Supplement 1- HLA typing and mismatches for all patient- donor pairs

Recipient						
1	A*02:01	A*02:01	B*07:02	B*40:01	C*03:04	C*07:02
2	A*02:01	A*03:01	B*40:01	B*44:02	C*03:04	C*05:01
3	A*01:01	A*02:01	B*35:03	B*51:01	C*04:01	C*12:03
4	A*25:01	A*32:01	B*18:01	B*44:05	C*02:02	C*12:03
5	A*01:01	A*03:01	B*07:02	B*15:01	C*07:01	C*07:02
6	A*01:01	A*02:01	B*07:02	B*08:01	C*07:01	C*07:02
7	A*02:01	A*02:01	B*18:01	B*49:01	C*07:01	C*07:01
8	A*01:01	A*11:01	B*08:01	B*52:01	C*07:01	C*12:02
9	A*24:02	A*24:02	B*07:02	B*57:01	C*06:02	C*07:02
10	A*01:01	A*24:02	B*08:01	B*15:01	C*03:03	C*07:01
11	A*02:01	A*26:01	B*07:02	B*50:01	C*06:02	C*07:02
12	A*02:01	A*11:01	B*27:05	B*27:05	C*02:02	C*02:02

Donor						
1	A*01:01	A*31:01	B*07:02	B*37:01	C*06:02	C*07:02
2	A*01:01	A*02:01	B*18:01	B*44:02	C*05:01	C*07:01
3	A*02:01	A*33:03	B*14:02	B*44:02	C*05:01	C*08:02
4	A*24:02	A*29:02	B*15:07	B*44:03	C*03:03	C*16:01
5	A*02:01	A*24:02	B*15:01	B*55:01	C*01:02	C*03:03
6	A*02:05	A*32:01	B*18:01	B*58:01	C*07:18	C*12:03
7	A*01:01	A*03:01	B*37:01	B*44:03	C*04:01	C*06:02
8	A*03:01	A*32:01	B*07:02	B*15:17	C*07:01	C*07:02
9	A*01:01	A*01:01	B*07:02	B*08:01	C*07:01	C*07:02
10	A*24:02	A*32:01	B*18:01	B*35:03	C*04:01	C*12:03
11	A*02:01	A*03:01	B*40:01	B*40:01	C*03:04	C*03:04
12	A*02:01	A*11:01	B*07:02	B*27:05	C*02:02	C*07:02

Recipient						
1	A*03:01	A*26:01	B*07:02	B*27:05	C*02:02	C*07:02
2	A*25:01	A*32:01	B*18:01	B*55:01	C*01:02	C*12:03
3	A*32:01	A*33:01	B*14:02	B*57:01	C*06:02	C*08:02
4	A*24:02	A*24:02	B*07:02	B*35:01	C*04:01	C*07:02
5	A*01:01	A*02:01	B*08:01	B*38:01	C*07:01	C*12:03
6	A*24:02	A*24:02	B*07:02	B*27:02	C*02:02	C*12:03
7	A*25:01	A*25:01	B*18:01	B*18:01	C*12:03	C*12:03
8	A*02:01	A*30:02	B*18:01	B*51:01	C*12:03	C*15:02
9	A*02:01	A*03:01	B*44:02	B*51:01	C*05:01	C*15:02
10	A*02:01	A*11:01	B*27:02	B*35:01	C*02:02	C*04:01
11	A*24:02	A*31:03	B*35:02	B*44:02	C*04:01	C*05:01
12	A*01:01	A*02:01	B*35:05	B*38:01	C*04:01	C*12:03
13	A*03:01	A*24:02	B*07:02	B*44:02	C*05:01	C*07:02
14	A*02:01	A*24:02	B*15:01	B*40:01	C*03:04	C*03:04
15	A*02:01	A*25:01	B*07:02	B*18:01	C*07:02	C*12:03
16	A*01:01	A*26:01	B*08:01	B*38:01	C*07:01	C*12:03
17	A*03:01	A*25:01	B*18:01	B*35:01	C*04:01	C*12:03
18	A*03:01	A*24:02	B*07:02	B*35:01	C*04:01	C*07:02
19	A*11:01	A*24:02	B*15:01	B*35:01	C*03:03	C*04:01

