Supplementary Appendix for "Tumor-infiltrating Merkel cell polyomavirus-specific T cells are diverse & associated with improved survival of Merkel cell carcinoma patients", by Miller et al.

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I. SUPPLEMENTAL FIGURES

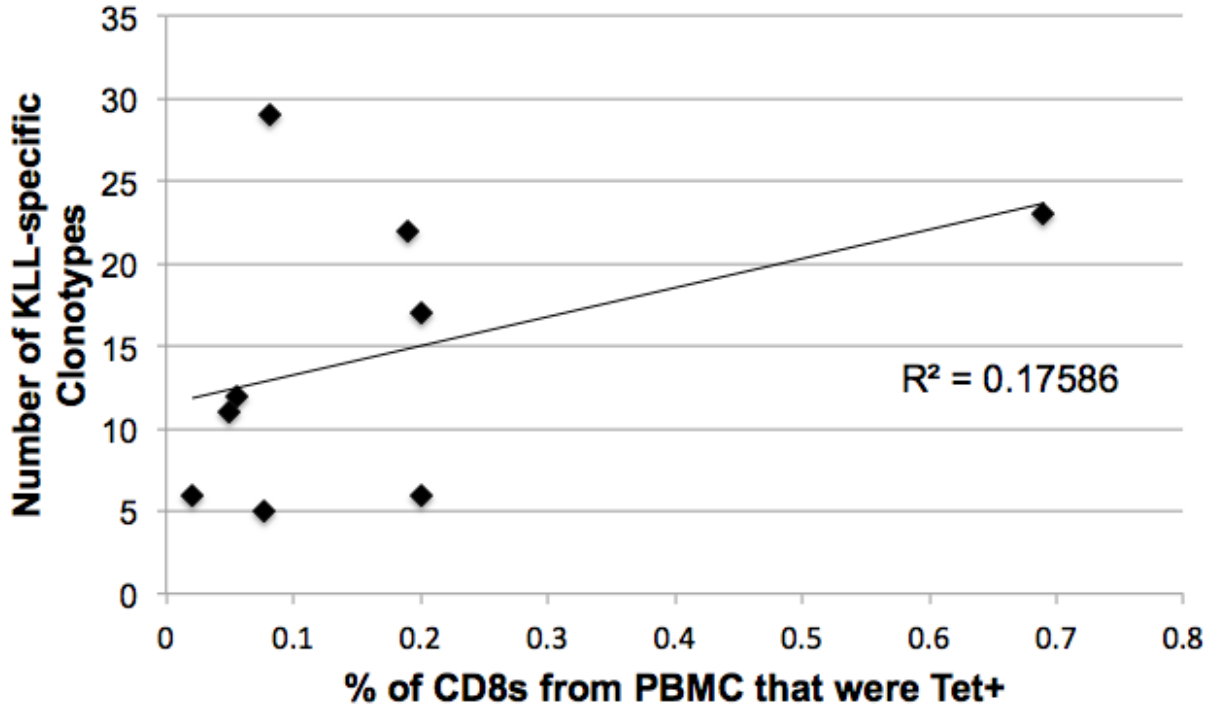


Figure S1: KLL-specific TCR diversity in PBMC is not correlated with the magnitude of KLL-specific responses. Number of unique clonotypes (present at ≥2 estimated number of genomes in each sample) was plotted against % of CD8+ cells positive for KLL-tetramer staining. No significant correlation was found ($r^2 = 0.17$).

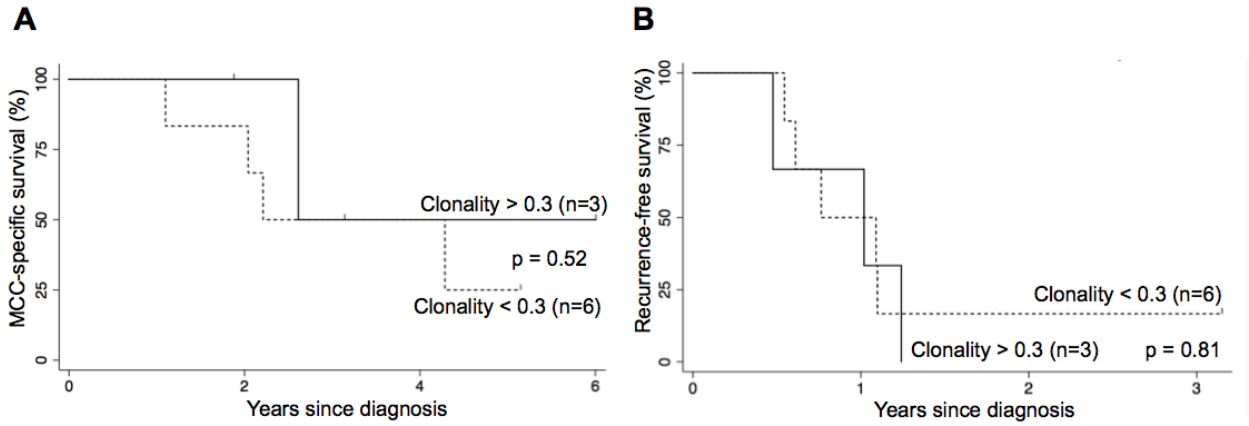
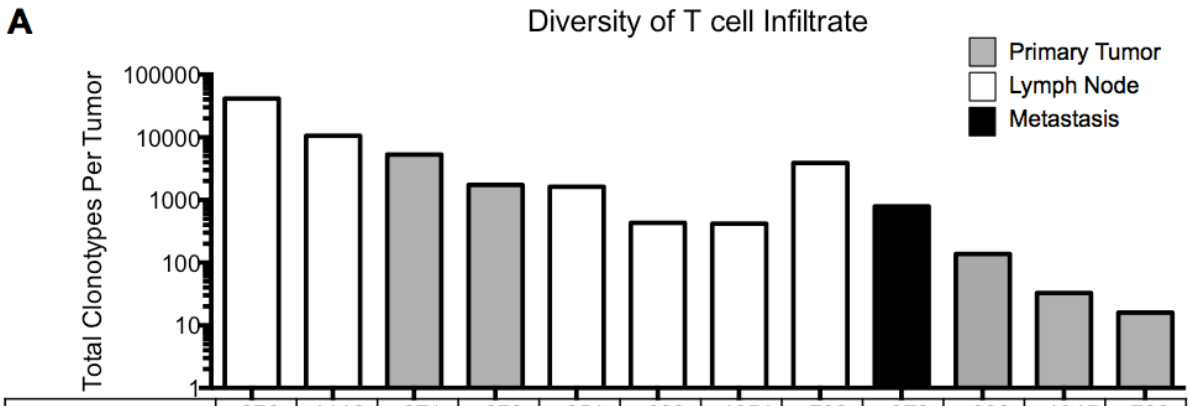


Figure S2: Clonality of KLL-specific T cell repertoire in PBMC of MCC patients does not correlate with disease outcome. Clonality of the KLL-specific repertoire from PBMC was calculated and patients were binned by high (>0.3, n=3) or low (<0.3, n=6) clonality. MCC-specific survival **(A)** or recurrence-free survival **(B)** between the two groups of patients were not significantly different by univariate analysis (p=0.52 or p=0.81 by log-rank test).



