB27A	12.3
C10orf26	6.0	RALA	7.1
C13orf15	24.7	RANBP2	5.4
C13orf15	58.7	RDH10	11.7
C19orf56	5.5	RGPD1	6.1
C19orf56	9.1	RGS1	7.6
C19orf56	10.2	RGS3	6.2
C6orf114	6.4	RNF24	4.3
CA866957	8.7	RP5-821D11.2	5.5
CALML4	5.0	S100PBP	9.1
CBLB	4.8	SARDH	3.6
CCT6A	4.3	SAT1	11.7
CD27	7.7	SECTM1	4.0
CD619445	7.5	SEMA7A	3.4
CKLF	22.2	SIRPG	10.0
CLTB	3.4	SLC7A5	16.2
COTL1	10.5	SNF1LK	18.2
CPT1C	3.2	SNX9	8.1
CRTAM	10.4	SOD1	9.2
CSNK2A2	5.4	SPG7	7.5
CTLA4	7.2	SPRY1	3.7
CXCL13	30.9	STAT3	7.1
DCLRE1C	4.2	STX1A	3.6
DCLRE1C	7.8	TAP1	9.7
DDX11	7.3	TATDN1	4.8
DGKE	3.1	TBC1D3	5.8
DTNBP1	9.6	TCEAL3	6.6
DUSP16	10.9	TFG	4.4
DUSP4	6.6	THC2510958	5.3
DUSP5	4.8	THC2576044	3.5
ENST00000309184	5.6	THC2603416	3.0
ENST00000328281	6.3	THC2657597	6.1
ENST00000335078	5.8	TMCC1	3.7
ERBB2IP	4.4	TNFRSF9	4.7
ERF	16.8	TOPORS	3.4
EXOC4	4.7	TOX	3.5
EXOC5	3.4	TP53INP1	3.6
EXOC7	9.9	TP53INP2	9.6
FAM105B	4.7	TRAF3	5.6
FAM53C	3.6	TRAF5	10.7
FASLG	4.9	TRBV5-4	3.1
FCRL3	8.4	TRIB1	10.8
FLJ20160	4.7	TSPYL2	5.5
FOS	5.7	TUBA4A	3.6
GALM	10.4	UBE1L	5.2
GAPVD1	6.6	VTA1	5.0
GARNL1	10.4	XCL2	19.9
GBP1	7.8	YPEL5	9.9
GCC2	6.4	ZC3H12A	6.9
GCC2	8.5	ZC3H12C	3.4
GEM	4.8	ZFAND5	4.6

