

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **18X**

Lot-specific information

Olerup SSP® HLA-A-B-DR SSP Combi Tray

Product number:	101.701-24/06 – including <i>Taq</i> pol. 101.701-24u/06u – without <i>Taq</i> pol.
Lot number:	18X
Expiry date:	2017-February-01
Number of tests:	24 tests – Product No. 101.701-24/24u 6 tests – Product No. 101.701-06/06u
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. 18X.

Complete product documentation consists of generic Instructions for Use (IFU), lot specific Product Insert, Worksheet and Certificate.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® HLA-A-B-DR SSP COMBI TRAY LOT (91S)

The format of the Product Insert and Worksheet have been changed.

As of lot series V, the Specificity Table is included in the lot-specific Product Insert, and the Interpretation Table is included in the Worksheet.

The **HLA-A low resolution** specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP®* HLA-A-B-DR SSP Combi Tray lot was made (**Lot No 91S**). The kit design is based on IMGT/HLA database 3.15.0.

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

Well	5'-primer	3'-primer	rationale
19	Added	-	5'-primer added for the A*74:07 allele.
23	Added	-	5'-primers added for the A*03:177 allele.

The **HLA-B low resolution** specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP®* HLA-A-B-DR SSP Combi Tray lot was made (**Lot No. 91S**). The kit design is based on IMGT/HLA database 3.15.0.

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

Well	5'-primer	3'-primer	rationale
63	Added	Exchanged	5'-primer added for increased yield of HLA-specific PCR product of B*54 alleles, 3'-primer exchanged for improved HLA-specific amplification.

The **HLA-DR low resolution** specificity and interpretation tables have been updated for the HLA-DRB alleles described since the previous *Olerup SSP*® HLA-A-B-DR SSP Combi Tray lot was made (**Lot No. 91S**). The kit design is based on IMGT/HLA database 3.15.0.

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

Well	5'-primer	3'-primer	rationale
75	Added	Added	3'-primer added for the DRB1*15:100 allele, 5'-primer added for the DRB1*15:01:22 allele.
86	Added	-	5'-primer added for the DRB1*12:41 allele.
96	-	-	Updated negative Control.

Change in revision R01 compared to R00:

1. Primer mix 28 amplifies the B*15:143, 35:19, 40:170, 44:07 and 50:07 alleles, and primer mix 50 amplifies the B*37:06:01-37:06:02 alleles. Foot notes for these two primer mixes have been added to the Specificity Table.

Changes in revision R02 compared to R01:

1. Primer mix 34 amplifies the C*02:06 and C*15:42 alleles and primer mix 65 amplifies the C*15:15 allele. This has been corrected in the Specificity and Interpretation Tables.

2. Primer mix 21 may generate a false positive band of about 560 base pairs. This band should be disregarded when interpreting HLA-A low resolution typings. A footnote has been added in the Specificity Table.

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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, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.
The PCR product generated by the positive control primer pair is 430 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

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.

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PRODUCT DESCRIPTION

HLA-A-B-DR SSP Combi Tray

CONTENT

The primer set contains 5'- and 3'-primers for grouping the HLA-A*01:01 to A*80:03 alleles into the corresponding serological groups A1 to A80.

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

The primer set contains 5'- and 3'-primers for grouping the DRB1*01:01 to DRB1*10:07 alleles into the corresponding serological groups DR1 to DR18 as well as primer pairs for recognizing the DRB3, DRB4 and DRB5 groups of alleles.

PLATE LAYOUT

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

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	NC

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

Well No. 1 is marked with the Lot No. '18X'.

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

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

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

Well 96 – Negative Control.

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 a few HLA-B and HLA-C alleles will be amplified by primer mixes 5, 6 and 9.

For further details see Specificity Table.

Only HLA-B alleles will be amplified by the 47 wells of the HLA-B low resolution, primer set, **wells 25 to 72**, except that a few HLA-A and HLA-C alleles will be

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amplified by primer mixes 25, 27, 28, 30 to 32, 37, 41, 43 to 45, 49, 50, 53, 55, 64 to 67 and 69.

For further details see Specificity Table.

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

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A alleles, i.e. **A*01:01 to A*80:03**, recognized by the HLA Nomenclature Committee in January 2014^{1,2} 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 specificities^{3,4}.

All the HLA-B alleles, i.e. **B*07:02 to B*83:01**, recognized by the HLA Nomenclature Committee in January 2014^{1,2} will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into their corresponding serological specificities³.

All the HLA-DRB1, -DRB3, -DRB4⁵ and -DRB5 alleles, i.e. **DRB1*01:01:01 to 10:07, DRB3*01:01:02:01 to DRB3*03:03, DRB4*01:01:01:01 to DRB4*01:08, DRB5*01:01:01 to DRB5*02:06**, recognized by the HLA Nomenclature Committee in January 2014^{1,2} will be amplified by the primers in the DR low resolution primer set, **wells 73 to 95**. The HLA-DRB alleles will be grouped into their corresponding serological specificities⁵.

¹HLA-A, HLA-B and HLA-DRB alleles listed on the IMGT/HLA web page 2014-January-17, release 3.15.0, www.ebi.ac.uk/imgt/hla.

²Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

³The HLA-A, HLA-B and the HLA-DRB1, -DRB3, -DRB4 and -DRB5 alleles will be grouped into their corresponding serological specificities, except that following alleles give rise to identical amplification patterns:

Alleles	Alleles
A*03:88, A*11:130	B*41:09, 41:29, B*45:02-45:03
A*03:152, A*24:92	B*53:30, B* 57:45, 57:51, 57:69
A*23:14:01-23:14:02, A*24:24, 24:71	B*55:04, 55:08, 55:13, 55:27, 55:46, 55:49, B*56:01:05, 56:15, 56:19N, 56:22
A*31:08, A*33:53	B*55:23, 55:32, B*56:18, 56:31-56:32
B*07:202, B*81:02	B*57:67, 58:36
B*08:26, 08:50, 08:62, 08:85, 08:94, B*42:07	DRB1*08:20, DRB1*13:18, 13:47, 13:55, 13:158, 13:164
B*13:21, 13:35, 13:59, 13:71, B*44:135, 44:158	DRB1*08:31, 08:41, DRB1*11:67
B*14:08:01, B*39:25N, 39:30, 39:32-39:34, 39:47, 39:50, 39:74, 39:82	DRB1*13:13, 13:119, 13:154, 13:156, DRB1*14:84, 14:116, 14:144
B*18:29, 18:72, 18:92, B*35:32:01-35:32:02, 35:37, 35:53N, 35:64:01-35:64:02, 35:68:01-35:68:02, 35:99, 35:118-35:119, 35:174	

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⁴The A*01:136 and the A*11:94 and A*11:112 alleles may be distinguished by the different sizes of the specific PCR products generated by primer mixes 1 and 11.

The A*24:14-24:15, 24:51-24:53, 24:57, 24:64, 24:94, 24:114, 24:138, 24:188, 24:222N and 24:228 and the C*04:01:03 alleles may be distinguished by the different sizes of the specific PCR products generated by primer mix 5.

⁵The DRB4*02:01N and DRB4*03:01N null alleles will not be amplified by the DR low resolution primer set.

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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 ^{4,5}
1^{6,7}	120 bp, 145 bp, 225 bp	800 bp	A1, A36	*01:01:01:01-01:04N, 01:06-01:33, 01:35-01:146, 03:18, 03:135, 11:94, 11:112, 36:01-36:05
2⁷	175 bp, 215 bp, 255 bp, 365 bp, 415 bp	800 bp	A2, A19, A28, A203, A210	*02:01:01:01-02:01:15, 02:01:17-02:01:19, 02:01:21-02:01:81, 02:01:83-02:22:02, 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, 02:130-02:478
3⁸	205 bp, 235 bp	1070 bp	A1, A3, A11, A32, A34, A36	*01:12, 01:19, 01:21, 01:126, 02:338, 03:01:01:01-03:17:02, 03:19-03:74, 03:76-03:94, 03:96-03:134, 03:136-03:176, 03:178N-03:182, 11:03, 11:20, 11:25, 11:60, 11:130, 11:158, 11:175, 24:92, 32:04, 34:02:01-34:04, 34:07-34:10N, 36:02
4	190 bp	800 bp	A1, A3, A11, A30, A36, A68	*01:01:01:01-01:01:22, 01:01:24-01:01:47, 01:01:49-01:04N, 01:06-01:07, 01:09-01:11N, 01:13, 01:16N-01:18N, 01:20-01:29, 01:31N-01:33, 01:35-01:78, 01:80-01:98, 01:100-01:144, 01:146, 02:78, 02:169, 03:12, 03:18, 03:88, 03:135, 11:01:01-11:27, 11:29-11:52Q, 11:54-11:176, 26:19, 26:72, 30:08, 36:04, 68:13:01, 68:66, 74:19
5	160 bp, 335 bp, 505 bp	1070 bp	A3, A9, A23, A24, A2403, A29, A31, A32	*03:15, 03:19, 03:30, 03:152, 11:139, 23:01:01-23:60, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17-24:64, 24:66-24:210, 24:212-24:270, 29:07, 29:49, 31:08, 31:29, 32:05, 33:19, 33:53, C*04:01:03
6^{9,12,13}	135 bp, 200 bp	800 bp	A9, A23, A24, A29, A80	*11:166, 23:01:01-23:56, 23:58-23:60, 24:24, 24:71, 29:07, 29:49, 31:29, 80:01:01:01-80:03, B*18:27
7	175 bp, 205 bp	1070 bp	A2, A3, A9, A23, A24, A2403, A26	*02:17:01 ^W -02:17:03 ^W , 11:139, 23:14:01-23:14:02, 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, 24:139-24:187, 24:189-24:210, 24:212-24:221, 24:223-24:227, 24:229-24:270, 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, 25:01:01-25:16, 25:18-25:24, 26:01:01-26:06, 26:08-26:15, 26:17-26:18, 26:20-26:43:02, 26:45-26:63, 26:65-26:71N, 26:73-26:88, 26:90-26:91, 26:93-26:98, 29:28, 32:15, 33:51, 34:01:01-34:11, 66:01:01-66:19, 68:01:01:01-68:107, 69:01-69:02
9^{6,10}	75 bp	800 bp	A3, A25, A32	*25:01:01-25:24, 32:01:01-32:01:13, 32:01:15-32:02, 32:04, 32:06-32:37, 32:39-32:59, 32:61, B*07:81, B*08:52, B*18:67, B*38:41, B*53:05, 53:16
10^{6,12}	80 bp, 240 bp	800 bp	A10, A26, A43	*01:43, 01:51, 11:17, 11:40, 26:01:01-26:02:02, 26:04, 26:07:01-26:20, 26:22-26:29, 26:31-26:43:02, 26:45-26:77, 26:79-26:91, 26:93-26:98, 33:13, 33:48,