Patient ID	w876	z1116	w871	w678	w851	w683	w1051	w782	w878	w830	w1045	w782
HLA class I (0-8)	3	5	3	7	3	6	8	0	0	4	0	5
CD8 Infiltration Score (0-5)	2	2	2	2	1	3	3	2	0	0	0	1
Corresponding CD8 density (cells/mm^2)	180-433	180-433	180-433	180-433	1-179	434-582	434-582	180-433	0	0	0	1-179
CD4 cells/mm^2	30	21	18.7	38.3	6	42.3	70	110.7	0	3	12	0.3
FoxP3 cells/mm^2	4.7	13	2.7	22	2.7	9	>50	6.7	0	0.67	1.7	34.7
CM2B4 (0-8) (Large T-Ag)	8	8	8	8	7	8	8	8	8	8	8	8

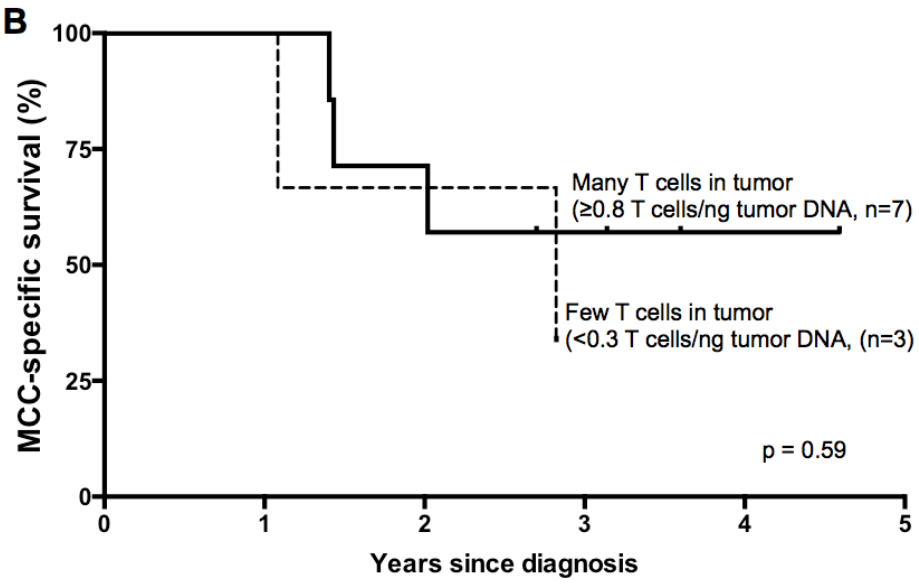


Figure S3: T cell infiltrate of tumor samples characterized by TCR repertoire and IHC. (A) Tumors from 9 patients were analyzed for TCRβ repertoire and stained for HLA-I, CD8, CD4, and FoxP3. Due to low DNA yield from patient w782's primary

tumor, the patient's nodal recurrence was also characterized. Tumor samples contained between 16 and 41,645 unique productive TCRB reads. Intratumoral CD8+ infiltration was categorized on a 0-5 scale as previously described (1), with corresponding range of CD8+ cells/mm2 below based on the scale from the same reference. CD4+ and FoxP3+ cells were scored directly as cells/mm^2. CD8+ cells infiltrated tumors more frequently than CD4+ or FoxP3+ cells in most tumors, suggesting that most TCRs are likely from CD8+ T cells. CM2B4 IHC (anti MCPyV Large T-Ag) was scored using the Allred system. Primary tumors = grey bars; lymph nodes = white; metastasis = black. **(B)** The density of T cells within each sample was normalized by dividing the number of T cells (per normalized sequencing) by the total amount of genomic DNA in each sample, per Adaptive Biotechnologies ImmunoSeq platform. Patients were separated *a priori* into those with many T cells (≥0.8 T cells/ng tumor DNA, n=7) or few T cells (<0.3 T cells/ng tumor DNA, n=3). There is no survival difference among patients based on their general immune infiltrate (p=0.59 by log-rank test).

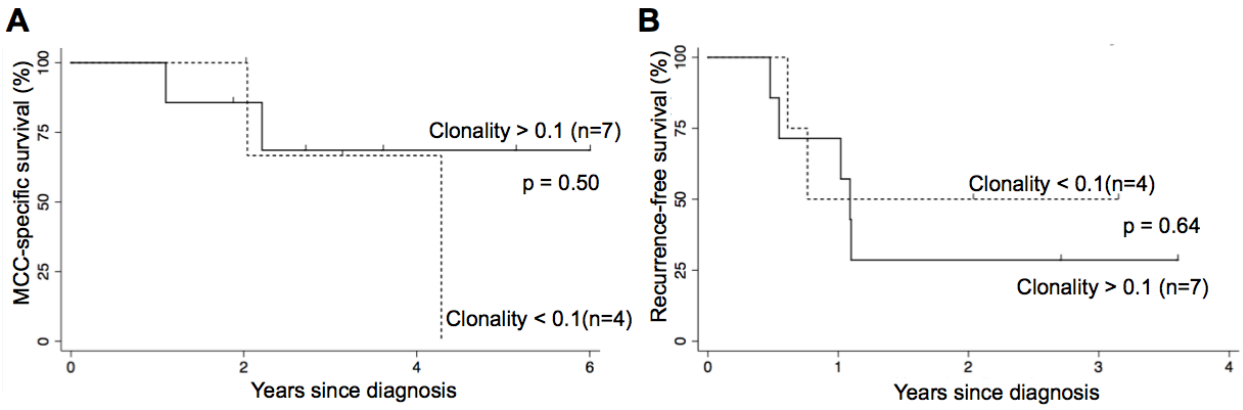


Figure S4: Clonality of the T cell repertoire within tumors of MCC patients does not correlate with disease outcome. Patients were binned by whether their tumors had high (>0.1, n=6) or low (<0.1, n=3) clonality. MCC-specific survival **(A)** or recurrence-free survival **(B)** between the two groups of patients was not significantly different by univariate analysis (p=0.50 or p=0.64 by log-rank test).

