

Olerup SSP® HLA-A-B-C SSP Combi Tray

Product number:	101.702-24u/06u – without <i>Taq</i> pol.
Lot number:	45M
Expiry date:	2014-February-01
Number of tests:	24 tests – Product No. 101.702-24u 6 tests – Product No. 101.702-06u
Number of wells per test:	95 +1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 45M.

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. 17M**).

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

Well	5'-primer	3'-primer	rationale
12	Added	-	Increased yield of HLA-specific PCR product.

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. 17M**).

The HLA-B low primer set is unchanged compared to the previous lot.

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. 17M**).

The HLA-C low primer set is unchanged compared to the previous lot.

Change in revision R01 compared to R00:

1. Primer mix 2 may give a lower yield of HLA-specific PCR product than the other HLA-A low primer mixes.

Changes in revision R02 compared to R01:

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

Changes in revision R03 compared to R02:

1. In primer mix 5, the specific PCR product of 535 base pairs may be difficult to distinguish from the internal control band. A foot note has been added to the Specificity Table.
2. Primer mix 17 does not amplify the HLA-A*36:02 allele. This has been corrected in the Specificity and Interpretation Tables.

Change in revision R05 compared to R04:

1. Primer mix 43 does not amplify the B*44:10 allele. This has been corrected in the Specificity and Interpretation Tables.

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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*18:04 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. '45M'.

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 A*23:31, A*24:106 and C*16:10 alleles will be amplified by primer mix 30, the A*68:56, C*06:20 and C*12:50 alleles will

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be amplified by primer mix 69, the C*01:30 allele will be amplified by primer mix 28, the C*02:06 allele will be weakly amplified by primer mix 67, the C*02:23 and C*04:77 alleles will be amplified by primer mix 25, the C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, the C*03:12 and 03:19 alleles will be amplified by primer mix 65, the C*03:102 allele will be amplified by primer mixes 41 and 65, 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*15:39 allele will be amplified by primer mix 55. Thus, the interpretation of HLA-B low resolution typings is only influenced by these 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, primer mix 92 will amplify the B*14:03 allele and primer mix 95 will amplify the A*24:106 and B*46:25 alleles. Thus, the interpretation of HLA-C low resolution typings is only influenced by these alleles and not by other HLA class I genes.

UNIQUELY IDENTIFIED ALLELES

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

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

All the HLA-C alleles, i.e. **C*01:02 to C*18:04**, recognized by the HLA Nomenclature Committee in October 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 groups⁴.

¹HLA-A, HLA-B and HLA-C alleles listed on the IMGT/HLA web page 2010-October-20, release 3.2.0, www.ebi.ac.uk/imgt/hla.

²The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

³The B*08:26, 08:50 and 08:62 and B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02, 35:99 and 35:118-35:119 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

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The B*55:04, 55:08, 55:13, 55:27 and 55:46 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

⁴The 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.

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Lot-specific information

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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^{7,8}	120 bp, 140 bp, 225 bp	800 bp	A1, A36	*01:01:01:01-01:04N, 01:06-01:33, 01:01:38L, 01:35-01:81, 03:18, 36:01-36:05
2^{8,12}	210 bp, 255 bp, 365 bp, 415 bp	800 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, 02:24:01-02:35:01, 02:35:03-02:47, 02:49-02:77, 02:78 ^w , 02:79:01-02:97:02, 02:99, 02:101:01-02:128, 02:130-02:282
3⁹	205 bp, 235 bp	1070 bp	A1, A3, A11, A32, A34, A36	*01:12, 01:19, 01:21, 03:01:01:01-03:17, 03:19-03:74, 03:76-03:94, 03:96-03:112, 11:25, 11:60, 24:92, 32:04, 34:02:01-34:04, 34:07-34:09, 36:02
4	190 bp	800 bp	A1, A3, A11, A30, A36	*01:01:01:01-01:01:22, 01:01:24-01:04N, 01:06-01:07, 01:09-01:11N, 01:13, 01:16N-01:18N, 01:20-01:29, 01:31N-01:33, 01:01:38L, 01:35-01:78, 01:80-01:81, 02:78, 02:169, 03:12, 03:18, 03:88, 11:01:01-11:27, 11:29-11:80, 26:19, 30:08, 36:04, 68:66
5¹³	160 bp, 535 bp	800 bp	A3, A9, A23, A24, A2403, A31, A32	*03:30, 23:01:01-23:31, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17-24:64, 24:66-24:88, 24:90N-24:128, 24:130-24:155N, 31:08, 32:05, 32:13
6¹⁰	135 bp, 175 bp, 210 bp	800 bp	A2, A9, A23, A24, A29, A80	*23:01:01-23:31, 24:05, 24:13:02, 24:24, 29:07, 31:29, 80:01-80:02, B*18:27
7	175 bp, 200 bp	1070 bp	A2, 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, 24:95-24:113, 24:115-24:137, 24:139-24:155N, 26:16, 33:19, 68:45
8	165 bp, 200 bp	800 bp	A2, A3, A10, A11, A25, A26, A28, A32, A34, A66, A68, A69	*01:51, 02:55, 03:24, 03:50, 11:10, 25:01:01-25:13, 26:01:01-26:06, 26:08-26:15, 26:17-26:18, 26:20-26:43:02, 26:45-26:56, 32:15, 34:01:01-34:09, 66:01-66:15, 68:01:01:01-68:66, 69:01
9⁷	75 bp	800 bp	A3, A25, A32	*25:01:01-25:13, 32:01:01-32:02, 32:04, 32:06-32:30

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10⁷	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, 26:31-26:43:02, 26:45-26:56, 33:13
11^{7,8}	80 bp, 175 bp, 500 bp	1070 bp	A1, A9, A10, A11, A26, A31, A34, A66	*01:13, 01:28, 03:63, 03:88, 11:01:01-11:27, 11:29-11:80, 24:19, 24:44, 26:03:01-26:03:02, 26:06, 26:21, 31:03, 34:01:01-34:08, 66:01, 66:04-66:11, 66:13-66:15, 80:02
12	185 bp	800 bp	A10, A25, A26, A31, A34, A43, A66	*03:01:19, 11:11, 25:06, 26:09, 31:03-31:04, 34:01:01-34:09, 43:01, 66:02-66:03
13¹²	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, 03:01:01:01-03:01:22, 03:02-03:07, 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, 03:73-03:87, 03:90-03:106, 03:109-03:110, 03:112, 25:01:01-25:05, 25:07-25:13, 26:01:01-26:01:18, 26:02 ^w , 26:03:01-26:03:02, 26:05-26:08, 26:10-26:33, 26:35-26:43:02, 26:45-26:56, 34:08, 43:01, 66:01, 66:04-66:15, 74:13
14⁷	100 bp, 200 bp, 240 bp	1070 bp	A2, A29	*02:237, 03:95, 26:19, 26:22, 29:01:01:01-29:27, 31:03-31:04, 33:13, 34:04, 66:09
15^{7,8,12}	90 bp, 135 bp, 205 bp	1070 bp	A1, A30	*01:13, 01:28, 03:43, 03:82, 30:01:01-30:04:02, 30:06-30:20, 30:22-30:46, 31:35
16	240 bp, 370 bp, 395 bp	1070 bp	A2, A24, A31, A32	*02:237, 03:95, 29:14, 31:01:02-31:46, 32:05
17	140 bp, 180 bp	1070 bp	A32	*03:43, 03:82, 29:13, 31:35, 32:01:01-32:03, 32:05-32:30, 74:07
18	200 bp	1070 bp	A33, A68	*02:243, 33:01:01-33:01:05, 33:03:01-33:34, 68:29
19	160 bp, 200 bp	800 bp	A74	*29:19, 74:01-74:14N
20¹⁰	220 bp, 245 bp	800 bp	A2, A210, A25, A68	*02:34-02:35:03, 02:46, 02:48, 02:56:01-02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 25:05, 26:54, 68:01:01:01-68:66
21	240 bp, 375 bp	800 bp	A2, A26, A28, A68, A69	*02:55, 02:243, 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}	75 bp, 160 bp, 240 bp, 495 bp	800 bp	A2, A26, A28, A36, A68, A80	*02:55, 03:41, 03:63, 03:75, 03:88, 24:18, 26:03:01-26:03:02, 26:05-26:06, 26:21, 26:30, 33:24, 36:02, 68:05, 68:15, 68:20, 80:01
24¹²	360 bp	1070 bp	A10, A26, A31, A66	*02:135, 03:01:19, 25:13, 26:30, 31:04, 34:09, 66:02-66:03, 66:12

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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 2, 4, 5, 6, 8, 9, 12 and 19 to 23 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

³ The serological reactivity of all HLA-A alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) **73**:95-170 and the serological grouping of the sequence-defined allele.

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*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.

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 wells 1, 2, 11 and 15 will in many samples give rise to two or three HLA-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, 20 and 23 may have a tendency of primer dimer formation.

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

¹² Primer mixes 2, 13, 15 and 24 may yield less specific PCR product than the other HLA-A low primer mixes.

¹³ In primer mix 5, the specific PCR product of 535 base pairs may be difficult to distinguish from the internal control band. The alleles giving rise to a product of this size are the following: A*23:09, 24:02:06, 24:02:27, 24:08, 24:24, 24:29, 24:42, 24:67, 24:116, 24:137, 24:140 and 24:145.

‘w’, might be weakly amplified.

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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 ⁴⁻⁶
25^{7,11}	110 bp	800 bp	7, 703, 40, 41, 42, 48, 61	*07:02:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:50, 07:52, 07:54-07:59, 07:61-07:99, 07:101-07:117, 15:138, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:136, 40:158, 41:08, 42:05:01-42:05:02, 48:05, 48:08, 48:15, C*02:23, C*04:77
26	215 bp	1070 bp	8, 44	*08:01:01-08:05, 08:07-08:25, 08:27-08:49, 08:51-08:61, 08:63-08:64, 08:66, 15:142, 15:180, 44:49, 51:68
27	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 61, 62, 77	*07:20, 07:24, 07:60, 07:100, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:38, 13:40, 15:07:01-15:07:02, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 15:205, 15:207, 35:05:01-35:05:02, 35:16-35:17, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 35:113-35:114, 35:125, 40:05, 40:71, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 44:106, 44:110, 46:12, 46:20, 51:64, 53:14, 58:18, C*03:05, C*03:25, C*03:27
28^{8,9}	130 bp, 265 bp	800 bp	12, 13, 14, 17, 21, 35, 40, 41, 44, 45, 47, 49, 50, 60, 61, 64, 65	*13:01:01-13:04, 13:06-13:13, 13:15-13:23, 13:25-13:40, 14:01:01-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:19, 15:46, 15:53, 15:106, 18:44, 35:46-35:47, 35:63, 40:01:01-40:01:17, 40:07, 40:10:01-40:10:02, 40:14:01-40:16, 40:22N-40:23, 40:25, 40:30-40:34, 40:36, 40:38, 40:42-40:43, 40:45, 40:47-40:49, 40:51-40:55, 40:58-40:63, 40:65-40:67, 40:69, 40:72:01-40:73, 40:76-40:77, 40:79-40:81, 40:84, 40:87:01-40:88, 40:92, 40:100-40:102, 40:106, 40:108, 40:110, 40:112-40:114, 40:116-40:118N, 40:121, 40:123-40:126, 40:128-40:130, 40:132, 40:134-40:136, 40:139-40:141, 40:146-40:147, 40:150-40:156, 40:158, 41:01-41:16, 44:02:01:01-44:03:06, 44:03:08-44:05:02, 44:09-44:39, 44:41:01-44:43:02, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84-44:102, 44:104-44:110, 44:112-44:115, 45:01-45:13, 47:01:01:01-47:07, 49:01:01-49:02, 49:04-49:15, 50:01:01-50:02, 50:04-50:06, 50:08-50:12, C*01:30
29⁹	185 bp, 235 bp	800 bp	7, 16, 17, 27, 2708, 37, 38,	*14:01:01-14:01:02, 14:07N-14:08, 14:10, 14:12, 14:14, 14:19, 27:01-27:06, 27:08-27:10, 27:12-27:13, 27:16-27:18, 27:20, 27:23, 27:26-27:27,

