

Olerup SSP® HLA-A-B-DR SSP Combi Tray

Product number:	101.701-24u/06u – without <i>Taq</i> pol.
Lot number:	14K
Expiry date:	2012-June-01
Number of tests:	24 tests – Product No. 101.701-24u 6 tests – Product No. 101.701-06u
Number of wells per test:	95 +1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 14K.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® HLA-A-B-DR SSP COMBI TRAY LOT

The **HLA-A low resolution** specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP® HLA-A-B-DR SSP Combi Tray* lot was made (**Lot No. 78G**).

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
6	Moved	Moved, exchanged	Primer pair to wells 14 and 16, exchanged 3'-primer to amplify the A*80:02 allele.
14	Added	Added	Primer pair from well 6.
16	Added	Added	Primer pair from well 6.
23	Added	-	Primer added for the A*03:75 allele.

The **HLA-B low resolution** specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP® HLA-A-B-DR SSP Combi Tray* lot was made (**Lot No. 78G**).

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
28	-	-	Exchanged positive control primer pair.
30	Added	Added	Improved resolution of B*13 and B*44 alleles
33	-	Added	Primer added for the B*78:07 allele.
39	-	Added	Improved resolution of B*35 alleles
43	-	Added	Improved resolution of B*15 and B*46 alleles
52	-	Added	Improved resolution of B*39 alleles
66	Added	Added	Primer pair added for the B*57:16 and 57:20 alleles, improved allelic resolution.

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Lot-specific information

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The **HLA-DR low resolution** specificity and interpretation tables have been updated for the HLA-DRB alleles described since the previous *Olerup SSP® HLA-A-B-DR SSP Combi Tray* lot was made (**Lot No. 78G**).

The **HLA-DR low resolution** primer set is unchanged compared to the previous lot.

Change in revision R01 compared to R00:

1. The HLA-C*03:12 and 03:19 alleles are amplified in primer mix 65.

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Lot-specific information

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Well 96 contains Negative Control primer pairs, that will amplify more than 95% of the *Olerup SSP®* HLA Class I, DRB, DQB1 and DPB1 amplicons as well as the amplicons generated by control primer pairs.

PCR product sizes range from 75 to 430 base pairs.
The PCR product generated by the control primer pair is 430 base pairs.

Length of PCR	105	200	105	80	75	80
product						
5'-primer¹	164	340	440	45	45	43
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tg g ^{3'}	5'-Tg g ^{3'}	5'-Tg g ^{3'}
3'-primer²	231	2nd 	507	59	58	57
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}
A*	+	+	+			
B*	+	+	+			
C*	+	+	+			
DRB1				+	+	
DRB3				+	+	
DRB5				+		
DQB1					+	
DPB1						+

¹The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codonnumbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

²The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

PRODUCT DESCRIPTION

HLA-A-B-DR SSP Combi Tray

CONTENT

The primer set contains 5'- and 3'-primers for grouping the HLA-A*01:01 to A*80:02 alleles into the corresponding serological groups A1 to A80.

The primer set contains 5'- and 3'-primers for grouping the B*07:02 to B*83:01 alleles into the corresponding serological groups B7 to B81 as well as primer pairs for recognizing the Bw4 and Bw6 sequence motifs.

The primer set contains 5'- and 3'-primers for grouping the DRB1*01:01 to DRB1*10:03 alleles into the corresponding serological groups DR1 to DR18 as well as primer pairs for recognizing the DRB3, DRB4 and DRB5 groups of alleles.

PLATE LAYOUT

Each test consists of 96 PCR reactions in a 96 well PCR plate.

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	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	ctrl

Wells 1 to 24 – HLA-A low resolution primers.

Wells 25 to 72 – HLA-B low resolution primers.

Wells 73 to 95 – HLA-DR low resolution primers.

Well 96 – Negative Control.

The 96 well PCR plate is marked with 'A-B-DR' in silver/gray ink.

Well No. 1 is marked with the Lot No. '14K'.

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded.

The PCR plates are covered with a PCR-compatible foil.

INTERPRETATION

Only HLA-A alleles will be amplified by the 24 wells of the HLA-A low resolution primer set, **wells 1 to 24**, except that primer mix 6 will amplify the B*18:27 allele. Thus, the interpretation of HLA-A low resolution is only influenced by this HLA-B allele and not by other HLA Class I genes.

Only HLA-B alleles will be amplified by the 48 wells of the HLA-B low resolution, primer set, **wells 25 to 72**, except that the C*01:30 allele will be amplified by primer mix 28, the C*02:06 allele will be weakly amplified by primer mix 67, the C*02:23

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allele will be amplified by primer mix 25, the HLA-C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, primer mix 41 will amplify the C*03:12 and 03:19 alleles, the C*06:20 allele will be amplified by primer mix 69, the C*07:46 allele will be amplified by primer mix 32, the C*15:02:04 allele will amplified by primer mix 64, the C*15:25 allele will amplified by primer mix 53 and the C*16:10 allele will be amplified by primer mix 30. Thus, the interpretation of HLA-B low resolution typings is only influenced by these HLA-C alleles and not by other alleles of other HLA class I genes.

Only HLA-DRB alleles will be amplified by the 23 wells the DR low resolution primer set, **wells 73 to 95**. Thus, the interpretation of DR low resolution typings is not influenced by other HLA class II genes.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A alleles, i.e. **A*01:01 to A*80:02**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 24**. The HLA-A alleles will be grouped into their corresponding serological specificities².

All the HLA-B alleles, i.e. **B*07:02 to B*83:01**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into their corresponding serological specificities³.

All the HLA-DRB1, -DRB3, -DRB4⁴ and –DRB5 alleles, i.e. **DRB1*01:01:01 to 10:03**, **DRB3*01:01:02:01 to DRB3*03:03**, **DRB4*01:01:01:01 to DRB4*01:08**, **DRB5*01:01:01 to DRB5*02:05**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the DR low resolution primer set, **wells 73 to 95**. The HLA-DRB alleles will be grouped into their corresponding serological specificities⁵.

¹HLA-A, HLA-B and HLA-DRB alleles listed on the IMGT/HLA web page 2010-April-01, release 3.0.0, www.ebi.ac.uk/imgt/hla.

²The A*03:18 and 26:19 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

The A*26:31 and the A*66:11 and 66:12 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

³The B*08:26 and 08:50 and the B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*14:08 and the B*39:25N, 39:30, 39:32-39:34, 39:47 and 39:50 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02 and 35:99 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*41:09 and the B*45:02 and 45:03 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*55:04, 55:08, 55:13 and 55:27 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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The B*55:23 and 55:32 and the B*56:18 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁴The DRB4*02:01N and DRB4*03:01N null alleles will not be amplified by the DR low resolution primer set.

⁵The DRB1* 08:09 and 08:21 and the DRB1*14:15 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*14:15 allele.

The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*13:18, DRB1*13:47 and DRB1*13:55 alleles.

The DRB1*08:31 and DRB1*11:67 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*11:67 allele.

The DRB1*13:13 and DRB1*14:84 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

SPECIFICITY TABLE

HLA-A low resolution primer set

Specificities and sizes of the PCR products of the 24 primer mixes used for HLA-A low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-A serology ³	Amplified HLA-A alleles ⁴⁻⁶
1 ^{7,9}	120 bp, 140 bp	800 bp	A1, A36	*01:01:01:01-01:04N, 01:06-01:55, 36:01-36:05
2 ⁸	135 bp, 200 bp, 255 bp	1070 bp	A2, A203, A210, A19, A28	*02:01:01:01-02:01:15, 02:01:17-02:01:19, 02:01:21-02:22:02, 02:24-02:35:01, 02:35-03-02:47, 02:49-02:97:02, 02:99, 02:101-02:121, 02:123-02:128, 02:130-02:199
3 ¹⁰	205 bp, 235 bp	1070 bp	A1, A3, A11, A32, A34, A36	*01:12, 01:19, 01:21, 03:01:01:01-03:17, 03:19-03:74, 03:76, 11:25, 24:92, 32:04, 34:02-34:04, 34:07-34:08, 36:02
4	190 bp	800 bp	A1, A3, A11, A30, A36	*01:01:01:01-01:04N, 01:06-01:07, 01:09-01:11N, 01:13, 01:16N-01:18N, 01:20-01:29, 01:31N-01:55, 02:78, 02:169, 03:12, 03:18, 11:01:01-11:27, 11:29-11:59, 26:19, 30:08, 36:04
5	160 bp, 535 bp	800 bp	A3, A9, A23, A24, A2403, A31, A32	*03:30, 23:01:01-23:25, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17-24:64, 24:66-24:88, 24:90N-24:99, 31:08, 32:05, 32:13
6 ⁶	135 bp, 175 bp, 210 bp	800 bp	A2, A9, A23, A24, A29, A80	*23:01:01-23:25, 24:05, 24:13:02, 24:24, 29:07, 31:29, 80:01-80:02, B*18:27
7	175 bp, 200 bp	1070 bp	A2, A3, A9, A23, A24, A2403, A26	*02:17:01 ^w -02:17:02 ^w , 23:14, 24:02:01:01-24:11N, 24:13:01-24:13:02, 24:17-24:50, 24:54-24:56, 24:58-24:63, 24:66-24:91, 24:93, 24:95-24:99, 26:16, 33:19, 68:45
8	165 bp, 200 bp	800 bp	A2, A3, A10, A11, A25, A26, A28, A32, A34, A66, A68, A69	*01:51, 02:55, 03:24, 03:50, 11:10, 25:01:01-25:13, 26:01:01-26:06, 26:08-26:15, 26:17-26:18, 26:20-26:45, 32:15, 34:01:01-34:08, 66:01-66:13, 68:01:01-68:49N, 69:01
9 ⁷	75 bp	800 bp	A3, A25, A32	*25:01:01-25:13, 32:01:01-32:02, 32:04, 32:06-32:22
10 ^{7,11}	85 bp	1070 bp	A10, A26	*01:51, 02:146, 26:01:01-26:02, 26:04, 26:07:01-26:18, 26:20, 26:22-26:29, 26:32-26:45, 33:13
11 ^{7,8,11}	80 bp, 175 bp, 500 bp	1070 bp	A1, A9, A10, A11, A26, A31, A34, A66	*01:13, 01:28, 03:63, 11:01:01-11:27, 11:29-11:59, 24:19, 24:44, 26:03:01-26:03:02, 26:06, 26:21, 31:03, 34:01:01-34:08, 66:01, 66:04-66:10, 66:13, 80:02
12	185 bp	800 bp	A10, A25, A26, A31, A34, A43, A66	*11:11, 25:06, 26:09, 31:03-31:04, 34:01:01-34:08, 43:01, 66:02-66:03

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13^{9,11}	175 bp, 225 bp	1070 bp	A1, A2, A3, A10, A25, A26, A34, A43, A66	*01:13, 02:34-02:35:03, 02:56:01- 02:56:02, 02:62, 02:103, 02:135, 03:01:01:01-03:07, 03:09-03:11N, 03:13- 03:31, 03:33-03:35, 03:37-03:40, 03:42- 03:56, 03:58, 03:60-03:71, 03:73-03:76, 25:01:01-25:05, 25:07-25:13, 26:01:01- 26:01:13, 26:02 ^w , 26:03:01-26:03:02, 26:05-26:08, 26:10-26:33, 26:35-26:45, 34:08, 43:01, 66:01, 66:04-66:13, 74:13
14	200 bp, 240 bp	1070 bp	A2, A29	*02:122, 29:01:01:01-29:22, 33:08-33:09, 33:13
15⁷	90 bp, 135 bp, 205 bp	1070 bp	A1, A30	*01:13, 01:28, 03:43, 30:01:01-30:04, 30:06-30:20, 30:22-30:37
16	190 bp, 370 bp, 395 bp	1070 bp	A2, A24, A31, A32	*02:122, 29:14, 31:01:02-31:01:06, 31:02-31:31, 32:05, 33:08-33:09, 74:04
17	150 bp, 180 bp	1070 bp	A32	*03:43, 29:13, 32:01:01-32:03, 32:05- 32:22
18	200 bp	1070 bp	A33, A68	*33:01:01-33:01:03, 33:03:01-33:29, 68:29
19	160 bp, 200 bp	800 bp	A74	*29:19, 74:01-74:14N
20	155 bp, 200 bp, 240 bp	800 bp	A2, A210, A25, A68	*02:10, 02:34-02:35:03, 02:39, 02:46, 02:48, 02:50, 02:52, 02:56:01-02:56:02, 02:62, 02:70, 02:73, 02:78, 02:93, 02:95, 02:103, 02:110, 02:114, 02:117, 02:122, 02:129, 02:156, 11:57, 24:94, 25:05, 68:01:01-68:49N
21	240 bp, 375 bp	800 bp	A2, A26, A28, A68, A69	*02:55, 24:82, 26:22, 33:22, 66:09, 68:29, 69:01
22^{7,22}	85 bp, 240 bp	800 bp	A2, A36	*02:34-02:35:03, 02:46, 02:48, 02:56:01- 02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 36:01-36:05
23^{7,11,13}	75, 160, 240, 495 bp	800 bp	A2, A26, A28, A36, A68, A80	*02:55, 03:41, 03:63, 03:75, 24:18, 26:03:01-26:03:02, 26:05-26:06, 26:21, 26:30, 33:24, 36:02, 68:05, 68:15, 68:20, 80:01
24	360 bp	1070 bp	A1, A11, A36, A80	*01:01:01:01-01:04N, 01:06, 01:08- 01:29, 01:31N-01:35, 01:37-01:49, 01:51-01:55, 03:41, 03:63, 11:01:01- 11:01:14, 11:01:16-11:11, 11:13-11:17, 11:19-11:27, 11:29-11:40, 11:42-11:59, 33:13, 36:01-36:05, 74:10, 80:01-80:02

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-A low resolution SSP typings.

When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

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PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherit feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A low resolution typing.

In addition, wells number 4, 5, 6, 8, 9, 12 and 19 to 23 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

In the presence of a specific amplification the intensity of the control band often decreases.

³The serological reactivity of all HLA-A alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁴For several HLA-A alleles only partial 1st exon nucleotide sequences are available. We assume that unknown sequences are conserved within allelic groups.

