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Manual No.:	14
Revision:	August 27, 2009
Product No.:	214 + 414
Lot No.:	DR14L04-0

CTS *Collaborative Transplant Study*

WORKING INSTRUCTION
HLA-DRB1*14 SUBTYPING
CTS-PCR-SSP MINITRAY KIT

LOCUS- AND LOT-SPECIFIC MANUAL

To be applied to the following products:

Product No.	Description
214	HLA-DRB1*14 Subtyping CTS-PCR-SSP Minitray Kit <div style="display: inline-block; vertical-align: middle; margin-left: 10px;">   0197 </div>

CHANGES COMPARED TO LOT DR14L03-0:

- The total number of primer mixes has been increased from 24 to 27 (mixes 1 – 26 = allele-specific mixes; mix 27 = negative control mix).
- Mixes 25 to 27 are new. Mix 25 amplifies DRB1*1454, whereas mix 26 is specific for DRB1*1401.
- The majority of HLA-DRB1*14 alleles are characterized by new amplification patterns due to new mix specificities.
- The kit was updated with the IMGT/HLA Sequence Database Release 2.24.0, January 2009.

Introduction

- Intended use: This kit reveals a high resolution typing of HLA-DRB1*14 by the PCR-SSP method.
- Allele coverage: IMGT/HLA Sequence Database Release 2.24.0, January 2009.
- This manual is only valid for **Lot No. DR14L04-0**
- This manual should be used together with the Main Manual (General Information) the ‘Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS’ (Manual No. 100A).

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1. Kit Composition

MINITRAY KIT

- Number of PCR primer mixes per test (minitray): 26 allele-specific mixes and one negative control mix.
- Number of tests (minitrays) per kit: 12
- The primer mixes are aliquoted and lyophilized in thin-walled, yellow PCR-minitrays.
- PCR buffer: 1.0 ml of 5% Mastermix (without Taq polymerase)

For storage condition, please refer to Section 1 of the ‘Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS’ (Manual No. 100A) supplied along with this product.

2. Materials, Reagents and Equipment not supplied

Please refer to Section 2 of the ‘Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS’ (Manual No. 100A) supplied along with this product.

3. Sample Requirements, PCR and Gel Electrophoresis

Please refer to Section 3 to 6 of the ‘Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS’ (Manual No. 100A) supplied along with this product.

4. Result Evaluation

- 4.1 Check the approximate size of the PCR product against the Primer Mix Specificity Table (Table 1) to confirm the correct product size.
- 4.2 Use the Amplification Pattern Tables (Table 2 and 3) to make the allele assignment, or use the SCORE Software (www.IHWG.org) for detailed result interpretation.

5. Interpretation Hints

The quality and quantity of DNA as well as of the Taq polymerase are extremely crucial factors. If your bands are too weak, you might try to adjust these two factors until you obtain optimal results.

Please refer to Section 7 of the 'Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product

SPECIAL NOTES

- Some **non-DRB1*14** alleles, such as DRB1*03, DRB1*11, DRB1*13 and others, share specific sequence motives with DRB1*14 specificities and therefore will react positively with some mixes (Table 3). Please take this into consideration while interpreting your reaction patterns!

6. Troubleshooting

Please refer to Section 8 of the 'Working Instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

7. Precaution

Please refer to Material Safety Data Sheet for the CTS-PCR-SSP TRAY and MINITRAY KITS (Manual No. 100B) supplied along with this product.

8. Contact

If you have any particular questions concerning this kit, which are not answered in this or the Main Manual, please do not hesitate to contact me or my coworkers at:

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Hien Tran, M.D.

Table 1: Sizes of the PCR products and allele specificities of each HLA-DRB1*14 SUBTYPING CTS-PCR-SSP primer mix (Lot No. DR14L04-0) based on the IMGT/HLA Sequence Database Release 2.24.0, January 2009

Amplification Control (Internal Positive Control): Product size 440 base pairs (bp)

