Supplemental table 1. List of optimal peptides used in the stimulation assays. The column *Insert* refers to whether (IN) or not (OUT) the peptide is included in the vaccine insert

Peptide #	Sequence	Name	Protein	HLA restriction	Insert
86	RIKQIINMW	RW9	Env	A32	IN
167	DPNPQEVVL	DL8	Env	B35	IN
202	AENLWVTVY	AY9	Env	B18	IN
282	KAYETEVHNVW	KW11	Env	B58	IN
21	SLLNATAIAV	SV10 conB	Env	A02	OUT
27	RIRQGLERA	RA9	Env	A02	OUT
49	RLRDLLLIVTR	RR11	Env	A03	OUT
75	IVNRVRQGY	IY9 conB	Env	A30	OUT
130	RQGLERALL	RLL9	Env	B08	OUT
136	ERYLKDQQL	EL9	Env	B14	OUT
175	TAVPWNASW	TW9	Env	B35	OUT
246	RAIEAQQHL	RL9	Env	Cw15	OUT
112	IPRRIRQGL	IL9	Env	B07	OUT
1	GSEELRSLY	GY9	Gag	A01	IN
22	SLYNTVATL	SL9	Gag	A02	IN
24	VLAEAMSQV	VV9	Gag	A02	IN
28	YVDRFYKTL	YL9	Gag	A02	IN
34	KIRLRPGGK	KK9	Gag	A03	IN
39	RLRPGGKKK	RK9	Gag	A03	IN
40	RLRPGGKKKY	RY10	Gag	A03	IN
64	ETINEEAAEW	EW10	Gag	A25	IN
70	LYNTVATLY	LY9	Gag	B44	IN
84	RSLYNTVATLY	RY11	Gag	A30	IN
93	QVSQNYPIV	QV9	Gag	A68	IN
108	GPGHKARVL	GL9	Gag	B07	IN
122	TPQDLNTML	TL9	Gag	Cw08	IN
125	EIYKRWII	EI8	Gag	B08	IN
135	DRFYKTLRA	DA9	Gag	B14	IN
138	GLNKIVRMY	GY9	Gag	B15	IN
163	IRLRPGGKK	IK9	Gag	B27	IN
164	KRWIILGLNK	KK10	Gag	B27	IN
171	PPIPVGEIY	NIY9 conB	Gag	B35	IN
174	PPIPVGDIY	PY9	Gag	B35	IN
180	WASRELERF	WF9	Gag	B35	IN
208	AEAMSQVTNS	AS10	Gag	B45	IN
215	RMYSPTSI	RI8	Gag	B52	IN
232	TSTLQEQIGW	TW10	Gag	B58	IN

244	VIPMFSAL	VL8	Gag	Cw01	IN
266	VQNLQGQMV	VV9	Gag	B13	IN
267	GQMREPRGSDI	GI11	Gag	B13	IN
10	FLGKIWPSHK	FK10 conB	Gag	A02	OUT
118	SPRTLNAWV	SV9	Gag	B07	IN
16	PLTFGWCFKL	PL10 conB	Nef	A02	OUT
44	AVDLSHFLK	ALK9	Nef	A11	IN
48	QVPLRPMTYK	QK10	Nef	A11	IN
53	PLRPMTYK	PK10	Nef	A11	IN
113	RPMTYKAAL	RL9	Nef	B07	IN
114	RPMTYKAAV	RV9 (RL9 conB)	Nef	B07	IN
120	TPQVPLRPM	TM9	Nef	B07	IN
121	RPQVPLRPM	TM9 conB	Nef	B07	IN
127	FLKEKGGL	FL8	Nef	B08	IN
133	RQDILDLWI	RI9	Nef	B13	IN
141	RMRRAEPAA	RA9	Nef	B15	IN
178	VPLRPMTY	VY8	Nef	B35	IN
252	KAAVDLSHFL	KL10	Nef	Cw08	IN
6	YFPDWQNYT	YT9	Nef	A01	OUT
15	PLTFGWCYKL	PL10	Nef	A02	OUT
159	YPLTFGWCY	YY9	Nef	B18	OUT
107	FPVRPQVPLR	FR10 conB	Nef	B07	IN
11	ILKEPVHGV	IV9	Pol	A02	IN
43	AIFQSSMTK	ATK9	Pol	A03	IN
47	QIYAGIKVK	QR9 conB	Pol	A11	IN
52	IYQEPFKNLK	IK10	Pol	A11	IN
77	KLNWASQIY	KIY9	Pol	A30	IN
79	KQNPDIVIYQY	KY11	Pol	A30	IN
85	PIQKETWETW	PW10	Pol	A32	IN
139	ILKEPVHGVY	IY10	Pol	B15	IN
168	HPDIVIYQY	HY9	Pol	B35	IN
169	NPDIVIYQY	NQY9	Pol	B35	IN
177	VPLDEDFRKY	VY10	Pol	B35	IN
205	EEMNLPGRW	EW9	Pol	B44	IN
214	TAFTIPSI	TI8	Pol	B51	IN
272	IRYQYNVL	IL8	Pol	B14	IN
275	NETPGIRYQY	NY10	Pol	B18	IN
285	NSPTRREL	NL8	Pol	Cw01	IN
76	KIQNFRVYY	KYY9	Pol	A30	OUT
143	FKRKGGIGGY	FGY10	Pol	B27	OUT
230	KAVRLIKFLY	KY10	Rev	B58	OUT