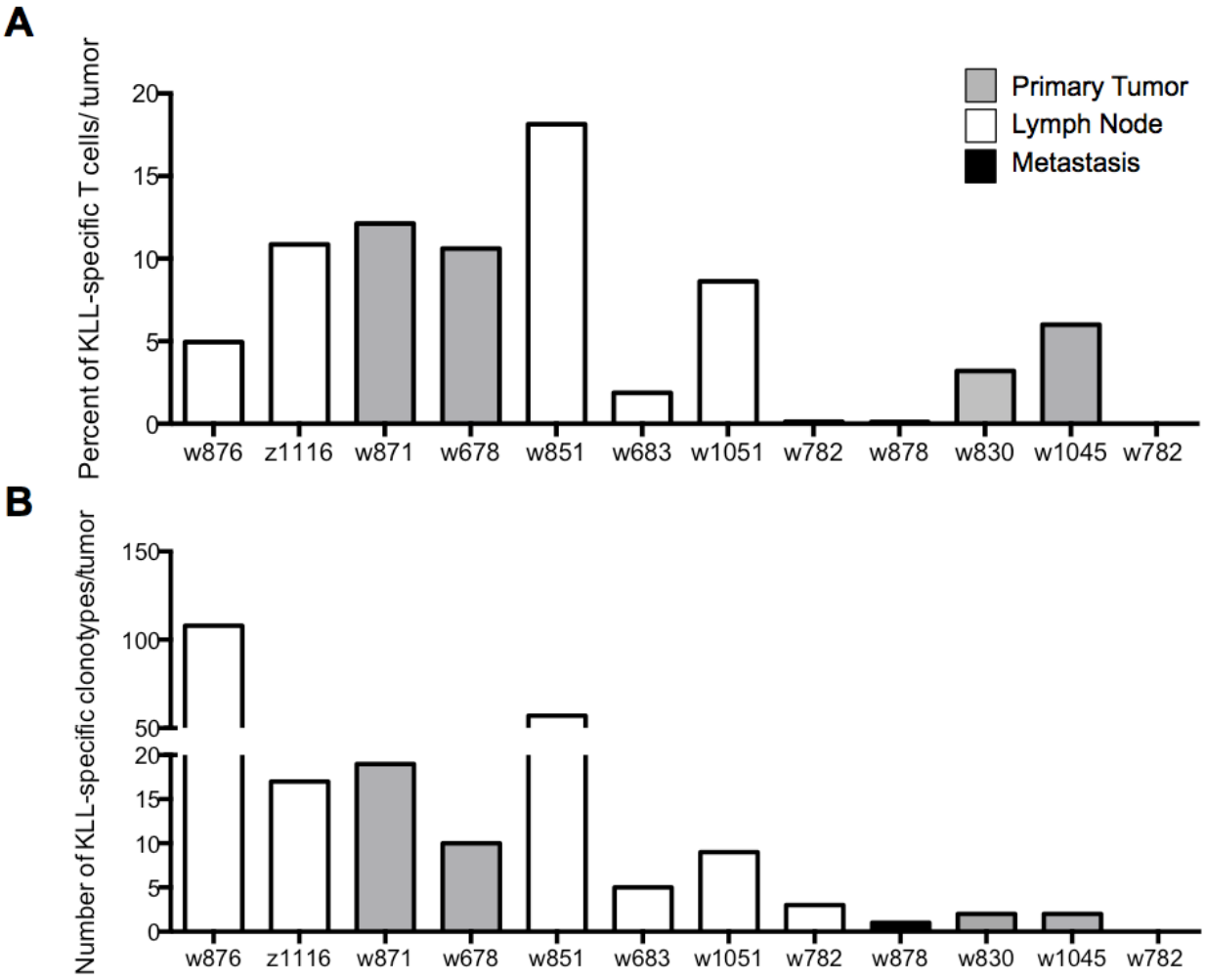


Figure S5: Percentage and number of KLL-specific clonotypes amid tumors. (A) KLL-specific T cells constituted between 0-18% of the T cell repertoire of each tumor based on number of genomes sequenced. **(B)** Tumors contained between 0-108 unique KLL-specific clonotypes.

II. SUPPLEMENTAL TABLES

Table S1: Homologs to the CT15-23 (KLLEIAPNC) epitope from other polyomaviruses

T-Ag aa #	15	16	17	18	19	20	21	22	23		IC_{50} binding to HLA A*02 (nM)
VIRUS											
MCPyV	**K**	**L**	**L**	**E**	**I**	**A**	**P**	**N**	**C**		**299**
BKV	D	L	L	G	L	E	R	A	A		19316
JCV	D	L	L	G	L	D	R	S	A		19439
KIV	Q	L	L	C	L	D	M	S	C		6950
WUV	Q	L	L	G	L	D	M	T	C		7444
SV40	D	L	L	G	L	E	R	S	A		19586
HPyV6	D	L	I	G	L	S	M	A	C		19258
HPyV7	E	L	I	G	L	N	M	A	C		15594
TSV	D	L	L	Q	I	P	R	H	C		25799

Residues in grey boxes are highly divergent. While putative HLA 'anchor residues' 2 and 9 are conserved and may permit presentation of homologs by HLA-A*02, differences in TCR contact residues (middle of peptide) may be sufficient to reduce binding of homologs by MCPyV CT15-23 specific T cells. Homologs are much less likely to bind to human HLA-A*0201, based on IC_{50} values calculated via ANN using the online Immune Epitope Database Analysis Resource binding prediction tool.

Table S2: Characteristics of MCC Patients with A*02/KLL Tetramer+ T cells

Pt ID	Stage at Dx	Gender	Primary Site	Survival Status	Recurrence	Age at Dx	Tetramer+ Samples	Tetramer+ % of CD8s
w678	IIA	male	lower limb	alive	Local & Distant	64	PBMC	0.08
							TIL	<0.01*
w683	IIA	male	lower limb	alive	LN & Distant	66	PBMC	0.69
w750	IIA	female	buttock	deceased	LN & Distant	58	PBMC	0.19
w782	IIIA	male	upper limb	deceased	Local & Distant	74	PBMC	0.05
w830	IIIA	male	head & neck	deceased	Local & Distant	58	PBMC	0.20
w851	IIIB	female	unknown	alive (NED)	No	77	PBMC	<0.01*
							TIL	0.16
w871	IA	male	buttock	alive (NED)	No	53	PBMC	<0.01*
							TIL	0.17
w876	IIIB	male	unknown	alive (NED)	No	50	PBMC	0.08
							TIL	7.98
w878	IV	female	unknown	deceased	N/A	54	PBMC	0.06
							TIL	<0.01*
w1045	IIIA	female	head & neck	deceased	Distant	70	PBMC	0.02
w1051	IIIB	male	unknown	alive (NED)	No	70	PBMC	<0.01*
							TIL	0.43
z1116	IIIB	male	unknown	alive	Distant	67	PBMC	0.2
							TIL	1.04

Abbreviations: MCC, Merkel cell carcinoma; Pt, patient; Dx, diagnosis; NED, no evidence of disease; LN, lymph node; TIL, tumor infiltrating lymphocytes. * denotes samples that had insufficient tetramer+ T cells for further analysis. TIL samples were unavailable for 5 of the 12 patients.