Donor						
1	A*01:01	A*02:01	B*07:02	B*57:01	C*06:02	C*07:02
2	A*25:01	A*32:01	B*18:01	B*40:02	C*02:02	C*12:03
3	A*01:01	A*02:05	B*44:02	B*50:01	C*05:01	C*06:02
4	A*03:01	A*11:01	B*07:02	B*35:01	C*04:01	C*07:02
5	A*01:01	A*03:01	B*35:02	B*38:01	C*04:01	C*12:03
6	A*02:01	A*24:02	B*27:02	B*27:05	C*01:02	C*02:02
7	A*03:01	A*32:01	B*35:01	B*44:02	C*04:01	C*05:01
8	A*02:01	A*24:02	B*07:02	B*44:03	C*07:02	C*16:01
9	A*02:01	A*03:01	B*07:02	B*35:01	C*04:01	C*07:02
10	A*01:01	A*02:01	B*27:05	B*35:01	C*02:02	C*04:01
11	A*11:01	A*26:01	B*35:03	B*37:01	C*04:01	C*06:02
12	A*03:01	A*03:01	B*13:02	B*15:01	C*03:04	C*06:02
13	A*01:01	A*24:02	B*07:02	B*07:02	C*07:02	C*07:02
14	A*02:01	A*02:01	B*27:05	B*27:05	C*02:02	C*07:02
15	A*01:01	A*03:01	B*07:02	B*40:01	C*03:04	C*07:02
16	A*01:01	A*24:02	B*35:03	B*51:01	C*12:03	C*14:02
17	A*02:01	A*25:01	B*18:01	B*38:01	C*12:03	C*12:03
18	A*02:01	A*03:01	B*07:02	B*07:02	C*07:02	C*07:02
19	A*01:01	A*24:02	B*15:01	B*35:02	C*03:03	C*04:01

	EpMM	Ag MM	EMMA
1	25	4	42
2	14	3	22
3	17	5	19
4	23	6	33
5	23	5	41
6	15	6	31
7	29	6	40
8	12	5	35
9	13	3	24
10	10	5	19
11	10	3	18
12	13	2	25

S1 HLA typing for positive and negative cohort in HLA class I (above) Typing for recipient- donor pairs from positive cohort (top) and recipient -donor pairs form the negative cohort (bottom). All alleles are defined by the NGS typing.

	EpMM	Ag MM	EMMA
1	14	4	22
2	7	2	10
3	27	5	32
4	13	2	21
5	8	3	15
6	19	3	21
7	36	6	48
8	26	5	30
9	22	4	27
10	8	2	8
11	16	5	13
12	11	5	13
13	4	1	8
14	15	3	28
15	20	4	27
16	12	4	24
17	9	2	16
18	6	1	10
19	4	2	6

S2 Number of mismatches for each donor- recipient pair respectively in HLA class I as defined by various approaches (left) Number of mismatches for recipient -donor pairs in positive cohort (top) and negative cohort (bottom) as defined by HLA Matchmaker (EpMM), total allelic mismatches (Ag MM) and HLA EMMA (EMMA).