Mix	Allele specificity	Serology	Product sizes (bp)
Mix 1	DRB1*111301w/1302w/17/52, DRB1*140101-0103/0501-0503/0701-08/14/18/2301/2302/26/3201w/3202w/34w/35/36/38/42-45/54-56/58-60/62/64/65w/70/72/75/81w/82, DRB4*0102?	DR11(5), -, DR14(6), DR6, DR53	210
Mix 2	DRB1*1310/85, DRB1*1402/06/09/13/17/19/21/29/30/33/46-48/51/52/80/83	DR13(6), -, DR14(6), DR6	140/ 145
Mix 3	DRB1*03010101-0104/0106/04-0502/07-15/18-25/29/30/32-34/36/39/40, DRB1*080402?/20, DRB1*110101-0106/0201/03-0404/0601-16/18-21/23-29/31-36/38/40/42/44-47/49/51/53-55/57-59/61-6502/68-70, DRB1*130101-06/09-1102/13-16/18/20-25/27-31/33/34/37/39/41-47/5001/5002/52/54-57/59/61-64/66/68/69/71/73-75/77-79/81-83/85-87, DRB1*140301/0302/12/17/19/21/27/30/33/35/40/42/53/55/63-65/67/72/77/78	DR17(3), -, DR8, DR11(5), DR13(6), DR6, DR1403, DR14(6)	see below
	DRB1*03010101-0104/0106/04-0502/07-15/18-25/29/30/32-34/36/39/40, DRB1*110101-0106/0201/03-0404/0601-16/18-21/23-29/31-36/38/40/42/44-47/49/51/53-55/57-59/61-6502/68-70, DRB1*130101-0203/04-06/09-1102/1401-16/18/20-25/27-31/34/39/41-46/5001/5002/52/54/56/57/59/61-64/66/68/69/71/73-75/77-79/82/83/86/87, DRB1*1417/21/30/33/35/42/53/64/65/72	DR17(3), -, DR11(5), DR13(6), DR6	145
	DRB1*03010101-0104/0106/04-0502/07-15/18-25/29/30/32-34/36/39/40, DRB1*1107/53, DRB1*130301/0302/10/33/37/66/81/85, DRB1*1419/21	DR17(3), -, DR13(6), DR14(6)	215
	DRB1*080402?/20, DRB1*1123/25/45/55/64, DRB1*1313/18/47/55, DRB1*140301/0302/12/27/40/55/63/67/77/78	DR8, -, DR11(5), DR13(6), DR1403, DR14(6)	225
Mix 4	DRB1*0706, DRB1*0808, DRB1*1404/26/28/31/50/68/71/73/76/79	-, DR1404, DR14(6)	see below
	DRB1*0808, DRB1*1404/28/31/50/68/71/73/76/79	-, DR1404	165
	DRB1*0706, DRB1*1426	-, DR14(6)	135
Mix 5	DRB1*140103/0501-0503/43-45/56, DRB4*0102?	DR14(6), -, DR53	see below
	DRB1*140501-0503/43-45/56, DRB4*0102?	DR14(6), -, DR53	200
	DRB1*140103	DR14(6)	145
Mix 6	DRB1*030201-03/27/29/38, DRB1*1117/52-5402, DRB1*1315/19/26/53/57/76/85, DRB1*140101-0302/0501-08/12-14/18-20/2301-24/26/27/29/33/35/36/40-45/47-49/51/54/56/58-60/62-64/67/70/72/75/77/78/81-83, DRB4*0102?	DR18(3), -, DR14(6), DR1403, DR6, DR53	see below
	DRB1*030201-03/27/29/38, DRB1*1315/19/26/53/57/85, DRB1*1402-0302/06/12/13/18-20/24/27/29/40/41/47-49/51/63/67/77/78/81/83	DR18(3), -, DR14(6), DR1403, DR6	85
	DRB1*0327, DRB1*1117/52-5402, DRB1*1376, DRB1*140101-0103/0501-0503/0701-08/14/18/2301/2302/26/33/35/36/42-45/51/54/56/58-60/62/64/70/72/75/82, DRB4*0102?	-, DR14(6), DR6, DR53	225
