

**Supplementary File 6. Neutrality, HWE and LD Statistics**

TABLE S1. Slatkin's Implementation of Ewens-Watterson Homozygosity Test of Neutrality (2 to 8-digit)

<i>2-digit HLA</i>						
Locus	k	F obs	F exp	Variance in F	Fnd	p
A	21	0.1272	0.2882	0.0143	-1.3469	0.0088*
B	41	0.0787	0.1590	0.0038	-1.3017	0.0107*
C	16	0.1251	0.3172	0.0163	-1.5069	0.0024*
DRB1	14	0.1163	0.3909	0.0248	-1.7438	0.0000****
DQB1	5	0.2726	0.6175	0.0389	-1.7495	0.0080*
DPB1	34	0.3476	0.1309	0.0021	4.7175	0.9971**
<i>8-digit HLA</i>						
Locus	k	F obs	F exp	Variance in F	Fnd	p
A	31	0.0994	0.0834	0.0005	0.7155	0.8240
B	50	0.0342	0.0429	0.0001	-1.0684	0.0776
C	35	0.0470	0.0711	0.0003	-1.3540	0.0101*
DRB1	38	0.0407	0.0634	0.0002	-1.5381	0.0037**
DQB1	30	0.0668	0.0870	0.0006	-0.8498	0.1544
DPB1	18	0.0964	0.1032	0.0005	-0.2930	0.4786

*k*: distinct alleles, *F obs*: Observed F, *F exp*: Expected F, *Fnd*: Normalized deviate of F, *p*: p-value of F  
 \* = significant at the 5% level, \*\* = significant at the 1% level, \*\*\* = significant at the 0.1% level, \*\*\*\* = significant at the 0.01% level, \*\*\*\*\* = significant at the 0.001% level

TABLE S2. Hardy-Weinberg Equilibrium (HWE) Proportion

Locus	Obs Het	Exp Het	Chi-square	p-HWE
A	5161	5323.93	4.99	0.0256*
B	5494	5619.85	2.82	0.0932
C	1524	1610.71	4.67	0.0307*
DRB1	5286	5390.72	2.03	0.1538
DQB1	420	447.33	1.67	0.1963
DPB1	362	356.23	0.09	0.7599

\* = significant at the 5% level, *Obs Het*: observed heterozygotes, *Exp Het*: expected heterozygotes

TABLE S3. Pairwise Linkage Disequilibrium (LD) Estimates for 2-digit HLA

Locus pair	D	D'	Wn	ln(L_1)	ln(L_0)	p-value
A:C	0.00393	0.24830	0.20483	-14535.00	-15026.63	0.0000*
A:B	†	†	†			-
A:DRB1	†	†	†			-
A:DQB1	0.00410	0.13604	0.16230	-3879.63	-3914.66	0.3551
A:DPB1	0.00478	0.24323	0.36003	-3567.63	-3749.76	0.0000*
C:B	0.01374	0.80208	0.62197	-12673.63	-16874.77	0.0000*
C:DRB1	0.00560	0.28991	0.22537	-14308.37	-14851.76	0.0000*
C:DQB1	0.01054	0.25576	0.26288	-2884.24	-2960.54	0.0000*
C:DPB1	0.00541	0.24000	0.26441	-2556.56	-2684.59	0.0010*
B:DRB1	†	†	†			-
B:DQB1	0.00740	0.33175	0.38395	-4332.29	-4536.50	0.0000*
B:DPB1	0.00450	0.31431	0.22853	-4055.24	-4312.81	0.0000*
DRB1:DQB1	0.03798	0.87434	0.81698	-2862.07	-3904.14	0.0000*
DRB1:DPB1	0.00810	0.27525	0.24694	-3563.36	-3746.42	0.0000*
DQB1:DPB1	0.00618	0.16659	0.28616	-2725.03	-2805.57	0.0000*

†no data after filtering in Pypop., Loglikelihood under linkage equilibrium [ln(L\_0)], Loglikelihood obtained via the EM algorithm [ln(L\_1)], D', Hedrick's statistic (Hedrick, 1987); Wn, Cramer's V statistic (Cramér, 1946) for global LD; \*significant (p < 0.05)

TABLE S4. Pairwise Linkage Disequilibrium (LD) Estimates for 8-digit HLA

Locus	D	D'	Wn	ln(L_1)	ln(L_0)	p-value
A:B	0.00429	0.86782	0.69161	-603.75	-857.64	0.0000*
A:C	0.00559	0.82243	0.58284	-587.82	-804.36	0.0000*
A:DRB1	0.00483	0.82150	0.61487	-603.33	-821.33	0.0000*
A:DQB1	0.00606	0.74533	0.54245	-582.80	-761.59	0.0020*
A:DPB1	0.01305	0.77319	0.73759	-138.67	-191.82	0.3303
B:C	0.00295	0.96534	0.81356	-565.50	-935.77	0.0000*
B:DRB1	0.00227	0.92542	0.68227	-623.54	-952.74	0.0000*
B:DQB1	0.00361	0.91295	0.71280	-605.43	-893.00	0.0000*
B:DPB1	0.00696	0.94193	0.81693	-150.47	-235.72	0.0450*
C:DRB1	0.00298	0.88465	0.59217	-623.22	-899.45	0.0000*
C:DQB1	0.00438	0.85110	0.56624	-595.39	-839.71	0.0000*
C:DPB1	0.00947	0.90469	0.74751	-145.79	-220.22	0.0641
DRB1:DQB1	0.00498	0.96140	0.78358	-522.25	-856.68	0.0000*
DRB1:DPB1	0.00969	0.93367	0.71229	-142.83	-219.59	0.0080*
DQB1:DPB1	0.01084	0.89533	0.63081	-142.49	-208.15	0.1151

Loglikelihood under linkage equilibrium [ln(L\_0)], Loglikelihood obtained via the EM algorithm [ln(L\_1)], D', Hedrick's statistic (Hedrick, 1987); Wn, Cramer's V statistic (Cramér, 1946) for global LD; \*significant (p < 0.05)