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				43:01, 68:84
11^{6,7}	80 bp, 175 bp, 500 bp	1070 bp	A1, A9, A10, A11, A26, A31, A34, A66	*01:13, 01:28, 01:136, 03:63, 03:88, 11:01:01-11:27, 11:29-11:52Q, 11:54-11:176, 24:19, 24:44, 26:03:01- 26:03:02, 26:06, 26:21, 26:78, 26:92, 34:01:01-34:08, 34:10N-34:11, 66:01:01-66:01:02, 66:04-66:11, 66:13-66:14, 66:17-66:19, 69:02, 80:02
12⁶	125 bp, 190 bp	800 bp	A3, A10, A25, A26, A31, A34, A43, A66	*02:309, 02:454, 03:01:19, 11:11, 25:05-25:06, 26:09, 26:54, 26:91, 31:03-31:04, 34:01:01-34:11, 43:01, 66:02-66:03, 66:16
13	175 bp, 225 bp	1070 bp	A1, A2, A3, A10, A25, A26, A34, A43, A66	*01:01:56 ^W , 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, 03:01:24-03:07, 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, 03:112-03:141, 03:143-03:151, 03:153- 03:171, 03:174-03:175, 03:177, 03:179-03:182, 25:01:01-25:05, 25:07-25:24, 26:01:01-26:01:20, 26:01:22-26:01:31, 26:02:01 ^W , 26:03:01-26:03:02, 26:05-26:08, 26:10-26:28, 26:29 ^W , 26:30-26:33, 26:35-26:43:02, 26:45-26:48, 26:49 ^W , 26:50-26:72, 26:74-26:77, 26:79-26:90, 26:92-26:98, 30:55, 34:08, 43:01, 66:01:01, 66:04-66:09, 66:10 ^W , 66:11-66:15, 66:17-66:19, 68:71, 74:13
14^{6,7,12}	80 bp, 115 bp, 200 bp, 240 bp, 470 bp	1070 bp	A26, A29, A31, A34,	*02:237, 02:309, 02:454, 03:95, 26:19, 26:22, 29:01:01-29:58, 31:03-31:04, 32:42, 34:04, 66:09
15^{6,7,13,14}	90 bp, 135 bp, 205 bp	1070 bp	A1, A30	*01:13, 01:28, 03:43, 03:82, 11:113, 11:162, 30:01:01-30:04:02, 30:06-30:20, 30:22-30:80, 31:35
16	240 bp, 380 bp	1070 bp	A2, A24, A31, A32	*02:237, 03:95, 29:14, 31:01:02-31:82, 32:05, 33:53
17	140 bp, 180 bp	1070 bp	A32	*01:95, 03:43, 03:82, 24:243, 29:13, 29:39, 31:35, 32:01:01-32:03, 32:05-32:61, 74:07
18	200 bp, 390 bp	1070 bp	A33, A68	*02:243:01-02:243:02, 29:48, 32:15, 33:01:01- 33:01:07, 33:03:01-33:37, 33:39-33:52, 33:54-33:85, 68:29, 74:04
19	340 bp, 375 bp	800 bp	A2, A19, A68, A74	*01:121, 02:65, 02:407, 02:449, 68:25, 74:01-74:20
20^{12,14}	210 bp, 240 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, 23:01:13, 25:05, 26:54, 68:01:01-01-68:107
21^{6,15}	240 bp, 375 bp	800 bp	A2, A26, A28, A32, A66, A68, A69	*02:55, 02:149, 02:243:01-02:243:02, 02:309, 23:57, 24:82, 26:22, 31:41, 32:06, 33:22, 66:06, 66:09, 68:29, 68:105, 69:01-69:02
22^{6,11}	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, 11:155, 23:01:13, 31:62, 36:01-36:05
23^{6,12}	75 bp, 155 bp, 240 bp, 495 bp	800 bp	A2, A26, A28, A36, A68, A80	*02:55, 02:237, 03:41, 03:63, 03:75, 03:88, 03:95, 03:177, 11:130, 24:18, 24:204, 24:213, 26:03:01- 26:03:02, 26:05-26:06, 26:21, 26:30, 26:78, 33:24, 36:02, 68:05, 68:15, 68:20, 80:01:01-01-80:01:01:02, 80:03

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24 ¹³	360 bp	1070 bp	A10, A26, A31, A66	*02:135, 02:309, 02:454, 03:01:19, 25:13, 26:30, 26:65, 31:04, 34:09, 66:02-66:03, 66:12, 66:16
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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-A low resolution SSP typings. When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

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 internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

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

⁴For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁵Only HLA-A alleles will be amplified by the 24 wells of the HLA-A low resolution primer set, wells 1 to 24, except that a few HLA-B and HLA-C alleles will be amplified by primer mixes 5, 6 and 9.

⁶HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁷The primer pairs in wells 1, 2, 11, 14 and 15 will in many samples give rise to two or three HLA-specific PCR fragments.

⁸Primer mix 3 may faintly amplify the A*30:04:01-30:04:02, 30:06, 30:17, 30:29, 30:46 and 30:77 alleles.

⁹Primer mix 6 may give rise to a lower yield of A*23 alleles than the other A low primer mixes.

¹⁰Primer mix 9 may weakly amplify the A*34 alleles.

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

¹²Primer mixes 6, 10, 14, 20 and 23 may have a tendency of giving rise to primer oligomer formation.

¹³Primer mixes 6, 15 and 24 may give rise to a lower yield of HLA-specific PCR product than the other HLA-A low primer mixes.

¹⁴Primer mixes 15, 20 may have tendencies of unspecific amplifications.

¹⁵Primer mix 21 may generate a false positive band of about 560 base pairs. This band should be disregarded when interpreting HLA-A low resolution typings.

'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 ^{4,5}
25^{6,10}	110 bp	800 bp	7, 703, 40, 41, 42, 48, 61	*07:02:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:50, 07:52, 07:54-07:59, 07:61-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:154, 07:156-07:163, 07:166-07:201N, 07:203-07:208, 07:210, 08:79, 15:138, 15:230, 15:241, 15:297, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:136, 40:158, 40:183, 40:198, 40:231, 41:08, 42:05:01-42:05:02, 44:150, 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, 08:66-08:84, 08:86N-08:93, 08:95-08:115, 15:142, 15:180, 35:218, 44:49, 44:156, 49:25, 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, 07:131, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:57, 13:59-13:66, 13:68-13:73, 15:07:01-15:07:03, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 15:207, 35:05:01-35:05:03, 35:16-35:17:02, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 35:113-35:114, 35:125, 35:164, 35:199, 35:232, 35:242, 40:05, 40:71, 40:174, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 44:106, 44:110, 44:135, 44:158, 46:12, 51:64, 51:148, 53:14, 55:51, 58:18, C*03:05, C*03:25, C*03:27, C*03:143, C*03:167
28^{7,8,16}	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, 13:25-13:57, 13:59-13:73, 14:01:01-14:02:08, 14:02:10-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:36, 14:38, 15:46, 15:53, 15:106, 15:212, 18:44:01-18:44:02, 35:46-35:47, 35:63, 35:154, 35:207, 35:217, 40:01:01-40:01:37, 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, 40:128-40:130:02, 40:132, 40:134-40:136, 40:139-40:141, 40:146-40:147, 40:150-40:156, 40:158, 40:160:01-40:160:02, 40:163-40:164, 40:166, 40:168, 40:171-40:172, 40:175, 40:178-40:179, 40:182-40:183, 40:186-40:188, 40:191-40:199, 40:204, 40:207-40:208, 40:212-40:213, 40:215-40:219, 40:221-40:223, 40:227-40:228, 40:231, 40:233-40:242, 40:245, 40:247, 40:249-40:250, 40:252-40:253, 40:257-40:264, 41:01-41:31, 44:02:01-44:03:06, 44:03:08-44:03:15, 44:03:17-44:03:18, 44:03:21-44:05:04, 44:09-44:39, 44:41:01-44:43:02, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84:01-44:102, 44:104-44:110, 44:112-44:129, 44:132-44:133, 44:135-44:144, 44:146-44:155, 44:157-44:183, 44:185-44:187, 45:01:01-45:14, 47:01:01-47:09, 49:01:01-49:02, 49:04-49:24, 49:27-49:28, 50:01:01-50:02, 50:04-50:06, 50:08-50:20, 50:31-50:33, 50:35-50:37, 53:30, 57:45, 57:51, 57:69, C*01:30, C*12:87