Supplement 1- HLA typing and mismatches for all patient- donor pairs

Recipient												
1	DRB1*04:01	DRB1*08:01	DRB4*01:03	DRB4*01:03	DQB1*03:01	DQB1*04:02	DQA1*03:03	DQA1*04:01	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
2	DRB1*04:03	DRB1*11:04	DRB3*02:02	DRB4*01:03	DQB1*03:01	DQB1*03:02	DQA1*03:01	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
3	DRB1*11:04	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:02	DQA1*05:05	DPB1*02:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
4	DRB1*07:01	DRB1*13:01	DRB3*02:02	DRB4*01:03	DQB1*02:02	DQB1*06:03	DQA1*01:03	DQA1*02:01	DPB1*04:01	DPB1*19:01	DPA1*01:03	DPA1*02:02
5	DRB1*13:01	DRB1*14:54	DRB3*01:01	DRB3*02:02	DQB1*05:03	DQB1*06:03	DQA1*01:03	DQA1*01:03	DPB1*02:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
6	DRB1*03:01	DRB1*07:01	DRB3*02:02	DRB4*01:01	DQB1*02:01	DQB1*02:02	DQA1*02:01	DQA1*05:01	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
7	DRB1*13:01	DRB1*13:03	DRB3*01:01	DRB3*01:01	DQB1*03:01	DQB1*06:03	DQA1*01:03	DQA1*05:05	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
8	DRB1*08:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*04:02	DQB1*06:02	DQA1*01:02	DQA1*04:02	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
9	DRB1*13:01	DRB1*15:01	DRB3*01:01	DRB5*01:01	DQB1*06:02	DQB1*06:03	DQA1*01:02	DQA1*01:03	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
10	DRB1*04:01	DRB1*04:04	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*03:02	DQA1*03:01	DQA1*03:01	DPB1*03:01	DPB1*03:01	DPA1*01:03	DPA1*01:03
11	DRB1*08:01	DRB1*16:01	DRB5*02:02	DRB5*02:02	DQB1*04:02	DQB1*05:02	DQA1*01:02	DQA1*04:01	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
12	DRB1*04:03	DRB1*11:01	DRB3*02:02	DRB4*01:03	DQB1*03:01	DQB1*03:02	DQA1*03:01	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
13	DRB1*01:01	DRB1*03:01	DRB3*01:01	DRB3*01:01	DQB1*02:01	DQB1*05:01	DQA1*01:01	DQA1*05:01	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
14	DRB1*03:01	DRB1*07:01	DRB3*01:01	DRB4*01:01	DQB1*02:01	DQB1*02:01	DQA1*02:01	DQA1*05:01	DPB1*01:01	DPB1*17:01	DPA1*02:01	DPA1*02:01
15	DRB1*11:01	DRB1*11:01	DRB3*01:01	DRB3*02:02	DQB1*03:01	DQB1*03:01	DQA1*05:05	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
16	DRB1*01:01	DRB1*04:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*03:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
17	DRB1*03:01	DRB1*15:02	DRB3*01:01	DRB5*01:02	DQB1*02:01	DQB1*06:01	DQA1*01:03	DQA1*05:01	DPB1*02:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
18	DRB1*07:01	DRB1*14:54	DRB3*02:02	DRB4*01:03	DQB1*03:03	DQB1*05:03	DQA1*01:04	DQA1*02:01	DPB1*03:01	DPB1*03:01	DPA1*01:03	DPA1*01:03
19	DRB1*04:01	DRB1*08:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*04:02	DQA1*03:01	DQA1*04:01	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
20	DRB1*03:01	DRB1*04:01	DRB3*02:02	DRB4*01:03	DQB1*02:01	DQB1*03:02	DQA1*03:01	DQA1*05:01	DPB1*01:01	DPB1*03:01	DPA1*01:03	DPA1*01:03
21	DRB1*11:01	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:02	DQA1*05:05	DPB1*04:01	DPB1*14:01	DPA1*01:03	DPA1*02:01
22	DRB1*01:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*05:01	DQB1*06:02	DQA1*01:01	DQA1*01:02	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03