Table S3: List of all TCRβ clonotypes resolved from HLA-A*02:01/KLL-tetramer sorted T cells, annotated by patient

CDR3	TCRBV allele	TCRBJ allele		CDR3	TCRBV allele	TCRBJ allele
w678				**w782 cont'd**		
CAIRQFDANTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSPPSSGNTIYF	TCRBV18-01*01	TCRBJ01-03*01
CASSIIAGSSYNEQFF	TCRBV19-01	TCRBJ02-01*01		CASSVRVQQRKNIQYF	TCRBV21-01*01	TCRBJ02-04*01
CASSSGNPSTDTQYF	TCRBV10-02*01	TCRBJ02-03*01		CAIRTLDMNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSGGLLHVLDEQYF	TCRBV21-01*01	TCRBJ02-07*01		CSARPGQGAYNSPLHF	TCRBV20	TCRBJ01-06*01
CATTWRRYYEQYF	TCRBV06-07*01	TCRBJ02-07*01		CASSLYREETQYF	TCRBV07-07*01	TCRBJ02-05*01
w683				**w830**		
CASRSQNYYGYTF*	TCRBV06-05*01	TCRBJ01-02*01		CASSIMLYSNQPQHF	TCRBV19-01	TCRBJ01-05*01
CASSILLVPIATNEKLFF	TCRBV19-01	TCRBJ01-04*01		CAIRARDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASRSQNYYGYTF*	TCRBV06-06	TCRBJ01-02*01		CASSILGASNQPQHF*	TCRBV19-01	TCRBJ01-05*01
CASRSQNYYGYTF*	TCRBV06-01*01	TCRBJ01-02*01		CASSLAGFRFF	TCRBV12	TCRBJ02-01*01
CASRSQNYYGYTF*	TCRBV06	TCRBJ01-02*01		CASSLTGLAGTDTQYF	TCRBV07-03*01	TCRBJ02-03*01
CASRSQNYYGYTF*	TCRBV06	TCRBJ01-02*01		CAIRKQDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSRALATARKNIQYF	TCRBV21-01*01	TCRBJ02-04*01		CASSFPGAGSNTGELFF	TCRBV28-01*01	TCRBJ02-02*01
CASSLSMLQQRKNIQYF	TCRBV21-01*01	TCRBJ02-04*01		CASSLVIATQIRTEAFF	TCRBV21-01*01	TCRBJ01-01*01
CASRSQNYYGYTF*	TCRBV06-08*01	TCRBJ01-02*01		CASSILGASNQPQHF*	TCRBV19-01	TCRBJ01-05*01
CASRSQNYYGYTF*	TCRBV06-09*01	TCRBJ01-02*01		CASRGLLAQQSRANVLTF	TCRBV21-01*01	TCRBJ02-06*01
CASRSQNYYGYTF*	TCRBV06-07*01	TCRBJ01-02*01		CASRHWLLQHARNTIYF	TCRBV21-01*01	TCRBJ01-03*01
CASRSQNYYGYTF*	TCRBV06-04	TCRBJ01-02*01		CASSNPQRIAQSRANVLTF	TCRBV10-01	TCRBJ02-06*01
CASRSQNYYGYTF*	TCRBV06	TCRBJ01-02*01		CPGSRYGSEQSRANVLTF	TCRBV22-01*01	TCRBJ02-06*01
CASSSQNYYGYTF	TCRBV06-05*01	TCRBJ01-02*01		CASSILLYSNQPQHF	TCRBV19-01	TCRBJ01-05*01
CASSVALLQHARNTIYF	TCRBV21-01*01	TCRBJ01-03*01		CASSWSVLQHARNTIYF	TCRBV21-01*01	TCRBJ01-03*01
CASRAKLATLRTEAFF	TCRBV21-01*01	TCRBJ01-01*01		CASSLGWGDTEAFF	TCRBV12	TCRBJ01-01*01
CASRSQNYYGYTF*	TCRBV10-03*01	TCRBJ01-02*01		CASSLTGLAGTDTQYF	TCRBV07-03*01	TCRBJ02-03*01
CASRSQNYYGYTF*	TCRBV06	TCRBJ01-02*01				
CASRSQNYYGYTF*	TCRBV06	TCRBJ01-02*01		**w851**		
CASKTGGREKLFF	TCRBV28-01*01	TCRBJ01-04*01		CASSILSNSYNEQFF	TCRBV19-01	TCRBJ02-01*01
CASKKLDRPAPNSPLHF	TCRBV03	TCRBJ01-06*01		CASRRAPGGGLYNEQFF	TCRBV03	TCRBJ02-01*01
CASSEFLRGADYGYTF	TCRBV25-01*01	TCRBJ01-02*01		CAIRTLDMNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSLVGGRDEQYF	TCRBV09-01	TCRBJ02-07*01		CASSLSRGLLNGYTF	TCRBV27-01*01	TCRBJ01-02*01
				CASSLVGGRDGYTF	TCRBV12	TCRBJ01-02*01
w750				CASSQFWAGGIYEQYF	TCRBV03	TCRBJ02-07*01
CAIRDSNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSQVGETQYF	TCRBV04-01*01	TCRBJ02-05*01
CSARDLLAGTNTGELFF	TCRBV20	TCRBJ02-02*01		CASSYQGEEETQYF	TCRBV06-05*01	TCRBJ02-05*01
CAIRLADQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CATSSDRGGLQETQYF	TCRBV15-01*01	TCRBJ02-05*01
CASRDIGSGPQHF	TCRBV10-02*01	TCRBJ01-05*01		CASRHNVLQHARNTIYF	TCRBV21-01*01	TCRBJ01-03*01
CASRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSGRLQQSRANVLTF	TCRBV21-01*01	TCRBJ02-06*01
CAIRIRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSYPYGGGQNEQFF	TCRBV06-05*01	TCRBJ02-01*01
CASRTIFATVMQDTQYF	TCRBV21-01*01	TCRBJ02-03*01		CARGPTGGYTF	TCRBV02-01*01	TCRBJ01-02*01
CAIRTRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSPRAGVDYGYTF	TCRBV18-01*01	TCRBJ01-02*01
CASSRLQQRKNIQYF	TCRBV21-01*01	TCRBJ02-04*01		CASSLVRDSYNEQFF	TCRBV07-02*01	TCRBJ02-01*01
CASSIMVYSYNEQFF	TCRBV19-01	TCRBJ02-01*01		CASSGGRVNEKLFF	TCRBV19-01	TCRBJ01-04*01
CAIREGDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSLGGNTGELFF	TCRBV27-01*01	TCRBJ02-02*01
CASSDFNPSTDTQYF	TCRBV06-01*01	TCRBJ02-03*01		CASSEWGGTQPQHF	TCRBV06-01*01	TCRBJ01-05*01
CASSRGSVSDEQYF	TCRBV19-01	TCRBJ02-07*01		CATSGTGRWETQYF	TCRBV15-01*01	TCRBJ02-05*01
CASSDRDLYGYTF	TCRBV19-01	TCRBJ01-02*01		CASSLARGPGNTIYF	TCRBV07-06*01	TCRBJ01-03*01
CASSIAAGDAYGYTF	TCRBV19-01	TCRBJ01-02*01		CASRITMGQPQHF	TCRBV19-01	TCRBJ01-05*01
CASSPRGDTEAFF	TCRBV10-01	TCRBJ01-01*01		CASSDRVAGNEQFF	TCRBV06-05*01	TCRBJ02-01*01
CASSFGSEQYF	TCRBV05-04*01	TCRBJ02-07*01		CASSLTSGVTEAFF	TCRBV07-09	TCRBJ01-01*01
CASSWELTNEQYF	TCRBV05-04*01	TCRBJ02-07*01		CASSLSPELHGYTF	TCRBV27-01*01	TCRBJ01-02*01
CASNRGSTQSRANVLTF	TCRBV05-02*01	TCRBJ02-06*01		CATSRDSGGLDGDTQYF	TCRBV15-01*01	TCRBJ02-03*01
CASSWRVQPQHF	TCRBV28-01*01	TCRBJ01-05*01		CASSPGEWGSETQYF	TCRBV03	TCRBJ02-05*01
CASSQSIADNYGYTF	TCRBV16-01	TCRBJ01-02*01		CASSFGGGANEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSLSGQPQHF	TCRBV27-01*01	TCRBJ01-05*01		CASTPGGLPKNIQYF	TCRBV11-01*01	TCRBJ02-04*01
				CASSATGTGDLEQFF	TCRBV07-02*01	TCRBJ02-01*01
w782				CASSWGYDSYNEQFF	TCRBV05-06*01	TCRBJ02-01*01
CASSILGYSNQPQHF	TCRBV19-01	TCRBJ01-05*01		CASSQETGEGNSPLHF	TCRBV04-02*01	TCRBJ01-06*01
CAIRDSNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASRLTDRGRVGEKLFF	TCRBV07-09	TCRBJ01-04*01
CAIRAGDSNTGELFF	TCRBV10-03*01	TCRBJ02-02*01		CASSILSNSYNEQFF	TCRBV19-01	TCRBJ02-01*01
CASREGAAYNEQFF**	TCRBV06-01*01	TCRBJ02-01*01		CASSAGTAAGNTIYF	TCRBV07-06*01	TCRBJ01-03*01
CASREGAAYNEQFF**	TCRBV06	TCRBJ02-01*01		CASSGVKRSHKSRANVLTF	TCRBV10-01	TCRBJ02-06*01
CATSDPLAASYEQYF	TCRBV24	TCRBJ02-07*01		CASSGYHDGFSEQYF	TCRBV06-01*01	TCRBJ02-07*01