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29⁸	185 bp, 235 bp	800 bp	7, 16, 17, 27, 2708, 37, 38, 3901, 3902, 39, 64, 67	*07:02:32, 07:197, 14:01:01-14:01:04, 14:07N-14:08:01, 14:10, 14:12, 14:14, 14:19, 14:26, 14:32, 27:01-27:05:15, 27:05:17- 27:05:19, 27:05:21-27:06, 27:07:04-27:10, 27:12-27:13, 27:16- 27:18, 27:20, 27:23, 27:26-27:27, 27:29, 27:31, 27:35-27:37, 27:39-27:42, 27:44-27:46, 27:48-27:61, 27:64N-27:69, 27:72- 27:75, 27:77-27:80, 27:82-27:117, 37:02, 38:01:01-38:02:02, 38:02:04-38:03, 38:07-38:24, 38:26-38:32, 38:34N-38:50, 39:01:01:01-39:01:01:03, 39:01:03-39:01:08, 39:01:10- 39:02:01, 39:03, 39:05:01-39:06:02, 39:06:04-39:09:01, 39:11, 39:14-39:15, 39:18, 39:19:02, 39:22, 39:24:01-39:39:01, 39:40:01N-39:44, 39:46-39:48, 39:50-39:62, 39:64-39:71, 39:73-39:75, 39:77, 39:79-39:82, 39:84-39:87N, 47:04-47:05, 48:21, 48:26, 67:01:01, 67:03-67:04
30	180 bp	800 bp	14, 35, 38, 39, 65	*07:28, 08:87, 14:02:01-14:02:02, 14:02:04-14:02:05, 14:02:07- 14:06:02, 14:09, 14:11, 14:13, 14:15-14:18, 14:20, 14:22-14:23, 14:25, 14:27, 14:29-14:31, 14:33-14:38, 15:77, 15:189, 15:233, 35:26, 38:05, 38:33, 39:04, 44:16, 44:37:01-44:37:02, 44:64:01- 44:64:02, 44:91, 44:132, 44:150, 52:26, 57:04, A*23:31, A*24:106, C*07:231, C*16:10
31	290 bp	1070 bp	15, 22, 62, 63, 71, 72, 75, 76, 77, 46	*15:01:01:01-15:01:03, 15:01:06-15:02:08, 15:03:03, 15:04:01- 15:08:01, 15:10:02-15:11:03, 15:11:05-15:15, 15:17:01:01- 15:17:02, 15:19-15:21, 15:24:01-15:28, 15:30-15:36, 15:38:01- 15:40, 15:42-15:46, 15:48, 15:50, 15:55-15:58, 15:60, 15:63, 15:65-15:66, 15:70-15:71, 15:73, 15:75-15:79N, 15:81-15:89, 15:92, 15:94N, 15:96-15:97, 15:101-15:102, 15:104-15:107, 15:109-15:113, 15:116-15:118, 15:120-15:122, 15:125-15:126, 15:128-15:129, 15:135-15:150, 15:152, 15:154-15:155, 15:157, 15:159-15:160, 15:162-15:172, 15:174-15:175, 15:177- 15:179:01, 15:181N-15:185, 15:187-15:196, 15:199, 15:201- 15:209N, 15:211, 15:213-15:219, 15:223-15:225, 15:227- 15:228, 15:230-15:234, 15:236-15:237, 15:239-15:241, 15:244- 15:251, 15:256-15:262N, 15:264-15:265, 15:267-15:273, 15:276-15:280, 15:283-15:289, 15:291, 15:295-15:304N, 46:01:01-46:57, C*01:73, C*07:02:30, C*08:16:02
32	165 bp, 220 bp, 285 bp, 330 bp	1070 bp	5, 8, 12, 21, 22, 37, 41, 42, 44, 45, 48, 51, 56, 57, 60, 62, 70, 71, 72, 82	*08:01:01-08:01:22, 08:02-08:05, 08:08N-08:13, 08:15-08:27, 08:29-08:36, 08:38-08:48, 08:50-08:73, 08:75-08:76, 08:78, 08:80-08:86N, 08:88, 08:90-08:106, 08:109-08:110, 08:112- 08:115, 13:46, 15:03:01-15:03:04, 15:09-15:10:02, 15:18:01- 15:18:06, 15:23, 15:29, 15:37, 15:46-15:47:02, 15:49, 15:51- 15:54, 15:61-15:62, 15:64:01-15:64:02, 15:69, 15:72, 15:74, 15:80, 15:83, 15:90-15:91, 15:93, 15:98-15:99, 15:103, 15:106, 15:108, 15:114-15:115, 15:119, 15:123-15:124, 15:127, 15:131- 15:134, 15:143, 15:151, 15:153, 15:156, 15:158, 15:161, 15:173, 15:176, 15:186, 15:197-15:198, 15:200, 15:210, 15:212, 15:220-15:221, 15:226N, 15:229, 15:235, 15:238, 15:242-15:243, 15:252-15:253, 15:255, 15:259, 15:263, 15:266, 15:274-15:275, 15:281-15:282, 15:290, 15:292-15:294N, 35:87, 37:12, 38:30, 40:12, 40:136, 40:231, 41:01-41:03:02, 41:05- 41:09, 41:11-41:17, 41:19-41:31, 42:01:01-42:02, 42:04-42:08, 42:10-42:15, 42:17-42:19, 44:14-44:15, 44:18, 44:20, 44:62, 44:100, 44:166, 45:01:01-45:14, 51:08:01, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 55:20, 55:56, 56:13, 57:09, 82:01-82:03, C*07:46

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33^{8,9,11}	165 bp, 190 bp, 390 bp	1070 bp	5, 17, 21, 35, 51, 5102, 5103, 52, 56, 62, 63, 70, 78	*13:62, 15:01:02, 15:09, 15:16:01-15:17:02, 15:67, 15:95, 15:162, 15:168, 15:177, 15:196, 15:208, 15:216, 15:222, 15:230, 15:243, 15:254, 15:268, 15:273, 15:277-15:278, 35:01:10, 35:04:02, 40:26, 40:28, 44:62, 49:18, 50:14, 51:01:01-51:01:03, 51:01:05-51:02:03, 51:02:05-51:09:02, 51:11N-51:12, 51:13:02-51:14, 51:16-51:23, 51:24:03-51:24:05, 51:26-51:33, 51:37-51:41N, 51:43-51:44N, 51:46, 51:48- 51:61:02, 51:63-51:80, 51:82-51:91, 51:94-51:98N, 51:100- 51:130, 51:132-51:142, 51:145-51:147, 51:149N-51:156, 51:158-51:166, 52:01:01:01-52:01:04, 52:01:06-52:01:14, 52:01:16-52:13, 52:15-52:24, 52:26-52:36, 53:28, 56:05:01- 56:06, 56:21, 58:08:01-58:08:02, 78:01:01-78:07
34	180 bp	800 bp	13, 22, 55, 60	*07:78, 13:01:01-13:02:16, 13:07N-13:09, 13:11, 13:14-13:20, 13:22:01-13:23, 13:25, 13:27-13:34, 13:36-13:45, 13:47, 13:49N-13:50, 13:52, 13:54-13:58, 13:60-13:61, 13:63N-13:70, 13:73, 40:48, 45:10, 49:07, 50:31, 54:26, 55:09, 55:22, 55:24, C*02:06, C*15:42
35⁶	100 bp, 195 bp	1070 bp	8, 12, 27, 38, 39, 3902, 44, 45, 48, 60, 70, 71, 72, 82	*07:27, 07:50, 08:04, 08:17, 08:54, 08:110, 15:03:01-15:03:04, 15:47:01-15:47:02, 15:49, 15:54, 15:61-15:62, 15:64:01- 15:64:02, 15:68-15:69, 15:91, 15:98, 15:103, 15:123, 15:127, 15:131-15:132, 15:151, 15:156, 15:158, 15:173, 15:210, 15:220, 15:235, 15:242, 15:253, 15:259, 15:266, 15:274, 15:281-15:282, 18:37, 27:18, 27:29, 37:28, 38:03, 39:02:01- 39:02:02, 39:08, 39:13:01-39:13:02, 39:23, 39:39:01-39:39:02, 39:49, 40:12, 40:46, 40:93, 42:11, 44:10, 44:15, 44:18, 44:40, 44:44, 44:130, 44:140, 44:156, 45:01:01, 45:05-45:07, 45:11- 45:14, 48:01:01-48:05, 48:07-48:30, 48:32-48:34, 49:20, 50:02, 52:16, 55:18, 58:44, 82:01-82:03
36	280 bp	1070 bp	5, 7, 8, 13, 15, 16, 17, 18, 22, 35, 40, 42, 44, 46, 48, 49, 51, 53, 55, 56, 57, 58, 60, 61, 62, 63, 70, 71, 72, 75, 76, 77, 78	*07:09, 07:11, 07:17, 07:162, 08:28, 08:35, 08:37, 08:89, 08:107, 13:04, 13:10, 13:26:01-13:26:02, 13:72, 15:01:01:01- 15:01:04, 15:01:06-15:08:01, 15:11:01-15:16:03, 15:18:01- 15:21, 15:23-15:29, 15:31-15:36, 15:38:01-15:40, 15:43-15:44, 15:46-15:47:02, 15:49-15:57, 15:60-15:62, 15:64:01-15:72, 15:74-15:76, 15:78:01-15:82, 15:84-15:85, 15:87-15:89, 15:91- 15:98, 15:101-15:129, 15:131-15:132, 15:134-15:136, 15:138- 15:149N, 15:151-15:161, 15:163-15:167, 15:169-15:176, 15:178-15:187, 15:189-15:195, 15:197-15:207, 15:209N- 15:215, 15:217-15:223, 15:225-15:228, 15:231-15:232, 15:234- 15:242, 15:244-15:247, 15:249-15:251, 15:254-15:268, 15:270- 15:272N, 15:274-15:286, 15:288-15:302N, 15:304N, 18:01:01:01-18:15, 18:17N-18:25, 18:27-18:40, 18:42-18:60, 18:62-18:96, 27:41, 27:107, 35:01:01:01-35:01:39, 35:05:01- 35:05:03, 35:07-35:08:06, 35:10-35:11:03, 35:14:01-35:17:02, 35:19-35:21, 35:23-35:30, 35:32:01-35:32:02, 35:35, 35:37, 35:40N-35:43:01, 35:45-35:54, 35:57-35:58, 35:61:01-35:64:02, 35:66-35:69, 35:71-35:72, 35:76-35:80, 35:82, 35:86, 35:89- 35:94, 35:97, 35:99-35:105, 35:107-35:108:02, 35:110-35:126, 35:130N-35:135, 35:137-35:148, 35:158-35:159, 35:161, 35:165N-35:166, 35:168, 35:170-35:171, 35:173N-35:178, 35:180, 35:185-35:192, 35:194, 35:196-35:197, 35:200, 35:202- 35:203, 35:206-35:210, 35:212, 35:215-35:219, 35:222, 35:224- 35:229, 35:232, 35:238-35:241, 35:244-35:245, 35:247-35:248, 37:35, 39:07, 39:43, 40:03, 40:20, 40:38, 40:52, 40:59-40:60, 40:105, 40:158-40:159, 40:222, 40:267, 41:24, 41:30, 42:09, 44:17, 44:43:01-44:43:02, 44:144, 45:09, 46:01:01-46:10, 46:12-46:17, 46:19-46:57, 48:02:01-48:02:03, 48:14, 48:23,

