

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

Product number:	101.702-24u/06u – without <i>Taq</i> pol.
Lot number:	85F
Expiry date:	2011-June-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. 85F.

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. 04F**).

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

Well	5'-primer	3'-primer	rationale
15	Added	Added	Primers added for the A*3026 and A*3028 alleles.
17	Added	Added	Primer pair added for improved resolution.
18	-	Added	Primer added for the A*3321 allele.
20		Modified	Primer modified to increase specificity.

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. 04F**).

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

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Well	5'-primer	3'-primer	rationale
33	Exchanged	-	Exchanged positive control primer pair and 5'-primer to increase specificity.
37	-	Modified	Primer modified to increase specificity.
41	-	-	Exchanged positive control primer pair.
44	Exchanged	Exchanged	Exchanged primer pair to improve specificity.
51	Exchanged	Exchanged	Exchanged primer pair to decrease formation of primer dimers.
58	Added	-	Primer added for the B*5903 allele.
64	Modified	-	Primer modified to increase specificity.

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. 04F**).

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

Well	5'-primer	3'-primer	rationale
73	Removed	Removed	Increased resolution.
79	Exchanged	-	Increased resolution.
80	-	Removed	Removed primer to increase resolution..
82	Added	Added	Exchanged positive control primer pair and added primer pair for the Cw*0520 allele.
87	Added	Added	Exchanged positive control primer pair and added primer pair for the Cw*0437 allele.

Change in revision R01 compared to R00:

1. The HLA-B*5150 allele is amplified in primer mix 60.

Changes in revision R02 compared to R01:

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

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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'-Tg g ^{3'}	5'-Tg g ^{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*	+	+	+			
Cw*	+	+	+			
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*0101 to A*8001 alleles into the corresponding serological groups A1 to A80.

The primer set contains 5'- and 3'-primers for grouping the B*0702 to B*8301 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-Cw*0102 to Cw*1803 alleles into the groups Cw*01xx to Cw*18xx.

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-Cw 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. '85F'.

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*1827 allele. Thus, the interpretation of HLA-A low resolution is only influenced by this HLA-B allele and not by other HLA Class I genes.

Only HLA-B alleles will be amplified by the 48 wells of the HLA-B low resolution, primer set, **wells 25 to 72**, except that the HLA-Cw*0223 allele will be amplified by primer mix 25, the HLA-Cw*0305, 0325 and 0327 alleles will be amplified by primer mix 27, that the Cw*0746 allele will be amplified by primer mix 32, the Cw*150204 allele will be amplified by primer mix 64, the Cw*0206 allele will be weakly amplified by primer mix 67 and the HLA-Cw*0206 allele will be amplified

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by primer mix 69. Thus, the interpretation of HLA-B low resolution typings is only influenced by these eight HLA-Cw alleles and not by other alleles of other HLA class I genes.

Only HLA-Cw alleles will be amplified by the HLA-C low resolution primer set, **wells 73 to 95**, except that primer mix 85 will amplify the B*6702 allele and primer mix 92 will amplify the B*1403 allele. Thus, the interpretation of HLA-C low resolution typings is only influenced by these HLA-B alleles and not by other HLA class I genes.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A alleles², i.e. **A*0101 to A*8001**, recognized by the HLA Nomenclature Committee in May 2009¹ will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 24**. The HLA-A alleles will be grouped into their corresponding serological specificities³.

All the HLA-B alleles², i.e. **B*0702 to B*8301**, recognized by the HLA Nomenclature Committee in May 2009¹ will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into their corresponding serological specificities⁴.

All the HLA-Cw alleles², i.e. **Cw*0102 to Cw*1803**, recognized by the HLA Nomenclature Committee in May 2009¹ will be amplified by the primers in the HLA-C low resolution primer set, **wells 73 to 95**. The HLA-Cw alleles will be grouped into the Cw*01xx to Cw*18xx groups.

¹HLA-A, HLA-B and HLA-Cw alleles listed on the IMGT/HLA web page 2009-May-11, release 2.25.2, www.ebi.ac.uk/imgt/hla.

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

³The A*0318 and A*2619 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

The A*2314, A*2405, A*241302 and A*2424 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

⁴The B*0826 and the B*4207 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*1408 and the B*3925N, B*3930, B*3932 to 3934 and B*3947 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*1829 and the B*3532, B*3537, B*3553N, B*3564, B*356801-356802 and B*3599 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*5504, B*5508, B*5513, B*5527 and the B*5615, B*5619N and B*5622 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*5523, B*5532 and the B*5618 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.