CDR3	TCRBV allele	TCRBJ allele
w851 cont'd		
CASSLQGAGQPQHF	TCRBV19-01	TCRBJ01-05*01
CADGRGDEQYF	TCRBV02-01*01	TCRBJ02-07*01
CASSPVGGDQPQHF	TCRBV07-09	TCRBJ01-05*01
CASSIGRTYYGYTF	TCRBV19-01	TCRBJ01-02*01
CAYGAGGPNTEAFF	TCRBV05-08*01	TCRBJ01-01*01
CASNIYSQPQHF	TCRBV19-01	TCRBJ01-05*01
CASSLEGDTEAFF	TCRBV05-05*01	TCRBJ01-01*01
CASSETDRGLAYEQYV	TCRBV06-01*01	TCRBJ02-07*01
CSARDRVGNTIYF	TCRBV20	TCRBJ01-03*01
CASSYFPGVEAFF	TCRBV06-05*01	TCRBJ01-01*01
CASSEGQGNSPLHF	TCRBV09-01	TCRBJ01-06*01
CASQTGFYNEQFF	TCRBV06-05*01	TCRBJ02-01*01
CASKTSGFPDTQYF	TCRBV02-01*01	TCRBJ02-03*01
CASSLSRGDSNQPQHF	TCRBV27-01*01	TCRBJ01-05*01
CASRESNTEAFF	TCRBV27-01*01	TCRBJ01-01*01
CASSEGQSYEQYF	TCRBV05-06*01	TCRBJ02-07*01
CASSSGTPSTDTQYF	TCRBV06-06	TCRBJ02-03*01
CASRPDIPLGETQYF	TCRBV06-05*01	TCRBJ02-05*01
CASSILSNSYNEQFF	TCRBV19-01	TCRBJ02-01*01
CASKKLDRPAPNSPLHF	TCRBV03	TCRBJ01-06*01
CASRRAPGGGLYNEQFS	TCRBV03	TCRBJ02
CASSYQGEEETQYF	TCRBV06	TCRBJ02-05*01
w871		
CASSSGTPSTDTQYF	TCRBV06-06	TCRBJ02-03*01
CAINNRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASTQSNTGELFF	TCRBV10-02*01	TCRBJ02-02*01
CASSETPDMNTEAFF	TCRBV06-01*01	TCRBJ01-01*01
CASSSGTPSTDTQYF*	TCRBV06-05*01	TCRBJ02-03*01
CASSSGTPSTDTQYF*	TCRBV06	TCRBJ02-03*01
CASTDSNTGELFF	TCRBV10-02*01	TCRBJ02-02*01
CASSSGTPSTDTQYF*	TCRBV06-05*01	TCRBJ02-03*01
CASSSGTPSTDTQYF*	TCRBV06-09*01	TCRBJ02-03*01
CASSSGTPSTDTQYF*	TCRBV06-09*01	TCRBJ02-03*01
CASSLGVAGGSSYNEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSYSTGVPEKLFF	TCRBV06-05*01	TCRBJ01-04*01
CASSWYLATHSDNEQFF	TCRBV21-01*01	TCRBJ02-01*01
CASTGGLADTQYF	TCRBV19-01	TCRBJ02-03*01
CASSSCMDIYKSRANVLTF	TCRBV18-01*01	TCRBJ02-06*01
CASRRTSGGRTDTQYF	TCRBV06	TCRBJ02-03*01
CASSSGTPSTDTQYF*	TCRBV06-08*01	TCRBJ02-03*01
CASSSGTPSTDTQYF*	TCRBV06-06	TCRBJ02-03*01
w876 (PBMC)		
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CAIRRQDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CAIHEGDSNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASRGQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSQLRTGDEYEQYF	TCRBV16-01	TCRBJ02-07*01
CATRDINTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRAGASYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CAISARDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSFGSGTKDTQYF	TCRBV12	TCRBJ02-03*01
CASRGSIATRYNEKLFF	TCRBV21-01*01	TCRBJ01-04*01
CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01
CASSLAGLAGTDTQYF	TCRBV07-02*01	TCRBJ02-03*01
CASSSRTKAYEQYF	TCRBV13-01*01	TCRBJ02-07*01
CARTESRQSRANVLTF	TCRBV07-05*01	TCRBJ02-06*01
CASSVEDYTGELFF*	TCRBV09-01	TCRBJ02-02*01
CASRDRREQFF	TCRBV21-01*01	TCRBJ02-01*01
CASRRVLAYRKTYGYTF	TCRBV21-01*01	TCRBJ01-02*01
CASRRCIATHTHNSPLHF	TCRBV21-01*01	TCRBJ01-06*01
CAISADNCIQSRANVLTF	TCRBV10-03*01	TCRBJ02-06*01
CASSGQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CAS SSRTKAYEQYF	TCRBV13-01*01	TCRBJ02-07*01
CASSLIAGLSYEQYF	TCRBV07-08*01	TCRBJ02-07*01
CASSLAGLAGTDTQYF	TCRBV07-02*01	TCRBJ02-03*01
CASTLGNPSTDTQYF*	TCRBV06-06	TCRBJ02-03*01
CASSGQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSVEDYTGELFF*	TCRBV09-01	TCRBJ02-02*01
CASSIQLFVRTEAFF*	TCRBV19-01	TCRBJ01-01*01
CASRASNTYGYTF*	TCRBV06-05*01	TCRBJ01-02*01
CASSIIAYSNQPQHF	TCRBV19-01	TCRBJ01-05*01
CASRSQLAVLNEQFF	TCRBV19-01	TCRBJ02-01*01
CASSTLSGTHNEQFF	TCRBV19-01	TCRBJ02-01*01
CASSILSSSNQPQHF	TCRBV19-01	TCRBJ01-05*01
CASSLAGDRYF	TCRBV12	TCRBJ01-06*01
CCASSFGTSGGTTYNEQFF*	TCRBV13-01*01	TCRBJ02-01*01
CASSPWDEQFF	TCRBV12	TCRBJ02-01*01
CASRGGSSYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CASSSGTSGGLTYNEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSYQIGLSYEQYF*	TCRBV06-06	TCRBJ02-07*01
CASSEFAGQETQYF	TCRBV02-01*01	TCRBJ02-05*01
CASSSGTSGGLNYNEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSVLNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIHEGDSNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSDTPDLNTEAFF*	TCRBV06	TCRBJ01-01*01
CAIRRQDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASRGQNTGELFF*	TCRBV10	TCRBJ02-02*01
CAIRGQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASRASNTYGYTF*	TCRBV06-06	TCRBJ01-02*01
CASSSRTKAYEQYF*	TCRBV13-01*01	TCRBJ02-07*01
CASSDTPDLNTEAFF*	TCRBV06-09*01	TCRBJ01-01*01
CASSDTPDLNTEAFF*	TCRBV06-08*01	TCRBJ01-01*01
CASSVEDYTGELFF*	TCRBV09-01	TCRBJ02-02*01
CASTLGNPSTDTQYF*	TCRBV06-05*01	TCRBJ02-03*01
CASRASNTYGYTF*	TCRBV06	TCRBJ01-02*01
CASRTVVLHWHHQPQHF	TCRBV21-01*01	TCRBJ01-05*01
CAIRTGSAYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CAISARDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSDTPDLNTEAFF*	TCRBV10-03*01	TCRBJ01-01*01
CSALPVTGAFQETQYF	TCRBV20	TCRBJ02-05*01
CASSVLNTGELFF	TCRBV10-01	TCRBJ02-02*01
CAIRGQDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASRASNTYGYTF*	TCRBV06-01*01	TCRBJ01-02*01