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37	195 bp	1070 bp	27, 35, 37, 44, 58, 76	*15:12, 15:14, 15:19, 15:91, 15:131, 15:161, 15:270, 15:298, 15:304N, 18:54, 18:56, 35:45, 35:71, 37:01:01-37:09, 37:12-37:13, 37:15-37:21, 37:23-37:28, 37:30N-37:33N, 37:35-37:36, 37:38-37:47, 38:17, 44:17, 44:43:01-44:43:02, 44:144, 45:09, 46:17, 53:22, 58:07, A*24:174, C*14:61
38 ⁶	105 bp, 395 bp, 435 bp	1070 bp	5, 7, 15, 41, 42, 62, 63, 70, 71, 75, 77	*07:04, 07:25, 07:146, 15:09-15:10:02, 15:13:01-15:13:02, 15:16:01-15:18:06, 15:21, 15:23-15:24:02, 15:37, 15:44, 15:51-15:52, 15:66-15:67, 15:72, 15:80, 15:87, 15:90, 15:93, 15:95, 15:99, 15:108, 15:114-15:115, 15:119, 15:124, 15:133-15:134, 15:153, 15:157, 15:161-15:162, 15:168, 15:176-15:177, 15:186, 15:189, 15:196-15:198, 15:200, 15:208, 15:216, 15:221-15:222, 15:226N, 15:229-15:230, 15:238, 15:243, 15:252, 15:254, 15:263, 15:268, 15:273, 15:275, 15:290, 15:292-15:294N, 40:136, 40:231, 41:08, 42:05:01-42:05:02
39 ⁶	115 bp, 150 bp	1070 bp	18	*18:01:01:01-18:15, 18:17N-18:28, 18:30-18:71, 18:73-18:91, 18:93-18:96, 48:28
40 ⁶	80 bp	1070 bp	7, 27, 2708, 44, 60	*07:73, 08:88, 08:102, 27:01-27:05:22, 27:05:24-27:21, 27:23-27:51, 27:53-27:66N, 27:68-27:74, 27:76-27:117, 38:22, 40:46, 40:93, 44:40, 44:44, 44:130, 49:26
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68⁶	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65 ^w , 07:134 ^w , 08:32, 18:01:01:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:65, 18:67-18:96, 35:01:01:01-35:08:04, 35:08:06-35:09:03, 35:11:01-35:12:03, 35:14:01-35:15, 35:17:01-35:18, 35:20:01-35:24:02, 35:27, 35:29:01-35:45, 35:48, 35:50-35:62, 35:64:01-35:68:02, 35:70-35:72, 35:74-35:75, 35:76 ^w , 35:77-35:79, 35:81-35:153, 35:155-35:185, 35:187-35:190, 35:192-35:197, 35:199-35:206, 35:208-35:209, 35:211-35:216N, 35:218-35:225, 35:227-35:248, 37:08, 38:06-38:07, 39:19:01-39:19:02, 44:06, 51:01:01-51:24:05, 51:26-51:46, 51:48-51:103, 51:105-51:111, 51:113-51:117, 51:119-51:146, 51:148-51:166, 53:01:01-53:16, 53:18-53:27, 53:29, 53:31, 56:06 ^w , 78:01:01-78:04, 78:07
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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	*07:02:01-07:02:38, 07:02:40-07:06, 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, 07:101-07:121, 07:123-07:138, 07:140-07:164, 07:166-07:192, 07:194-07:195, 07:199-07:210, 08:01:01-08:01:20, 08:01:22-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:83, 08:85-08:88, 08:90-08:102, 08:104- 08:106, 08:108-08:112, 08:114-08:115, 15:297, 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, 40:160:01-40:160:02, 41:02:01-41:02:05, 41:04, 41:10-41:11, 41:13, 41:18-41:19, 41:23-41:24, 41:27, 41:31, 42:01:01-42:02, 42:05:01-42:07, 42:09-42:13, 42:15-42:20, 44:150, 44:166, 48:01:01-48:01:06, 48:05-48:12, 48:14-48:20, 48:22, 48:27-48:34, 53:15, 81:01-81:06

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 HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

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 internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for 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.

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⁴For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁵Only HLA-B alleles will be amplified by the 47 wells of the HLA-B low resolution, primer set, wells 25 to 72, except that a few HLA-A and HLA-C alleles will be amplified by primer mixes 25, 27, 28, 30 to 32, 37, 41, 43 to 45, 49, 50, 53, 55, 64 to 67 and 69.

⁶HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

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

⁸Primer mixes 28, 29, 33, 42, 53 and 63 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes.

⁹Primer mix 33 has pronounced tendencies of unspecific amplifications.

¹⁰Primer mixes 25, 43, 44, 50, 53 and 69 have a tendency to giving rise to primer oligomer formation, most pronounced in primer mix 53

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

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

¹³Primer mixes 56 and 67 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

¹⁴Primer mix 63 may give rise to a lower yield of B*54 alleles than the other B low primer mixes.

¹⁵The Bw4-associated HLA-A specificities A9, A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 70.

¹⁶Primer mix 28 amplifies the B*15:143, 35:19, 40:170, 44:07 and 50:07 alleles in addition to the alleles specified in the table.

¹⁷Primer mix 50 amplifies the B*37:06:01-37:06:02 alleles in addition to the alleles specified in the table.

‘w’, might be weakly amplified.

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

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SPECIFICITY TABLE

Specificities and sizes of the PCR products of the 23+1 primer mixes used for DR low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	DR serology ³	Amplified HLA-DRB alleles ^{4,5}
73^{7,8}	215 bp, 230 bp, 260 bp	515 bp	1	*01:01:01-01:02:09, 01:04-01:38, 01:40N-01:60
74	200 bp	430 bp	103	*01:03, 01:39N, 01:42
75⁷	210 bp, 230 bp	430 bp	15	*15:01:01:01-15:104
76	210 bp	430 bp	16	*16:01:01-16:05:02, 16:07-16:24
77^{5,6,7}	120 bp, 220 bp	430 bp	3, 17, 18, 11	*03:01:01:01-03:75, 03:77-03:94, 11:07, 11:53, 11:103, 11:105, 11:107, 11:125, 15:25
78^{5,6,7}	75 bp, 210 bp	430 bp	3, 17, 11, 13, 14, 6	*03:01:01:01-03:01:22, 03:04:01-03:06, 03:08-03:16, 03:18-03:20, 03:22-03:23, 03:25-03:26, 03:28, 03:30-03:31, 03:33-03:34, 03:36-03:37, 03:43-03:48, 03:50-03:52, 03:54-03:68N, 03:70-03:73, 03:75-03:86, 03:89, 03:91-03:93, 08:40, 11:02:01-11:03, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40-11:41, 11:48, 11:59, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:73, 11:76, 11:79-11:80, 11:83, 11:85-11:87, 11:93, 11:118, 11:122, 11:124, 11:127, 11:131-11:132, 11:135, 11:138-11:139, 11:142, 11:151, 11:153, 13:01:01-13:04, 13:08, 13:10, 13:15-13:17, 13:19-13:20, 13:22-13:24, 13:27-13:29, 13:31-13:41, 13:43, 13:45, 13:48, 13:51-13:54, 13:57, 13:59, 13:61:01-13:61:02, 13:63-13:66:02, 13:68-13:76, 13:78-13:81, 13:83-13:85, 13:87-13:99, 13:101-13:102, 13:104-13:107, 13:109, 13:111-13:117, 13:120-13:131, 13:133, 13:135, 13:137N-13:145, 13:147-13:149, 13:151-13:153, 13:155, 13:159, 13:162, 13:165-13:168, 14:16, 14:19, 14:21, 14:82, 14:95, 14:109, 14:132, 14:137N
79^{6,7}	85 bp, 210 bp	430 bp	3, 18, 11, 13, 14, 6	*03:02:01-03:03, 03:27, 03:29, 03:38, 03:53, 03:74, 03:88, 03:90, 11:13:01w-11:13:02w, 11:26, 11:34, 13:15, 13:19, 13:26:01-13:26:02, 13:44, 13:53, 13:57, 13:85-13:86, 13:104, 14:02:01-14:03:02, 14:06:01-14:06:03, 14:09, 14:12:01-14:13, 14:17-14:21, 14:24, 14:27, 14:29-14:30, 14:32:01w-14:32:02w, 14:33, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:65w, 14:67, 14:77-14:78, 14:80-14:81, 14:83, 14:85, 14:89, 14:94, 14:98, 14:102, 14:106, 14:108-14:109, 14:115, 14:119, 14:121, 14:135, 14:146
80^{6,7,8}	100 bp, 175 bp	430 bp	3,4	*04:01:01-04:05:11, 04:05:13-04:172
81⁷	210 bp, 235 bp	430 bp	7, 13, 14	*07:01:01:01-07:01:07, 07:03-07:29, 12:22, 13:17, 13:116, 14:50
82⁷	170 bp, 215 bp, 250 bp	515 bp	8, 12, 14	*08:01:01-08:19, 08:21-08:54, 11:67, 12:04, 12:16:01-12:16:03, 12:22, 12:39, 14:11, 14:15, 14:68, 14:93
83^{6,7}	90 bp, 135 bp, 180 bp	430 bp	3, 9, 11	*03:08, 03:65, 09:01:02-09:22, 11:07, 11:53, 11:103, 11:105, 11:107, 11:125
84	180 bp	430 bp	10,11,13	*03:76, 10:01:01-10:07, 11:59, 11:80, 11:83, 11:87, 11:135, 11:142, 13:27, 13:41, 13:71, 13:129