Donor												
1	DRB1*01:01	DRB1*04:01	DRB4*01:01	DRB4*01:01	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*03:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
2	DRB1*01:01	DRB1*04:01	DRB4*01:01	DRB4*01:01	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*03:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
3	DRB1*12:01	DRB1*16:01	DRB3*02:02	DRB5*02:02	DQB1*03:01	DQB1*05:02	DQA1*01:02	DQA1*05:05	DPB1*04:01	DPB1*10:01	DPA1*01:03	DPA1*02:01
4	DRB1*04:04	DRB1*13:01	DRB3*01:01	DRB4*01:03	DQB1*03:02	DQB1*06:03	DQA1*01:03	DQA1*03:01	DPB1*04:01	DPB1*05:01	DPA1*01:03	DPA1*02:02
5	DRB1*07:01	DRB1*13:03	DRB3*01:01	DRB4*01:03	DQB1*02:02	DQB1*03:01	DQA1*02:01	DQA1*05:05	DPB1*04:01	DPB1*17:01	DPA1*01:03	DPA1*02:01
6	DRB1*08:01	DRB1*09:01	DRB4*01:03	DRB4*01:03	DQB1*03:03	DQB1*04:02	DQA1*03:02	DQA1*04:01	DPB1*04:01	DPB1*15:01	DPA1*01:03	DPA1*01:04
7	DRB1*04:08	DRB1*13:03	DRB3*01:01	DRB4*01:03	DQB1*03:01	DQB1*03:01	DQA1*03:03	DQA1*05:05	DPB1*03:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
8	DRB1*04:01	DRB1*16:01	DRB5*01:03	DRB5*02:02	DQB1*03:02	DQB1*05:02	DQA1*01:02	DQA1*03:01	DPB1*04:02	DPB1*23:01	DPA1*01:03	DPA1*01:03
9	DRB1*07:01	DRB1*13:01	DRB3*02:02	DRB4*01:03	DQB1*02:02	DQB1*06:03	DQA1*01:03	DQA1*02:01	DPB1*03:01	DPB1*17:01	DPA1*01:03	DPA1*02:01
10	DRB1*07:01	DRB1*13:02	DRB3*03:01	DRB4*01:03	DQB1*02:02	DQB1*06:04	DQA1*01:02	DQA1*02:01	DPB1*02:01	DPB1*02:01	DPA1*01:03	DPA1*01:03
11	DRB1*11:01	DRB1*13:01	DRB3*01:01	DRB3*02:02	DQB1*03:01	DQB1*03:01	DQA1*05:05	DQA1*05:05	DPB1*04:01	DPB1*104:01	DPA1*01:03	DPA1*01:03
12	DRB1*08:01	DRB1*09:01	DRB4*01:03	DRB4*01:03	DQB1*03:03	DQB1*04:02	DQA1*03:02	DQA1*04:01	DPB1*04:01	DPB1*15:01	DPA1*01:03	DPA1*01:04
13	DRB1*03:01	DRB1*11:04	DRB3*02:02	DRB3*02:02	DQB1*03:01	DQB1*03:19	DQA1*05:05	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
14	DRB1*03:01	DRB1*15:01	DRB3*01:01	DRB5*01:01	DQB1*02:01	DQB1*06:02	DQA1*01:02	DQA1*05:01	DPB1*01:01	DPB1*04:01	DPA1*01:03	DPA1*02:01
15	DRB1*04:02	DRB1*04:02	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*03:02	DQA1*03:01	DQA1*03:01	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
16	DRB1*04:03	DRB1*15:01	DRB4*01:03	DRB5*01:01	DQB1*03:02	DQB1*06:02	DQA1*01:02	DQA1*03:01	DPB1*04:01	DPB1*15:01	DPA1*01:03	DPA1*01:04
17	DRB1*13:02	DRB1*15:01	DRB3*03:01	DRB5*01:01	DQB1*06:02	DQB1*06:04	DQA1*01:02	DQA1*01:02	DPB1*13:01	DPB1*13:01	DPA1*02:01	DPA1*02:01
18	DRB1*07:01	DRB1*13:01	DRB3*01:01	DRB4*01:03	DQB1*02:02	DQB1*06:03	DQA1*01:03	DQA1*02:01	DPB1*04:02	DPB1*13:01	DPA1*01:03	DPA1*02:01
19	DRB1*08:01	DRB1*09:01	DRB4*01:03	DRB4*01:03	DQB1*03:03	DQB1*04:02	DQA1*03:02	DQA1*04:01	DPB1*04:01	DPB1*15:01	DPA1*01:03	DPA1*01:04
20	DRB1*13:02	DRB1*13:02	DRB3*03:01	DRB3*03:01	DQB1*06:04	DQB1*06:04	DQA1*01:02	DQA1*01:02	DPB1*03:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
21	DRB1*11:01	DRB1*13:01	DRB3*01:01	DRB3*02:02	DQB1*03:01	DQB1*03:01	DQA1*05:05	DQA1*05:05	DPB1*02:01	DPB1*104:01	DPA1*01:03	DPA1*01:03
22	DRB1*14:54	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*05:03	DQB1*06:02	DQA1*01:02	DQA1*01:04	DPB1*02:02	DPB1*04:01	DPA1*01:03	DPA1*01:03