Mix 7	DRB1*03010101-0104/0106/04-0502/07-15/18-25/29/30/32-34/36/39/40, DRB1*110101-0106/0201/03-0404/0601-16/18-21/23-29/31-36/38/40/42/44-47/49/51/53-55/57-59/61-6502/68-70, DRB1*130101-0203/04-06/09-1102/1401-16/18/20-25/27-31/34/39/41-46/5001/5002/52/54/56/57/59/61-64/66/68/69/71/73-75/77-79/82/83/86/87, DRB1*140101-0103/0701/0702/16/17/21/22/25/26/30/3201-33/35/38/42/43/49/53-55/58/60/62/64/65/69/70/72/74/75/82	DR17(3), -, DR11(5), DR13(6), DR6, DR14(6)	see below
	DRB1*03010101-0104/0106/04-0502/07-15/18-25/29/30/32-34/36/39/40, DRB1*110101-0106/0201/03-0404/0601-16/18-21/23-29/31-36/38/40/42/44-47/49/51/53-55/57-59/61-6502/68-70, DRB1*130101-0203/04-06/09-1102/1401-16/18/20-25/27-31/34/39/41-46/5001/5002/52/54/56/57/59/61-64/66/68/69/71/73-75/77-79/82/83/86/87, DRB1*1417/21/30/33/35/42/53/64/65/72	DR17(3), -, DR11(5), DR13(6), DR6	145
	DRB1*0310, DRB1*1343/45, DRB1*140101-0103/0701/0702/16/22/25/26/3201/3202/35/38/49/53-55/58/60/62/69/70/74/75/82	-, DR14(6), DR6	175
	DRB1*1443	-	230
Mix 8	DRB1*03010101-0106/0202-04/06-08/10/11/12?/13/15/16?/17-28/30-37/39, DRB1*0820, DRB1*110201-0404/0601-07/1301/1302/16-18/21/25/2701/34-36/38/40?/41-44/46-48/50/52/5401-60/63/6501/6502/70, DRB1*130101-0103/04/06/08-1102/15/18-20/22/24/27/28/32/35/40/42-44/48/51-54/57-59/61/64/68-72/75-81/83/84/87, DRB1*140101/0102?/0103/0501-06/08/12/16-18/20?/21/2301/2302/26/29/3201-35/37/38/43/45/47/54-56/58-60/62/64/65/70/72/74/75/78/80-83, DRB4*0102?	DR17(3), DR18(3), DR3, -, DR11(5), DR13(6), DR14(6), DR6, DR53	see below
	DRB1*030102/0202/17/24/27/35, DRB1*112701, DRB1*1361, DRB1*1438/47	DR17(3), DR18(3), -, DR11(5)	235
	DRB1*03010101-0106/03/04/06-08/10/11/12?/13/15/16?/18-26/28/30-34/36/37/39, DRB1*0820, DRB1*110201-0404/0601-07/1301/1302/16-18/21/25/34-36/38/40?/41-44/46-48/50/52/5401-60/63/6501/6502/70, DRB1*130101-0103/04/06/08-1102/15/18-20/22/24/27/28/32/35/40/42-44/48/51-54/57-59/61/64/68-72/75-81/83/84/87, DRB1*140101/0102?/0103/0501-06/08/12/16-18/20?/21/2301/2302/26/29/3201-35/37/38/43/45/47/54-56/58-60/62/64/65/70/72/74/75/78/80-83, DRB4*0102?	DR17(3), DR18(3), DR3, -, DR11(5), DR13(6), DR14(6), DR6, DR53	260
Mix 9	DRB1*030201/0202/0501/0502/09/14/17/27/29/35/38/40, DRB1*110101-0107/0801-1202/1401-15/1901-20/23?/24/26?/2701?/2702-29/31-33/37/39/45/49/51/53/61/62/64/66/68/69, DRB1*130201-0302/0501/0502/0701/0702/12-1403/21/23/25?/26/29-31/33?/34/36-39/41/45?/46/47/49-5002/55/56/60/62/63/65/66/73/74/82/85/86, DRB1*1402-0302/0701/0702/09/13/14/19/22/24/25/27/30/36/40-42/4401/4402/47-49/51/53/63/67/69/77	DR18(3), DR17(3), -, DR11(5), DR13(6), DR6, DR14(6), DR1403	260
Mix 10	DRB1*0462/69, DRB1*1410/57/60	-	see below
	DRB1*0462/69, DRB1*1410/57	-	175
	DRB1*1460	-	80

