

1 27mer

1.1 27mer Selection Sets

Symbol	Set	# Peptides	HLA-I Coverage	HLA-II Coverage	Total Coverage	# B-cell Epitope Regions
⊗	CD4+/CD8+	4	95.1%	89.7%	85.3%	0
⊗ ^d	CD4+/CD8+ (H2 ^d ligands)	3	93.9%	88.5%	83.1%	0
⊗ ^b	CD4+/CD8+ (H2 ^b ligands)	4	92.6%	89.7%	83.0%	0
⊗ ^{bd}	CD4+/CD8+ (H2 ^b and H2 ^d ligands)	3	92.6%	88.5%	81.9%	0
○	CD4+	3	92.0%	89.7%	82.6%	0
○ ^d	CD4+ (H2 ^d ligands)	3	92.0%	89.7%	82.6%	0
○ ^b	CD4+ (H2 ^b ligands)	3	92.0%	89.7%	82.6%	0
○ ^{bd}	CD4+ (H2 ^b and H2 ^d ligands)	3	92.0%	89.7%	82.6%	0
*	CD8+	2	95.9%	69.9%	67.1%	0
* ^d	CD8+ (H2 ^d ligands)	2	95.9%	69.9%	67.1%	0
* ^b	CD8+ (H2 ^b ligands)	2	95.9%	69.9%	67.1%	0
* ^{bd}	CD8+ (H2 ^b and H2 ^d ligands)	2	95.9%	69.9%	67.1%	0
⊗	B-Cell/CD4+/CD8+	3	88.9%	62.7%	55.7%	3
⊖	B-Cell/CD4+	3	88.9%	62.7%	55.7%	3
⊖ ^d	B-Cell/CD4+ (H2 ^d ligands)	1	66.2%	39.9%	26.4%	1
⊖ ^b	B-Cell/CD4+ (H2 ^b ligands)	2	64.8%	39.4%	25.5%	2
⊗	B-Cell/CD8+	3	90.8%	57.7%	52.4%	3
⊗ ^d	B-Cell/CD8+ (H2 ^d ligands)	1	81.8%	38.4%	31.4%	1
⊗ ^b	B-Cell/CD8+ (H2 ^b ligands)	2	89.4%	46.5%	41.5%	2
⊗ ^{bd}	B-Cell/CD8+ (H2 ^b and H2 ^d ligands)	1	81.8%	38.4%	31.4%	1
□	B-Cell	3	81.8%	52.8%	43.2%	3

