

**Extended Data Table 1** | Frequency and sequence identity of top TCRβ VDJ recombinations in FACS-sorted T cells from PR8-infected mice.

CD8 population	Mouse #/VDJ rank	VDJ amino acid sequence	V gene	J gene	Frequency
Naive	1/1	CASGDAGEQYF	TCRBV13-02	TCRBJ02-07	0.06%
Naive	1/2	CASSDAGEYQYF	TCRBV13-01	TCRBJ02-07	0.03%
Naive	1/3	CTCSADRGNTVFF	TCRBV01-01	TCRBJ01-01	0.02%
Naive	1/4	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.02%
Naive	1/5	CASSPPTGGYEQYF	TCRBV12-01	TCRBJ02-07	0.02%
Naive	1/6	CASSLGGYEQYF	TCRBV29-01	TCRBJ02-07	0.02%
Naive	1/7	CTCSADRANTEVFF	TCRBV01-01	TCRBJ01-01	0.02%
Naive	1/8	CASSLGDSEYQYF	TCRBV12-01	TCRBJ02-07	0.02%
Naive	1/9	CASSDAGEYQYF	TCRBV13-01	TCRBJ02-07	0.02%
Naive	1/10	CTCSADRYEQYF	TCRBV01-01	TCRBJ02-07	0.02%
Naive	1/others				99.73%
Naive	2/1	CASGDAGEQYF	TCRBV13-02	TCRBJ02-07	0.07%
Naive	2/2	CASSPPTGGYEQYF	TCRBV05-01	TCRBJ02-07	0.03%
Naive	2/3	CASGDRLGGYEQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	2/4	CASSLGGNYAEQFF	TCRBV12-01	TCRBJ02-01	0.02%
Naive	2/5	CASGDAGGSAAETLYF	TCRBV13-02	TCRBJ02-03	0.02%
Naive	2/6	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.02%
Naive	2/7	CASSQGYEQYF	TCRBV05-01	TCRBJ02-07	0.02%
Naive	2/8	CASSLTGGYEQYF	TCRBV14-01	TCRBJ02-07	0.02%
Naive	2/9	CTCSADEQYF	TCRBV01-01	TCRBJ02-07	0.02%
Naive	2/10	CASSLVNSGNTLYF	TCRBV16-01	TCRBJ01-03	0.02%
Naive	2/others				99.73%
Naive	3/1	CASGDAGEQYF	TCRBV13-02	TCRBJ02-07	0.06%
Naive	3/2	CASSPPTGGYEQYF	TCRBV12-01	TCRBJ02-07	0.03%
Naive	3/3	CTCSAGNSGNTLYF	TCRBV01-01	TCRBJ01-03	0.02%
Naive	3/4	CTCSAGTGGYEQYF	TCRBV01-01	TCRBJ02-07	0.02%
Naive	3/5	CASSSGTGGYEQYF	TCRBV03-01	TCRBJ02-07	0.02%
Naive	3/6	CASSPPTGGYEQYF	TCRBV05-01	TCRBJ02-07	0.02%
Naive	3/7	CASSPPTGGYEQYF	TCRBV04-01	TCRBJ02-07	0.02%
Naive	3/8	CASSLGYEQYF	TCRBV12-01	TCRBJ02-07	0.02%
Naive	3/9	CTCSADRANTEVFF	TCRBV01-01	TCRBJ01-01	0.02%
Naive	3/10	CASSDAGEYQYF	TCRBV13-01	TCRBJ02-07	0.02%
Naive	3/others				99.74%
Naive	4/1	CASGDAGEQYF	TCRBV13-02	TCRBJ02-07	0.09%
Naive	4/2	CASSLGYEQYF	TCRBV12-01	TCRBJ02-07	0.05%
Naive	4/3	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	4/4	CASGDGYEQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	4/5	CASGDEYQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	4/6	CASSQDNYEQYF	TCRBV05-01	TCRBJ02-07	0.03%
Naive	4/7	CASGDRLGGYEQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	4/8	CASSLGGYEQYF	TCRBV12-01	TCRBJ02-07	0.03%