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56^{7,14}	90 bp, 410 bp	1070 bp	15, 22, 27, 35, 47, 54, 55, 56, 78, 81, 82	*07:65, 27:01 ^w , 27:02-27:11, 27:13-27:15, 27:17, 27:19-27:21, 27:24-27:28, 27:30-27:38, 27:40- 27:58, 27:60-27:73, 35:76, 44:90, 44:97, 47:01:01:01-47:03, 47:06-47:07, 54:01:01-54:23, 55:01:01-55:05, 55:07-55:17, 55:19-55:48, 56:01:01-56:16, 56:18-56:22, 56:24-56:30, 81:01, 82:01-82:03, 83:01
57⁷	90 bp, 175 bp	1070 bp	15, 27, 35, 48, 60, 62, 75, 77, 81	*13:36, 15:02:01-15:02:05, 15:08, 15:11:01- 15:11:05, 15:13, 15:15, 15:21, 15:31, 15:44, 15:55, 15:76 ^w , 15:88-15:89, 15:112, 15:121, 15:139, 15:144, 15:148, 15:170, 15:189, 15:191, 15:194, 15:209N, 27:24, 35:46, 40:31, 40:45, 40:80, 48:01:01-48:01:03, 48:04, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 48:24, 81:01-81:05
58	145 bp, 430 bp	1070 bp	44, 49, 59, 61	*40:13, 40:19, 40:109, 40:117, 44:18, 44:25, 44:50, 44:95, 49:01:01-49:01:02, 49:04-49:15, 54:12, 56:21, 59:01:01:01-59:05
59⁷	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 , 15:16:01, 15:42, 15:67, 15:95, 15:137 ^w , 40:95, 40:148, 49:01:01, 49:02-49:10, 49:12-49:15, 50:01:01- 50:02, 50:04-50:11, 51:01:01-51:03, 51:05, 51:07:01-51:09:02, 51:11N-51:14, 51:16- 51:24:04, 51:26-51:41N, 51:43-51:44N, 51:48- 51:55, 51:57-51:58, 51:60, 51:61 ^w , 51:63, 51:65- 51:80, 51:82-51:106, 52:01:01:01-52:22, 54:20, 55:01:01-55:01:06, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21 ^w , 55:24-55:25, 55:28-55:29, 55:31, 55:33, 55:36, 55:38, 55:40, 55:44-55:45, 56:05:01-56:06, 56:21, 56:25, 58:08, 78:01-78:07
60	430 bp	1070 bp	5, 17, 27, 44, 51, 5102, 5103, 52, 53, 57, 58, 61	*27:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 40:13, 40:19, 40:109, 40:117, 44:06, 44:25, 44:50, 44:95, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:106, 52:01:01:01-52:19, 52:21-52:22, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:24, 57:01:01- 57:11, 57:13-57:37, 58:01:01-58:02, 58:04-58:16, 58:18-58:31N
61	145 bp	1070 bp	12, 21, 35, 40, 4005, 41, 45, 47, 50, 60, 61	*15:46, 15:53, 15:106, 15:143, 18:48, 35:19, 35:47, 35:63, 40:01:01-40:11:02, 40:14:01-40:16, 40:18, 40:20, 40:22N-40:40, 40:42-40:45, 40:48- 40:75, 40:77-40:92, 40:94-40:95, 40:97-40:108, 40:111-40:116, 40:118N-40:136, 40:138-40:156, 40:158, 41:01-41:04, 41:05 [?] , 41:06-41:16, 44:09, 44:46, 44:75, 44:90, 45:01-45:13, 47:02, 47:03 ^w , 50:01:01-50:02, 50:04-50:05, 50:07-50:12
62	300 bp	1070 bp	7, 12, 13, 15, 17, 18, 21, 27, 2708, 35,	*07:54, 08:17, 08:38, 08:54, 13:01:01-13:04, 13:06, 13:08Q-13:23, 13:25-13:35, 13:37-13:40, 15:01:01:01-15:01:04, 15:01:06-15:01:18, 15:01:20, 15:03:01-15:07:02, 15:12, 15:14,

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			37, 38, 39, 3902, 40, 4005, 41, 44, 45, 47, 48, 49, 50, 52, 60, 61, 62, 70, 72, 76	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, 15:192-15:193, 15:195, 15:199, 15:201-15:207, 18:12, 27:01-27:21, 27:24-27:73, 35:10, 35:13, 35:16, 35:28, 35:63, 35:69, 35:80, 37:01:01-37:07, 37:09-37:25, 38:03-38:04, 38:25, 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, 40:70-40:105, 40:107-40:158, 41:01-41:16, 42:11, 44:02:01:01-44:05:02, 44:07-44:11, 44:13-44:115, 45:01-45:13, 47:01:01:01-47:07, 48:01:01-48:05, 48:07-48:15, 48:17-48:24, 49:01:01-49:15, 50:01:01-50:02, 50:04-50:12, 52:01:01:01-52:22, 53:17:01, 55:18, 55:34, 55:40, 78:05-78:06
63^{9,10}	160 bp, 330 bp	1070 bp	22, 44, 45, 47, 54	*44:02:01:01-44:02:14, 44:06, 44:08-44:09, 44:11-44:12, 44:16, 44:19N-44:24, 44:27:01, 44:33-44:34, 44:41:01, 44:44, 44:48-44:49, 44:52N-44:53, 44:55, 44:59, 44:63, 44:66-44:68, 44:71-44:74, 44:80, 44:83-44:84, 44:86-44:87, 44:89-44:91, 44:93, 44:95, 44:97, 44:99-44:102, 44:104, 44:106, 44:112-44:113, 54:01:01-54:23, 83:01
64	180 bp, 210 bp	1070 bp	13, 15, 18, 35, 39, 40, 54, 55, 56, 59, 78	*07:65, 13:06, 15:42, 15:86, 18:04, 35:42:02, 35:43:02, 35:60, 39:17, 40:01:11, 40:58, 45:08, 46:18, 54:01:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:12-54:13, 54:16-54:23, 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, 55:33-55:45, 55:47-55:48, 56:05:01, 56:06, 56:10, 56:23, 59:01:01:01, 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, 45:11-45:13, 46:11, 49:01:01-49:03, 49:06, 49:08-49:15, 50:01:01-50:02, 50:04-50:08, 50:10-50:12, 51:15, 51:62, 51:106, 54:03, 56:01:01-56:02, 56:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20, 56:24-56:30, 59:04, 82:01-82:03, C*03:12, C*03:19, C*03:102
66^{7,11}	90 bp, 240 bp	800 bp	57	*55:14, 57:01:01-57:37

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67^{7,14}	90 bp	1070 bp	5, 13, 15, 17, 39, 55, 56, 58, 60, 61, 62, 71	*13:11, 15:18:03, 15:73, 39:17, 40:48, 40:71, 51:62, 56:02, 56:04, 56:10, 58:01:01-58:02, 58:04-58:31N, C*02:06^w
68^{7,9}	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65 ^w , 08:32, 18:01:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:52, 35:01:01:01-35:09:02, 35:11:01-35:12:02, 35:14:01-35:15, 35:17-35:18, 35:20:01-35:24:02, 35:27, 35:29-35:45, 35:48, 35:50-35:62, 35:64- 35:68:02, 35:70-35:72, 35:74-35:75, 35:76 ^w , 35:77-35:79, 35:81-35:151, 37:08, 38:06-38:07, 39:19:01-39:19:02, 44:06, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:103, 51:105-51:106, 53:01:01-53:16, 53:18-53:24, 56:06 ^w , 78:01- 78:04, 78:07
69⁷	115 bp, 150 bp	1070 bp	15, 18,22, 27, 35, 39, 46, 55, 62, 72, 73, 75, 76	*07:100, 13:31, 15:01:01:01-15:01:04, 15:01:06- 15:01:16, 15:01:18-15:01:20, 15:04, 15:07:01- 15:08, 15:11:01-15:12, 15:14-15:15, 15:19, 15:24, 15:26N-15:28, 15:30, 15:32, 15:34-15:35, 15:38:01-15:38:02, 15:43, 15:45-15:46, 15:50, 15:53-15:54, 15:56-15:58, 15:60, 15:63, 15:66, 15:68, 15:70-15:71, 15:73, 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, 15:189-15:193, 15:201-15:203, 15:205- 15:207, 15:209N, 18:19, 27:25, 35:14:01- 35:14:02, 35:43:01-35:44, 35:62, 35:67, 35:79, 35:86, 35:102, 35:117, 35:135, 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, 46:22-46:24, 51:61, 52:21, 54:06, 55:21, 56:03, 73:01-73:02, A*68:56, C*06:20, C*12:50
70¹⁵	360 bp	1070 bp	Bw4	
71	350 bp	1070 bp	Bw6	
72	285 bp	800 bp	7, 703, 8, 35, 40, 41, 42, 48, 53, 60, 61, 81	*07:02:01-07:06, 07:08-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61- 07:76, 07:79-07:83, 07:85-07:99, 07:101-07:117, 08:01:01-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:66, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 40:137, 41:02:01-41:02:03, 41:04, 41:10-41:11, 41:13, 42:01:01-42:02, 42:05:01- 42:07, 42:09-42:13, 48:01:01-48:01:03, 48:05- 48:12, 48:14-48:20, 48:22, 53:15, 81:01-81:05

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

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers. PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

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

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

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

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

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

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

³The serological reactivity of all HLA-B alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) **73**:95-170 and the serological grouping of the sequence-defined allele.

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.

⁵The B*08:26, 08:50 and 08:62 and B*42:07 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

The B*18:29 and the B*35:32, 35:37, 35:53N, 35:64, 35:68:01-35:68:02, 35:99 and 35:118-35:119 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

The B*55:04, 55:08, 55:13, 55:27 and 55:46 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

⁶The A*23:31, A*24:106 and C*16:10 alleles will be amplified by primer mix 30, the A*68:56, C*06:20 and C*12:50 alleles will be amplified by primer mix 69, the C*01:30 allele will be amplified by primer mix 28, the C*02:06 allele will be weakly amplified by primer mix 67, the C*02:23 and C*04:77 alleles will be amplified by primer mix 25, the C*03:05, 03:25 and 03:27 alleles will be amplified by primer mix 27, the C*03:12 and 03:19 alleles will be amplified by primer mix 65, the C*03:102 allele will be amplified by primer mixes 41 and 65, 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*15:39 allele will be amplified by primer mix 55.