Nucleotide sequence information is available for only exons 2 and 3 of many HLA Class I alleles and for only exon 2 of many HLA Class II alleles and not for other exons or for the introns of these alleles. We assume that unknown sequences in these exons and in the introns are conserved within loci and within allelic groups.

⁵The A*03:18 and 26:19 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

The A*26:31 and the A*66:11 and 66:12 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

⁶Primer mix 6 will amplify the B*18:27 allele.

⁷Specific PCR fragments shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR bands.

⁸The primer pairs in wells 2 and 11 will in most samples give rise to two or three specific PCR fragments.

⁹Primer mixes 1 and 13 have a tendency of giving rise to weaker positive control bands than the other HLA-A low primer mixes.

¹⁰Primer mix 3 may faintly amplify the A*30:04, 30:06, 30:17 and 30:29 alleles.

¹¹Primer mixes 10, 11, 13 and 23 may yield less specific PCR product than the other primer mixes.

¹²Primer mix 22 might faintly amplify most A*11 alleles.

¹³Primer mix 23 may have a tendency of primer dimer formation.

'w', might be weakly amplified.

SPECIFICITY TABLE

HLA-B low resolution primer set

Specificities and sizes of the PCR products of the 48 primer mixes used for HLA-B low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-B serol. ³	Amplified HLA-B alleles ^{4,5}
25^{6,10}	110 bp	800 bp	7, 703, 40, 41, 42, 48, 61	*07:02:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:50, 07:52, 07:54-07:59, 07:61-07:99, 15:138, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 41:08, 42:05:01-42:05:02, 48:05, 48:08, 48:15, C*02:23
	215 bp	1070 bp	8, 44	*08:01:01-08:25, 08:27-08:49, 08:51-08:61, 15:142, 15:180, 44:49, 51:68
26				
27	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 61, 62, 77	*07:20, 07:24, 07:60, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:37, 15:07, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 35:05:01-35:05:02, 35:16-35:17, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 40:05, 40:71, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 46:12, 46:20, 51:64, 53:14, 58:18, C*03:05, C*03:25, C*03:27
28⁷	130 bp, 265 bp	800 bp	12, 13, 14, 17, 21, 35, 40, 41, 44, 45, 47, 49, 50, 60, 61, 64, 65	*13:01:01-13:04, 13:06-13:13, 13:15-13:23, 13:25- 13:37, 14:01-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:18, 15:46, 15:53, 15:106, 18:44, 35:46- 35:47, 35:63, 40:01:01-40:01:10, 40:07, 40:10, 40:14:01-40:16, 40:22N-40:23, 40:25, 40:30-40:34, 40:36, 40:38, 40:42-40:43, 40:45, 40:47-40:49, 40:51-40:55, 40:58-40:63, 40:65-40:67, 40:69, 40:72:01-40:73, 40:76-40:77, 40:79-40:81, 40:84, 40:87-40:88, 40:92, 41:01-41:12, 44:02:01:01- 44:03:06, 44:03:08-44:05:02, 44:09-44:39, 44:41- 44:43, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84- 44:99, 45:01-45:11, 47:01:01:01-47:07, 49:01:01- 49:02, 49:04-49:10, 50:01:01-50:02, 50:04-50:06, 50:08-50:09, C*01:30
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59⁶	120 bp, 210 bp	800 bp	5, 13, 15, 17, 22, 35, 45, 49, 50, 51, 5102, 5103, 52, 55, 56, 62, 63, 78	*07:78, 07:84, 13:16, 13:31 ^w , 15:04 ^w , 15:16, 15:42, 15:67, 15:95, 15:137 ^w , 40:95, 49:01:01, 49:02-49:10, 50:01:01-50:02, 50:04-50:09, 51:01:01-51:03, 51:05, 51:07:01-51:09:02, 51:11N-51:14, 51:16-51:24:03, 51:26-51:41N, 51:43-51:44N, 51:48-51:55, 51:57-51:58, 51:60, 51:61 ^w , 51:63, 51:65-51:80, 51:82-51:95, 52:01:01-52:20, 54:20, 55:01:01-55:01:06, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21 ^w , 55:24-55:25, 55:28-55:29, 55:31, 55:33, 55:36, 55:38, 55:40, 56:05:01-56:06, 56:21, 56:25, 58:08, 78:01-78:07
60	430 bp	1070 bp	5, 17, 27, 44, 51, 5102, 5103, 52, 53, 57, 58, 61	*27:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 40:13, 40:19, 44:06, 44:25, 44:50, 44:95, 51:01:01-51:24:03, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:95, 52:01:01-52:19, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:23, 57:01:01-57:11, 57:13-57:31, 58:01:01-58:02, 58:04-58:16, 58:18-58:28
61	145 bp	1070 bp	12, 21, 35, 40, 4005,	*15:46, 15:53, 15:106, 15:143, 18:48, 35:19, 35:47, 35:63, 40:01:01-40:11, 40:14:01-40:16, 40:18, 40:20,

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62	300 bp	1070 bp	7, 12, 13, 15, 17, 18, 21, 27, 2708, 35, 37, 38, 39, 3902, 40, 4005, 41, 44, 45, 47, 48, 49, 50, 52, 60, 61, 62, 70, 72, 76	*07:54, 08:17, 08:38, 08:54, 13:01:01-13:04, 13:06, 13:08Q-13:23, 13:25-13:35, 13:37, 15:01:01-01- 15:01:04, 15:01:06-15:01:16, 15:03:01-15:07, 15:12, 15:14, 15:19-15:20, 15:24-15:27:03, 15:30, 15:32- 15:36, 15:38:01-15:40, 15:42-15:43, 15:45-15:50, 15:53-15:54, 15:56-15:58, 15:60-15:63, 15:65-15:66, 15:68-15:71, 15:73-15:75, 15:77-15:79N, 15:81- 15:87, 15:91-15:92, 15:94N, 15:96-15:98, 15:101- 15:107, 15:109-15:111N, 15:113, 15:116-15:118, 15:122-15:123, 15:125-15:129, 15:131-15:132, 15:135-15:138, 15:140-15:142, 15:145-15:147, 15:150-15:152, 15:154-15:160, 15:163-15:167, 15:169, 15:171-15:175, 15:178-15:179, 15:181N- 15:185, 15:187-15:188, 15:190N, 18:12, 27:01- 27:21, 27:24-27:65N, 35:10, 35:13, 35:16, 35:28, 35:63, 35:69, 35:80, 37:01:01-37:07, 37:09-37:22, 38:03-38:04, 39:02:01-39:02:02, 39:08, 39:13:01- 39:13:02, 39:22-39:23, 39:49, 40:01:01-40:07, 40:09- 40:16, 40:18-40:24, 40:26-40:40, 40:42-40:67, 40:70-40:99, 41:01-41:12, 42:11, 44:02:01:01- 44:05:02, 44:07-44:11, 44:13-44:99, 45:01-45:11, 47:01:01:01-47:07, 48:01:01-48:05, 48:07-48:15, 48:17-48:22, 49:01:01-49:10, 50:01:01-50:02, 50:04- 50:09, 52:01:01-52:20, 53:17, 55:18, 55:34, 55:40, 78:05-78:06
63	160 bp, 330 bp	1070 bp	22, 44, 45, 47, 54	*44:02:01:01-44:02:13, 44:06, 44:08-44:09, 44:11- 44:12, 44:16, 44:19N-44:24, 44:27, 44:33-44:34, 44:41, 44:44, 44:48-44:49, 44:52N-44:53, 44:55, 44:59, 44:63, 44:66-44:68, 44:71-44:74, 44:80, 44:83-44:84, 44:86-44:87, 44:89-44:91, 44:93, 44:95, 44:97, 44:99, 54:01-54:22, 83:01
64	180 bp, 210 bp	1070 bp	13, 15, 18, 35, 39, 40, 54, 55, 56, 59, 78	*07:65, 13:06, 15:42, 15:86, 18:04, 35:42:02, 35:60, 39:17, 40:58, 45:08, 46:18, 54:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:12-54:13, 54:16-54:22, 55:01:01-55:03, 55:05, 55:07, 55:10-55:12, 55:15- 55:16, 55:18-55:19, 55:21, 55:25-55:26, 55:29-55:31, 55:33-55:40, 56:05:01, 56:06, 56:10, 56:23, 59:01, 59:05, 78:01, 78:02:02-78:03, 78:07, C*15:02:04
65¹⁵	180 bp	1070 bp	12, 15, 21, 22, 44, 45, 49, 50, 51, 56, 61, 62, 82	*13:03, 15:73, 40:71, 44:10, 44:15, 44:18, 45:01, 45:04-45:07, 45:11, 46:11, 49:01:01-49:03, 49:06, 49:08-49:10, 50:01:01-50:02, 50:04-50:08, 51:15, 51:62, 54:03, 56:01:01-56:02, 56:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20, 56:24-56:29, 59:04, 82:01-82:03, C*03:12, C*03:19
66^{6,10}	90 bp, 240 bp	800 bp	57	*55:14, 57:01:01-57:31
67^{6,14}	90 bp	1070 bp	5, 13, 15, 17, 39, 55, 56, 58, 60, 61, 62, 71	*13:11, 15:18:03, 15:73, 39:17, 40:48, 40:71, 51:62, 56:02, 56:04, 56:10, 58:01:01-58:02, 58:04-58:28, C*02:06^w
68^{6,8}	95 bp	1070 bp	8, 18, 22,	*07:65 ^w , 08:32, 18:01:01-18:11, 18:13-18:15,

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69⁶	115 bp, 150 bp	1070 bp	15, 18, 22, 27, 35, 39, 46, 55, 62, 72, 73, 75, 76	*13:31, 15:01:01:01-15:01:04, 15:01:06-15:01:16, 15:04, 15:07-15:08, 15:11:01-15:12, 15:14-15:15, 15:19, 15:24, 15:26N-15:28, 15:30, 15:32, 15:34- 15:35, 15:38:01-15:38:02, 15:43, 15:45-15:46, 15:50, 15:53-15:54, 15:56-15:58, 15:60, 15:63, 15:66, 15:68, 15:70-15:71, 15:73, 15:75-15:77, 15:79N, 15:81-15:82, 15:85, 15:87, 15:92, 15:94N, 15:96- 15:97, 15:101-15:102, 15:104-15:105, 15:109- 15:111N, 15:113, 15:117-15:118, 15:120, 15:122, 15:125-15:126, 15:128-15:129, 15:135, 15:137, 15:140, 15:142-15:149N, 15:152, 15:154, 15:157, 15:159-15:160, 15:163-15:167, 15:169, 15:171- 15:172, 15:174-15:175, 15:178, 15:180-15:184, 15:187, 15:189-15:191, 18:19, 27:25, 35:14:01- 35:14:02, 35:43-35:44, 35:62, 35:67, 35:79, 35:86, 39:18, 39:36, 46:01:01-46:02, 46:04-46:05, 46:07NN, 46:09-46:10, 46:12, 46:14-46:17, 46:20, 46:22, 51:61, 54:06, 55:21, 56:03, 73:01, C*06:20	
70¹⁶	360 bp	1070 bp	Bw4		
71	350 bp	1070 bp	Bw6		
72¹⁰	285 bp	800 bp	7, 703, 8, 35, 40, 41, 42, 48, 53, 60, 61, 81	*07:02:01-07:06, 07:08-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61-07:76, 07:79-07:83, 07:85-07:99, 08:01:01-08:08N, 08:10- 08:11, 08:13-08:15, 08:17-08:61, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 41:02:01-41:02:02, 41:04, 41:10-41:11, 42:01:01-42:02, 42:05:01-42:07, 42:09- 42:13, 48:01:01-48:01:02, 48:05-48:12, 48:14-48:20, 48:22, 53:15, 81:01-81:04N	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-B low resolution SSP typings.

When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherit feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene.

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The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 25 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-B low resolution typing.

In addition, wells number 28 to 30, 34, 41, 44, 45, 54, 59, 66 and 72 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

In the presence of a specific amplification the intensity of the control band often decreases.

³The serological reactivity of all HLA-B alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁴Nucleotide sequence information is available for only exons 2 and 3 of many HLA Class I alleles and for only exon 2 of many HLA Class II alleles and not for other exons or for the introns of these alleles. We assume that unknown sequences in these exons and in the introns are conserved within loci and within allelic groups.

The B*08:26 and 08:50 and the B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*14:08 and the B*39:25N, 39:30, 39:32-39:34, 39:47 and 39:50 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02 and 35:99 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*41:09 and the B*45:02 and 45:03 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*55:04, 55:08, 55:13 and 55:27 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The B*55:23 and 55:32 and the B*56:18 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁵C*01:30 allele will be amplified by primer mix 28, the C*02:06 allele will be weakly amplified by primer mix 67, the C*02:23 allele will be amplified by primer mix 25, the HLA-C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, primer mix 41 will amplify the C*03:12 and C*03:19 alleles, the C*06:20 allele will be amplified by primer mix 69, the C*07:46 allele will be amplified by primer mix 32, the C*15:02:04 allele will amplified by primer mix 64, the C*15:25 allele will amplified by primer mix 53 and the C*16:10 allele will be amplified by primer mix 30

⁶Specific PCR fragments shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR bands.

⁷Primer mix 28 may yield less specific PCR product than the other HLA-B low resolution primer mixes in B*40, B*41, B*45, B*49 and B*50 alleles.

⁸Primer mixes 29, 33 and 68 give a lower yield of specific PCR product than the other HLA-B low resolution primer mixes.

⁹Primer mixes 33, 34 and 44 may have a tendency to give rise to nonspecific amplifications.

¹⁰Primer mixes 25, 43, 66 and 72 may give rise to a primer oligomer artifact.

¹¹The B*57 and B*58 alleles might be faintly amplified by primer mix 33.

¹²Primer mix 44 has a tendency of giving rise to a weaker positive control band than the other HLA-B low primer mixes.

¹³The C*17:01 to C*17:04 alleles might be faintly amplified by primer mix 49.

¹⁴Primer mixes 56 and 67 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

¹⁵The C*03:12 allele might be faintly amplified by primer mix 65.

¹⁶The Bw4-associated HLA-A specificities A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 70.