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85^{6,7}	100 bp, 170 bp	430 bp	11, 3, 8	*03:08, 03:65, 08:31, 08:41, 11:01:01-11:70, 11:72-11:153
86^{6,7}	95 bp, 115 bp	430 bp	12, 8	*08:32, 08:53, 12:01:01-12:44
87⁸	220 bp	430 bp	6, 8, 11, 13, 14, 1403	*03:76, 08:20-08:21, 11:01:01-11:04:11, 11:06:01-11:06:03, 11:08:01-11:12:02, 11:14:01-11:16, 11:18-11:21, 11:23:01-11:25, 11:27:01-11:33, 11:35-11:51, 11:54:01-11:54:02, 11:56-11:66, 11:68, 11:70, 11:72-11:81, 11:83-11:88, 11:90-11:97, 11:99-11:102:02, 11:106, 11:108-11:124, 11:126-11:135, 11:137-11:142, 11:144-11:153, 13:01:01-13:02:01, 13:02:03-13:08, 13:10-13:16, 13:18-13:43, 13:45-13:85, 13:87-13:115, 13:117-13:128, 13:130-13:145, 13:147-13:166, 13:168-13:169, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:16, 14:19, 14:21-14:22, 14:25, 14:27, 14:40, 14:53, 14:63, 14:67, 14:69, 14:74, 14:77-14:78, 14:84-14:85, 14:98, 14:102, 14:105, 14:109, 14:115-14:116, 14:128, 14:135, 14:137N, 14:144, DRB3*02:27
88^{7,8}	205 bp, 225 bp	430 bp	13, 8, 11, 12, 14, 6	*08:01:01-08:02:04, 08:04:01-08:09, 08:11, 08:16-08:17, 08:20-08:22, 08:24, 08:26, 08:28, 08:31, 08:39, 08:41-08:44, 08:50, 08:52, 08:54, 11:01:01-11:01:17, 11:01:20-11:06:03, 11:09-11:12:02, 11:14:01-11:16, 11:20-11:21, 11:23:01-11:25, 11:27:01-11:30, 11:32-11:33, 11:35-11:41, 11:43-11:44, 11:46:01-11:51, 11:54:01-11:56, 11:58:01-11:63, 11:65:01-11:70, 11:72, 11:74:01-11:78, 11:80-11:88, 11:90-11:97, 11:99-11:102:02, 11:106, 11:108-11:118, 11:120-11:124, 11:126-11:129, 11:133-11:135, 11:137-11:142, 11:144-11:152, 12:02:01-12:02:05, 12:13, 12:15-12:16:03, 12:18-12:21, 12:23, 12:26-12:27, 12:31N-12:33, 12:37, 12:42-12:44, 13:01:01-13:02:01, 13:02:03-13:02:09, 13:04-13:05:02, 13:07:01-13:09, 13:11:01-13:11:02, 13:14:01-13:24, 13:26:01-13:29, 13:31-13:32, 13:34-13:36, 13:38-13:43, 13:45-13:55, 13:57, 13:59, 13:61:01-13:65, 13:67-13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96:01-13:100, 13:102-13:109, 13:111-13:114, 13:116-13:117, 13:121, 13:123-13:132, 13:135-13:136, 13:138-13:150, 13:153, 13:155, 13:158-13:160, 13:162, 13:164-13:166, 13:168-13:169, 14:15-14:16, 14:22, 14:24-14:25, 14:27, 14:37, 14:53, 14:73, 14:105, 14:128
89⁵	175 bp, 240 bp	430 bp	3, 13, 14, 17, 6, 11	*03:01:01:01-03:01:05, 03:01:07-03:01:08, 03:01:10-03:07, 03:09, 03:11:01-03:41, 03:43-03:45, 03:47-03:63, 03:66-03:68N, 03:70-03:86, 03:88-03:91, 03:93-03:94, 08:20, 11:13:01-11:13:02, 11:149, 13:01:01-13:16, 13:18-13:42, 13:44, 13:46-13:66:02, 13:68-13:102, 13:104-13:115, 13:117-13:121, 13:123-13:158, 13:161-13:164, 13:166-13:169, 14:01:01-14:14, 14:15?-14:16?, 14:17-14:21, 14:22?, 14:23:01, 14:23:02?, 14:23:03-14:24, 14:25?-14:26?, 14:27, 14:28?, 14:29-14:30, 14:31?-14:32:03?, 14:33, 14:34?-14:35?, 14:36-14:37, 14:38?-14:39?, 14:40-14:45, 14:47-14:48, 14:49?-14:50?, 14:51, 14:52?-14:53?, 14:54:01-14:54:03, 14:55?, 14:56-14:57, 14:58?, 14:59, 14:60?-14:62?, 14:63-14:65, 14:67, 14:68?-14:76?, 14:77-14:78, 14:79?, 14:80-14:85, 14:86?-14:88?, 14:89, 14:90?, 14:91, 14:92N?-14:93?, 14:94-14:96, 14:97?, 14:98, 14:99?, 14:100, 14:101?,

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101.701-24u/06u – without *Taq* pol., IFU-02

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Lot-specific information

				14:102-14:103, 14:104?-14:105?, 14:106, 14:107?, 14:108-14:109, 14:110?-14:114?, 14:115-14:116, 14:117?-14:120?, 14:121, 14:122?, 14:123, 14:124?-14:126?, 14:127:01-14:127:02, 14:128?-14:133?, 14:134-14:137N, 14:138?-14:140?, 14:141, 14:142?-14:143?, 14:144
90^{6,7}	100 bp, 150 bp	430 bp	14, 4, 8, 13, 6	*04:62, 04:69, 04:73, 04:105:01-04:105:02, 04:122, 04:146, 08:08, 11:69, 11:82, 13:45, 14:01:01-14:01:02, 14:01:04, 14:04, 14:07:01-14:07:02, 14:10, 14:16, 14:22, 14:25-14:26, 14:28, 14:31-14:32:03, 14:35, 14:37-14:39, 14:49-14:50, 14:53-14:54:01, 14:54:03-14:55, 14:57-14:58, 14:60-14:62, 14:68-14:71, 14:73-14:76, 14:79, 14:82, 14:86-14:88, 14:90, 14:93, 14:99, 14:101, 14:104-14:105, 14:107, 14:110-14:114, 14:117-14:120, 14:122, 14:124-14:125, 14:128-14:129, 14:131, 14:137N-14:140, 14:142-14:143, 14:145-14:146, DRB4*01:03:01:02N
91^{6,7,9}	120 bp, 150 bp, 175 bp	430 bp	14, 3, 9, 11, 12, 13, 15, 6, 4	*03:10, 09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:22, 11:13:01-11:13:02, 11:17, 11:52, 13:43, 13:159, 14:01:01-14:02:01, 14:04-14:11, 14:13-14:14, 14:16-14:18, 14:19w, 14:20, 14:21w, 14:22-14:23:04, 14:26, 14:28-14:36, 14:38-14:39, 14:41, 14:43-14:52, 14:54:01-14:57, 14:59-14:62, 14:64-14:65, 14:68, 14:70-14:76, 14:79-14:83, 14:86-14:88, 14:90-14:97, 14:99-14:101, 14:103-14:108, 14:109w, 14:110-14:114, 14:117-14:127:02, 14:129-14:134, 14:137N-14:140, 14:142-14:143, 14:145-14:146, 15:27, 15:34, 15:66:01
92^{6,7,8}	110 bp, 150 bp, 180 bp, 220 bp	430 bp	14, 3, 8, 11, 13, 15, 16, 6, 2	*03:10, 08:09, 08:20-08:21, 08:32, 08:35, 08:36:02, 08:53, 11:13:01-11:13:02, 11:17, 11:23:01-11:23:02, 11:25, 11:31, 11:45, 11:52, 11:55, 11:64, 11:89, 11:96, 11:119, 11:148, 13:13, 13:18, 13:43, 13:45, 13:47, 13:55, 13:119, 13:144, 13:146, 13:154, 13:156, 13:158-13:159, 13:164, 14:01:01-14:01:04, 14:03:01-14:05:04, 14:07:01-14:08, 14:10-14:12:02, 14:14-14:16, 14:18, 14:22-14:23:04, 14:25-14:28, 14:31-14:32:03, 14:34-14:36, 14:38-14:40, 14:42-14:45, 14:49-14:50, 14:53-14:65, 14:67-14:79, 14:81-14:82, 14:84-14:93, 14:95-14:97, 14:99-14:105, 14:107, 14:110-14:120, 14:122-14:140, 14:142-14:146, 15:21w, 16:04w, 16:18w
93^{7,8}	160 bp, 240 bp	430 bp	52	*14:141, DRB3*01:01:02:01-01:15, DRB3*02:01-02:29N, DRB3*03:01:01-03:03
94^{8,10}	215 bp	430 bp	53	DRB4*01:01:01:01-01:08
95	175 bp	430 bp	51	DRB5*01:01:01-01:14, DRB5*02:02-02:06
96¹¹				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 DR low resolution SSP subtypings. When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

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

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

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot-specific information

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 internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases. In the presence of a specific amplification the intensity of the control band often decreases.

