

**Table S4** Allele sharing between interlocus class II eplets and amino acid residues within a 3.5 Ångstrom radius.

	14	24	25	26	27	40	42		
	E	V	R	Residue	V	F	S	Eplet	
<b>DRB1*03:01</b>	-	-	-	26Y	-	-	-	rq26Y	
<b>DRB1*09:01</b>	-	-	-	26Y	-	-	-	rq26Y	
<b>DRB3*01:01</b>	-	-	-	26Y	-	-	-	rq26Y	
<b>DQB1*03:01</b>	M	-	-	26Y	-	-	-	rq26Y	
<b>DQB1*06:01</b>	M	-	-	26Y	-	-	-	rq26Y	
	30	35	36	3738	39	48	50	54	
	Y	E	E	Residues	R	R	V	G	Eplet
<b>DRB1*07:01</b>	L	-	-	37F38V	-	-	-	-	rp37FV
<b>DRB1*14:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DRB1*14:54</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DRB3*03:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*02:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*03:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*04:02</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*06:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*08:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*09:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*10:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*14:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*16:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*17:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*18:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*19:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*20:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
<b>DPB1*23:01</b>	-	-	-	37F38V	-	-	-	-	rp37FV
	30	35	36	3738	39	48	50	54	
	Y	E	E	Residues	R	R	V	G	Eplet
<b>DRB1*10:01</b>	R	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DRB3*02:02</b>	H*	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DRB4*01:01</b>	-	-	-	37Y38A	-	Q*	-	-	raqp37YA
<b>DRB4*01:03</b>	-	-	-	37Y38A	-	Q*	-	-	raqp37YA
<b>DQB1*03:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*03:02</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*03:03</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*04:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*04:02</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*06:02</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*06:03</b>	H*	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*06:04</b>	H*	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*06:05</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DQB1*06:09</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DPB1*01:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DPB1*11:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DPB1*13:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA
<b>DPB1*15:01</b>	-	-	-	37Y38A	-	-	-	-	raqp37YA

	30	35	36	3738	39	48	50	54	
	Y	E	E	Residues	R	R	V	G	Eplet
DRB1*04:01	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*04:02	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*04:03	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*04:04	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*04:05	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*08:01	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*08:02	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*11:01	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*11:02	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*11:04	-	-	-	37Y38V	-	-	-	-	rq37YV
DRB1*13:03	-	-	-	37Y38V	-	-	-	-	rq37YV
DQB1*05:01	H*	-	-	37Y38V	-	-	-	-	rq37YV
DQB1*05:02	H*	-	-	37Y38V	-	-	-	-	rq37YV

  

	64	65	66	6770	68	69	71	72	73	
	Q	K	D	Residues	L	E	K	R	A	Eplet
DQB1*04:01	-	-	-	67I70E	-	-	D	-	-	qp67IE
DQB1*04:02	-	-	-	67I70E	-	-	D	-	-	qp67IE
DPB1*01:01	-	-	-	67I70E	-	-	-	-	-	qp67IE
DPB1*02:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*02:02	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*04:01	-	-	-	67I70E	-	-	-	-	-	qp67IE
DPB1*04:02	-	-	-	67I70E	-	-	-	-	-	qp67IE
DPB1*05:01	-	-	-	67I70E	-	-	-	-	-	qp67IE
DPB1*08:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*09:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*10:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*13:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*17:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*18:01	-	-	-	67I70E	-	-	-	-	-	qp67IE
DPB1*19:01	-	-	-	67I70E	-	-	E*	-	-	qp67IE
DPB1*23:01	-	-	-	67I70E	-	-	-	-	-	qp67IE

  

	64	65	66	6771	68	69	70	72	73	
	Q	K	D	Residue	L	E	E	R	A	Eplet
DRB1*13:03	-	-	-	67I71K	-	-	D*	-	-	rqp67IK
DQB1*02:01	-	-	-	67I71K	-	-	R	-	-	rqp67IK
DQB1*02:02	-	-	-	67I71K	-	-	R	-	-	rqp67IK
DPB1*01:01	-	-	-	67I71K	-	-	-	-	-	rqp67IK
DPB1*04:01	-	-	-	67I71K	-	-	-	-	-	rqp67IK
DPB1*04:02	-	-	-	67I71K	-	-	-	-	-	rqp67IK
DPB1*05:01	-	-	-	67I71K	-	-	-	-	-	rqp67IK
DPB1*18:01	-	-	-	67I71K	-	-	-	-	-	rqp67IK

	64	65	66	6771	68	69	70	72	73	
	Q	K	D	Residues	L	E	Q	R	G	Eplet
DRB1*03:01	-	-	-	67L71K	-	-	-	-	-	rp67LK
DRB1*03:02	-	-	-	67L71K	-	-	-	-	-	rp67LK
DRB1*04:01	-	-	-	67L71K	-	-	-	-	A	rp67LK
DRB3*01:01	-	-	-	67L71K	-	-	-	-	-	rp67LK
DRB3*02:01	-	-	-	67L71K	-	-	-	-	-	rp67LK
DRB3*02:02	-	-	-	67L71K	-	-	-	-	-	rp67LK
DRB3*03:01	-	-	-	67L71K	-	-	-	-	-	rp67LK
DPB1*03:01	-	-	-	67L71K	-	-	E*	-	A	rp67LK
DPB1*14:01	-	-	-	67L71K	-	-	E*	-	A	rp67LK
DPB1*28:01	-	-	-	67L71K	-	-	E*	-	A	rp67LK