Mix	Allele specificity	Serology	Product sizes (bp)
Mix 11	DRB1*080101-0401/0402?/0403/0404/06-17/19/21-23/26-36, DRB1*1167, DRB1*1204, DRB1*1404/11/15/28/68/71/73, DRB4*0102?	DR8, -, DR1404, DR14(6), DR53	see below
	DRB1*0831, DRB1*1167, DRB1*1204, DRB1*1411	-, DR14(6)	170
	DRB1*080101-0401/0402?/0403/0404/06-17/19/21-23/26-28/30/32-36, DRB1*1167, DRB1*1415	DR8, -	215
	DRB1*0829, DRB1*1404/11/28/68/71/73, DRB4*0102?	-, DR1404, DR14(6), DR53	215
Mix 12	DRB1*030106/08/10/18, DRB1*0809/21/35, DRB1*1109-1002/1301/1302/16/17/20/40/46/52/59, DRB1*1318/43, DRB1*140101-0103/0301-04/0701-08/10-12/15/16/22/2302/26-28/31-3202/34-36/38-40/49/50/54/55/57/60-63/67/68/70/71/73-79/82, DRB3*020204/16/18	DR17(3), -, DR8, DR11(5), DR13(6), DR14(6), DR1403, DR1404, DR6, DR52	see below
	DRB1*0318, DRB1*1436	-	70
	DRB1*030106/08/10, DRB1*1109-1002/1301/1302/16/17/20/40/46/52/59, DRB1*1343, DRB1*140101-0103/04/0701-08/10/11/16/22/2302/26/28/31-3202/34/35/38/39/49/50/54/55/57/60-62/68/70/71/73-76/79/82, DRB3*020204/16/18	DR17(3), -, DR11(5), DR14(6), DR1404, DR6, DR52	115
	DRB1*0809/21/35, DRB1*1318, DRB1*140301/0302/12/15/27/40/55/63/67/77/78	DR8, -, DR13(6), DR1403, DR14(6)	160
Mix 13	DRB1*0312, DRB1*11301w/1302w/17/52, DRB1*130301-04/12/13/21/30/32/33/38/48/49/55/58/65/66/75/81, DRB1*140101-0103/0501-0503/0701-08/13/14/18/2301/2302/26/3201w/3202w/34w/35/36/38/42-45/54-56/58-60/62-65/70/72/75/78/81w/82, DRB4*0102?	-, DR11(5), DR13(6), DR6, DR14(6), DR53	see below
	DRB1*0312, DRB1*130301-04/12/13/21/30/32/33/38/48/49/55/58/65/66/75/81, DRB1*1413/63/65/78	-, DR13(6), DR6, DR14(6)	170
	DRB1*11301w/1302w/17/52, DRB1*140101-0103/0501-0503/0701-08/14/18/2301/2302/26/3201w/3202w/34w/35/36/38/42-45/54-56/58-60/62/64/65/70/72/75/81w/82, DRB4*0102?	DR11(5), -, DR14(6), DR6, DR53	210
Mix 14	DRB1*010201-0205, DRB1*110105/0403/0602/1301/1302/17/52/5401, DRB1*1204/09, DRB1*130103/76, DRB1*140501/0502/08/11/14/18/2301/2302/34/36/42-4401/45/56/59/64/72, DRB1*150103/0206	DR1, DR11(5), -, DR13(6), DR14(6), DR6, DR15(2)	105
Mix 15	DRB1*1109/40/58/59, DRB1*130501/0502/18/26/42/5002/63, DRB1*1427, DRB1*1608	DR11(5), -, DR13(6), DR14(6)	130
Mix 16	DRB1*0320, DRB1*1116/20/40/59, DRB1*1205/14/15, DRB1*130101-0203/08/15/16/19/20/27-29/31/32/34-36/39-41/43/51/53/57/59/61/63-65/67/69/71-74/76/78-80/83/87, DRB1*1416/28/29/57	-, DR11(5), DR12(5), DR13(6), DR6, DR14(6)	see below
	DRB1*1116/20/40/59, DRB1*130101-0203/15/16/20/27-29/31/32/34-36/39-41/43/51/53/59/61/63/65/67/69/71/73/74/78-80/87	-, DR11(5), DR13(6), DR6	145
	DRB1*0320, DRB1*1429	-, DR14(6)	185
	DRB1*1308/19/57/64/72/76/83, DRB1*1416/57	DR13(6), -, DR6	140
	DRB1*1205/14/15, DRB1*1428	DR12(5), -	185
Mix 17	DRB1*1116/20/40/59, DRB1*130101-0203/10/15/16/20/27-29/31/32/34-36/39-41/43/51/53/59/61/63/65/67/69/71/73/74/78-80/85/87, DRB1*1419/21	-, DR11(5), DR13(6), DR6, DR14(6)	145
Mix 18	DRB1*0335, DRB1*130203/26/60w/72, DRB1*140501/0503/18/37/43-45/56, DRB1*15010101w-0103w/0105w-0201w/0204w/0206w/04w-11w/13w-22w/24w-31w, DRB1*160101w-0502w/07w-13Nw	-, DR13(6), DR14(6), DR6, DR15(2), DR2, Null, DR16(2)	115
Mix 19	DRB1*1441/52	-	see below
	DRB1*1452	-	210
	DRB1*1441	-	135
Mix 20	DRB1*03010101-09/11/12/14-37/39/40, DRB1*080402?/20, DRB1*110101-0404/0601-21/23-29/32-51/53-66/68-70, DRB1*130101-16/18-38/40-42/44/46-53/55-66/68-76/80-87, DRB1*1402-0302/0501-06/09/12-14/17-21/2301-24/27/29/30/33/36-38/40-45/47/51/56/59/63/65/67/77/78/80/81/83, DRB4*0102?	DR17(3), DR18(3), DR3, -, DR8, DR11(5), DR13(6), DR6, DR14(6), DR1403, DR53	see below
	DRB1*03010101-09/11/12/14-37/39/40, DRB1*080402?/20, DRB1*110101-0404/0601-21/23-29/32-51/53-66/68-70, DRB1*130101-16/18-38/40-42/44/46-53/55-66/68-76/80-87, DRB1*1402-0302/0501-06/09/12-14/17-21/2301-24/27/29/30/33/36/37/40-45/47/51/56/59/63/65/67/77/78/80/81/83, DRB4*0102?	DR17(3), DR18(3), DR3, -, DR8, DR11(5), DR13(6), DR6, DR14(6), DR1403, DR53	180
	DRB1*030102/0202/17/24/27/35, DRB1*112701, DRB1*1361, DRB1*1438/47	DR17(3), DR18(3), -, DR11(5)	235
Mix 21	DRB1*0420?, DRB1*1439/59, DRB3*0215, DRB4*0102?	DR4, -, DR53	see below
	DRB1*0420?, DRB1*1439, DRB4*0102?	DR4, -, DR53	230
	DRB1*1459, DRB3*0215	-	110
Mix 22	DRB1*0338, DRB1*1117/52-5402, DRB1*1331/46/54/76/77, DRB1*140101-0103/0501-0503/0701-08/14/18/2301/2302/26/33/35/36/42-45/48/51/54/56/58-60/62/64/70/72/75/82, DRB4*0102?	-, DR14(6), DR6, DR53	see below
	DRB1*0338, DRB1*1331/46/54/77, DRB1*1448	-	175
	DRB1*1117/52-5402, DRB1*1376, DRB1*140101-0103/0501-0503/0701-08/14/18/2301/2302/26/33/35/36/42-45/51/54/56/58-60/62/64/70/72/75/82, DRB4*0102?	-, DR14(6), DR6, DR53	225
Mix 23	DRB1*0809/21/35, DRB1*1415/40/55/62/77	DR8, -	see below
	DRB1*1462	-	100
	DRB1*0809/21/35, DRB1*1415/40/55/77	DR8, -	150
Mix 24	DRB1*1445	-	190
Mix 25	DRB1*11301/1302, DRB1*1308, DRB1*1404/0501/0701/10/11/14/54/57/82	DR11(5), DR13(6), DR1404, DR14(6), -	50
Mix 26	DRB1*140101	DR14(6)	50
Mix 27	Negativ Control	-	-

