

Olerup SSP[®] HLA-A-B-C SSP Combi Tray

Product number:	101.702-24/06 – including <i>Taq</i> pol.
Lot number:	17K
Expiry date:	2012-July-01
Number of tests:	24 tests – Product No. 101.702-24 6 tests – Product No. 101.702-06
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. 17K.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP[®] HLA-A-B-C 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-C SSP Combi Tray lot was made (**Lot No. 85F**).

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

Well	5'-primer	3'-primer	rationale
1	Added	-	Primer added for the A*01:43 allele.
6	Moved	Moved, exchanged	Primer pair to wells 14 and 16, exchanged 3'-primer to amplify the A*80:02 allele.
13	Added	-	Improved yield of specific PCR product.
14	Added	Added	Primer pair from well 6.
16	Added	Added	Primer pair from well 6.
20	Added	-	Primer added for the A*68:48 allele.
23	Added	-	Primer added for the A*03:75 allele.

The **HLA-B low resolution** specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP[®]* HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 85F**).

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

Well	5'-primer	3'-primer	rationale
30	Added	Added	Improved allelic resolution of B*13 and B*44 alleles.
33	-	Added	Primer added for the B*78:07 allele.
34	Moved	Moved	Primer pair moved to well 14 for increased specificity.
38	Added	Added	Primer pair from well 10.
39	-	Added	Improved allelic resolution of B*35 alleles.
43	Added	-	Primer pair added for the B*82:03 allele.
44	-	Modified	Primer modified to decrease primer oligomer formation.
50	-	Added	Primer added for the B*40:02:05 allele.
52	-	Added	Improved allelic resolution of B*39 alleles.
62	-	Added	Primer added for the B*52:18 allele.
63	Exchanged	-	Improved allelic resolution.
66	Added	Added	Primer pair added for the B*57:16 and B*57:20 alleles. Improved allelic resolution.
72	-	Exchanged	Decreased formation of primer oligomers.

The **HLA-C low resolution** specificity and interpretation tables have been updated for the HLA-DRB alleles described since the previous *Olerup SSP*[®] HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 85F**).

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

Well	5'-primer	3'-primer	rationale
75	Added	Added	Primers added for the C*02:33 allele and for increased yield of specific PCR product.
78	Added	-	Exchanged positive control primer pair, primer added for the C*07:02:09 allele.
82	-	-	Exchanged positive control primer pair.
84	Modified	-	Increased yield of specific PCR product.
86	Added	Added	Primer pair added for the C*04:42 allele.
90	-	Added	Primer added for the C*04:52 and C*04:55 alleles.
91	Added	Added	Primer pair added for the C*15:25 allele.

Change in revision R01 compared to R00:

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

Change in revision R02 compared to R01:

1. The HLA-C*04:03, 04:06 and 04:16 alleles are amplified in primer mix 87.

Change in revision R03 compared to R02:

1. Primer mix 6 may give a lower yield of HLA-specific PCR product than the other HLA-A low primer mixes.

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

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

Length of PCR 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'-Tg g ^{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-C 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 HLA-C*01:02 to C*18:03 alleles into the groups C*01:xx to C*18:xx.

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-C low resolution primers.

Well 96 – Negative Control.

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

Well No. 1 is marked with the Lot No. '17K'.

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 HLA-C*01:30 allele will be amplified by primer mix 28, the HLA-C*02:06 allele will be weakly amplified by primer mix 67,

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the HLA-C*02:23 allele will be amplified by primer mix 25, the HLA-C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, the HLA-C*03:12 and 03:19 alleles will be amplified by primer mix 65, the C*06.20 allele will be amplified by primer mix 69, the C*07:46 allele will be amplified by primer mix 32, the C*15:02:04 allele will be amplified by primer mix 64, the C*15:25 allele will be amplified by primer mix 53 and the C*16:10 allele will be amplified by primer mix 30. Thus, the interpretation of HLA-B low resolution typings is only influenced by these HLA-C alleles and not by other alleles of other HLA class I genes.

Only HLA-C alleles will be amplified by the HLA-C low resolution primer set, **wells 73 to 95**, except that primer mix 73 will amplify the B*54:18 allele, primer mix 85 will amplify the B*67:02 allele and primer mix 92 will amplify the B*14:03 allele. Thus, the interpretation of HLA-C low resolution typings is only influenced by these HLA-B alleles and not by other HLA class I genes.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A alleles², i.e. **A*01:01 to A*80:02**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 24**. The HLA-A alleles will be grouped into their corresponding serological specificities³.

All the HLA-B alleles², i.e. **B*07:02 to B*83:01**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into their corresponding serological specificities⁴.

All the HLA-C alleles², i.e. **C*01:02 to C*18:03**, recognized by the HLA Nomenclature Committee in April 2010¹ will be amplified by the primers in the HLA-C low resolution primer set, **wells 73 to 95**. The HLA-C alleles will be grouped into the C*01:xx to C*18:xx groups⁵.

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

²The nucleotide sequences of some alleles are not yet retrievable from the GenBank or EMBL data banks, see www.ebi.ac.uk/imgt/hla.

³The A*03:18 and 26:19 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets. The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

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

⁴The B*08:26 and 08:50 and the B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

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

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

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

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

⁵The C*01:05, 01:22, 01:35 and 01:36 and the B*54:18 alleles give rise to identical amplification patterns with the HLA-C low resolution primer set. These alleles are separated by the HLA-B low primer set.

SPECIFICITY TABLE

HLA-A low resolution primer set

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

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

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				34:01:01-34:08, 66:01, 66:04-66:10, 66:13, 80:02
12	185 bp	800 bp	A10, A25, A26, A31, A34, A43, A66	*11:11, 25:06, 26:09, 31:03-31:04, 34:01:01-34:08, 43:01, 66:02-66:03
13	175 bp, 225 bp	1070 bp	A1, A2, A3, A10, A25, A26, A34, A43, A66	*01:13, 02:34-02:35:03, 02:56:01-02:56:02, 02:62, 02:103, 02:135, 03:01:01:01-03:07, 03:09-03:11N, 03:13-03:31, 03:33-03:35, 03:37-03:40, 03:42-03:56, 03:58, 03:60-03:71, 03:73-03:76, 25:01:01-25:05, 25:07-25:13, 26:01:01-26:01:13, 26:02 ^w , 26:03:01-26:03:02, 26:05-26:08, 26:10-26:33, 26:35-26:45, 34:08, 43:01, 66:01, 66:04-66:13, 74:13
14	200 bp, 240 bp	1070 bp	A2, A29	*02:122, 29:01:01:01-29:22, 33:08-33:09, 33:13
15⁷	90 bp, 135 bp, 205 bp	1070 bp	A1, A30	*01:13, 01:28, 03:43, 30:01:01-30:04, 30:06-30:20, 30:22-30:37
16	190 bp, 370 bp, 395 bp	1070 bp	A2, A24, A31, A32	*02:122, 29:14, 31:01:02-31:31, 32:05, 33:08-33:09, 74:04
17	150 bp, 180 bp	1070 bp	A32	*03:43, 29:13, 32:01:01-32:03, 32:05-32:22
18	200 bp	1070 bp	A33, A68	*33:01:01-33:01:03, 33:03:01-33:29, 68:29
19	160 bp, 200 bp	800 bp	A74	*29:19, 74:01-74:14N
20	155 bp, 200 bp, 240 bp	800 bp	A2, A210, A25, A68	*02:10, 02:34-02:35:03, 02:39, 02:46, 02:48, 02:50, 02:52, 02:56:01-02:56:02, 02:62, 02:70, 02:73, 02:78, 02:93, 02:95, 02:103, 02:110, 02:114, 02:117, 02:122, 02:129, 02:156, 11:57, 24:94, 25:05, 68:01:01-68:49N
21	240 bp, 375 bp	800 bp	A2, A26, A28, A68, A69	*02:55, 24:82, 26:22, 33:22, 66:09, 68:29, 69:01
22^{7,11}	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^{7,10,12}	70 bp, 160 bp, 240 bp, 495 bp	800 bp	A2, A26, A28, A36, A68, A80	*02:55, 03:41, 03:63, 03:75, 24:18, 26:03:01-26:03:02, 26:05-26:06, 26:21, 26:30, 33:24, 36:02, 68:05, 68:15, 68:20, 80:01
24	360 bp	1070 bp	A1, A11, A36, A80	*01:01:01:01-01:04N, 01:06, 01:08-01:29, 01:31N-01:35, 01:37-01:49, 01:51-01:55, 03:41, 03:63, 11:01:01-11:01:14, 11:01:16-11:11, 11:13-11:17, 11:19-11:27, 11:29-11:40, 11:42-11:59, 33:13, 36:01-36:05, 74:10, 80:01-80:02

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

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

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

In addition, wells 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.

³ The 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.

⁴ For 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.

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

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

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

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

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

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

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

¹⁰ Primer mixes 6, 10, 11 and 23 may yield less specific PCR product than the other HLA-A low primer mixes.

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

¹² Primer mix 23 may have a tendency of primer dimer formation.

'w', might be weakly amplified.