genes downregulated in tumor-specific cells from TILN

Gene Probe	fold change	Gene Probe	fold change
A_23_P392897	-4.2	RPL18A	-3.4
A_24_P213073	-4.2	RSHL2	-3.2
A_24_P400616	-5.2	SAMHD1	-7.8
A_24_P925786	-6.7	SFRS2IP	-6.2
A_24_P931788	-3.1	SH3BGRL3	-4.2
A_24_P932046	-3.7	SKIP	-6.5
A_32_P6442	-3.2	SSBP3	-5.5
AA747799	-4.9	SSBP4	-5.4
ABHD14B	-13.6	THC2484951	-4.6
AF116659	-5.7	THC2512028	-4.0
AF116701	-3.2	THC2514262	-5.2
AF264625	-4.1	THC2541607	-4.2
AK090408	-3.9	THC2611277	-3.1
AK091034	-4.7	THC2742325	-7.3
AK127494	-7.1	THC2782843	-3.0
ANAPC5	-9.5	THOC2	-4.7
APOL3	-5.3	TMEM181	-5.8
ATG16L1	-4.8	TMUB2	-9.6
ATG3	-8.7	TMUB2	-8.1
ATP2B1	-9.9	TNFRSF25	-3.8
AU184995	-6.8	TPST2	-8.6
AW002417	-4.6	TRAF3IP3	-6.7
AW751256	-9.6	TXN	-7.6
BC008618	-11.6	TXNIP	-4.5
BC069024	-3.9	UBE2B	-9.6
BLMH	-3.3	UQCRQ	-5.0
BM980974	-6.7	VDAC2	-4.5
BU618279	-3.7	ZBTB44	-6.6
BX344068	-4.6	ZYX	-3.4
C12orf47	-8.9		
C16orf63	-7.7		
C19orf42	-6.5		
C1orf21	-6.7		
C20orf20	-4.0		
C8orf53	-3.6		
CACYBP	-3.5		
CASP8	-3.5		
CB114618	-3.5		
CB114618	-3.4		
CD300C	-10.8		
CD359823	-5.2		
CDC2L1	-4.7		
CLPX	-4.9		
COG4	-4.6		
COMMD2	-3.8		
COX6B1	-5.1		
CUL4A	-3.7		
DERL2	-5.9		
E2F1	-3.0		
EDG1	-7.4		
EDG8	-13.7		
EIF3S9	-5.9		
EIF4G3	-4.9		
ENST00000324677	-6.4		
FAM104A	-5.3		
FAM45B	-6.1		
FAM8A1	-5.2		
FBXO3	-4.0		
FGFBP2	-17.1		
FLJ38723	-3.1		
FLJ90709	-4.2		
FLNA	-3.2		
FLVCR1	-5.6		
FRAP1	-3.1		
FXYD5	-3.7		
FZR1	-5.3		
G3BP1	-4.5		
GARNL4	-6.3		
GARNL4	-5.0		
GINS4	-6.3		
GK5	-10.6		
GOLGA4	-4.4		
hCG_1641703	-3.9		
hCG_1790474	-6.3		
HLA-DOA	-4.4		
INPP5D	-10.4		
ITGAM	-11.2		
JHDM1D	-8.6		
KCNN1	-4.1		
KIAA1276	-4.6		
LOC392522	-3.5		
LOC552889	-4.6		
LOC648312	-4.0		
LOC732221	-4.3		
LRRC47	-7.9		
LRRC47	-6.3		
LYAR	-14.1		
METAP1	-6.2		
MIAT	-6.3		
MIF4GD	-5.2		
MYO1F	-4.6		
NDUFS8	-5.4		
NF2	-13.9		
NR3C1	-11.4		
PDCD2	-5.7		
PIK3R1	-8.7		
POLR1D	-11.3		
POM121	-4.4		
PPP2R5C	-3.2		

GPR19	3.6	ZFAND5	9.4	PPP3R1	-4.9
GRAMD1B	4.0	ZFP36L1	3.3	PPP4R1	-3.4
HDGF	6.2	ZFP36L1	4.0	PRNT	-3.8
HDHD2	9.4	ZMYM2	3.8	PSMA2	-4.5
HIP1	10.8	ZNF410	5.3	PXN	-7.5
HIP2	7.5	ZNRF1	4.8	RBL2	-4.6
HLA-DQA1	6.5			REV3L	-4.9

Table S4 Gene probes found to be up- or downregulated in tumor-specific T-cells obtained from TILN relative to tumor-specific T-cells obtained from peripheral blood. Values represent the fold change.

Table S5 Primers used for quantitative PCR

gene	alt. name	forward primer (5' - 3')	reverse primer (5' - 3')
CCR7		ggggaaaccaatgaaaagc	acctcatcttgacacaggcata
CD160		cctcactacatccgtgaactcc	tgaagcaaatgttggctctg
2B4	*CD244*	cctgcaatgtcagcaatcc	ccaaaaacggccaaaatct
CD300A		ctggagctgctgcaagtg	acggtcctgcatttgctc
CRTAM		agaaagcaaaatggagaagaacat	ttcttcccatcagtttcaaattc
CTLA4	*CD152*	ttcatccctgtcttctgcaa	agtggctttgcctggagat
CXCL13		tctctgcttctcatgctgct	tcaagcttgtgtaatagacctcca
GNLY		agttacccagggcctcgt	gacaaggtgagagggctcag
GZMB		agatgcaaccaatcctgctt	catgtcccccgatgatct
IFNG		ggcattttgaagaattggaaag	tttggatgctctggtcatctt
KLRG1		aacggacaatcaggaaatgag	ccttgagaagtttagaggtgatcc
LAG3		gccatatccatctgcaggaa	ccaaaggatttgggagtcac
LEF1		cagatgtcaactccaaacaagg	ggagacaagggataaaaagtaggg
LYAR		aacccacaaaggcgacatc	ggctgacattgggtctcttt
TIM3	*HAVCR2*	ccaaggatgcttaccaccag	gaggctccccagtgtctgt
TNFRSF9	*4-1BB*	gaccaaggagtggaaagttctc	actagcaaagctgattccaagag
TOB1		ctctgtatgggcttggcttg	tctgctgttgttgctgctg
TXN		ttacagccgctcgtcaga	ggcttcctgaaaagcagtctt
XCL1		tagtctctggcaccctgtcc	tccatgagcgtgtaaagtgaa
XCL2		actctccctgcacagctcag	tgagacttcactccctacacctt

