

Olerup SSP® HLA-A-B-DR SSP Combi Tray

Product number:	101.701-24/06 – including <i>Taq</i> pol.
Lot number:	74K
Expiry date:	2013-June-01
Number of tests:	24 tests – Product No. 101.701-24 6 tests – Product No. 101.701-06
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. 74K.

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. 14K**).

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

Well	5'-primer	3'-primer	rationale
1	Added	Added	Primer pair added for the A*01:69 allele.
2	Exchanged	-	Exchanged 5'-primer for improved allelic resolution, exchanged positive control primer pair.
10	Added	-	Primer added for the A*26:31 allele.
11	Added	-	Primer added for the A*66:11 allele.
14	Removed, added	Removed, added	Removed primer pair for improved allelic resolution. Primer pairs added for the A*03:95 and A*26:19 alleles.
16	Removed, added	Removed, added	Removed primer pair for improved allelic resolution. Primer pairs added for the A*03:95 and A*31:44 alleles.
17	Added	Added	Exchanged 3'-primer to amplify the A*03.82 allele, primer pair added for the A*31:35 allele.
20	Exchanged	Added	Exchanged 5'-primer and primer added to amplify the A*68:50 allele.
24	Exchanged	Exchanged	New primer pair for the A*66:12 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. 14K**).

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

Well	5'-primer	3'-primer	rationale
39	-	Added	Primer added for the B*18:48 and B*18:01:09 alleles.
44	-	Exchanged	Decreased primer dimer formation.
48	-	Added	Primer added for the B*40:110 allele.
49	Added	-	Primer added for the B*40:137 allele.
50	Exchanged	-	Improved allelic resolution.

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. 14K**).

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

Well	5'-primer	3'-primer	rationale
73	Added	-	Primer added for the DRB1*01:33N allele.
76	-	Exchanged	Improved allelic resolution.
87	Added	-	Primer added for the DRB1*13:103 allele.
88	Added	-	Primer added for the DRB1*13:103 allele.
93	Exchanged	-	Improved allelic resolution.

Change in revision R01 compared to R00:

1. Primer mix 43 does not amplify the B*15:101 allele. This has been corrected in the Specificity and Interpretation tables.

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 product	105	200	105	80	75	80
5'-primer¹	164	340	440	45	45	43
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}
3'-primer²	231	2nd I	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 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.

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. ‘74K’.

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*02:23 and C*04:77 alleles will be amplified by primer mix 25, the HLA-C*03:05, 03:25 and 03:27 alleles will be

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amplified by primer mix 27, the C*01:30 allele will be amplified by primer mix 28, the A*23:31 and A*24:106 and the C*16:10 alleles will be amplified by primer mix 30, the C*07:46 allele will be amplified by primer mix 32, primer mix 41 will amplify the C*03:102 allele, the C*15:25 allele will be amplified by primer mix 53, the C*15:39 allele will be amplified by primer mix 55, the C*15:02:04 allele will be amplified by primer mix 64, the C*03:12, C*03:19 and C*03:102 alleles will be amplified by primer mix 65, the C*02:06 allele will weakly amplified by primer mix 67 and the A*68:56 and the C*06:20 and C*12:50 alleles will amplified by primer mix 69. Thus, the interpretation of HLA-B low resolution typings is only influenced by these alleles and not by any 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 October 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 October 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 October 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-October-15, release 3.2.0, www.ebi.ac.uk/imgt/hla.

²The 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.

³The B*08:26, 08:50 and 08:62 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, 35:99 and 35:118-35:119 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, 55:27 and 55:46 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 the DRB1*14:15 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets. The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The DRB1*08:31, 08:41 and DRB1*11:67 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets. 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 ^{4,5,6}
1 ^{7,8}	120 bp, 140 bp, 225 bp	800 bp	A1, A36	*01:01:01:01-01:04N, 01:06-01:81, 03:18, 36:01-36:05
2 ⁸	210 bp, 255 bp, 365 bp, 415 bp	800 bp	A2, A19, A28, A203, A210	*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, 02:49-02:77, 02:78 ^w , 02:79:01-02:97:02, 02:99, 02:101-02:128, 02:130-02:282
3 ⁹	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, 03:76-03:94, 03:96-03:112, 11:25, 11:60, 24:92, 32:04, 34:02-34:04, 34:07-34:09, 36:02
4	190 bp	800 bp	A1, A2, A3, A11, A26, A30, A36	*01:01:01:01-01:01:22, 01:01:24-01:04N, 01:06-01:07, 01:09-01:11N, 01:13, 01:16N-01:18N, 01:20-01:29, 01:31N-01:78, 01:80-01:81, 02:78, 02:169, 03:12, 03:18, 03:88, 11:01:01-11:27, 11:29-11:80, 26:19, 30:08, 36:04, 68:66
5	160 bp, 535 bp	800 bp	A3,A9,A23, A24, A31, A32	*03:30, 23:01:01-23:31, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17-24:64, 24:66-24:88, 24:90N-24:128, 24:130-24:155N, 31:08, 32:05, 32:13
6	135 bp, 175 bp, 210 bp	800 bp	A9,A23, A24, A29, A80	*23:01:01-23:31, 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, A23, A24, A26, A33	*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, 24:95-24:113, 24:115-24:137, 24:139-24:155N, 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, 26:20-26:43:02, 26:45-26:56, 32:15, 34:01:01-34:09, 66:01-66:15, 68:01:01-68:66, 69:01
9 ⁷	75 bp	800 bp	A25, A32	*25:01:01-25:13, 32:01:01-32:02, 32:04, 32:06-32:30
10 ⁷	85 bp	1070 bp	A2, A10, A26, A33	*01:51, 02:146, 26:01:01-26:02, 26:04, 26:07:01-26:18, 26:20, 26:22-26:29, 26:31-26:43:02, 26:45-26:56, 33:13
11 ^{7,8}	80 bp, 175 bp, 500 bp	1070 bp	A1, A11, A24, A26, A31, A34, A66	*01:13, 01:28, 03:63, 03:88, 11:01:01-11:27, 11:29-11:80, 24:19, 24:44, 26:03:01-26:03:02, 26:06, 26:21, 31:03, 34:01:01-34:08, 66:01, 66:04-66:11, 66:13-66:15, 80:02
12	185 bp	800 bp	A11, A25, A26, A31, A34, A43, A66	*03:01:19, 11:11, 25:06, 26:09, 31:03-31:04, 34:01:01-34:09, 43:01, 66:02-66:03
13	175 bp, 225 bp	1070 bp	A1, A2, A3, A25, A26, A34, A43, A66, A74	*01:13, 02:34-02:35:03, 02:56:01-02:56:02, 02:62, 02:103, 02:135, 03:01:01:01-03:01:22, 03:02-03:07, 03:09-03:11N, 03:13-03:31, 03:33-03:35,

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				03:37-03:40, 03:42-03:56, 03:58, 03:60-03:71, 03:73-03:87, 03:90-03:106, 03:109-03:110, 03:112, 25:01:01-25:05, 25:07-25:13, 26:01:01-26:01:18, 26:02 ^w , 26:03:01-26:03:02, 26:05-26:08, 26:10-26:33, 26:35-26:43:02, 26:45-26:56, 34:08, 43:01, 66:01, 66:04-66:15, 74:13
14 ⁷	100 bp, 200 bp, 240 bp	1070 bp	A29, A33	*02:237, 03:95, 26:19, 26:22, 29:01:01-01-29:27, 31:03-31:04, 33:13, 34:04, 66:09
15 ^{7,8}	90 bp, 135 bp, 205 bp	1070 bp	A1, A30	*01:13, 01:28, 03:43, 03:82, 30:01:01-30:04:02, 30:06-30:20, 30:22-30:46, 31:35
16	240 bp, 370 bp, 395 bp	1070 bp	A31, A32	*02:237, 03:95, 29:14, 31:01:02-31:46, 32:05
17	140 bp, 180 bp	1070 bp	A29, A32	*03:43, 03:82, 29:13, 31:35, 32:01:01-32:03, 32:05-32:30, 36:02, 74:07
18	200 bp	1070 bp	A33, A68	*02:243, 33:01:01-33:01:05, 33:03:01-33:34, 68:29
19	160 bp, 200 bp	800 bp	A74	*29:19, 74:01-74:14N
20 ¹¹	220 bp, 245 bp	800 bp	A2, A210, A25, A68	*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, 25:05, 26:54, 68:01:01-68:66
21	240 bp, 375 bp	800 bp	A2, A24, A26, A68, A69	*02:55, 02:243, 24:82, 26:22, 33:22, 66:09, 68:29, 69:01
22 ^{7,10}	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}	70 bp, 160 bp, 240 bp, 495 bp	800 bp	A2, A26, A68, A80	*02:55, 03:41, 03:63, 03:75, 03:88, 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	*02:135, 03:01:19, 25:13, 26:30, 31:04, 34:09, 66:02-66:03, 66:12

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 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.