1.2 27mer Vaccine Peptides

	Sequence	Protein	Start	End	B-cell Epitope	HLA-I Coverage	HLA-II Coverage	H2 ^b I	H2 ^b II	H2 ^d I	H2 ^d II	Selection Sets
1	LLQFAYANRNRFLYIIKLIFLWLLWPV	M	34	60		89.0%	36.0%	+	+	+	+	* * ^b * ^d * ^{bd}
2	ATPSDFVRATATIPIQASLPFGWLIVG	ORF3a	23	49		39.0%	78.0%	+	+	-	+	○ ○ ^d ○ ^b ○ ^{bd}
3	DFVRATATIPIQASLPFGWLIVGVALL	ORF3a	27	53		65.0%	73.0%	+	+	-	+	⊗ ⊗ ^b
4	GLTVLPPLLTDemiaQYTSALLAGTIT	S	857	883		66.0%	73.0%	+	+	+	+	⊗ ⊗ ^d ⊗ ⊗ ^b ⊗ ^{bd}
5	RLQSLQTYVTQQLIRAAEIRASANLAA	S	1000	1026		54.0%	81.0%	-	+	+	+	○ ○ ^d ○ ^b ○ ^{bd}
6	HLDGEVITFDNLKTLLSLREVRTIKVF	orflab	1545	1571		74.0%	62.0%	+	-	+	+	* * ^b * ^d * ^{bd}
7	STFNVPMEKLKTLVATAEAELAKNVSL	orflab	2600	2626		69.0%	73.0%	-	+	-	+	⊗
8	IASEFSSLPSYAAFATAQEAYEQAVAN	orflab	3944	3970		48.0%	84.0%	+	+	+	+	⊗ ^d
9	SRLSFKELLVYAADPAMHAASGNLLLD	orflab	4756	4782		87.0%	80.0%	-	+	+	+	○ ○ ^d ○ ^b ○ ^{bd}
10	FAYTKRNVIPITITQMNLYAISAKNRA	orflab	4920	4946		86.0%	62.0%	+	+	+	+	⊗ ^b ⊗ ^{bd}
11	TLMIERFVSLAIDAYPLTKHPNQEYAD	orflab	5245	5271		81.0%	71.0%	+	+	+	+	⊗ ^b ⊗ ^{bd}
12	NYDLSVVNARLRRAKHVYIGDPAQLPA	orflab	5705	5731		89.0%	70.0%	-	+	+	+	⊗ ⊗ ^d
13	GNYNLYRLFRKSNLKPFERDISTEIIY	S	447	473	S ₄₅₆₋₄₇₃	82.0%	38.0%	+	-	+	-	⊗ ⊗ ^d ⊗ ⊗ ^b ⊗ ^{bd}
14	YLYRLFRKSNLKPFERDISTEIIYQAGS	S	451	477	S ₄₅₆₋₄₇₃	78.0%	46.0%	+	-	-	-	□ □ ⊗
15	FRKSNLKPFERDISTEIIYQAGSTPCNG	S	456	482	S ₄₅₆₋₄₇₃	46.0%	30.0%	-	+	-	-	□ ^b
16	KFLPFQQFGRDIADTTDAVRDPQTLEI	S	558	584	S ₅₈₀₋₅₈₃	0.0%	0.0%	-	-	-	-	□
17	PQTLEILDITPCSFGGVSIVITPGTNTS	S	579	605	S ₅₈₀₋₅₈₃	13.0%	21.0%	-	-	-	-	⊗ □ ⊗
18	IYKTPPIKDFGGFNFSQILPDPSKPSK	S	788	814	S ₈₀₉₋₈₁₂	35.0%	23.0%	-	+	-	-	□ □ ^b
19	PSKPSKRSFIEDLLFNKVTLDAGFIK	S	809	835	S ₈₀₉₋₈₁₂	66.0%	40.0%	+	-	-	+	⊗ ⊗ ^b □ □ ^d ⊗

2 21mer

2.1 21mer Selection Sets

Symbol	Set	# Peptides	HLA-I Coverage	HLA-II Coverage	Total Coverage	# B-cell Epitope Regions
⊗	CD4+/CD8+	4	94.1%	89.7%	84.5%	0
⊗ ^d	CD4+/CD8+ (H2 ^d ligands)	3	94.1%	88.5%	83.3%	0
⊗ ^b	CD4+/CD8+ (H2 ^b ligands)	4	95.1%	89.7%	85.3%	0
⊗ ^{bd}	CD4+/CD8+ (H2 ^b and H2 ^d ligands)	4	95.1%	88.5%	84.1%	0
○	CD4+	3	92.9%	89.7%	83.4%	0
○ ^d	CD4+ (H2 ^d ligands)	3	92.9%	89.7%	83.4%	0
○ ^b	CD4+ (H2 ^b ligands)	3	92.9%	89.7%	83.4%	0
○ ^{bd}	CD4+ (H2 ^b and H2 ^d ligands)	3	92.9%	89.7%	83.4%	0
*	CD8+	2	95.8%	36.2%	34.6%	0
* ^d	CD8+ (H2 ^d ligands)	2	94.7%	49.2%	46.6%	0
* ^b	CD8+ (H2 ^b ligands)	2	94.7%	49.2%	46.6%	0
* ^{bd}	CD8+ (H2 ^b and H2 ^d ligands)	2	94.7%	49.2%	46.6%	0
⊗	B-Cell/CD4+/CD8+	4	84.2%	62.7%	52.8%	3
⊖	B-Cell/CD4+	4	84.2%	62.7%	52.8%	3
⊖ ^b	B-Cell/CD4+ (H2 ^b ligands)	2	37.2%	39.4%	14.6%	2
⊗	B-Cell/CD8+	3	88.9%	22.6%	20.1%	3
⊗ ^d	B-Cell/CD8+ (H2 ^d ligands)	1	77.2%	38.4%	29.7%	1
⊗ ^b	B-Cell/CD8+ (H2 ^b ligands)	2	87.2%	22.6%	19.7%	2
⊗ ^{bd}	B-Cell/CD8+ (H2 ^b and H2 ^d ligands)	1	77.2%	38.4%	29.7%	1
□	B-Cell	3	78.0%	40.7%	31.8%	3