³The serological split of all DRB1 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.

⁴For several DRB1 alleles 1st and/or 3rd exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁵Due to sharing of sequence motifs in codon 38, DRB3*01:14 will also be amplified in primer mixes 77, 78 and 89 in addition to primer mix 93.

⁶HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁷Individual alleles can give rise to two differently sized specific PCR fragments in primer mixes 73, 75, 77 to 83, 85, 86, 88 and 90 to 93.

⁸Primer mix 73, 80, 87, 88 and 92 to 94 may have a tendency to giving rise to primer oligomer formation.

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

¹⁰The DRB4*01:03:01:02N allele is amplified by primer mix 94, whereas the DRB4*02:01N and DRB4*03:01N null alleles are not amplified by this primer mix.

¹¹Primer mix 96 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.

‘w’, might be weakly amplified.

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

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

HLA-A LOW PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	120	175	205	190	160	135	175	165	75	80	80	125
PCR product	145	215	235		335	200	205	200		240	175	190
	225	255			505						500	
		365										
		415										
Length of int. pos. control ¹	800	800	1070	800	1070	800	1070	800	800	800	1070	800
5'-primer(s) ²	98	48	363	98	144	176	98	98	261	98	301	103
	5'-CTT 3'	5'-gCT 3'	5'-ATA 3'	5'-CTA 3'	5'-gCC 3'	5'-gCA 3'	5'-CTC 3'	5'-CTA 3'	5'-AAC 3'	5'-CTA 3'	5'-Cgg 3'	5'-CCT 3'
	103	78		413	317	368	368	102	266	261	302	415
	5'-CCT 3'	5'-TCT 3'		5'-CCg 3'	5'-gCT 3'	5'-gTT 3'	5'-gTT 3'	5'-ACA 3'	5'-ACg 3'	5'-AAC 3'	5'-ggA 3'	5'-ggT 3'
	123	106						413			385	423
	5'-AgT 3'	5'-CCA 3'						5'-CCg 3'			5'-ggC 3'	5'-gCT 3'
	363											
	5'-ATA 3'											
3'-primer(s) ³	203	240	527	256	265	270	259	259	302	299	341	257
	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'
	545	292	527	559	368	521	502	259			521	506
	5'-AgA 3'	5'-gTg 3'	5'-CCT 3'	5'-CCg 3'	5'-CAA 3'	5'-ggg 3'	5'-CTT 3'	5'-gTT 3'			5'-ggg 3'	5'-TgT 3'
			527			534	539	538				559
			5'-CCT 3'			5'-CgT 3'	5'-TCT 3'	5'-CCA 3'				5'-CTC 3'
			555									559
			5'-CCA 3'									5'-CgT 3'
			555									559
			5'-gCA 3'									5'-CgC 3'

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec.	175	80	90	240	140	200	340	210	240	85	75	360
PCR product	225	115	135	380	180	390	375	240	375	240	155	
		200	205								240	
		240									495	
		470										
Length of int. pos. control ¹	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
5'-primer(s) ²	98	98	203	41	180	41	302	78	28	78	176	341
	5'-CTT 3'	5'-CAC 3'	5'-gAA 3'	5'-CTT 3'	5'-TTT 3'	5'-CTT 3'	5'-ggA 3'	5'-TCT 3'	5'-TCg 3'	5'-TCT 3'	5'-gCA 3'	5'-ggC 3'
	423	219	362	355	203	98	302	106	261	527	261	
	5'-gCT 3'	5'-gCA 3'	5'-ggT 3'	5'-CCg 3'	5'-gAA 3'	5'-CAC 3'	5'-ggA 3'	5'-CCA 3'	5'-AAC 3'	5'-TgC 3'	5'-AAC 3'	
		238	363		418		341	2 nd I	502		341	
		5'-AgA 3'	5'-ATA 3'		5'-AgC 3'		5'-ggA 3'	5'-CCT 3'	5'-CCC 3'		5'-ggA 3'	
		355	363								355	
		5'-CCg 3'	5'-ATA 3'								5'-CCC 3'	
			363								362	
			5'-ATA 3'								5'-gAg 3'	
			369								362	
			5'-TAC 3'								5'-gAg 3'	
3'-primer(s) ³	282	180	299	238	290	256	397	265	97	265	292	418
	5'-gAC 3'	5'-TCA 3'	5'-CCA 3'	5'-CCT 3'	5'-CAA 3'	5'-CCC 3'	5'-gAg 3'	5'-CCC 3'	5'-ggT 3'	5'-CCC 3'	5'-gTg 3'	5'-gTC 3'
	282	257	411	238	317	256		282	355	282	292	
	5'-gAC 3'	5'-gCA 3'	5'-TCA 3'	5'-CCT 3'	5'-ggA 3'	5'-CTC 3'		5'-gAC 3'	5'-gAC 3'	5'-gAC 3'	5'-gTT 3'	
	559	418	526	243	555	259		282	524	282	299	
	5'-CCC 3'	5'-gTC 3'	5'-CCA 3'	5'-TCA 3'	5'-CCA 3'	5'-gTT 3'		5'-gAC 3'	5'-CAT 3'	5'-gAC 3'	5'-TCT 3'	
	559	555		265				502		570	555	
	5'-CCg 3'	5'-CCA 3'		5'-CCC 3'				5'-CTT 3'		5'-CAC 3'	5'-CCA 3'	
				555				506				
				5'-CCA 3'				5'-TgT 3'				

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot-specific information

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position 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 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.

HLA-B LOW PRIMER SPECIFICATION

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec. PCR product	110	215	140	130	185	180	290	165	165	180	100	280
			235	265	235			220	190		195	
								285	390			
								330				
Length of int. pos. control ¹	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070
5'-primer(s) ²	527	97	209	103	103	103	45	45	45	420	206	419
	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'
	540		363	103	103	418		357	435		420	
	5'-gAC 3'		5'-AgC 3'	5'-CCg 3'	5'-CCT 3'	5'-Agg 3'		5'-Tgg 3'	5'-AAA 3'		5'-TTA 3'	
			363	361	363			412				
			5'-AgC 3'	5'-AgT 3'	5'-AAT 3'			5'-ATA 3'				
3'-primer(s) ³	605	272	309	193	246	246	165	206	266	559	256	3 rd I
	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'-CCC 3'	5'-TAT 3'
		272	312	193	246	572		538	559		272	
		5'-TgA 3'	5'-gCC 3'	5'-CgT 3'	5'-TAT 3'	5'-gCC 3'		5'-gTC 3'	5'-CAg 3'		5'-Tgg 3'	
			559	583	559			603	583		572	
			5'-CAg 3'	5'-gTg 3'	5'-CTC 3'			5'-gTg 3'	5'-gTg 3'		5'-gCg 3'	
Well No.	25	26	27	28	29	30	31	32	33	34	35	36

101.701-24/06 – including *Taq* pol., IFU-01
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Lot-specific information

Well No.	37	38	39	40	41	42	43	44	45	46	47	48
Length of spec. PCR product	195	105	115	80	150	140	60	210	170	110	395	160
		395	150				245					425
		435					400					
Length of int. pos. control ¹	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070	1070
5'-primer(s) ²	142	45	161	167	355	206	45	142	409	246	44	44
	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'
	419	540					368	368	420			357
	5'-gTC 3'	5'-gAC 3'					5'-gTT 3'	5'-gTC 3'	5'-TTA 3'			5'-Tgg 3'
							557					
							5'-ggA 3'					
3'-primer(s) ³	301	272	234	204	463	302	259	311	544	317	272	302
	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'
	301	309	272			312	259	311				302
	5'-gTC 3'	5'-ATC 3'	5'-TgA 3'			5'-AgT 3'	5'-gTT 3'	5'-ggg 3'				5'-ggT 3'
	570	605	272				266	538				477
	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					
							5'-gCg 3'					
Well No.	37	38	39	40	41	42	43	44	45	46	47	48

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec. PCR product	180	290	105	325	80	215	130	90	90	145	120	430
		465			115		270	410	175	430	210	
					160							
					195							
					225							
					260							
Length of int. pos. control ¹	1070	1070	1070	800	1070	800	800	1070	1070	1070	800	1070
5'-primer(s) ²	355	72	540	1 st I	355	141	209	41	209	48	357	49
	5'-TCA 3'	5'-gCT 3'	5'-gAC 3'	5'-CAG 3'	5'-TCA 3'	5'-ATT 3'	5'-ggC 3'	5'-CTg 3'	5'-ggC 3'	5'-gCC 3'	5'-Tgg 3'	5'-CAG 3'
	363	209			418	357	209	368	363	206		
	5'-Agg 3'	5'-ggC 3'			5'-Agg 3'	5'-Tgg 3'	5'-ggg 3'	5'-gTT 3'	5'-AgC 3'	5'-gAA 3'		
					499		355					
					5'-TCT 3'		5'-TCA 3'					
3'-primer(s) ³	499	193	603	282	538	309	299	282	259	309	435	309
	5'-ggA 3'	5'-CgT 3'	5'-gTg 3'	5'-gCC 3'	5'-gTC 3'	5'-ATC 3'	5'-TCA 3'	5'-gCC 3'	5'-gTT 3'	5'-ATC 3'	5'-TCT 3'	5'-ATC 3'
		193	605		572	538	583	418	499		527	
		5'-TgT 3'	5'-gCT 3'		5'-gCg 3'	5'-gTC 3'	5'-gTg 3'	5'-gTC 3'	5'-ggA 3'		5'-CCT 3'	
		387			573							
		5'-TCg 3'			5'-AgT 3'							
Well No.	49	50	51	52	53	54	55	56	57	58	59	60