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 inherent 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.

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In addition, wells number 2, 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*23:14 and the A*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.

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 1, 2, 11 and 15 will in many samples give rise to two or three HLA-specific PCR fragments.

⁹Primer mix 3 may faintly amplify the A*30:04, 30:06, 30:17 and 30:29 alleles.

¹⁰Primer mix 22 might faintly amplify most A*11 alleles.

¹¹Primer mixes 20 and 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, 07:101-07:117, 15:138, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:136, 40:158, 41:08, 42:05:01-42:05:02, 48:05, 48:08, 48:15, C*02:23, C*04:77
26	215 bp	1070 bp	8, 44	*08:01:01-08:05, 08:07-08:25, 08:27-08:49, 08:51-08:61, 08:63-08:64, 08:66, 15:142, 15:180, 44:49, 51:68
27	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 61, 62, 77	*07:20, 07:24, 07:60, 07:100, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:38, 13:40, 15:07:01-15:07:02, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 15:205, 15:207, 35:05:01-35:05:02, 35:16-35:17, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 35:113-35:114, 35:125, 40:05, 40:71, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 44:106, 44:110, 46:12, 46:20, 51:64, 53:14, 58:18, C*03:05, C*03:25, C*03:27
28 ^{7,8}	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, 13:25-13:40, 14:01:01-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:19, 15:46, 15:53, 15:106, 18:44, 35:46-35:47, 35:63, 40:01:01-40:01:17, 40:07, 40:10:01-40:10:02, 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, 40:100-40:102, 40:106, 40:108, 40:110, 40:112-40:114, 40:116-40:118N, 40:121, 40:123-40:126, 40:128-40:130, 40:132, 40:134-40:136, 40:139-40:141, 40:146-40:147, 40:150-40:156, 40:158, 41:01-41:16, 44:02:01:01-44:03:06, 44:03:08-44:05:02, 44:09-44:39, 44:41-44:43:02, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84-44:102, 44:104-44:110, 44:112-44:115, 45:01-45:13, 47:01:01:01-47:07, 49:01:01-49:02, 49:04-49:15, 50:01:01-50:02, 50:04-50:06, 50:08-50:12, C*01:30
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54	215 bp	800 bp	5, 8, 12, 17, 21, 22, 41, 42, 44, 45, 51, 5102, 5103, 52, 53, 56, 62	*08:09, 15:83, 41:01, 41:05-41:07, 41:09, 41:12, 41:14, 41:16, 42:04, 44:06, 44:15, 44:18, 44:20, 44:100, 45:01-45:13, 51:01:01, 51:01:03-51:01:08, 51:01:10-51:02:01, 51:02:03-51:04, 51:06-51:07:01, 51:08-51:09:01, 51:10-51:14, 51:16-51:24:04, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:88, 51:90-51:92, 51:94-51:102, 51:104-51:106, 52:01:02, 52:01:04, 52:02-52:03, 52:06:01-52:06:02, 52:09, 52:19, 52:21, 53:06, 55:20, 56:13, 58:08
55¹²	130 bp, 270 bp	1070 bp	17, 18, 22, 35, 37, 46, 51, 53, 62, 78	*14:10, 15:57 ^w , 18:22, 35:21, 35:24:01-35:24:02, 35:81, 35:96, 35:109, 37:04:01-37:04:02, 40:28, 46:01:01-46:26, 51:04, 51:46, 51:56, 53:02, 53:06, 57:14, 58:09, C*15:39
56^{6,14}	90 bp, 410 bp	1070 bp	15, 22, 27, 35, 47, 54, 55, 56, 78, 81, 82	*07:65, 27:01 ^w , 27:02-27:11, 27:13-27:15, 27:17, 27:19-27:21, 27:24-27:28, 27:30-27:38, 27:40-27:58, 27:60-27:73, 35:76, 44:90, 44:97, 47:01:01:01-47:03, 47:06-47:07, 54:01-54:23, 55:01:01-55:05, 55:07-55:17, 55:19-55:48, 56:01:01-56:16, 56:18-56:22, 56:24-56:30, 81:01, 82:01-82:03, 83:01
57⁶	90 bp, 175 bp	1070 bp	15, 27, 35, 48, 60, 62, 75, 77, 81	*13:36, 15:02:01-15:02:05, 15:08, 15:11:01-15:11:05, 15:13, 15:15, 15:21, 15:31, 15:44, 15:55, 15:76 ^w , 15:88-15:89, 15:112, 15:121, 15:139, 15:144, 15:148, 15:170, 15:189, 15:191, 15:194, 15:209N, 27:24, 35:46, 40:31, 40:45, 40:80, 48:01:01-48:01:03, 48:04, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 48:24, 51:104, 55:35 ^w , 81:01-81:05
58	145 bp, 430 bp	1070 bp	44, 49, 59, 61	*40:13, 40:19, 40:109, 40:117, 44:18, 44:25, 44:50, 44:95, 49:01:01-49:01:02, 49:04-49:15, 54:12, 56:21, 59:01-59:05
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, 40:148, 49:01:01, 49:02-49:10, 49:12-49:15, 50:01:01-50:02, 50:04-50:11, 51:01:01-51:03, 51:05, 51:07:01-51:09:02, 51:11N-51:14, 51:16-51:24:04, 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, 51:82-51:106, 52:01:01-52:22, 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, 55:44-55:45, 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, 40:109, 40:117, 44:06, 44:25, 44:50, 44:95, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:106, 52:01:01-52:19, 52:21-52:22, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:24, 57:01:01-57:11, 57:13-57:37, 58:01:01-58:02, 58:04-58:16, 58:18-58:31N
61	145 bp	1070 bp	12, 21, 35, 40, 4005, 41, 45, 47, 50, 60, 61	*15:46, 15:53, 15:106, 15:143, 18:48, 35:19, 35:47, 35:63, 40:01:01-40:11:02, 40:14:01-40:16, 40:18, 40:20, 40:22N-40:40, 40:42-40:45, 40:48-40:75, 40:77-40:92, 40:94-40:95, 40:97-40:108, 40:111-40:116, 40:118N-40:136, 40:138-40:156, 40:158, 41:01-41:04, 41:05?, 41:06-41:16, 44:09, 44:46, 44:75, 44:90, 45:01-45:13, 47:02, 47:03 ^w , 50:01:01-50:02, 50:04-50:05, 50:07-50:12
62	300 bp	1070 bp	7, 12, 13, 15, 17, 18, 21, 27, 2708, 35,	*07:54, 08:17, 08:38, 08:54, 13:01:01-13:04, 13:06, 13:08Q-13:23, 13:25-13:35, 13:37-13:40, 15:01:01:01-15:01:04, 15:01:06-15:01:18, 15:01:20, 15:03:01-15:07:02, 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,

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Lot-specific information

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63^B	160 bp, 330 bp	1070 bp	22, 44, 45, 47, 54	*44:02:01:01-44:02:14, 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, 44:99-44:102, 44:104, 44:106, 44:112-44:113, 54:01-54:23, 83:01
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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, 45:11-45:13, 46:11, 49:01:01-49:03, 49:06, 49:08-49:15, 50:01:01-50:02, 50:04-50:08, 50:10-50:12, 51:15, 51:62, 51:106, 54:03, 56:01:01-56:02, 56:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20, 56:24-56:30, 59:04, 82:01-82:03, C*03:12, C*03:19, C*03:102
66^{6,10}	90 bp, 240 bp	800 bp	57	*55:14, 57:01:01-57:37
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, 58:04-58:31N, C*02:06^W
68^{6,8}	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65 ^W , 08:32, 18:01:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:52, 35:01:01:01-35:09:02, 35:11:01-35:12:02, 35:14:01-35:15, 35:17-35:18, 35:20:01-35:24:02, 35:27, 35:29-35:45, 35:48, 35:50-35:62, 35:64-35:68:02, 35:70-35:72, 35:74-35:75, 35:76 ^W , 35:77-35:79, 35:81-35:151, 37:08, 38:06-38:07, 39:19:01-39:19:02, 44:06, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:103, 51:105-51:106, 53:01:01-53:16, 53:18-53:24, 56:06 ^W , 78:01-78:04, 78:07
69⁶	115 bp, 150 bp	1070 bp	15, 18, 22, 27, 35, 39, 46, 55, 62, 72, 73, 75, 76	*07:100, 13:31, 15:01:01:01-15:01:04, 15:01:06-15:01:16, 15:01:18-15:01:20, 15:04, 15:07:01-15:08, 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,

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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, 07:101-07:117, 08:01:01-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:66, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 40:137, 41:02:01-41:02:03, 41:04, 41:10-41:11, 41:13, 42:01:01-42:02, 42:05:01-42:07, 42:09-42:13, 48:01:01-48:01:03, 48:05-48:12, 48:14-48:20, 48:22, 53:15, 81:01-81:05

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 inherent 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 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, 08:50 and 08:62 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, 35:99 and 35:118-35:119 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, 55:27 and 55:46 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.