Naive	4/9	CASSLANSGNTLYF	TCRBV16-01	TCRBJ01-03	0.03%
Naive	4/10	CASSPPTGGYEQYF	TCRBV12-01	TCRBJ02-07	0.02%
Naive	4/others				99.64%
Naive	5/1	CASGDAGEQYF	TCRBV13-02	TCRBJ02-07	0.08%
Naive	5/2	CTCSAVSYEQYF	TCRBV01-01	TCRBJ02-07	0.06%
Naive	5/3	CASSLTGGYEQYF	TCRBV12-01	TCRBJ02-07	0.04%
Naive	5/4	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.04%
Naive	5/5	CASSDNYEQYF	TCRBV13-01	TCRBJ02-07	0.04%
Naive	5/6	CASSSGTGGYEQYF	TCRBV04-01	TCRBJ02-07	0.04%
Naive	5/7	CASSIGTGGYEQYF	TCRBV19-01	TCRBJ02-07	0.04%
Naive	5/8	CASSDSYEQYF	TCRBV13-01	TCRBJ02-07	0.04%
Naive	5/9	CASSLEGYEQYF	TCRBV12-01	TCRBJ02-07	0.03%
Naive	5/10	CTCSADRGNTVFF	TCRBV01-01	TCRBJ01-01	0.03%
Naive	5/others				99.57%
Naive	6/1	CASSIGGEQYF	TCRBV19-01	TCRBJ02-07	0.03%
Naive	6/2	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.03%
Naive	6/3	CASSPPTGGYEQYF	TCRBV05-01	TCRBJ02-07	0.03%
Naive	6/4	CASSLVDSGNTLYF	TCRBV16-01	TCRBJ01-03	0.03%
Naive	6/5	CASSLGGYEQYF	TCRBV12-01	TCRBJ02-07	0.03%
Naive	6/6	CASSLGGNYAEQFF	TCRBV12-01	TCRBJ02-01	0.03%
Naive	6/7	CASGDAGEYQYF	TCRBV13-02	TCRBJ02-07	0.02%
Naive	6/8	CASSSGTGGYEQYF	TCRBV04-01	TCRBJ02-07	0.02%
Naive	6/9	CASGDAGGSAAETLYF	TCRBV13-02	TCRBJ02-03	0.02%
Naive	6/10	CASSLDNYEQYF	TCRBV12-02	TCRBJ02-07	0.02%
Naive	6/others				99.73%
M-SL9-specific	1/1	CASSEQPPYSAETLYF	TCRBV13-01	TCRBJ02-03	7.71%
M-SL9-specific	1/2	CASSYGDTYEQYF	TCRBV04-01	TCRBJ02-07	6.45%
M-SL9-specific	1/3	CASSLQGGTGLYF	TCRBV04-01	TCRBJ02-02	4.33%
M-SL9-specific	1/4	CASSWGNVYAEQFF	TCRBV04-01	TCRBJ02-01	4.17%
M-SL9-specific	1/5	CASSLGLGDYEQYF	TCRBV05-01	TCRBJ02-07	4.09%
M-SL9-specific	1/6	CASSLLEGEDEYQYF	TCRBV14-01	TCRBJ02-07	3.54%
M-SL9-specific	1/7	CASSLDPLGGYEQYF	TCRBV16-01	TCRBJ02-07	3.46%
M-SL9-specific	1/8	CASSPSPANTGQLYF	TCRBV14-01	TCRBJ02-02	3.38%
M-SL9-specific	1/9	CASSDIANODTQYF	TCRBV13-01	TCRBJ02-05	2.97%
M-SL9-specific	1/10	CASSLQNERLFF	TCRBV19-01	TCRBJ01-04	2.80%
M-SL9-specific	1/others				57.10%
M-SL9-specific	2/1	CGASPASYEQYF	TCRBV20-01	TCRBJ02-07	14.85%
M-SL9-specific	2/2	CASSLWGGYEQYF	TCRBV12-01	TCRBJ02-07	12.52%
M-SL9-specific	2/3	CASSPPTGGDNERLFF	TCRBV05-01	TCRBJ01-04	6.42%
M-SL9-specific	2/4	CASSLAGDQTYF	TCRBV12-02	TCRBJ02-05	6.12%
M-SL9-specific	2/5	CASSPPTGGYEQYF	TCRBV05-01	TCRBJ02-07	5.58%
M-SL9-specific	2/6	CASSPPTGTYAEQFF	TCRBV12-01	TCRBJ02-01	5.55%
M-SL9-specific	2/7	CASIGLGGPTQLYF	TCRBV13-03	TCRBJ02-02	5.18%