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **18X**

Lot-specific information

Well No.	61	62	63	64	65	66	67	68	69	70	71	72
Length of spec. PCR product	145	300	160	180	180	90	90	95	115	360	350	285
			370	210		240			150			
Length of int. pos. control ¹	1070	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	800
5'-primer(s) ²	206	1 st I	15	141	420	209	208	206	165	1 st I	1 st I	355
	5'-gAA 3'	5'-CAg 3'	5'-gCA 3'	5'-ATT 3'	5'-TTA 3'	5'-ggC 3'	5'-CgT 3'	5'-gAC 3'	5'-ACC 3'	5'-CAg 3'	5'-CAg 3'	5'-TCA 3'
			418	420		209	209		463			363
			5'-Agg 3'	5'-TTA 3'		5'-ggA 3'	5'-ggA 3'		5'-TgA 3'			5'-AgC 3'
						362	369					
						5'-ggT 3'	5'-TAC 3'					
3'-primer(s) ³	311	259	207	311	559	256	256	259	272	317	311	603
	5'-ggT 3'	5'-CTC 3'	5'-TCC 3'	5'-ggT 3'	5'-CAg 3'	5'-CCC 3'	5'-CTC 3'	5'-gTT 3'	5'-TgC 3'	5'-ggA 3'	5'-ggT 3'	5'-gTg 3'
		259	226	559		259	256		538			605
		5'-CTC 3'	5'-CAC 3'	5'-CgT 3'		5'-CTT 3'	5'-CCC 3'		5'-CCA 3'			5'-gCT 3'
		262	538			263	420					
		5'-TgC 3'	5'-gTC 3'			5'-gTT 3'	5'-gCT 3'					
						559						
						5'-CgT 3'						
Well No.	61	62	63	64	65	66	67	68	69	70	71	72

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 25 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position 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 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.

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **18X**

Lot-specific information

DR LOW PRIMER SPECIFICATION

Well No.	73	74	75	76	77	78	79	80	81	82	83	84
Length of spec.	215	200	210	210	120	75	85	100	210	170	90	180
PCR product	230		230		220	210	210	175	235	215	135	
	260									250	185	
Length of int. pos. control ¹	515	430	430	430	430	430	430	430	430	515	430	430
5'-primer(s) ²	12(124) 5'-A.T 3'	14(129) 5'-gAA 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	13(125) 5'-ACA 3'	13(127) 5'-ATA 3'	15(133) 5'-gTT 3'	26(165) 5'-TAT 3'	26(164) 5'-gTA 3'
	14(129) 5'-gAA 3'		13(126) 5'-AAG 3'	13(126) 5'-AAG 3'	47(227) 5'-gTT 3'	15(133) 5'-gTT 3'		13(125) 5'-ACC 3'	13(127) 5'-ATA 3'	15(133) 5'-gTT 3'	58(261) 5'-gAg 3'	30(178) 5'-gCg 3'
			13(126) 5'-AgA 3'					13(125) 5'-ATA 3'	13(127) 5'-gTA 3'			
								13(125) 5'-gTC 3'	15(133) 5'-gTT 3'			
3'-primer(s) ³	66(286) 5'-gAg 3'	66(286) 5'-gAT 3'	66(286) 5'-gAT 3'	66(286) 5'-gAA 3'	73(305) 5'-ggC 3'	26(164) 5'-ggT 3'	28(171) 5'-CTC 3'	32(184) 5'-gTg 3'	70(298) 5'-CTC 3'	58(260) 5'-CCT 3'	57(257) 5'-CgA 3'	73(307) 5'-CgC 3'
	66(286) 5'-gAg 3'		69(295) 5'-CTg 3'	66(286) 5'-gAg 3'	73(305) 5'-ggC 3'	71(299) 5'-gCT 3'	69(295) 5'-CTg 3'	58(260) 5'-Cgg 3'	73(305) 5'-ggC 3'	73(307) 5'-CAG 3'	73(305) 5'-ggC 3'	
	66(286) 5'-gAT 3'		69(295) 5'-Tg 3'	70(297) 5'-CTg 3'	74(308) 5'-CCC 3'				77(317) 5'-AAT 3'	86(344) 5'-CAC 3'	77(319) 5'-CAC 3'	
	70(297) 5'-CTg 3'		70(298) 5'-CgC 3'	71(301) 5'-ggC 3'					77(319) 5'-CAC 3'			
	71(299) 5'-gCg 3'		71(299) 5'-gCT 3'						77(319) 5'-CAA 3'			
	77(317) 5'-AgT 3'		73(305) 5'-ggC 3'									
	86(344) 5'-CCA 3'		77(317) 5'-AgT 3'									
Well No.	73	74	75	76	77	78	79	80	81	82	83	84

Well No.	85	86	87	88	89	90	91	92	93	94	95
Length of spec.	100	95	220	205	175	100	120	110	160	215	175
PCR product	170	115		225	240	150	150	150	240		
							175	180			
								220			
Length of int. pos. control ¹	430	430	430	430	430	430	430	430	430	430	430
5'-primer(s) ²	13(125) 5'-gTC 3'	12(124) 5'-Cgg 3'	10(116) 5'-gCT 3'	10(116) 5'-gCT 3'	13(125) 5'-gTC 3'	5(101) 5'-CAA 3'	26(164) 5'-gTA 3'	13(125) 5'-gTC 3'	10(116) 5'-gCT 3'	28(170) 5'-gAT 3'	13(125) 5'-gTA 3'
	15(133) 5'-gTC 3'	15(133) 5'-gTT 3'	12(122) 5'-TAT 3'	12(122) 5'-TAT 3'	114(429) 5'-CTg 3'	37(197) 5'-gTT 3'	34(189) 5'-CAG 3'	34(189) 5'-CAG 3'	10(116) 5'-gCT 3'		
	38(200) 5'-CgT 3'		13(125) 5'-gTC 3'	13(125) 5'-gTC 3'		37(197) 5'-gTA 3'		36(196) 5'-AgC 3'	37(199) 5'-TCC 3'		
				15(133) 5'-gTT 3'							
				15(133) 5'-gTC 3'							
3'-primer(s) ³	58(260) 5'-CCT 3'	29(175) 5'-gTg 3'	69(295) 5'-gTC 3'	66(286) 5'-gAA 3'	58(260) 5'-Cgg 3'	42(213) 5'-TCA 3'	57(257) 5'-CAG 3'	57(257) 5'-CAG 3'	51(239) 5'-CCC 3'	86(346) 5'-CTC 3'	57(258) 5'-gCg 3'
	58(260) 5'-CCT 3'	37(199) 5'-CAG 3'	71(299) 5'-gCT 3'	70(298) 5'-CgC 3'	58(260) 5'-CAG 3'	57(257) 5'-CAG 3'	69(295) 5'-CTg 3'	59(265) 5'-gTg 3'	77(317) 5'-AAT 3'	86(346) 5'-CTT 3'	58(260) 5'-CCT 3'
	58(260) 5'-CCT 3'		71(299) 5'-ACT 3'	70(298) 5'-CTC 3'	181(630) 5'-CTT 3'	70(298) 5'-CgC 3'	70(296) 5'-TCC 3'	70(296) 5'-TCC 3'			
								73(307) 5'-CAG 3'			
Well No.	85	86	87	88	89	90	91	92	93	94	95

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: 18X**Lot-specific information**

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 73 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position 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 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.

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

CELL LINE VALIDATION SHEET													
HLA-A low resolution primer set ²													
					Lot No.:	Well							
						17	18	19	20	21	22	23	24
						201329717	201329718	201439919	201329720	201329721	201329722	201439923	201329724
	IHWC cell line ¹		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		-	-	-	-	-	-	-	-

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: 18X

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional 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 solution 1 and 19 were tested by separately adding one or two 3'-primers. Additional 3'-primers in primer solutions 3 and 18 were tested by separately adding one 5'-primer.

In primer solutions 2, 11, 12 and 15 one or two 5'-primers were not possible to test, and in primer solutions 3, 6, 8, 12, 13, 16 and 18 one 3'-primer was not possible to test.

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **18X**

Lot-specific information

CELL LINE VALIDATION SHEET																					
HLA-B low resolution SSP kit ²																					
					Prod. No.:	Well															
						41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
						201329817	201329818	201329819	201329820	201329821	201329822	201329823	201329824	201329825	201329826	201329827	201329828	201329829	201329830	201329831	201329832
	IHWC cell line ¹		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	+	+	-	-	-	-	-	-		-	-	-	-	+	-			

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

CELL LINE VALIDATION SHEET																					
HLA-B low resolution SSP kit ²																					
					Prod. No.:	Well															
						57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
						201329833	201329834	201329835	201329836	201329837	201329838	201440039	201329840	201329841	201329842	201329843	201329844	201329845	201329846	201329847	201434948
	IHWC cell line ¹	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 S8TO	*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		-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	-	

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: 18X**Lot-specific information**

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional 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, 32, 35, 37, 39 and 42 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, 66 and 67 one 5'-primer was not possible to test, and in primer mixes 27, 53, 62, 63 and 66 one or two 3'-primer was not possible to test.