'w', might be weakly amplified.

'?', nucleotide sequence information not available for the primer matching sequence.

SPECIFICITY TABLE

Specificities and sizes of the PCR products of the 24 primer mixes used for DR low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	DR serology ³	Amplified HLA-DRB alleles ⁴
73 ^{6,8}	200 bp, 255 bp	515 bp	1	*01:01:01-01:02:05, 01:04-01:32
74	200 bp	430 bp	103	*01:03
75	210 bp	430 bp	2, 15	*15:01:01:01-15:44
76	210 bp	430 bp	16	*16:01:01-16:05:02, 16:07-16:16
77 ^{5,6,11}	120 bp, 220 bp	430 bp	3, 17, 18, 11	*03:01:01:01-03:52, 11:07, 11:53, 15:25
78 ^{5,6,11}	80 bp, 210 bp	430 bp	3, 6, 17, 11, 13, 14	*03:01:01:01-03:01:09, 03:04-03:06, 03:08-03:16, 03:18-03:20, 03:22-03:23, 03:25-03:26, 03:28, 03:30- 03:31, 03:33-03:34, 03:36-03:37, 03:43-03:48, 03:50- 03:52, 08:40, 11:02:01-11:03, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40- 11:41, 11:48, 11:59, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:73, 11:76, 11:79-11:80, 11:83, 11:85-11:87, 11:93, 13:01:01-13:04, 13:08, 13:10, 13:15-13:17, 13:19-13:20, 13:22-13:24, 13:27-13:29, 13:31-13:41, 13:43, 13:45, 13:48, 13:51-13:54, 13:57, 13:59, 13:61, 13:63-13:66:02, 13:68-13:76, 13:78-13:81, 13:83- 13:85, 13:87-13:98, 14:16, 14:19, 14:21, 14:82, 14:95
79 ^{5,6}	85 bp, 210 bp	430 bp	3, 6, 11, 13, 14, 1403, 18	*03:02:01-03:03, 03:27, 03:29, 03:38, 11:13:01 ^w - 11:13:02 ^w , 11:26, 11:34, 13:15, 13:19, 13:26, 13:44, 13:53, 13:57, 13:85-13:86, 14:02-14:03:02, 14:06:01- 14:06:02, 14:09, 14:12-14:13, 14:17-14:21, 14:24, 14:27, 14:29-14:30, 14:32:01 ^w -14:32:02 ^w , 14:33, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:65 ^w , 14:67, 14:77-14:78, 14:80-14:81, 14:83, 14:85, 14:89, 14:94, 14:98
80 ^{5,6}	100 bp, 175 bp	430 bp	4	*04:01:01-04:89
81 ⁶	210 bp, 230 bp	430 bp	7, 13, 14	*07:01:01:01-07:01:03, 07:03-07:17, 13:17, 14:50
82 ⁶	170 bp, 215 bp, 250 bp	515 bp	8, 12, 14	*08:01:01-08:19, 08:21-08:40, 11:67, 12:04, 12:16, 14:11, 14:15, 14:68, 14:93
83 ⁵⁻⁷	85 bp, 135 bp, 180 bp	430 bp	3, 9, 11	*03:08, 09:01:02-09:09, 11:07, 11:53
84 ⁸	205 bp	430 bp	10	*10:01:01-10:03
85 ^{5,6}	100 bp, 170 bp	430 bp	3, 8, 11, 14	*03:08, 08:31, 11:01:01-11:70, 11:72-11:94
86 ^{5,6}	85 bp, 105 bp	430 bp	12	*08:32, 12:01:01-12:21
87	215 bp	430 bp	6, 8, 11, 13, 14, 1403	*08:20, 11:01:01-11:04:05, 11:06:01-11:06:02, 11:08:01-11:12:02, 11:14:01-11:16, 11:18-11:21, 11:23-11:25, 11:27:01-11:33, 11:35-11:51, 11:54:01- 11:54:02, 11:56-11:66, 11:68, 11:70, 11:72-11:81, 11:83-11:88, 11:90-11:94, 13:01:01-13:08, 13:10-

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88⁶	195 bp, 215 bp	430 bp	6, 8, 11, 12, 13, 14	*08:01:01-08:02:03, 08:04:01-08:09, 08:11, 08:16- 08:17, 08:20-08:22, 08:24, 08:26, 08:28, 08:31, 08:39, 11:01:01-11:06:02, 11:09-11:12:02, 11:14:01-11:16, 11:20-11:21, 11:23-11:25, 11:27:01-11:30, 11:32- 11:33, 11:35-11:41, 11:43-11:44, 11:46-11:51, 11:54:01-11:56, 11:58:01-11:63, 11:65:01-11:70, 11:72, 11:74-11:78, 11:80-11:88, 11:90-11:94, 12:02:01-12:02:04, 12:13, 12:15-12:16, 12:18-12:21, 13:01:01-13:02:01, 13:02:03, 13:04-13:05:02, 13:07:01-13:09, 13:11:01-13:11:02, 13:14:01-13:24, 13:26-13:29, 13:31-13:32, 13:34-13:36, 13:38-13:43, 13:45-13:55, 13:57, 13:59, 13:61-13:65, 13:67-13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96- 13:98, 14:15-14:16, 14:22, 14:24-14:25, 14:27, 14:37, 14:53, 14:73
89¹¹	175 bp	430 bp	3, 6, 11, 13, 14, 1403, 17, 18	*03:01:01:01-03:07, 03:09, 03:11:01-03:41, 03:43- 03:45, 03:47-03:52, 08:20, 13:01:01-13:16, 13:18- 13:42, 13:44, 13:46-13:66:02, 13:68-13:98, 14:02- 14:03:02, 14:05:01-14:06:02, 14:09, 14:12-14:14, 14:17-14:21, 14:23:01, 14:23:03-14:24, 14:27, 14:29- 14:30, 14:33, 14:36-14:37, 14:40-14:45, 14:47-14:48, 14:51, 14:56, 14:59, 14:63-14:65, 14:67, 14:77-14:78, 14:80-14:81, 14:83-14:85, 14:89, 14:91, 14:94-14:96, 14:98, DRB4*01:03:01:02N
90^{5,6,10}	100 bp, 140 bp, 155 bp	430 bp	4, 6, 8, 13, 14, 1404	*04:62, 04:69, 04:73, 08:08, 11:69, 11:82, 13:45, 14:01:01-14:01:02, 14:04, 14:07:01-14:07:02, 14:10, 14:16, 14:22, 14:25-14:26, 14:28, 14:31-14:32:02, 14:35, 14:37-14:39, 14:49-14:50, 14:53-14:55, 14:57- 14:58, 14:60-14:62, 14:68-14:71, 14:73-14:76, 14:79, 14:82, 14:86-14:88, 14:90, 14:93, 14:99
91^{5,6,9}	110 bp, 135 bp, 170 bp	430 bp	3, 4, 6, 9, 11, 13, 14, 140 4	*03:10, 09:01:02-09:01:05, 09:01:07-09:02:02, 09:04- 09:09, 11:13:01-11:13:02, 11:17, 11:52, 13:43, 14:01:01-14:02, 14:04-14:11, 14:13-14:14, 14:16- 14:18, 14:19 ^w , 14:20, 14:21 ^w , 14:22-14:23:03, 14:26, 14:28-14:36, 14:38-14:39, 14:41, 14:43-14:52, 14:54- 14:57, 14:59-14:62, 14:64-14:65, 14:68, 14:70-14:76, 14:79-14:83, 14:86-14:88, 14:90-14:97, 14:99, 15:27, 15:34
92^{5,6}	110 bp, 175 bp, 225 bp	430 bp	2, 3, 4, 6, 8, 11, 13, 14, 1403, 1404, 16	*03:10, 08:09, 08:20-08:21, 08:32, 08:35, 11:13:01- 11:13:02, 11:17, 11:23, 11:25, 11:31, 11:45, 11:52, 11:55, 11:64, 11:89, 13:13, 13:18, 13:43, 13:45, 13:47, 13:55, 14:01:01-14:01:03, 14:03:01-14:05:03, 14:07:01-14:08, 14:10-14:12, 14:14-14:16, 14:18, 14:22-14:23:03, 14:25-14:28, 14:31-14:32:02, 14:34- 14:36, 14:38-14:40, 14:42-14:45, 14:49-14:50, 14:53- 14:65, 14:67-14:79, 14:81-14:82, 14:84-14:93, 14:95- 14:97, 14:99, 15:21 ^w , 16:04 ^w
93^{5,6,10,11}	100 bp, 165 bp, 240 bp	430 bp	52	DRB3*01:01:02:01-01:14, DRB3*02:01-02:25, DRB3*03:01:01-03:03
94	215 bp	430 bp	53	DRB4*01:01:01-01-01:08
95	175 bp	430 bp	51	DRB5*01:01:01-01-14, DRB5*02:02-02:05
96¹²	-	-		Negative control

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¹ Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DR low resolution SSP typings.

When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers, e.g. the primers in wells 75, 80, 90, 91 and 92.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherit feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 73 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DR low resolution typing.

In addition, well number 82 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

In the presence of a specific amplification the intensity of the control band often decreases.

³The serological reactivity of all DRB alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁴For several DRB alleles only partial second exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the SSP set are completely matched with the target sequences or not. We assume that unknown sequences in the first hyperpolymorphic region of the second exon of DRB alleles are conserved within allelic groups and that unknown sequences of codons 87 to 92 are identical with the DRB1*0101 consensus sequence.

Nucleotide sequence information is available for only exons 2 and 3 of many HLA Class I alleles and for only exon 2 of many HLA Class II alleles and not for other exons or for the introns of these alleles. We assume that unknown sequences in these exons and in the introns are conserved within loci and within allelic groups.

The DRB1*08:09 and 08:21 and the DRB1*14:15 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*14:15 allele.

The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*13:18, DRB1*13:47 and DRB1*13:55 alleles.

The DRB1*08:31 and DRB1*11:67 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*11:67 allele.

The DRB1*13:13 and DRB1*14:84 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁵Specific PCR fragments shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR bands.

⁶Individual alleles can give to rise to two differently sized specific PCR fragments in primer mixes 73, 77 to 83, 85, 86, 88 and 90 to 93.

⁷Primer mix 83 may give rise to nonspecific amplifications.

⁸Primer mixes 73 and 84 may have tendencies of primer oligomer formation.

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⁹Primer mix 91 has a tendency of primer oligomer formation and also has an intense primer cloud due to the high number of primers present in the primer mix.

¹⁰The DRB4*01:03:01:02N allele is amplified by the primer pairs in well No. 90 and 94, whereas the DRB4*02:01N and DRB4*03:01N null alleles are not amplified by these primer pairs.

¹¹Due to sharing of sequence motifs in codon 38, DRB3*01:14 will also be amplified in primer mixes 77, 78 and 89 in addition to primer mix 93.

¹²Primer mix 96 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.

'w', might be weakly amplified.

'?', nucleotide sequence information not available for the primer matching sequence.