S3 HLA typing for positive cohort in HLA class II Typing for recipient (top) and donor (bottom) pairs from positive cohort. All alleles are defined by the NGS typing.

	EpMM			Ag MM			EMMA		
Positive	DR	DQ	DP	DR	DQ	DP	DR	DQ	DP
1	4	19	7	2	4	2	5	35	2
2	4	19	7	3	2	2	4	36	2
3	9	9	9	3	1	3	7	9	14
4	6	4	1	2	2	1	7	10	0
5	11	20	7	3	4	3	28	78	14
6	9	21	4	3	4	2	9	30	9
7	12	2	4	2	1	1	26	9	9
8	10	13	3	4	3	2	10	20	1
9	15	16	7	3	2	3	25	38	22
10	18	24	6	3	4	1	38	55	10
11	21	8	8	4	2	1	29	10	11
12	12	10	4	2	4	2	10	9	9
13	11	10	0	2	3	0	6	17	0
14	9	18	5	2	2	2	12	38	12
15	10	8	0	2	2	0	27	17	0
16	10	3	4	3	2	3	13	5	7
17	3	11	8	4	3	2	3	14	14
18	8	9	10	2	3	3	5	13	19
19	8	1	4	1	2	2	6	1	9
20	7	11	5	2	2	1	5	30	7
21	7	0	1	2	0	2	6	0	3
22	20	1	1	2	2	1	25	1	0

S4 Number of mismatches for each donor- recipient pair respectively in HLA class II as defined by various approaches (left) Number of mismatches for recipient -donor pairs in positive cohort as defined by HLA Matchmaker (EpMM), total allelic mismatches (Ag MM) and HLA EMMA (EMMA).