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

CELL LINE VALIDATION SHEET																	
DR low resolution primer set ²																	
										Well							
										73	74	75	76	77	78	79	80
										81	82	83	84	85	86	87	88
										201440101	201440102	201440103	201440104	201440105	201440106	201440107	201440108
										201326709	201440110	201440111	201440112	201440113	201440114	201440115	201440116
IHWC cell line ¹										DRB1							
1	9001	SA	*01:01							+	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05						-	-	+	-	-	-	-	+
3	9011	E4181324	*15:02							-	-	+	-	-	-	-	-
4	9275	GU373	*03:01							-	-	-	-	+	+	-	-
5	9009	KAS011	*16:01							-	-	-	+	-	-	-	-
6	9353	SM	*04:07	*08:03						-	-	-	-	-	-	-	+
7	9020	QBL	*03:01							-	-	-	-	+	+	-	-
8	9025	DEU	*04:01							-	-	-	-	-	-	-	+
9	9026	YAR	*04:02							-	-	-	-	-	-	-	+
10	9107	LKT3	*04:05							-	-	-	-	-	-	-	+
11	9051	PITOUT	*07:01							-	-	-	-	-	-	-	+
12	9052	DBB	*07:01							-	-	-	-	-	-	-	+
13	9004	JESTHOM	*01:01							+	-	-	-	-	-	-	-
14	9071	OLGA	*08:02							-	-	-	-	-	-	-	+
15	9075	DKB	*09:01							-	-	-	-	-	-	-	+
16	9037	SWEIG007	*11:01							-	-	-	-	-	-	-	+
17	9282	CTM3953540	*03:01	*13:01						-	-	-	-	+	+	-	+
18	9257	32367	*09:01	*11:01						-	-	-	-	-	-	-	+
19	9038	BM16	*12:01							-	-	-	-	-	-	-	+
20	9059	SLE005	*13:02							-	-	-	-	-	-	-	+
21	9064	AMALA	*14:02							-	-	-	-	-	-	-	+
22	9056	KOSE	*13:02	*14:54						-	-	-	-	-	-	-	+
23	9124	IHL	*08:03	*14:14						-	-	-	-	-	-	-	+
24	9035	JBUSH	*11:01							-	-	-	-	-	-	-	+
25	9049	IBW9	*07:01							-	-	-	-	-	-	-	+
26	9285	WT49	*03:01							-	-	-	-	+	+	-	-
27	9191	CH1007	*04:05	*10:01						-	-	-	-	-	-	-	+
28	9320	BEL5GB	*04:16	*07:01						-	-	-	-	-	-	-	+
29	9050	MOU	*07:01							-	-	-	-	-	-	-	+
30	9021	RSH	*03:02							-	-	-	-	+	+	-	-
31	9019	DUCAF	*03:01							-	-	-	-	+	+	-	-
32	9297	HAG	*13:03							-	-	-	-	-	-	-	+
33	9098	MT14B	*04:04							-	-	-	-	-	-	-	+
34	9104	DHIF	*11:01							-	-	-	-	-	-	-	+
35	9302	SSTO	*04:03							-	-	-	-	-	-	-	+
36	9024	KT17	*04:03	*04:06						-	-	-	-	-	-	-	+
37	9065	HHKB	*13:01							-	-	-	-	-	-	-	+
38	9099	LZL	*14:02							-	-	-	-	-	-	-	+
39	9315	CML	*03:01	*04:01						-	-	-	-	+	+	-	-
40	9134	WHONP199	*07:01	*09:01						-	-	-	-	-	-	-	+
41	9055	H0301	*13:02							-	-	-	-	-	-	-	+
42	9066	TAB089	*08:03							-	-	-	-	-	-	-	+
43	9076	T7526	*09:01							-	-	-	-	-	-	-	+
44	9057	TEM	*14:01							-	-	-	-	-	-	-	+
45	9239	SHJO	*07:01							-	-	-	-	-	-	-	+
46	9013	SCHU	*15:01							-	-	-	-	-	-	-	+
47	9045	TUBO	*11:04	*12:01						-	-	-	-	-	-	-	+
48	9303	TER-ND	*01:03							-	-	-	-	-	-	-	+

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

CELL LINE VALIDATION SHEET												
DR low resolution primer set ²												
					Prod. No.:	Well						
						89	90	91	92	93	94	95
						201326717	201440118	201440119	201440120	201440129	201440130	201440131
	IHCW cell line ¹		DRB1									
1	9001	SA	*01:01			-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05		-	-	-	-	-	+	+
3	9011	E4181324	*15:02			-	-	-	-	-	-	+
4	9275	GU373	*03:01			+	-	-	-	+	-	-
5	9009	KAS011	*16:01			-	-	-	-	-	-	+
6	9353	SM	*04:07	*08:03		-	-	-	-	-	+	-
7	9020	QBL	*03:01			+	-	-	-	+	-	-
8	9025	DEU	*04:01			-	-	-	-	-	+	-
9	9026	YAR	*04:02			-	-	-	-	-	+	-
10	9107	LKT3	*04:05			-	-	-	-	-	+	-
11	9051	PITOUT	*07:01			-	-	-	-	-	+	-
12	9052	DBB	*07:01			-	-	-	-	-	+	-
13	9004	JESTHOM	*01:01			-	-	-	-	-	-	-
14	9071	OLGA	*08:02			-	-	-	-	-	-	-
15	9075	DKB	*09:01			-	-	+	-	-	+	-
16	9037	SWEIG007	*11:01			-	-	-	-	+	-	-
17	9282	CTM3953540	*03:01	*13:01		+	-	-	-	+	-	-
18	9257	32367	*09:01	*11:01		-	-	+	-	+	+	-
19	9038	BM16	*12:01			-	-	-	-	+	-	-
20	9059	SLE005	*13:02			+	-	-	-	+	-	-
21	9064	AMALA	*14:02			+	-	+	-	+	-	-
22	9056	KOSE	*13:02	*14:54		+	+	+	+	+	-	-
23	9124	IHL	*08:03	*14:14		+	-	+	+	+	-	-
24	9035	JBUSH	*11:01			-	-	-	-	+	-	-
25	9049	IBW9	*07:01			-	-	-	-	-	+	-
26	9285	WT49	*03:01			+	-	-	-	+	-	-
27	9191	CH1007	*04:05	*10:01		-	-	-	-	-	+	-
28	9320	BEL5GB	*04:16	*07:01		-	-	-	-	-	+	-
29	9050	MOU	*07:01			-	-	-	-	-	+	-
30	9021	RSH	*03:02			+	-	-	-	+	-	-
31	9019	DUCAF	*03:01			+	-	-	-	+	-	-
32	9297	HAG	*13:03			+	-	-	-	+	-	-
33	9098	MT14B	*04:04			-	-	-	-	-	+	-
34	9104	DHIF	*11:01			-	-	-	-	+	-	-
35	9302	SSTO	*04:03			-	-	-	-	-	+	-
36	9024	KT17	*04:03	*04:06		-	-	-	-	-	+	-
37	9065	HHKB	*13:01			+	-	-	-	+	-	-
38	9099	LZL	*14:02			+	-	+	-	+	-	-
39	9315	CML	*03:01	*04:01		+	-	-	-	+	+	-
40	9134	WHONP199	*07:01	*09:01		-	-	+	-	-	+	-
41	9055	H0301	*13:02			+	-	-	-	+	-	-
42	9066	TAB089	*08:03			-	-	-	-	-	-	-
43	9076	T7526	*09:01			-	-	+	-	-	+	-
44	9057	TEM	*14:01			-	+	+	+	+	-	-
45	9239	SHJO	*07:01			-	-	-	-	-	+	-
46	9013	SCHU	*15:01			-	-	-	-	-	-	+
47	9045	TUBO	*11:04	*12:01		-	-	-	-	+	-	-
48	9303	TER-ND	*01:03			-	-	-	-	-	-	-

101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

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

Additional 5'-primers in primer solutions 78, 84, 87 and 88 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 73, 75, 76, 82 and 92 were tested by separately adding one 5'-primer.

One, two or three of the 5'-primers in primer solution 73, 75, 76, 80 to 82, 85 to 88 and 92 were not possible to test. One or two of the 3'-primers in primer solution 73, 75, 76, 81, 85, 87 and 94 were not possible to test.

101.701-24/06 – including *Taq* pol., IFU-01

101.701-24u/06u – without *Taq* pol., IFU-02

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Lot-specific information

101.701-24/06 – including *Taq* pol., IFU-01

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101.701-24/06 – including *Taq* pol., IFU-01
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101.701-24/06 – including *Taq* pol., IFU-01
101.701-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **18X**

Lot-specific information

ADDRESSES:

Manufacturer:

Olerup SSP AB, Franzengatan 5, SE-112 51 Stockholm, Sweden.

Tel: +46-8-717 88 27

Fax: +46-8-717 88 18

E-mail: info-ssp@olerup.com

Web page: <http://www.olerup-ssp.com>

Distributed by:

Olerup GmbH, Löwengasse 47 / 6, AT-1030 Vienna, Austria.

Tel: +43-1-710 15 00

Fax: +43-1-710 15 00 10

E-mail: support-at@olerup.com

Web page: <http://www.olerup.com>

Olerup Inc., 901 S. Bolmar St., Suite R, West Chester, PA 19382

Tel: 1-877-OLERUP1

Fax: 610-344-7989

E-mail: info.us@olerup.com

Web page: <http://www.olerup.com>

For information on Olerup SSP distributors worldwide, contact **Olerup GmbH.**