INTERPRETATION TABLE

HLA-A low resolution SSP typing

Amplification patterns of the A*01:01 to A*80:02 alleles

		Well ⁶																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec.																									
PCR product(s)																									
Length of int.																									
pos. control ¹																									
5'-primer(s) ²																									
3'-primer(s) ³																									
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
HLA-A allele ⁴	ser ⁵																									
*01:01:01:01-01:04N, 01:06, 01:09-01:11N, 01:16N-01:18N, 01:20, 01:22N-01:27N, 01:29, 01:31N-01:35, 01:37-01:49, 01:52N-01:55	A1, Null, -	1			4																				24	
*01:07, 01:36, 01:50	A1, -	1			4																					
*01:08, 01:14-01:15N	A1, Null	1																							24	
*01:12, 01:19	A1, -	1		3																					24	
*01:13	A1	1			4						11			13		15									24	
*01:21	A1	1		3	4																				24	
*01:28	-	1			4						11				15										24	
*01:30	-	1																								
*01:51	-	1		4				8		10															24	
*02:01:01:01-02:01:15, 02:01:17-02:01:19, 02:01:21- 02:09, 02:11-02:16, 02:18- 02:22:02, 02:24-02:33, 02:36- 02:38, 02:40-02:45, 02:47, 02:49, 02:51, 02:53N-02:54, 02:57-02:61, 02:63-02:69, 02:71-02:72, 02:74:01-02:77, 02:79-02:92, 02:94N, 02:96- 02:97:02, 02:99, 02:101- 02:102, 02:104-02:109, 02:111-02:113N, 02:115- 02:116, 02:118-02:121, 02:123-02:128, 02:130- 02:134, 02:136-02:145, 02:147-02:155, 02:157- 02:168, 02:170-02:199	A2, A203, A19, Null, -		2																							
*02:10, 02:39, 02:50, 02:52, 02:73, 02:93, 02:95, 02:110, 02:114, 02:117, 02:156	A210/ A2, -		2																		20					
*02:17:01-02:17:02	A2	2				w																				
*02:34-02:35:01, 02:35:03, 02:56:01-02:56:02, 02:62, 02:103	A2	2										13						20		22						
*02:35:02	A2											13						20		22						
*02:46, 02:70	A2	2																20		22						
*02:48, 02:129	A2, -																	20		22						
*02:55	A2/ A28	2				8															21		23			
*02:78	-	2		4														20		22						
*02:122	A2														14	16			20							
*02:135	-	2										13														
*02:146	-	2								10																
*02:169	-	2		4																						
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*03:01:01:01-03:07, 03:09-03:11N, 03:13-03:17, 03:19-03:23, 03:25-03:29, 03:31, 03:33-03:35, 03:37-03:40, 03:42, 03:44-03:49, 03:51-03:56, 03:58, 03:60-03:62, 03:64-03:71, 03:73-03:74, 03:76	A3, Null, -			3										13												
*03:08, 03:32, 03:36N, 03:57, 03:59, 03:72	A3, Null, -		3																							
*03:12	A3	3	4																							
*03:18, 26:19 ⁷	-		4											13												
*03:24, 03:50	A3, -	3				8								13												
*03:30	A3	3	5											13												
*03:41	-	3																				23	24			
*03:43	-	3												13	15	17										
*03:63	-	3								11				13								23	24			
*03:75	-													13									23			
*11:01:01-11:01:14, 11:01:16-11:09, 11:13-11:17, 11:19-11:24:02, 11:26-11:27, 11:29-11:40, 11:42-11:56, 11:58-11:59	A11, Null, -		4							11															24	
*11:01:15, 11:12, 11:18, 11:41	A11, -		4							11																
*11:10	A11	4			8					11															24	
*11:11	-	4								11	12														24	
*11:25	A11	3	4							11															24	
*11:57	-	4								11											20				24	
*23:01:01-23:13, 23:15-23:25	A23, Null, -			5	6																					
*23:14, 24:05, 24:13:02, 24:24 ⁸	A23, A9, A24			5	6	7																				
*24:02:01:01-24:04, 24:06-24:11N, 24:13:01, 24:17, 24:20-24:23, 24:25-24:43, 24:45N-24:50, 24:54-24:56, 24:58-24:63, 24:66-24:81, 24:83N-24:88, 24:90N-24:91, 24:93, 24:95-24:99	A24, A2403 /A24, A24/ A9, Null, -				5	7																				
*24:14-24:15, 24:51-24:53, 24:57, 24:64	A24		5																							
*24:18	A24/ A3			5	7																				23	
*24:19, 24:44	A9			5	7					11																
*24:82	-		5	7																					21	
*24:89	-				7																					
*24:92	-		3	5																						
*24:94	-			5																	20					
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
*25:01:01-25:04, 25:07-25:13	A25, Null, -								8	9			13															
*25:05	A25								8	9			13							20								
*25:06	A25								8	9		12																
*26:01:01-26:01:13, 26:08, 26:10-26:15, 26:17-26:18, 26:20, 26:23-26:29, 26:32- 26:33, 26:35-26:45	A26, A10, Null, -								8		10		13															
*26:02	A26								8		10		w															
*26:03:01-26:03:02, 26:06, 26:21	A26,-								8		11		13									23						
*26:04, 26:34	A26								8		10																	
*26:05, 26:30	A26								8				13									23						
*26:07:01-26:07:02	A26										10		13															
*26:09	A26								8		10		12															
*26:16	A26								7		10		13															
*26:22	A26								8		10		13									21						
*26:31, 66:11-66:12 ⁹	A26,-								8				13															
*29:01:01-29:06, 29:08N- 29:12, 29:15-29:18, 29:20- 29:22	A29, Null, -																	14										
*29:07	A29								6									14										
*29:13	-																	14		17								
*29:14	-																	14	16									
*29:19	-																	14		19								
*30:01:01-30:04, 30:06-30:07, 30:09-30:20, 30:22-30:37	A30, Null, -																	15										
*30:08	A30								4									15										
*31:01:02-31:01:06, 31:02, 31:05-31:07, 31:09-31:28, 31:30-31:31	A31, Null, -																											
*31:03	A31																	11	12		16							
*31:04	A31																	12		16								
*31:08	A31/ A24								5											16								
*31:29	-								6											16								
*32:01:01-32:02, 32:06-32:12, 32:14, 32:16-32:22	A32, Null, -																	9			17							
*32:03	A32																				17							
*32:04	A32/ A3								3									9										
*32:05	A32								5											16	17							
*32:13	A32								5				9								17							
*32:15	A32												8	9							17							
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
*33:01:01-33:01:03, 33:03:01-33:07, 33:10-33:12, 33:14-33:18, 33:20-33:21, 33:23, 33:25-33:29	A33, –																	18										
*33:08-33:09	-														14	16	18											
*33:13	-									10				14		18									24			
*33:19	-							7										18										
*33:22	-																	18		21								
*33:24	-																	18								23		
*34:01:01-34:01:02, 34:05-34:06	A34, A10							8		11	12																	
*34:02-34:04, 34:07	A34		3					8		11	12																	
*34:08	A34		3					8		11	12	13																
*36:01, 36:03, 36:05	A36, –	1																					22	24				
*36:02	A36	1	3																				22	23	24			
*36:04	A36	1		4																			22	24				
*43:01	A43									12	13																	
*66:01, 66:04-66:08, 66:10, 66:13	A66, A26, –							8		11	13																	
*66:02-66:03	A66, A10							8		12																		
*66:09	–							8		11	13														21			
*68:01:01-68:04, 68:06-68:14, 68:16-68:19, 68:21-68:28, 68:30-68:44, 68:46-68:49N	A68, A28, Null, –							8															20					
*68:05, 68:15, 68:20	A68							8														20		23				
*68:29	A68							8												18	20	21						
*68:45	–						7	8														20						
*69:01	A69							8															21					
*74:01-74:03, 74:05-74:09, 74:11-74:12N, 74:14N	A74, Null																			19								
*74:04	A74																	16	19									
*74:10	–																		19							24		
*74:13	–														13		19											
*80:01	A80						6																	23	24			
*80:02	–						6				11														24			
B*18:27	–						6																					
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			

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¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A low resolution SSP typing.

In addition, wells number 4, 5, 6, 8, 9, 12 and 19 to 23 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

²The nucleotide position, in the 1st, 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

⁴The sequence of the A*01:05N has been shown to be identical to A*01:04N.

The A*02:01:16 allele has been renamed to A*02:134

The A*02:01:20 has been renamed to A*02:01:18.

The sequence of the A*02:23 allele has been shown to be identical to A*02:22.

The sequence of the A*02:98 allele has been shown to be identical to A*02:96.

The A*11:28 allele has been renamed to A*11:15:02.

The sequence of the A*24:01 allele has been shown to be in error.

The sequence of the A*24:12 allele has been shown to be identical to A*24:08.

The A*24:16 allele has been renamed to A*31:08.

The A*24:65 allele has been renamed to A*24:13:02.

The sequence of the A*30:05 allele has been shown to be identical to A*30:04.

The A*30:21 allele has been renamed to A*30:11:02.

The sequence of the A*31:011 allele has been shown to be identical to A*31:01:02.

The sequence of the A*33:02 allele has been shown to be identical to A*33:03.

⁵The serological reactivity of all HLA-A alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶The primer pairs in vials 2 and 11 will in most samples give rise to multiple specific PCR fragments.

⁷The A*03:18 and 26:19 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

⁸The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

⁹The A*26:31 and the A*66:11 and 66:12 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

'w', may be weakly amplified.

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		INTERPRETATION TABLE																									
		HLA-B low resolution SSP																									
		Amplification patterns of the B*07:02 to B*83:01 alleles																									
		Well																									
Length of spec.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48		
PCR product(s)		110	215	216	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
Length of int. pos. control¹		800	97	1070	1070	235	140	235	130	235	185	235	185	190	290	330	220	165	290	330	220	165	290	330	220	165	
5'-primer(s)²		527	363	363	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	
3'-primer(s)³		605	272	272	309	309	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

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INTERPRETATION TABLE															
HLA-B low resolution SSP															
Amplification patterns of the B*07:02 to B*83:01 alleles															
Well															
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72															
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*18:12	B18											36			39				42								
*18:19	B18											36			39				42								
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												62						71		-					*15:62
												62				69	71		B71					*15:64	
												62				69	71		B62					*15:66	
												62				69	71		-					*15:68	
												62				71			B72					*15:69	
												62		65	67	69	71		B62					*15:73	
												62					71		B72					*15:74	
52				w												69	71		-					*15:76	
												62				69	71		B62					*15:77	
																	71		B70					*15:80	
				54								62					71		B62					*15:83	
												62				69	71		B62, -					*15:85, 15:154, 15:165	
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49												62					71		B62					*15:116	
49																	71		B71					*15:124	
				w								62				69	71		-					*15:137	
												62					71		-					*15:138	
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												61				69	71		-					*15:143	
					57											69	71		-					*15:144	
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*27:01	B27					29											40									
*27:02, 27:53, 27:57, 27:65N	B27, Null, -					29											40									
*27:03-27:06, 27:09- 27:10, 27:13, 27:17, 27:20, 27:27, 27:31, 27:35-27:37, 27:45- 27:46, 27:48-27:51, 27:54-27:56, 27:58, 27:60-27:61, 27:64N	B27, Null, -																40									
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*27:12	-					29											40									
*27:16, 27:39, 27:59N	B27, Null, -					29											40									
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*27:19	B27																40	41								
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*27:24	B27																40									
*27:25	B27																40									
*27:29	B27					29							35				40									
*27:30	B27																40	41								
*27:33	-																40									
*27:41	-					29							36				40									
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	52			56					62											71		-					*27:33	
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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			Well No.		

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*35:01:10	B35									33		36						41	42						
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*35:03:03, 35:56	B35																		41						
*35:04:02	B35									33									41	42					
*35:05:01-35:05:02, 35:51, 35:58, 35:72, 35:89, 35:97	B35, -		27									36							42						
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*35:13	B35																		41	42					
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*35:16	B35		27								36								41	42					
*35:17, 35:30	B35		27								36								41	42					
*35:19	B35											36							41						
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*35:22	B35		27																42						
*35:25, 35:49	B35											36							41						
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*35:27	B35											36							41						
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*37:01:01-37:01:07, 37:03N, 37:06, 37:13, 37:15-37:21	B37, Null, -													37			41		44							
*37:02	B37/ B27					29								37							44					
*37:04:01-37:04:02	B37, -													37			41		44							
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*37:07	-	25												37							44					
*37:08	B37													37			41		44							
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*37:10, 37:22	B37, -																	41		44						
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*38:01:01-38:02:02, 38:08-38:09, 38:11- 38:16, 38:18-38:19, 38:21	B38, -					29																45	46	47		
*38:03	B38					29								35								45	46			
*38:04	B38																				45		47			
*38:05	B38					30															45	46	47			
*38:06	B38																				45					
*38:07	B38					29															45					
*38:10	B38					29															46	47				
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*38:20	-					29												41			45	46	47			
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*39:01:01:01- 39:01:01:02L, 39:01:03- 39:01:08, 39:01:10- 39:01:11, 39:03, 39:05:01-39:06:02, 39:09, 39:11, 39:14- 39:15, 39:24, 39:26- 39:29, 39:31, 39:35, 39:37-39:38Q, 39:40N- 39:41, 39:44, 39:46, 39:48, 39:51-39:57	B3901, B39, Null, -																									
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*39:04	B39					30															45		47	48		
*39:07	B16					?								36							45		47	48		
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				53												68	70			B37						*37:08
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				53								62								70				B37, -		*37:10, 37:22
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																			70				B38		*38:05	
																68	70			B38						*38:06
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																			70				B38		*38:10	
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*39:18	B39					29																45	46	47	48	
*39:19:01	B39																				42	45	47	48		
*39:19:02	B39					29															42	45	47	48		
*39:22	B39					29															45	46	47	48		
*39:36	-					29																47	48			
*39:39	B39					29				35											45	46	47	48		
*39:42	B39					29												41			45	47	48			
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*40:09, 40:11, 40:18, 40:24, 40:27, 40:29, 40:35, 40:37, 40:44, 40:50, 40:56-40:57, 40:64, 40:75, 40:78, 40:82, 40:85-40:86, 40:90-40:91, 40:99	B61, -																								?	
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*40:12	B60/B 48									32		35									43					
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*40:14:01-40:14:03, 40:53	B60, B61				28																				?	
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*40:16	B61	25		28																					48	
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																64	67		71	B39		*39:17					
																		69	71	B39		*39:18					
																		68	71	B39		*39:19:01					
																		68	71	B39		*39:19:02					
																		62		71	B39		*39:22				
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																			71	B39		*39:39					
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																			71	-			*39:43				
49																61	62			71	B60, -		*40:01:01-40:01:06, 40:01:08-40:01:10, 40:07, 40:51, 40:66, 40:73, 40:79				
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50																61	62			71	B61, B41, -		*40:02:01-40:02:10, 40:04, 40:06:01:01- 40:06:02, 40:39-40:40, 40:70, 40:89, 40:94, 40:97				
50																61	62			71	B61		*40:03, 40:20				
50																61	62			71	B4005/ B50		*40:05				
50																61				71	B61		*40:08				
50																		61	62						*40:09, 40:11, 40:18, 40:24, 40:27, 40:29, 40:35, 40:37, 40:44, 40:50, 40:56-40:57, 40:64, 40:75, 40:78, 40:82, 40:85-40:86, 40:90-40:91, 40:99		
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49																		62			71	B60/B 48		*40:12			
50																58	60	62		70		B61, -		*40:13, 40:19			
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49																			62			71	B40/B 15		*40:21		
49																			61	62		71	B40		*40:23		
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49										61	62									71			-	*40:60	
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49	50									61	62									71			B60	*40:74	
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50										61	62									71	72		-	*40:98	
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	51	52																		71	72		B42	*42:09	
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*44:14	B44			28						32															41	
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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			Well No.			

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			52	53		56						61	62	63							71			–		*44:90
				53				58	60			62	63							70			–		*44:95	
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					58				62			65					70			B49		*49:01:02					
					59				62			65					70			B49		*49:02					
					59				62			65					70			B49		*49:03					
					58	59			62								70			B49		*49:04-49:05					
					58	59			62								70			-		*49:07					
									59			61	62			65			71		B50, -		*50:01:01-50:01:02, 50:04-50:05, 50:08				
									59			61	62			65			71		B45		*50:02				
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					54					60						68		70			B51, -		*51:10, 51:81				
										60					65		68		70			-			*51:15		
					54				59	60						68		70			B51			*51:36			
					54				59	60						68		70			B51, -			*51:37, 51:63			
					53	54				60						68		70			-				*51:42		
					54					60						68		70			-					*51:45	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			Well No.	