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 ^{4,11}
1⁵	120, 145 bp	800 bp	A1, A36	01010101-0104N, 0106-0135, 3601-3604
2⁶	135, 200, 255 bp	1070 bp	A2	02010101-020115, 020117-020119, 020121-0222, 0224-023501, 023503-0247, 0249-0297, 0299, 9201-9221, 9223-9228, 9230-9257
3¹²	205, 235 bp	1070 bp	A1, A3, A11, A32, A34, A36	0112, 0119, 0121, 03010101-0317, 0319-0347, 0350, 0351, 1125, 2492, 3204, 3402-3404, 3407, 3408, 3602
4	190 bp	800 bp	A1, A2, A3, A11, A26, A30, A36	01010101-0104N, 0106, 0107, 0109-0111N, 0113, 0116N-0118N, 0120-0129, 0131N-0135, 0278, 0312, 0318, 110101-1127, 1129-1142, 2619, 3008, 3604
5	160, 535 bp	800 bp	A3, A23, A24, A31, A32	0330, 2301-2321, 24020101-2411N, 241301-2415, 2417-2464, 2466-2488, 2490N-2499, 3108, 3205, 3213
6	165, 200 bp	800 bp	A2, A23, A24, A29, A80	9222, 2301-2321, 2405, 241302, 2424, 2907, 8001, B*1827
7	175, 205 bp	1070 bp	A2, A23, A24, A26, A33	021701-021702 ^{weakly} , 2314, 24020101-2411N, 241301-241302, 2417-2450, 2454-2456, 2458-2463, 2466-2491, 2493, 2495-2499, 2616, 3319, 6845
8	165, 200 bp	800 bp	A2, A3, A11, A25, A26, A32, A34, A66, A68, A69	0255, 0324, 0350, 1110, 250101-2508, 260101-2606, 2608-2615, 2617, 2618, 2620-2638, 3215, 340101-3408, 6601-6609, 680101-6847, 6901
9⁵	75 bp	800 bp	A25, A32	250101-2508, 320101-3202, 3204, 3206-3218

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10^{5,7}	85 bp	1070 bp	A2, A26, A33	9246, 260101-2602, 2604, 260701-2618, 2620, 2622-2629, 2632-2638, 3313
11^{5,8}	80, 175, 500 bp	1070 bp	A1, A11, A24, A26, A31, A34, A66	0113, 0128, 110101-1127, 1129-1142, 2419, 2444, 2603, 2606, 2621, 3103, 340101-3408, 6601, 6604-6609
12	185 bp	800 bp	A11, A25, A26, A31, A34, A43, A66	1111, 2506, 2609, 3103, 3104, 340101-3408, 4301, 6602, 6603
13	175, 225 bp	1070 bp	A1, A2, A3, A25, A26, A34, A43, A66	0113, 0234-023503, 025601-025602, 0262, 9203, 9235, 03010101-0307, 0309-0311N, 0313-0331, 0333-0335, 0337-0340, 0342-0347, 0350, 0351, 250101-2505, 2507, 2508, 260101-260107, 2602 ^{weakly} , 2603, 2605-2608, 2610-2633, 2635-2638, 3408, 4301, 6601, 6604-6609, 7413
14	200, 240 bp	1070 bp	A29, A33	29010101-2919, 3313
15⁵	90, 135, 205 bp	1070 bp	A1, A30	0113, 0128, 0343, 300101-3004, 3006-3020, 3022-3028
16	370, 400 bp	1070 bp	A31, A32	2914, 310102-3124, 3205
17	150, 180 bp	1070 bp	A29, A32	0343, 2913, 320101-3203, 3205-3218
18	200 bp	1070 bp	A33, A68	3301, 330301-3323, 6829
19	160, 200 bp	800 bp	A74	2919, 7401-7413
20	155, 240 bp	800 bp	A2, A210, A25, A30, A68	0210, 0234-023503, 0239, 0246, 0248, 0250, 0252, 025601-025602, 0262, 0270, 0273, 0278, 0293, 0295, 9203, 9210, 9214, 9217, 9222, 9229, 9256, 2494, 2505, 3008, 680101-6847
21	240, 375 bp	800 bp	A2, A24, A26, A68, A69	0255, 2482, 2622, 3322, 6609, 6829, 6901
22^{5,9}	85, 240 bp	800 bp	A2, A30, A36	0234-023503, 0246, 0248, 025601-025602, 0262, 0270, 0278, 9203, 9229, 3008, 3601-3604
23^{5,7}	75, 160 bp	800 bp	A2, A26,	0255, 2603, 2605, 2606, 2621,

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24	360 bp	1070 bp	A68, A80	2630, 6805, 6815, 6820, 8001
			A1, A11,	01010101-0104N, 0106, 0108-
			A33, A36,	0129, 0131N-0135, 0341,
			A74, A80	110101-1111, 1113-1117, 1119- 1127, 1129-1140, 1142, 3313, 3601-3604, 7410, 8001

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

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

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

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

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

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

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

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

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

³The serological reactivity of all HLA-A alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site and the information available at the www.worldmarrow.org web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

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

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

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

⁶The primer pairs in vial 2 will in most samples give rise to two specific PCR fragments.

⁷Primer mixes 10 and 23 may yield less specific PCR product than the other primer mixes.

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

⁹Primer mix 22 might faintly amplify most A*11 alleles.

¹⁰The A*0318 and A*2619 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

The A*2314, A*2405, A*241302 and A*2424 alleles will give rise to identical amplification patterns. These four alleles can be separated by the respective high resolution SSP primer sets.

¹¹Primer mix 6 will amplify the B*1827 allele.