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

⁸Primer 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.

⁹Primer mixes 28, 29, 33, 42, 45, 46, 63 and 68 give a lower yield of specific PCR product than the other HLA-B low resolution primer mixes.

¹⁰Primer mixes 33, 34, 44 and 63 may give rise to nonspecific amplifications, most pronounced in primer mix 33.

¹¹Primer mixes 25, 43, 44, 46 and 66 may give rise to a primer oligomer artifact.

¹²The B*57 and B*58 alleles might be faintly amplified by primer mix 33.

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

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

¹⁵The Bw4-associated HLA-A specificities A9, 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 ¹³	155 bp	800 bp	*01:02:01-01:45, B*54:18
74 ^{6,12}	130 bp, 200 bp, 270 bp, 300 bp	800 bp	*01:10, 01:43, 02:02:01-02:02:03, 02:02:05-02:40, 02:42-02:46, 04:32, 04:77, 06:08, 07:101, 07:148, 08:31, 14:25, 15:42, 16:29, 17:01:01-01-17:06, 17:08, 18:03
75 ¹³	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, 02:26:02-02:40, 02:42-02:46, 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, 03:87, 03:89-03:95, 03:98, 03:100-03:101, 04:03, 04:06, 04:16, 04:80, 06:03, 07:96, 15:02:01-15:09, 15:10:02-15:11, 15:13, 15:15-15:22, 15:24-15:35, 15:37-15:45
76 ⁷	170 bp, 275 bp	1070 bp	*03:02:01-03:04:06, 03:04:08-03:15, 03:17-03:40, 03:42-03:57, 03:59-03:79, 03:81-03:85, 03:87-03:93, 03:95-03:98, 03:100-03:102
77	280 bp	800 bp	*03:03:01-03:03:13, 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, 03:85-03:86, 03:88, 03:96-03:97, 03:102, 15:12
78 ¹²	130 bp, 335 bp	800 bp	*02:02:01-02:02:03, 02:02:05-02:02:12, 02:02:14-02:20, 02:22-02:25Q, 02:27:01-02:38N, 02:40, 02:42-02:44, 02:46, 04:01:01-01-04:01:26, 04:03-04:15:02, 04:17-04:20, 04:23-04:41, 04:43-04:81, 05:26, 07:02:09, 07:125, 15:11, 15:36
79	390 bp	1070 bp	*05:01:01-01-05:01:15, 05:03-05:51Q, 08:10
80 ¹¹	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, 06:33-06:55, 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, 15:31-15:35, 15:37-15:39, 15:41-15:45
81 ^{8,11}	245 bp, 425 bp	800 bp	*07:01:01-07:33N, 07:35-07:160
82 ^{5,9,13}	115 bp, 165 bp, 265 bp, 390 bp	800 bp	*01:43, 07:101, 07:148, 08:01:01-08:44
83	340 bp	1070 bp	*01:14, 02:02:01-02:02:03, 02:02:05-02:11, 02:13-02:26:02, 02:28-02:40, 02:42-02:46, 03:07, 03:15,

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84^{5,11}	100 bp, 160 bp, 220 bp	800 bp	*01:04, 01:21, 05:42, 05:46, 07:101, 07:148, 08:05, 08:21, 12:02:01-12:03:01:02, 12:03:03-12:03:07, 12:03:09-12:03:14, 12:04:02-12:08, 12:10:01-12:13, 12:14:02-12:25, 12:27-12:32, 12:34-12:50, 16:15:02, 17:05
85^{5,12,13}	120 bp, 250 bp	800 bp	*01:21, 02:12, 04:01:01:01-04:01:26, 04:03-04:09N, 04:12-04:20, 04:23-04:35, 04:37-04:54, 04:56-04:81, 05:42, 05:46, 07:02:09, 07:125, 08:05, 08:21, 08:25, 12:02:01-12:03:03, 12:03:05-12:03:08, 12:03:10-12:03:14, 12:04:02, 12:06-12:08, 12:10:01-12:20, 12:22-12:32, 12:34-12:48, 12:50, 15:03, 15:16, 15:25, 16:01:01-16:02:05, 16:06-16:28, 16:30N-16:32, 17:01:04, B*67:02
86^{13,14}	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, 06:36-06:39, 06:41-06:55, 07:125, 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, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50, 14:16, 16:04:01, 16:29
87¹³	130 bp, 255 bp, 555 bp	1070 bp	*02:02:01 ^w , 02:02:02-02:02:03, 02:02:05-02:13, 02:15-02:26:02, 02:28-02:40, 02:42-02:46, 03:07, 03:10, 03:15, 03:29, 03:45, 03:58, 03:86, 03:94, 03:99, 04:03, 04:06, 04:16, 04:37, 04:80, 05:01:01:01-05:01:15, 05:03-05:19, 05:21-05:42, 05:44-05:51Q, 06:03, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 15:02:01-15:06:03, 15:08-15:13, 15:15-15:22, 15:24, 15:26-15:35, 15:37-15:42, 15:44-15:45, 16:02:01-16:02:05, 16:09, 16:12, 16:18-16:19, 16:25, 17:01:01:01-17:08
88^{12,13}	255 bp	1070 bp	*04:11, 04:29, 04:36, 04:55, 07:64, 14:02:01-14:11, 14:13-14:25
89^{5,10,11,13}	110 bp, 325 bp	1070 bp	*02:06, 03:81, 05:36, 07:123, 12:08, 12:15, 15:02:01-15:13, 15:15-15:24, 15:26-15:45, 16:20
90¹²	180 bp, 210 bp, 240 bp	1070 bp	*02:13, 02:18, 02:33, 04:01:01:01-04:01:22, 04:01:24-04:01:26, 04:03-04:10, 04:12-04:20, 04:23-04:32, 04:34-04:81, 05:17, 05:25, 05:42, 06:05, 06:31, 07:02:09, 07:31, 08:01:01-08:01:03, 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, 08:36N, 08:38, 08:40-08:42, 08:44, 12:14:01-12:14:02, 12:28, 14:10, 14:15, 15:12, 15:25, 16:01:01-16:02:05, 16:04:01, 16:06-16:32

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91	225 bp, 250 bp	800 bp	*04:58, 05:23, 08:07, 12:14:01-12:14:02, 14:17, 15:25, 17:01:01:01-17:08
92	215 bp, 425 bp	800 bp	*01:02:01-01:03, 01:06-01:08, 01:10-01:20, 01:23-01:34, 01:37N-01:45, 03:58, 03:86, 03:94, 03:99, 04:37, 05:16, 06:05-06:06, 06:17, 06:31, 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, 14:17-14:25, 16:04:01, 16:29, 18:01-18:04, 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, 03:85, 03:87-03:88, 03:90-03:93, 03:96, 03:98, 03:100-03:102, 04:01:01:01-04:01:15, 04:01:17-04:01:26, 04:03-04:20, 04:24-04:53, 04:55-04:71, 04:73-04:81, 05:01:01:01-05:01:15, 05:03, 05:05-05:21, 05:23-05:51Q, 06:09, 06:14, 06:35, 07:10, 07:28, 07:41, 07:43, 08:01:01-08:08, 08:10, 08:12-08:44, 12:31, 12:44, 15:02:01-15:13, 15:15-15:21, 15:23-15:36, 15:38-15:45, 17:01:01:01-17:08, 18:01-18:04
94^{12,13}	135 bp	1070 bp	*03:02:01-03:17, 03:19-03:38:02, 03:40-03:66, 03:67 ^w , 03:68-03:98, 03:100-03:102, 04:32, 04:77, 06:03, 07:96, 14:25, 15:43, 18:03
95	160 bp, 235 bp	1070 bp	*04:42, 06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:04-06:55, 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, 07:97-07:138, 07:140-07:151, 07:153-07:155, 07:157-07:160, 12:16, 16:01:01-16:02:05, 16:06-16:28, 16:30N-16:32, 18:01-18:04, A*24:106, B*46:25
96¹⁵	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 to 82, 84 to 86, 91 and 92 contain the primer pair

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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.

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, primer mix 92 will amplify the B*14:03 allele and primer mix 95 will amplify the A*24:106 and B*46:25 alleles.

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 74 will for most C*02 alleles give rise to two specific PCR fragments.

⁷Primer mix 76 will for most C*03 alleles give rise to two specific PCR fragments.

⁸Primer mix 81 will for most C*07 alleles give rise to two specific PCR fragments.

⁹Primer mix 82 will for most C*08 alleles give rise to multiple specific PCR fragments.

¹⁰Primer mix 89 will for most C*15 alleles give rise to two specific PCR fragments.

¹¹Primer mixes 80, 81, 84 and 89 may give rise to unspecific amplification.

¹²Primer mixes 74, 78, 85, 88, 90 and 94 have a tendency of giving rise to primer oligomer artifacts.

¹³Primer mixes 73, 75, 82, 85 to 89 and 94 may yield less HLA-specific PCR fragments than the other HLA-C low resolution primer mixes.

¹⁴Primer mix 86 might faintly amplify most C*01 and the C*14 alleles.

¹⁵Primer 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.