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
*51:54, 51:78	-									33																
*51:61	-									33																
*51:62	-																									
*51:64	-			27						33																
*51:68	-		26							33																
*51:93	-																									
*52:01:01, 52:01:03, 52:04-52:05, 52:07- 52:08, 52:10-52:13, 52:15, 52:17-52:18	B52, -									33																
*52:01:02, 52:01:04, 52:02-52:03, 52:06:01- 52:06:02, 52:09	B52									33																
*52:01:05, 52:14	B52, -																									
*52:16	-									33	35															
*52:19	-									32	33															
*52:20	-									33																
*53:01:01-53:01:05, 53:05, 53:08:01- 53:08:02, 53:10, 53:16, 53:18, 53:20-53:21, 53:23	B53, -											36						41								
*53:02	B53											36						41								
*53:03, 53:09, 53:11- 53:13	B53/B 35											36						41								
*53:04, 53:07, 53:19	B53, -																	41								
*53:06	B53/B 51											36						41								
*53:14	-	27									36															
*53:15	-										36						41									
*53:17	-										36						41									
*53:22	-										36	37					41									
*54:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:13, 54:16-54:19, 54:21-54:22	B54, Null, -																									
*54:03	B22																									
*54:04, 54:11, 54:15	B54, -																									
*54:06	-											36														
*54:09, 54:14	-											36														
*54:12	-																									
*54:20	-																									
*55:01:01-55:01:06, 55:03, 55:05, 55:11, 55:15, 55:25, 55:29, 55:31, 55:33, 55:36, 55:38	B55, -																									
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.			
									59									68		70			-		*51:54, 51:78			
					54				w	60								68	69	70			-		*51:61			
					54					60					65	67	68	70					-		*51:62			
					54					60							68	70				-			*51:64			
					54					59	60						68	70				-			*51:68			
										59	60							68	70			-			*51:93			
																				70		B52, -			*52:01:01, 52:01:03,			
																									52:04-52:05, 52:07-			
																									52:08, 52:10-52:13,			
																									52:15, 52:17-52:18			
					54					59	60									70		B52			*52:01:02, 52:01:04,			
																									52:02-52:03, 52:06:01-			
																									52:06:02, 52:09			
																				70		B52, -			*52:01:05, 52:14			
																									*52:16			
																				70		-			*52:19			
																									*52:20			
																				68	70	B53, -			*53:01:01-53:01:05,			
																									53:05, 53:08:01-			
																									53:18, 53:20-53:21,			
																									53:23			
					55					60								68	70		B53				*53:02			
																									B53/B			
																									*53:03, 53:09, 53:11-			
																									35			
																									B53, -			
																				68	70				*53:04, 53:07, 53:19			
																									B53/B			
																									51			
																									*53:06			
																									-			
																				68	70				*53:14			
																									72			
																									-			
																									*53:15			
																									60			
																									62			
																									-			
					53					60								68	70		-				*53:17			
																									-			
																									*53:22			
																									B54, Null, -			
																									*54:01-54:02, 54:05N,			
																									54:07-54:08N, 54:10,			
																									54:13, 54:16-54:19,			
																									54:21-54:22			
					52				56							63	64				71					*54:03		
																									B22			
																63	65				71					B54, -		
																63					71					*54:04, 54:11, 54:15		
																	63					69	71			-		
																		63					71			*54:06		
																			63					71		-		
																				63	64				70		*54:09, 54:14	
																									70		-	
																									63	64	*54:12	
																									59		-	
																									64		*54:20	
																									71		B55, -	
																												*55:01:01-55:01:06,
																												55:03, 55:05, 55:11,
																												55:15, 55:25, 55:29,
																												55:31, 55:33, 55:36,
																												55:38
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			Well No.		

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*55:02:01-55:02:05, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39	B55, B54, –																								
*55:04, 55:08, 55:13, 55:27, 56:15, 56:19N, 56:22 ¹⁰	B55, B56, Null, –																								
*55:09, 55:24	B22, B55													34											
*55:14	-														36				41						
*55:17, 55:28	B55, –																								
*55:18	-														35										
*55:20	B22												32												
*55:21	B55																								
*55:22	B22													34											
*55:23, 55:32, 56:18 ¹¹	B55, –														36										
*55:34	-																								
*55:35	-																								
*55:40	-																								
*56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26- 56:29	B56, Null, –																								
*56:02, 56:04	B56																								
*56:03	B22/15														36										
*56:05:01	B56													33											
*56:05:02	B56													33											
*56:06	B78													33							42				
*56:07	B56																								
*56:09	B56														36				41						
*56:10	B55																								
*56:11-56:12	B56, B22																				41				
*56:13	B56													32											
*56:17	B56																								
*56:21	-													33											
*56:23	-																								
*56:25	-																								
*57:01:01-57:01:04, 57:01:06-57:01:07, 57:06, 57:08, 57:10, 57:15-57:16, 57:18- 57:20, 57:22-57:23, 57:25-57:27, 57:29- 57:30	B57, –																	36				41			
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
			52		56								64								71	B55, B54, –	*55:02:01-55:02:05, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39		
			52		56																71	B55, B56, Null, –	*55:04, 55:08, 55:13, 55:27, 56:15, 56:19N, 56:22 ¹⁰		
			52		56	59														71	B22, B55	*55:09, 55:24			
			52		56									66						71	-		*55:14		
			52		56	59														71	B55, –	*55:17, 55:28			
								62	64											71	-		*55:18		
51	52	54	56																	71	B22		*55:20		
			52		56	w							64				69	71	B55					*55:21	
			52		56															71	B22		*55:22		
			52		56															71	B55, –	*55:23, 55:32, 56:18 ¹¹			
			52		56				62	64										71	-		*55:34		
			52		56	w							64							71	-			*55:35	
			52		56	59			62	64										71	-			*55:40	
																65				71	B56, Null, –	*56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26- 56:29			
			52		56									65	67					71	B56		*56:02, 56:04		
			52		56												69	71	B22/15					*56:03	
			52		56	59							64							71	B56			*56:05:01	
			52		56	59														71	B56			*56:05:02	
			52		56	59							64			w				71	B78			*56:06	
			52		56									65						70	B56			*56:07	
			52		56															71	B56			*56:09	
			52		56									64		67				71	B55			*56:10	
			52		56															71	B56, B22			*56:11-56:12	
			52	54	56									65						71	B56			*56:13	
														65						71	B56			*56:17	
			52		56	58	59													70	-			*56:21	
														64						71	-			*56:23	
			52		56	59								65						71	-			*56:25	
															60										*57:01:01-57:01:04, 57:01:06-57:01:07, 57:06, 57:08, 57:10, 57:15-57:16, 57:18- 57:20, 57:22-57:23, 57:25-57:27, 57:29- 57:30
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48							
*57:01:05, 57:11, 57:13, 57:21, 57:31	B57, -												36																			
*57:02:01-57:03:02, 57:05, 57:17, 57:28N	B57, Null, -																			41												
*57:04	B57									30									41													
*57:07	B57																		41													
*57:09	B57												32						41													
*57:12	B57																		41													
*57:14	-													36				41														
*57:24	-													36				41														
*58:01:01-58:01:02, 58:01:04, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24	B58, Null, -													36				41														
*58:01:03, 58:02, 58:06, 58:16, 58:25-58:26	B58, -													36																		
*58:07	B58													36	37																	
*58:08	B17/ B5												33																			
*58:09	B17													36			41															
*58:17N	Null													36			41															
*58:18	-			27										36																		
*58:20	-																						45									
*58:27	-																															
*58:28	-																41															
*59:01, 59:05	B59, -																															
*59:02-59:03	B59, -																															
*59:04	-																															
*67:01:01	B67				29															45		48										
*67:01:02-67:02	B67, -																			45		48										
*73:01	B73																						48									
*78:01, 78:02:02-78:03, 78:07	B78, -												33							42												
*78:02:01, 78:04	B78, B35												33						42													
*78:05	-												33						42													
*78:06	-												33																			
*81:01	B81																															
*81:02	B81																							48								
*81:03-81:04N	Null, -																															
*82:01-82:03	B82, -									32			35							43												
*83:01	-																		41													
C*01:30					28																											
C*02:06																																
C*02:23					25																											
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48							

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
								60				66				70				B57, –	*57:01:05, 57:11, 57:13, 57:21, 57:31				
								60				66				70				B57, Null, –	*57:02:01-57:03:02, 57:05, 57:17, 57:28N				
								60				66				70				B57	*57:04				
		53						60				66				70				B57	*57:07				
		53						60				66				70				B57	*57:09				
			55					60				66				71				B57	*57:12				
		53						60				66				70				–	*57:14				
								60				66				70				–	*57:24				
								60					67			70				B58, Null, –	*58:01:01-58:01:02, 58:01:04, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24				
								60					67			70				B58, –	*58:01:03, 58:02, 58:06, 58:16, 58:25-58:26				
								60					67			70				B58	*58:07				
		54			59	60							67			70				B17/ B5	*58:08				
			55			60							67			70				B17	*58:09				
													67			70				Null	*58:17N				
													67			70				–	*58:18				
													67			70				–	*58:20				
													67			70				–	*58:27				
													67			70				–	*58:28				
								58			64					70				B59, –	*59:01, 59:05				
								58								70				B59, –	*59:02-59:03				
								58			65					70				–	*59:04				
		52															71			B67	*67:01:01				
		52														71			B67, -	*67:01:02-67:02					
		52														69	71		B73		*73:01				
								59			64			68		71			B78, –	*78:01, 78:02:02-78:03, 78:07					
								59						68		71			B78, B35	*78:02:01, 78:04					
								59	62							71			-		*78:05				
								59	62							71			-		*78:06				
		52	56	57													71	72	B81		*81:01				
		52		57													71	72	B81		*81:02				
		52		57													71	72	Null, -		*81:03-81:04N				
		52		56									65			71			B82, –		*82:01-82:03				
		52	53	56						63						71			-		*83:01				
														w							C*01:30				
																					C*02:06				
																					C*02:23				
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

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Well No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48		
C*03:05, C*03:25, C*03:27			27																							
C*03:12, 03:19																										
C*06:20												32														
C*07:46																										
C*15:02:04																										
C*15:25																										
C*16:10									30																	
Well No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48		

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells. Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-B low resolution typing.

In addition, wells number 28 to 30, 34, 41, 44, 45, 54, 59, 66 and 72 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

²The nucleotide position, in the 1st, 2nd or 3rd exon or in the 1st intron, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position, in the 2nd, or 3rd exon or the 1st or 3rd introns, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

⁴The sequence of the B*07:01 allele has been shown to be in error.

The sequence of the B*13:05 allele has been shown to be identical to B*13:04.

The B*13:24 allele has been renamed B*13:22:02

The B*15:01:05 allele has been corrected and renamed B*15:120

The B*15:22 allele has been renamed B*35:43.

The sequence of the B*15:41 allele has been shown to be identical to B*15:39.

The B*15:59 allele has been renamed B*35:44.

The sequence of the B*18:16 allele has been shown to be identical to B*18:14.

The sequence of the B*27:051 allele has been shown to be identical to B*27:05:02.

The sequence of the B*27:22 allele has been shown to be identical to the corrected B*27:06 sequence.

The B*35:73 allele has been renamed B*35:08:03.

The sequence of the B*39:012 allele has been shown to be identical to B*39:01:01.

The sequence of the B*39:21 allele has been shown to be identical to B*39:24.

The sequence of the B*40:17 allele has been shown to be identical to B*40:16.

The sequence of the B*40:41 allele has been shown to be identical to B*40:40.

The sequence of the B*42:03 allele has never been assigned.

The sequence of the B*44:01 allele has been shown to be identical to B*4402.

The sequence of the B*50:03 allele has been shown to be identical to B*50:02.

The sequence of the B*51:25 allele has been shown to be identical to B*51:22.

The B*51:47 allele has been renamed B*51:09:02.

The sequence of the B*55:06 allele has been shown to be identical to B*55:04.

The sequence of the B*58:03 allele has never been assigned.

The B*79:01 allele has been renamed B*15:18.

The B*9530 allele has been renamed B*15:27:02.

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
															65										C*03:05, C*03:25, C*03:27
																		69							C*03:12, 03:19
															64										C*06:20
																									C*07:46
																									C*15:02:04
																									C*15:25
																									C*16:10
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

⁵The serological reactivity of all HLA-B alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶The B*08:26 and 08:50 and the B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁷The B*14:08 and the B*39:25N, 39:30, 39:32-39:34, 39:47 and 39:50 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁸The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02 and 35:99 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁹The B*41:09 and the B*45:02 and 45:03 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

¹⁰The B*55:04, 55:08, 55:13 and 55:27 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

¹¹The B*55:23 and 55:32 and the B*56:18 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

'ser', serological HLA specificity.

'w', might be weakly amplified.

'?', nucleotide sequence information not available for the primer matching sequence.