¹²Primer mix 3 may faintly amplify the A*30:04, 30:06, 30:17 and 30:29 alleles.

‘w’, might be weakly amplified.

SPECIFICITY TABLE

HLA-B low resolution primer set

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

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-B serol. ³	Amplified HLA-B alleles ⁴
25^{5,10}	110 bp	800 bp	7, 15, 37, 40, 41, 42, 48	070201-071802, 0720-0732, 0734-0739, 0741-0747, 0749N, 0750, 0752, 0754-0759, 0761-0772, 0775, 0776, 9538, 3707, 4015, 4016, 4023, 4032, 4108, 420501-420502, 4805, 4808, 4815, Cw*0223
26	215 bp	1070 bp	8, 15, 44	080101-0825, 0827-0838, 0840, 9542, 4449
27¹⁰	140, 235 bp	1070 bp	7, 8, 13, 15, 35, 40, 4005, 44, 46, 53, 57, 58	0720, 0724, 0760, 0821, 0825, 1301-1304, 1306-1308Q, 1310-1324, 1507, 1536 ^{weakly} , 1545, 1555, 1568, 1589 ^{weakly} , 9526, 3505, 3516, 3517, 3522, 3530, 3551, 3558, 3572, 3589, 3597, 4005, 4071, 4408 ^{weakly} , 4454, 4457 ^{weakly} , 4460, 4612, 5164, 5314, 5818, Cw*0305, Cw*0325, Cw*0327
28⁹	130, 265 bp	1070 bp	13, 14, 15, 35, 40, 41, 44, 45, 47, 49, 50	1301-1304, 1306-1313, 1315-1324, 1401-1404, 1407N, 1409, 1546, 1553, 9506, 3546, 3547, 3563, 400101-400106, 4007, 4010, 401401-4016, 4022N, 4023, 4025, 4030-4034, 4036, 4038, 4042, 4043, 4045, 4047-4049, 4051-4055, 4058-4063, 4065-4067, 4069, 407201-4073, 4076, 4077, 4079-4081, 4084, 4087, 4088, 4092, 4101-4108, 44020101-4405, 4409-4439, 4441-4443, 4445-4456N, 4458N-4467, 4469, 4501-4509, 47010101-4705, 490101-4902, 4904, 4905, 5001, 5002, 5004
29⁶	185, 235 bp	1070 bp	14, 16, 27, 37, 38, 39,	1401, 1407N, 1408, 1410, 2701-270402, 270502-2706, 2708-2710,

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			47, 64, 67	2712, 2713, 2716-2718, 2720, 2723, 2726, 2727, 2729, 2731, 2735-2737, 2739-2742, 2744-2746, 2750, 3702, 380101-3803, 3807-3819, 39010101-39010102L, 390103-390201, 3903, 3905-390602, 3907 [?] , 3908, 3909, 3911, 3914, 3915, 3918, 391902, 3922, 3924-3944, 3946-3948, 4704, 4705, 670101
30⁶	185 bp	800 bp	14, 35, 38, 39, 65	140201-140602, 1409, 3526, 3805, 3904, 3907 [?]
31	290 bp	1070 bp	15, 62, 63, 75, 76, 77, 46	15010101-150103, 150106-1502, 1504-1508, 151101-1515, 15170101-151702, 1519-1521, 1524-1528, 1530-1536, 1538-1540, 1542-1546, 1548, 1550, 1555-1558, 1560, 1563, 1565, 1566, 1568, 1570, 1571, 1573, 1575-1579N, 1581-1589, 1592, 1594N, 1596, 1597, 9501, 9502, 9504-9507, 9509-9513, 9516-9518, 9520-9522, 9525, 9526, 9528, 9529, 9535-9550, 9552, 9554, 9555, 9557, 9559, 9560, 460101-4618
32¹⁰	165, 220, 330 bp	1070 bp	8, 15, 35, 37, 40, 41, 42, 44, 45, 51, 56, 57, 70, 71, 72	080101-0805, 0808N-0812, 0815-0819N, 0821-0824, 0826, 0827, 0829-0836, 0838, 1503, 1509, 1510, 1518, 1523, 1529, 1537, 1546, 1547, 1549, 1551-1554, 1561, 1562, 1564, 1568, 1569, 1572, 1574, 1580, 1583, 1590, 1591, 1593, 1598, 1599, 9503, 9506, 9508, 9514, 9515, 9519, 9523, 9524, 9527, 9531-9534, 9543, 9551, 9553, 9556, 9558, 3587, 3712, 4012, 4101-410302, 4105-4108, 4201, 4202, 4204-4208, 4216, 4414, 4415, 4418, 4420, 4462, 4501-4509, 5108, 5120, 5136, 5144N, 5520, 5613, 5709, 8201, 8202, Cw*0746
33^{7,11}	165, 390 bp	1070 bp	15, 35, 40, 44, 51, 52, 56, 58, 62,	150102, 1509, 1516-151702, 1567, 1595, 350402, 4026, 4028, 4462, 510101-510103, 510105-510203,