M-SL9-specific	2/8	CASSLQGNQDTQYF	TCRBV15-01	TCRBJ02-05	3.67%
M-SL9-specific	2/9	CASSLYRYSNPLYF	TCRBV24-01	TCRBJ01-06	3.24%
M-SL9-specific	2/10	CASSPVGNTLYF	TCRBV12-01	TCRBJ02-04	2.48%
M-SL9-specific	2/others				34.38%
M-SL9-specific	3/1	CASSLVFGDEYQYF	TCRBV12-01	TCRBJ02-07	6.53%
M-SL9-specific	3/2	CASSLQGGADTLYF	TCRBV12-02	TCRBJ01-03	6.01%
M-SL9-specific	3/3	CASSSGLGGYEQYF	TCRBV03-01	TCRBJ02-07	4.64%
M-SL9-specific	3/4	CASSFQRLGDEYQYF	TCRBV14-01	TCRBJ02-07	4.18%
M-SL9-specific	3/5	CASSPPLGGYEQYF	TCRBV03-01	TCRBJ02-07	3.63%
M-SL9-specific	3/6	CTCSASNTGQLYF	TCRBV01-01	TCRBJ02-02	3.17%
M-SL9-specific	3/7	CASNNDQTYF	TCRBV19-01	TCRBJ02-05	3.00%
M-SL9-specific	3/8	CASSLQGNSDYTF	TCRBV12-02	TCRBJ01-02	2.93%
M-SL9-specific	3/9	CGARGRNSDYTF	TCRBV20-01	TCRBJ01-02	2.63%

M-SL9-specific	3/10	CASSLALGDEQYF	TCRBV15-01	TCRBJ02-07	2.53%
M-SL9-specific	3/others				60.76%
M-SL9-specific	4/1	CASSLGLGGGEQYF	TCRBV12-01	TCRBJ02-07	11.87%
M-SL9-specific	4/2	CASSPQGDGEQYF	TCRBV14-01	TCRBJ02-07	4.12%
M-SL9-specific	4/3	CASSYQGDQYF	TCRBV16-01	TCRBJ02-05	3.26%
M-SL9-specific	4/4	CASGTGTGGYEQYF	TCRBV13-02	TCRBJ02-07	3.09%
M-SL9-specific	4/5	CASSLDPLGGGEQYF	TCRBV16-01	TCRBJ02-07	3.08%
M-SL9-specific	4/6	CASSLGLGEYEQYF	TCRBV26-01	TCRBJ02-07	2.92%
M-SL9-specific	4/7	CASSLAQTYEQYF	TCRBV12-02	TCRBJ02-07	2.78%
M-SL9-specific	4/8	CASSGGQNSDYTF	TCRBV13-02	TCRBJ01-02	2.64%
M-SL9-specific	4/9	CASSHWGVEQYF	TCRBV12-01	TCRBJ02-07	2.57%
M-SL9-specific	4/10	CATGDNYAEQFF	TCRBV05-01	TCRBJ02-01	2.55%
M-SL9-specific	4/others				61.12%
M-SL9-specific	5/1	CASSLMGGDSYTF	TCRBV12-02	TCRBJ01-02	15.10%
M-SL9-specific	5/2	CTCSGGLDNYAEQFF	TCRBV01-01	TCRBJ02-01	7.59%
M-SL9-specific	5/3	CASSLGLGIYEQYF	TCRBV04-01	TCRBJ02-07	6.71%
M-SL9-specific	5/4	CASSLAGEDTGLYF	TCRBV14-01	TCRBJ02-02	5.30%
M-SL9-specific	5/5	CASSGTGGNSDYTF	TCRBV13-03	TCRBJ01-02	5.10%
M-SL9-specific	5/6	CASSLGLGDYEQYF	TCRBV05-01	TCRBJ02-07	4.82%
M-SL9-specific	5/7	CASSPQGGSGTGEQYF	TCRBV26-01	TCRBJ02-07	4.54%
M-SL9-specific	5/8	CASSPTGGDNERLFF	TCRBV05-01	TCRBJ01-04	4.30%
M-SL9-specific	5/9	CASSLGQYQDTQYF	TCRBV12-02	TCRBJ02-05	3.79%
M-SL9-specific	5/10	CASSLDGRNTEVFF	TCRBV15-01	TCRBJ01-01	3.51%
M-SL9-specific	5/others				39.25%
M-SL9-specific	6/1	CASSLGGFSNERLFF	TCRBV16-01	TCRBJ01-04	10.43%
M-SL9-specific	6/2	CASSYFNSNERLFF	TCRBV04-01	TCRBJ01-04	5.46%