SPECIFICITY TABLE

HLA-B low resolution primer set

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

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-B serol. ³	Amplified HLA-B alleles ^{4,5}
25 ^{6,10}	110 bp	800 bp	7, 703, 40, 41, 42, 48, 61	*07:02:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:50, 07:52, 07:54-07:59, 07:61-07:99, 15:138, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 41:08, 42:05:01-42:05:02, 48:05, 48:08, 48:15, C*02:23
26	215 bp	1070 bp	8, 44	*08:01:01-08:25, 08:27-08:49, 08:51-08:61, 15:142, 15:180, 44:49, 51:68
27	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 61, 62, 77	*07:20, 07:24, 07:60, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:37, 15:07, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 35:05:01-35:05:02, 35:16-35:17, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 40:05, 40:71, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 46:12, 46:20, 51:64, 53:14, 58:18, C*03:05, C*03:25, C*03:27
28 ⁷	130 bp, 265 bp	800 bp	12, 13, 14, 17, 21, 35, 40, 41, 44, 45, 47, 49, 50, 60, 61, 64, 65	*13:01:01-13:04, 13:06-13:13, 13:15-13:23, 13:25-13:37, 14:01-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:18, 15:46, 15:53, 15:106, 18:44, 35:46-35:47, 35:63, 40:01:01-40:01:10, 40:07, 40:10, 40:14:01-40:16, 40:22N-40:23, 40:25, 40:30-40:34, 40:36, 40:38, 40:42-40:43, 40:45, 40:47-40:49, 40:51-40:55, 40:58-40:63, 40:65-40:67, 40:69, 40:72:01-40:73, 40:76-40:77, 40:79-40:81, 40:84, 40:87-40:88, 40:92, 41:01-41:12, 44:02:01:01-44:03:06, 44:03:08-44:05:02, 44:09-44:39, 44:41-44:43, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84-44:99, 45:01-45:11, 47:01:01:01-47:07, 49:01:01-49:02, 49:04-49:10, 50:01:01-50:02, 50:04-50:06, 50:08-50:09, C*01:30
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31	290 bp	1070 bp	15, 22, 62, 63, 71, 72, 75, 76, 77, 46	*15:01:01:01-15:01:03, 15:01:06-15:02:04, 15:03:03-15:08, 15:10:02-15:11:03, 15:12- 15:15, 15:17:01:01-15:17:02, 15:19-15:21, 15:24-15:28, 15:30-15:36, 15:38:01-15:40, 15:42-15:46, 15:48, 15:50, 15:55-15:58, 15:60, 15:63, 15:65-15:66, 15:70-15:71, 15:73, 15:75- 15:79N, 15:81-15:89, 15:92, 15:94N, 15:96- 15:97, 15:101-15:102, 15:104-15:107, 15:109- 15:113, 15:116-15:118, 15:120-15:122, 15:125-15:126, 15:128-15:129, 15:135-15:150, 15:152, 15:154-15:155, 15:157, 15:159- 15:160, 15:162-15:172, 15:174-15:175, 15:177-15:179, 15:181N-15:185, 15:187- 15:191, 46:01:01-46:22
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36	280 bp	1070 bp	5, 7, 8, 13, 15, 16, 17, 18, 22, 35, 40, 42, 44, 46, 48, 49, 51, 53, 55, 56, 57, 58, 60, 61, 62, 63, 70, 71, 72, 75, 76, 77, 78	*07:09, 07:11, 07:17, 08:28, 08:35, 08:37, 13:04, 13:10, 13:26, 15:01:01:01-15:01:04, 15:01:06-15:08, 15:11:01-15:16, 15:18:01-15:21, 15:23-15:29, 15:31-15:36, 15:38:01-15:40, 15:43-15:44, 15:46-15:47, 15:49-15:57, 15:60-15:62, 15:64-15:72, 15:74-15:76, 15:78:01-15:82, 15:84-15:85, 15:87-15:89, 15:91-15:98, 15:101-15:129, 15:131-15:132, 15:134-15:136, 15:138-15:149N, 15:151-15:161, 15:163-15:167, 15:169-15:176, 15:178-15:187, 15:189-15:191, 18:01:01-18:15, 18:17N-18:25, 18:27-18:40, 18:42-18:49, 27:41, 35:01:01-35:01:19, 35:05:01-35:05:02, 35:07-35:08:04, 35:10-35:11, 35:14:01-35:17, 35:19-35:21, 35:23-35:30, 35:32, 35:35, 35:37, 35:40N-35:43, 35:45-35:54, 35:57-35:58, 35:61-35:64, 35:66-35:69, 35:71-35:72, 35:76-35:80, 35:82, 35:86, 35:89-35:94, 35:97, 35:99, 39:07, 39:43, 40:03, 40:20, 40:38, 40:52, 40:59-40:60, 42:09, 44:17, 44:43, 45:09, 46:01:01-46:10, 46:12-46:17, 46:19-46:22, 48:02:01-48:02:02, 48:14, 49:04-49:05, 51:37, 51:45, 51:63, 53:01:01-53:03, 53:05-53:06, 53:08:01-53:18, 53:20-53:23, 54:06, 54:09, 54:14, 55:14, 55:23, 55:32, 56:03, 56:09, 56:18, 57:01:01-57:01:07, 57:06, 57:08, 57:10-57:11, 57:13-57:16, 57:18-57:27, 57:29-57:31, 58:01:01-58:02, 58:04-58:07, 58:09-58:19, 58:21-58:26
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39⁶	115 bp, 150 bp	1070 bp	18	*18:01:01-18:15, 18:17N-18:28, 18:30-18:36, 18:38-18:47, 18:49
40⁶	80 bp	1070 bp	7, 27, 2708, 44, 60	*07:73, 27:01-27:21, 27:23-27:51, 27:53-27:65N, 38:22, 40:46, 40:93, 44:40, 44:44
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45	170 bp	800 bp	16, 35, 38, 39, 3901, 3902, 67, 72	*08:55, 15:69, 15:186, 35:35, 38:01:01-38:09, 38:11-38:21, 39:01:01:01-39:01:01:02L, 39:01:03-39:20, 39:22-39:24, 39:26-39:29, 39:31, 39:35, 39:37-39:42, 39:44-39:46, 39:48-39:49, 39:51-39:57, 58:20, 67:01:01-67:02
46⁶	110 bp	1070 bp	38	*38:01:01-38:03, 38:05, 38:08-38:22
47	395 bp	1070 bp	14, 16, 38, 39, 3901, 64, 65	*07:69, 07:85, 14:01-14:18, 38:01:01-38:02:02, 38:04-38:05, 38:08-38:22, 39:01:01:01-39:01:01:02L, 39:01:03-39:01:11, 39:03-39:07, 39:09, 39:11-39:12, 39:14-39:15,

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57⁶	90 bp, 175 bp	1070 bp	15, 27, 35, 48, 60, 62, 75, 77, 81	*13:36, 15:02:01-15:02:04, 15:08, 15:11:01-15:11:04, 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, 27:24, 35:46, 40:31, 40:45, 40:80, 48:01:01-48:01:02, 48:04, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 55:35 ^w , 81:01-81:04N
58	145 bp, 430 bp	1070 bp	44, 49, 59, 61	*40:13, 40:19, 44:18, 44:25, 44:50, 44:95, 49:01:01-49:01:02, 49:04-49:10, 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, 49:01:01, 49:02-49:10, 50:01:01-50:02, 50:04-50:09, 51:01:01-51:03, 51:05, 51:07:01-51:09:02, 51:11N-51:14, 51:16-51:24:03, 51:26-51:41N, 51:43-51:44N, 51:48-51:55, 51:57-51:58, 51:60, 51:61 ^w , 51:63, 51:65-51:80, 51:82-51:95, 52:01:01-52:20, 54:20, 55:01:01-55:01:06, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21 ^w , 55:24-55:25, 55:28-55:29, 55:31, 55:33, 55:36, 55:38, 55:40, 56:05:01-56:06, 56:21, 56:25, 58:08, 78:01-78:07

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60	430 bp	1070 bp	5, 17, 27, 44, 51, 5102, 5103, 52, 53, 57, 58, 61	*27:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 40:13, 40:19, 44:06, 44:25, 44:50, 44:95, 51:01:01-51:24:03, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:95, 52:01:01-52:19, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14- 53:23, 57:01:01-57:11, 57:13-57:31, 58:01:01- 58:02, 58:04-58:16, 58:18-58:28
61	145 bp	1070 bp	12, 21, 35, 40, 4005, 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, 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- 40:99, 41:01-41:04, 41:05 [?] , 41:06-41:12, 44:09, 44:46, 44:75, 44:90, 45:01-45:11, 47:02, 47:03 ^w , 50:01:01-50:02, 50:04-50:05, 50:07- 50:09
62	300 bp	1070 bp	7, 12, 13, 15, 17, 18, 21, 27, 2708, 35, 37, 38, 39, 3902, 40, 4005, 41, 44, 45, 47, 48, 49, 50, 52, 60, 61, 62, 70, 72, 76	*07:54, 08:17, 08:38, 08:54, 13:01:01-13:04, 13:06, 13:08Q-13:23, 13:25-13:35, 13:37, 15:01:01:01-15:01:04, 15:01:06-15:01:16, 15:03:01-15:07, 15:12, 15:14, 15:19-15:20, 15:24-15:27:03, 15:30, 15:32-15:36, 15:38:01- 15:40, 15:42-15:43, 15:45-15:50, 15:53-15:54, 15:56-15:58, 15:60-15:63, 15:65-15:66, 15:68- 15:71, 15:73-15:75, 15:77-15:79N, 15:81- 15:87, 15:91-15:92, 15:94N, 15:96-15:98, 15:101-15:107, 15:109-15:111N, 15:113, 15:116-15:118, 15:122-15:123, 15:125-15:129, 15:131-15:132, 15:135-15:138, 15:140-15:142, 15:145-15:147, 15:150-15:152, 15:154-15:160, 15:163-15:167, 15:169, 15:171-15:175, 15:178-15:179, 15:181N-15:185, 15:187- 15:188, 15:190N, 18:12, 27:01-27:21, 27:24- 27:65N, 35:10, 35:13, 35:16, 35:28, 35:63, 35:69, 35:80, 37:01:01-37:07, 37:09-37:22, 38:03-38:04, 39:02:01-39:02:02, 39:08, 39:13:01-39:13:02, 39:22-39:23, 39:49, 40:01:01-40:07, 40:09-40:16, 40:18-40:24, 40:26-40:40, 40:42-40:67, 40:70-40:99, 41:01- 41:12, 42:11, 44:02:01:01-44:05:02, 44:07- 44:11, 44:13-44:99, 45:01-45:11, 47:01:01:01- 47:07, 48:01:01-48:05, 48:07-48:15, 48:17- 48:22, 49:01:01-49:10, 50:01:01-50:02, 50:04- 50:09, 52:01:01-52:20, 53:17, 55:18, 55:34, 55:40, 78:05-78:06
63	160 bp, 330 bp	1070 bp	22, 44, 45, 47, 54	*44:02:01:01-44:02:13, 44:06, 44:08-44:09, 44:11-44:12, 44:16, 44:19N-44:24, 44:27, 44:33-44:34, 44:41, 44:44, 44:48-44:49, 44:52N-44:53, 44:55, 44:59, 44:63, 44:66- 44:68, 44:71-44:74, 44:80, 44:83-44:84, 44:86- 44:87, 44:89-44:91, 44:93, 44:95, 44:97, 44:99, 54:01-54:22, 83:01
64	180 bp, 210 bp	1070 bp	13, 15, 18, 35, 39, 40,	*07:65, 13:06, 15:42, 15:86, 18:04, 35:42:02, 35:60, 39:17, 40:58, 45:08, 46:18, 54:01-54:02,