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			63, 70, 78	5103-510902, 5111N, 5112, 511302, 5114, 5117-5120, 5122, 5123, 5126-5130, 5132, 5133, 5137-5141N, 5143, 5144N, 5146, 5148-5161, 5163-5165, 520101-5207, 5209-5213, 560501-5606, 5621, 5808, 7801-7806
34⁷	180, 400 bp	800 bp	13, 15, 40, 55, 62, 70, 71, 72, 75	1301-130205, 1307N-1309, 1311, 1314-1320, 1322-1324, 1509, 1510, 1518, 1521, 1523, 1537, 1544, 1551, 1552, 1566, 1572, 1580, 1590, 1593, 1599, 9508, 9514, 9515, 9519, 9524, 9533, 9534, 9553, 4048, 5509, 5522, 5524
35⁵	105, 195 bp	1070 bp	7, 8, 15, 27, 38, 39, 40, 44, 45, 48, 55, 72	0727, 0750, 0804, 0817, 1503, 1547, 1549, 1554, 1561, 1562, 1564, 1568, 1569, 1591, 1598, 9503, 9523, 9527, 9531, 9532, 9551, 9556, 9558, 2718, 2729, 2750, 3803, 390201-390202, 3908, 391301-391302, 3923, 3939, 4012, 4046, 4093, 4410, 4415, 4418, 4440, 4444, 4501, 4505-4507, 480101-4805, 4807-4819, 5002, 5518, 8201, 8202
36	280 bp	1070 bp	7, 8, 13, 15, 18, 27, 35, 39, 40, 42, 44, 46, 48, 49, 51, 53, 54, 55, 56, 57, 58, 62, 63, 70, 71, 72, 75, 76, 77	0709, 0711, 0717, 0828, 0835, 0837, 1304, 1310, 15010101-150104, 150106-1508, 151101-1516, 1518-1521, 1523-1529, 1531-1536, 1538-1540, 1543, 1544, 1546, 1547, 1549-1557, 1560-1562, 1564-1572, 1574-1576, 1578-1582, 1584, 1585, 1587-1589, 1591-1598, 9501-9529, 9531, 9532, 9534-9536, 9538-9549N, 9551-9560, 180101-1815, 1817N-1825, 1827-1833, 2741, 350101-350107, 3505, 3507-350803, 3510, 3511, 351401-3517, 3519-3521, 3523-3530, 3532, 3535, 3537, 3540N-3543, 3545-3554, 3557, 3558, 3561-3564, 3566-3569, 3571, 3572, 3576-3580, 3582, 3586, 3589-3594, 3597, 3599, 3907, 3943, 4003, 4020, 4038, 4052, 4059, 4060, 4209, 4417, 4443, 4509, 460101-

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				4610, 4612-4617, 4802, 4814, 4904, 4905, 5137, 5145, 5163, 530101-5303, 5305, 5306, 5308-5318, 5406, 5409, 5414, 5514, 5523, 5532, 5603, 5609, 5618, 570101-570103, 5706, 5708, 5710, 5711, 5713-5716, 5718, 5719, 580101-5802, 5804-5807, 5809-5819, 5821
37	195 bp	1070 bp	15, 35, 37, 38, 44, 45, 58, 76	1512, 1514, 1519, 1591, 9531, 3545, 3571, 370101-3709, 3712, 3713, 3817, 4417, 4443, 4509, 4617, 5807
38⁵	105, 435	1070 bp	7, 15, 41, 42, 59, 62, 63, 77	0704, 0725, 1513, 1516-151702, 1523, 1524, 1567, 1587, 1595, 9557, 4108, 420501-420502
39^{5,6}	115 bp	1070 bp	18	180101-1815, 1817N-1828, 1830-1833
40⁵	80 bp	1070 bp	27, 40, 44	2701-270402, 270502-2721, 2723-2746, 2750, 4046, 4093, 4440, 4444
41	150 bp	800 bp	13, 15, 18, 27, 35, 37, 39, 40, 44, 48, 51, 53, 55, 56, 57, 58, 62, 75, 77	1301, 1306, 1307N, 1312, 1313, 1317, 1320, 1322-1324, 1410, 1502, 1513, 1520, 1521, 1525, 1536, 1544, 1562, 1577, 1580, 1585, 1588, 1589, 9506, 9512, 9521, 9539, 9544, 9554, 1822, 2719, 2730, 350101-350403, 3506-350803, 3510-3517, 3519-3521, 3523-3530, 3533-3536, 3538-3542, 3545-3550, 3552, 3554-3557, 3559, 3561-3563, 3565Q, 3569-3571, 3574, 3576-3578, 3580-3585, 3590-3595, 370101-370104, 3703N-3706, 3708, 3710, 3711, 3713, 3942, 4028, 44020101-4414, 4416, 4417, 4419N, 4421-4430, 4432-4440, 4442-4446, 4448-4452N, 4455-446402, 4466, 4467, 4469, 4802, 5104, 5142, 5146, 5156, 530101-5313, 5315-5318, 5514, 5609, 5611, 5612, 570101-5710, 5712, 5714-5719, 580101-580102, 5804, 5805, 5809-5815, 5817N, 5819, 5821, 8301
42	135 bp	1070 bp	7, 8, 18, 35, 37, 39,	0765, 0832, 180101-1808, 1810-1815, 1817N-1833, 350101-3518,