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.

⁵The C*02:23 and C*04:77 alleles 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, the C*01:30 allele will be amplified by primer mix 28, the A*23:31 and A*24:106 and the C*16:10 alleles will be amplified by primer mix 30, the C*07:46 allele will be amplified by primer mix 32, primer mix 41 will amplify the C*03:102 allele, the C*15:25 allele will be amplified by primer mix 53, the C*15:39 allele will be amplified by primer mix 55, the C*15:02:04 allele will be amplified by primer mix 64, the C*03:12, C*03:19 and C*03:102 alleles will be amplified by primer mix 65, the C*02:06 allele will be weakly amplified by primer mix 67 and the A*68:56 and the C*06:20 and C*12:50 alleles will be amplified by primer mix 69.

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 28, 29, 33, 42, 63 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 have a tendency to give rise to nonspecific amplifications, most pronounced in primer mix 33.

¹⁰Primer mixes 25, 43, 44, 46, 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.

¹²In primer mix 55, the positive control band may be weaker than for other HLA-B low primer mixes. However, the amplification of the HLA-specific bands is of comparable strength to 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, 01:04-01:34
74	200 bp	430 bp	103	*01:03
75	215 bp	430 bp	2, 15	*15:01:01:01-15:49, 15:50N ^w , 15:51
76	210 bp	430 bp	16	*16:01:01-16:05:02, 16:07-16:17
77 ^{5,6,11}	120 bp, 220 bp	430 bp	3, 17, 18, 11	*03:01:01:01-03:58, 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, 03:54-03:58, 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, 13:87-13:99, 13:101-13:102, 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, 03:53, 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, 14:12:01-14:13, 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	*04:01:01-04:92
81 ⁶	210 bp, 230 bp	430 bp	7, 13, 14	*07:01:01:01-07:01:03, 07:03-07:19, 12:22, 13:17, 14:50
82 ⁶	170 bp, 215 bp, 250 bp	515 bp	8, 12, 14	*08:01:01-08:19, 08:21-08:41, 11:67, 12:04, 12:16, 12:22, 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, 08:41, 11:01:01-11:70, 11:72-11:98
86 ^{5,6}	85 bp, 105 bp	430 bp	12	*08:32, 12:01:01-12:26
87	215 bp	430 bp	6, 8, 11, 13, 14, 1403	*08:20-08:21, 11:01:01-11:04:06, 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, 11:90-11:97, 13:01:01-13:08, 13:10-13:16, 13:18-13:43, 13:45-13:85, 13:87-13:103, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:16, 14:19, 14:21-14:22, 14:25, 14:27, 14:40, 14:53, 14:63, 14:67, 14:69, 14:74, 14:77-14:78, 14:84-14:85, 14:98

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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, 08:41, 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, 11:90-11:97, 12:02:01-12:02:05, 12:13, 12:15-12:16, 12:18-12:21, 12:23, 12:26, 13:01:01-13:02:01, 13:02:03-13:02:04, 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, 13:96-13:100, 13:102-13:103, 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, 03:47-03:58, 08:20, 13:01:01-13:16, 13:18-13:42, 13:44, 13:46-13:66:02, 13:68-13:102, 14:02-14:03:02, 14:05:01-14:06:02, 14:09, 14:12:01-14:14, 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, 14:100
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, DRB4*01:03:01:02N
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, 14:99-14:100, 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, 11:96, 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, 14:10-14:12:02, 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, 14:99-14:100, 15:21 ^w , 16:04 ^w
93^{6,11}	160 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^{8,10}	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

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 inherent 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 the DRB1*14:15 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

The DRB1*08:31, 08:41 and DRB1*11:67 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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 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, 84 and 94 may have tendencies of primer oligomer formation.