2.2 21mer Vaccine Peptides

	Sequence	Protein	Start	End	B-cell Epitope	HLA-I Coverage	HLA-II Coverage	H2 ^b I	H2 ^b II	H2 ^d I	H2 ^d II	Selection Sets
1	LLQFAYANRNRFlyIIKLIFL	M	34	54		89.0%	36.0%	+	+	+	+	* * ^b * ^d * ^{bd}
2	LSYFIASFRLFARTRSMWSFN	M	93	113		78.0%	46.0%	+	+	+	+	⊗ ^b ⊗ ^{bd}
3	SDFVRATATIPIQASLPFGWL	ORF3a	26	46		39.0%	78.0%	+	+	-	+	○ ○ ^d ○ ^b ○ ^{bd}
4	LSSNFGAISSVLNDILSRDLK	S	966	986		59.0%	62.0%	+	+	-	+	⊗ ^b
5	VTQQLIRAAEIRASANLAATK	S	1008	1028		30.0%	81.0%	-	+	-	+	○ ○ ^d ○ ^b ○ ^{bd}
6	TMDLFMRIFTIGTVTLKQGEI	S	1273	1293		82.0%	58.0%	-	-	+	+	⊗ ⊗ ^d
7	YVDNSSLTIKKPNELSRVLGL	orflab	2099	2119		84.0%	11.0%	-	-	-	-	*
8	TNVLEGSVAYESLRPDTRYVL	orflab	2936	2956		66.0%	64.0%	-	+	-	-	⊗
9	ASEFSSLP SYAAFATAQEAYE	orflab	3945	3965		48.0%	84.0%	+	+	+	+	⊗ ⊗ ^d ⊗ ^b ⊗ ^{bd}
10	SRLSFKELLVYAADPAMHAAS	orflab	4756	4776		87.0%	80.0%	-	+	-	+	○ ○ ^d ○ ^b ○ ^{bd}
11	RAMPNMLRIMASLVLARKHTT	orflab	5016	5036		90.0%	78.0%	+	-	+	+	⊗ ^d
12	TLMIERFVSLAIDAYPLTKHP	orflab	5245	5265		81.0%	71.0%	+	+	+	+	⊗ ^{bd}
13	PNQEYADVFLYLQYIRKLHD	orflab	5265	5285		92.0%	37.0%	+	-	+	-	* ^b * ^d * ^{bd}
14	ATEETFKLSYGIATVREVLSD	orflab	5464	5484		76.0%	69.0%	+	+	+	+	⊗ ^{bd}
15	NYNYLYRLFRKSNLKPFERDI	S	448	468	S ₄₅₆₋₄₇₃	77.0%	38.0%	+	-	+	-	⊗ ^d ⊗ ^{bd} □ ⊗
16	YRLFRKSNLKPFERDISTEIIY	S	453	473	S ₄₅₆₋₄₇₃	78.0%	23.0%	+	-	-	-	□ ⊗ ⊗ ^b □
17	KPFERDISTEIIYQAGSTPCNG	S	462	482	S ₄₅₆₋₄₇₃	20.0%	21.0%	-	+	-	-	□ ^b
18	QFGRDIADTTDAVRDPQTLEI	S	564	584	S ₅₈₀₋₅₈₃	0.0%	0.0%	-	-	-	-	□
19	PQTLEILDITPCSFGGVSVIT	S	579	599	S ₅₈₀₋₅₈₃	13.0%	0.0%	-	-	-	-	⊗
20	QTLEILDITPCSFGGVSVITP	S	580	600	S ₅₈₀₋₅₈₃	13.0%	21.0%	-	-	-	-	□ ⊗
21	GFNFSQILPDPSKPSKRSFIE	S	799	819	S ₈₀₉₋₈₁₂	21.0%	23.0%	-	+	-	-	□ □ □ ^b ⊗
22	PSKPSKRSFIEDLLFNKVTLA	S	809	829	S ₈₀₉₋₈₁₂	66.0%	0.0%	+	-	-	-	⊗ ⊗ ^b