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			54, 55, 56, 59, 78	54:05N, 54:07-54:08N, 54:10, 54:12-54:13, 54:16-54:22, 55:01:01-55:03, 55:05, 55:07, 55:10-55:12, 55:15-55:16, 55:18-55:19, 55:21, 55:25-55:26, 55:29-55:31, 55:33-55:40, 56:05:01, 56:06, 56:10, 56:23, 59:01, 59:05, 78:01, 78:02:02-78:03, 78:07, C*15:02:04
65	180 bp	1070 bp	12, 15, 21, 22, 44, 45, 49, 50, 51, 56, 61, 62, 82	*13:03, 15:73, 40:71, 44:10, 44:15, 44:18, 45:01, 45:04-45:07, 45:11, 46:11, 49:01:01- 49:03, 49:06, 49:08-49:10, 50:01:01-50:02, 50:04-50:08, 51:15, 51:62, 54:03, 56:01:01- 56:02, 56:04, 56:07-56:08, 56:13-56:14, 56:16- 56:17, 56:20, 56:24-56:29, 59:04, 82:01-82:03, C*03:12, C*03:19
66^{6,10}	90 bp, 240 bp	800 bp	57	*55:14, 57:01:01-57:31
67^{6,13}	90 bp	1070 bp	5, 13, 15, 17, 39, 55, 56, 58, 60, 61, 62, 71	*13:11, 15:18:03, 15:73, 39:17, 40:48, 40:71, 51:62, 56:02, 56:04, 56:10, 58:01:01-58:02, 58:04-58:28, C*02:06^w
68^{6,8}	95 bp	1070 bp	8, 18, 22, 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, 35:01:01- 35:09:02, 35:11-35:12:02, 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, 35:81-35:99, 37:08, 38:06-38:07, 39:19:01- 39:19:02, 44:06, 51:01:01-51:24:03, 51:26- 51:46, 51:48-51:95, 53:01:01-53:16, 53:18- 53:23, 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	*13:31, 15:01:01:01-15:01:04, 15:01:06- 15:01:16, 15:04, 15:07-15:08, 15:11:01-15:12, 15:14-15:15, 15:19, 15:24, 15:26N-15:28, 15:30, 15:32, 15:34-15:35, 15:38:01-15:38:02, 15:43, 15:45-15:46, 15:50, 15:53-15:54, 15:56- 15:58, 15:60, 15:63, 15:66, 15:68, 15:70-15:71, 15:73, 15:75-15:77, 15:79N, 15:81-15:82, 15:85, 15:87, 15:92, 15:94N, 15:96-15:97, 15:101-15:102, 15:104-15:105, 15:109- 15:111N, 15:113, 15:117-15:118, 15:120, 15:122, 15:125-15:126, 15:128-15:129, 15:135, 15:137, 15:140, 15:142-15:149N, 15:152, 15:154, 15:157, 15:159-15:160, 15:163-15:167, 15:169, 15:171-15:172, 15:174-15:175, 15:178, 15:180-15:184, 15:187, 15:189-15:191, 18:19, 27:25, 35:14:01-35:14:02, 35:43-35:44, 35:62, 35:67, 35:79, 35:86, 39:18, 39:36, 46:01:01-46:02, 46:04-46:05, 46:07N, 46:09-46:10, 46:12, 46:14-46:17, 46:20, 46:22, 51:61, 54:06, 55:21, 56:03, 73:01, C*06:20
70¹⁴	360 bp	1070 bp	Bw4	

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71	350 bp	1070 bp	Bw6	
72¹⁰	285 bp	800 bp	7, 703, 8, 35, 40, 41, 42, 48, 53, 60, 61, 81	*07:02:01-07:06, 07:08-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61- 07:76, 07:79-07:83, 07:85-07:99, 08:01:01- 08:08N, 08:10-08:11, 08:13-08:15, 08:17- 08:61, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 41:02:01-41:02:02, 41:04, 41:10-41:11, 42:01:01-42:02, 42:05:01-42:07, 42:09-42:13, 48:01:01-48:01:02, 48:05-48:12, 48:14-48:20, 48:22, 53:15, 81:01-81:04N

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-B low resolution SSP typings. When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

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

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

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

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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-B low resolution typing.

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

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

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

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

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

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

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

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

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

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

⁵The C*01:30 allele will be amplified by primer mix 28, the C*02:06 allele will be weakly amplified by primer mix 67, the C*02:23 allele will be amplified by primer mix 25, the HLA-C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, the HLA-C*03:12 and 03:19 alleles will be amplified by primer mix 65, the C*06:20 allele will be amplified by primer mix 69, the C*07:46 allele will be amplified by primer mix 32, the C*15:02:04 allele will be amplified by primer mix 64, the C*15:25 allele will be amplified by primer mix 53 and the C*16:10 allele will be amplified by primer mix 30

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

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

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

⁹Primer mixes 33, 34 and 44 may give rise to nonspecific amplifications, most pronounced in primer mix 33.

¹⁰Primer mixes 25, 43, 44, 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.

¹²The C*17:01 to C*17:04 alleles might be faintly amplified by primer mix 49.

¹³Primer 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.

¹⁴The 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

HLA-C low resolution SSP typing

Specificities and sizes of the PCR products of the 23 primer mixes used for HLA-C low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA class I ^{3,4} alleles
73	155 bp	800 bp	*01:02:01-01:37N, B*54:18
74	270 bp	800 bp	*01:10, 02:02:01-02:02:03, 02:02:05-02:36, 04:32, 06:08, 08:31, 17:01:01:01-17:06, 18:03
75¹¹	280 bp	800 bp	*02:02:01-02:02:03, 02:02:05-02:03, 02:04 ^w , 02:05-02:13, 02:14 ^w , 02:15-02:25Q, 02:26:02-02:36, 03:02:01-03:02:06, 03:04:01:01-03:10, 03:14-03:17, 03:19, 03:23-03:29, 03:32-03:38:02, 03:40-03:42, 03:44-03:48, 03:51, 03:54, 03:57, 03:60, 03:63-03:65, 03:70-03:74, 03:77-03:78, 03:80, 03:82, 03:84, 04:03, 04:06, 04:16, 06:03, 07:96, 15:02:01-15:09, 15:10:02-15:11, 15:13, 15:15-15:22, 15:24-15:28
76¹¹	155 bp	1070 bp	*03:02:01-03:04:06, 03:04:08-03:15, 03:17-03:40, 03:42-03:57, 03:59-03:74, 03:76-03:79, 03:81-03:84
77	280 bp	800 bp	*03:03:01-03:03:11, 03:11:01-03:13, 03:20N-03:22Q, 03:30-03:31, 03:43:01-03:43:02, 03:49-03:50, 03:52-03:53, 03:55-03:56, 03:58-03:59, 03:61-03:62, 03:66, 03:67 ^w , 03:68-03:69, 03:75-03:76, 03:79, 03:81, 03:83, 15:12
78^{5,10}	125 bp, 325 bp	800 bp	*02:02:01-02:02:03, 02:02:05-02:20, 02:22-02:25Q, 02:27-02:36, 04:01:01:01-04:01:16, 04:03-04:15:02, 04:17-04:20, 04:23-04:41, 04:43-04:62, 05:26, 07:02:09, 15:11
79	390 bp	1070 bp	*05:01:01:01-05:01:13, 05:03-05:42, 08:10
80⁹	130 bp, 355 bp	800 bp	*02:06, 06:02:01:01-06:02:01:02, 06:02:03-06:16N, 06:18-06:31, 06:33-06:37, 12:03:09, 12:15, 15:02:01-15:03, 15:07-15:08, 15:10:01-15:13, 15:15-15:18, 15:21, 15:26, 15:28
81⁶	245 bp, 425 bp	800 bp	*07:01:01-07:33N, 07:35-07:99
82^{5,7,11}	115 bp, 165 bp, 265 bp, 390 bp	800 bp	*08:01:01-08:31
83	340 bp	1070 bp	*01:14, 02:02:01-02:02:03, 02:02:05-02:11, 02:13-02:26:02, 02:28-02:36, 03:07, 03:15, 03:45, 04:01:01:01-04:01:16, 04:03-04:10, 04:12-04:20, 04:23-04:28, 04:30-04:35,

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			04:37-04:54, 04:56-04:62, 05:01:01:01-05:01:13, 05:03-05:42, 06:02:01:01-06:02:01:02, 06:02:03-06:10, 06:12-06:37, 07:07, 07:09, 07:49, 07:76, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 14:04, 14:12, 15:02:01-15:06:02, 15:08-15:13, 15:15-15:20, 15:22-15:24, 15:26-15:28, 16:02:01-16:02:04, 16:09, 16:12, 16:19, 17:01:01:01-17:06, 18:01-18:03
84⁵	100 bp, 160 bp, 220 bp	1070 bp	*01:04, 01:21, 12:02:01-12:03:01:02, 12:03:03-12:03:07, 12:03:09-12:03:11, 12:04:02-12:08, 12:10:01-12:13, 12:14:02-12:25, 12:27-12:32, 12:34-12:35
85^{10,11}	130 bp, 250 bp	800 bp	*01:21, 02:12, 04:01:01:01-04:01:16, 04:03-04:09N, 04:12-04:20, 04:23-04:35, 04:37-04:54, 04:56-04:62, 05:42, 07:02:09, 08:05, 08:21, 08:25, 12:02:01-12:03:03, 12:03:05-12:03:08, 12:03:10-12:03:11, 12:04:02, 12:06-12:08, 12:10:01-12:20, 12:22-12:32, 12:34-12:35, 15:03, 15:16, 15:25, 16:01:01-16:02:04, 16:06-16:21, B*67:02
86¹²	160 bp, 220 bp	800 bp	*01:04, 01:09, 02:05, 02:17, 04:42, 06:02:01:01-06:02:01:02, 06:02:03-06:03, 06:07-06:13, 06:15-06:34, 06:36-06:37, 12:03:01:01-12:07, 12:11-12:13, 12:15, 12:19, 12:23, 12:25-12:26, 12:28-12:29, 12:31-12:35, 14:16, 16:04:01
87¹¹	130 bp, 255 bp	1070 bp	*02:02:01 ^w , 02:02:02-02:02:03, 02:02:05-02:13, 02:15-02:26:02, 02:28-02:36, 03:07, 03:10, 03:15, 03:29, 03:45, 04:03, 04:06, 04:16, 04:37, 05:01:01:01-05:01:13, 05:03-05:19, 05:21-05:42, 06:03, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 15:02:01-15:06:02, 15:08-15:13, 15:15-15:22, 15:24, 15:26-15:28, 16:02:01-16:02:04, 16:09, 16:12, 16:19, 17:01:01:01-17:06
88^{5,10,11}	95 bp, 255 bp	1070 bp	*04:11, 04:29, 04:36, 04:55, 05:11, 05:17, 05:27, 07:64, 08:04, 08:13, 14:02:01-14:11, 14:13-14:19
89^{5,8,11}	110 bp, 325 bp	1070 bp	*02:06, 03:81, 05:36, 12:08, 12:15, 15:02:01-15:13, 15:15-15:24, 15:26-15:28, 16:20
90¹⁰	190 bp, 240 bp	1070 bp	*02:13, 02:18, 02:33, 04:01:01:01-04:01:16, 04:03-04:10, 04:12-04:20, 04:23-04:32, 04:34-04:62, 05:17, 05:25, 05:42, 06:05, 06:31, 07:02:09, 07:31, 08:01:01-08:01:02, 08:03:01-08:03:02, 08:06, 08:08-08:11, 08:14, 08:16, 08:20-08:22, 08:24, 08:26N, 08:28, 12:14:01-12:14:02, 12:28, 14:10, 14:15, 15:12, 15:25, 16:01:01-16:02:04, 16:04:01, 16:06-16:21