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			56, 78	352001-3524, 3528-3545, 3548, 3550-3555, 3557-3562, 3564-3572, 3774-3595, 3597, 3599, 3711, 391901-391902, 5606, 7801-7805
43	245, 400 bp	1070 bp	15, 62, 63, 70, 71, 72, 75, 76, 77, 40, 44	15010101-150104, 150106-1521, 1523-1540, 1542-1558, 1560-1575, 1576 ^{weakly} , 1577-1599, 9501-9529, 9531-9560, 4012, 4410, 8201, 8202
44	210 bp	800 bp	7, 8, 15, 18, 37, 38	0727, 370101-3714, 3817
45	170 bp	800 bp	15, 35, 38, 39, 67	1569, 3535, 380101-3809, 3811-3819, 39010101-39010102L, 390103-3920, 3922-3924, 3926-3929, 3931, 3935, 3937-3942, 3944-3946, 3948, 5820, 670101-6702
46⁵	110 bp	1070 bp	38	380101-3803, 3805, 3808-3819
47	400 bp	1070 bp	14, 38, 39, 64, 65	0769, 1401-1410, 380101-380202, 3804, 3805, 3808-3819, 39010101-39010102L, 390103-390106, 3903-3907, 3909, 3911, 3912, 3914, 3915, 3918-391902, 3922, 3924-3938Q, 3940N- 3948
48	430 bp	1070 bp	7, 8, 14, 39, 40, 41, 42, 45, 48, 50, 60, 64, 65, 67, 73	070201-0726, 0728-0735, 0737, 0739-0764, 0766-0772, 0775, 0776, 080101-080106, 0804-0835, 0837, 0838, 0840, 1401-1410, 39010101-39010102L, 390103-3920, 3922-3948, 400101-400106, 4007, 4009-4011 [?] , 401401-4015 [?] , 4016, 4018 [?] , 4021 [?] , 4022N [?] , 4023, 4024-4038 [?] , 4040 [?] , 4042-4046 [?] , 4048-4050 [?] , 4051, 4052-4058 [?] , 4059, 4060, 4061-4065 [?] , 4066, 4067-4069 [?] , 4071 [?] , 407201-4073, 4074 [?] , 4075 [?] , 4077, 4078 [?] , 4079, 4080-4088 [?] , 4090-4093 [?] , 4095 [?] , 4101-4108, 4201, 4202, 4204-4210, 4501-4509, 480101-4817, 4819, 5001, 5002, 5004, 670101-6702, 7301, 8102
49¹⁰	175 bp	1070 bp	15, 40, 44, 46, 48, 60	9516, 9524, 400101-400106, 4007, 4010, 4012, 4021-4023, 4025, 4033, 4036, 4038, 4042, 4043, 4046-4049, 4051, 4052, 4054, 4055, 4060-4063, 4065-4067, 4069, 4073, 4074, 4076, 4079,

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				4081, 4084, 4087, 4088, 4092, 4431, 4606, 480301-480302
50	130 bp	1070 bp	40, 61	400201-400602, 4008, 4009, 4011, 4013, 4018-4020, 4024, 4026-4029, 4035, 4037, 4039, 4040, 4044, 4050, 4056, 4057, 4064, 4068, 4070, 4071, 4074, 4075, 4078, 4082, 4085, 4086, 4089-4091, 4094-4096
51⁵	105 bp	1070 bp	7, 8, 35, 41, 42, 55	0704, 0725, 080101-0805, 0807-0812, 0814-0819N, 0821-0824, 0826-0838, 3587, 4101-4108, 4201, 4202, 4204-4207, 4209, 4210, 5520
52	325 bp	1070 bp	7, 15, 27, 35, 42, 45, 46, 54, 55, 56, 67, 73, 81	070201-070207, 0704-0707, 0709-0712, 0713 ^{weakly} , 0714, 0715 ^{weakly} , 0717-0726, 0728-0731, 0733-0736, 0739-0749N, 0751-0768, 0770-0772, 0775, 0776, 1576, 9501, 2701-270402, 270502-2711, 2713-2715, 2717, 2719-2721, 2724-2728, 2730-2738, 2740-2746, 2750, 3576, 4201, 4202, 4204-4206, 4208-4210, 4506, 460101-460102, 4602 ^{weakly} , 4603-4618, 5401-5417, 550101-5505, 5507-5517, 5519-5534, 5601-5616, 5618-5622, 5624, 670101-670102, 6702 ^{weakly} , 7301, 8101-8104N, 8201, 8202, 8301
53^{5,12}	115, 195, 225, 260 bp	1070 bp	35, 37, 44, 47, 51, 57	3538, 3545, 3571, 370101-370105, 3703N-3706, 3708, 3710-3713, 44020101-4414, 4416, 4417, 4419N-4436, 4438-4463, 4465-4467, 4469, 5142, 5707, 5709, 8301
54	215 bp	800 bp	8, 12, 15, 41, 42, 44, 45, 51, 52, 53, 55, 56, 58	0809, 1583, 4101, 4105-4107, 4204, 4406, 4415, 4418, 4420, 4501-4509, 510101, 510103-510108, 510201, 510203-5104, 5106-510901, 5110-5114, 5116-512402, 5126-5146, 5148, 5149, 5151-5153, 5155-5165, 520102, 520104-5203, 520601-520602, 5209, 5306, 5520, 5613, 5808
55	130, 270 bp	1070 bp	18, 35, 37, 40, 46, 51, 53, 57, 58	1410, 1557 ^{weakly} , 1822, 3521, 3524, 3581, 3704, 4028, 460101-4618, 5104, 5146, 5156, 5302, 5306,