95	ITKGLGISYGR	IR11	Tat	A68	OUT
256	CCFHCQVC	CC8	Tat	Cw12	OUT
33	HMYISKKAK	HK9	Vif	A03	OUT
38	RIRTWKSLVK	RK10	Vif	A03	OUT
158	LADQLIHLHY	LY10	Vif	B18	OUT
7	AIIRILQQL	AL9	Vpr	A02	OUT
19	RILQQLLFI	RI9	Vpr	A02	OUT
94	DTWAGVEAIIR	DR11	Vpr	A68	OUT
160	VRHFPRIWL	VL9	Vpr	B27	OUT

Supplemental digital content 2

Stimulation assays and flow cytometry

PBMC ($1x10^6$) were incubated for 6 hours at 37ºC in 250 µL of R10 medium (RPMI 1640 containing L-glutamine, 10% of fetal calf serum and antibiotics) with each of the selected optimal peptides. Control conditions included stimulation with medium alone as negative control, and with PMA (50ng/mL) plus Ionomycin (1 µM) as positive control. All stimulations were done in the presence of CD28 and CD49d as co-stimulators. Both Brefeldin A and Monensin (at 1 µg/mL and 2 µM concentration respectively) were added during the second hour of incubation. Cells were harvested, washed with PBS and incubated at 4ºC during 30 minutes with Live/dead VioBlue. Then, cells were washed with PBS and stained with the following panel of monoclonal antibodies: CD3-PECF594, CD8-BV510, PD1-BV785 and Tim3-APC. Cells were incubated during 30 min at 4ºC and were washed with PBS (containing bovine serum albumin). Thereafter, cells were permeabilized by incubating in 250 µL of Cytofix/Cytoperm solution for 20 min at 4ºC and washed with Perm/Wash solution (BD Biosciences, San Jose, CA) for intracellular staining. Permeabilized cells were incubated for 30 min at 4ºC with the following panel of monoclonal antibodies: MIP1β-FITC, IFNγ-PECy7, TNFα-BV650, IL2-PercPCy5.5, GranzymeB-AF700 and Perforin-PE. Thereafter, cells were washed with Perm/wash solution and resuspended in PBS for sample acquisition. Acquisition was done using a LSR Fortessa flow Cytometer (BD Biosciences, San Jose, CA) able to evaluate 16

different parameters, and a minimum of 50.000 CD3+CD8+ cells were acquired. Data analysis was performed using FlowJo (Treestar, San Carlos, CA).

Supplemental Table 2: Monoclonal antibodies and fluorochromes used in the study

Antibody	Fluorochrome	Clone	Provider
CD8	BV510	RPA-T8	Biolegend
CD3	PE-CF594	UCHT1	BD Biosciences
MIP-1b	FITC	D21-1351	BD Biosciences
IFN-g	PE-Cy7	B27	BD Biosciences
TNF-a	BV650	MAb11	Biolegend
IL2	PerCP-Cy5.5	MQ1-17H12	Biolegend
Granzyme B	AF700	GB11	BD Biosciences
Perforin	PE	B-D48	Diaclone
PD-1	BV785	EH12.2H7	Biolegend
Tim-3	APC	F38-2E2	Miltenyi Biotec
-	LIVE/DEAD Violet		Molecular Probes