Supplement 1- HLA typing and mismatches for all patient- donor pairs

Recipient												
1	DRB1*01:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*05:01	DQB1*06:02	DQA1*01:01	DQA1*01:02	DPB1*04:01	DPB1*13:01	DPA1*01:03	DPA1*02:01
2	DRB1*03:01	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*02:01	DQB1*06:02	DQA1*01:02	DQA1*05:01	DPB1*04:01	DPB1*23:01	DPA1*01:03	DPA1*01:03
3	DRB1*01:02	DRB1*07:01	DRB4*01:03	DRB4*01:03	DQB1*03:03	DQB1*05:01	DQA1*01:01	DQA1*02:01	DPB1*04:02	DPB1*04:02	DPA1*01:03	DPA1*01:03
4	DRB1*01:01	DRB1*14:54	DRB3*02:02	DRB3*02:02	DQB1*05:01	DQB1*05:03	DQA1*01:01	DQA1*01:04	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
5	DRB1*03:01	DRB1*13:01	DRB3*01:01	DRB3*01:01	DQB1*02:01	DQB1*06:03	DQA1*01:03	DQA1*05:01	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
6	DRB1*13:01	DRB1*13:03	DRB3*01:01	DRB3*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:03	DQA1*05:05	DPB1*02:01	DPB1*104:01	DPA1*01:03	DPA1*01:03
7	DRB1*15:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*06:02	DQB1*06:02	DQA1*01:02	DQA1*01:02	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
8	DRB1*04:04	DRB1*07:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*03:03	DQA1*02:01	DQA1*03:01	DPB1*13:01	DPB1*14:01	DPA1*02:01	DPA1*02:01
9	DRB1*04:01	DRB1*09:01	DRB4*01:03	DRB4*01:03	DQB1*03:03	DQB1*03:03	DQA1*03:02	DQA1*03:03	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
10	DRB1*01:01	DRB1*04:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
11	DRB1*01:01	DRB1*11:04	DRB3*02:02	DRB3*02:02	DQB1*03:01	DQB1*05:01	DQA1*01:01	DQA1*05:05	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
12	DRB1*04:03	DRB1*13:01	DRB3*01:01	DRB4*01:03	DQB1*03:02	DQB1*06:03	DQA1*01:03	DQA1*03:01	DPB1*04:02	DPB1*05:01	DPA1*01:03	DPA1*02:02
13	DRB1*01:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*05:01	DQB1*06:02	DQA1*01:01	DQA1*01:02	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
14	DRB1*04:01	DRB1*11:01	DRB3*02:02	DRB4*01:03	DQB1*03:01	DQB1*03:01	DQA1*03:01	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
15	DRB1*10:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*05:01	DQB1*06:02	DQA1*01:02	DQA1*01:05	DPB1*10:01	DPB1*23:01	DPA1*01:03	DPA1*02:01
16	DRB1*03:01	DRB1*13:01	DRB3*01:01	DRB3*01:01	DQB1*02:01	DQB1*06:03	DQA1*01:03	DQA1*05:01	DPB1*04:01	DPB1*05:01	DPA1*01:03	DPA1*02:02
17	DRB1*01:01	DRB1*04:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*04:01	DPB1*17:01	DPA1*01:03	DPA1*02:01
18	DRB1*11:01	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:02	DQA1*05:05	DPB1*04:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
19	DRB1*13:01	DRB1*13:02	DRB3*02:02	DRB3*03:01	DQB1*06:03	DQB1*06:09	DQA1*01:02	DQA1*01:03	DPB1*02:01	DPB1*03:01	DPA1*01:03	DPA1*02:02