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INTERPRETATION TABLE
DR low resolution SSP typing
Amplification patterns of the DRB1*01:01 to DRB1*10:03 alleles

	Well ⁴												
	73	74	75	76	77	78	79	80	81	82	83	84	
Length of spec.	200	200	210	210	120	80	85	100	210	170	85	205	
PCR product(s)	255				220	210	210	175	230	215	135		
Length of int.											250	180	
pos control¹	515	430	430	430	430	430	430	430	430	515	430	430	
5'-primer(s)²	14 (129)	14 (129)	13 (126)	13 (126)	13 (125)	13 (125)	13 (125)	13 (125)	14 (127)	16 (133)	26 (165)	31 (178)	
	5' -gAA 3'	5' -gAA 3'	5' -Agg 3'	5' -Agg 3'	5' -AAG 3'	5' -GTC 3'	5' -GTC 3'	5' -GTC 3'	5' -ATA 3'	5' -GTT 3'	5' -TAT 3'	5' -gCg 3'	
			13 (126)	13 (126)	47 (227)	16 (133)		13 (125)	14 (127)	16 (133)	58 (261)		
					5' -gTT 3'	5' -gTT 3'		5' -ACC 3'	5' -ATA 3'	5' -gTT 3'	5' -Ag 3'		
								13 (125)	13 (125)	16 (133)			
3'-primer(s)³	67 (286)	67 (286)	67 (286)	67 (286)	73 (305)	26 (164)	28 (171)	33 (184)	71 (298)	58 (260)	57 (257)	86 (344)	
	5' -gAg 3'	5' -gAT 3'	5' -gAT 3'	5' -gAA 3'	5' -ggC 3'	5' -gTC 3'	5' -CTC 3'	5' -gTC 3'	5' -CTC 3'	5' -gTC 3'	5' -CCT 3'	5' -CAC 3'	
			70 (295)	67 (286)	73 (305)	71 (299)	70 (295)	58 (260)	73 (305)	74 (307)	73 (305)	86 (344)	
			67 (286)	71 (298)	71 (303)	74 (308)	5' -gCT 3'	5' -gTC 3'	77 (317)	78 (319)	78 (319)		
					5' -CCC 3'	5' -gCT 3'	5' -CTC 3'	5' -gTC 3'					
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

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INTERPRETATION TABLE

DR low resolution SSP typing

Amplification patterns of the DRB1*01:01 to DRB1*10:03 alleles

Well ⁴													
85	86	87	88	89	90	91	92	93	94	95	96		
100	85	215	195	175	100	110	110	100	215	175		Length of spec. PCR product(s)	
170	105		215		140	135	175	165				Length of int. pos control ¹	
155				170	225	240						5'-primer(s) ²	
430	430	430	430	430	430	430	430	430	430	430		3'-primer(s) ³	
13 (125)	16 (133)	10 (116)	10 (116)	13 (125)	26 (164)	13 (125)	10 (116)	28 (170)	13 (125)			Negative Control	
16 (133)		13 (125)	13 (125)	37 (197)	34 (189)	34 (189)	10 (116)						
38 (200)				37 (197)			57 (258)						
58 (260)	30 (175)	70 (295)	67 (286)	58 (260)	42 (213)	57 (257)	57 (257)	51 (239)	87 (346)	57 (258)			
58 (260)	38 (199)	71 (299)	71 (298)	58 (260)	57 (257)	70 (295)	60 (265)	77 (317)	87 (346)	58 (260)			
58 (260)				71 (298)	70 (296)	70 (296)							
				5'-Cgc ^{3'}	5'-CTC ^{3'}	74 (307)							
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

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Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
DRB1 allele ¹⁰	ser ⁵												
*01:01:01-01:02:05, 01:04-01:32	DR1, -	73											
*01:03	DR103		74										
*03:01:01:01-03:01:09, 03:04-03:06, 03:09, 03:11:01-03:16, 03:18-03:20, 03:22-03:23, 03:25-03:26, 03:28, 03:30-03:31, 03:33-03:34, 03:36-03:37, 03:43-03:45, 03:47-03:48, 03:50-03:52	DR3, DR17, -					77	78						
*03:02:01-03:03, 03:27, 03:29, 03:38	DR3, DR18, -					77		79					
*03:07, 03:17, 03:21, 03:24, 03:32, 03:35, 03:39-03:41, 03:49	DR3, -					77							
*03:08	DR3					77	78				83		
*03:10	DR3					77	78						
*03:42	-					77							
*03:46	-					77	78						
*04:01:01-04:61, 04:63-04:68, 04:70-04:72:02, 04:74-04:89	DR4, DR4/ DR3, Null, -								80				
*04:62, 04:69, 04:73	DR4, -								80				
*07:01:01-01-07:01:03, 07:03-07:17	DR7, Null, -									81			
*08:01:01-08:02:03, 08:04:01-08:07, 08:11, 08:16-08:17, 08:22, 08:24, 08:26, 08:28, 08:39	DR8, -										82		
*08:03:02, 08:10, 08:12-08:15, 08:18-08:19, 08:23, 08:25, 08:27, 08:29-08:30:02, 08:33-08:34, 08:36-08:38	DR8, -										82		
*08:08	DR8										82		
*08:09, 08:21, 14:15 ⁶	DR8										82		
*08:20, 13:18, 13:47, 13:55 ⁷	DR13,-												
*08:31, 11:67 ⁸	DR8/ DR11, -										82		
*08:32	-										82		
*08:35	-										82		
*08:40	-						78				82		
*09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:09	DR9, -										83		
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
												ser ⁵	DRB1 allele ¹⁰
												DR1, –	*01:01:01:02:05, 01:04-01:32
												DR103	*01:03
				89								DR3, DR17, –	*03:01:01-03:01:09, 03:04-03:06, 03:09, 03:11:01-03:16, 03:18-03:20, 03:22-03:23, 03:25-03:26, 03:28, 03:30-03:31, 03:33-03:34, 03:36-03:37, 03:43-03:45, 03:47-03:48, 03:50-03:52
				89								DR3, DR18, –	*03:02:01-03:03, 03:27, 03:29, 03:38
				89								DR3, –	*03:07, 03:17, 03:21, 03:24, 03:32, 03:35, 03:39-03:41, 03:49
												DR3	*03:08
						91	92					DR3	*03:10
												–	*03:42
												–	*03:46
												DR4, DR4/ DR3, Null, –	*04:01:01-04:61, 04:63-04:68, 04:70-04:72:02, 04:74-04:89
												DR4, –	*04:62, 04:69, 04:73
												DR7, –	*07:01:01-07:01:03, 07:03-07:17
												DR8, –	*08:01:01-08:02:03, 08:04:01-08:07, 08:11, 08:16-08:17, 08:22, 08:24, 08:26, 08:28, 08:39
				88								DR8, –	*08:03:02, 08:10, 08:12-08:15, 08:18-08:19, 08:23, 08:25, 08:27, 08:29-08:30:02, 08:33-08:34, 08:36-08:38
												DR8	*08:08
												DR8	*08:09, 08:21, 14:15 ⁶
												DR13, –	*08:20, 13:18, 13:47, 13:55 ⁷
												DR8/ DR11, –	*08:31, 11:67 ⁸
												-	*08:32
												-	*08:35
												-	*08:40
												DR9, –	*09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:09
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

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Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
*09:01:06, 09:03	DR9											83	
*10:01:01-10:03	DR10, -												84
*11:01:01-11:01:11, 11:04:01- 11:04:05, 11:06:01-11:06:02, 11:09-11:10:02, 11:12:01- 11:12:02, 11:15, 11:24, 11:27:01-11:30, 11:32-11:33, 11:35, 11:37-11:39, 11:43- 11:44, 11:46-11:47, 11:49- 11:51, 11:54:01-11:54:02, 11:56, 11:58:01-11:58:02, 11:60-11:62, 11:66, 11:72, 11:74-11:75, 11:77-11:78, 11:81, 11:84, 11:88, 11:90- 11:92, 11:94	DR11, -												
*11:02:01-11:03, 11:11:01- 11:11:02, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40-11:41, 11:48, 11:59, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:76, 11:80, 11:83, 11:85-11:87, 11:93	DR11, DR11/ DR13, -						78						
*11:05	DR11												
*11:07, 11:53	DR11					77					83		
*11:08:01-11:08:02, 11:18- 11:19:02, 11:42, 11:57	DR11												
*11:13:01-11:13:02	DR11							w					
*11:17, 11:52	DR11, DR14												
*11:22	-												
*11:23, 11:25	DR11												
*11:26, 11:34	DR11						79						
*11:31, 11:45, 11:64	DR11, -												
*11:55	DR11												
*11:69, 11:82	-												
*11:73, 11:79	-						78						
*11:89	-												
*12:01:01-12:01:03, 12:03:02, 12:05-12:12, 12:14, 12:17	DR12, -												
*12:02:01-12:02:04, 12:13, 12:15, 12:18-12:21	DR12, -												
*12:04	DR12										82		
*12:16	-										82		
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

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Well No.

85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
												DR9	*09:01:06, 09:03
												DR10, -	*10:01:01-10:03
85	87	88										DR11, -	*11:01:01-11:01:11, 11:04:01- 11:04:05, 11:06:01-11:06:02, 11:09-11:10:02, 11:12:01- 11:12:02, 11:15, 11:24, 11:27:01-11:30, 11:32-11:33, 11:35, 11:37-11:39, 11:43- 11:44, 11:46-11:47, 11:49- 11:51, 11:54:01-11:54:02, 11:56, 11:58:01-11:58:02, 11:60-11:62, 11:66, 11:72, 11:74-11:75, 11:77-11:78, 11:81, 11:84, 11:88, 11:90- 11:92, 11:94
85	87	88										DR11, DR11/ DR13, -	*11:02:01-11:03, 11:11:01- 11:11:02, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40-11:41, 11:48, 11:59, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:76, 11:80, 11:83, 11:85-11:87, 11:93
85		88										DR11	*11:05
85												DR11	*11:07, 11:53
85	87											DR11	*11:08:01-11:08:02, 11:18- 11:19:02, 11:42, 11:57
85						91	92					DR11	*11:13:01-11:13:02
85						91	92					DR11, DR14	*11:17, 11:52
85												-	*11:22
85	87	88					92					DR11	*11:23, 11:25
85												DR11	*11:26, 11:34
85	87						92					DR11, -	*11:31, 11:45, 11:64
85		88					92					DR11	*11:55
85		88			90							-	*11:69, 11:82
85	87											-	*11:73, 11:79
85						92						-	*11:89
	86											DR12, -	*12:01:01-12:01:03, 12:03:02- 12:05-12:12, 12:14, 12:17
	86	88										DR12, -	*12:02:01-12:02:04, 12:13- 12:15, 12:18-12:21
	86											DR12, -	*12:04
	86	88										-	*12:16
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

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*13:01:01-13:02:01, 13:02:03, 13:04, 13:08, 13:16, 13:20, 13:22-13:24, 13:27-13:29, 13:31-13:32, 13:34-13:36, 13:38-13:41, 13:48, 13:51- 13:52, 13:54, 13:59, 13:61, 13:63-13:65, 13:68-13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96- 13:98	DR11, DR13, DR14, -						78						
*13:02:02, 13:03:01-13:03:05, 13:10, 13:33:01-13:33:03, 13:37, 13:66:01-13:66:02, 13:81, 13:88-13:90, 13:94- 13:95	DR13, -						78						
*13:05:01-13:05:02, 13:07:01- 13:07:02, 13:11:01-13:11:02, 13:14:01-13:14:03, 13:21:01- 13:21:02, 13:42, 13:46, 13:49- 13:50:02, 13:62	DR13, DR13/ DR11, DR6												
*13:06, 13:12, 13:25, 13:30, 13:56, 13:58, 13:60, 13:77, 13:82	DR11, DR13, DR6, -												
*13:09	DR13												
*13:13, 14:84 ⁹	DR13, -												
*13:15, 13:19, 13:53, 13:57	DR13					78	79						
*13:17	DR13					78				81			
*13:26	DR14						79						
*13:43	DR13					78							
*13:44, 13:86	-						79						
*13:45	DR13					78							
*13:67	DR13												
*13:85	-					78	79						
*14:01:01-14:01:02, 14:04, 14:07:01-14:07:02, 14:10, 14:26, 14:28, 14:31, 14:35, 14:38-14:39, 14:54-14:55, 14:57, 14:60-14:62, 14:70- 14:71, 14:75-14:76, 14:79, 14:86-14:88, 14:90, 14:99	DR14, DR 1404/ DR14, DR4/ DR6, -												
*14:01:03, 14:08, 14:23:02, 14:34, 14:72, 14:92N, 14:97	DR14, Null, -												
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

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Well No.

85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
												DR11, DR13, DR14, -	*13:01:01-13:02:01, 13:02:03, 13:04, 13:08, 13:16, 13:20, 13:22-13:24, 13:27-13:29, 13:31-13:32, 13:34-13:36, 13:38-13:41, 13:48, 13:51- 13:52, 13:54, 13:59, 13:61, 13:63-13:65, 13:68-13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96- 13:98
		87	88	89								DR13, -	*13:02:02, 13:03:01-13:03:05, 13:10, 13:33:01-13:33:03, 13:37, 13:66:01-13:66:02, 13:81, 13:88-13:90, 13:94- 13:95
		87	88	89								DR13, DR13/ DR11, DR6	*13:05:01-13:05:02, 13:07:01- 13:07:02, 13:11:01-13:11:02, 13:14:01-13:14:03, 13:21:01- 13:21:02, 13:42, 13:46, 13:49- 13:50:02, 13:62
		87	88	89								DR11, DR13, DR6, -	*13:06, 13:12, 13:25, 13:30, 13:56, 13:58, 13:60, 13:77, 13:82
			88	89								DR13	*13:09
		87		89			92					DR13, -	*13:13, 14:84 ⁹
		87	88	89								DR13	*13:15, 13:19, 13:53, 13:57
			88									DR13	*13:17
		87	88	89								DR14	*13:26
		87	88			91	92					DR13	*13:43
				89								-	*13:44, 13:86
		87	88		90		92					DR13	*13:45
		87	88									DR13	*13:67
		87		89								-	*13:85
					90	91	92					DR14, DR 1404/ DR14, DR4/ DR6, -	*14:01:01-14:01:02, 14:04, 14:07:01-14:07:02, 14:10, 14:26, 14:28, 14:31, 14:35, 14:38-14:39, 14:54-14:55, 14:57, 14:60-14:62, 14:70- 14:71, 14:75-14:76, 14:79, 14:86-14:88, 14:90, 14:99
						91	92					DR14, Null, -	*14:01:03, 14:08, 14:23:02, 14:34, 14:72, 14:92N, 14:97
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