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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.		120	210	205	190	160	135	175	165	75	85	80	185	175	100	90	240	140	200	160	220	240	85	75	360	
PCR product(s)		225 140	415 365 255	235		535	210 175	200	200			500 175		225	240 200	205 135	395 370	180		200	200 160	245 220	375 240	240	160 75	360
Length of int.		800	800	1070	800	800	800	1070	800	800	1070	1070	800	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070	
pos. control ¹																										
5'-primer(s) ²		98	48	363	98	144	176	98	98	266	257	301	103	98	98	203	41	180	98	180	78	28	78	176	341	
		103	78		413	317	368	368	102	266	259	302	423	423	238	362	355	203			106	261	527	261		
		5' -CTT 3'	5' -gCT 3'	5' -ATA 3'	5' -CTA 3'	5' -gCT 3'	5' -gCA 3'	5' -CTC 3'	5' -CTA 3'	5' -ACg 3'	5' -Cgg 3'	5' -Cgg 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' -ggC 3'	
		123	106						413		261	385			355	363		418			106	261	527	261		
		5' -AgT 3'	5' -CCA 3'						5' -CCg 3'		5' -AAC 3'	5' -ggC 3'			5' -CCg 3'	5' -ATA 3'		5' -AgC 3'			5' -CCT 3'			5' -ggA 3'		
		363																						355		
		5' -ATA 3'																					5' -CCC 3'			
3'-primer(s) ³		203	240	527	256	265	270	259	259	302	299	341	257	282	257	299	411	243	290	256	299	265	97	265	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' -gCA 3'	5' -TCA 3'	5' -TCA 3'	5' -CAA 3'	5' -CAA 3'	5' -CCC 3'	5' -CCA 3'	5' -CCC 3'	5' -ggT 3'	5' -CCC 3'	5' -gTC 3'	
		545	292	527	559	570	502	502	538			521	559	282	299	411	243	317	256	299	282	355	282	292		
		5' -AgA 3'	5' -gTg 3'	5' -CCT 3'	5' -CCg 3'	5' -CCg 3'	5' -CTg 3'	5' -CTT 3'	5' -CCA 3'			5' -ggg 3'	5' -CTC 3'	5' -gAC 3'	5' -TCg 3'	5' -TCA 3'	5' -TCA 3'	5' -ggA 3'	5' -CTC 3'	5' -CCA 3'	5' -gAC 3'	5' -gAC 3'	5' -gAC 3'	5' -gTT 3'		
				555			538	539					559	559	418	526	265	555	259	341	282		282	299		
			5' -gCA 3'				5' -CAG 3'	5' -TCT 3'					5' -CgT 3'	5' -CCg 3'	5' -gTC 3'	5' -CCA 3'	5' -CCC 3'	5' -CCA 3'	5' -gTT 3'	5' -CgT 3'	5' -gAC 3'		5' -gAC 3'	5' -TCT 3'		
		555													555		555				502		570	555		
		5' -CCA 3'													5' -CCA 3'		5' -CCA 3'				5' -CTT 3'		5' -CAC 3'	5' -CCA 3'		
																					506					
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HLA-A allele ⁴	ser ⁵																								
*01:01:01:01:01:01:22, 01:01:24-01:04N, 01:06- 01:07, 01:09-01:11N, 01:16N-01:18N, 01:20, 01:22N-01:27N, 01:29, 01:31N-01:33, 01:01:38L, 01:35-01:50, 01:52N- 01:78, 01:80-01:81	A1, Null, –	1			4																				
*01:01:23, 01:08, 01:14- 01:15N, 01:30, 01:79	A1, Null, –	1																							
*01:12, 01:19	A1, –	1		3																					
*01:13	A1	1			4							11		13		15									
*01:21	A1	1		3	4																				
*01:28	–	1			4							11				15									
*01:51	–	1			4				8		10														
*02:01:01:01:02:01:15, 02:01:17-02:01:19, 02:01:21-02:16, 02:18- 02:22:02, 02:24:01-02:33, 02:36-02:45, 02:47, 02:49- 02:54, 02:57-02:61, 02:63- 02:69, 02:71-02:77, 02:79:01-02:97:02, 02:99, 02:101:01-02:102, 02:104- 02:128, 02:130-02:134, 02:136-02:145, 02:147- 02:168, 02:170-02:236, 02:238-02:242, 02:244- 02:282	A2, A19, A203, A210, Null, –				2																				
*02:17:01-02:17:02	A2		2					w																	
*02:34-02:35:01, 02:35:03, 02:56:01- 02:56:02, 02:62, 02:103	A2		2											13						20		22			
*02:35:02	A2													13						20		22			
*02:46, 02:70	A2		2																	20		22			
*02:48, 02:129	A2, –																			20		22			
*02:55	A2, A28		2						8													21		23	
*02:78	–		w		4															20		22			
*02:135	–		2											13											24
*02:146	–		2									10													
*02:169	–		2		4																				
*02:237	–		2												14		16								
*02:243	–		2																18			21			
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HLA-A allele ⁴	ser ⁵																								
*03:01:01:01-03:01:18, 03:01:20-03:01:22, 03:02- 03:07, 03:09-03:11N, 03:13-03:17, 03:19- 03:23:01, 03:25-03:29, 03:31, 03:33-03:35, 03:37- 03:40, 03:42, 03:44-03:49, 03:51-03:56, 03:58, 03:60- 03:62, 03:64-03:71, 03:73- 03:74, 03:76-03:81, 03:83- 03:87, 03:90-03:94, 03:96- 03:106, 03:109-03:110, 03:112	A3, Null, –			3										13											
*03:01:19	–			3									12	13											24
*03:01:23, 03:08, 03:32, 03:36N, 03:57, 03:59, 03:72, 03:89, 03:107- 03:108, 03:111	A3, Null, –			3																					
*03:12	A3			3	4																				
*03:18	–	1			4									13											
*03:24, 03:50	A3, –			3					8					13											
*03:30	A3			3		5								13											
*03:41	–			3																				23	
*03:43, 03:82	–			3										13		15		17							
*03:63	–			3								11		13										23	
*03:75	–													13										23	
*03:88	–			3	4							11												23	
*03:95	–													13	14		16								
*11:01:01-11:09, 11:12- 11:24:02, 11:26-11:27, 11:29-11:59, 11:61-11:80	A11, Null, –				4							11													
*11:10	A11			4				8				11													
*11:11	–			4								11	12												
*11:25, 11:60	A11, –			3	4							11													
*23:01:01-23:13, 23:15- 23:31	A23, Null, –					5	6																		
*23:14, 24:05, 24:13:02, 24:24 ⁷	A23, A9, A24					5	6	7																	
*24:02:01:01-24:04, 24:06- 24:11N, 24:13:01, 24:17, 24:20-24:23, 24:25-24:43, 24:45N-24:50, 24:54- 24:56, 24:58-24:63, 24:66- 24:81, 24:83N-24:88, 24:90N-24:91, 24:93, 24:95-24:113, 24:115- 24:128, 24:130-24:137, 24:139-24:155N	A24, A9, A2403, Null, –					5		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
HLA-A allele ⁴	ser ⁵																								
*24:14-24:15, 24:51-24:53, 24:57, 24:64, 24:94, 24:114, 24:138	A24, –					5																			
*24:18	A24, A3					5		7																23	
*24:19, 24:44	A9					5		7				11													
*24:82	–					5		7													21				
*24:89, 24:129	–							7																	
*24:92	–			3		5																			
*25:01:01-25:04, 25:07-25:12N	A25, Null, –							8		9				13											
*25:05	A25							8		9				13						20					
*25:06	A25							8		9			12												
*25:13	–							8		9				13											24
*26:01:01-26:01:18, 26:08, 26:10-26:15, 26:17-26:18, 26:20, 26:23-26:29, 26:31-26:33, 26:35-26:43:02, 26:45-26:53, 26:55-26:56	A26, A10, Null, –							8		10				13											
*26:02	A26							8		10				w											
*26:03:01-26:03:02, 26:06, 26:21	A26, –							8				11		13										23	
*26:04, 26:34	A26							8		10															
*26:05	A26							8						13										23	
*26:07:01-26:07:02	A26									10				13											
*26:09	A26							8		10		12													
*26:16	A26							7		10				13											
*26:19	–			4										13	14										
*26:22	A26							8		10				13	14					21					
*26:30	A26							8						13									23	24	
*26:54	–							8		10				13						20					
*29:01:01:01-29:06, 29:08N-29:12, 29:15-29:18, 29:20-29:27	A29, Null, –													14											
*29:07	A29					6								14											
*29:13	–													14			17								
*29:14	–													14		16									
*29:19	–													14				19							
*30:01:01-30:04:02, 30:06-30:07, 30:09-30:20, 30:22-30:46	A30, Null, –														15										
*30:08	A30				4										15										
*31:01:02-31:02, 31:05-31:07, 31:09-31:28, 31:30-31:34, 31:36-31:46	A31, Null, –															16									
*31:03	A31											11	12		14		16								
*31:04	A31												12		14		16							24	
*31:08	A31, A24					5											16								
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																								
*31:29	–					6											16								
*31:35	–															15	16	17							
*32:01:01-32:02, 32:06-32:12, 32:14, 32:16-32:30	A32, Null, –									9								17							
*32:03	A32																	17							
*32:04	A32, A3			3						9															
*32:05	A32					5											16	17							
*32:13	A32					5				9								17							
*32:15	A32								8	9								17							
*33:01:01-33:01:05, 33:03:01-33:12, 33:14-33:18, 33:20-33:21, 33:23, 33:25-33:34	A33, –																	18							
*33:13	–									10					14			18							
*33:19	–						7											18							
*33:22	–																	18		21					
*33:24	–																	18					23		
*34:01:01-34:01:02, 34:05-34:06	A34, A10								8			11	12												
*34:02:01-34:03, 34:07	A34			3					8			11	12												
*34:04	A34			3					8			11	12		14										
*34:08	A34			3					8			11	12	13											
*34:09	–			3					8				12											24	
*36:01, 36:03, 36:05	A36, –	1																				22			
*36:02	A36	1		3																		22	23		
*36:04	A36	1			4																	22			
*43:01	A43												12	13											
*66:01, 66:04-66:08, 66:10-66:11, 66:13-66:15	A66, A26, –								8			11		13											
*66:02-66:03	A66, A10								8				12											24	
*66:09	–								8			11		13	14						21				
*66:12	–								8					13										24	
*68:01:01:01-68:04, 68:06-68:14, 68:16-68:19, 68:21:01-68:28, 68:30-68:44, 68:46-68:65	A68, A28, Null, –								8											20					
*68:05, 68:15, 68:20	A68								8											20			23		
*68:29	A68								8									18		20	21				
*68:45	–							7	8											20					
*68:66	–				4				8											20					
*69:01	A69								8													21			
*74:01-74:06, 74:08-74:12N, 74:14N	A74, Null, –																		19						
*74:07	A74																	17		19					
*74:13	–													13					19						
*80:01	A80						6																23		
*80:02	–						6					11													
B*18:27							6																		
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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Lot-specific information

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

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

In addition, wells number 2, 4, 5, 6, 8, 9, 12 and 19 to 23 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

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

⁴The sequence of the A*0105N has been shown to be identical to A*01:04N.

The A*01:34N allele has been renamed A*01:01:38L.

The A*020116 allele has been renamed to A*02:134.

The A*020120 allele has been shown to be identical to A*02:01:18.

The sequence of the A*0223 allele has been shown to be identical to A*02:22:01.

The sequence of the A*0298 allele has been shown to be identical to A*02:96.

The A*02:100 allele has never been assigned.

The A*1128 allele has been renamed to A*11:15:02.

The sequence of the A*2401 allele has been shown to be in error.

The sequence of the A*2412 allele has been shown to be identical to A*24:08.

The A*2416 allele has been renamed to A*31:08.

The A*2465 allele has been renamed to A*24:13:02.

The A*26:44 allele has been renamed to A*26:43:02.

The sequence of the A*3005 allele has been shown to be identical to A*30:04.

The A*3021 allele has been renamed to A*30:11:02.

The sequence of the A*31011 allele has been shown to be identical to A*31:01:02.

The sequence of the A*3302 allele has been shown to be identical to A*33:03:01.

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

⁶The primer pairs in wells 1, 2, 11 and 15 will in many samples give rise to two or three HLA-specific PCR fragments.

⁷The A*23:14, 24:05, 24:13:02 and 24:24 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

'w', may be weakly amplified.