w = weak

? = nucleotide sequence information not available for the primer matching sequence

bold: specificities amplified by primer which result in PCR fragments of different sizes

Table 2: Amplification patterns of HLA-DRB1*14 alleles detected by the HLA-DRB1*14 SUBTYPING CTS-PCR-SSP primer mixes (Lot No. DR14L04-0) based on the IMGT/HLA Database Release 2.24.0, January 2009

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
DRB1*140101	DR14(6)	+					+	+	+				+	+													+	
DRB1*140102	DR14(6)	+					+	+	?				+	+														+
DRB1*140103	DR14(6)	+					+	+	+				+	+														+
DRB1*1402	DR14(6)		+				+			+												+						
DRB1*140301/0302/6Z	DR1403, -			+			+			+			+									+						
DRB1*1404	DR1404				+							+	+															+
DRB1*140501	DR14(6)	+					+	+		+				+	+				+			+						+
DRB1*140502	DR14(6)	+					+	+	+	+				+	+						+	+						+
DRB1*140503	DR14(6)	+					+	+		+				+						+		+						+
DRB1*1406/83	DR14(6), -		+				+		+													+						
DRB1*140701	DR14(6)	+					+	+		+			+	+														+
DRB1*140702	DR14(6)	+					+	+		+			+	+														+
DRB1*1408, DRB1*1152	-	+					+		+				+	+	+													+
DRB1*1409	-		+							+												+						
DRB1*1410	-										+																	+
DRB1*1411	DR14(6)											+	+		+													+
DRB1*1412	DR14(6)			+			+		+				+									+						
DRB1*1413	DR14(6)		+				+			+				+								+						
DRB1*1414	DR14(6)	+					+			+				+	+							+						+
DRB1*1415, DRB1*0809/21/35	-, DR8											+	+													+		
DRB1*1416	DR6							+	+				+					+										
DRB1*1417	DR6		+	+				+	+													+						
DRB1*1418	DR6	+					+		+					+	+					+		+						
DRB1*1419, DRB1*1385	DR14(6), -		+	+			+			+									+			+						
DRB1*1420	DR14(6)						+		?													+						
DRB1*1421, DRB1*1310	DR13(6)		+	+				+	+										+			+						
DRB1*1422	-							+		+			+															
DRB1*142301	-	+					+		+					+	+							+						+
DRB1*142302, DRB1*1117	-	+					+		+				+	+	+							+						+
DRB1*1424, DRB1*030201	-, DR18(3)						+			+												+						
DRB1*1425/69	-							+		+																		
DRB1*1426	DR14(6)	+			+		+	+	+				+	+														+
DRB1*1427	DR14(6)			+			+			+			+				+					+						
DRB1*1428	-				+							+	+					+										
DRB1*1429	DR14(6)		+				+		+									+				+						
DRB1*1430	-		+	+				+		+												+						
DRB1*1431/50/76/79	-				+								+															
DRB1*143201/3202	-		w					+	+				+	w														
DRB1*1433	-		+	+			+	+	+													+						+
DRB1*1434	-		w						+				+	w	+													
DRB1*1435	-		+		+		+	+	+				+	+														+
DRB1*1436	-		+				+			+			+	+	+							+						+
DRB1*1437	-								+											+		+						
DRB1*1438	-		+					+	+				+	+								+						
DRB1*1439	-												+											+				
DRB1*1440/ZZ	-			+			+			+			+									+				+		
DRB1*1441	-						+			+											+	+						
DRB1*1442	-		+		+		+	+		+				+	+							+						+
DRB1*1443	-		+				+	+	+	+				+	+					+		+						+
DRB1*144401	-		+				+	+		+				+	+					+		+						+
DRB1*144402	-		+				+	+		+				+	+					+		+						+