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*14:02, 14:06:01-14:06:02, 14:09, 14:13, 14:17, 14:20, 14:29-14:30, 14:33, 14:41, 14:47-14:48, 14:51, 14:80, 14:83, 14:94	DR14, DR6, -							79					
*14:03:01-14:03:02, 14:12, 14:40, 14:63, 14:67, 14:77- 14:78, 14:85	DR 1403/ DR14, DR6, -							79					
*14:05:01-14:05:03, 14:14, 14:23:01, 14:23:03, 14:36, 14:43-14:45, 14:56, 14:59, 14:64, 14:91, 14:96	DR14, -												
*14:11	DR14									82			
*14:16	DR6						78						
*14:18, 14:81	DR14, -							79					
*14:19, 14:21	DR14						78	79					
*14:22	DR14												
*14:24	DR14							79					
*14:25, 14:53	DR6, DR13/ 14												
*14:27	DR14							79					
*14:32:01-14:32:02	DR14							w					
*14:37	DR14												
*14:42	-												
*14:46, 14:52	DR14												
*14:49	DR14							79					
*14:50	DR14									81			
*14:58	DR14												
*14:65	DR6							w					
*14:68, 14:93	DR14, -									82			
*14:69	-												
*14:73	-												
*14:74	-												
*14:82	-						78						
*14:89	-							79					
*14:95	-						78						
*14:98	-							79					
*15:01:01:01-15:20, 15:22- 15:24, 15:26, 15:28-15:33, 15:35-15:44	DR15, DR2, Null, -			75									
*15:21	DR2			75									
*15:25	-			75			77						
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
				89		91						DR14, DR6, -	*14:02, 14:06:01-14:06:02, 14:09, 14:13, 14:17, 14:20, 14:29-14:30, 14:33, 14:41, 14:47-14:48, 14:51, 14:80, 14:83, 14:94
		87		89			92					DR 1403/ DR14, DR6, -	*14:03:01-14:03:02, 14:12, 14:40, 14:63, 14:67, 14:77- 14:78, 14:85
				89		91	92					DR14, -	*14:05:01-14:05:03, 14:14, 14:23:01, 14:23:03, 14:36, 14:43-14:45, 14:56, 14:59, 14:64, 14:91, 14:96
		87	88		90	91	92					DR14	*14:11
				89		91	92					DR6	*14:16
		87		89		w						DR14, -	*14:18, 14:81
		87	88		90	91	92					DR14	*14:19, 14:21
				88	89							DR14	*14:22
				87	88		90	91	92			DR14	*14:24
					89							DR6, DR13/ 14	*14:25, 14:53
					87	88		90	91	92		DR14	*14:27
					87	88	89		92			DR14	*14:32:01-14:32:02
						88	89	90				DR14	*14:37
							89		92			-	*14:42
								91				DR14	*14:46, 14:52
								90	91	92		DR14	*14:49
								90	91	92		DR14	*14:50
								90		92		DR14	*14:58
								89	91	92		DR6	*14:65
									90	91	92	DR14, -	*14:68, 14:93
										90		-	*14:69
										90	91	-	*14:73
										90	91	-	*14:74
										89		-	*14:82
										89		-	*14:89
										89		-	*14:95
										87	89	-	*14:98
												DR15, DR2, Null, -	*15:01:01-15:20, 15:22- 15:24, 15:26, 15:28-15:33, 15:35-15:44
												DR2	*15:21
												-	*15:25
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

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*15:27, 15:34	-			75									
*16:01:01-16:03, 16:05:01-16:05:02, 16:07-16:16	DR16, Null, -				76								
*16:04	DR16				76								
<i>DRB3*01:01:02:01-01:14, DRB3*02:01-02:25, DRB3*03:01:01-03:03</i>	DR52, -												
<i>DRB4*01:01:01:01-01:03:01:01, 01:03:02-01:08</i>	DR53, -												
<i>DRB4*01:03:01:02N</i>	Null												
<i>DRB5*01:01:01-01:14, DRB5*02:02-02:05</i>	DR51, Null, -												
Well No.	ser ⁵	73	74	75	76	77	78	79	80	81	82	83	84

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 73 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DR low resolution typing.

In addition, well number 82 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

²The codon, and in parenthesis the nucleotide, in the 2nd exon, matching the specificity-determining 3'-end of the primer is given. Codon and nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given. ³The codon, and in parenthesis the nucleotide, in the 2nd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Codon and nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

Lot No.: 14K

Lot-specific information

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
						91						-	*15:27, 15:34
												DR16, Null, -	*16:01:01-16:03, 16:05:01- 16:05:02, 16:07-16:16
						w						DR16	*16:04
								93				DR52, -	DRB3*01:01:02-01-01:14, DRB3*02:01-02:25, DRB3*03:01:01-03:03
									94			DR53, -	DRB4*01:01:01-01- 01:03:01:01, 01:03:02-01:08
				90					94			Null	DRB4*01:03:01:02N
										95		DR51, Null, -	DRB5*01:01:01-01:14, DRB5*02:02-02:05
85	86	87	88	89	90	91	92	93	94	95	96	ser ⁵	Well No.

⁴Primer mix 96 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.

⁵The serological reactivity of all DRB alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site, the information available at the www.worldmarrow.org web site and the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶The DRB1*08:09 and 08:21 and the DRB1*14:15 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*14:15 allele.

⁷The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*13:18, DRB1*13:47 and DRB1*13:55 alleles.

⁸The DRB1*08:31 and DRB1*11:67 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1*11:67 allele.

⁹The DRB1*13:13 and DRB1*14:84 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

¹⁰The sequence of the DRB1*07:02 allele has been shown to be identical to DRB1*07:01:01.

The sequence of the DRB1*08:03:01 allele has been shown to be identical to DRB1*08:03:02.

The sequence of the DRB1*09:01:01 allele has been shown to be identical to DRB1*09:01:02.

The sequence of the DRB1*11:71 allele has been shown to be identical to DRB1*11:02:01.

The sequence of the DRB1*12:03:01 allele has been shown to be identical to DRB1*12:01.

The DRB1*14:66 allele has been renamed DRB1*14:32:02.

The sequence of the DRB1*16:06 allele has been shown to be identical to DRB1*16:05:01.

The sequence of the DRB3*01:01:01 allele has been shown to be identical to DRB3*01:01:02:01.

The DRB4*01:01:102N allele has been renamed DRB4*01:03:102N.

The sequence of the DRB5*02:01 allele has been shown to be identical to DRB5*02:02.

'ser', serological HLA specificity.

'w', may be weakly amplified.

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET																		
HLA-A low resolution primer set																		
	IHWC cell line	A*	A*	Well														
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	9001 SA	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
5	9009 KAS011	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03	-	+	-	-	-	-	-	+	-	-	+	-	+	-	-
7	9020 QBL	*26:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
9	9026 YAR	*26:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-
10	9107 LKT3	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
12	9052 DBB	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
15	9075 DKB	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
17	9282 CTM3953540	*03:01	*80:01	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17		-	+	-	-	-	-	W	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	-	+	-	-	-	-	+	-	-	+	+	-	-	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:05		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	-	-	-	-	+	-	+	-	-	-	-	-	-	+	-
28	9320 BEL5GB	*02:01	*29:02	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
29	9050 MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
30	9021 RSH	*30:01	*68:02	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+
31	9019 DUCAF	*30:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
32	9297 HAG	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-
37	9065 HHKB	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
38	9099 LZL	*02:17		-	+	-	-	-	W	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	+	-	+	+	-	-	-	-	-	-	-	-	+	-	-
40	9134 WHONP199	*02:07	*30:01	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+
41	9055 H0301	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
42	9066 TAB089	*02:07		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01		-	-	-	-	-	-	+	-	-	+	-	+	-	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
47	9045 TUBO	*02:16	*03:01	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-
48	9303 TER-ND	*02:01	*11:01	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET									
HLA-A low resolution primer set									
		Well							
		17	18	19	20	21	22	23	24
		201072817	200855018	200855019	200959320	201072821	201072822	201072823	201068724
	IHWC cell line	A*	A*						
1	9001 SA	*24:02		-	-	-	-	-	-
2	9280 LK707	*02:01		-	-	-	-	-	-
3	9011 E4181324	*01:01		-	-	-	-	-	+
4	9275 GU373	*30:01		-	-	-	-	-	-
5	9009 KAS011	*01:01		-	-	-	-	-	+
6	9353 SM	*02:01	*26:03	-	-	-	-	+	-
7	9020 QBL	*26:01		-	-	-	-	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-
9	9026 YAR	*26:01		-	-	-	-	-	-
10	9107 LKT3	*24:02		-	-	-	-	-	-
11	9051 PITOUT	*29:02		-	-	-	-	-	-
12	9052 DBB	*02:01		-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-
15	9075 DKB	*24:02		-	-	-	-	-	-
16	9037 SWEIG007	*29:02		-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01	-	+	-	-	+	+
18	9257 32367	*33:03	*74:01	-	+	+	-	-	-
19	9038 BM16	*02:01		-	-	-	-	-	-
20	9059 SLE005	*02:01		-	-	-	-	-	-
21	9064 AMALA	*02:17		-	-	-	-	-	-
22	9056 KOSE	*02:01		-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	-	-	-	-	-	-
24	9035 JBUSH	*32:01		+	-	-	-	-	-
25	9049 IBW9	*33:01		-	+	-	-	-	-
26	9285 WT49	*02:05		-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02	-	-	-	-	-	-
29	9050 MOU	*29:02		-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02	-	-	-	+	-	-
31	9019 DUCAF	*30:02		-	-	-	-	-	-
32	9297 HAG	*02:01		-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-
34	9104 DHIF	*31:01		-	-	-	-	-	-
35	9302 SSTO	*32:01		+	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	-	-	-	-	-	+
37	9065 HHKB	*03:01		-	-	-	-	-	-
38	9099 LZL	*02:17		-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	-	-	-	-	-	+
40	9134 WHONP199	*02:07	*30:01	-	-	-	-	-	-
41	9055 H0301	*03:01		-	-	-	-	-	-
42	9066 TAB089	*02:07		-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	-	-	-	-	-
44	9057 TEM	*66:01		-	-	-	-	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	-
46	9013 SCHU	*03:01		-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01	-	-	-	-	-	+

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET																	
HLA-B low resolution SSP kit																	
	Prod. No.:	Well															
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	9001 SA	*07:02	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
2	9280 LK707	*52:01	*73:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
3	9011 E4181324	*52:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
4	9275 GU373	*15:10	*53:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
5	9009 KAS011	*37:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -
6	9353 SM	*39:01	*51:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
7	9020 QBL	*18:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
8	9025 DEU	*35:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
9	9026 YAR	*38:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
10	9107 LKT3	*54:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
11	9051 PITOUT	*44:03	- - - - +	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
12	9052 DBB	*57:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
13	9004 JESTHOM	*27:05	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -
14	9071 OLGA	*15:01	*15:20	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
15	9075 DKB	*40:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
16	9037 SWEIG007	*40:02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
17	9282 CTM3953540	*08:01	*55:01	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -
18	9257 32367	*14:01	*56:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
19	9038 BM16	*18:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
20	9059 SLE005	*40:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
21	9064 AMALA	*15:01	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
22	9056 KOSE	*35:03	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
23	9124 IHL	*40:02	*56:02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
24	9035 JBUSH	*38:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
25	9049 IBW9	*14:02	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
26	9285 WT49	*58:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -
27	9191 CH1007	*07:05	*51:01	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
28	9320 BEL5GB	*44:02	*44:03	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
29	9050 MOU	*44:03	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
30	9021 RSH	*42:01	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
31	9019 DUCAF	*18:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
32	9297 HAG	*41:02	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
33	9098 MT14B	*40:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
34	9104 DHIF	*38:01	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
35	9302 SSTO	*44:02	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
36	9024 KT17	*15:01	*35:01	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
37	9065 HHKB	*07:02	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
38	9099 LZL	*15:01	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
39	9315 CML	*08:01	*27:05	- + - - -	- - - - -	+ - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -
40	9134 WHONP199	*13:02	*46:01	- - + + -	- - - - -	+ - - - -	- - - - -	- + - - -	- - - - -	- - - - -	+ - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
41	9055 H0301	*14:02	- - - - -	- - - - -	+ - - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
42	9066 TAB089	*46:01	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
43	9076 T7526	*46:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- + - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -
44	9057 TEM	*38:01	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
45	9239 SHJO	*42:01	*50:01	- - - - -	- - - - -	+ - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
46	9013 SCHU	*07:02	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
47	9045 TUBO	*51:01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
48	9303 TER-ND	*35:01	*44:03	- - - - -	- - - - -	+ - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	+ - - - -	- + - - -	- - - - -	- - - - -	- - - - -	- - - - -

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET																	
HLA-B low resolution SSP kit																	
	Prod. No.:	Well															
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	201072917																
IHWC cell line	B*																
1	9001 SA	*07:02	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-
2	9280 LK707	*52:01	*73:01	-	-	-	-	-	-	+	-	-	-	+	-	-	-
3	9011 E4181324	*52:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*15:10	*53:01	+	-	+	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*37:01	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-
6	9353 SM	*39:01	*51:01	-	-	-	+	-	+	+	-	-	-	-	+	-	-
7	9020 QBL	*18:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*35:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*38:01	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*54:01	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
11	9051 PITOUT	*44:03	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052 DBB	*57:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*27:05	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
14	9071 OLGA	*15:01	*15:20	+	-	+	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*40:01	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
16	9037 SWEIG007	*40:02	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
17	9282 CTM3953540	*08:01	*55:01	-	-	-	-	-	+	-	-	+	+	-	-	+	-
18	9257 32367	*14:01	*56:01	-	-	-	-	-	+	+	-	-	+	-	-	+	-
19	9038 BM16	*18:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*40:01	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
21	9064 AMALA	*15:01	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*35:03	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*40:02	*56:02	-	-	-	-	-	-	-	+	-	+	-	-	+	-
24	9035 JBUSH	*38:01	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
25	9049 IBW9	*14:02	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
26	9285 WT49	*58:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*07:05	*51:01	-	-	-	-	-	+	-	-	-	+	-	+	-	-
28	9320 BEL5GB	*44:02	*44:03	+	-	-	-	-	-	-	-	-	-	+	-	-	-
29	9050 MOU	*44:03	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021 RSH	*42:01	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
31	9019 DUCAF	*18:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*41:02	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
33	9098 MT14B	*40:01	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
34	9104 DHIF	*38:01	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
35	9302 SSTO	*44:02	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
36	9024 KT17	*15:01	*35:01	+	+	+	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*07:02	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
38	9099 LZL	*15:01	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*08:01	*27:05	-	-	-	-	-	+	-	-	+	+	-	-	+	-
40	9134 WHONP199	*13:02	*46:01	-	-	-	-	-	-	-	-	-	+	-	-	+	-
41	9055 H0301	*14:02	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
42	9066 TAB089	*46:01	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
43	9076 T7526	*46:01	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
44	9057 TEM	*38:01	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
45	9239 SHJO	*42:01	*50:01	-	-	-	-	-	+	-	-	+	+	-	-	-	-
46	9013 SCHU	*07:02	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
47	9045 TUBO	*51:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
48	9303 TER-ND	*35:01	*44:03	+	+	-	-	-	-	-	-	-	+	-	-	-	-

