SUPPLEMENTARY MATERIALS

Members of the Cohort of Rapid Progressors (CoRP) study group:

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Fig. S1 Flow diagram showing the selection criteria and a description of the RP and SP cohorts. Subjects were recruited from the Spanish and Swiss seroconvertor (SC) cohorts based on available documented seroconversion in a window of <1 year between the first negative and the first positive sample. The main clinical inclusion criterion from the rapid progressors cohort (CoRP) was CD4+ T-cell counts <350 (cells/μl) within the first 3 years after documented seroconversion. Patients who did not meet the inclusion criteria for rapid progression or HIV-1 control (CD4+ T-cell counts >350 cells/μl for more than 10 years or viral load below 2000 copies/ml in the absence of treatment) were included in the standard progressors cohort (CoSP). Patients were systematically selected based on clinical data and sample availability. Each group (SP and RP) comprised 46 patients.

Cryopreserved PBMCs and plasma samples were available early after HIV-1 seroconversion at baseline (BL) and a median of 1.5 years after initial sampling (postbaseline, P). All functional analyses were carried out in BL samples, with the exception of CTL or CD8+ T-cell responses and neutralizing activity, which were also measured in P samples. Cryopreserved PBMCs were prioritized for HLA, tropism, and RC analyses. Samples were randomly distributed across experiments (tropism, RC, HLA, CTL, plasma neutralization, and virus neutralization). *The number of plasma samples available for neutralization was reduced in RP owing to sample dilution in vacutainer CPT cell preparation tubes.

Figure.S1

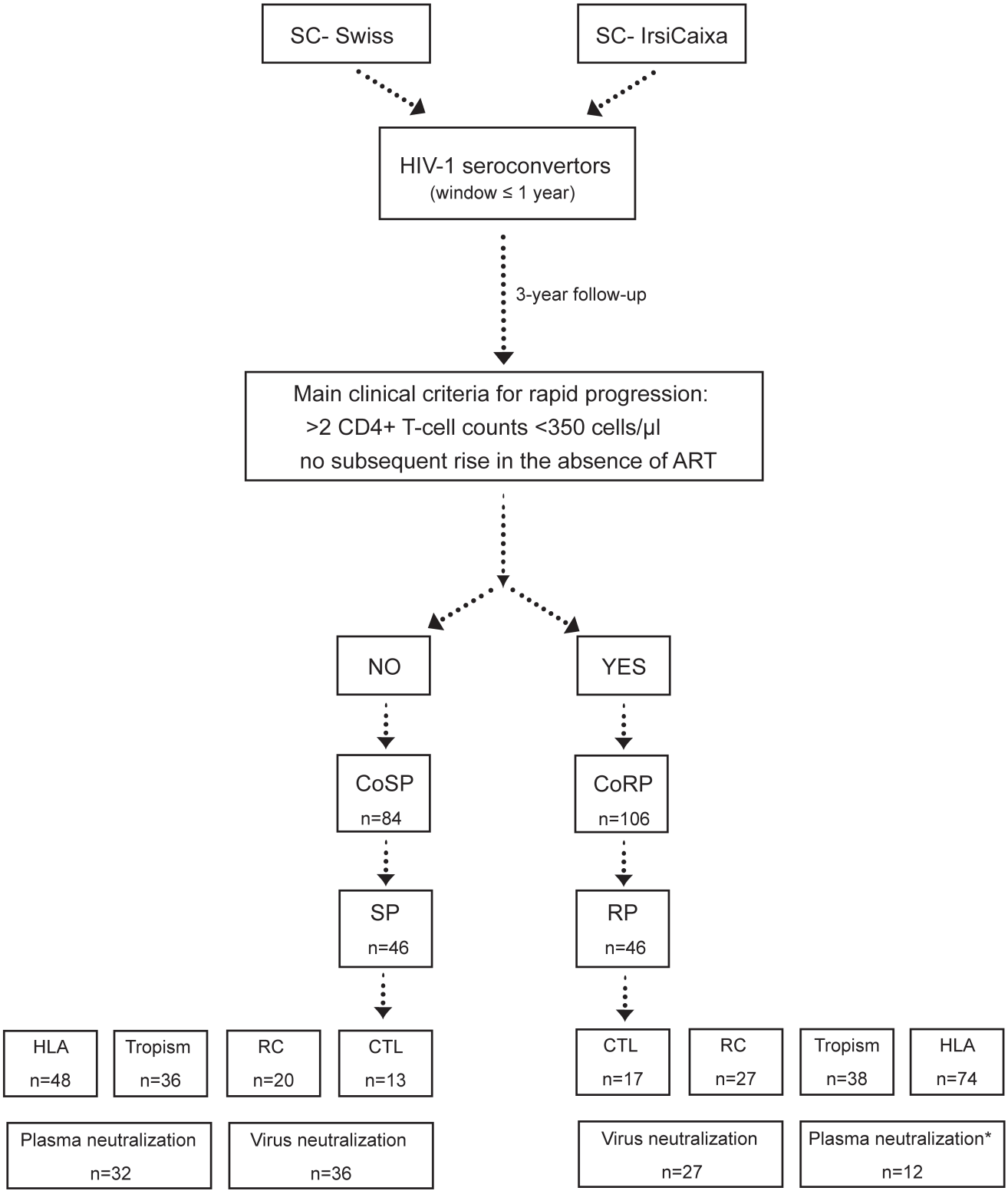
SC- Swiss
SC- IrsiCaixa
HIV-1 seroconvertors
(window ≤ 1 year)
3-year follow-up
Main clinical criteria for rapid progression:
>2 CD4+ T-cell counts <350 cells/µl
no subsequent rise in the absence of ART
NO
YES
CoSP
n=84
CoRP
n=106
SP
n=46
RP
n=46
HLA
n=48
Tropism
n=36
RC
n=20
CTL
n=13
CTL
n=17
RC
n=27
Tropism
n=38
HLA
n=74
Plasma neutralization
n=32
Virus neutralization
n=36
Virus neutralization
n=27
Plasma neutralization*
n=12