Table S5 Primers used for qPCR. All primer pairs were chosen to be on different exons or on exon/exon boundaries and were validated by standard curves and melting curves.

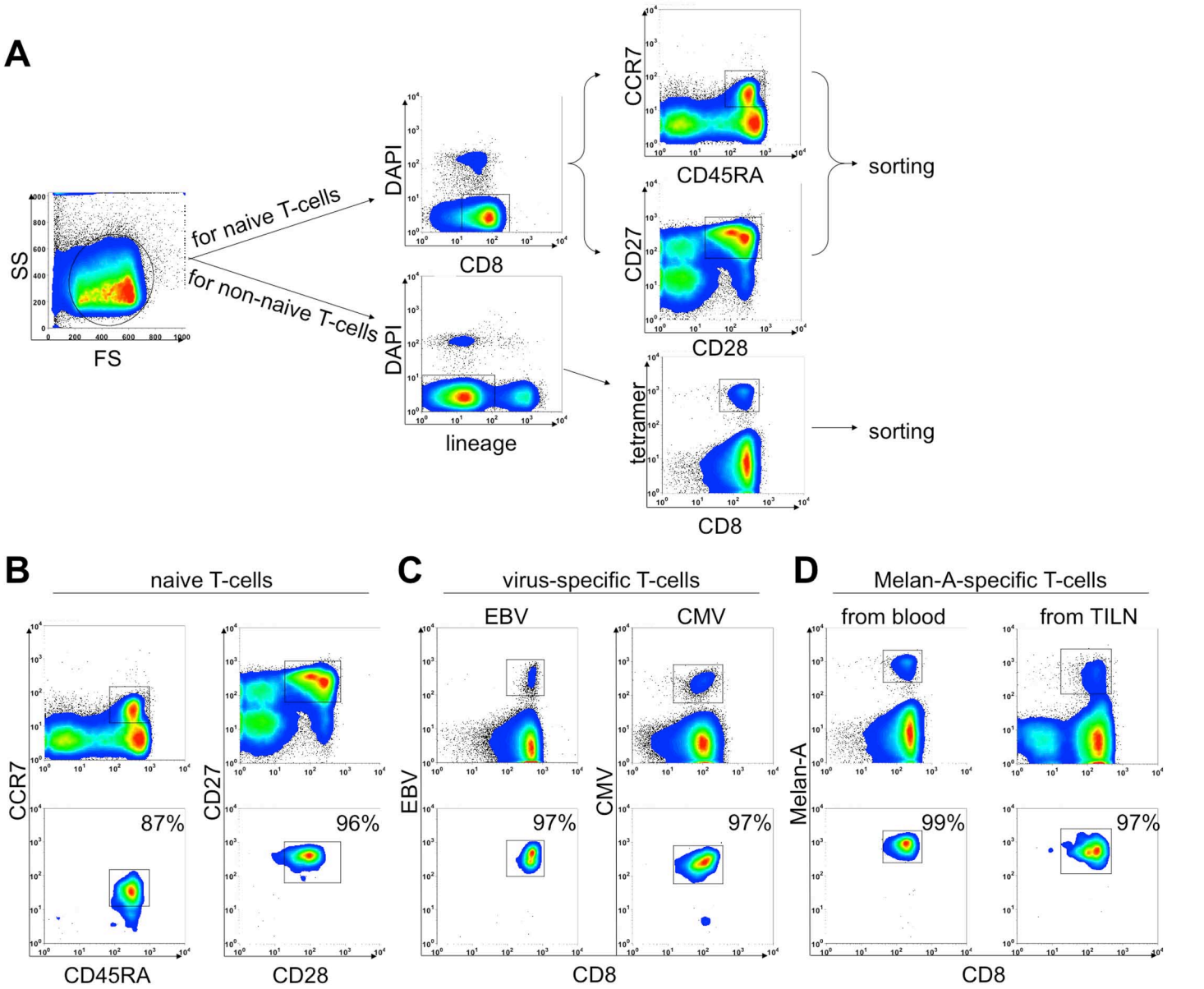

Figure S1 Experimental approach.
(A) CD8+ lymphocytes were purified using magnetic cell sorting and then stained with antibodies. Naive T-cells were obtained by gating on CD8+DAPI–CCR7+CD45RA+CD27+CD28+ cells. Antigen-experienced non-naive T-cells were gated on lin–DAPI–CD8+tetramer+ cells. 1000 cells per sample were sorted directly into lysis and storage buffer and amplified non-specifically by PCR, according to the manufacturer's instructions (SuperAmp, Miltenyi Biotec). (B) – (D) Representative plots before (upper panels) and after sorting (lower panels) of naive T-cells (B), virus-specific T-cells (C) and tumor-specific T-cells (D), with high sorting purity.