M-SL9-specific	6/3	CASSPQGDGEQYF	TCRBV16-01	TCRBJ02-07	3.50%
M-SL9-specific	6/4	CASSRQDQDTQYF	TCRBV15-01	TCRBJ02-05	2.75%
M-SL9-specific	6/5	CASSMLGGHAEQFF	TCRBV19-01	TCRBJ02-01	2.47%
M-SL9-specific	6/6	CASSLGGGDEQYF	TCRBV14-01	TCRBJ02-07	2.42%
M-SL9-specific	6/7	CASSPQGAGYEQYF	TCRBV12-02	TCRBJ02-07	2.31%
M-SL9-specific	6/8	CASSIGPQGSQDTQYF	TCRBV19-01	TCRBJ02-05	2.05%
M-SL9-specific	6/9	CASSLTGFSYEQYF	TCRBV12-02	TCRBJ02-07	1.82%
M-SL9-specific	6/10	CASSPEGLGYEQYF	TCRBV05-01	TCRBJ02-07	1.79%
M-SL9-specific	6/others				65.00%
NP366-specific	1/1	CASSGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	13.65%
NP366-specific	1/2	CASSLAKAETLYF	TCRBV16-01	TCRBJ02-03	12.13%
NP366-specific	1/3	CASSARTANTEVFF	TCRBV13-01	TCRBJ01-01	9.64%
NP366-specific	1/4	CASSQDRRNSYNSPLYF	TCRBV02-01	TCRBJ01-06	9.03%
NP366-specific	1/5	CASSQDLGGRYEQYF	TCRBV05-01	TCRBJ02-07	8.71%
NP366-specific	1/6	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	6.75%
NP366-specific	1/7	CASSQRGGNTGQLYF	TCRBV02-01	TCRBJ02-02	6.02%
NP366-specific	1/8	CTCSADRRNSYNSPLYF	TCRBV01-01	TCRBJ01-06	5.59%
NP366-specific	1/9	CASSDHRTEVFF	TCRBV13-01	TCRBJ01-01	3.81%
NP366-specific	1/10	CASSDESTEVEFF	TCRBV13-03	TCRBJ01-01	3.07%
NP366-specific	1/others				21.61%
NP366-specific	2/1	CASSLARDEQYF	TCRBV16-01	TCRBJ02-07	21.71%
NP366-specific	2/2	CASRDWGGAKAEQFF	TCRBV15-01	TCRBJ02-01	10.93%
NP366-specific	2/3	CASKGGGHTGQLYF	TCRBV13-01	TCRBJ02-02	6.32%
NP366-specific	2/4	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	6.17%
NP366-specific	2/5	CGARGDWGANAEQFF	TCRBV20-01	TCRBJ02-01	5.81%
NP366-specific	2/6	CASKGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	5.27%
NP366-specific	2/7	CASSHWGVEQYF	TCRBV12-01	TCRBJ02-07	5.23%
NP366-specific	2/8	CASSGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	4.04%
NP366-specific	2/9	CASSRGPSSYEQYF	TCRBV12-01	TCRBJ02-07	3.59%
NP366-specific	2/10	CASGDERTGGSQNTLYF	TCRBV13-02	TCRBJ02-04	3.08%
NP366-specific	2/others				27.87%
NP366-specific	3/1	CASSGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	20.73%
NP366-specific	3/2	CGARDGGGEQYF	TCRBV20-01	TCRBJ02-07	14.44%
NP366-specific	3/3	CASSQDRRNSYNSPLYF	TCRBV02-01	TCRBJ01-06	9.07%
NP366-specific	3/4	CASSQGLGGRGEQYF	TCRBV05-01	TCRBJ02-07	8.83%
NP366-specific	3/5	CASSDAANTEVFF	TCRBV13-01	TCRBJ01-01	7.28%
NP366-specific	3/6	CASSIMGGGAETLYF	TCRBV19-01	TCRBJ02-03	5.10%