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91⁹	225 bp, 270 bp	800 bp	*04:11, 04:33, 04:58, 05:23, 08:07, 12:14:01-12:14:02, 14:17, 15:25, 17:01:01:01-17:06
92	220 bp, 425 bp	800 bp	*01:02:01-01:03, 01:06-01:08, 01:10-01:20, 01:23-01:34, 01:37N, 03:58, 04:37, 05:16, 06:05-06:06, 06:17, 07:07, 07:09, 07:49, 07:76, 08:12, 12:09, 12:24, 14:02:01-14:05, 14:07N, 14:10-14:14, 14:17-14:19, 18:01-18:03, B*14:03
93	325 bp, 380 bp	1070 bp	*01:03, 01:24, 01:34, 02:22, 03:03:01-03:04:19, 03:06-03:12, 03:14, 03:18-03:24, 03:26, 03:28-03:32, 03:34, 03:37-03:59, 03:61-03:70, 03:72-03:83, 04:01:01:01-04:01:15, 04:03-04:20, 04:24-04:53, 04:55-04:62, 05:01:01:01-05:01:13, 05:03, 05:05-05:21, 05:23-05:42, 06:09, 06:14, 06:35, 07:10, 07:28, 07:41, 07:43, 08:01:01-08:08, 08:10, 08:12-08:31, 12:31, 15:02:01-15:13, 15:15-15:21, 15:23-15:28, 17:01:01:01-17:06, 18:01-18:03
94¹⁰	135 bp	1070 bp	*03:02:01-03:17, 03:19-03:38:02, 03:40-03:66, 03:67 ^w , 03:68-03:84, 04:32, 06:03, 07:96, 18:03
95	160 bp, 235 bp	1070 bp	*04:42, 06:02:01:01-06:02:01:02, 06:02:03-06:02:05, 06:04, 06:06-06:37, 07:01:01-07:02:07, 07:02:09-07:25, 07:27:01-07:32N, 07:35-07:38, 07:41-07:63, 07:65-07:91, 07:93-07:95, 07:97-07:99, 12:16, 16:01:01-16:02:04, 16:06-16:21, 18:01-18:03
96¹³	Negative control	-	-

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-C 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 73 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-C low resolution typing.

In addition, wells number 74, 75, 77, 78, 80, 81, 82, 85, 86, 91 and 92 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

³For several HLA-C alleles only partial 1st and 4th exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the HLA-C low resolution SSP sets are completely matched with the target sequences or not. We assume that unknown sequences in these exons and in the introns are conserved within loci and within allelic groups.

⁴Due to sharing of sequence motifs, primer mix 73 will amplify the B*54:18 allele, primer mix 85 will amplify the B*67:02 allele and primer mix 92 will amplify the B*14:03 allele.

The C*01:05, 01:22, 01:35 and 01:36 and the B*54:18 alleles give rise to identical amplification patterns with the HLA-C low resolution primer set. These alleles are separated by the HLA-B low primer set.

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

⁶Primer mix 81 will for most C*07 alleles give rise to two specific PCR fragments.

⁷Primer mix 82 will for most C*08 alleles give rise to multiple specific PCR fragments.

⁸Primer mix 89 will for most C*15 alleles give rise to two specific PCR fragments.

⁹Primer mixes 80 and 91 may give rise to unspecific amplification.

¹⁰Primer mixes 78, 85, 88, 90 and 94 have a tendency of giving rise to primer oligomer artifacts.

¹¹Primer mixes 75, 76, 82, 85, 87, 88 and 89 yield somewhat less intense specific PCR fragments than the other HLA-C low resolution primer mixes.

¹²Primer mix 86 might faintly amplify the C*01:02 to 01:03, the C*01:05 to C*01:19 and the C*14:02:01 to 14:09 alleles.

¹³Primer 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.