CDR3	TCRBV allele	TCRBJ allele
w876 (PBMC) cont'd		
CASRGDIGYRKTYGYTF	TCRBV21-01*01	TCRBJ01-02*01
CASSILSSSNQPQHF	TCRBV19-01	TCRBJ01-05*01
CASTLGNPSTDTQYF	TCRBV06-06	TCRBJ02-03*01
CASSSGTSGGLNYNEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSSGTSGGLTYNEQFF	TCRBV13-01*01	TCRBJ02-01*01
CASSTLSGTHNEQFF	TCRBV19-01	TCRBJ02-01*01
CASSAEVTNHQSRANVLTF	TCRBV19-01	TCRBJ02-06*01
CASSDTPDLNTEAFF*	TCRBV06	TCRBJ01-01*01
CASSYSTGVPEKLFF	TCRBV06-05*01	TCRBJ01-04*01
w876 (TIL)		
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CAIRAGASYNEQFF*	TCRBV28-01*01	TCRBJ02-01*01
CASRGQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIHEGDSNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAISARDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRRQDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRGQDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CATRDINTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSQLRTGDEYEQYF	TCRBV16-01	TCRBJ02-07*01
CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01
CASSFGSGTKDTQYF*	TCRBV12	TCRBJ02-03*01

CDR3	TCRBV allele	TCRBJ allele		CDR3	TCRBV allele	TCRBJ allele
w876 (TIL) cont'd				**w876 (TIL) cont'd**		
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASRDINSGELFF	TCRBV10-03*01	TCRBJ02-02*01
CARSVLNTGELFF	TCRBV10-02*01	TCRBJ02-02*01		CASSVLNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRRQDQNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CASTLGNPSTDTQYF*	TCRBV10-03*01	TCRBJ02-03*01
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CACSVLNTGELFF	TCRBV10-02*01	TCRBJ02-02*01
CAIHEGDSNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CAIHEGDSNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSVLNTGELFF*	TCRBV03	TCRBJ02-02*01		CAIHEGDSNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSPTGAVSYEQYF	TCRBV12	TCRBJ02-07*01		CAIRAGASYNEQFF*	TCRBV28-01*01	TCRBJ02-01*01
CSARAPTGTGNTGELFF	TCRBV20	TCRBJ02-02*01		CAIRAVASYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CATRDINTGELFF*	TCRBV10	TCRBJ02-02*01		CAIRGQDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRRQDQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CAIRRQDHNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CAISARDQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CAIRRQDQNNGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASRGQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASRASNTYGYTF*	TCRBV10-03*01	TCRBJ01-02*01
CASRGQNTGELFF*	unresolved	TCRBJ02-02*01		CASRGQDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CAIRGQDQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASSLIAGLSYEQYF*	TCRBV07-04*01	TCRBJ02-07*01
CAIRRQDQNTGELFF*	TCRBV06-06	TCRBJ02-02*01		CAIHEGDSNTGELFF*	TCRBV06-06	TCRBJ02-02*01
CASSGQNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASSQLRTGDEYEQYF*	TCRBV16-01	TCRBJ02-07*01
CAIRGQDQNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CASSSRTKAYEQYF*	TCRBV05-02*01	TCRBJ02-07*01
CASSSRTKAYEQYF*	TCRBV02-01*01	TCRBJ02-07*01		CAIRRQDQNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01
CASSSRTKAYEQYF*	TCRBV27-01*01	TCRBJ02-07*01		CAIRRQDQNTGELFF*	unresolved	TCRBJ02-02*01
CASTLGNPSTDTQYF*	TCRBV06-09*01	TCRBJ02-03*01		CAISARDQNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01
CATRDINTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CAISARDQNTGELFF*	TCRBV06	TCRBJ02-02*01
CASSDRPRIAQSRANVLTF	TCRBV10-01	TCRBJ02-06*01		CAISDTPDLNTEAFF	TCRBV06-01*01	TCRBJ01-01*01
CASRRCIATTARNTIYF	TCRBV21-01*01	TCRBJ01-03*01		CANSSRTKAYEQYF	TCRBV13-01*01	TCRBJ02-07*01
CASSESNTLVGFF	TCRBV10-02*01	TCRBJ02-01*01		CASRASNTYGYTF*	TCRBV06-08*01	TCRBJ01-02*01
CPGRRARKRTSRANVLTF	TCRBV22-01*01	TCRBJ02-06*01		CASSDTPDLNTEAFF*	TCRBV03	TCRBJ01-01*01