NP366-specific	3/7	CASSQDLGGLYEQYF	TCRBV05-01	TCRBJ02-07	4.48%
NP366-specific	3/8	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	3.40%
NP366-specific	3/9	CASSPTASNTGQLYF	TCRBV12-01	TCRBJ02-02	3.11%
NP366-specific	3/10	CASRGGANTGQLYF	TCRBV13-01	TCRBJ02-02	2.38%
NP366-specific	3/others				21.18%
NP366-specific	4/1	CASSGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	18.22%
NP366-specific	4/2	CASSDRGRREQYF	TCRBV17-01	TCRBJ02-07	15.02%
NP366-specific	4/3	CASKGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	13.75%
NP366-specific	4/4	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	11.75%
NP366-specific	4/5	CASSQGLGGRGEQYF	TCRBV05-01	TCRBJ02-07	6.42%
NP366-specific	4/6	CASSLARDEQYF	TCRBV16-01	TCRBJ02-07	6.41%
NP366-specific	4/7	CASSQDLGGLYEQYF	TCRBV05-01	TCRBJ02-07	5.01%
NP366-specific	4/8	CASRGGANTGQLYF	TCRBV13-01	TCRBJ02-02	3.98%
NP366-specific	4/9	CAWSLRGDEQYF	TCRBV31-01	TCRBJ02-07	3.23%
NP366-specific	4/10	CGAREGYEQYF	TCRBV20-01	TCRBJ02-07	2.72%
NP366-specific	4/others				13.49%
NP366-specific	5/1	CASSQDRRNSYNSPLYF	TCRBV02-01	TCRBJ01-06	28.17%
NP366-specific	5/2	CGARDHRGTYLYF	TCRBV20-01	TCRBJ02-03	10.89%
NP366-specific	5/3	CTCSADLRNSYNSPLYF	TCRBV01-01	TCRBJ01-06	10.79%
NP366-specific	5/4	CASSGGGNTGQLYF	TCRBV13-01	TCRBJ02-02	10.66%
NP366-specific	5/5	CASSLQGRSPLYF	TCRBV29-01	TCRBJ01-06	8.28%
NP366-specific	5/6	CASSOELGGVYEQYF	TCRBV05-01	TCRBJ02-07	7.39%
NP366-specific	5/7	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	4.28%
NP366-specific	5/8	CTCSADFRNSYNSPLYF	TCRBV01-01	TCRBJ01-06	2.27%
NP366-specific	5/9	CASSPRYNOAPLF	TCRBV05-01	TCRBJ01-05	1.69%
NP366-specific	5/10	CTCSADRRNSYNSPLYF	TCRBV01-01	TCRBJ01-06	1.67%
NP366-specific	5/others				13.92%
NP366-specific	6/1	CTCSADLWGNAEQFF	TCRBV01-01	TCRBJ02-01	24.12%
NP366-specific	6/2	CASSQGPSSYEQYF	TCRBV12-01	TCRBJ02-07	20.94%
NP366-specific	6/3	CASSPDRRNSYNSPLYF	TCRBV02-01	TCRBJ01-06	19.90%
NP366-specific	6/4	CASSGGANTGQLYF	TCRBV13-01	TCRBJ02-02	7.38%
NP366-specific	6/5	CASGTGNGVAEQFF	TCRBV04-01	TCRBJ02-01	4.83%
NP366-specific	6/6	CASSQERLGGREAEQFF	TCRBV05-01	TCRBJ02-01	2.72%
NP366-specific	6/7	CASRGGANTGQLYF	TCRBV13-01	TCRBJ02-02	2.44%
NP366-specific	6/8	CTCSADLGGSSYEQYF	TCRBV01-01	TCRBJ02-07	1.94%
NP366-specific	6/9	CTCSAERRASNSPLYF	TCRBV01-01	TCRBJ01-06	1.74%
NP366-specific	6/10	CASSDGHKTEVFF	TCRBV13-03	TCRBJ01-01	1.28%
NP366-specific	6/others				12.72%