3 15mer vaccine peptides

3.1 15mer Selection Sets

Symbol	Set	# Peptides	HLA-I Coverage	HLA-II Coverage	Total Coverage	# B-cell Epitope Regions
⊗	CD4+/CD8+	5	94.1%	89.7%	84.5%	0
⊗ ^d	CD4+/CD8+ (H2 ^d ligands)	5	91.2%	88.5%	80.7%	0
⊗ ^b	CD4+/CD8+ (H2 ^b ligands)	7	93.4%	89.7%	83.8%	0
⊗ ^{bd}	CD4+/CD8+ (H2 ^b and H2 ^d ligands)	4	92.3%	84.7%	78.1%	0
○	CD4+	4	46.4%	89.7%	41.7%	0
○ ^d	CD4+ (H2 ^d ligands)	4	46.4%	89.7%	41.7%	0
○ ^b	CD4+ (H2 ^b ligands)	4	46.4%	89.7%	41.7%	0
○ ^{bd}	CD4+ (H2 ^b and H2 ^d ligands)	4	46.4%	89.7%	41.7%	0
*	CD8+	2	94.3%	22.6%	21.3%	0
* ^d	CD8+ (H2 ^d ligands)	2	93.7%	22.6%	21.2%	0
* ^b	CD8+ (H2 ^b ligands)	2	94.7%	0.0%	0.0%	0
* ^{bd}	CD8+ (H2 ^b and H2 ^d ligands)	2	94.7%	0.0%	0.0%	0
⊗	B-Cell/CD4+/CD8+	4	77.2%	45.8%	35.3%	3
⊖	B-Cell/CD4+	5	77.2%	62.7%	48.4%	3
⊖ ^b	B-Cell/CD4+ (H2 ^b ligands)	2	0.0%	39.4%	0.0%	2
⊗	B-Cell/CD8+	6	84.2%	29.9%	25.2%	3
⊗ ^d	B-Cell/CD8+ (H2 ^d ligands)	1	77.2%	20.4%	15.8%	1
⊗ ^b	B-Cell/CD8+ (H2 ^b ligands)	2	72.5%	20.4%	14.8%	1
⊗ ^{bd}	B-Cell/CD8+ (H2 ^b and H2 ^d ligands)	1	77.2%	20.4%	15.8%	1
□	B-Cell	3	44.0%	11.9%	5.2%	3