INTERPRETATION TABLE																										
HLA-A low resolution SSP typing																										
Amplification patterns of the A*01:01 to A*80:02 alleles																										
		Well ⁶																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Length of spec.		140	120							75				225	175			180	150							
PCR product(s)				255	200	135									240	200				200						
					235	205									205	135	90				240	200	155			
Length of int.		800								800				1070				1070		1070						
pos. control ¹																										
5'-primer(s) ²			98	78	363	98	144	176	98	266	257	302	103	98	98	203	41	180	98	180	78	28	78	176	341	
			5'-CTT ^{3'}	5'-TCT ^{3'}	5'-ATA ^{3'}	5'-CTA ^{3'}	5'-gCC ^{3'}	5'-gCA ^{3'}	5'-CTC ^{3'}	5'-ACg ^{3'}	5'-Cgg ^{3'}	5'-gga ^{3'}	5'-CCT ^{3'}	5'-CTT ^{3'}	5'-CAC ^{3'}	5'-gAA ^{3'}	5'-CTT ^{3'}	5'-TTT ^{3'}	5'-CAC ^{3'}	5'-TTT ^{3'}	5'-TCT ^{3'}	5'-TCg ^{3'}	5'-TCT ^{3'}	5'-gCA ^{3'}	5'-gga ^{3'}	
			103	106		413	317	368	368	266	261	385	423	423	106	362	106	418	418		106	261	527	261	341	
			5'-CCT ^{3'}	5'-CCA ^{3'}		5'-CCg ^{3'}	5'-gCT ^{3'}	5'-gTT ^{3'}	5'-gTT ^{3'}	5'-ACg ^{3'}	5'-AAC ^{3'}	5'-ggC ^{3'}	5'-gCT ^{3'}	5'-gCT ^{3'}	5'-CCA ^{3'}	5'-ggT ^{3'}	5'-CCA ^{3'}	5'-AgC ^{3'}	5'-AgC ^{3'}		5'-CCA ^{3'}	5'-AAC ^{3'}	5'-TgC ^{3'}	5'-AAC ^{3'}	5'-gga ^{3'}	
			123	144												363					391		341			
			5'-AgT ^{3'}	5'-gCA ^{3'}						5'-CCg ^{3'}						5'-ATA ^{3'}					5'-ACg ^{3'}		5'-ggA ^{3'}			
			144																							
			5'-TCA ^{3'}																							
3'-primer(s) ³		203	240	527	256	265	270	259	259	302	299	341	257	282	256	299	238	317	256	299	265	97	265	292	418	
		5'-TCT ^{3'}	5'-gga ^{3'}	5'-CCA ^{3'}	5'-CTg ^{3'}	5'-CCC ^{3'}	5'-ACA ^{3'}	5'-gTT ^{3'}	5'-gTT ^{3'}	5'-ggC ^{3'}	5'-TCg ^{3'}	5'-CgT ^{3'}	5'-gCA ^{3'}	5'-gAC ^{3'}	5'-CCC ^{3'}	5'-CCA ^{3'}	5'-CCT ^{3'}	5'-gga ^{3'}	5'-CCC ^{3'}	5'-CCA ^{3'}	5'-CCC ^{3'}	5'-ggt ^{3'}	5'-CCC ^{3'}	5'-gTg ^{3'}	5'-gTC ^{3'}	
			292	527	559	570	502	502	538			521	559	282	257	411	256	527	256	299	282	355	282	292		
			5'-gTg ^{3'}	5'-CCT ^{3'}	5'-CCg ^{3'}	5'-CCg ^{3'}	5'-CTg ^{3'}	5'-CCT ^{3'}	5'-TCT ^{3'}	5'-CCA ^{3'}		5'-ggg ^{3'}	5'-CTC ^{3'}	5'-gAC ^{3'}	5'-gCA ^{3'}	5'-TCA ^{3'}	5'-CCC ^{3'}	5'-CCT ^{3'}	5'-CCT ^{3'}	5'-CTC ^{3'}	5'-CCA ^{3'}	5'-gAC ^{3'}	5'-gAC ^{3'}	5'-gTT ^{3'}		
			555	555			538	539					559	559	526	265	265	527	259	341	282		282	299		
			5'-gCA ^{3'}	5'-CCA ^{3'}			5'-CAG ^{3'}	5'-TCT ^{3'}					5'-CgT ^{3'}	5'-CCg ^{3'}	5'-CCA ^{3'}	5'-CCC ^{3'}	5'-CCT ^{3'}	5'-gTt ^{3'}	5'-gTt ^{3'}	5'-CCA ^{3'}	5'-gAC ^{3'}		5'-gAC ^{3'}	5'-TCT ^{3'}		
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HLA-A allele ⁴	ser ⁵																								
*01:01:01:01-01:04N, 01:06, 01:09-01:11N, 01:16N-01:18N, 01:20, 01:22N-01:27N, 01:29, 01:31N-01:35, 01:37- 01:49, 01:52N-01:55	A1, Null, –	1			4																				24
*01:07, 01:36, 01:50	A1, –	1			4																				
*01:08, 01:14-01:15N	A1, Null	1																							24
*01:12, 01:19	A1, –	1		3																					24
*01:13	A1	1			4							11		13		15									24
*01:21	A1	1		3	4																				24
*01:28	–	1			4							11				15									24
*01:30	–	1																							
*01:51	–	1			4				8		10														24
*02:01:01:01-02:01:15, 02:01:17-02:01:19, 02:01:21-02:09, 02:11- 02:16, 02:18-02:22:02, 02:24-02:33, 02:36- 02:38, 02:40-02:45, 02:47, 02:49, 02:51, 02:53N-02:54, 02:57- 02:61, 02:63-02:69, 02:71-02:72, 02:74:01- 02:77, 02:79-02:92, 02:94N, 02:96- 02:97:02, 02:99, 02:101- 02:102, 02:104-02:109, 02:111-02:113N, 02:115-02:116, 02:118- 02:121, 02:123-02:128, 02:130-02:134, 02:136- 02:145, 02:147-02:155, 02:157-02:168, 02:170- 02:199	A2, A203, A19, Null, –		2																						
*02:10, 02:39, 02:50, 02:52, 02:73, 02:93, 02:95, 02:110, 02:114, 02:117, 02:156	A210, A2, –		2																		20				
*02:17:01-02:17:02	A2		2					w																	
*02:34-02:35:01, 02:35:03, 02:56:01- 02:56:02, 02:62, 02:103	A2		2											13							20		22		
*02:35:02	A2													13							20		22		
*02:46, 02:70	A2		2																		20		22		
*02:48, 02:129	A2, –																				20		22		
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
*02:55	A2, A28		2						8													21		23	
*02:78	–		2		4																	20		22	
*02:122	A2														14		16				20				
*02:135	–		2											13											
*02:146	–		2							10															
*02:169	–		2		4																				
*03:01:01:01-03:07, 03:09-03:11N, 03:13- 03:17, 03:19-03:23, 03:25-03:29, 03:31, 03:33-03:35, 03:37- 03:40, 03:42, 03:44- 03:49, 03:51-03:56, 03:58, 03:60-03:62, 03:64-03:71, 03:73- 03:74, 03:76	A3, Null, –				3										13										
*03:08, 03:32, 03:36N, 03:57, 03:59, 03:72	A3, Null, –				3																				
*03:12	A3				3	4																			
*03:18, 26:19 ⁷	–				4										13										
*03:24, 03:50	A3, –				3				8						13										
*03:30	A3				3	5									13										
*03:41	–				3																			23	24
*03:43	–				3										13	15		17							
*03:63	–				3								11	13										23	24
*03:75	–													13										23	
*11:01:01-11:01:14, 11:01:16-11:09, 11:13- 11:17, 11:19-11:24:02, 11:26-11:27, 11:29- 11:40, 11:42-11:56, 11:58-11:59	A11, Null, –				4								11												24
*11:01:15, 11:12, 11:18, 11:41	A11, –				4								11												
*11:10	A11				4				8				11												24
*11:11	–				4								11	12											24
*11:25	A11				3	4							11												24
*11:57	–				4								11									20			24
*23:01:01-23:13, 23:15- 23:25	A23, Null, –					5	6																		
*23:14, 24:05, 24:13:02, 24:24 ⁸	A23, A9, A24					5	6	7																	
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, 24:95-24:99	A24, A2403 , A9, Null, -					5		7																	
*24:14-24:15, 24:51- 24:53, 24:57, 24:64	A24					5																			
*24:18	A24, A3					5		7																23	
*24:19, 24:44	A9					5		7				11													
*24:82	-					5		7														21			
*24:89	-							7																	
*24:92	-			3		5																			
*24:94	-					5																20			
*25:01:01-25:04, 25:07- 25:13	A25, Null, -								8	9				13											
*25:05	A25								8	9				13							20				
*25:06	A25								8	9		12													
*26:01:01-26:01:13, 26:08, 26:10-26:15, 26:17-26:18, 26:20, 26:23-26:29, 26:32- 26:33, 26:35-26:45	A26, A10, Null, -								8		10			13											
*26:02	A26								8		10			w											
*26:03:01-26:03:02, 26:06, 26:21	A26, -								8			11		13										23	
*26:04, 26:34	A26								8		10														
*26:05, 26:30	A26								8					13										23	
*26:07:01-26:07:02	A26										10			13											
*26:09	A26								8		10		12												
*26:16	A26								7					10											
*26:22	A26									8				10									21		
*26:31, 66:11-66:12 ⁹	A26, -								8					13											
*29:01:01:01-29:06, 29:08N-29:12, 29:15- 29:18, 29:20-29:22	A29, Null, -														14										
*29:07	A29							6							14										
*29:13	-														14			17							
*29:14	-														14		16								
*29:19	-														14					19					
*30:01:01-30:04, 30:06- 30:07, 30:09-30:20, 30:22-30:37	A30, Null, -															15									
*30:08	A30				4											15									
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
*31:01:02-31:02, 31:05-31:07, 31:09-31:28, 31:30-31:31	A31, Null, -																16								
*31:03	A31											11	12				16								
*31:04	A31												12				16								
*31:08	A31, A24					5											16								
*31:29	-						6										16								
*32:01:01-32:02, 32:06-32:12, 32:14, 32:16-32:22	A32, Null, -									9								17							
*32:03	A32																	17							
*32:04	A32, A3			3						9															
*32:05	A32					5											16	17							
*32:13	A32					5				9								17							
*32:15	A32								8	9								17							
*33:01:01-33:01:03, 33:03:01-33:07, 33:10-33:12, 33:14-33:18, 33:20-33:21, 33:23, 33:25-33:29	A33, -																		18						
*33:08-33:09	-													14		16		18							
*33:13	-									10				14				18							24
*33:19	-							7										18							
*33:22	-																	18			21				
*33:24	-																	18						23	
*34:01:01-34:01:02, 34:05-34:06	A34, A10								8			11	12												
*34:02-34:04, 34:07	A34			3					8			11	12												
*34:08	A34			3					8			11	12	13											
*36:01, 36:03, 36:05	A36, -	1																					22		24
*36:02	A36	1		3																			22	23	24
*36:04	A36	1			4																		22		24
*43:01	A43												12	13											
*66:01, 66:04-66:08, 66:10, 66:13	A66, A26, -								8			11		13											
*66:02-66:03	A66, A10								8				12												
*66:09	-								8			11		13									21		
*68:01:01-68:04, 68:06-68:14, 68:16-68:19, 68:21-68:28, 68:30-68:44, 68:46-68:49N	A68, A28, Null, -								8													20			
*68:05, 68:15, 68:20	A68								8													20			23
*68:29	A68								8										18		20	21			
*68:45	-							7	8													20			
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
*69:01	A69								8													21			
*74:01-74:03, 74:05-74:09, 74:11-74:12N, 74:14N	A74, Null																			19					
*74:04	A74																16			19					
*74:10	-																			19					24
*74:13	-													13						19					
*80:01	A80						6																	23	24
*80:02	-						6					11													24
B*18:27							6																		
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