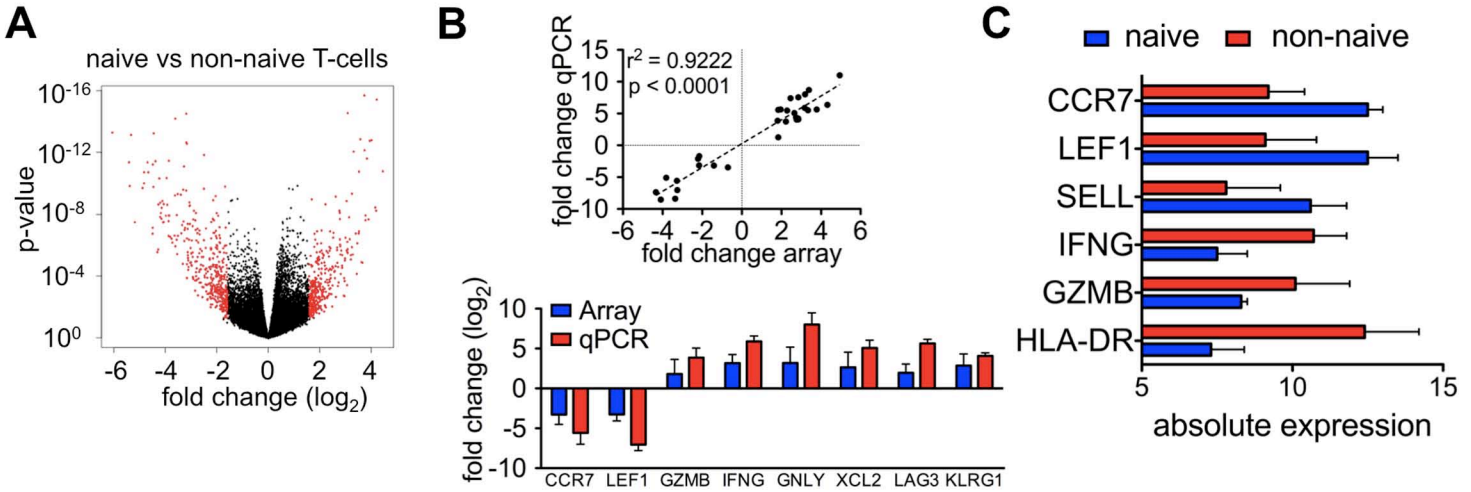

Figure S2 Gene selection and validation of naive- vs. non-naive CD8 T-cells.
(A) Volcano-plot for all gene probes on the microarray, showing expression differences and p-values of naive vs. non-naive T-cells (naive: n = 13; non-naive: n = 19). Each point represents one gene probe. Probes selected based on ≥ 3-fold change and adjusted p-value of < 0.05 are highlighted in red. (B) Correlation (top) and log fold change (bottom) between naive and non-naive cells of microarray data (blue bars) and qPCR (red bars). Positive and negative values indicate over- and under-expression in non-naive T-cells. The correlation includes data shown in Figures 3E, 3G and 5D. Data are represented as mean +/– SEM. (C) Absolute expression values and standard deviation (log2) of six genes selected to distinguish naive from non-naive cells.