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																									
		Well⁶																							
		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.		120	140	210	205	190	160	135	175	165	75	85	80	185	175	100	90	240	140	200	160	240	85	70	360
PCR product(s)		225	385	235		535	210	200	200			500		225	240	205	395	180		200	245	375	240	160	
Length of int. pos. control¹		800	800	1070	800	800	800	1070	800	800	1070	1070	800	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
5'-primer(s)²		98	48	363	98	144	176	98	98	266	257	301	103	98	98	203	41	180	98	180	78	28	78	176	341
		5'-CTT	5'-gCT	5'-ATA	5'-CTA	5'-gCC	5'-gCA	5'-gTT	5'-ACA	5'-ACg	5'-CgA	5'-CgA	5'-CCT	5'-CTT	5'-CAC	5'-gAA	5'-CTT	5'-TTT	5'-CAC	5'-TTT	5'-TCT	5'-ICg	5'-TCT	5'-gCA	5'-ggC
		103	78		413	317	368	368	102	266	259	302	423	423	238	362	355	203			106	261	527	261	
		5'-CCT	5'-TCT		5'-CCg	5'-gCT	5'-gTT	5'-gTT	5'-ACA	5'-ACg	5'-CgA	5'-ggA	5'-gCT	5'-gCT	5'-AgA	5'-ggT	5'-CCg	5'-gAA	5'-AgC	5'-CAC		5'-AAC	5'-TgC	5'-AAC	
		123	108						413		261	385			355	363		418			2			341	
		5'-AgT	5'-CCA						5'-CCg		5'-AAC	5'-ggC			5'-CCg	5'-ATA		5'-AgC			5'-CCT			5'-CCC	
		363																						355	
		5'-ATA																							
3'-primer(s)³		203	240	527	266	265	270	269	269	302	299	341	257	282	267	299	238	280	266	299	265	97	265	292	418
		5'-TCT	5'-ggA	5'-CCA	5'-CTg	5'-CCC	5'-ACA	5'-gTT	5'-gTT	5'-ggC	5'-ICg	5'-CgT	5'-gCA	5'-gAC	5'-gCA	5'-TCA	5'-TCA	5'-CAA	5'-CIC	5'-CCA	5'-gAC	5'-ggT	5'-CCC	5'-gTg	5'-gTC
		545	292	527	559	570	502	502	538			521	559	282	299	411	243	317	256	341	282	355	282	292	
		5'-AgA	5'-gTg	5'-CCT	5'-CCg	5'-CCg	5'-CTg	5'-CCT	5'-CCT			5'-ggg	5'-CTC	5'-gAC	5'-TCA	5'-TCA	5'-ggA	5'-gTT	5'-CIC	5'-CCA	5'-gAC	5'-gAC	5'-TCT	5'-gTT	
		545	292	527	555	570	502	502	538			521	559	282	299	411	243	317	256	341	282	355	282	292	
		5'-TCT	5'-gCA	5'-CCA	5'-CTg	5'-CCC	5'-ACA	5'-gTT	5'-CCT			5'-ggg	5'-CTC	5'-gAC	5'-TCA	5'-TCA	5'-ggA	5'-gTT	5'-CIC	5'-CCA	5'-gAC	5'-gAC	5'-TCT	5'-gTT	
		545	292	527	555	570	502	502	538			521	559	282	299	411	243	317	256	341	282	355	282	292	
		5'-AgA	5'-gTg	5'-CCT	5'-CCg	5'-CCg	5'-CTg	5'-CCT	5'-CCT			5'-ggg	5'-CTC	5'-gAC	5'-TCA	5'-TCA	5'-ggA	5'-gTT	5'-CIC	5'-CCA	5'-gAC	5'-gAC	5'-TCT	5'-gTT	
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																								
*01:01:01:01-01:01:22, 01:01:24-01:04N, 01:06- 01:07, 01:09-01:11N, 01:16N-01:18N, 01:20, 01:22N-01:27N, 01:29, 01:31N-01:50, 01:52N- 01:78, 01:80-01:81	A1, Null, -	1			4																				
*01:01:23, 01:08, 01:14- 01:15N, 01:30, 01:79	A1, Null, -	1																							
*01:12, 01:19	A1, -	1		3																					
*01:13	A1	1			4							11		13		15									
*01:21	A1	1		3	4																				
*01:28	-	1			4							11				15									
*01:51	-	1			4				8		10														
*02:01:01:01-02:01:15, 02:01:17-02:01:19, 02:01:21-02:16, 02:18- 02:22:02, 02:24-02:33, 02:36-02:45, 02:47, 02:49- 02:54, 02:57-02:61, 02:63- 02:69, 02:71-02:77, 02:79:01-02:97:02, 02:99, 02:101-02:102, 02:104- 02:128, 02:130-02:134, 02:136-02:145, 02:147- 02:168, 02:170-02:236, 02:238-02:242, 02:244- 02:282	A2, Low A2, A203, A210, A19, Null, -		2																						
*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	-		w		4																20		22		
*02:135	-		2											13											24
*02:146	-		2									10													
*02:169	-		2		4																				
*02:237	-		2												14		16								
*02:243	-		2																18			21			
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
*03:01:01:01-03:01:18, 03:01:20-03:01:22, 03:02- 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- 03:81, 03:83-03:87, 03:90- 03:94, 03:96-03:106, 03:109-03:110, 03:112	A3, Null, -			3										13											
*03:01:19	-			3									12	13											24
*03:01:23, 03:08, 03:32, 03:36N, 03:57, 03:59, 03:72, 03:89, 03:107- 03:108, 03:111	A3, Null, -			3																					
*03:12	A3			3	4																				
*03:18	-	1			4									13											
*03:24, 03:50	A3, -			3					8					13											
*03:30	A3			3		5								13											
*03:41	-			3																				23	
*03:43, 03:82	-			3										13		15		17							
*03:63	-			3								11		13										23	
*03:75	-													13										23	
*03:88	-			3	4							11												23	
*03:95	-													13	14		16								
*11:01:01-11:09, 11:12- 11:24:02, 11:26-11:27, 11:29-11:59, 11:61-11:80	A11, Null, -				4								11												
*11:10	A11				4				8			11													
*11:11	-				4							11	12												
*11:25, 11:60	A11, -			3	4							11													
*23:01:01-23:13, 23:15- 23:31	A23, Null, -					5	6																		
*23:14, 24:05, 24:13:02, 24:24 ⁷	A23, A9, A24					5	6	7																	
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
*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, 24:95-24:113, 24:115-24:128, 24:130-24:137, 24:139-24:155N	A24, Low A24, A2403, A9, Null, -					5		7																	
*24:14-24:15, 24:51-24:53, 24:57, 24:64, 24:94, 24:114, 24:138	A24, -					5																			
*24:18	A24, A3					5		7																23	
*24:19, 24:44	A9					5		7				11													
*24:82	-					5		7														21			
*24:89, 24:129	-							7																	
*24:92	-			3		5																			
*25:01:01-25:04, 25:07-25:12N	A25, Null, -								8	9				13											
*25:05	A25								8	9				13							20				
*25:06	A25								8	9			12												
*25:13	-								8	9				13											24
*26:01:01-26:01:18, 26:08, 26:10-26:15, 26:17-26:18, 26:20, 26:23-26:29, 26:31-26:33, 26:35-26:43:02, 26:45-26:53, 26:55-26:56	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	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											
*26:19	-			4										13	14										
*26:22	A26								8		10			13	14							21			
*26:30	A26								8					13										23	24
*26:54	-								8		10			13							20				
*29:01:01:01-29:06, 29:08N-29:12, 29:15-29:18, 29:20-29:27	A29, Null, -														14										
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
*29:07	A29					6									14										
*29:13	–														14			17							
*29:14	–														14	16									
*29:19	–														14				19						
*30:01:01-30:04:02, 30:06-30:07, 30:09-30:20, 30:22-30:46	A30, Null, –															15									
*30:08	A30			4												15									
*31:01:02-31:02, 31:05-31:07, 31:09-31:28, 31:30-31:34, 31:36-31:46	A31, Null, –																16								
*31:03	A31											11	12		14	16									
*31:04	A31												12		14	16									24
*31:08	A31, A24					5											16								
*31:29	–						6										16								
*31:35	–															15	16	17							
*32:01:01-32:02, 32:06-32:12, 32:14, 32:16-32:30	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							
*33:01:01-33:01:05, 33:03:01-33:12, 33:14-33:18, 33:20-33:21, 33:23, 33:25-33:34	A33, –																		18						
*33:13	–										10				14			18							
*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												
*34:02-34:03, 34:07	A34			3					8			11	12												
*34:04	A34			3					8			11	12		14										
*34:08	A34			3					8			11	12	13											
*34:09	–			3					8				12												24
*36:01, 36:03, 36:05	A36, –	1																						22	
*36:02	A36	1	3															17					22	23	
*36:04	A36	1		4																			22		
*43:01	A43												12	13											

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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
*66:01, 66:04-66:08, 66:10-66:11, 66:13-66:15	A66, A26, –								8			11		13											
*66:02-66:03	A66, A10								8			12													24
*66:09	–								8			11		13	14							21			
*66:12	–								8					13											24
*68:01:01-68:04, 68:06-68:14, 68:16-68:19, 68:21-68:28, 68:30-68:44, 68:46-68:65	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				
*68:66	–				4				8												20				
*69:01	A69								8														21		
*74:01-74:06, 74:08-74:12N, 74:14N	A74, Null, –																				19				
*74:07	A74																		17		19				
*74:13	–													13							19				
*80:01	A80							6																23	
*80:02	–							6				11													
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

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 2, 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*02:22:01. 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 A*26:44 allele has been renamed to A*26:43:02. 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*33:03:01.

⁵The serological reactivity of all HLA-A alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶Primer mixes 1, 2, 11 and 15 will in many samples give rise to two or three HLA-specific PCR fragments.

⁷The 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.

'w', may be weakly amplified.