⁹The A*26:31 and the A*66:11 and 66:12 alleles will give rise to identical amplification patterns. These three 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																																														
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Length of int. pos. control ¹	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070	1070																							
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*40:47	B40				28																					
*40:48	B60				28						34															?
*40:58	B40				28																					?
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*40:71	B61			27																						?
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				53					58	60			62	63								70		-	*44:95	
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*49:02	B49				28																					
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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.
									58				62			65				70				B49	*49:01:02
									59				62			65				70				B49	*49:02
									59				62			65				70				B49	*49:03
									58	59			62							70				B49	*49:04-49:05
									58	59			62							70				-	*49:07
									59			61	62			65					71			B50, -	*50:01:01-50:01:02, 50:04 50:05, 50:08
									59			61	62			65					71			B45	*50:02
									59				62			65					71			-	*50:06
									59			61	62			65					71			-	*50:07
									59			61	62								71			-	*50:09
					54						59	60							68			70		B51, B5102, B5103, Null, -	*51:01:01, 51:01:03, 51:01:05-51:01:08, 51:01:10-51:02:01, 51:02:03, 51:03, 51:07:01, 51:09:01, 51:11N-51:12, 51:13:02-51:14, 51:16- 51:19, 51:21-51:23, 51:24:03, 51:26-51:33, 51:38-51:41N, 51:43, 51:48-51:53, 51:55, 51:57 51:58, 51:60, 51:65- 51:67, 51:69-51:77, 51:79 51:80, 51:82-51:88, 51:90 51:91, 51:94-51:95
											59	60							68			70		B51, B5102, -	*51:01:02, 51:01:09, 51:02:02, 51:05, 51:07:02, 51:09:02, 51:89
					54						59	60							68			70		B51, B5102, -	*51:01:04, 51:02:04, 51:13:01, 51:24:01- 51:24:02, 51:34-51:35, 51:92
					54	55						60							68			70		B51, -	*51:04, 51:46, 51:56
					54							60							68			70		B51, -	*51:06, 51:59
					54						59	60							68			70		B51, Null	*51:08, 51:20, 51:44N
					54							60							68			70		B51, -	*51:10, 51:81
												60				65			68			70		-	*51:15
					54						59	60							68			70		B51	*51:36
					54						59	60							68			70		B51, -	*51:37, 51:63
					53	54						60							68			70		-	*51:42
					54							60							68			70		-	*51:45
											59								68			70		-	*51:54, 51:78
					54						w	60							68		69	70		-	*51:61
					54							60				65	67	68				70		-	*51:62
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*51:64	-			27						33															
*51:68	-		26							33															
*51:93	-																								
*52:01:01, 52:01:03, 52:04-52:05, 52:07-52:08, 52:10-52:13, 52:15, 52:17- 52:18	B52, -									33															
*52:01:02, 52:01:04, 52:02-52:03, 52:06:01- 52:06:02, 52:09	B52									33															
*52:01:05, 52:14	B52, -																								
*52:16	-									33	35														
*52:19	-								32	33															
*52:20	-									33															
*53:01:01-53:01:05, 53:05, 53:08:01-53:08:02, 53:10, 53:16, 53:18, 53:20- 53:21, 53:23	B53, -												36					41							
*53:02	B53												36					41							
*53:03, 53:09, 53:11- 53:13	B53, B35												36					41							
*53:04, 53:07, 53:19	B53, -																	41							
*53:06	B53, B51												36					41							
*53:14	-			27									36												
*53:15	-												36					41							
*53:17	-												36					41							
*53:22	-												36	37				41							
*54:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:13, 54:16-54:19, 54:21- 54:22	B54, Null, -																								
*54:03	B22																								
*54:04, 54:11, 54:15	B54, -																								
*54:06	-												36												
*54:09, 54:14	-												36												
*54:12	-																								
*54:20	-																								
*55:01:01-55:01:06, 55:03, 55:05, 55:11, 55:15, 55:25, 55:29, 55:31, 55:33, 55:36, 55:38	B55, -																								
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
				54						60									68	70				-	*51:64
				54						59	60								68	70				-	*51:68
										59	60								68	70				-	*51:93
										59	60		62								70			B52, -	*52:01:01, 52:01:03, 52:04-52:05, 52:07-52:08, 52:10-52:13, 52:15, 52:17 52:18
				54						59	60		62								70			B52	*52:01:02, 52:01:04, 52:02-52:03, 52:06:01- 52:06:02, 52:09
										59	60		62								70			B52, -	*52:01:05, 52:14
										59	60		62								70			-	*52:16
				54						59	60		62								70			-	*52:19
										59			62								70			-	*52:20
										60									68	70				B53, -	*53:01:01-53:01:05, 53:05, 53:08:01-53:08:02, 53:10, 53:16, 53:18, 53:20 53:21, 53:23
				55						60									68	70				B53	*53:02
																			68	70				B53, B35	*53:03, 53:09, 53:11- 53:13
										60									68	70				B53, -	*53:04, 53:07, 53:19
				54	55					60									68	70				B53, B51	*53:06
										60									68	70				-	*53:14
										60									68	70	72			-	*53:15
										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 54:22
			52				56						63	65								71		B22	*54:03
			52				56						63								69	71		B54, -	*54:04, 54:11, 54:15
			52				56						63									71		-	*54:06
			52				56						63									71		-	*54:09, 54:14
			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
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*55:02:01-55:02:05, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39	B55, B54, –																								
*55:04, 55:08, 55:13, 55:27, 56:15, 56:19N, 56:22 ¹⁰	B55, B56, Null, –																								
*55:09, 55:24	B22, B55										34														
*55:14	–												36					41							
*55:17, 55:28	B55, –																								
*55:18	–											35													
*55:20	B22								32																
*55:21	B55																								
*55:22	B22										34														
*55:23, 55:32, 56:18 ¹¹	B55, –												36												
*55:34	–																								
*55:35	–																								
*55:40	–																								
*56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26-56:29	B56, Null, –																								
*56:02, 56:04	B56																								
*56:03	B22/ B15												36												
*56:05:01	B56									33															
*56:05:02	B56									33															
*56:06	B78									33									42						
*56:07	B56																								
*56:09	B56												36						41						
*56:10	B55																								
*56:11-56:12	B56, B22																		41						
*56:13	B56								32																
*56:17	B56																								
*56:21	–										33														
*56:23	–																								
*56:25	–																								
*57:01:01-57:01:04, 57:01:06-57:01:07, 57:06, 57:08, 57:10, 57:15- 57:16, 57:18-57:20, 57:22- 57:23, 57:25-57:27, 57:29- 57:30	B57, –												36						41						
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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			52				56								64							71		B55, B54, – *55:02:01-55:02:05, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:37, 55:39		
			52				56															71		B55, B56, Null, – *55:04, 55:08, 55:13, 55:27, 56:15, 56:19N, 56:22 ¹⁰		
			52				56			59												71		B22, B55 *55:09, 55:24		
			52				56										66					71		– *55:14		
			52				56			59												71		B55, – *55:17, 55:28		
													62		64							71		– *55:18		
		51	52		54		56															71		B22 *55:20		
			52				56			w					64					69		71		B55 *55:21		
			52				56															71		B22 *55:22		
			52				56															71		B55, – *55:23, 55:32, 56:18 ¹¹		
			52				56						62		64							71		– *55:34		
			52				56	w							64							71		– *55:35		
			52				56			59			62		64							71		– *55:40		
			52				56										65					71		B56, Null, – *56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26-56:29		
			52				56										65		67			71		B56 *56:02, 56:04		
			52				56													69		71		B22/B15 *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		
																										*57:01:01-57:01:04, 57:01:06-57:01:07, 57:06, 57:08, 57:10, 57:15-57:16, 57:18-57:20, 57:22 57:23, 57:25-57:27, 57:29 57:30
																										B57, –
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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*57:01:05, 57:11, 57:13, 57:21, 57:31	B57, -												36													
*57:02:01-57:03:02, 57:05, 57:17, 57:28N	B57, Null, -																	41								
*57:04	B57						30											41								
*57:07	B57																	41								
*57:09	B57								32									41								
*57:12	B57																	41								
*57:14	-												36					41								
*57:24	-												36					41								
*58:01:01-58:01:02, 58:01:04, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24	B58, Null, -												36					41								
*58:01:03, 58:02, 58:06, 58:16, 58:25-58:26	B58, -												36													
*58:07	B58												36	37												
*58:08	B17, B5									33																
*58:09	B17												36					41								
*58:17N	Null												36					41								
*58:18	-			27									36													
*58:20	-																						45			
*58:27	-																									
*58:28	-																	41								
*59:01, 59:05	B59, -																									
*59:02-59:03	B59, -																									
*59:04	-																									
*67:01:01	B67					29																		45	48	
*67:01:02-67:02	B67, -																							45	48	
*73:01	B73																								48	
*78:01, 78:02:02-78:03, 78:07	B78, -									33									42							
*78:02:01, 78:04	B78, B35									33									42							
*78:05	-									33									42							
*78:06	-									33																
*81:01	B81																									
*81:02	B81																								48	
*81:03-81:04N	Null, -																									
*82:01-82:03	B82, -								32			35							43							
*83:01	-																	41								
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 allele ⁴	ser. ⁵																									

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											60					66					70			B57, -	*57:01:05, 57:11, 57:13, 57:21, 57:31
											60					66					70			B57, Null, -	*57:02:01-57:03:02, 57:05, 57:17, 57:28N
											60					66					70			B57	*57:04
				53							60					66					70			B57	*57:07
				53							60					66					70			B57	*57:09
											60					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, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24
											60							67			70			B58, -	*58:01:03, 58:02, 58:06, 58:16, 58:25-58:26
											60							67			70			B58	*58:07
					54					59	60							67			70			B17, B5	*58:08
						55					60							67			70			B17	*58:09
											60							67			70			Null	*58:17N
											60							67			70			-	*58:18
											60							67			70			-	*58:20
											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
			52																			71		B67, -	*67:01:02-67:02
			52																		69	71		B73	*73:01
										59				64					68			71		B78, -	*78:01, 78:02:02-78:03, 78:07
										59									68			71		B78, B35	*78:02:01, 78:04
										59		62										71		-	*78:05
										59		62										71		-	*78:06
			52				56	57														71	72	B81	*81:01
			52					57														71	72	B81	*81:02
			52					57														71	72	Null, -	*81:03-81:04N
			52				56									65						71		B82, -	*82:01-82:03
			52	53		56								63								71		-	*83:01
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.
																								ser. ⁵	HLA-B allele ⁴

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C*01:30				28																				
C*02:06																								
C*02:23		25																						
C*03:05, C*03:25, C*03:27			27																					
C*03:12, 03:19																								
C*06:20																								
C*07:46								32																
C*15:02:04																								
C*15:25																								
C*16:10						30																		
Well No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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																								C*01:30	
																		w							C*02:06
																									C*02:23
																									C*03:05, C*03:25, C*03:27
																65									C*03:12, 03:19
																				69					C*06:20
																									C*07:46
															64										C*15:02:04
				53																					C*15:25
																									C*16:10
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	Well No.	

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

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

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

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

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

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

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

‘ser’, serological HLA specificity.

‘w’, might be weakly amplified.

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

Lot No.: 17K

Lot-specific information

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		Well ⁵																																	
		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96										
Length of spec.		155	270	280	155	280	125	390	130	245	115	340	100	130	160	130	95	110	190	225	220	325	325	160											
PCR product(s)							325	390	355	425	390	220	250	220	255	255	325	240	270	425	380		235												
Length of int.		800	800	800	1070	800	800	1070	800	800	1070	1070	800	800	1070	1070	1070	1070	800	800	1070	1070	1070	1070											
pos. control ¹																																			
5'-primer(s) ²		5'-gAA 3' 89	5'-CCA 3' 2 nd I	5'-gCT 3' 105	5'-gCC 3' 477	5'-gCT 3' 105	5'-Agg 3' 47	5'-CgA 3' 1 st I	5'-TCA 3' 28	5'-gAA 3' 89	5'-CCA 3' 2 nd I	5'-gCT 3' 105	5'-gCC 3' 477	5'-gCT 3' 105	5'-Agg 3' 47	5'-CgA 3' 1 st I	5'-TCA 3' 28	5'-gAA 3' 89	5'-CCA 3' 2 nd I	5'-gCT 3' 105	5'-gCC 3' 477	5'-gCT 3' 105	5'-Agg 3' 47	5'-CgA 3' 1 st I	5'-TCA 3' 28										
3'-primer(s) ³		5'-CTT 3' 201	5'-CTC 3' 559	5'-C 3' 343	5'-CTT 3' 589	5'-T 3' 343	5'-CTT 3' 201	5'-ggT 3' 302	5'-Cgg 3' 213	5'-CAT 3' 853	5'-ggC 3' 302	5'-CCg 3' 175	5'-ggT 3' 302	5'-gCA 3' 474	5'-TCT 3' 601	5'-AgC 3' 289	5'-AgC 3' 289	5'-gCT 3' 218	5'-AgA 3' 459	5'-AgT 3' 312	5'-CAG 3' 538	5'-ggT 3' 311	5'-CTC 3' 3 rd I	5'-TAg 3' 270	5'-T 3' 343	5'-CgT 3' 341	5'-CgT 3' 341	5'-CgG 3' 341	5'-CCg 3' 538	5'-ggT 3' 302	5'-CTC 3' 3 rd I	5'-CTC 3' 559	5'-AgC 3' 289	5'-TCT 3' 539	5'-AgC 3' 289
Well No.		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96										

Negative Control



Lot No.: **17K**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
HLA-C allele⁴																								
*01:02:01-01:02:09, 01:06-01:08, 01:11-01:13, 01:15-01:20, 01:23, 01:25-01:33, 01:37N	73																			92				
*01:03, 01:24, 01:34	73																			92	93			
*01:04	73											84		86										
*01:05, 01:22, 01:35-01:36, B*54:18 ⁶	73																							
*01:09	73													86										
*01:10	73	74																		92				
*01:14	73											83								92				
*01:21	73											84	85											
*02:02:01		74	75			78					83				w									
*02:02:02-02:02:03, 02:02:05-02:03, 02:07-02:11, 02:15-02:16:02, 02:19-02:20, 02:23-02:25Q, 02:28-02:32, 02:34-02:36		74	75			78					83				87									
*02:04		74	w			78					83				87									
*02:05, 02:17		74	75			78					83			86	87									
*02:06		74	75			78		80			83				87		89							
*02:12		74	75			78							85		87									
*02:13, 02:18, 02:33		74	75			78					83				87			90						
*02:14		74	w			78					83													
*02:21, 02:26:02		74	75								83				87									
*02:22		74	75			78					83				87						93			
*02:26:01		74									83				87									
*02:27		74	75			78																		
*03:02:01-03:02:06, 03:05, 03:17, 03:25, 03:27, 03:33, 03:35-03:36, 03:60, 03:71, 03:84			75	76																			94	
*03:03:01-03:03:11, 03:11:01-03:12, 03:20N-03:22Q, 03:30-03:31, 03:43:01-03:43:02, 03:49-03:50, 03:52-03:53, 03:55-03:56, 03:59, 03:61-03:62, 03:66, 03:68-03:69, 03:76, 03:79, 03:83				76	77																	93	94	
*03:04:01:01-03:04:06, 03:04:08-03:04:19, 03:06, 03:08-03:09, 03:14, 03:19, 03:23-03:24, 03:26, 03:28, 03:32, 03:34, 03:37-03:38:02, 03:40, 03:42, 03:44, 03:46-03:48, 03:51, 03:54, 03:57, 03:63-03:65, 03:70, 03:72-03:74, 03:77-03:78, 03:82			75	76																		93	94	
*03:04:07, 03:41, 03:80			75																			93	94	
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96