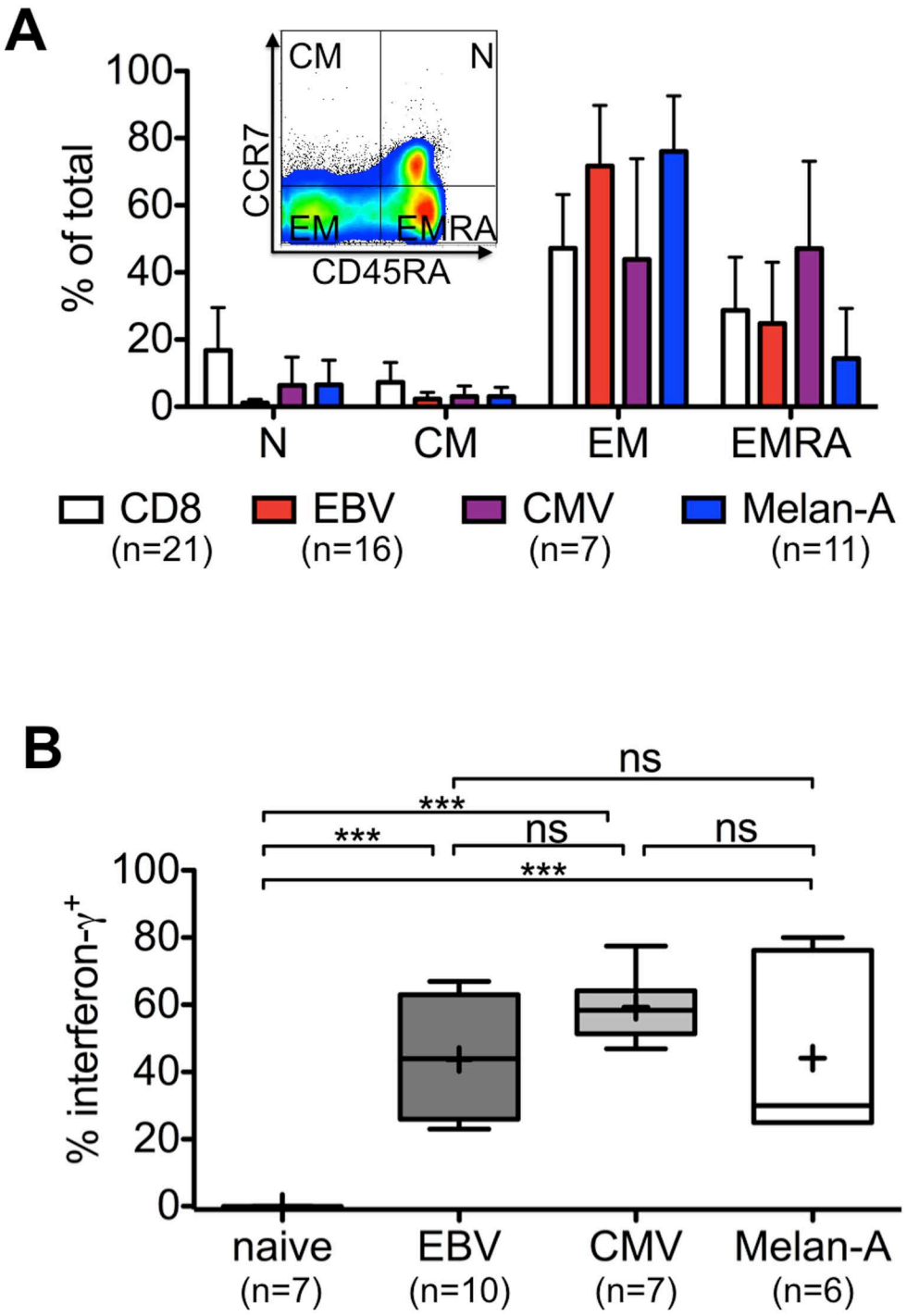

Figure S3 Similar phenotype and IFNγ production by antigen-experienced CD8 T-cells. (A) Lymphocytes were stained with tetramers and anti-CD8, anti-CD45RA and anti-CCR7 mAbs. The subsets are naive (N; CD45RA+CCR7+), central memory (CM; CD45RA–CCR7+), effector memory (EM; CD45RA–CCR7–) and effector memory RA+ cells (EMRA; CD45RA+CCR7–). The inset shows an example dotplot distinguishing the four subsets of total CD8 T-cells. The bar-graph depicts the percentages (mean +/– SD) of each subset of total CD8 cells or total tetramer-positive populations, according to antigen specificity. (B) IFNγ production by tetramer-positive T-cells upon 4h triggering by T2 cells loaded with the respective cognate peptide. Data of naive-, EBV- and CMV-specific T-cells are from healthy donors, while data of tumor-specific T-cells are from patients.