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
DRB1*1445	-	+				+	+		+					+	+				+		+		+		+		
DRB1*1446	-		+																								
DRB1*1447	-		+				+		+	+											+						
DRB1*1448	-		+				+			+													+				
DRB1*1449	-						+	+		+			+										+				
DRB1*1451	-		+				+			+												+	+				
DRB1*1452	-		+																		+						
DRB1*1453, DRB1*1131	-			+				+		+																	
DRB1*1454/ <u>82</u>	-	+					+	+	+				+	+									+				+
DRB1*1455	-	+		+				+	+	+			+	+											+		
DRB1*1456	-	+				+	+		+					+	+				+		+		+				
DRB1*1457	-										+		+				+										+
DRB1*1458	-	+					+	+	+					+									+				
DRB1*1459	-	+					+	+	+					+	+						+	+	+				
DRB1*1460	-	+					+	+	+		+		+	+									+				
DRB1*1461, DRB3*020204/16/18	-, DR52												+														
DRB1*1462	-	+					+	+	+					+	+								+		+		
DRB1*1463	-			+			+			+			+	+								+					
DRB1*1464/ <u>72</u>	-	+		+			+	+	+					+	+								+				
DRB1*1465	-	w		+				+	+					+								+					
DRB1*1468/ <u>71/73</u>	-				+							+	+														
DRB1*1470/ <u>75</u>	-	+					+	+	+				+	+									+				
DRB1*1474	-							+	+				+														
DRB1*1478	-			+			+		+				+	+								+					
DRB1*1480	-		+						+												+	+					
DRB1*1481	-	w					+		+					w							+						

w = weak

? = nucleotide sequence information not available for the primer matching sequence

Underlined alleles = new HLA-DRB1*14 alleles that have the same amplification patterns as the previously known HLA-DRB1*14

Table 3: Amplification patterns of HLA-DRB1*14 alleles and other HLA-DRB alleles detected by the HLA-DRB1*14 SUBTYPING CTS-PCR-SSP primer mixes (**Lot No. DR14L04-0**) based on the IMGT/HLA Sequence Database Release 2.24.0, January 2009