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET													
HLA-B low resolution SSP kit													
	Prod. No.:	Well											
		57	58	59	60	61	62	63	64	65	66	67	68
	200959433	-	-	-	-	-	-	-	-	-	-	-	-
	200959434	-	-	-	-	-	-	-	-	-	-	-	-
	200959435	-	-	-	-	-	-	-	-	-	-	-	-
	200959436	-	-	-	-	-	-	-	-	-	-	-	-
	200959437	-	-	-	-	-	-	-	-	-	-	-	-
	201068838	-	-	-	-	-	-	-	-	-	-	-	-
	201068839	-	-	-	-	-	-	-	-	-	-	-	-
	201068840	-	-	-	-	-	-	-	-	-	-	-	-
	200959441	-	-	-	-	-	-	-	-	-	-	-	-
	201071742	-	-	-	-	-	-	-	-	-	-	-	-
	200963343	-	-	-	-	-	-	-	-	-	-	-	-
	200959444	-	-	-	-	-	-	-	-	-	-	-	-
	200959445	-	-	-	-	-	-	-	-	-	-	-	-
	200959446	-	-	-	-	-	-	-	-	-	-	-	-
	200959447	-	-	-	-	-	-	-	-	-	-	-	-
	200963348	-	-	-	-	-	-	-	-	-	-	-	-
		IHWG cell line	B*										
1	9001	SA	*07:02										
2	9280	LK707	*52:01	*73:01	-	-	-	-	-	-	-	-	+
3	9011	E4181324	*52:01		-	-	-	-	-	-	-	+	-
4	9275	GU373	*15:10	*53:01	-	-	-	-	-	-	-	+	-
5	9009	KAS011	*37:01		-	-	-	-	-	-	-	+	-
6	9353	SM	*39:01	*51:01	-	-	-	-	-	-	-	+	-
7	9020	QBL	*18:01		-	-	-	-	-	-	-	+	-
8	9025	DEU	*35:01		-	-	-	-	-	-	-	+	-
9	9026	YAR	*38:01		-	-	-	-	-	-	-	+	-
10	9107	LKT3	*54:01		-	-	-	-	-	-	-	+	-
11	9051	PITOUT	*44:03		-	-	-	-	-	-	-	+	-
12	9052	DBB	*57:01		-	-	-	-	-	-	-	+	-
13	9004	JESTHOM	*27:05		-	-	-	-	-	-	-	+	-
14	9071	OLGA	*15:01	*15:20	-	-	-	-	-	-	-	+	-
15	9075	DKB	*40:01		-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*40:02		-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*08:01	*55:01	-	-	-	-	-	-	-	-	+
18	9257	32367	*14:01	*56:01	-	-	-	-	-	-	-	-	-
19	9038	BM16	*18:01		-	-	-	-	-	-	-	+	-
20	9059	SLE005	*40:01		-	-	-	-	-	-	-	-	-
21	9064	AMALA	*15:01		-	-	-	-	-	-	-	+	-
22	9056	KOSE	*35:03		-	-	-	-	-	-	-	+	-
23	9124	IHL	*40:02	*56:02	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*38:01		-	-	-	-	-	-	-	-	-
25	9049	IBW9	*14:02		-	-	-	-	-	-	-	-	-
26	9285	WT49	*58:01		-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:05	*51:01	-	-	-	-	-	-	-	+	-
28	9320	BEL5GB	*44:02	*44:03	-	-	-	-	-	-	-	-	-
29	9050	MOU	*44:03		-	-	-	-	-	-	-	+	-
30	9021	RSH	*42:01		-	-	-	-	-	-	-	+	-
31	9019	DUCAF	*18:01		-	-	-	-	-	-	-	+	-
32	9297	HAG	*41:02		-	-	-	-	-	-	-	-	+
33	9098	MT14B	*40:01		-	-	-	-	-	-	-	-	-
34	9104	DHIF	*38:01		-	-	-	-	-	-	-	-	-
35	9302	SSTO	*44:02		-	-	-	-	-	-	-	-	-
36	9024	KT17	*15:01	*35:01	-	-	-	-	-	-	-	+	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	+
38	9099	LZL	*15:01		-	-	-	-	-	-	-	+	-
39	9315	CML	*08:01	*27:05	-	-	-	-	-	-	-	+	-
40	9134	WHONP199	*13:02	*46:01	-	-	-	-	-	-	-	+	-
41	9055	H0301	*14:02		-	-	-	-	-	-	-	-	-
42	9066	TAB089	*46:01		-	-	-	-	-	-	-	+	-
43	9076	T7526	*46:01		-	-	-	-	-	-	-	+	-
44	9057	TEM	*38:01		-	-	-	-	-	-	-	+	-
45	9239	SHJO	*42:01	*50:01	-	-	-	-	-	-	-	-	+
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	+
47	9045	TUBO	*51:01		-	-	-	-	-	-	-	+	-
48	9303	TER-ND	*35:01	*44:03	-	-	-	-	-	-	-	+	-

Lot No.: 14K

Lot-specific information

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IFU-02 Rev. No. 01 can be downloaded from

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CELL LINE VALIDATION SHEET

DR low resolution primer set

Lot No.: 14K

Lot-specific information

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CELL LINE VALIDATION SHEET										
DR low resolution primer set										
	Prod. No.:	Well								
		89	90	91	92	93	94	95		
IHWG cell line	DRB1									
1	9001 SA	*01:01			-	-	-	-	-	-
2	9280 LK707	*15:02	*04:05	-	-	-	-	-	+	+
3	9011 E4181324	*15:02		-	-	-	-	-	+	
4	9275 GU373	*03:01		+	-	-	+	-	-	
5	9009 KAS011	*16:01		-	-	-	-	-	+	
6	9353 SM	*04:07	*08:03	-	-	-	-	+	-	
7	9020 QBL	*03:01		+	-	-	+	-	-	
8	9025 DEU	*04:01		-	-	-	-	-	-	
9	9026 YAR	*04:02		-	-	-	-	+	-	
10	9107 LKT3	*04:05		-	-	-	-	+	-	
11	9051 PITOUT	*07:01		-	-	-	-	+	-	
12	9052 DBB	*07:01		-	+	-	-	+	-	
13	9004 JESTHOM	*01:01		-	-	-	-	-	-	
14	9071 OLGA	*08:02		-	-	-	-	-	-	
15	9075 DKB	*09:01		-	-	+	-	-	+	-
16	9037 SWEIG007	*11:01		-	-	-	-	+	-	
17	9282 CTM3953540	*03:01	*13:01	+	-	-	-	-	-	
18	9257 32367	*09:01	*11:01	-	-	+	-	+	+	-
19	9038 BM16	*12:01		-	-	-	+	-	-	
20	9059 SLE005	*13:02		+	-	-	+	-	-	
21	9064 AMALA	*14:02		+	-	+	-	+	-	
22	9056 KOSE	*13:02	*14:01	+	+	+	+	+	-	
23	9124 IHL	*08:03	*14:14	+	-	+	+	+	-	
24	9035 JBUSH	*11:01		-	-	-	+	-	-	
25	9049 IBW9	*07:01		-	-	-	-	+	-	
26	9285 WT49	*03:01		+	-	-	-	+	-	
27	9191 CH1007	*04:05	*10:01	-	-	-	-	+	-	
28	9320 BEL5GB	*04:16	*07:01	-	-	-	-	+	-	
29	9050 MOU	*07:01		-	-	-	-	+	-	
30	9021 RSH	*03:02		+	-	-	-	+	-	
31	9019 DUCAF	*03:01		+	-	-	-	+	-	
32	9297 HAG	*13:03		+	-	-	-	+	-	
33	9098 MT14B	*04:04		-	-	-	-	+	-	
34	9104 DHIF	*11:01		-	-	-	-	+	-	
35	9302 SSTO	*04:03		-	-	-	-	+	-	
36	9024 KT17	*04:03	*04:06	-	-	-	-	+	-	
37	9065 HHKB	*13:01		+	-	-	-	+	-	
38	9099 LZL	*14:02		+	-	+	-	+	-	
39	9315 CML	*03:01	*04:01	+	-	-	-	+	+	-
40	9134 WHONP199	*07:01	*09:01	-	-	+	-	-	+	-
41	9055 H0301	*13:02		+	-	-	-	+	-	
42	9066 TAB089	*08:03		-	-	-	-	-	-	
43	9076 T7526	*09:01		-	-	+	-	-	+	-
44	9057 TEM	*14:01		-	+	+	+	+	-	
45	9239 SHJO	*07:01		-	-	-	-	+	-	
46	9013 SCHU	*15:01		-	-	-	-	-	+	-
47	9045 TUBO	*11:04	*12:01	-	-	-	-	+	-	
48	9303 TER-ND	*01:03		-	-	-	-	-	-	

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A-B-DR SSP Combi Tray

Product number: 101.701-24u/06u – without *Taq* pol.
Lot number: 14K
Expiry date: 2012-June-01
Number of tests: 24 tests – Product No. 101.701-24u
6 tests – Product No. 101.701-06u
Number of wells per test: 95 + 1

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2009-669-01	9	2008-550-09	17	2010-728-17
2	2010-728-02	10	2008-550-10	18	2008-550-18
3	2008-550-03	11	2008-550-11	19	2008-550-19
4	2010-728-04	12	2008-550-12	20	2009-593-20
5	2008-550-05	13	2010-728-13	21	2010-728-21
6	2010-728-06	14	2010-728-14	22	2010-728-22
7	2008-550-07	15	2008-550-15	23	2010-728-23
8	2008-550-08	16	2010-728-16	24	2010-687-24

The specificity of each primer solution of the kit has been tested against 48 well characterized IHWC cell line DNAs.

Additional 5'- and 3'-primers in primer solutions 4, 5, 7, 8, 12, 14 to 17 and 20 to 23 were tested by separately adding one 3'-primer, respectively one 5'-primer. One additional 5'-primer in primer solutions 1 and 10 was tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 3, 6, 18 and 19 were tested by separately adding one 5'-primer. Two respective one of the 5'-primers in primer solutions 2 and 15 were not possible to test, and in primer solutions 3, 18 and 19 one 3'-primer was not possible to test.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
25	2009-594-01	41	2010-729-17	57	2009-594-33
26	2009-594-02	42	2009-594-18	58	2009-594-34
27	2009-633-03	43	2010-717-19	59	2009-594-35
28	2010-729-04	44	2009-633-20	60	2009-594-36
29	2010-729-05	45	2009-594-21	61	2009-594-37
30	2010-717-06	46	2009-594-22	62	2010-688-38
31	2009-594-07	47	2009-594-23	63	2010-688-39
32	2009-594-08	48	2009-594-24	64	2010-688-40
33	2010-729-09	49	2009-594-25	65	2009-594-41
34	2010-688-10	50	2009-633-26	66	2010-717-42
35	2009-594-11	51	2009-633-27	67	2009-633-43
36	2009-594-12	52	2010-717-28	68	2009-594-44
37	2009-633-13	53	2009-633-29	69	2009-594-45
38	2009-670-14	54	2009-594-30	70	2009-594-46
39	2010-717-15	55	2009-594-31	71	2009-594-47
40	2010-729-16	56	2009-633-32	72	2009-633-48

The specificity of each primer solution of the kit has been tested against 48 well characterized IHWC cell line DNAs.

Additional 5'-primers and 3'-primers in primer solutions 27, 30, 38, 43, 53, 55 and 64 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solutions 26, 37, 39 and 59 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 25, 45 and 72 were tested by separately adding one additional 3'-primer. One 5'-primer in primer solutions 55 and 66 and one 3'-primer in primer solutions 62 and 66 were not possible to test.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2010-689-01	81	2010-689-09	89	2010-689-17
74	2010-689-02	82	2010-689-10	90	2010-689-18
75	2010-689-03	83	2010-689-11	91	2010-689-19
76	2010-689-04	84	2010-689-12	92	2010-689-20
77	2010-689-05	85	2010-689-13	93	2010-689-21
78	2010-689-06	86	2010-689-14	94	2010-689-22
79	2010-689-07	87	2010-689-15	95	2010-689-23
80	2010-689-08	88	2010-689-16		

The specificity of each primer solution of the kit has been tested against 48 well characterized IHWC cell line DNAs.

Additional 5'- and 3'-primers in primer solutions 81, 83 and 90 were tested by separately adding one 3'-primer, respectively one 5'-primer.

Additional 5'-primer in primer solutions 78, 87, 88 and 93 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 73, 75, 82, 84 and 92 were tested by separately adding one 5'-primer.

One of the 5'-primers in primer solution 76, 81, 82 and 88, and three of the 5'-primers in primer solution 80 were not possible to test. One of the 3'-primers in

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Lot-specific information

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primer solution 73 and 94 were not possible to test. In primer solution 75 and 85, one 5'-primer and one respective two 3'-primers were not possible to test.

The negative control primer pairs, **Production No. 2009-614-01**, can detect contamination with PCR products diluted 10^{-7} .

Results: No false positive or false negative amplifications were obtained.

Date of approval: 2010-August-31

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: *Olerup SSP® HLA-A-B-DR SSP Combi Tray*

Product number: 101.701-24u/06u

Lot number: 14K

Intended use: HLA-A, HLA-B and HLA-DR low resolution histo-compatibility testing

Manufacturer: *Olerup SSP AB
Hasselstigen 1
SE-133 33 Saltsjöbaden, Sweden*
Phone: +46-8-717 88 27
Fax: +46-8-717 88 18

We, *Olerup SSP AB*, hereby declare that this product, to which this Declaration of Conformity relates is in conformity with the following Standard(s) and other normative document(s) ISO 9001:2008 and ISO 13485:2003, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex II List B, conformity assessed using Annex IV, as transposed into the national laws of the Member States of the European Union.

The Technical Documentation File is maintained at *Olerup SSP AB*, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.

The Authorized Representative located within the Community is: *Olerup SSP AB*.

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(Notified Body number: 0088.)

Saltsjöbaden, Sweden
2010-August-31

Olle Olerup
Managing Director

**HLA-A-B-DR SSP Combi Tray
101.701-24u/06u – without Taq polymerase**

Product Insert

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General “Instructions for Use”

IFU-02 Rev. No. 01 can be downloaded from

Lot No.: 14K

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August 2010
Rev. No.: 01u



0088

For *In Vitro* Diagnostic Use

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