		INTERPRETATION TABLE																																															
		HLA-B low resolution SSP																																															
		Amplification patterns of the B*07:02 to B*83:01 alleles																																															
		Well																																															
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																								
Length of spec.		110	215	140	130	185	190	290	165	165	180	105	280	195	105	115	80	150	135	60	210	170	110	395	160																								
PCR product(s)				235	265	235			390	190		195			435	150				400	245				425																								
Length of int. pos. control¹		800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070																									
5'-primer(s)²		5' -TgA 5' 527	5' -TCg 5' 97	5' -ggC 5' 209	5' -CCg 5' 103	5' -CCT 5' 103	5' -CCg 5' 103	5' -ggA 5' 45	5' -ggA 5' 45	5' -ggA 5' 45	5' -TTA 5' 420	5' -AgA 5' 208	5' -gTC 5' 419	5' -TCT 5' 142	5' -ggA 5' 45	5' -Cgg 5' 161	5' -gCT 5' 167	5' -TCA 5' 355	5' -gAC 5' 208	5' -ggA 5' 45	5' -TCT 5' 142	5' -ggC 5' 409	5' -gAA 5' 246	5' -ggC 5' 44																									
		5' -gAC 5' 540		5' -AgC 5' 363	5' -CCg 5' 103	5' -AA 5' 363	5' -Agg 5' 418	5' -ggA 5' 45	5' -Tgg 5' 357	5' -AAA 5' 435		5' -TTA 5' 420		5' -gTC 5' 419	5' -gAC 5' 540					5' -gTT 5' 368	5' -gTC 5' 368	5' -TTA 5' 420	5' -ggC 5' 409																										
			5' -AgC 5' 363	5' -AgT 5' 361					5' -ATA 5' 412											5' -ggA 5' 557																													
3'-primer(s)³		5' -gCT 5' 605	5' -Tgg 5' 272	5' -gTg 5' 309	5' -CgT 5' 193	5' -TAT 5' 246	5' -TAT 5' 246	5' -Tgg 5' 165	5' -CCT 5' 206	5' -TCC 5' 266	5' -CTC 5' 559	5' -Tgg 5' 272	5' -TAT 5' 301	5' -gTC 5' 301	5' -ATC 5' 309	5' -TCT 5' 234	5' -TCT 5' 204	5' -gCT 5' 463	5' -ggC 5' 302	5' -gTT 5' 259	5' -ggg 5' 311	5' -ggT 5' 544	5' -ggA 5' 317	5' -TgC 5' 272																									
		5' -TgA 5' 272	5' -CAg 5' 559	5' -CgT 5' 193	5' -gTg 5' 583	5' -TAT 5' 246	5' -gCC 5' 572		5' -gTC 5' 538	5' -CAg 5' 559		5' -gCg 5' 572		5' -gTC 5' 570	5' -gCT 5' 605	5' -Tgg 5' 272				5' -gTT 5' 259	5' -ggg 5' 311		5' -gCg 5' 477																										
					5' -gTg 5' 583					5' -gTg 5' 583			5' -gCg 5' 572		5' -Tgg 5' 272					5' -Tgg 5' 292	5' -TCC 5' 266	5' -gTC 5' 538																											
																				5' -gTA 5' 292	5' -TCC 5' 266	5' -gTC 5' 538																											
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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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	
HLA-B allele⁴	ser.⁵																									
*07:02:01-07:02:20, 07:05:01-07:06, 07:10, 07:12-07:15, 07:18:01- 07:18:02, 07:21-07:23, 07:26, 07:29-07:31, 07:34-07:35, 07:39, 07:41-07:46, 07:49N, 07:52, 07:55-07:59, 07:61-07:64, 07:66- 07:68:02, 07:70-07:72, 07:74-07:76, 07:79- 07:80, 07:82-07:83, 07:86-07:99, 07:101- 07:117	B7, B42, Null, -	25																								48
*07:03, 07:08, 07:16, 07:32, 07:37	B703, B7, -	25																								48
*07:04, 07:25	B7	25													38											48
*07:07, 07:77	B7, -	25																								48
*07:09, 07:11, 07:17	B7	25											36													48
*07:19, 07:33, 07:40, 07:53	B7, 42																									48
*07:20, 07:24	B7, -	25		27																						48
*07:27	-	25										35								44						
*07:28	B7	25					30																			48
*07:36, 07:81	B7, -	25																								
*07:38	-	25																								
*07:47	B7	25																								48
*07:48, 07:51	B7																									48
*07:50	-	25										35														48
*07:54	B7	25																								48
*07:60	-			27																						48
*07:65	-	25																	42							
*07:69, 07:85	-	25																							47	48
*07:73	-	25															40									48
*07:78	-	25										34														48
*07:84	-	25																								48
*07:100	-			27																						48
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	ser. ⁵	HLA-B allele ⁴	Well No.		
			52																			71	72	B7, B42, Null, -	*07:02:01-07:02:20, 07:05:01-07:06, 07:10, 07:12-07:15, 07:18:01- 07:18:02, 07:21-07:23, 07:26, 07:29-07:31, 07:34-07:35, 07:39, 07:41-07:46, 07:49N, 07:52, 07:55-07:59, 07:61-07:64, 07:66- 07:68:02, 07:70-07:72, 07:74-07:76, 07:79- 07:80, 07:82-07:83, 07:86-07:99, 07:101- 07:117			
																						71	72	B703, B7, -	*07:03, 07:08, 07:16, 07:32, 07:37			
		51	52																						B7	*07:04, 07:25		
			52																							B7, -	*07:07, 07:77	
			52																							B7	*07:09, 07:11, 07:17	
			52																							B7, 42	*07:19, 07:33, 07:40, 07:53	
			52																							B7, -	*07:20, 07:24	
																						70	72	-		*07:27		
			52																							B7	*07:28	
			52																			70	72		B7, -	*07:36, 07:81		
																										-	*07:38	
			w																							B7	*07:47	
			52																							B7	*07:48, 07:51	
																										-	*07:50	
			52										62													B7	*07:54	
			52																							-	*07:60	
			52				56							64					w							-	*07:65	
																										-	*07:69, 07:85	
			52																							-	*07:73	
			52							59																-	*07:78	
			52							59																-	*07:84	
			52																		69				-	*07:100		
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
*08:01:01-08:01:13, 08:05, 08:08N, 08:10- 08:11, 08:15, 08:18- 08:19N, 08:22-08:24, 08:27, 08:29-08:31, 08:33-08:34, 08:39, 08:41-08:48, 08:51, 08:53, 08:56-08:59, 08:61, 08:63-08:64, 08:66	B8, Null, -		26						32																48
*08:02-08:03, 08:52	B8, -	26							32																
*08:04	B8, -	26							32		35														48
*08:07, 08:14	B8	26																							48
*08:09	B8	26							32																48
*08:12:01-08:12:03, 08:16	B8	26							32																48
*08:13, 08:20, 08:40	B8, -	26																							48
*08:17, 08:54	-	26							32		35														48
*08:21	B8	26	27						32																48
*08:25	B8	26	27																						48
*08:26, 08:50, 08:62, 42:07 ⁶	B8, -								32																48
*08:28, 08:37	B8, -	26										36													48
*08:32	B8	26							32									42							48
*08:35	-	26							32			36													48
*08:36	-	26							32																
*08:38	-	26							32																48
*08:49	-	26																41		44					48
*08:55	-	26																				45			48
*08:60	-	26							32																48
*08:65	-								32															47	48
*13:01:01-13:01:05, 13:17, 13:20, 13:22:01- 13:23, 13:25, 13:28- 13:29	B13, -			27	28						34							41							
*13:02:01-13:02:09, 13:08Q, 13:15, 13:18- 13:19, 13:27, 13:30, 13:32-13:34, 13:37- 13:38, 13:40	B13, -			27	28						34														
*13:03	B49, B15			27	28																				
*13:04, 13:10	B49, B15, B13			27	28							36													
*13:06	B13			27	28													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.	
		51																				71	72	B8, Null, – *08:01:01-08:01:13, 08:05, 08:08N, 08:10-08:11, 08:15, 08:18-08:19N, 08:22-08:24, 08:27, 08:29-08:31, 08:33-08:34, 08:39, 08:41-08:48, 08:51, 08:53, 08:56-08:59, 08:61, 08:63-08:64, 08:66	
		51																			70	72	B8, – *08:02-08:03, 08:52		
		51																				71	72	B8, – *08:04	
		51																				71	72	B8 *08:07, 08:14	
		51			54																	71		B8 *08:09	
		51																				71		B8 *08:12:01-08:12:03, 08:16	
																						71	72	B8, – *08:13, 08:20, 08:40	
		51											62									71	72	– *08:17, 08:54	
		51																				71	72	B8 *08:21	
																						71	72	B8 *08:25	
		51																				71	72	B8, – *08:26, 08:50, 08:62, 42:07 ⁶	
		51																				71	72	B8, – *08:28, 08:37	
		51																	68			71	72	B8 *08:32	
		51																				71	72	– *08:35	
		51																				71	72	– *08:36	
		51											62									71	72	– *08:38	
		51			53																	71	72	– *08:49	
																						71	72	– *08:55	
		51			53																	71	72	– *08:60	
		51																				71	72	– *08:65	
													62									70		B13, – *13:01:01-13:01:05, 13:17, 13:20, 13:22:01-13:23, 13:25, 13:28-13:29	
													62										70		B13, – *13:02:01-13:02:09, 13:08Q, 13:15, 13:18-13:19, 13:27, 13:30, 13:32-13:34, 13:37-13:38, 13:40
													62			65						70		B49, B15 *13:03	
													62									70		B49, B15, B13 *13:04, 13:10	
													62	64								70		B13 *13:06	
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
*13:07N	Null			27	28						34							41							
*13:09	–				28						34														
*13:11	B13			27	28						34														
*13:12-13:13	B13			27	28													41							
*13:14	B13			27							34														
*13:16	B13			27	28						34														
*13:21, 13:35	–			27	28																				
*13:26	–			27	28								36					41							
*13:31	–			27	28						34														
*13:36	–			27	28						34							41							
*13:39	–				28						34							41							
*14:01:01-14:01:02, 14:07N, 14:12, 14:14, 14:19	B64, –, Null				28	29																		47	48
*14:02:01-14:02:02, 14:02:04, 14:03-14:04, 14:09, 14:11, 14:15- 14:18	B65, B14, –				28		30																	47	48
*14:02:03, 14:02:06	B65, –				28																			47	48
*14:02:05	B65				28		30																	47	
*14:05-14:06:02, 14:13	B14, –						30																	47	48
*14:08, 39:25N, 39:30, 39:32-39:34, 39:47, 39:50 ⁷	B39, B16, Null, –					29																		47	48
*14:10	–					29												41						47	48
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.
																					70			Null	*13:07N
													62									71		-	*13:09
													62				67				70			B13	*13:11
													62								70			B13	*13:12-13:13
													62								70			B13	*13:14
										59			62								70			B13	*13:16
													62								70			-	*13:21, 13:35
													62								70			-	*13:26
										w			62								69	70		-	*13:31
								57													70			-	*13:36
													62									71		-	*13:39
																						71		B64, -, Null	*14:01:01-14:01:02, 14:07N, 14:12, 14:14, 14:19
																						71		B65, B14, -	*14:02:01-14:02:02, 14:02:04, 14:03-14:04, 14:09, 14:11, 14:15-14:18
																						71		B65, -	*14:02:03, 14:02:06
																						71		B65	*14:02:05
																						71		B14, -	*14:05-14:06:02, 14:13
																						71		B39, B16, Null,	*14:08, 39:25N, 39:30, 39:32-39:34, 39:47, 39:50 ⁷
																						71		-	*14:10
						55																71		-	*14:10
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.