Table S1. Clinical parameters of the study subgroups selected for the assessment of HIV-1 specific CD8+ T-cell responses

Subjects	Sample for ELIspot [b]	VL[a] (HIV_{RNA} copies/ml)	CD4 count[a] (cells/μl)	HLA-I molecules A	B	C
RP46	P	69,000	190	A*33:01/34:02	B*08:01/38:01	Cw*07:01/12:03
RP47	BL, P	25,000	375	A*29:02/11:01	B*44:03/35:01	Cw*04:01/16:01
RP48	BL, P	110,000	59	A*02:01/68:01	B*35:03/44:02	Cw*03:04/05:01
RP51	BL, P	370	473	A*11:01/30:02	B*18:01/44:01	Cw*03:04/05:01
RP52	BL, P	na	627	A*01:01/02:01	B*44:03/58:01	Cw*04:01/07:01
RP53	BL, P	320,000	181	A*24:02/68:02	B*15:03/40:02	Cw*02:10/03:04
RP54	P	<50	725	A*02:01/02:17	B*15:40/35:02	Cw*03:03/04:01
RP55	P	<50	419	A*01:01/24:02	B*07:02/08:01	Cw*07:01/07:02
RP58	BL, P	27,000	576	A*02:01/24:02	B*44:02/44:03	Cw*05:01/16:02
RP60	BL	<50	535	A*02:01/02:01	B*44:02/44:02	Cw*05:01/14:02
RP61	BL, P	<50	673	A*01:01/2902	B*44:03/58:01	Cw*03:02/16:01
RP62	BL, P	3300	339	A*02:01/33:01	B*14:02/15:01	Cw*03:03/08:02
RP69	P	<50	565	A*29:02/29:02	B*44:03/35:03	Cw*04:01/16:01
RP74	P	2,000,000	1	A*02:01/03:01	B*07:02/18:01	Cw*07:02/12:03
RP75	na	29,400	108	A*02:01/11:01	B*35:03/40:01	Cw*03:04/04:01
RP76	na	na	na	A*24:02/33:01	B*08:01/14:02	Cw*07:01/08:02
RP77	na	40,000	32	A*30:01/30:02	B*18:01/50:02	Cw*04:01/05:01
SP1	BL, P	8,800	806	A*01:01/24:02	B*14:02/51:08	Cw*16:02/16:02
SP2	P	5,100	516	A*01:01/24:02	B*18:01/57:01	Cw*05:01/07:01
SP3	BL	801	na	A*02:01/29:02	B*27:05/44:02	Cw*02:02/05:01
SP6	BL, P	2,900,000	244	A*24:02/32:01	B*49:01/51:01	Cw*02:02/07:01
SP7	BL, P	280,000	420	A*11:01/24:02	B*35:01/35:02	Cw*04:01/04:01
SP8	BL	160,000	660	A*24:02/30:02	B*18:01/51:01	Cw*05:01/15:02
SP12	BL	<50	1,198	A*01:01/29:02	B*44:03/57:01	Cw*07:01/16:01
SP14	BL, P	8,700	731	A*02:01/30:02	B*18:01/27:05	Cw*01:02/05:01
SP15	P	160,000	422	A*31:01/02:01	B*08:01/18:01	Cw*07:01/12:03
SP17	na	39,000	979	A*02:01/02:01	B*44:02/44:02	Cw*05:01/14:02
SP18	BL, P	690	798	A*01:01/23:01	B*27:05/51:01	Cw*02:02/02:02
SP19	na	7,000	1,099	A*26:01/29:02	B*14:01/44:03	Cw*08:02/16:01
SP20	BL, P	34,000	1,009	A*11:01/25:01	B*15:01/55:01	Cw*03:03/03:03