Negative Control

Lot No.: **17K**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
*03:07, 03:45			75	76							83				87						93	94		
*03:10, 03:29			75	76											87						93	94		
*03:13				76	77																	94		
*03:15			75	76							83				87							94		
*03:16			75																			94		
*03:18, 03:39				76																		93		
*03:58					77															92	93	94		
*03:67				76	w																93	w		
*03:75					77																93	94		
*03:81				76	77												89				93	94		
*04:01:01:01-04:01:15, 04:04:01-04:05, 04:07-04:09N, 04:12-04:15:02, 04:17-04:20, 04:24-04:28, 04:30-04:31, 04:34-04:35, 04:38-04:41, 04:43-04:53, 04:56-04:57, 04:59Q-04:62						78					83		85					90				93		
*04:01:16, 04:23, 04:54						78					83		85					90						
*04:03, 04:06			75			78					83		85		87			90				93		
*04:10						78					83							90				93		
*04:11						78										88			91			93		
*04:16			75								83		85		87			90				93		
*04:29						78							85		88			90				93		
*04:32			74			78					83		85					90				93	94	
*04:33						78					83		85						91			93		
*04:36, 04:55						78										88		90				93		
*04:37						78					83		85		87			90		92		93		
*04:42											83		85	86				90				93		95
*04:58						78					83		85					90	91			93		
*05:01:01:01-05:01:13, 05:03, 05:05-05:10, 05:12-05:15, 05:18-05:19, 05:21, 05:24, 05:28-05:35, 05:37-05:41							79					83			87							93		
*05:04, 05:22							79					83			87									
*05:11, 05:27							79					83			87	88						93		
*05:16							79					83			87					92		93		
*05:17							79					83			87	88		90				93		
*05:20							79					83										93		
*05:23							79					83			87					91		93		
*05:25							79					83			87			90				93		
*05:26						78	79					83			87							93		
*05:36							79					83			87		89					93		
*05:42							79					83		85	87			90				93		
*06:02:01:01-06:02:01:02, 06:02:03-06:02:05, 06:07, 06:10, 06:12-06:13, 06:15-06:16N, 06:18-06:30, 06:33-06:34, 06:36-06:37								80				83			86									95
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96

Negative Control

Lot No.: **17K**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
*06:03			75					80			83			86	87							94		
*06:04								80			83												95	
*06:05								80			83						90		92					
*06:06								80			83								92				95	
*06:08		74						80			83			86									95	
*06:09								80			83			86								93	95	
*06:11								80						86									95	
*06:14, 06:35								80			83											93	95	
*06:17											83			86					92				95	
*06:31								80			83			86			90						95	
*06:32											83			86									95	
*07:01:01-07:02:07, 07:02:10-07:06, 07:08, 07:11-07:25, 07:27:01-07:27:02, 07:29-07:30, 07:32N, 07:35-07:38, 07:42, 07:44-07:48, 07:50-07:63, 07:65-07:75, 07:77-07:91, 07:93-07:95, 07:97-07:99									81														95	
*07:02:08, 07:26, 07:33N, 07:39-07:40, 07:92									81															
*07:02:09						78			81				85				90						95	
*07:07, 07:09, 07:49, 07:76									81	83									92				95	
*07:10, 07:28, 07:41, 07:43									81												93		95	
*07:31									81								90						95	
*07:64									81							88								
*07:96			75						81													94		
*08:01:01-08:01:02, 08:03:01-08:03:02, 08:06, 08:08, 08:14, 08:16, 08:20, 08:22, 08:24, 08:26N, 08:28										82							90				93			
*08:02:01-08:02:03, 08:15, 08:17-08:19, 08:23, 08:27, 08:29-08:30										82												93		
*08:04, 08:13										82						88						93		
*08:05, 08:25										82			85									93		
*08:07										82									91			93		
*08:09, 08:11										82							90							
*08:10							79			82	83				87		90				93			
*08:12										82										92	93			
*08:21										82			85				90				93			
*08:31			74							82												93		
*12:02:01-12:02:05, 12:10:01-12:10:02, 12:17-12:18, 12:20, 12:22, 12:27, 12:30												84	85											
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96

Negative Control

Lot No.: **17K**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
*12:03:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:11, 12:06-12:07, 12:11-12:13, 12:19, 12:23, 12:25, 12:29, 12:32, 12:34-12:35												84	85	86										
*12:03:02, 12:03:08, 12:26													85	86										
*12:03:04												84	86											
*12:03:09								80				84	86											
*12:04:01, 12:33											83		86	87										
*12:04:02											83	84	85	86	87									
*12:05											83	84	86	87										
*12:08												84	85				89							
*12:09											83			87					92					
*12:14:01													85				90	91						
*12:14:02												84	85				90	91						
*12:15								80				84	85	86			89							
*12:16												84	85										95	
*12:21											83	84		87										
*12:24												84	85						92					
*12:28												84	85	86			90							
*12:31												84	85	86							93			
*14:02:01-14:03, 14:05, 14:07N, 14:11, 14:13-14:14, 14:18-14:19															88			92						
*14:04											83				88			92						
*14:06, 14:08-14:09															88									
*14:10															88		90	92						
*14:12											83								92					
*14:15															88		90							
*14:16													86	88										
*14:17															88		91	92						
*15:02:01-15:02:05, 15:08, 15:10:02, 15:13, 15:15, 15:17- 15:18, 15:26, 15:28			75					80			83				87		89				93			
*15:03, 15:16			75					80			83	85	87				89				93			
*15:04-15:06:02, 15:09, 15:19- 15:20, 15:24, 15:27			75								83				87		89				93			
*15:07			75					80									89				93			
*15:10:01								80			83				87		89				93			
*15:11			75			78	80				83				87		89				93			
*15:12					77		80				83				87		89	90			93			
*15:21			75				80								87		89				93			
*15:22			75								83				87		89							
*15:23											83						89				93			
*15:25			75										85				90	91			93			
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96

Negative Control

Lot No.: 17K

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
*16:01:01-16:01:04, 16:06-16:08, 16:10-16:11, 16:13-16:18, 16:21													85				90						95	Neg. Control
*16:02:01-16:02:04, 16:09, 16:12, 16:19											83		85		87		90						95	
*16:04:01														86			90							
*16:20													85				89	90					95	
*17:01:01:01-17:06		74										83			87			91			93			
*18:01-18:02												83								92	93		95	
*18:03		74										83								92	93	94	95	
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
HLA-C allele ⁴																								
B*14:03																				92				
B*67:02													85											

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-C low resolution SSP typing.

In addition, wells number 74, 75, 77, 78, 80, 81, 82, 85, 86, 91 and 92 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, 3rd or 4th exon or the 1st or 2nd intron, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk, imgt, hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position, in the 1st, 2nd, 3rd or 4th exon or the 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 C*01:01 allele has been shown to be identical to C*01:02.

The sequence of the C*02:01 allele has been shown to be identical to C*02:022.

The sequence of the C*02:02:04 allele has been shown to be identical to C*02:10.

The sequence of the C*02:16:03 allele has been shown to be in error.

The sequence of the C*03:01 allele has been shown to be identical to C*03:04.

The sequence of the C*04:02 allele has been shown to be identical to C*04011.

The sequence of the C*04:21 allele has been shown to be identical to C*04:15:02.

The sequence of the C*04:22 allele has been shown to be identical to C*04:21.

The sequence of the C*05:02 allele has been shown to be identical to C*05:09.

The sequence of the C*06:01 allele has been shown to be identical to C*06:02.

The sequence of the C*06:02:02 allele has been shown to be identical to C*06:17.

The sequence of the C*07:34 allele has been shown to be identical to C*07:27:02.

The sequence of the C*11:01 allele has been shown to be in error.

The sequence of the C*12:01 allele has been shown to be identical to C*12:022.

The sequence of C*13:01 has been shown to be in error.

The sequence of the C*14:01 allele has been shown to be identical to C*14:02.

The sequence of the C*15:01 allele has been shown to be identical to C*15:02.

The sequence of the C*15:14 allele has been shown to be identical to C*15:10:02.

The sequence of the C*16:03 allele has been shown to be identical to C*14:03.

The sequence of the C*16:042 allele has been shown to be identical to C*16:041.

The sequence of the C*16:05 allele has been shown to be identical to C*16:041.

⁵The C*01:05, 01:22, 01:35 and 01:36 and the B*54:18 alleles give rise to identical amplification patterns with the HLA-C low resolution primer set. These alleles are separated by the HLA-B low primer set.

