

**Supplementary Table 1: Frequency of Variant Specific T cell Responses in HSCT patients**

Patient	Evidence of Coinfection	Variant Epitope Sequence	HLA Restriction	Antigen	% IFN- $\gamma^+$ of CD8 <sup>+</sup> T cells
<b>Patients with CMV Reactivation</b>					
<b>04</b>	<b>No</b>	VLEETSVML	A2	IE-1	0.52
		YILEETSVML	A2	IE-1	0.18
		DELRRKMMY	B44	IE-1	0.07
		DELKRKMIY	B44	IE-1	0.07
		EEAIVAYTL	B44	IE-1	12.61
		EDAIAAYTL	B44	IE-1	0.52
		NLVPMVATV	A2	pp65	27.38
		FMDILTTCV	A2	IE-1	0.24
<b>06</b>	<b>No</b>	AYAQKIFKIL	A24	IE-1	21.68
		TYSQKIFKIL	A24	IE-1	21.29
<b>13</b>	<b>No</b>	VLEETSVML	A2	IE-1	0.1
		YILEETSVML	A2	IE-1	24.05
		DELRRKMMY	B44	IE-1	3.4
		DELKRKMIY	B44	IE-1	0.05
		EEAIVAYTL	B44	IE-1	0.3
		EDAIAAYTL	B44	IE-1	0.01
		NLVPMVATV	A2	pp65	31.5
		FMDILTTCV	A2	IE-1	9.04
<b>14</b>	<b>No</b>	KARAKKDELK	A31	IE-1	0.08
		KARAKKDELK	A31	IE-1	0
		RPHERNGFTVL	B7	pp65	49.86
		TPRVTGGGAM	B7	pp65	26.65
<b>16</b>	<b>Yes</b>	VLEETSVML	A2	IE-1	0.77
		YILEETSVML	A2	IE-1	0.34
		ARAKKDELK	B27	IE-1	34.53
		ARAKKDELK	B27	IE-1	29.82
		KRKMIYMCYR	B27	IE-1	0.62
		RRKMMYMCYR	B27	IE-1	7.12
		NLVPMVATV	A2	pp65	48.43
		FMDILTTCV	A2	IE-1	3.69
<b>17</b>	<b>Yes</b>	ELRRKMMYM	B8	IE-1	0.77
		ELKRKMIYM	B8	IE-1	32.07
		VTEHDTLLY	A1	pp50	16.55
		QIKVRVDMV	B8	IE-1	1.81
<b>19</b>	<b>Yes</b>	VLEETSVML	A2	IE-1	*
		YILEETSVML	A2	IE-1	*
		DELRRKMMY	B44	IE-1	*

		DELKRKMIY	B44	IE-1	*
		EEAIVAYTL	B44	IE-1	*
		EDAIAAYTL	B44	IE-1	*
		NLVPMVATV	A2	pp65	*
		FMDILTTCV	A2	IE-1	*
25	Yes	VLEETSVML	A2	IE-1	0.22
		YILEETSVML	A2	IE-1	1.37
		NLVPMVATV	A2	pp65	29.309
		FMDILTTCV	A2	IE-1	0.32
26	No	VLEETSVML	A2	IE-1	0
		YILEETSVML	A2	IE-1	0
		NLVPMVATV	A2	pp65	0
		FMDILTTCV	A2	IE-1	2.69
28	Yes	VLEETSVML	A2	IE-1	8.83
		YILEETSVML	A2	IE-1	8.53
		DELRRKMMY	B44	IE-1	2.56
		DELKRKMIY	B44	IE-1	3
		EEAIVAYTL	B44	IE-1	2.82
		EDAIAAYTL	B44	IE-1	3.51
		NLVPMVATV	A2	pp65	7.09
		FMDILTTCV	A2	IE-1	13.4
30	No	YILEETSVML	A2	IE-1	49.91
		VLEETSVML	A2	IE-1	46.51
		NLVPMVATV	A2	pp65	57.39
		FMDILTTCV	A2	IE-1	0.55
32	Yes	YILEETSVML	A2	IE-1	1.48
		VLEETSVML	A2	IE-1	0.39
		NLVPMVATV	A2	pp65	0.43
		FMDILTTCV	A2	IE-1	26.54
34	Yes	ELRRKMMYM	B8	IE-1	18.85
		ELKRKMIYM	B8	IE-1	13.04
		VTEHDTLLY	A1	pp50	22.54
		QIKVRVDMV	B8	IE-1	19.39
38	Yes	VTEHDTLLY	A1	pp50	83.72
39	Yes	VLEETSVML	A2	IE-1	0
		YILEETSVML	A2	IE-1	0
		DELRRKMMY	B44	IE-1	0.26
		DELKRKMIY	B44	IE-1	0
		EEAIVAYTL	B44	IE-1	0.18
		EDAIAAYTL	B44	IE-1	0
		NLVPMVATV	A2	pp65	1.8
		FMDILTTCV	A2	IE-1	18.48