[a] Viral load (VL) and CD4 values corresponding to baseline samples; BL , Baseline sample; P, Postbaseline sample, na, not available

Table S2. Standard panel of HIV-1 reference strains to measure neutralizing activity

Virus panel	HIV stage	Subtype	Level of neutralization Sensitivity to subtype B HIV+ plasma	bNAbs Sensitivity	Sensitivity group
94UG103	Chronic	A	Moderately resistant	b12, 4E10	Moderate
92BR020	Chronic	B	Moderately resistant	b12, 2G12	Moderate
93IN905	Chronic	C	Moderately resistant	b12, 4E10	Moderate
MGRM -C-026	Chronic	C	Resistant	b12, 4E10	Resistant
92TH021	Chronic	CRF01-AE	Moderately resistant	b12, 2F5, 4E10	Moderate
MGRM-SC-B-006	Acute	B	Resistant	b12, 2G12, 4E10, 2F5	Resistant
MGRM-D-009	Chronic	D	Moderately sensitive	4E10, 2F5	Moderate
MGRM- AG -002	Chronic	CRF02-AG	Resistant	4.00E+10	Resistant
1196	Early	B	Sensitive	b12, 2G12, 4E10, 2F5	Sensitive
SF162	Control	B	Very sensitive	b12, 2G12, 4E10, 2F5	Sensitive
JRCSF	Control R5	B	Very sensitive	b12, 2G12, 4E10, 2F5	Sensitive
NL4-3	Control X4	B	Very sensitive	b12, 2G12, 4E10, 2F5	Sensitive
aMLV	Negative	---	Resistant	---	Resistant