CASSLFSVYTQFF	TCRBV12	TCRBJ02-01*01		CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01
CASSLGVSGGMTYNEQFF	TCRBV13-01*01	TCRBJ02-01*01		CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01
CPGSRLGSEQSRANVLTF	TCRBV22-01*01	TCRBJ02-06*01		CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01
CASSVLNTGELFF*	TCRBV10-01	TCRBJ02-02*01		CASSFGSGTKDTQYF*	TCRBV03	TCRBJ02-03*01
CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASSFGSGTKDTQYF*	TCRBV03	TCRBJ02-03*01
CAIRGQDQNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01		CASSFGSGTKDTQYF*	TCRBV07-04*01	TCRBJ02-03*01
CASSLAGLAGTDTQYF*	TCRBV11-02*02	TCRBJ02-03*01		CASSFGSGTKDTQYF*	TCRBV12	TCRBJ02-03*01
CASSVLNTGELFF*	TCRBV06-06	TCRBJ02-02*01		CASSLAGLAGTDTQYF*	TCRBV07-06*01	TCRBJ02-03*01
CAIHEGDSNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01		CASSLAGLAGTDTQYF*	TCRBV07-03*01	TCRBJ02-03*01
CAIHEGDSNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01		CASSLIAGLSYEQYF*	TCRBV11-02*02	TCRBJ02-07*01
CASRASNTYGYTF*	TCRBV06-09*01	TCRBJ01-02*01		CASSLIAGLSYEQYF*	TCRBV07-01*01	TCRBJ02-07*01
CASRASNTYGYTF*	TCRBV06	TCRBJ01-02*01		CASSLIAGLSYEQYF*	TCRBV07-06*01	TCRBJ02-07*01
CASRGQNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01		CASSQLRTGDEYEQYF*	TCRBV13-01*01	TCRBJ02-07*01
CASRGQNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CASSSRTKAYEQYF*	TCRBV03	TCRBJ02-07*01
CASRGQNTGELFF*	TCRBV06-06	TCRBJ02-02*01		CASSSRTKAYEQYF*	TCRBV03	TCRBJ02-07*01
CASSDTPDLNTEAFF*	TCRBV06-01*01	TCRBJ01-01*01		CASSSRTKAYEQYF*	TCRBV02-01*01	TCRBJ02-07*01
CCASSFGTSGGTTYNEQFF*	TCRBV13-01*01	TCRBJ02-01*01		CASSSRTKAYEQYF*	TCRBV02-01*01	TCRBJ02-07*01
CASSIQLFVRTEAFF*	TCRBV19-01	TCRBJ01-01*01		CASSSRTKAYEQYF*	TCRBV13-01*01	TCRBJ02-07*01
CASSLAGLAGTDTQYF*	TCRBV07-09	TCRBJ02-03*01		CASSSRTKAYEQYF*	TCRBV13-01*01	TCRBJ02-07*01
CASSLIAGLSYEQYF*	TCRBV07-03*01	TCRBJ02-07*01		CASSVEDYTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSRYGQGWEQYF	TCRBV27-01*01	TCRBJ02-07*01		CASSVLNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01
CASSSRTKAYEQYF*	TCRBV13-01*01	TCRBJ02-07*01		CASSVLNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01
CASSSRTKAYEQYF*	TCRBV13-01*01	TCRBJ02-07*01		CASSVLNTGELFF*	TCRBV06-09*01	TCRBJ02-02*01
CASSVEDYTGELFF*	TCRBV03	TCRBJ02-02*01		CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSVLNTGELFF*	TCRBV09-01	TCRBJ02-02*01		CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSVLNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CASSVLNTGELFF*	TCRBV10-02*01	TCRBJ02-02*01
CASSVLNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01		CASSYQIGLSYEQYF*	TCRBV06	TCRBJ02-07*01
CASSYQIGLSYEQYF*	TCRBV06-05*01	TCRBJ02-07*01		CASTLGNPSTDTQYF*	TCRBV06	TCRBJ02-03*01
CASREGYSNQPQHF	TCRBV19-01	TCRBJ01-05*01		CATRDINTGELFF*	TCRBV06-01*01	TCRBJ02-02*01
CASSGRDRGSEKLFF	TCRBV19-01	TCRBJ01-04*01				
CASSGQVATHARNTIYF	TCRBV21-01*01	TCRBJ01-03*01		**w878**		
CASSHGRLNEKLFF	TCRBV13-01*01	TCRBJ01-04*01		CASRGGASYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CATSHSTVGYGYTF	TCRBV10-03*01	TCRBJ01-02*01		CASSILLFSGNTIYF	TCRBV19-01	TCRBJ01-03*01
CASSFDSKGSNTGELFF	TCRBV28-01*01	TCRBJ02-02*01		CAIRSRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSLIIGRDPYEQYF	TCRBV07-09	TCRBJ02-07*01		CASSQDARRSGNTIYF	TCRBV14-01*01	TCRBJ01-03*01
CASSLVPSGSPVSAGELFF	TCRBV11-02*02	TCRBJ02-02*01		CASSIQEGYSEQYF	TCRBV19-01	TCRBJ02-07*01
CASSLWVAGYNEQFF	TCRBV07-09	TCRBJ02-01*01		CASSPALATTSRANVLTF	TCRBV21-01*01	TCRBJ02-06*01
CSARLANSYEQYF	TCRBV20	TCRBJ02-07*01		CASRTSNTYGYTF	TCRBV06-05*01	TCRBJ01-02*01
CAISARDQNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01		CAIRAADQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01