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
					201073301	201073302	201073303	201073304	201073305	201073306	201073307	201073308	201073309	201073310	201073311	201073312	201073313	201073314	201073315	201073316
	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.: **17K**

Lot-specific information

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CELL LINE VALIDATION SHEET												
HLA-A low resolution primer set												
				Well								
				17	18	19	20	21	22	23	24	
				Lot No.:	201073317	201073318	201073319	201073320	201073321	201073322	201073323	201073324
	IHC 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	-	-	-	-	-	-	-	-	+

CELL LINE VALIDATION SHEET																			
HLA-B low resolution SSP kit																			
				Well															
				25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
			Prod. No.:	201073401	201073402	201073403	201073404	201073405	201073406	201073407	201073408	201073409	201073410	201073411	201073412	201073413	201073414	201073415	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	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-

CELL LINE VALIDATION SHEET				Well															
HLA-B low resolution SSP kit																			
			Prod. No.:	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
				201073417	201073418	201073419	201073420	201073421	201073422	201073423	201073424	201073425	201073426	201073427	201073428	201073429	201073430	201073431	201073432
	IHWC cell line	B*																	
1	9001 SA	*07:02		-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
2	9280 LK707	*52:01	*73:01	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
3	9011 E4181324	*52:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*15:10	*53:01	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*37:01		+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
6	9353 SM	*39:01	*51:01	-	-	-	-	+	-	+	+	-	-	-	-	-	+	-	-
7	9020 QBL	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*35:01		+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*54:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
11	9051 PITOUT	*44:03		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052 DBB	*57:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*27:05		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
14	9071 OLGA	*15:01	*15:20	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
16	9037 SWEIG007	*40:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
17	9282 CTM3953540	*08:01	*55:01	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
18	9257 32367	*14:01	*56:01	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-	+
19	9038 BM16	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
21	9064 AMALA	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*35:03		+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*40:02	*56:02	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	+
24	9035 JBUSH	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*14:02		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
26	9285 WT49	*58:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*07:05	*51:01	-	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-
28	9320 BEL5GB	*44:02	*44:03	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
29	9050 MOU	*44:03		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021 RSH	*42:01		-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
31	9019 DUCAF	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*41:02		-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
33	9098 MT14B	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
34	9104 DHIF	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*44:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
36	9024 KT17	*15:01	*35:01	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*07:02		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
38	9099 LZL	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*08:01	*27:05	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
40	9134 WHONP199	*13:02	*46:01	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
41	9055 H0301	*14:02		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
42	9066 TAB089	*46:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
43	9076 T7526	*46:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
44	9057 TEM	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*42:01	*50:01	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
46	9013 SCHU	*07:02		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
47	9045 TUBO	*51:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
48	9303 TER-ND	*35:01	*44:03	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-

CELL LINE VALIDATION SHEET																				
HLA-C low resolution SSP primer set																				
				Well																
				73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	
				Prod. No.:	200963101	200963102	201073503	200963104	200963105	200963106	200963107	200963108	200963109	200963110	200963111	200963112	200963113	200963114	200963115	200963116
	IHWC cell line		C*																	
1	9001 SA		*07:02	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
2	9280 LK707		*07:01	*15:05	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	
3	9011 E4181324		*12:02		-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	
4	9275 GU373		*03:04	*04:01	-	-	+	+	-	+	-	-	-	-	+	-	+	-	-	
5	9009 KAS011		*06:02		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
6	9353 SM		*03:04	*07:02	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	
7	9020 QBL		*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
8	9007 DEM		*04:01		-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	
9	9026 YAR		*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
10	9107 LKT3		*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051 PITOUT		*16:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
12	9052 DBB		*06:02		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
13	9004 JESTHOM		*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	9071 OLGA		*01:02	*03:04	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
15	9075 DKB		*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
16	9037 SWEIG007		*02:02		-	+	+	-	-	+	-	-	-	-	+	-	-	-	+	
17	9282 CTM3953540		*03:03	*07:01	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	
18	9257 32367		*01:02	*07:05	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
19	9038 BM16		*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
20	9059 SLE005		*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
21	9064 AMALA		*03:03		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	
22	9056 KOSE		*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
23	9124 IHL		*01:02	*15:02	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	
24	9035 JBUSH		*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
25	9049 IBW9		*08:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
26	9285 WT49		*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
27	9191 CH1007		*07:04	*15:05	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	
28	9320 BEL5GB		*05:01	*16:01	-	-	-	-	-	-	+	-	-	-	+	-	+	-	+	
29	9050 MOU		*16:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
30	9021 RSH		*17:01		-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	
31	9019 DUCAF		*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
32	9297 HAG		*17:01	*17:03	-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	
33	9098 MT14B		*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
34	9104 DHIF		*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
35	9302 SSTO		*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
36	9024 KT17		*03:03	*04:01	-	-	-	+	+	+	-	-	-	-	+	-	+	-	-	
37	9065 HHKB		*07:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
38	9099 LZL		*03:03		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	
39	9315 CML		*02:02	*07:01	-	+	+	-	-	+	-	-	+	-	+	-	-	-	+	
40	9134 WHONP199		*01:02	*06:02	+	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
41	9055 H0301		*08:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
42	9066 TAB089		*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	9076 T7526		*01:02	*08:01	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
44	9057 TEM		*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
45	9239 SHJO		*06:02	*17:01	-	+	-	-	-	-	-	+	-	-	+	-	-	+	+	
46	9013 SCHU		*07:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
47	9045 TUBO		*07:04	*15:02	-	-	+	-	-	-	-	+	+	-	+	-	-	-	+	
48	9303 TER-ND		*04:01	*16:01	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	

Lot No.: **17K**

Lot-specific information

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CELL LINE VALIDATION SHEET											
HLA-C low resolution SSP primer set											
				Well							
				89	90	91	92	93	94	95	
				Prod. No.:	200963117	201073518	201073519	200963120	200963121	200963122	200963123
	IHWC cell line		C*								
1	9001	SA	*07:02		-	-	-	-	-	-	+
2	9280	LK707	*07:01	*15:05	+	-	-	-	+	-	+
3	9011	E4181324	*12:02		-	-	-	-	-	-	-
4	9275	GU373	*03:04	*04:01	-	+	-	-	+	+	-
5	9009	KAS011	*06:02		-	-	-	-	-	-	+
6	9353	SM	*03:04	*07:02	-	-	-	-	+	+	+
7	9020	QBL	*05:01		-	-	-	-	+	-	-
8	9007	DEM	*04:01		-	+	-	-	+	-	-
9	9026	YAR	*12:03		-	-	-	-	-	-	-
10	9107	LKT3	*01:02		-	-	-	+	-	-	-
11	9051	PITOUT	*16:01		-	+	-	-	-	-	+
12	9052	DBB	*06:02		-	-	-	-	-	-	+
13	9004	JESTHOM	*01:02		-	-	-	+	-	-	-
14	9071	OLGA	*01:02	*03:04	-	-	-	+	+	+	-
15	9075	DKB	*03:04		-	-	-	-	+	+	-
16	9037	SWEIG007	*02:02		-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	+	+	+
18	9257	32367	*01:02	*07:05	-	-	-	+	-	-	+
19	9038	BM16	*07:01		-	-	-	-	-	-	+
20	9059	SLE005	*03:04		-	-	-	-	+	+	-
21	9064	AMALA	*03:03		-	-	-	-	+	+	-
22	9056	KOSE	*12:03		-	-	-	-	-	-	-
23	9124	IHL	*01:02	*15:02	+	-	-	+	+	-	-
24	9035	JBUSH	*12:03		-	-	-	-	-	-	-
25	9049	IBW9	*08:02		-	-	-	-	+	-	-
26	9285	WT49	*07:01		-	-	-	-	-	-	+
27	9191	CH1007	*07:04	*15:05	+	-	-	-	+	-	+
28	9320	BEL5GB	*05:01	*16:01	-	+	-	-	+	-	+
29	9050	MOU	*16:01		-	+	-	-	-	-	+
30	9021	RSH	*17:01		-	-	+	-	+	-	-
31	9019	DUCAF	*05:01		-	-	-	-	+	-	-
32	9297	HAG	*17:01	*17:03	-	-	+	-	+	-	-
33	9098	MT14B	*03:04		-	-	-	-	+	+	-
34	9104	DHIF	*12:03		-	-	-	-	-	-	-
35	9302	SSTO	*05:01		-	-	-	-	+	-	-
36	9024	KT17	*03:03	*04:01	-	+	-	-	+	+	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	+
38	9099	LZL	*03:03		-	-	-	-	+	+	-
39	9315	CML	*02:02	*07:01	-	-	-	-	-	-	+
40	9134	WHONP199	*01:02	*06:02	-	-	-	+	-	-	+
41	9055	H0301	*08:02		-	-	-	-	+	-	-
42	9066	TAB089	*01:02		-	-	-	+	-	-	-
43	9076	T7526	*01:02	*08:01	-	+	-	+	+	-	-
44	9057	TEM	*12:03		-	-	-	-	-	-	-
45	9239	SHJO	*06:02	*17:01	-	-	+	-	+	-	+
46	9013	SCHU	*07:02		-	-	-	-	-	-	+
47	9045	TUBO	*07:04	*15:02	+	-	-	-	+	-	+
48	9303	TER-ND	*04:01	*16:01	-	+	-	-	+	-	+

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A-B-C SSP Combi Tray

Product number: 101.702-24/06 – including Taq pol.

Lot number: 17K

Expiry date: 2012-July-01

Number of tests: 24 tests – Product No. 101.702-24

6 tests – Product No. 101.702-06

Number of wells per test: 95 + 1

Well specifications:

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

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. Additional 5'-primers in primer solutions 1 and 10 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 3, 6, 18 and 19 to 23 were tested by separately adding one 5'-primer.

In primer solutions 2, and 15 two respectively one 5'-primer was 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	2010-734-33
26	2010-734-02	42	2010-734-18	58	2010-734-34
27	2010-734-03	43	2010-734-19	59	2010-734-35
28	2010-734-04	44	2010-734-20	60	2010-734-36
29	2010-734-05	45	2010-734-21	61	2010-734-37
30	2010-734-06	46	2010-734-22	62	2010-734-38
31	2010-734-07	47	2010-734-23	63	2010-734-39
32	2010-734-08	48	2010-734-24	64	2010-734-40
33	2010-734-09	49	2010-734-25	65	2010-734-41
34	2010-734-10	50	2010-734-26	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	2010-734-15	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 and 72 were tested by separately adding one additional 3'-primer.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2009-631-01	81	2009-631-09	89	2009-631-17
74	2009-631-02	82	2009-631-10	90	2010-735-18
75	2010-735-03	83	2009-631-11	91	2010-735-19
76	2009-631-04	84	2009-631-12	92	2009-631-20
77	2009-631-05	85	2009-631-13	93	2009-631-21
78	2009-631-06	86	2009-631-14	94	2009-631-22
79	2009-631-07	87	2009-631-15	95	2009-631-23
80	2009-631-08	88	2009-631-16		

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 86, 87, 91 and 94 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solution 82 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 78 and 95 were tested by separately adding one additional 3'-primer.

In primer solutions 75, 84, 86 and 90 one 3'-primer was not possible to test.

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

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

Date of approval: 2011-September-08

Approved by:

Quality Control, Supervisor

Lot No.: **17K**

Lot-specific information

www.olerup-ssp.com

Declaration of Conformity

Product name: *Olerup* SSP® HLA-A-B-C SSP Combi Tray
Product number: 101.702-24/06
Lot number: 17K

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

Manufacturer: *Olerup* SSP AB
Franzengatan 5
SE-112 51 Stockholm, Sweden
Phone: +46-8-717 88 27
Fax: +46-8-717 88 18

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

The Technical Documentation File is maintained at *Olerup* SSP AB, Franzengatan 5, SE-112 51 Stockholm, Sweden.

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

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

Saltsjöbaden, Sweden
2011-Stockholm-08

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **17K**

Lot-specific information

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