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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.
													62							69		71		B62, Null, - *15:01:01:01-15:01:01:02N, 15:01:03, 15:01:06-15:01:16, 15:01:18, 15:01:20, 15:26N-15:27:03, 15:32, 15:34-15:35, 15:38:01-15:38:02, 15:50, 15:56, 15:60, 15:70-15:71, 15:75, 15:79N, 15:81-15:82, 15:92, 15:94N, 15:96-15:97, 15:102, 15:104-15:105, 15:109-15:111N, 15:113, 15:117 15:118, 15:122, 15:125, 15:128-15:129, 15:135, 15:140, 15:145-15:147, 15:152, 15:159-15:160, 15:163-15:164, 15:166-15:167, 15:169, 15:171-15:172, 15:174-15:175, 15:178, 15:181N-15:184, 15:187, 15:190N, 15:192 15:193, 15:201, 15:203, 15:206
													62							69		71		B62 *15:01:02
													62							69		71		B62 *15:01:04
													62										71	B62, - *15:01:17, 15:05:01-15:06, 15:33, 15:39:01-15:40, 15:65, 15:78:01-15:78:02, 15:84, 15:107, 15:136, 15:141, 15:155, 15:179, 15:185, 15:195, 15:199
																				69		71		B62, Null, - *15:01:19, 15:28, 15:120, 15:149N
											57												71	B75, - *15:02:01-15:02:05, 15:88, 15:112, 15:121, 15:139, 15:170, 15:194
													62										71	B72, B70, - *15:03:01-15:03:02, 15:47, 15:49, 15:61, 15:98, 15:103, 15:123, 15:127, 15:132, 15:151, 15:156, 15:158, 15:173
													62										71	B72 *15:03:03
											w		62							69		71		B62 *15:04
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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*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, 55:44-55:45	B55, –																								
*55:02:01-55:02:06, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39, 55:41-55:43, 55:47- 55:48	B55, B54, –																								
*55:04, 55:08, 55:13, 55:27, 55:46, 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- 56:30	B56, Null, –																								
*56:02, 56:04	B56																								
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		62								70			-	*53:17
				53							60								68		70			-	*53:22
			52				56							63	64							71		B54, Null, -	*54:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:13, 54:16-54:19, 54:21-54:23
			52				56							63	65							71		B22	*54:03
			52				56							63								71		B54, -	*54:04, 54:15
			52				56							63						69		71		-	*54:06
			52				56							63								71		-	*54:09, 54:14
			52				56							63								71		B54	*54:11
			52				56			58				63	64							70		-	*54:12
			52				56			59				63	64							71		-	*54:20
			52				56			59					64							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, 55:44-55:45
			52				56								64							71		B55, B54, -	*55:02:01-55:02:06, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39, 55:41-55:43, 55:47-55:48
			52				56															71		B55, B56, Null, -	*55:04, 55:08, 55:13, 55:27, 55:46, 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
			52				56									65						71		B56, Null, -	*56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26-56:30
			52				56									65		67				71		B56	*56:02, 56:04
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	
*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, 57:01:06-57:01:10, 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, 57:33-57:37	B57, -												36						41							
*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, 57:32	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, 58:01:04-58:01:08, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24, 58:29-58:31N	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		
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													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						66					70			B57, - *57:01:01-57:01:04, 57:01:06-57:01:10, 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, 57:33-57:37
											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, 57:32
											60						66					70			B57 *57:04
						53					60						66					70			B57 *57:07
						53					60						66					70			B57 *57:09
																	66					71			B57 *57:12
							55				60						66					70			- *57:14
						53					60						66					70			- *57:24
											60											67	70		B58, Null, - *58:01:01-58:01:02, 58:01:04-58:01:08, 58:04, 58:05, 58:10N-58:15, 58:19, 58:21-58:24, 58:29-58:31N
											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
											60											67	70		Null *58:17N
											60											67	70		- *58:18
											60											67	70		- *58:20
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
*58:27	–																								
*58:28	–																	41							
*59:01, 59:05	B59, –																								
*59:02-59:03	B59, –																								
*59:04	–																								
*67:01:01, 67:03	B67, –					29																45			48
*67:01:02-67:02	B67, –																					45			48
*73:01-73:02	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
*81:03-81:05	Null, –																								
*82:01-82:03	B82, –								32		35								43						
*83:01	–																	41							
A*23:31, A*24:106, C*16:10						30																			
A*68:56, C*06:20, C*12:50																									
C*01:30					28																				
C*02:06																									
C*02:23, C*04:77		25																							
C*03:05, C*03:25, C*03:27					27																				
C*03:12, C*03:19																									
C*03:102																			41						
C*07:46									32																
C*15:02:04																									
C*15:25																									
C*15:39																									
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.

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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							67			70			-	*58:27
											60							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, 67:03
			52																			71		B67, -	*67:01:02-67:02
			52																		69	71		B73, -	*73:01-73:02
										59					64							71		B78, -	*78:01, 78:02:02-78:03, 78:07
										59												71		B78, B35	*78:02:01, 78:04
										59												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, -	*81:03-81:05
			52				56										65					71		B82, -	*82:01-82:03
			52	53			56								63							71		-	*83:01
																									A *23:31, A *24:106, C *16:10
																					69				A *68:56, C *06:20, C *12:50
																									C *01:30
																			w						C *02:06
																									C *02:23, C *04:77
																									C *03:05, C *03:25, C *03:27
																	65								C *03:12, C *03:19
																	65								C *03:102
																									C *07:46
																64									C *15:02:04
				53																					C *15:25
						55																			C *15:39
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.

³The nucleotide position, in the 2nd, or 3rd exon or the 1st or 3rd intron, 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*08:06 allele has been shown to be identical to B*08:20

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.

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The sequence of the B*27:05:01 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*39:01:01:01.

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*44:02.

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*15:18:01.

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

⁵The serological reactivity of all HLA-B alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶The B*08:26, 08:50 and 08:62 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.