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56⁵	90, 410 bp	1070 bp	7, 27, 35, 47, 54, 55, 56, 81	5714, 5809 0765, 2702-270402, 270502-2711, 2713-2715, 2717, 2719-2721, 2724-2728, 2730-2738, 2740-2746, 2750, 3576, 47010101-4703, 5401-5417, 550101-5505, 5507- 5517, 5519-5534, 5601-5616, 5618-5622, 5624, 8101, 8201, 8202, 8301
57⁵	90, 175 bp	1070 bp	15, 27, 35, 40, 48, 62, 75, 77, 81	1502, 1508, 151101-151103, 1513, 1515, 1521, 1531, 1544, 1555, 1576 ^{weakly} , 1588, 1589, 9512, 9521, 9539, 9544, 9548, 2724, 3546, 4031, 4045, 4080, 480101-480102, 4804, 4806, 4807, 4809, 4811, 4815, 4816, 4818, 4819, 8101- 8104N
58	145, 430 bp	1070 bp	40, 44, 49	4013, 4019, 4418, 4425, 4450, 490101-490102, 4904, 4905, 5412, 5621, 5901-5904
59⁵	120, 210 bp	800 bp	13, 15, 45, 49, 50, 51, 52, 55, 56, 58, 62, 63, 78	1316, 1504 ^{weakly} , 1516, 1542, 1567, 1595, 9537 ^{weakly} , 4095, 490101, 4902-4905, 5001, 5002, 5004, 510101-5103, 5105, 5107-510902, 5111N-5114, 5116-152402, 5126- 5141N, 5143, 5144N, 5148-5155, 5157, 5158, 5160, 5161, 5163, 5165, 520101-5214, 550101- 550104, 5503, 5505, 5509, 5511, 5515, 5517, 5521 ^{weakly} , 5524, 5525, 5528, 5529, 5531, 5533, 560501- 5606, 5621, 5808, 7801-7806
60	430 bp	1070 bp	27, 40, 44, 45, 51, 52, 53, 57, 58, 59	2702, 2730, 4013, 4019, 4406, 4425, 4450, 510101-512402, 5126- 5146, 5148-5153, 5155-5165, 520101-5214, 530101-5302, 5304- 5308, 5310, 5314-5318, 570101- 5711, 5713-5719, 580101-5802, 5804-5816, 5818-5821
61	145 bp	1070 bp	15, 35, 40, 41, 44, 45, 47, 50, 72	1546, 1553, 9506, 9543, 3519, 3547, 3563, 400101-4011, 401401- 4016, 4018, 4020, 4022N-4040, 4042-4045, 4048-4075, 4077-4092, 4094, 4095, 4101-4104, 4105 [?] , 4106-4108, 4409, 4446, 4501- 4509, 4702, 4703 ^{weakly} , 5001, 5002, 5004

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62	300 bp	1070 bp	7, 8, 13, 15, 18, 27, 35, 37, 38, 39, 40, 41, 44, 45, 46, 47, 48, 49, 50, 52, 55, 57, 58, 62, 72, 76, 78	0754, 0817, 0838, 1301-1304, 1306, 1308Q-1324, 15010101- 150104, 150106-150108, 1503- 1507, 1512, 1514, 1519, 1520, 1524-152703, 1530, 1532-1536, 1538-1540, 1542, 1543, 1545- 1550, 1553, 1554, 1556-1558, 1560-1563, 1565, 1566, 1568- 1571, 1573-1575, 1577-1579N, 1581-1587, 1591, 1592, 1594N, 1596-1598, 9501-9507, 9509- 9511N, 9513, 9516-9518, 9522, 9523, 9525-9529, 9531, 9532, 9535-9538, 9540-9542, 9545-9547, 9550-9552, 9554-9560, 1812, 2701-270402, 270502-2721, 2724- 2746, 2750, 3510, 3513, 3516, 3528, 3563, 3569, 3580, 370101- 3707, 3709-3714, 3803, 3804, 390201-390202, 3908, 391301- 391302, 3922, 3923, 400101-4007, 4009-4016, 4018-4024, 4026-4040, 4042-4067, 4070-4096, 4101-4108, 44020101-4405, 4407-4411, 4413- 4467, 4469, 4501-4509, 47010101- 4705, 480101-4805, 4807-4815, 4817-4819, 490101-4905, 5001, 5002, 5004, 520101-5214, 5317, 5518, 5534, 7805, 7806
63	160, 215 bp	1070 bp	15, 37, 44, 54	150104, 370104, 4094, 44020101- 440205, 4406, 4408, 4409, 4411, 4412, 4416, 4419N-4424, 4427, 4433, 4434, 4441, 4444, 4448, 4449, 4452, 4453, 4455, 4459, 4463, 4466, 4467, 5401-5417, 8301
64¹⁰	180, 210 bp	1070 bp	7, 13, 15, 18, 35, 39, 40, 45, 54, 55, 56, 59, 78	0765, 1306, 1542, 1586, 1804, 3560, 3917, 4058, 4508, 4618, 5401, 5402, 5405N, 5407, 5408N, 5410, 5412, 5413, 5416, 5417, 550101-5503, 5505, 5507, 5510- 5512, 5515, 5516, 5518, 5519, 5521, 5525, 5526, 5529-5531, 5533, 5534, 560501, 5606, 5610, 5623, 5901, 7801, 780202, 7803, Cw*150204
65¹⁰	180 bp	1070 bp	13, 15, 40, 44, 45,	1303, 1573, 4071, 4410, 4415, 4418, 4501, 4504-4507, 4611,