INTERPRETATION TABLE																																																
HLA-B low resolution SSP																																																
Amplification patterns of the B*07:02 to B*83:01 alleles																																																
		Well																																														
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																							
Length of spec.		110	215											195	105			150	80	150	135	60	210	170	110	395	160																					
PCR product(s)				235 140	265 130	235 185		290	330 220 165	390 190 165		180		195 105	435 395 105	150 115				400 245						425 160																						
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	1070	800	1070	1070	1070	1070																						
5'-primer(s) ²		527	97	209	103	103	103	45	45	45	420	206	419	142	45	161	167	355	206	45	142	409	246	44	44																							
		5'-TgA ^{3'}	5'-TCg ^{3'}	5'-ggC ^{3'}	5'-CCg ^{3'}	5'-CCT ^{3'}	5'-CCg ^{3'}	5'-ggA ^{3'}	5'-ggA ^{3'}	5'-ggA ^{3'}	5'-TTA ^{3'}	5'-AgA ^{3'}	5'-gTC ^{3'}	5'-TCT ^{3'}	5'-ggA ^{3'}	5'-Cgg ^{3'}	5'-gCT ^{3'}	5'-TCA ^{3'}	5'-gAC ^{3'}	5'-ggA ^{3'}	5'-TCT ^{3'}	5'-ggC ^{3'}	5'-gAA ^{3'}	5'-ggC ^{3'}	5'-ggC ^{3'}																							
		540		363	103	103	418		357	435		420		419	540					368	368	420			357																							
				363	361	363			412											557																												
				5'-AgC ^{3'}	5'-AgT ^{3'}	5'-AAAT ^{3'}			5'-ATA ^{3'}											5'-ggA ^{3'}																												
3'-primer(s) ³		605	272	309	193	246	246	165	206	266	559	272	3rd	301	272	234	204	463	302	259	311	544	317	272	302																							
		5'-gCT ^{3'}	5'-Tgg ^{3'}	5'-gTg ^{3'}	5'-Cgt ^{3'}	5'-TAT ^{3'}	5'-TAT ^{3'}	5'-Tgg ^{3'}	5'-CCT ^{3'}	5'-TCC ^{3'}	5'-CTC ^{3'}	5'-Tgg ^{3'}	5'-TAT ^{3'}	5'-gTC ^{3'}	5'-Tgc ^{3'}	5'-TCT ^{3'}	5'-TCT ^{3'}	5'-gCT ^{3'}	5'-ggC ^{3'}	5'-gTT ^{3'}	5'-ggg ^{3'}	5'-ggT ^{3'}	5'-gga ^{3'}	5'-Tgc ^{3'}	5'-ggC ^{3'}																							
			272	559	193	246	572		538	559		572		301	309	272				259	311				302																							
		5'-TgA ^{3'}	5'-CAG ^{3'}	5'-Cgt ^{3'}	5'-gTg ^{3'}	5'-TAT ^{3'}	5'-gCC ^{3'}		5'-gTC ^{3'}	5'-CAG ^{3'}		5'-gCg ^{3'}		5'-gTC ^{3'}	5'-ATC ^{3'}	5'-TgA ^{3'}				266	538																											
				583	559					583				570	605	272				572	538				477																							
				5'-gTg ^{3'}	5'-CTC ^{3'}					5'-gTg ^{3'}				5'-CCg ^{3'}	5'-gCT ^{3'}	5'-Tgg ^{3'}				5'-TCC ^{3'}	5'-gTC ^{3'}				5'-gCg ^{3'}																							
														572						272																												
														5'-gCg ^{3'}						5'-Tgg ^{3'}																												
																				292																												
																				5'-gTA ^{3'}																												
																				572																												
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																							

[illegible]