⁸ The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02, 35:99 and 35:118-35:119 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													
	Well⁴												
	73	74	75	76	77	78	79	80	81	82	83	84	
Length of spec. PCR product(s)	200 255	200	215	210	120 220	80 210	85 210	100 175	210 230	170 215	85 135	205	
Length of int. pos control¹	515	430	430	430	430	430	430	430	430	515	430	430	
5'-primer(s)²	13 (124) 5'-AT 5' 5'-gAA 5'	14 (129) 5'-gAA 5'	13 (126) 5'-Agg 5'	13 (126) 5'-Agg 5'	13 (125) 5'-gTC 5'	13 (125) 5'-gTC 5'	13 (125) 5'-gTC 5'	13 (125) 5'-ACA 5'	14 (127) 5'-ATA 5'	16 (133) 5'-gTT 5'	26 (165) 5'-TAT 5'	31 (178) 5'-gCg 5'	
	14 (129) 5'-gAA 5'		13 (126) 5'-AAg 5'	13 (126) 5'-AAg 5'	47 (227) 5'-gTT 5'	16 (133) 5'-gTT 5'		13 (125) 5'-ACC 5'	14 (127) 5'-ATA 5'	16 (133) 5'-gTT 5'	58 (261) 5'-gAg 5'		
								13 (125) 5'-ATA 5'	16 (133) 5'-gTT 5'				
								13 (125) 5'-gTC 5'					
3'-primer(s)³	67 (286) 5'-gAg 5'	67 (286) 5'-gAT 5'	67 (286) 5'-gAT 5'	67 (286) 5'-gAA 5'	73 (305) 5'-ggC 5'	26 (164) 5'-ggT 5'	28 (171) 5'-CtC 5'	33 (184) 5'-gTg 5'	71 (298) 5'-CtC 5'	58 (260) 5'-CCT 5'	57 (257) 5'-CgA 5'	86 (344) 5'-CAC 5'	
	67 (286) 5'-gAg 5'		70 (295) 5'-CTg 5'	67 (286) 5'-gAg 5'	73 (305) 5'-ggC 5'	71 (299) 5'-gCT 5'	70 (295) 5'-CTg 5'	58 (260) 5'-Cgg 5'	73 (305) 5'-ggC 5'	74 (307) 5'-CAG 5'	73 (305) 5'-ggC 5'	86 (344) 5'-CCA 5'	
	67 (286) 5'-gAT 5'		71 (298) 5'-CgC 5'	70 (297) 5'-CTg 5'	74 (308) 5'-CCC 5'				77 (317) 5'-AAT 5'	86 (344) 5'-CAC 5'	78 (319) 5'-CAC 5'		
	71 (299) 5'-gCg 5'		71 (299) 5'-gCT 5'	72 (301) 5'-ggC 5'					78 (319) 5'-CAC 5'				
	86 (344) 5'-CCA 5'		73 (305) 5'-ggC 5'										
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	160	215	175	Length of spec. PCR product(s)
170	105		215		140	135	175	240			
					155	170	225				
430	430	430	430	430	430	430	430	430	430	430	Length of int. pos control ¹
13 (125)	16 (133)	10 (116)	10 (116)	13 (125)	13 (125)	26 (164)	13 (125)	10 (116)	28 (170)	13 (125)	5'-primer(s) ²
5'-gTC	5'-gTT	5'-gCT	5'-gCT	5'-gTC	5'-CAA	5'-gTA	5'-gTC	5'-gCT	5'-gAT	5'-gTA	
16 (133)		12 (122)	12 (122)		37 (197)	34 (189)	34 (189)	10 (116)			
5'-gTC		5'-TAT	5'-TAT		5'-gTT	5'-CAg	5'-CAg	5'-gCT			
38 (200)		13 (125)	13 (125)		37 (197)			38 (199)			
5'-CgT		5'-gTC	5'-gTC		5'-gTA			5'-TCC			
			16 (133)								
			5'-gTT								
			16 (133)								
			5'-gTC								
58 (260)	30 (175)	70 (295)	67 (286)	58 (260)	42 (213)	57 (257)	57 (257)	51 (239)	87 (346)	57 (258)	3'-primer(s) ³
5'-CCT	5'-gTg	5'-gTC	5'-gAA	5'-Cgg	5'-TCA	5'-CAg	5'-CAg	5'-CCC	5'-CTC	5'-gCg	
58 (260)	38 (199)	71 (299)	71 (298)	58 (260)	57 (257)	70 (295)	60 (265)	77 (317)	87 (346)	58 (260)	
5'-CCT	5'-CAg	5'-gCT	5'-CgC	5'-CAg	5'-CAg	5'-CTg	5'-gTg	5'-AAT	5'-CTT	5'-CCT	
58 (260)			71 (298)		71 (298)	70 (296)	70 (296)				
5'-CCT			5'-CTC		5'-CgC	5'-TCC	5'-TCC				
							74 (307)				
							5'-CAg				
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, 01:04-01:34	DR1, Null, –	73											
*01:03	DR103, DR1		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, 03:54-03:58	DR17, DR3, –					77	78						
*03:02:01-03:03, 03:27, 03:29, 03:38, 03:53	DR18, DR3, –					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, 04:74-04:92	DR4, DR3, Null, –								80				
*04:62, 04:69, 04:73	DR4, –								80				
*07:01:01-01-07:01:03, 07:03-07:19	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, 14:15 ⁶	DR8										82		
*08:20, 13:18, 13:47, 13:55 ⁷	DR13, –												
*08:21	DR8										82		
*08:31, 08:41, 11:67 ⁸	DR8, DR11, –										82		
*08:32	–										82		
*08:35	–										82		
*08:40	–						78				82		
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

Lot No.: **74K**

Lot-specific information

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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, Null, –	*01:01:01-01:02:05, 01:04-01:34
												DR103, DR1	*01:03
				89								DR17, DR3, –	*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, 03:54-03:58
				89								DR18, DR3, –	*03:02:01-03:03, 03:27, 03:29, 03:38, 03:53
				89								DR3, –	*03:07, 03:17, 03:21, 03:24, 03:32, 03:35, 03:39-03:41, 03:49
85												DR3	*03:08
						91	92					DR3	*03:10
												–	*03:42
												–	*03:46
												DR4, DR3, Null, –	*04:01:01-04:61, 04:63-04:68, 04:70-04:72:02, 04:74-04:92
					90							DR4, –	*04:62, 04:69, 04:73
												DR7, Null, –	*07:01:01-01-07:01:03, 07:03-07:19
			88									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
												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
			88		90							DR8	*08:08
			88				92					DR8	*08:09, 14:15 ⁶
		87	88	89			92					DR13, –	*08:20, 13:18, 13:47, 13:55 ⁷
		87	88				92					DR8	*08:21
85			88									DR8, DR11, –	*08:31, 08:41, 11:67 ⁸
	86						92					–	*08:32
							92					–	*08:35
												–	*08:40
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

Negative Control

Lot No.: **74K**

Lot-specific information

www.olerup-ssp.com

Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
*09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:09	DR9, -											83	
*09:01:06, 09:03	DR9											83	
*10:01:01-10:03	DR10, -												84
*11:01:01-11:01:12, 11:04:01-11:04:06, 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, 11:94-11:95, 11:97	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	DR14, DR11												
*11:22, 11:98	-												
*11:23, 11:25, 11:96	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, 12:24N-12:25	DR12, Null, -												
*12:02:01-12:02:05, 12:13, 12:15, 12:18-12:21, 12:23, 12:26	DR12, -												
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

Lot No.: **74K**

Lot-specific information

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
						91						DR9, –	*09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:09
												DR9	*09:01:06, 09:03
												DR10, –	*10:01:01-10:03
85		87	88									DR11, –	*11:01:01-11:01:12, 11:04:01-11:04:06, 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, 11:94-11:95, 11:97
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					DR14, DR11	*11:17, 11:52
85												–	*11:22, 11:98
85		87	88				92					DR11, –	*11:23, 11:25, 11:96
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, Null, –	*12:01:01-12:01:03, 12:03:02, 12:05-12:12, 12:14, 12:17, 12:24N-12:25
	86		88									DR12, –	*12:02:01-12:02:05, 12:13, 12:15, 12:18-12:21, 12:23, 12:26
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

Negative Control

Lot No.: **74K**

Lot-specific information

www.olerup-ssp.com

Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
*12:04	DR12										82		
*12:16	–										82		
*12:22	–									81	82		
*13:01:01-13:02:01, 13:02:03-13:02:04, 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, 13:96-13:99, 13:102	DR13, DR11, DR14, –						78						
*13:02:02, 13:03:01-13:03:06, 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, 13:101	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, 13:100	DR13, DR11, DR6, –												
*13:06, 13:12, 13:25, 13:30, 13:56, 13:58, 13:60, 13:77, 13:82	DR13, DR11, 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, 13:103	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, DR1404, DR4, DR6, –												
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

Lot No.: **74K**

Lot-specific information

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
	86											DR12	*12:04
	86		88									–	*12:16
	86											–	*12:22
		87	88	89								DR13, DR11, DR14, –	*13:01:01-13:02:01, 13:02:03-13:02:04, 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, 13:96-13:99, 13:102
		87		89								DR13, –	*13:02:02, 13:03:01-13:03:06, 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, 13:101
		87	88	89								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, 13:100
		87		89								DR13, DR11, 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, 13:103
		87		89								–	*13:85
					90	91	92					DR14, DR1404, 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
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

Negative Control

Lot No.: **74K**

Lot-specific information

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Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
*14:01:03, 14:08, 14:23:02, 14:34, 14:72, 14:92N, 14:97	DR14, Null, –												
*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, 14:12:01-14:12:02, 14:40, 14:63, 14:67, 14:77-14:78, 14:85	DR1403, 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, 14:100	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, 15:35-15:49, 15:51	DR15, DR2, Null, –			75									
*15:21	DR2			75									
Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84

Lot No.: **74K**

Lot-specific information

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
						91	92					DR14, Null, –	*14:01:03, 14:08, 14:23:02, 14:34, 14:72, 14:92N, 14:97
				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					DR1403, DR14, DR6, –	*14:03:01-14:03:02, 14:12:01-14:12:02, 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, 14:100
						91	92					DR14	*14:11
		87	88		90	91	92					DR6	*14:16
				89		91	92					DR14, –	*14:18, 14:81
		87		89		w						DR14	*14:19, 14:21
		87	88		90	91	92					DR14	*14:22
			88	89								DR14	*14:24
		87	88		90		92					DR6, DR13, 14	*14:25, 14:53
		87	88	89			92					DR14	*14:27
					90	91	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
		87			90		92					–	*14:69
			88		90	91	92					–	*14:73
		87			90	91	92					–	*14:74
					90	91	92					–	*14:82
				89			92					–	*14:89
				89		91	92					–	*14:95
		87		89								–	*14:98
							w					DR15, DR2, Null, –	*15:01:01:01-15:20, 15:22-15:24, 15:26, 15:28-15:33, 15:35-15:49, 15:51
												DR2	*15:21
85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.