44	Yes	VLEETSVML	A2	IE-1	1.57
		YILEETSVML	A2	IE-1	5.3
		DELRRKMMY	B44	IE-1	28.62
		DELKRKMIY	B44	IE-1	6.67
		EDAIAAYTL	B44	IE-1	2.24
		EEAIVAYTL	B44	IE-1	13.5
		NLVPMVATV	A2	pp65	59.84
46	Yes	VLEETSVML	A2	IE-1	8.55
		YILEETSVML	A2	IE-1	4.3
		DELRRKMMY	B44	IE-1	6.81
		DELKRKMIY	B44	IE-1	2.63
		EDAIAAYTL	B44	IE-1	0.71
		EEAIVAYTL	B44	IE-1	1.38
		NLVPMVATV	A2	pp65	54.79
		FMDILTTCV	A2	IE-1	15.12
<b>Patients without CMV Reactivation</b>					
1	N.A.	ARAKKDELK	B27	IE-1	0
		ARAKKDELR	B27	IE-1	0.76
		KRKMIYMCYR	B27	IE-1	15.29
		RRKMMYMCYR	B27	IE-1	9.14
		VTEHDTLLY	A1	pp50	33.45
		YSEHPTFTSQY	A1	pp65	47.34
07	N.A.	VLEETSVML	A2	IE-1	0.31
		YILEETSVML	A2	IE-1	0.61
		ELRRKMMYM	B8	IE-1	15.74
		ELKRKMIYM	B8	IE-1	5.91
		VTEHDTLLY	A1	pp50	3.02
		NLVPMVATV	A2	pp65	25.23
		FMDILTTCV	A2	IE-1	0
15	N.A.	KARAKKDELR	A31	IE-1	0.09
		KARAKKDELK	A31	IE-1	0.52
		RPHERNGFTVL	B7	pp65	18.79
		TPRVTGGGAM	B7	pp65	58.62
36	N.A.	VLEETSVML	A2	IE-1	0
		YILEETSVML	A2	IE-1	0.13
		NLVPMVATV	A2	pp50	1.03
		FMDILTTCV	A2	IE-1	2
37	N.A.	ELRRKMMYM	B8	IE-1	33.84
		ELKRKMIYM	B8	IE-1	32.39
		VTEHDTLLY	A1	pp50	43.16
		QIKVRVDMV	B8	IE-1	37.36
42	N.A.	VLEETSVML	A2	IE-1	0.68
		YILEETSVML	A2	IE-1	5.65

		AYAQKIFKIL	A24	IE-1	0
		TYSQKIFKIL	A24	IE-1	10.26
		DELRRKMMY	B44	IE-1	1.62
		DELKRKMIY	B44	IE-1	0.41
		EEAIVAYTL	B44	IE-1	1.27
		EDAIAAYTL	B44	IE-1	0.25
		NLVPMVATV	A2	pp65	56.11
		FMDILTTCV	A2	IE-1	1.24
<b>43</b>	<b>N.A.</b>	DELRRKMMY	B44	IE-1	0
		DELKRKMIY	B44	IE-1	0
		EEAIVAYTL	B44	IE-1	0
		EDAIAAYTL	B44	IE-1	0
		VTEHDTLLY	A1	pp50	49.31
		YSEHPTFTSQY	A!	pp65	44.4
<b>45</b>	<b>N.A.</b>	VLEETSVML	A2	IE-1	0
		YILEETSVML	A2	IE-1	0
		DELRRKMMY	B44	IE-1	0.03
		DELKRKMIY	B44	IE-1	0
		EEAIVAYTL	B44	IE-1	0
		EDAIAAYTL	B44	IE-1	0
		NLVPMVATV	A2	pp65	29.55
		FMDILTTCV	A2	IE-1	1.24
<b>47</b>	<b>N.A.</b>	VLEETSVML	A2	IE-1	11.57
		YILEETSVML	A2	IE-1	20.54
		DELRRKMMY	B44	IE-1	0
		DELKRKMIY	B44	IE-1	0
		EEAIVAYTL	B44	IE-1	0
		EDAIAAYTL	B44	IE-1	0
		NLVPMVATV	A2	pp65	15.83
		FMDILTTCV	A2	IE-1	3.41

Shaded boxes represent the variant sequences detected in the corresponding patients

\* T cells failed to survive in culture

**N.A.** Not Applicable