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			46, 49, 50, 51, 54, 56	490101-4903, 5001, 5002, 5004, 5115, 5162, 5403, 5601, 5602, 5604, 5607, 5608, 5613, 5614, 5616, 5617, 5620, 5624, 5904, 8201, 8202
66^{5,8}	90, 240 bp	800 bp	55, 57	5514, 570101-5715, 5717-5719
67^{5,10}	90 bp	1070 bp	13, 15, 39, 40, 56, 58	1311, 1573, 3917, 4048, 4071, 5162, 5602, 5604, 5610, 580101- 5802, 5804-5821, Cw*0206^{weakly}
68⁵	95 bp	1070 bp	7, 8, 18, 35, 37, 38, 39, 44, 51, 52, 53, 78	0765 ^{weakly} , 0832, 180101-1811, 1813-1815, 1817N-1833, 350101- 350902, 3511, 3512, 351401-3515, 3517, 3518, 352001-3524, 3527, 3529-3545, 3548, 3550-3562, 3564-356802, 3570-3572, 3574, 3575, 3576 ^{weakly} , 3577-3579, 3581-3595, 3597, 3599, 3708, 3806, 3807, 391901-391902, 4406, 510101-512402, 5126-5146, 5148- 5165, 530101-5316, 5318, 7801- 7804
69^{5,10}	115, 150 bp	1070 bp	15, 18, 27, 35, 39, 46, 54, 55, 56, 62, 73, 75, 76	15010101-150104, 150106- 150108, 1504, 1507, 1508, 151101- 1512, 1514, 1515, 1519, 1524, 1526N-1528, 1530, 1532, 1534, 1535, 1538, 1543, 1545, 1546, 1550, 1553, 1554, 1556-1558, 1560, 1563, 1566, 1568, 1570, 1571, 1573, 1575-1577, 1579N, 1581, 1582, 1585, 1587, 1592, 1594N, 1596, 1597, 9501, 9502, 9504, 9505, 9509-9511N, 9513, 9517, 9518, 9520, 9522, 9525, 9526, 9528, 9529, 9535, 9537, 9540, 9542-9549N, 9552, 9554, 9557, 9559, 9560, 1819, 2725, 351401-351402, 3543, 3544, 3562, 3567, 3579, 3586, 3918, 3936, 460101-4602, 4604, 4605, 4607N, 4609, 4610, 4612, 4614-4617, 5161, 5406, 5521, 5603, 7301, Cw*0620
70¹³	360 bp	1070 bp	Bw4 ¹⁶	
71	350 bp	1070 bp	Bw6	
72⁸	290 bp	800 bp	7, 8, 35, 37, 40, 41,	070201-0706, 0708-0732, 0734- 0741, 0743-0752, 0754-0759, 0761-

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42, 48, 53, 81	0772, 0775, 0776, 080101-0808N, 0810, 0811, 0813-0815, 0817- 0830N, 0832-0838, 0840, 3566, 3587, 3707, 4015, 4016, 4030-4032, 4034, 4045, 4059, 4080, 4102, 4104, 4201, 4202, 420501-4207, 4209, 4210, 480101-480102, 4805- 4812, 4814-4819, 5315, 8101- 8104N
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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 length of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

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

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

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

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

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

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

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

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

³The serological reactivity of all HLA-B alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site and the information available at the www.worldmarrow.org web site and have also inferred the serological grouping from the naming 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.

The B*0826 and the B*4207 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*1408 and the B*3925N, B*3930, B*3932 to 3934 and B*3947 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*1829 and the B*3532, B*3537, B*3553N, B*3564, B*356801-356802 and B*3599 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*5504, B*5508, B*5513, B*5527 and the B*5615, B*5619N and B*5622 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*5523, B*5532 and the B*5618 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.