3.2 15mer Vaccine Peptides

	Sequence	Protein	Start	End	B-cell Epitope	HLA-I Coverage	HLA-II Coverage	H2 ^b I	H2 ^b II	H2 ^d I	H2 ^d II	Selection Sets
1	LLQFAYANRNRFlyI	M	34	48		77.0%	36.0%	+	+	+	+	$\otimes^b \otimes^d \otimes^{bd}$
2	ANRNRFlyIiKLIFL	M	40	54		81.0%	0.0%	+	-	+	-	$*^b *^{bd}$
3	SFRLFARTRSMWSFN	M	99	113		73.0%	46.0%	+	+	-	+	\otimes^b
4	DFVRATATIPIQASL	ORF3a	27	41		14.0%	73.0%	+	+	-	+	$\circ \circ^b \circ^d \circ^{bd}$
5	GLEAPFLYLYALVYF	ORF3a	100	114		77.0%	0.0%	+	-	-	-	\otimes^b
6	PYNSVTSSIVITSGD	ORF3a	159	173		17.0%	61.0%	-	+	+	+	\otimes^d
7	IGINITRFQTLLALH	S	231	245		61.0%	62.0%	+	-	+	+	$\otimes^b \otimes^d$
8	YYVGYLQPRTFLLKY	S	265	279		88.0%	23.0%	-	+	+	-	$**^d$
9	MIAQYTSALLAGTIT	S	869	883		14.0%	73.0%	+	+	+	+	\otimes^{bd}
10	RAAEIRASANLAATK	S	1014	1028		30.0%	79.0%	-	+	-	+	$\circ \circ^b \circ^d \circ^{bd}$
11	SPLYAFASEAARVVR	orflab	531	545		24.0%	78.0%	-	+	-	+	$\circ \circ^b \circ^d \circ^{bd}$
12	INLVQMAPISAMVRM	orflab	2369	2383		65.0%	60.0%	+	+	+	+	$\otimes^b \otimes^d$
13	KTLVATAEAEELAKNV	orflab	2610	2624		40.0%	67.0%	-	+	-	+	\otimes^b
14	AAIFYLITPVHVMSK	orflab	2784	2798		80.0%	62.0%	+	+	+	+	\otimes^{bd}
15	IASEFSSLPSYAFA	orflab	3944	3958		48.0%	67.0%	+	+	+	+	\otimes^b
16	KELLVYAADPAMHAA	orflab	4761	4775		24.0%	80.0%	-	+	-	+	$\circ \circ^b \circ^d \circ^{bd}$
17	TLMIERFVSLAIDAY	orflab	5245	5259		72.0%	59.0%	+	-	+	+	\otimes^d
18	MIERFVSLAIDAYPL	orflab	5247	5261		26.0%	47.0%	+	+	-	+	\otimes^b
19	PNQEYADVFLYLQY	orflab	5265	5279		90.0%	0.0%	+	-	+	-	$*^d *^b *^{bd}$
20	FKLSYGIATVREVLS	orflab	5469	5483		61.0%	66.0%	+	+	+	+	$\otimes^b \otimes^{bd}$
21	LELAMDEFIERYKLE	orflab	6666	6680		72.0%	20.0%	-	-	-	-	\otimes^b
22	IQQKLALGGSVAIKI	orflab	6955	6969		33.0%	67.0%	+	+	-	+	\otimes^b
23	GGNYNYLYRLFRKSN	S	446	460	S ₄₅₆₋₄₇₃	37.0%	20.0%	+	-	+	-	\boxtimes
24	NYNYLYRLFRKSNLK	S	448	462	S ₄₅₆₋₄₇₃	77.0%	20.0%	+	-	+	-	$\boxtimes^d \boxtimes^{bd} \square \boxtimes$
25	YNYLYRLFRKSNLKP	S	449	463	S ₄₅₆₋₄₇₃	73.0%	20.0%	+	-	-	-	\boxtimes^b
26	YLYRLFRKSNLKPFE	S	451	465	S ₄₅₆₋₄₇₃	73.0%	20.0%	+	-	-	-	\boxtimes
27	YRLFRKSNLKPFERD	S	453	467	S ₄₅₆₋₄₇₃	73.0%	23.0%	+	-	-	-	$\square \boxtimes$
28	RLFRKSNLKPFERDI	S	454	468	S ₄₅₆₋₄₇₃	56.0%	0.0%	+	-	-	-	\boxtimes^b
29	FRKSNLKPFERDIST	S	456	470	S ₄₅₆₋₄₇₃	32.0%	0.0%	-	-	-	-	\boxtimes
30	KSNLKPFERDISTEI	S	458	472	S ₄₅₆₋₄₇₃	29.0%	0.0%	-	-	-	-	\square
31	LKPFERDISTEIYQA	S	461	475	S ₄₅₆₋₄₇₃	20.0%	12.0%	-	-	-	-	\boxtimes
32	ISTEIYQAGSTPCNG	S	468	482	S ₄₅₆₋₄₇₃	0.0%	21.0%	-	+	-	-	$\square \square^b$
33	ADTTDAVRDPQTLEI	S	570	584	S ₅₈₀₋₅₈₃	0.0%	0.0%	-	-	-	-	$\square \square \boxtimes$
34	PQTLEILDITPCSF	S	579	593	S ₅₈₀₋₅₈₃	13.0%	0.0%	-	-	-	-	\boxtimes
35	GFNFSQILPDPSKPS	S	799	813	S ₈₀₉₋₈₁₂	0.0%	23.0%	-	+	-	-	$\square \square^b$
36	FNFSQILPDPSKPSK	S	800	814	S ₈₀₉₋₈₁₂	21.0%	12.0%	-	-	-	-	$\square \boxtimes \boxtimes$