CDR3	TCRBV allele	TCRBJ allele
w878 cont'd		
CASRQFLATPSDNEQFF	TCRBV21-01*01	TCRBJ02-01*01
CASSLLRTSQETQYF	TCRBV12	TCRBJ02-05*01
CASSIQEGYSEQYF	TCRBV19-01	TCRBJ02-05*01
YASSDKSLGGVDTGELFF	TCRBV26-01*01	TCRBJ01-03*01
w1045		
CASRTGSSYNEQFF	TCRBV28-01*01	TCRBJ02-01*01
CASSTGEPGVYGYTF	TCRBV06-05*01	TCRBJ01-02*01
CASTPGAGLKNEQFF	TCRBV06-05*01	TCRBJ02-01*01
CASSTGEPGVYGYTF	TCRBV06-01*01	TCRBJ01-02*01
CASSLDWRGNTIYF	TCRBV07-02*01	TCRBJ01-03*01
CAIRAYGQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSIELRSYEQYF	TCRBV19-01	TCRBJ02-07*01
CASTTGEGYEQYF	TCRBV06-05*01	TCRBJ02-07*01
CASSSGASLLNEQFF	TCRBV06-05*01	TCRBJ02-01*01
w1051		
CSARTGYNEQFF	TCRBV20	TCRBJ02-01*01
CASILIAGGYNEQFF	TCRBV02-01*01	TCRBJ02-01*01
CASILIAGAYNEQFF	TCRBV02-01*01	TCRBJ02-01*01
CASSPEGSGGYTF	TCRBV18-01*01	TCRBJ01-02*01
CASRCLVLQQSRANVLTF	TCRBV21-01*01	TCRBJ02-06*01
CASSADRGGWSGNQPQHF	TCRBV12	TCRBJ01-05*01
w1116 (PBMC)		
CAIRTLDMNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSLNIAHHSDNEQFF	TCRBV21-01*01	TCRBJ02-01*01
CASKRLAGEGTGELFF	TCRBV06	TCRBJ02-02*01
CAISTLDMNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CAIRTLDMNTGELFF	unresolved	TCRBJ02-02*01
CASSSSTEILWLHL	TCRBV28-01*01	TCRBJ01-02*01
w1116 (TIL)		
CAIRTLDMNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CASSGPDGDNEQFF	TCRBV09-01	TCRBJ02-01*01
CAIRTLDMNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CASSYPDVYEQYF*	TCRBV06	TCRBJ02-07*01
CAIRTLDMNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRIRDQNTGELFF	TCRBV10-03*01	TCRBJ02-02*01
CAIRTLDMNTGELFF*	TCRBV06-05*01	TCRBJ02-02*01
CASSYPDVYEQYF*	TCRBV06	TCRBJ02-05*01
CASSETGTWDEQYF	TCRBV10-02*01	TCRBJ02-07*01
CAIRTLDMNTGELFF*	TCRBV10-03*01	TCRBJ02-02*01
CAIRTLDMNTGELLF	TCRBV10-03*01	TCRBJ02-02*01
CAIRTLDMNTGELFF*	TCRBV06-06	TCRBJ02-02*01
CASSSSTESYGYTF	TCRBV28-01*01	TCRBJ01-02*01
CAIRTLDMNTGELFF*	TCRBV06-01*01	TCRBJ02-02*01
CASSGPDGDNEQFF	TCRBV09-01	TCRBJ02-01*01
CASSERHLHARNTIYF	TCRBV03	TCRBJ01-03*01
CASRSLIATLLDEQYF	TCRBV21-01*01	TCRBJ02-07*01
CASSSTLKSQSRANVLTF	TCRBV19-01	TCRBJ02-06*01
CAISEPSGAQHF	TCRBV10-03*01	TCRBJ01-05*01
CASSEGKTKSQSRANVLTF	TCRBV19-01	TCRBJ02-06*01
CASSLGNTEAFF	TCRBV11-02*02	TCRBJ01-01*01
CASSLVSSGGEAFF	TCRBV07-09	TCRBJ01-01*01
CAIRTLDMNTGDLFF	TCRBV10-03*01	TCRBJ02-02*01
CASKKLDRPAPNSPLHF	TCRBV03	TCRBJ01-06*01
CASSGPDGGNEQFF*	TCRBV09-01	TCRBJ02-01*01
CASSGPDGGNEQFF*	TCRBV09-01	TCRBJ02-01*01
CASSSQRKSYGYTF	TCRBV28-01*01	TCRBJ01-02*01
CASSSSRKSYGYTF	TCRBV28-01*01	TCRBJ01-02*01
CATSDPLAASYEQYF	TCRBV24	TCRBJ02-07*01

*denotes non-unique CDR3s within a patient, encoded by a unique *TRB* nucleotide sequence and/or unique TCRBV or TCRBJ.