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Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
HLA-B allele ⁴	ser. ⁵																								
*07:02:01-07:02:20, 07:05:01-07:06, 07:10, 07:12-07:15, 07:18:01- 07:18:02, 07:21-07:23, 07:26, 07:29-07:31, 07:34- 07:35, 07:39, 07:41- 07:46, 07:49N, 07:52, 07:55-07:59, 07:61-07:64, 07:66-07:68:02, 07:70- 07:72, 07:74-07:76, 07:79- 07:80, 07:82-07:83, 07:86- 07:99, 07:101-07:117	B7, B42, Null, –	25																							48
*07:03, 07:08, 07:16, 07:32, 07:37	B703, B7, –	25																							48
*07:04, 07:25	B7	25													38										48
*07:07, 07:77	B7, –	25																							48
*07:09, 07:11, 07:17	B7	25											36												48
*07:19, 07:33, 07:40, 07:53	B7, 42																								48
*07:20, 07:24	B7, –	25		27																					48
*07:27	–	25										35							44						
*07:28	B7	25				30																			48
*07:36, 07:81	B7, –	25																							
*07:38	–	25																							
*07:47	B7	25																							48
*07:48, 07:51	B7																								48
*07:50	–	25										35													48
*07:54	B7	25																							48
*07:60	–			27																					48
*07:65	–	25																	42						
*07:69, 07:85	–	25																						47	48
*07:73	–	25															40								48
*07:78	–	25										34													48
*07:84	–	25																							48
*07:100	–			27																					48
*08:01:01-08:01:13, 08:05, 08:08N, 08:10- 08:11, 08:15, 08:18- 08:19N, 08:22-08:24, 08:27, 08:29-08:31, 08:33- 08:34, 08:39, 08:41- 08:48, 08:51, 08:53, 08:56- 08:59, 08:61, 08:63- 08:64, 08:66	B8, Null, –		26						32																48
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.		
																								ser. ⁵	HLA-B allele ⁴		
			52																			71	72	B7, B42, Null, –	*07:02:01-07:02:20, 07:05:01-07:06, 07:10, 07:12-07:15, 07:18:01- 07:18:02, 07:21-07:23, 07:26, 07:29-07:31, 07:34 07:35, 07:39, 07:41- 07:46, 07:49N, 07:52, 07:55-07:59, 07:61-07:64, 07:66-07:68:02, 07:70- 07:72, 07:74-07:76, 07:79 07:80, 07:82-07:83, 07:86 07:99, 07:101-07:117		
																						71	72	B703, B7, –	*07:03, 07:08, 07:16, 07:32, 07:37		
		51	52																				71	72	B7	*07:04, 07:25	
			52																				71		B7, –	*07:07, 07:77	
			52																				71	72	B7	*07:09, 07:11, 07:17	
			52																				71		B7, 42	*07:19, 07:33, 07:40, 07:53	
			52																				71	72	B7, –	*07:20, 07:24	
																				70		72	–		*07:27		
			52																				71	72	B7	*07:28	
			52																	70		72	B7, –		*07:36, 07:81		
																				70		72	–		*07:38		
			w																				71	72	B7	*07:47	
			52																				71	72	B7	*07:48, 07:51	
																							71	72	–	*07:50	
			52										62											71	72	B7	*07:54
			52																				71		–	*07:60	
			52				56							64					w				71	72	–	*07:65	
																								71	72	–	*07:69, 07:85
			52																				71	72	–	*07:73	
			52							59														71		–	*07:78
			52							59														71		–	*07:84
			52																	69			71		–	*07:100	
			51																				71	72	B8, Null, –	*08:01:01-08:01:13, 08:05, 08:08N, 08:10- 08:11, 08:15, 08:18- 08:19N, 08:22-08:24, 08:27, 08:29-08:31, 08:33 08:34, 08:39, 08:41- 08:48, 08:51, 08:53, 08:56 08:59, 08:61, 08:63- 08:64, 08:66	
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
HLA-B allele ⁴	ser. ⁵																								
*08:02-08:03, 08:52	B8, –	26							32																
*08:04	B8, –	26							32		35														48
*08:07, 08:14	B8	26																							48
*08:09	B8	26							32																48
*08:12:01-08:12:03, 08:16	B8	26							32																48
*08:13, 08:20, 08:40	B8, –	26																							48
*08:17, 08:54	–, –	26							32		35														48
*08:21	B8	26	27						32																48
*08:25	B8	26	27																						48
*08:26, 08:50, 08:62, 42:07 ⁶	B8, –								32																48
*08:28, 08:37	B8, –	26										36													48
*08:32	B8	26							32									42							48
*08:35	–	26							32		36														48
*08:36	–	26							32																
*08:38	–	26							32																48
*08:49	–	26																41		44					48
*08:55	–	26																			45				48
*08:60	–	26							32																48
*08:65	–								32														47	48	
*13:01:01-13:01:05, 13:17, 13:20, 13:22:01-13:23, 13:25, 13:28-13:29	B13, –		27	28						34								41							
*13:02:01-13:02:09, 13:08Q, 13:15, 13:18-13:19, 13:27, 13:30, 13:32-13:34, 13:37-13:38, 13:40	B13, –		27	28						34															
*13:03	B49, B15		27	28																					
*13:04, 13:10	B49, B15, B13		27	28							36														
*13:06	B13		27	28														41							
*13:07N	Null		27	28						34								41							
*13:09	–		28							34															
*13:11	B13		27	28						34															
*13:12-13:13	B13		27	28														41							
*13:14	B13		27							34															
*13:16	B13		27	28						34															
*13:21, 13:35	–		27	28																					
*13:26	–		27	28							36							41							
*13:31	–		27	28						34															
*13:36	–		27	28						34								41							
*13:39	–		28							34								41							
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.			
																								ser. ⁵	HLA-B allele ⁴			
		51																			70	72	B8, –	*08:02-08:03, 08:52				
		51																				71	72	B8, –	*08:04			
		51																				71	72	B8	*08:07, 08:14			
		51			54																	71		B8	*08:09			
		51																				71		B8	*08:12:01-08:12:03, 08:16			
																						71	72	B8, –	*08:13, 08:20, 08:40			
		51											62										71	72	–, –	*08:17, 08:54		
		51																					71	72	B8	*08:21		
																							71	72	B8	*08:25		
		51																					71	72	B8, –	*08:26, 08:50, 08:62, 42:07 ⁶		
		51																					71	72	B8, –	*08:28, 08:37		
		51																	68				71	72	B8	*08:32		
		51																					71	72	–	*08:35		
		51																					71	72	–	*08:36		
		51											62											71	72	–	*08:38	
		51			53																			71	72	–	*08:49	
																								71	72	–	*08:55	
		51			53																			71	72	–	*08:60	
		51																						71	72	–	*08:65	
													62									70		B13, –	*13:01:01-13:01:05, 13:17, 13:20, 13:22:01-13:23, 13:25, 13:28-13:29			
													62									70		B13, –	*13:02:01-13:02:09, 13:08Q, 13:15, 13:18-13:19, 13:27, 13:30, 13:32-13:34, 13:37-13:38, 13:40			
													62			65						70		B49, B15	*13:03			
													62									70		B49, B15, B13	*13:04, 13:10			
													62		64							70		B13	*13:06			
																						70		Null	*13:07N			
													62										71		–	*13:09		
													62						67			70		B13	*13:11			
													62									70		B13	*13:12-13:13			
													62									70		B13	*13:14			
										59			62									70		B13	*13:16			
													62									70		–	*13:21, 13:35			
													62									70		–	*13:26			
										w			62								69	70		–	*13:31			
								57														70		–	*13:36			
													62										71		–	*13:39		
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
HLA-B allele ⁴	ser. ⁵																								
*14:01:01-14:01:02, 14:07N, 14:12, 14:14, 14:19	B64, Null, –				28	29																		47	48
*14:02:01-14:02:02, 14:02:04, 14:03-14:04, 14:09, 14:11, 14:15-14:18	B65, B14, –				28		30																	47	48
*14:02:03, 14:02:06	B65, –				28																			47	48
*14:02:05	B65				28		30																	47	
*14:05-14:06:02, 14:13	B14, –						30																	47	48
*14:08, 39:25N, 39:30, 39:32-39:34, 39:47, 39:50 ⁷	B39, B16, Null, –					29																		47	48
*14:10	–					29												41						47	48
*15:01:01:01-15:01:01:02N, 15:01:03, 15:01:06-15:01:16, 15:01:18, 15:01:20, 15:26N-15:27:03, 15:32, 15:34-15:35, 15:38:01-15:38:02, 15:50, 15:56, 15:60, 15:70-15:71, 15:75, 15:79N, 15:81-15:82, 15:92, 15:94N, 15:96-15:97, 15:102, 15:104-15:105, 15:109-15:111N, 15:113, 15:117-15:118, 15:122, 15:125, 15:128-15:129, 15:135, 15:140, 15:145-15:147, 15:152, 15:159-15:160, 15:163-15:164, 15:166-15:167, 15:169, 15:171-15:172, 15:174-15:175, 15:178, 15:181N-15:184, 15:187, 15:190N, 15:192-15:193, 15:201, 15:203, 15:206	B62, Null, –							31				36								43					
*15:01:02	B62							31		33			36							43					
*15:01:04	B62												36							43					
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.	
																								ser. ⁵	HLA-B allele ⁴	
																						71		B64, Null, –	*14:01:01-14:01:02, 14:07N, 14:12, 14:14, 14:19	
																						71		B65, B14, –	*14:02:01-14:02:02, 14:02:04, 14:03-14:04, 14:09, 14:11, 14:15-14:18	
																						71		B65, –	*14:02:03, 14:02:06	
																						71		B65	*14:02:05	
																						71		B14, –	*14:05-14:06:02, 14:13	
																						71		B39, B16, Null, –	*14:08, 39:25N, 39:30, 39:32-39:34, 39:47, 39:50 ⁷	
						55																71		–	*14:10	
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*35:35	B35												36					41	42			45			
*35:38	B35																	41	42						
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*37:08	B37													37				41			44				
*37:09	B37													37							44				
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*37:12	B37								32					37							44				
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*38:03	B38					29						35										45	46		
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*38:05	B38						30															45	46	47	
*38:06	B38																					45			
*38:07	B38					29																45			
*38:10	B38					29																	46	47	
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*38:20	–					29												41				45	46	47	
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				53		55						62								70				B37, – *37:04:01-37:04:02
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HLA-B allele ⁴	ser. ⁵																									
*39:18	B39					29																45		47	48	
*39:19:01	B39																		42				45		47	48
*39:19:02	B39					29													42				45		47	48
*39:22	B39					29																	45		47	48
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																								ser. ⁵	HLA-B allele ⁴
																				69	71			B39	*39:18
																			68		71			B39	*39:19:01
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*40:10:01-40:10:02, 40:22N, 40:33, 40:36, 40:42-40:43, 40:49, 40:54- 40:55, 40:61-40:63, 40:65, 40:67, 40:81, 40:84, 40:87:01-40:88, 40:92, 40:100-40:102, 40:108, 40:112-40:114, 40:116, 40:118N, 40:123, 40:124:02-40:126, 40:128, 40:130, 40:134, 40:141, 40:151, 40:154, 40:156	B60, Null, –				28																				?
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49	?											62										70		B40	*40:47
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*40:83	–																								48
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*40:105	–											36													?
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*40:117	–				28																				
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*40:135	–				28																				
*40:136	–	25			28				32							38									?
*40:137	–																								?
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*42:13	–								32																48
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																								ser. ⁵	HLA-B allele ⁴
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49	?			53								61	62									71		–	*40:132
49	?											61	62									71		–	*40:135
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*44:10	B44				28							35						41							
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											60					65			68		70			–	*51:15
					54					59	60								68		70			B51	*51:24:02
					54					59	60								68		70			B51, –	*51:24:03-51:24:04
					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
					54						60								68		70			–	*51:64
					54					59	60								68		70			–	*51:68
					54						60								68		70			–	*51:81
										59	60								68		70			–	*51:93
					54					59	60								68		70			–	*51:97
					54					59	60								68		70			–	*51:101
					54					59	60										70			–	*51:104
					54					59	60					65			68		70			–	*51:106
										59	60		62								70			B52, –	*52:01:01:01, 52:01:03, 52:01:06, 52:04-52:05, 52:07-52:08, 52:10-52:13, 52:15, 52:17-52:18, 52:22
					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
					54					59	60		62								69	70		–	*52:21
											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, 53:23-53:24
						55					60									68		70		B53	*53:02
																				68		70		B53, B35	*53:03, 53:09, 53:11-53:13
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
HLA-B allele ⁴	ser. ⁵																								
*53:04, 53:07, 53:19	B53, –																	41							
*53:06	B53, B51												36					41							
*53:14	–			27									36												
*53:15	–												36					41							
*53:17:01	–												36					41							
*53:22	–												36	37				41							
*54:01:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:13, 54:16-54:19, 54:21- 54:23	B54, Null, –																								
*54:03	B22																								
*54:04, 54:15	B54, –																								
*54:06	–												36												
*54:09, 54:14	–												36												
*54:11	B54																							48	
*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, 55:44-55:45	B55, –																								
*55:02:01-55:02:06, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:35, 55:37, 55:39, 55:41-55:43, 55:47- 55:48	B55, B54, –																								
*55:04, 55:08, 55:13, 55:27, 55:46, 56:15, 56:19N, 56:22 ¹⁰	B55, B56, Null, –																								
*55:09, 55:24	B22, B55											34													
*55:14	–												36					41							
*55:17, 55:28	B55, –																								
*55:18	–											35													
*55:20	B22								32																
*55:21	B55																								
*55:22	B22											34													
*55:23, 55:32, 56:18 ¹¹	B55, –												36												
*55:34	–																								
*55:40	–																								
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.	
																								ser. ⁵	HLA-B allele ⁴	
										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				–	*53:17:01	
				53						60								68		70				–	*53:22	
			52				56						63	64								71			*54:01:01-54:02, 54:05N, B54, Null, –	54:07-54:08N, 54:10, 54:13, 54:16-54:19, 54:21, 54:23
			52				56						63			65						71			B22	*54:03
			52				56						63									71			B54, –	*54:04, 54:15
			52				56						63							69		71			–	*54:06
			52				56						63									71			–	*54:09, 54:14
			52				56						63									71			B54	*54:11
			52				56		58				63	64							70				–	*54:12
			52				56			59			63	64								71			–	*54:20
			52				56			59				64								71			B55, –	*55:01:01-55:01:06, 55:03, 55:05, 55:11, 55:15, 55:25, 55:29, 55:31, 55:33, 55:36, 55:38, 55:44-55:45
			52				56							64								71			B55, B54, –	*55:02:01-55:02:06, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:35, 55:37, 55:39, 55:41-55:43, 55:47, 55:48
			52				56															71			B55, B56, Null, –	*55:04, 55:08, 55:13, 55:27, 55:46, 56:15, 56:19N, 56:22 ¹⁰
			52				56			59												71			B22, B55	*55:09, 55:24
			52				56										66					71			–	*55:14
			52				56			59												71			B55, –	*55:17, 55:28
													62		64							71			–	*55:18
			51	52		54	56															71			B22	*55:20
			52				56			w				64						69		71			B55	*55:21
			52				56															71			B22	*55:22
			52				56															71			B55, –	*55:23, 55:32, 56:18 ¹¹
			52				56						62		64							71			–	*55:34
			52				56			59			62		64							71			–	*55:40
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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HLA-B allele ⁴	ser. ⁵																								
*56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26-56:30	B56, Null, –																								
*56:02, 56:04	B56																								
*56:03	B22, 15												36												
*56:05:01	B56									33															
*56:05:02	B56									33															
*56:06	B78									33									42						
*56:07	B56																								
*56:09	B56												36					41							
*56:10	B55																								
*56:11-56:12	B56, B22																	41							
*56:13	B56								32																
*56:17	B56																								
*56:21	–									33															
*56:23	–																								
*56:25	–																								
*57:01:01-57:01:04, 57:01:06-57:01:10, 57:06, 57:08, 57:10, 57:15- 57:16, 57:18-57:20, 57:22- 57:23, 57:25-57:27, 57:29- 57:30, 57:33-57:37	B57, –												36					41							
*57:01:05, 57:11, 57:13, 57:21, 57:31	B57, –												36												
*57:02:01-57:03:02, 57:05, 57:17, 57:28N, 57:32	B57, Null, –																	41							
*57:04	B57						30											41							
*57:07	B57																	41							
*57:09	B57								32									41							
*57:12	B57																	41							
*57:14	–												36					41							
*57:24	–												36					41							
*58:01:01-58:01:02, 58:01:04-58:01:08, 58:04- 58:05, 58:10N-58:15, 58:19, 58:21-58:24, 58:29- 58:31N	B58, Null, –												36					41							
*58:01:03, 58:02, 58:06, 58:16, 58:25-58:26	B58, –												36												
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.
																								ser. ⁵
																								HLA-B allele ⁴
			52				56									65						71		B56, Null, – *56:01:01-56:01:04, 56:08, 56:14, 56:16, 56:20, 56:24, 56:26-56:30
			52				56									65	67					71		B56 *56:02, 56:04
			52				56													69		71		B22, 15 *56:03
			52				56			59				64								71		B56 *56:05:01
			52				56			59												71		B56 *56:05:02
			52				56			59				64					w			71		B78 *56:06
			52				56									65					70			B56 *56:07
			52				56															71		B56 *56:09
			52				56							64			67					71		B55 *56:10
			52				56															71		B56, B22 *56:11-56:12
			52		54		56									65						71		B56 *56:13
																65						71		B56 *56:17
			52				56			58	59										70			– *56:21
														64								71		– *56:23
			52				56			59						65						71		– *56:25
											60						66					70		B57, – *57:01:01-57:01:04, 57:01:06-57:01:10, 57:06, 57:08, 57:10, 57:15-57:16, 57:18-57:20, 57:22, 57:23, 57:25-57:27, 57:29, 57:30, 57:33-57:37
											60						66					70		B57, – *57:01:05, 57:11, 57:13, 57:21, 57:31
											60						66					70		B57, Null, – *57:02:01-57:03:02, 57:05, 57:17, 57:28N, 57:32
											60						66					70		B57 *57:04
				53							60						66					70		B57 *57:07
				53							60						66					70		B57 *57:09
																	66					71		B57 *57:12
							55				60						66					70		– *57:14
				53							60						66					70		– *57:24
											60							67				70		B58, Null, – *58:01:01-58:01:02, 58:01:04-58:01:08, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24, 58:29, 58:31N
											60							67				70		B58, – *58:01:03, 58:02, 58:06, 58:16, 58:25-58:26
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
HLA-B allele ⁴	ser. ⁵																								
*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							
*59:01:01:01, 59:05	B59, –																								
*59:02-59:03	B59, –																								
*59:04	–																								
*67:01:01, 67:03	B67, –					29																45			48
*67:01:02-67:02	B67, –																					45			48
*73:01-73:02	B73, –																								48
*78:01, 78:02:02-78:03, 78:07	B78, –									33								42							
*78:02:01, 78:04	B78, B35									33								42							
*78:05	–									33								42							
*78:06	–									33															
*81:01	B81																								
*81:02	B81																								48
*81:03-81:05	Null, –																								
*82:01-82:03	B82, –								32			35						43							
*83:01	–																	41							
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																								
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
A*23:31, A*24:106, C*16:10						30																			
A*68:56, C*06:20, C*12:50																									
C*01:30	–			28																					
C*02:06																									
C*02:23, C*04:77		25																							
C*03:05, 03:25, 03:27			27																						
C*03:12, 03:19																									
C*03:102																		41							
C*07:46									32																
C*15:02:04																									
C*15:25																									
C*15:39																									
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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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.
																								ser. ⁵	HLA-B allele ⁴
										60								67		70				B58	*58:07
					54					59	60							67		70				B17, B5	*58:08
						55					60							67		70				B17	*58:09
																		67		70				Null	*58:17N
											60							67		70				–	*58:18
											60							67		70				–	*58:20
											60							67		70				–	*58:27
											60							67		70				–	*58:28
									58					64						70				B59, –	*59:01:01:01, 59:05
									58											70				B59, –	*59:02-59:03
									58							65				70				–	*59:04
			52																		71			B67, –	*67:01:01, 67:03
			52																		71			B67, –	*67:01:02-67:02
			52																	69	71			B73, –	*73:01-73:02
										59				64				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, –	*81:03-81:05
			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
																									Well No.
																									A*23:31, A*24:106, C*16:10
																				69					A*68:56, C*06:20, C*12:50
																								–	C*01:30
																		w							C*02:06
																									C*02:23, C*04:77
																									C*03:05, 03:25, 03:27
																	65								C*03:12, 03:19
																	65								C*03:102
																									C*07:46
															64										C*15:02:04
				53																					C*15:25
						55																			C*15:39
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.