Donor												
1	DRB1*07:01	DRB1*15:01	DRB4*01:03	DRB5*01:01	DQB1*03:03	DQB1*06:02	DQA1*01:02	DQA1*02:01	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
2	DRB1*11:01	DRB1*15:01	DRB3*02:02	DRB5*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:02	DQA1*05:05	DPB1*04:01	DPB1*14:01	DPA1*01:03	DPA1*02:01
3	DRB1*07:01	DRB1*11:04	DRB3*02:02	DRB4*01:03	DQB1*02:02	DQB1*03:01	DQA1*02:01	DQA1*05:05	DPB1*04:01	DPB1*104:01	DPA1*01:03	DPA1*01:03
4	DRB1*01:01	DRB1*14:54	DRB3*02:02	DRB3*02:02	DQB1*05:01	DQB1*05:03	DQA1*01:01	DQA1*01:04	DPB1*02:01	DPB1*02:01	DPA1*01:03	DPA1*01:03
5	DRB1*11:04	DRB1*13:01	DRB3*01:01	DRB3*02:02	DQB1*03:01	DQB1*06:03	DQA1*01:03	DQA1*05:05	DPB1*02:01	DPB1*104:01	DPA1*01:03	DPA1*01:03
6	DRB1*01:01	DRB1*13:01	DRB3*01:01	DRB3*01:01	DQB1*05:01	DQB1*06:03	DQA1*01:01	DQA1*01:03	DPB1*02:01	DPB1*06:01	DPA1*01:03	DPA1*01:03
7	DRB1*11:01	DRB1*11:04	DRB3*02:02	DRB3*02:02	DQB1*03:01	DQB1*03:01	DQA1*05:05	DQA1*05:05	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
8	DRB1*07:01	DRB1*15:01	DRB4*01:01	DRB5*01:01	DQB1*02:02	DQB1*06:02	DQA1*01:02	DQA1*02:01	DPB1*03:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
9	DRB1*01:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*05:01	DQB1*06:02	DQA1*01:01	DQA1*01:02	DPB1*03:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
10	DRB1*01:01	DRB1*04:05	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:03	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
11	DRB1*07:01	DRB1*11:01	DRB3*02:02	DRB4*01:03	DQB1*03:01	DQB1*03:03	DQA1*02:01	DQA1*05:05	DPB1*02:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
12	DRB1*04:01	DRB1*07:01	DRB4*01:03	DRB4*01:03	DQB1*02:02	DQB1*03:02	DQA1*02:01	DQA1*03:01	DPB1*105:01	DPB1*126:01	DPA1*01:03	DPA1*01:03
13	DRB1*15:01	DRB1*16:01	DRB5*01:01	DRB5*02:02	DQB1*05:02	DQB1*06:02	DQA1*01:02	DQA1*01:02	DPB1*04:02	DPB1*04:02	DPA1*01:03	DPA1*01:03
14	DRB1*04:01	DRB1*07:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*03:03	DQA1*02:01	DQA1*03:01	DPB1*02:01	DPB1*665:01	DPA1*01:03	DPA1*01:03
15	DRB1*04:01	DRB1*15:01	DRB4*01:03	DRB5*01:01	DQB1*03:01	DQB1*06:02	DQA1*01:02	DQA1*03:03	DPB1*04:01	DPB1*04:02	DPA1*01:03	DPA1*01:03
16	DRB1*14:04	DRB1*16:01	DRB3*02:02	DRB5*02:02	DQB1*05:02	DQB1*05:03	DQA1*01:02	DQA1*01:04	DPB1*02:01	DPB1*26:01	DPA1*01:03	DPA1*01:03
17	DRB1*01:01	DRB1*04:01	DRB4*01:03	DRB4*01:03	DQB1*03:02	DQB1*05:01	DQA1*01:01	DQA1*03:01	DPB1*02:01	DPB1*02:01	DPA1*01:03	DPA1*01:03
18	DRB1*15:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*06:02	DQB1*06:02	DQA1*01:02	DQA1*01:02	DPB1*03:01	DPB1*04:01	DPA1*01:03	DPA1*01:03
19	DRB1*15:01	DRB1*15:01	DRB5*01:01	DRB5*01:01	DQB1*06:02	DQB1*06:02	DQA1*01:02	DQA1*01:02	DPB1*04:01	DPB1*23:01	DPA1*01:03	DPA1*01:03

S5 HLA typing for negative cohort in HLA class II Typing for recipient (top) and donor (bottom) pairs from negative cohort. All alleles are defined by the NGS typing.

	EpMM			Ag MM			EMMA		
Negative	DR	DQ	DP	DR	DQ	DP	DR	DQ	DP
1	16	10	3	2	2	1	26	34	1
2	3	4	7	1	2	2	1	5	16
3	16	11	10	2	3	2	15	21	11
4	0	0	1	0	0	1	0	0	1
5	12	4	3	2	2	1	8	5	10
6	5	12	0	1	3	1	7	9	0
7	20	13	0	3	2	0	32	39	0
8	10	19	8	3	3	3	12	46	13
9	11	23	4	3	4	1	16	78	9
10	2	1	1	1	1	1	1	1	1
11	13	2	0	3	2	0	25	9	0
12	3	10	1	2	2	2	7	13	0
13	4	1	3	2	1	1	2	2	4
14	7	7	4	1	3	2	9	11	3
15	11	12	1	2	2	2	16	36	0
16	24	8	4	4	4	2	33	18	4
17	0	0	0	0	0	1	0	0	0
18	0	0	6	0	0	1	0	0	10
19	12	0	3	0	1	1	21	1	1

S6 Number of mismatches for each donor- recipient pair respectively in HLA class II as defined by various approaches Number of mismatches for recipient -donor pairs in negative cohort as defined by HLA Matchmaker (EpMM), total allelic mismatches (Ag MM) and HLA EMMA (EMMA).