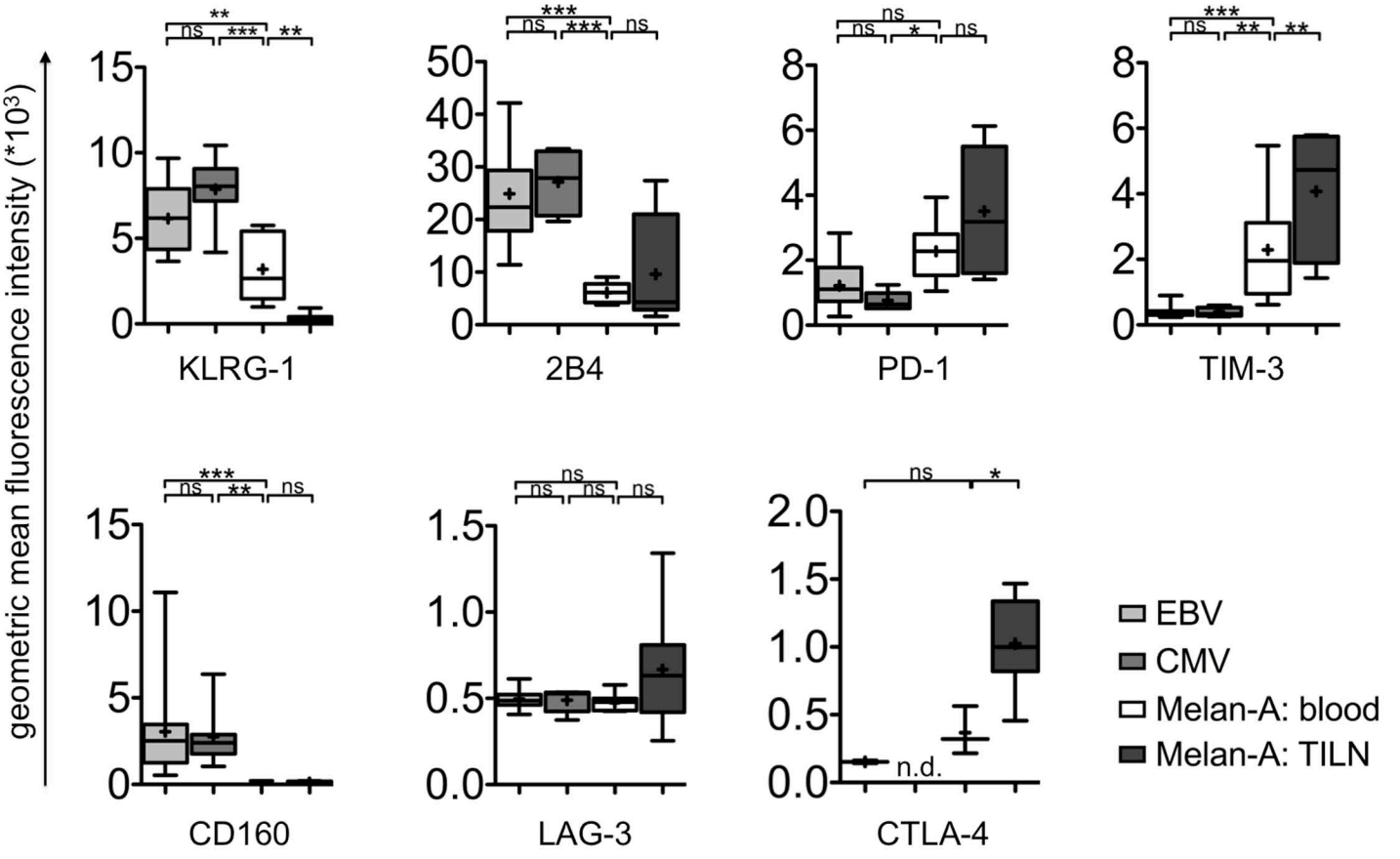

Figure S4 Expression of inhibitory receptors in antigen-specific CD8 T-cells.
Graphs summarize the data of all patients analyzed in *Figure 6B*, represented as geometric mean fluorescence intensity.

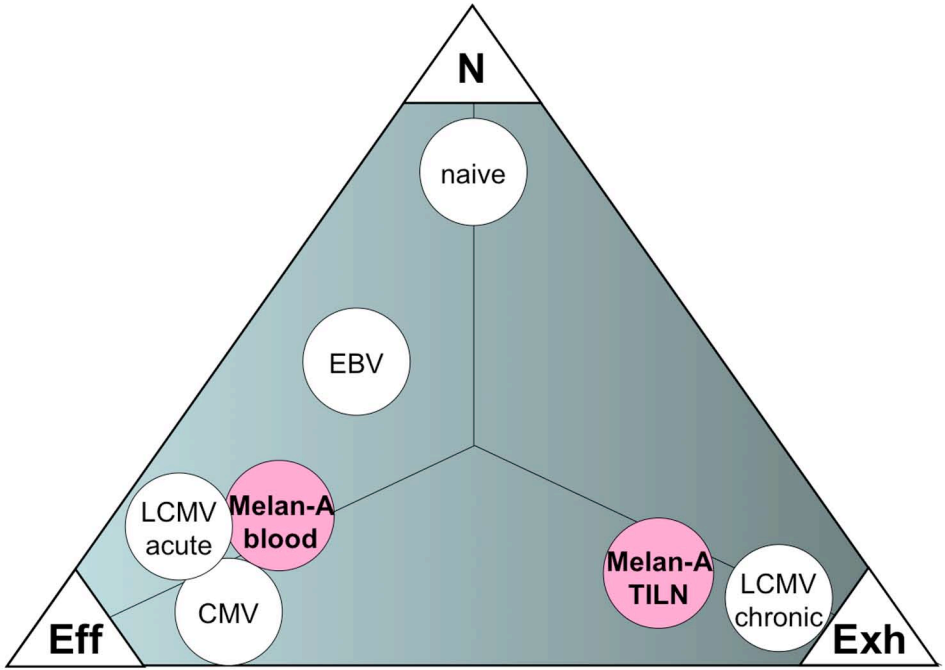

Figure S5 Model of differentiation and function of tumor- and virus-specific CD8 T-cells.
After antigen encounter, naive T-cells (N) differentiate into diverse stages of effector cells (Eff). In peripheral blood, EBV-specific T-cells are early-differentiated effector cells, while CMV-specific T-cells differentiate into late-stage effectors, similar to protective LCMV-specific T-cells in acute infection with LCMV-Armstrong. Vaccine induced tumor-specific T-cells in peripheral blood are late-stage differentiated effector cells, much like CMV-specific T-cells. In chronic infection such as in mice infected with LCMV-clone-13, T-cells are functionally impaired and become exhausted (Exh). Tumor-specific T-cells from tumor-infiltrated lymph nodes (TILN) show a similar exhaustion profile, with numerous molecular alterations of multiple cellular systems.