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

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

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

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*0701 allele has been shown to be in error.

The sequence of the B*08:06 allele has been shown to be identical to B*08:20.

The sequence of the B*1305 allele has been shown to be identical to B*13:04.

The B*1324 allele has been renamed B*13:22:02

The B*150105 allele has been corrected and renamed B*15:120

The B*1522 allele has been renamed B*35:43.

The sequence of the B*1541 allele has been shown to be identical to B*15:39.

The B*1559 allele has been renamed B*35:44.

The B*15:100 allele has never been assigned.

The sequence of the B*1816 allele has been shown to be identical to B*18:14.

The sequence of the B*27051 allele has been shown to be identical to B*27:05:02.

The sequence of the B*2722 allele has been shown to be identical to the corrected B*27:06 sequence.

The B*3573 allele has been renamed B*35:08:03.

The sequence of the B*39012 allele has been shown to be identical to B*39:01:01:01.

The sequence of the B*3921 allele has been shown to be identical to B*39:24.

The sequence of the B*4017 allele has been shown to be identical to B*40:16.

The sequence of the B*4041 allele has been shown to be identical to B*40:40.

The sequence of the B*4203 allele has never been assigned.

The sequence of the B*4401 allele has been shown to be identical to B*44:02:01:01.

The sequence of the B*5003 allele has been shown to be identical to B*50:02.

The sequence of the B*5125 allele has been shown to be identical to B*51:22.

The B*5147 allele has been renamed B*51:09:02.

The sequence of the B*5506 allele has been shown to be identical to B*55:04.

The sequence of the B*5803 allele has never been assigned.

The B*7901 allele has been renamed B*15:18:01.

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

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

⁶The B*08:26, 08:50 and 08:62 and 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, 35:99 and 35:118-35:119 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

¹⁰The B*55:04, 55:08, 55:13, 55:27 and 55:46 and the B*56:15, 56:19N and 56:22 alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

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

‘ser’, serological HLA specificity. ‘w’, might be weakly amplified.

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

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[illegible]

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HLA-C allele ⁴																								
*01:02:01-01:02:13, 01:06-01:08, 01:11-01:13, 01:15-01:20, 01:23, 01:25-01:33, 01:37N-01:42, 01:44-01:45	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 ⁵	73																							
*01:09	73													86										
*01:10	73	74																		92				
*01:14	73											83								92				
*01:21	73												84	85										
*01:43	73	74										82								92				
*02:02:01		74	75			78						83			w									
*02:02:02-02:02:03, 02:02:05-02:02:12, 02:02:14-02:03, 02:07-02:11, 02:15-02:16:02, 02:19-02:20, 02:23-02:25Q, 02:28-02:32, 02:34-02:38N, 02:40, 02:42-02:44, 02:46		74	75			78						83			87									
*02:02:13, 02:21, 02:26:02, 02:39, 02:45		74	75									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												
*02:22		74	75			78						83			87						93			
*02:26:01		74										83			87									
*02:27:01-02:27:02		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, 03:89, 03:95				75	76																	94		
*03:03:01-03:03:13, 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, 03:75-03:76, 03:79, 03:83, 03:85, 03:88, 03:96, 03:102						76	77														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

Neg. Control

Lot No.: **45M**

Lot-specific information

www.olerup-ssp.com

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																								
*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, 03:87, 03:90-03:93, 03:98, 03:100-03:101			75	76																	93	94		
*03:04:07, 03:41, 03:80			75																		93	94		
*03:07, 03:45			75	76						83					87						93	94		
*03:10, 03:29			75	76											87						93	94		
*03:13, 03:97				76	77																	94		
*03:15			75	76						83					87							94		
*03:16			75																			94		
*03:18, 03:39				76																	93			
*03:58					77										87				92		93	94		
*03:67				76	w																93	w		
*03:81				76	77												89				93	94		
*03:86					77										87				92			94		
*03:94			75												87				92			94		
*03:99															87				92					
*04:01:01:01-04:01:15, 04:01:17-04:01:22, 04:01:24-04:01:26, 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-04:71, 04:73-04:76, 04:78-04:79, 04:81					78					83			85				90				93			
*04:01:16, 04:23, 04:54, 04:72					78					83			85				90							
*04:01:23, 04:33					78					83			85								93			
*04:03, 04:06, 04:80			75		78					83			85		87		90				93			
*04:10					78					83							90				93			
*04:11					78										88						93			
*04:16			75							83			85		87		90				93			
*04:29					78								85		88		90				93			
*04:32, 04:77		74			78					83			85				90				93	94		
*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			
*05:01:01:01-05:01:15, 05:03, 05:05-05:15, 05:18-05:19, 05:21, 05:24, 05:27-05:35, 05:37-05:41, 05:44-05:45, 05:47-05:51Q					79					83				87							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.: **45M**

Lot-specific information

www.olerup-ssp.com

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																								
*05:04, 05:22							79				83				87									
*05:16							79				83				87				92		93			
*05:17, 05:25							79				83				87			90			93			
*05:20, 05:43							79				83										93			
*05:23							79				83				87				91		93			
*05:26						78	79				83				87						93			
*05:36							79				83				87		89				93			
*05:42							79				83	84	85		87		90				93			
*05:46							79				83	84	85		87						93			
*06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:07, 06:10, 06:12-06:13, 06:15-06:16N, 06:18- 06:30, 06:33-06:34, 06:36-06:39, 06:41-06:51, 06:53-06:55								80			83			86									95	
*06:03			75					80			83			86	87							94		
*06:04, 06:40								80			83												95	
*06:05								80			83						90		92				95	
*06:06								80			83								92				95	
*06:08		74						80			83			86									95	
*06:09								80			83			86							93		95	
*06:11, 06:52								80						86									95	
*06:14, 06:35								80			83										93		95	
*06:17											83			86					92				95	
*06:31								80			83			86			90		92				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, 07:97-07:100, 07:102-07:122, 07:124, 07:126-07:138, 07:140- 07:147, 07:149-07:151, 07:153- 07:155, 07:157-07:160									81														95	
*07:02:08, 07:26, 07:33N, 07:39- 07:40, 07:92, 07:139, 07:152N, 07:156									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		
*07:101, 07:148		74							81	82		84											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.: **45M**

Lot-specific information

www.olerup-ssp.com

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																								
*07:123									81								89						95	
*07:125						78			81				85	86									95	
*08:01:01-08:01:03, 08:03:01-08:03:02, 08:06, 08:08, 08:14, 08:16, 08:20, 08:22, 08:24, 08:26N, 08:28, 08:36N, 08:38, 08:40-08:42, 08:44										82								90				93		
*08:02:01-08:02:05, 08:04, 08:13, 08:15:01, 08:17-08:19, 08:23, 08:27, 08:29-08:30, 08:32-08:35, 08:37, 08:39, 08:43										82												93		
*08:05										82		84	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		84	85					90				93		
*08:25										82			85									93		
*08:31		74								82												93		
*12:02:01-12:02:06, 12:10:01-12:10:02, 12:17-12:18, 12:20, 12:22, 12:27, 12:30, 12:36, 12:40												84	85											
*12:03:01:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:14, 12:06-12:07, 12:11-12:13, 12:19, 12:23, 12:25, 12:29, 12:32, 12:34-12:35, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50												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		
*12:41											83	84	85		87									
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.: **45M**

Lot-specific information

www.olerup-ssp.com

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																								
*12:44												84	85								93			
*12:49												84												
*14:02:01-14:03, 14:05, 14:07N, 14:11, 14:13-14:14, 14:18-14:24																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				
*14:25		74														88				92		94		
*15:02:01-15:02:07, 15:08, 15:10:02, 15:13, 15:15, 15:17-15:18, 15:26, 15:28, 15:31-15:35, 15:38-15:39, 15:41, 15:44-15:45			75					80				83				87	89				93			
*15:03, 15:16			75					80				83		85		87	89				93			
*15:04-15:06:03, 15:09, 15:19-15:20, 15:24, 15:27, 15:29-15:30, 15:40			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			
*15:36						78						83					89				93			
*15:37			75					80				83				87	89							
*15:42		74	75					80				83				87	89				93			
*15:43			75					80									89				93	94		
*16:01:01-16:01:05, 16:06-16:08, 16:10-16:11, 16:13-16:15:01, 16:16Q-16:17, 16:21-16:24, 16:26-16:28, 16:30N-16:32														85				90					95	
*16:02:01-16:02:05, 16:09, 16:12, 16:19, 16:25												83		85		87		90					95	
*16:04:01															86			90		92				
*16:15:02													84	85				90					95	
*16:18														85		87		90					95	
*16:20														85			89	90					95	
*16:29		74													86			90		92				
*17:01:01-17:01:03, 17:01:05-17:04, 17:06, 17:08		74										83				87			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.: 45M

Lot-specific information

www.olerup-ssp.com

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																								
*17:01:04		74									83		85		87				91		93			
*17:05		74									83	84			87				91		93			
*17:07											83				87				91		93			
*18:01-18:02, 18:04											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	
HLA-C allele ⁴																								
A*24:106, B*46:25																							95	
B*14:03																				92				
B*67:02													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

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 to 82, 84 to 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](http://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 Cw*0101 allele has been shown to be identical to C*01:02:01.

The sequence of the Cw*0201 allele has been shown to be identical to C*02:02:02.

The sequence of the Cw*020204 allele has been shown to be identical to C*02:10.

The sequence of the Cw*021603 allele has been shown to be identical to C*02:16:02.