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
DRB1*140101	DR14(6)	+					+	+	+				+	+									+				+
DRB1*140102	DR14(6)	+					+	+	?				+	+									+				
DRB1*140103	DR14(6)	+				+	+	+	+				+	+									+				
DRB1*1402	DR14(6)		+				+			+												+					
DRB1*140301/0302/6Z	DR1403, -			+			+			+			+									+					
DRB1*1404	DR1404				+							+	+														+
DRB1*140501	DR14(6)	+				+	+		+					+	+				+		+		+				+
DRB1*140502	DR14(6)	+				+	+	+	+					+	+						+	+	+	+			
DRB1*140503	DR14(6)	+				+	+	+	+					+					+		+	+	+				
DRB1*1406/83	DR14(6), -		+				+		+													+					
DRB1*140701	DR14(6)	+					+	+		+			+	+									+				+
DRB1*140702	DR14(6)	+					+	+		+			+	+									+				
DRB1*1408, DRB1*1152	-		+				+		+				+	+	+								+				
DRB1*1409	-		+							+												+					
DRB1*1410	-										+		+														+
DRB1*1411	DR14(6)											+	+		+												+
DRB1*1412	DR14(6)			+			+		+				+									+					+
DRB1*1413	DR14(6)		+				+			+				+								+					
DRB1*1414	DR14(6)	+					+			+				+	+							+		+			+
DRB1*1415, DRB1*0809/21/35	-, DR8											+	+											+			
DRB1*1416	DR6							+	+				+				+										
DRB1*1417	DR6		+	+				+	+													+					
DRB1*1418	DR6	+					+		+					+	+				+		+	+	+				
DRB1*1419, DRB1*1385	DR14(6), -		+	+			+			+									+		+	+					
DRB1*1420	DR14(6)						+		?													+					
DRB1*1421, DRB1*1310	-, DR13(6)		+	+				+	+										+		+						
DRB1*1422	-						+	+		+			+														
DRB1*142301	-		+				+		+					+	+							+		+			
DRB1*142302, DRB1*1117	-		+				+		+				+	+	+							+		+			
DRB1*1424, DRB1*030201	-, DR18(3)						+			+												+					
DRB1*1425/69	-							+		+																	
DRB1*1426	DR14(6)	+			+		+	+	+				+	+										+			
DRB1*1427	DR14(6)			+			+			+			+			+						+					
DRB1*1428	-				+							+	+						+			+					
DRB1*1429	DR14(6)		+				+		+									+				+					
DRB1*1430	-		+	+				+		+												+					
DRB1*1431/50/76/79	-				+								+														
DRB1*143201/3202	-		w					+	+				+	w													
DRB1*1433	-		+	+			+	+	+													+		+			
DRB1*1434	-		w					+		+			+	w	+												
DRB1*1435	-		+		+		+	+	+				+	+										+			
DRB1*1436	-		+				+			+			+	+	+							+		+			
DRB1*1437	-								+											+		+					
DRB1*1438	-		+					+	+				+	+								+					
DRB1*1439	-												+										+				
DRB1*1440/ZZ	-			+			+			+			+									+			+		
DRB1*1441	-						+			+											+	+					
DRB1*1442	-		+		+		+	+	+	+				+	+							+		+			
DRB1*1443	-		+				+	+	+	+				+	+					+		+		+			
DRB1*144401	-		+				+	+		+				+	+	+				+		+		+			

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
DRB1*144402	-	+				+	+			+				+					+		+		+					
DRB1*1445	-	+				+	+		+					+	+				+		+		+			+		
DRB1*1446	-		+																									
DRB1*1447	-		+				+		+	+												+						
DRB1*1448	-		+				+			+														+				
DRB1*1449	-						+	+		+			+															
DRB1*1451	-		+				+			+												+		+				
DRB1*1452	-		+																		+							
DRB1*1453, DRB1*1131	-			+				+		+																		
DRB1*1454/82	-	+					+	+	+				+	+										+			+	
DRB1*1455	-	+		+				+	+				+	+											+			
DRB1*1456	-	+				+	+		+					+	+					+		+		+				
DRB1*1457	-										+		+				+											+
DRB1*1458	-	+					+	+	+					+										+				
DRB1*1459	-	+					+	+	+					+	+							+	+	+				
DRB1*1460	-	+					+	+	+		+		+	+									+					
DRB1*1461, DRB3*020204/16/18	-, DR52												+															
DRB1*1462	-	+					+	+	+				+	+										+		+		
DRB1*1463	-			+			+			+			+	+									+					
DRB1*1464/72	-	+		+			+	+	+					+	+									+				
DRB1*1465	-	w		+				+	+					+									+					
DRB1*1468/71/73	-				+							+	+															
DRB1*1470/75	-	+					+	+	+				+	+										+				
DRB1*1474	-							+	+				+															
DRB1*1478	-			+			+		+				+	+									+					
DRB1*1480	-		+						+														+					
DRB1*1481	-	w					+		+						w								+					
DRB1*010201-0205, DRB1*1209	DR1, -														+													
DRB1*03010101-0104/04/07/11/15/19/21-25/30/32-34/36/39, DRB1*110201/03-0402/0404/0601/07/18/21/25/34-36/38/42/44/47/55/57/63/6501/6502/70, DRB1*1306/09/1101/1102/22/24/44/52/68	DR17(3), -, DR11(5), DR13(6)			+					+	+												+						
DRB1*030105/06/26/28/31/37, DRB1*110202/41/43/48/50/56/60, DRB1*1370/84	DR17(3), DR3, -, DR11(5)									+													+					
DRB1*030106/08/18, DRB1*1146	DR17(3), -			+					+	+			+										+					
DRB1*030202/27	DR18(3), -								+	+	+												+					
DRB1*0303	DR18(3)							+		+													+					
DRB1*030501/0502/09/14/40, DRB1*110101-0104/0106/0801/0802/1101-1202/1401-15/1901/1902/24/2702-29/32/33/45/49/51/61/62/64/68/69, DRB1*131401-1403/23/5001/56/62/82/86	DR17(3), -, DR11(5), DR13(6)			+					+		+												+					
DRB1*0310	-			+					+	+			+															
DRB1*0312	-			+					+	?				+									+					
DRB1*0313	-			+					+	+																		
DRB1*0316	-									?													+					
DRB1*0317	-								+	+													+					
DRB1*0320, DRB1*1364/83	-			+					+	+							+						+					
DRB1*0329	-			+				+	+		+												+					
DRB1*0335	-								+	+										+			+					
DRB1*0338	-							+		+															+			
DRB1*0420	DR4																							?				
DRB1*0462/69	-										+																	
DRB1*0706	-				+																							