  

	64	65	66	6771	68	69	70	72	73	
	Q	K	D	Residues	L	E	Q	R	A	Eplet
DRB1*01:01	-	-	-	67L71R	-	-	-	-	-	rp67LR
DRB1*01:02	-	-	-	67L71R	-	-	-	-	-	rp67LR
DRB1*04:03	-	-	-	67L71R	-	-	-	-	-	rp67LR
DRB1*04:05	-	-	-	67L71R	-	-	-	-	-	rp67LR
DRB1*10:01	-	-	-	67L71R	-	-	R*	-	-	rp67LR
DRB1*14:01	-	-	-	67L71R	-	-	R*	-	-	rp67LR
DRB1*14:02	-	-	-	67L71R	-	-	-	-	-	rp67LR
DRB4*01:01	-	-	-	67L71R	-	-	R*	-	-	rp67LR
DPB1*11:01	-	-	-	67L71R	-	-	E*	-	-	rp67LR

  

	70	71	72	73	7475	76	77	78	79	80	
	Q	K	R	A	Residues	D	T	Y	C	R	Eplet
DRB1*01:01/02	-	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*01:03	D	E*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*04:01	-	-	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*04:02	D	E*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*04:04/05	-	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*10:01	R*	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*11:01/04	D	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*11:02	D	E*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*12:01/02	D	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*13:01/02	D	E*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*13:03	D	-	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*14:02	-	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*15:01/02/03	-	A	-	-	74A75V	-	-	-	-	-	rq74AV
DRB1*16:01/02	D	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB5*01:01	D	R*	-	-	74A75V	-	-	-	-	-	rq74AV
DRB5*02:02	-	A	-	-	74A75V	-	-	-	-	-	rq74AV
DQB1*02:01	R*	-	-	-	74A75V	-	R	V	-	-	rq74AV
DQB1*02:02	R*	-	-	-	74A75V	-	R	V	-	-	rq74AV

	73	74	75	76	7778	79	80	81	
	A	V	P	D	Residues	C	H	N	Eplet
<b>DQB1*02:01</b>	-	A*	V	-	77R78V	-	-	-	qp77RV
<b>DQB1*02:02</b>	-	A*	V	-	77R78V	-	-	-	qp77RV
<b>DQB1*05:01</b>	-	S	V	-	77R78V	-	-	-	qp77RV
<b>DQB1*05:02</b>	-	S	V	-	77R78V	-	-	-	qp77RV
<b>DPB1*01:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
<b>DPB1*03:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
<b>DPB1*08:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
<b>DPB1*09:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
<b>DPB1*10:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
<b>DPB1*14:01</b>	-	-	-	-	77R78V	-	-	-	qp77RV
	73	74	75	76	7778	79	80	81	
	A	E	L	D	Residues	C	H	N	Eplet
<b>DRB1*07:01</b>	G	Q*	V*	-	77T78V	-	-	-	rq77TV
<b>DRB1*09:01</b>	-	-	V*	-	77T78V	-	-	-	rq77TV
<b>DRB1*09:02</b>	-	-	V*	-	77T78V	-	-	-	rq77TV
<b>DQB1*03:01</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*03:02</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*03:03</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*04:01</b>	-	S	V*	-	77T78V	-	-	-	rq77TV
<b>DQB1*04:02</b>	-	S	V*	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:01</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:02</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:03</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:04</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:05</b>	-	-	-	-	77T78V	-	-	-	rq77TV
<b>DQB1*06:09</b>	-	-	-	-	77T78V	-	-	-	rq77TV

	139	141	140142	143	159	160	
	K	G	Residues	V	V	M	Eplet
<b>DRB1*03:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*03:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*04:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*04:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*04:03</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*04:04</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*04:05</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*08:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*08:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*10:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*11:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*11:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*11:04</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*12:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*12:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*13:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*13:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*13:03</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*14:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*14:02</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB1*14:54</b>	-	-	140T142V	-	-	-	rq140TV
<b>DRB3*03:01</b>	-	-	140T142V	-	-	-	rq140TV
<b>DQB1*03:01</b>	T	-	140T142V	-	-	-	rq140TV
<b>DQB1*03:02</b>	T	-	140T142V	-	-	-	rq140TV
<b>DQB1*03:03</b>	T	-	140T142V	-	-	-	rq140TV
<b>DQB1*04:01</b>	T	-	140T142V	-	-	-	rq140TV
<b>DQB1*04:02</b>	T	-	140T142V	-	-	-	rq140TV

  

	27	32	33	34	35	36	47	
	H	D	E	Residue	F	Y	C	Eplet
<b>DQA1*0102</b>	-	-	-	34Q	-	-	R	pq34Q
<b>DQA1*0103</b>	-	-	-	34Q	-	-	R	pq34Q
<b>DQA1*0401</b>	-	-	-	34Q	-	-	-	pq34Q
<b>DQA1*0501</b>	-	-	-	34Q	-	-	-	pq34Q
<b>DQA1*0503</b>	-	-	-	34Q	-	-	-	pq34Q
<b>DQA1*0505</b>	-	-	-	34Q	-	-	-	pq34Q
<b>DQA1*0601</b>	-	-	-	34Q	-	-	-	pq34Q
<b>DPA1*0201</b>	F	-	-	34Q	-	-	H	pq34Q
<b>DPA1*0202</b>	F	-	-	34Q	-	-	H	pq34Q