The sequence of the Cw*0301 allele has been shown to be identical to C*03:04:01:01.

The sequence of the Cw*0402 allele has been shown to be identical to C*04:01:01:01.

The sequence of the Cw*0421 allele has been renamed to C*04:15:02.

The sequence of the Cw*0422 allele has been renamed to C*04:21.

The sequence of the Cw*0502 allele has been shown to be identical to C*05:09.

The sequence of the Cw*0601 allele has been shown to be identical to C*06:02:01:01.

The sequence of the Cw*060202 allele has been renamed to C*06:17.

The sequence of the C*0734 allele has been renamed to C*07:27:02.

The sequence of the Cw*1101 allele has been shown to be in error.

The sequence of the Cw*1201 allele has been shown to be identical to C*12:02:02.

The sequence of Cw*1301 has been shown to be in error.

The sequence of the Cw*1401 allele has been shown to be identical to C*14:02:01.

The sequence of the Cw*1501 allele has been shown to be identical to C*15:02:01.

The sequence of the Cw*1514 allele has been shown to be identical to C*15:10:02.

The sequence of the Cw*1603 allele has been shown to be identical to C*14:03.

The sequence of the Cw*16042 allele has been shown to be identical to C*16:04:01.

The sequence of the Cw*1605 allele has been shown to be identical to C*16:04:01.

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.

'w', might be weakly amplified.

Lot No.: **45M**

Lot-specific information

www.olerup-ssp.com

CELL LINE VALIDATION SHEET																				
HLA-A low resolution primer set																				
					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Lot No.:	201078701	201078702	201073303	201073304	201073305	201078706	201188507	201073308	201073309	201078710	201078711	201187512	201073313	201078714	201073315	201078716
	IHWC cell line		A*	A*																
1	9001	SA	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
2	9280	LK707	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
5	9009	KAS011	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*02:01	*26:03	-	+	-	-	-	-	-	+	-	-	+	-	+	-	-	-
7	9020	QBL	*26:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
8	9025	DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
9	9026	YAR	*26:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
10	9107	LKT3	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
12	9052	DBB	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
15	9075	DKB	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
17	9282	CTM3953540	*03:01	*80:01	-	-	+	-	-	+	-	-	-	-	-	-	+	-	-	-
18	9257	32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*02:17		-	+	-	-	-	-	W	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*02:01	*34:01	-	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-
24	9035	JBUSH	*32:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
25	9049	IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*02:05		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*24:10	*29:01	-	-	-	-	+	-	+	-	-	-	-	-	-	+	-	-
28	9320	BEL5GB	*02:01	*29:02	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-
29	9050	MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
30	9021	RSH	*30:01	*68:02	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-
31	9019	DUCAF	*30:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
32	9297	HAG	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
34	9104	DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
35	9302	SSTO	*32:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
36	9024	KT17	*02:06	*11:01	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-
37	9065	HHKB	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
38	9099	LZL	*02:17		-	+	-	-	-	-	W	-	-	-	-	-	-	-	-	-
39	9315	CML	*01:01	*03:01	+	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-
40	9134	WHONP199	*02:07	*30:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-
41	9055	H0301	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
42	9066	TAB089	*02:07		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*02:06	*02:07	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*66:01		-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-
45	9239	SHJO	*23:01	*24:02	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
47	9045	TUBO	*02:16	*03:01	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-
48	9303	TER-ND	*02:01	*11:01	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-

Lot No.: **45M**

Lot-specific information

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CELL LINE VALIDATION SHEET													
HLA-A low resolution primer set													
					Lot No.:	Well							
						17	18	19	20	21	22	23	24
						201078717	201073318	201073319	201078720	201073321	201078722	201188523	201078724
	IHWC cell line		A*	A*									
1	9001	SA	*24:02		-	-	-	-	-	-	-	-	-
2	9280	LK707	*02:01		-	-	-	-	-	-	-	-	-
3	9011	E4181324	*01:01		-	-	-	-	-	-	-	-	-
4	9275	GU373	*30:01		-	-	-	-	-	-	-	-	-
5	9009	KAS011	*01:01		-	-	-	-	-	-	-	-	-
6	9353	SM	*02:01	*26:03	-	-	-	-	-	-	-	+	-
7	9020	QBL	*26:01		-	-	-	-	-	-	-	-	-
8	9025	DEU	*31:01		-	-	-	-	-	-	-	-	-
9	9026	YAR	*26:01		-	-	-	-	-	-	-	-	-
10	9107	LKT3	*24:02		-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*29:02		-	-	-	-	-	-	-	-	-
12	9052	DBB	*02:01		-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*02:01		-	-	-	-	-	-	-	-	-
14	9071	OLGA	*31:01		-	-	-	-	-	-	-	-	-
15	9075	DKB	*24:02		-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*29:02		-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:01	*80:01	-	-	-	-	-	-	-	+	-
18	9257	32367	*33:03	*74:01	-	+	+	-	-	-	-	-	-
19	9038	BM16	*02:01		-	-	-	-	-	-	-	-	-
20	9059	SLE005	*02:01		-	-	-	-	-	-	-	-	-
21	9064	AMALA	*02:17		-	-	-	-	-	-	-	-	-
22	9056	KOSE	*02:01		-	-	-	-	-	-	-	-	-
23	9124	IHL	*02:01	*34:01	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*32:01		+	-	-	-	-	-	-	-	-
25	9049	IBW9	*33:01		-	+	-	-	-	-	-	-	-
26	9285	WT49	*02:05		-	-	-	-	-	-	-	-	-
27	9191	CH1007	*24:10	*29:01	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*02:01	*29:02	-	-	-	-	-	-	-	-	-
29	9050	MOU	*29:02		-	-	-	-	-	-	-	-	-
30	9021	RSH	*30:01	*68:02	-	-	-	+	-	-	-	-	-
31	9019	DUCAF	*30:02		-	-	-	-	-	-	-	-	-
32	9297	HAG	*02:01		-	-	-	-	-	-	-	-	-
33	9098	MT14B	*31:01		-	-	-	-	-	-	-	-	-
34	9104	DHIF	*31:01		-	-	-	-	-	-	-	-	-
35	9302	SSTO	*32:01		+	-	-	-	-	-	-	-	-
36	9024	KT17	*02:06	*11:01	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*03:01		-	-	-	-	-	-	-	-	-
38	9099	LZL	*02:17		-	-	-	-	-	-	-	-	-
39	9315	CML	*01:01	*03:01	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*02:07	*30:01	-	-	-	-	-	-	-	-	-
41	9055	H0301	*03:01		-	-	-	-	-	-	-	-	-
42	9066	TAB089	*02:07		-	-	-	-	-	-	-	-	-
43	9076	T7526	*02:06	*02:07	-	-	-	-	-	-	-	-	-
44	9057	TEM	*66:01		-	-	-	-	-	-	-	-	-
45	9239	SHJO	*23:01	*24:02	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*03:01		-	-	-	-	-	-	-	-	-
47	9045	TUBO	*02:16	*03:01	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*02:01	*11:01	-	-	-	-	-	-	-	-	-

Lot No.: **45M**

Lot-specific information

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CELL LINE VALIDATION SHEET																					
HLA-B low resolution SSP kit																					
					Prod. No.:	Well															
						25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
						201073401	201073402	201078803	201073404	201185805	201073406	201073407	201073408	201073409	201073410	201073411	201073412	201073413	201073414	201078815	201073416
	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	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	

April 2014
Rev. No.: 04u

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[illegible]

Lot No.: **45M**

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.:	201188817	201188818	201188819	201188820
						201188821	201188822	201188823	
IHW 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.: **45M**

Lot-specific information

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CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A-B-C SSP Combi Tray

Product number: 101.702-24u/06u – without *Taq* pol.
Lot number: 45M
Expiry date: 2014-February-01
Number of tests: 24 tests – Product No. 101.702-24u
6 tests – Product No. 101.702-06u
Number of wells per test: 95 + 1

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2010-787-01	9	2010-733-09	17	2010-787-17
2	2010-787-02	10	2010-787-10	18	2010-733-18
3	2010-733-03	11	2010-787-11	19	2010-733-19
4	2010-733-04	12	2011-875-12	20	2010-787-20
5	2010-733-05	13	2010-733-13	21	2010-733-21
6	2010-787-06	14	2010-787-14	22	2010-787-22
7	2011-885-07	15	2010-733-15	23	2011-885-23
8	2010-733-08	16	2010-787-16	24	2010-787-24

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

Additional 5'- and 3'-primers in primer solutions 4, 5, 7 8, 12, 14 to 17 and 20 to 23 were tested by separately adding one 3'-primer, respectively one 5'-primer. 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 were tested by separately adding one 5'-primer.

In primer solutions 2, 10, 11 and 15 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	2011-823-33
26	2010-734-02	42	2010-734-18	58	2010-734-34
27	2010-788-03	43	2010-788-19	59	2010-734-35
28	2010-734-04	44	2011-823-20	60	2010-788-36
29	2011-858-05	45	2010-734-21	61	2010-734-37
30	2010-734-06	46	2010-734-22	62	2010-788-38
31	2010-734-07	47	2010-734-23	63	2010-734-39
32	2010-734-08	48	2010-788-24	64	2010-734-40
33	2010-734-09	49	2010-788-25	65	2010-734-41
34	2010-734-10	50	2011-823-26	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	2011-858-29	69	2010-734-45
38	2010-734-14	54	2010-734-30	70	2010-734-46
39	2010-788-15	55	2011-886-31	71	2010-734-47
40	2010-734-16	56	2010-734-32	72	2011-886-48

Lot No.: **45M**

Lot-specific information

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

Additional 5'-primers and 3'-primers in primer solutions 27, 30, 38, 43, 53, 55 and 64 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solutions 26, 37, 39 and 59 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 25, 45, 49 and 72 were tested by separately adding one additional 3'-primer.

In primer mixes 55 and 66 one 5'-primer was not possible to test, and in primer mixes 62 and 66 one 3'-primer was not possible to test.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2011-888-01	81	2011-888-09	89	2011-888-17
74	2011-888-02	82	2011-888-10	90	2011-888-18
75	2011-888-03	83	2011-888-11	91	2011-888-19
76	2011-888-04	84	2011-888-12	92	2011-888-20
77	2011-888-05	85	2011-888-13	93	2011-888-21
78	2011-888-06	86	2011-888-14	94	2011-888-22
79	2011-888-07	87	2011-888-15	95	2011-888-23
80	2011-888-08	88	2011-888-16		

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 74, 84, 86, 87 and 94 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solution 82, 90 and 91 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 78, 85 and 95 were tested by separately adding one additional 3'-primer.

In primer solution 95 one 5'-primer was not possible to test, and in primer solutions 75, 83, 84, 86 and 90 one or two 3'-primers were not possible to test.

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

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

Date of approval: 2011-October-06

Approved by:

Production Quality Control

Lot No.: **45M**

Lot-specific information

www.olerup-ssp.com

Declaration of Conformity

Product name: *Olerup* SSP® HLA-A-B-C SSP Combi Tray
Product number: 101.702-24u/06u
Lot number: 45M

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.)

Stockholm, Sweden
2011-October-06

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **45M**

Lot-specific information

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