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
DRB1*080101-0401/0403/0404/06/07/10-17/19/22/23/26-34/36, DRB1*1167	DR8, -											+															
DRB1*080402	DR8			?								?									?						
DRB1*0808	-				+							+															
DRB1*0820	-			+					+													+					
DRB1*110105	DR11(5)			+				+		+					+							+					
DRB1*110107/37/39/66, DRB1*130701/0702	DR11(5), -, DR13(6)									+												+					
DRB1*110403/0602	DR11(5)			+				+	+						+							+					
DRB1*1109	DR11(5)			+				+		+			+			+						+					
DRB1*111001/1002	-			+				+		+			+									+					
DRB1*111301/1302	DR11(5)	w		+				+	+				+	w	+							+				+	
DRB1*1116	-			+				+	+				+				+	+				+					
DRB1*1120	DR11(5)			+				+		+			+				+	+				+					
DRB1*1123/26, DRB1*1325	DR11(5), -			+				+		?												+					
DRB1*112701	DR11(5)			+				+	+	?												+					
DRB1*1140	-			+				+	?				+			+	+	+				+					
DRB1*1153	-			+			+	+		+												+		+			
DRB1*115401	-			+			+	+	+						+							+		+			
DRB1*115402	-			+			+	+	+													+		+			
DRB1*1158, DRB1*1342	-			+				+	+							+						+		+			
DRB1*1159	-			+				+	+				+			+	+	+				+					
DRB1*1204	-											+			+												
DRB1*1205/14/15	DR12(5), -																+										
DRB1*130101/0102/20/27/28/59/61/69/71/87	DR13(6), -			+				+	+								+	+				+					
DRB1*130103	DR13(6)			+				+	+						+		+	+				+					
DRB1*130201/0202/29/34/41/73/74	DR13(6), DR6, -			+				+		+							+	+				+					
DRB1*130203	DR13(6)			+				+		+							+	+	+			+					
DRB1*130301/0302/13/55	DR13(6), -			+						+				+								+					
DRB1*1304/75	DR13(6), -			+				+	+					+								+					
DRB1*130501/0502/5002	DR13(6), -			+				+		+						+						+					
DRB1*1308	DR13(6)								+								+					+				+	
DRB1*1312/38/49	DR6, -									+				+								+					
DRB1*1315	-			+			+	+	+								+	+				+					
DRB1*1316	DR13(6)			+				+									+	+				+					
DRB1*1318	DR13(6)			+				+	+				+			+						+					
DRB1*1319	-						+	+									+					+					
DRB1*1321/30/66	-			+				+	+	+				+								+					
DRB1*1326	-						+			+						+				+		+					
DRB1*1331	-			+				+		+							+	+				+		+			
DRB1*1332	-								+					+			+	+				+					
DRB1*1333	-			+						?				+								+					
DRB1*1335/40/51/80	-								+								+	+				+					
DRB1*1336	-									+							+	+				+					
DRB1*1337/47	-			+						+							+	+				+					
DRB1*1339	-			+				+		+							+	+				+					
DRB1*1343	-			+				+	+				+				+	+				+					
DRB1*1345	-			+				+		?												+					
DRB1*1346	-			+				+		+												+		+			
DRB1*1348/58	-								+					+								+					
DRB1*1353	-						+		+								+	+				+					
DRB1*1354/77	-			+				+	+													+					
DRB1*1357	-			+			+	+	+								+					+					
DRB1*1360	-									+									w			+					
DRB1*1363	-			+				+		+						+	+	+				+					

DRB1*1365	-									+				+			+	+			+							
Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
DRB1*1367	-																+	+										
DRB1*1372	-								+								+		+									
DRB1*1376	-							+		+					+		+				+		+					
DRB1*1378/79	-			+					+	+							+	+										
DRB1*1381	-			+						+				+							+							
DRB1*15010101-0102/0105-0201/0204/04-11/13-22/24-31, DRB1*160101-0502/07/09-13N	DR15(2), -, DR2, DR16(2)																			w								
DRB1*150103/0206	DR15(2)														+				w									
DRB1*1608	-															+			w									
DRB3*0215	-																						+					
DRB4*0102	DR53	?					?	?		?			?								?	?	?					

w = weak

? = nucleotide sequence information not available for the primer matching sequence

Underlined alleles = new HLA-DRB1*14 alleles that have the same amplification patterns as the previously known HLA-DRB1*14