Table S3. Heterologous neutralization against a panel of standard viruses

		Plasma	94UG103	92BR020	93IN905	MGRM-C-026	92TH021	MGRM-SCB-006	MGRM-D-009	MGRM-AG-002	1196	SF162	JRCSF	NL43	aMLV
RAPID PROGRESSORS (RP)	BASELINE	49	57	59	57	107	104	(-)	(-)	(-)	67	798	32	37	(-)
		58	61	35	44	54	128	23	56	44	25	43	35	(-)	(-)
		59	95	73	87	82	118	(-)	99	(-)	138	1811	(-)	204	(-)
		62	52	49	73	44	92	53	126	42	85	5154	34	214	(-)
		44	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1695	(-)	182	(-)
		47	(-)	195	138	132	149	(-)	132	(-)	137	17619	120	668	(-)
		52	(-)	(-)	58	(-)	44	(-)	(-)	(-)	(-)	935	(-)	75	(-)
		53	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	257	(-)	(-)	(-)
		75	(-)	(-)	(-)	(-)	36	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
		65	(-)	(-)	101	116	156	85	155	(-)	120	4119	(-)	210	(-)
		76	46	25	25	38	120	27	(-)	28	(-)	70	(-)	(-)	(-)
		48	45	47	64	52	69	(-)	35	(-)	(-)	1436	48	689	(-)
	POST	45	90	121	163	154	136	(-)	90	111	135	5150	106	517	(-)
		47	(-)	106	124	(-)	(-)	(-)	96	(-)	(-)	13698	(-)	448	(-)
		49	33	39	46	54	56	28	26	29	52	394	31	23	(-)
		53	(-)	(-)	95	(-)	(-)	(-)	(-)	(-)	(-)	398	(-)	175	(-)
		44	(-)	80	78	66	(-)	(-)	(-)	(-)	74	6017	(-)	137	(-)
		47	(-)	66	55	55	46	(-)	64	(-)	59	10606	44	408	(-)
		52	(-)	(-)	(-)	(-)	79	(-)	(-)	(-)	(-)	811	(-)	(-)	(-)
		58	87	71	112	103	179	81	171	76	171	2253	84	805	(-)
STANDARD PROGRESSORS (SP)	BASELINE	CM9	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
		CM53	(-)	186	66	63	52	(-)	69	(-)	98	1267	74	305	(-)
		CM2	273	506	617	288	170	98	326	426	355	33764	152	2048	(-)
		CM41	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	678	(-)	56	(-)
		CM10	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	801	(-)	(-)	(-)
		CM11	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	439	(-)	52	(-)
		CM39	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	482	(-)	112	(-)
		CM12	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	92	(-)	(-)	(-)
		CM43	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	252	(-)	(-)	(-)
		CM44	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
		CM48	41	39	53	90	57	26	39	(-)	35	218	(-)	81	(-)
		CM19	37	40	59	83	49	(-)	39	28	64	528	(-)	349	(-)
		CM54	(-)	(-)	(-)	77	42	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
		CM49	(-)	(-)	(-)	69	31	(-)	(-)	30	(-)	(-)	(-)	(-)	(-)
		CM21	(-)	(-)	(-)	92	(-)	(-)	(-)	(-)	(-)	142	(-)	61	(-)
		CM50	193	139	194	(-)	194	(-)	136	(-)	124	7504	(-)	972	(-)
		CM23	126	107	255	170	104	(-)	93	62	127	5045	68	330	(-)
		CM51	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
		CM52	76	(-)	72	143	107	(-)	67	(-)	62	403	(-)	(-)	(-)
		CM25	105	(-)	124	107	85	(-)	107	(-)	**60**	1540	(-)	331	(-)
		CM59	48	56	128	64	113	(-)	97	(-)	95	6775	(-)	661	(-)
		CM26	(-)	(-)	(-)	(-)	84	(-)	(-)	(-)	**21**	73	(-)	(-)	(-)
		CM61	71	126	92	69	86	(-)	102	(-)	94	2192	77	120	(-)
		CM29	77	105	72	(-)	88	(-)	(-)	(-)	100	1076	(-)	100	(-)
		CM35	46	75	75	54	45	(-)	227	(-)	58	7622	(-)	923	(-)
		CM64	83	(-)	(-)	111	(-)	(-)	(-)	(-)	(-)	81	(-)	(-)	(-)
		CM37	(-)	(-)	96	(-)	(-)	(-)	(-)	(-)	(-)	1046	(-)	372	(-)
		CM66	73	122	235	198	(-)	(-)	74	(-)	191	5412	79	1107	(-)
		CM67	(-)	(-)	121	122	142	(-)	116	(-)	(-)	738	(-)	139	(-)
		CM68	(-)	(-)	153	(-)	(-)	(-)	162	(-)	(-)	811	(-)	244	(-)
		CM69	85	(-)	209	251	241	(-)	76	(-)	113	1308	(-)	208	(-)
		CM1	47	194	(-)	172	81	(-)	53	(-)	188	53571	54	115	(-)
	POST	CM17	(-)	119	251	(-)	40	53	46	**N/A**	58	18895	39	128	(-)
		CM9	33	78	38	49	55	(-)	34	23	75	2260	37	283	(-)
		CM53	44	192	76	67	77	(-)	48	(-)	140	1943	59	361	(-)
		CM66	102	143	208	448	(-)	(-)	60	(-)	184	5234	232	1835	(-)
		CM68	30	51	43	42	23	(-)	127	24	74	2395	(-)	250	(-)
		CM1	63	582	96	89	97	(-)	62	(-)	236	83576	87	221	(-)
		CM11	60	101	54	(-)	(-)	(-)	(-)	(-)	115	3346	81	113	(-)
		CM39	35	44	59	(-)	38	(-)	69	83	56	3066	39	646	(-)
		CM12	34	(-)	42	(-)	(-)	(-)	113	(-)	54	2036	(-)	396	(-)
		CM41	(-)	85	63	(-)	(-)	(-)	70	(-)	75	1390	(-)	226	(-)
		CM43	(-)	89	101	86	(-)	(-)	86	(-)	(-)	1077	(-)	334	(-)
		CM44	(-)	82	87	(-)	59	(-)	79	**N/A**	61	25440	(-)	181	(-)
		CM45	47	56	69	46	54	(-)	67	(-)	93	2965	(-)	295	(-)
		CM48	92	120	306	128	92	53	249	66	227	4529	67	730	(-)
		CM19	88	149	99	107	93	32	145	45	355	14726	53	2882	(-)
		CM54	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	353	(-)	119	(-)
		CM21	(-)	(-)	179	124	(-)	(-)	157	(-)	(-)	1207	(-)	420	(-)
		CM23	143	102	244	275	132	45	157	96	128	5499	109	316	(-)
		CM51	61	86	91	81	79	(-)	89	66	117	2560	(-)	331	(-)
		CM52	54	79	64	53	71	(-)	54	36	108	2347	(-)	320	(-)
		CM25	73	76	188	106	89	(-)	211	(-)	125	8312	112	1452	(-)
		CM59	73	93	393	104	178	(-)	269	(-)	153	23261	(-)	1153	(-)
		CM26	263	112	189	124	143	355	226	(-)	183	9950	131	5592	(-)
		CM35	53	80	94	(-)	(-)	(-)	61	(-)	109	14327	(-)	1209	(-)
		CM36	77	(-)	97	(-)	(-)	(-)	(-)	(-)	(-)	1795	(-)	89	(-)
		CM37	(-)	(-)	210	264	(-)	(-)	(-)	(-)	101	2002	(-)	298	(-)
		CM67	(-)	(-)	131	(-)	(-)	(-)	197	(-)	144	9931	(-)	470	(-)
		CM69	77	73	260	188	263	71	94	46	130	1630	72	171	(-)