Negative Control

Lot No.: **74K**

Lot-specific information

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Well No.	DR	73	74	75	76	77	78	79	80	81	82	83	84
*15:25	–			75		77							
*15:27, 15:34	–			75									
*15:50N	Null			w									
*16:01:01-16:03, 16:05:01-16:05:02, 16:07-16:17	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.

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.

Lot No.: **74K**

Lot-specific information

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85	86	87	88	89	90	91	92	93	94	95	96	DR	Well No.
												–	*15:25
						91						–	*15:27, 15:34
												Null	*15:50N
												DR16, Null, –	*16:01:01-16:03, 16:05:01- 16:05:02, 16:07-16:17
							w					DR16	*16:04
								93				DR52, –	<i>DRB3*01:01:02:01-01:14,</i> <i>DRB3*02:01:02:25,</i> <i>DRB3*03:01:01-03:03</i>
									94			DR53, –	<i>DRB4*01:01:01:01- 01:03:01:01, 01:03:02-01:08</i>
					90				94			Null	<i>DRB4*01:03:01:02N</i>
										95		DR51, Null, –	<i>DRB5*01:01:01-01:14,</i> <i>DRB5*02:02-02:05</i>
85	86	87	88	89	90	91	92	93	94	95	96	ser ⁵	Well No.

⁵The serological reactivity of all DRB alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

⁶The DRB1*08:09 and the DRB1*14:15 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁷The DRB1*08:20 and the DRB1*13:18, 13:47 and 13:55 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁸The DRB1*08:31, 08:41 and DRB1*11:67 alleles yield identical amplification patterns with the DR low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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*07:01:01:01.

The sequence of the DRB1*08:031 allele has been shown to be identical to DRB1*08:03:02.

The sequence of the DRB1*09:011 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*12:031 allele has been shown to be identical to DRB1*12:01:01.

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*0101102N allele has been shown to be identical to DRB4*01:03:10:02N.

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.

CELL LINE VALIDATION SHEET																				
HLA-A low resolution primer set																				
				Lot No.:	Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					201078701	201078702	201073303	201073304	201073305	201078706	201073307	201073308	201073309	201078710	201078711	201073312	201073313	201078714	201073315	201078716
	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			-	+	-	-	-	-	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.: **74K**

Lot-specific information

www.olerup-ssp.com

CELL LINE VALIDATION SHEET												
HLA-A low resolution primer set												
				Lot No.:	Well							
					17	18	19	20	21	22	23	24
					201078717	201073318	201073319	201078720	201073321	201078722	201078723	201078724
	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		-	-	-	-	-	-	-	+

				Well															
				25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Prod. No.:				201073401	201073402	201078803	201073404	201078805	201073406	201073407	201073408	201073409	201073410	201073411	201073412	201073413	201073414	201078815	201073416
IHC 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	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-

				Well															
				41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Prod. No.:				201073417	201073418	201078819	201078820	201073421	201073422	201073423	201078824	201078825	201078826	201073427	201073428	201073429	201073430	201073431	201073432
IHC 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	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-

				Well															
				57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
				Prod. No.:															
				201078833	201073334	201073335	201078836	201073337	201078838	201073339	201073340	201073341	201073342	201073343	201073344	201073345	201073346	201073347	200963348
IHC 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	-	-	-	-	-	-	+	-	-	-	-	+	-	+	+	

CELL LINE VALIDATION SHEET																			
DR low resolution primer set																			
				Well															
				73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
				Prod. No.:															
				201078901	201068902	201068903	201078904	201068905	201068906	201068907	201068908	201068909	201068910	201068911	201068912	201068913	201068914	201078915	201078916
	IHCW 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		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Lot No.: **74K**

Lot-specific information

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CELL LINE VALIDATION SHEET													
DR low resolution primer set													
				Well									
				89	90	91	92	93	94	95			
				Prod. No.:	201078917	201068918	201068919	201068920	201078921	201068922	201068923		
	IHWC 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: 101.701-24/06 – including *Taq* pol.

Lot number: 74K

Expiry date: 2013-June-01

Number of tests: 24 tests – Product No. 101.701-24

6 tests – Product No. 101.701-06

Number of wells per test: 95 + 1

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2010-787-01	9	2010-733-09	17	2010-787-17
2	2010-787-02	10	2010-787-10	18	2010-733-18
3	2010-733-03	11	2010-787-11	19	2010-733-19
4	2010-733-04	12	2010-733-12	20	2010-787-20
5	2010-733-05	13	2010-733-13	21	2010-733-21
6	2010-787-06	14	2010-787-14	22	2010-787-22
7	2010-733-07	15	2010-733-15	23	2010-787-23
8	2010-733-08	16	2010-787-16	24	2010-787-24

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. One of the 5'-primers in primer solutions 2, 10, 11 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	2010-734-01	41	2010-734-17	57	2010-788-33
26	2010-734-02	42	2010-734-18	58	2010-734-34
27	2010-788-03	43	2010-788-19	59	2010-734-35
28	2010-734-04	44	2010-788-20	60	2010-788-36
29	2010-788-05	45	2010-734-21	61	2010-734-37
30	2010-734-06	46	2010-734-22	62	2010-788-38
31	2010-734-07	47	2010-734-23	63	2010-734-39
32	2010-734-08	48	2010-788-24	64	2010-734-40
33	2010-734-09	49	2010-788-25	65	2010-734-41
34	2010-734-10	50	2010-788-26	66	2010-734-42
35	2010-734-11	51	2010-734-27	67	2010-734-43
36	2010-734-12	52	2010-734-28	68	2010-734-44
37	2010-734-13	53	2010-734-29	69	2010-734-45
38	2010-734-14	54	2010-734-30	70	2010-734-46
39	2010-788-15	55	2010-734-31	71	2010-734-47
40	2010-734-16	56	2010-734-32	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, 49 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 was not possible to test.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2010-789-01	81	2010-689-09	89	2010-789-17
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	2010-789-04	84	2010-689-12	92	2010-689-20
77	2010-689-05	85	2010-689-13	93	2010-789-21
78	2010-689-06	86	2010-689-14	94	2010-689-22
79	2010-689-07	87	2010-789-15	95	2010-689-23
80	2010-689-08	88	2010-789-16		

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 and 88 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 73, 75, 76, 82, 84 and 92 were tested by separately adding one 5'-primer. One, two or three of the 5'-primers in primer solution 73, 75, 76, 80 to 82, 85, 87 and 88 were not possible to test. One or two of the 3'-primers in primer solution 73, 75, 76, 85 and 94 were not possible to test.

The negative control primer pairs, **Production No. 2010-760-01**, can detect contamination with PCR products diluted 10^{-7} .

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

Date of approval: 2011-January-14

Approved by:

Production Quality Control

Lot No.: **74K**

Lot-specific information

www.olerup-ssp.com

Declaration of Conformity

Product name: *Olerup* SSP® HLA-A-B-DR SSP Combi Tray
Product number: 101.701-24/06
Lot number: 74K

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

Manufacturer: *Olerup* SSP AB
Franzengatan 5
SE-112 51 Stockholm, Sweden
Phone: +46-8-717 88 27
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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, Franzengatan 5, SE-112 51 Stockholm, Sweden.

Notified Body: Lloyd’s Register Quality Assurance Limited, Hiramford, Middlemarch Office Village, Siskin Drive, Coventry CV3 4FJ, United Kingdom. (Notified Body number: 0088.)

Stockholm, Sweden
2013-February-11

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **74K**

Lot-specific information

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