IC50 (1/dilfn)	<20	20-100	100-250	250-500	>500
Virus group	Sensitive	Moderate	Resistant		

Table S4. HLA Class I phenotype frequency and allelic distribution in the RP and SP study Groups

HLA-A alleles[a]	% RP (n=74)	% SP (n =48)	p-value	q-value
A*02:01	59.5	39.6	0.041	0.543
A*03:01	23.0	18.8	0.654	0.938
A*24:02	21.6	18.8	0.819	0.956
A*01:01	18.9	18.8	1.000	1.000
A*68:01	9.50	4.20	0.480	0.938
A*11:01	6.80	18.8	0.077	0.543
A*31:01	6.80	2.10	0.401	0.938
A*33:01	6.80	4.20	0.702	0.938
A*29:02	6.80	8.30	0.737	0.938
A*68:02	4.10	4.20	1.000	1.000
A*02:05	4.10	6.30	0.678	0.938
A*30:02	2.70	4.20	0.645	0.938
A*32:01	2.70	6.30	0.380	0.938
A*26:01	1.40	8.30	0.077	0.543

HLA-B alleles[a]	% RP (n =74)	% SP (n =48)	p-value	q-value
B*07:02	21.6	8.30	0.078	0.344
B*44:02	16.2	8.30	0.276	0.558
B*08:01	14.9	4.20	0.075	0.344
B*51:01	14.9	12.5	0.794	0.919
B*44:03	13.5	20.8	0.322	0.558
B*40:01	12.2	6.30	0.361	0.558
B*35:01	10.8	8.30	0.762	0.919
B*18:01	9.50	16.7	0.267	0.558
B*35:03	8.10	4.20	0.478	0.657
B*38:01	6.80	0.00	0.155	0.488
B*58:01	5.40	0.00	0.153	0.488
B*14:02	5.40	8.30	0.710	0.919
B*35:02	5.40	4.20	1.000	1.000
B*40:02	4.10	0.00	0.278	0.558
B*50:01	4.10	4.20	1.000	1.000
B*49:01	2.70	6.30	0.380	0.558
B*13:02	2.70	2.10	1.000	1.000
B*52:01	1.40	6.30	0.298	0.558
B*27:05	1.40	8.30	0.077	0.344
B*14:01	0.00	6.30	0.058	0.344
B*57:01	0.00	8.30	0.022	0.344

[a] Only alleles with a phenotypic frequency in the overall population >3% are represented in the table.