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

⁶Primer mixes 29, 30 and 39 may yield less specific PCR product than the other HLA-B low resolution primer mixes.

⁷Primer mixes 33 and 34 have a higher tendency than other primer mixes to give rise to nonspecific amplifications.

⁸Primer mixes 66 and 72 may give rise to a primer oligomer artifact.

⁹Primer 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.

¹⁰Primer mix 25 will amplify the Cw*0223 allele, primer mix 27 will amplify the Cw*0305, Cw*0325 and Cw*0327 alleles, primer mix 32 will amplify the Cw*0746 allele, primer mix 64 will amplify the Cw*150201 allele, primer mix 67 will amplify the Cw*0206 allele and primer mix 69 will amplify the Cw*0620 allele, the Cw*1701 to Cw*1704 alleles might be faintly amplified by primer mix 49 and the Cw*0312 allele might be faintly amplified by primer mix 65.

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

¹²Primer mix 53 might generate a false band of about 500 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

¹³The Bw4-associated HLA-A specificities A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 70.

‘?’ , 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 alleles
73⁶	155 bp	800 bp	010201-0127
74	270 bp	800 bp	0110, 020201-020203, 020205-0223, 0226, 0227, 0432, 0608, 1701-1705, 1803
75	280 bp	800 bp	020201-020203, 020205-0203, 0204 ^{weakly} , 0205-0213, 0214 ^{weakly} , 0215-0223, 0227, 030201-030203, 030401-0310, 0314-0317, 0319, 0323-0329, 0332-033802, 0340-0342, 0344-0348, 0357, 0403, 0406, 0416, 0603, 150201-1509, 151002, 1511, 1513, 1515-1521
76	155 bp	1070 bp	030201-030406, 0305-0315, 0317-0340, 0342-0350, 0357
77	280 bp	800 bp	030301-030305, 031101-0313, 0320N-0322Q, 0330, 0331, 034301-034302, 0349, 0350, 0358, 1512
78⁵	125 bp	1070 bp	020201-020203, 020205-0220, 0222, 0223, 0227, 04010101-040106, 0403-041502, 0417-0420, 0423-0438, 0440, 1511
79	390 bp	1070 bp	05010101-050104, 0503-0525, 0810
80^{4,7}	130, 355 bp	800 bp	0206, 06020101-06020102, 060203-0616N, 0618-0620, 0622, 0623, 1215, 150201-1503, 1507, 1508, 151001-1513, 1515-1518, 1521
81⁴	245, 425 bp	800 bp	070101-0733N, 0735-0764, 0766-0772
82^{4,5}	115, 165, 260, 390 bp	1070 bp	080101-0823
83	340 bp	1070 bp	0114, 020201-020203, 020205-0211, 0213-0223, 0226, 0307, 0315, 0345, 04010101-040106,

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			0403-0410, 0412-0420, 0423-0428, 0430-0435, 0437, 0438, 0440, 05010101-050104, 0503-0525, 06020101-06020102, 060203-0610, 0612-0620, 0622, 0623, 0707, 0709, 0749, 0810, 120401-1205, 1209, 1221, 1404, 150201-1506, 1508-1513, 1515-1520, 1602, 1609, 1612, 1701-1705, 1801-1803
84⁵	100, 160, 220 bp	1070 bp	0104, 0121, 120201-12030102, 120303-120306, 120402-1208, 1210-1213, 121402-1221
85⁷	130, 250 bp	800 bp	0121, 0212, 04010101-040106, 0403-0409N, 0412-0420, 0423-0435, 0437, 0438, 0440, 0805, 0821, 120201-120303, 120305-120306, 120402, 1206-1208, 1210-1220, 1503, 1516, 160101-1602, 1606-1612, B*6702
86⁹	220 bp	800 bp	0104, 0109, 0205, 0217, 06020101-06020102, 060203, 0603, 0607-0613, 0615-0620, 0622, 0623, 12030101-1207, 1211-1213, 1215, 1219, 160401
87⁶	130, 255 bp	1070 bp	020201 ^{weakly} , 020202-020203, 020205-0213, 0215-0223, 0226, 0307, 0310, 0315, 0329, 0345, 0403, 0406, 0416, 0437, 05010101-050104, 0503-0519, 0521-0525, 0603, 0810, 120401-1205, 1209, 1221, 150201-1506, 1508-1513, 1515-1521, 1602, 1609, 1612, 1701-1705
88^{5,8}	95, 255 bp	1070 bp	0411, 0429, 0436, 0511, 0517, 0764, 0804, 0813, 140201-1411
89⁵	110, 325 bp	1070 bp	0206, 0223, 1208, 1215, 150201-1513, 1515-1521
90	190, 250 bp	1070 bp	0213, 0218, 04010101-040106, 0403-0410, 0412-0420, 0423-0432, 0434-0438, 0440, 0517, 0525, 0605, 0731, 080101-080102, 0803, 0806, 0808-0811, 0814, 0816, 0820-0822, 121401-121402, 160101-1602, 160401, 1606-1612
91	225, 270 bp	800 bp	0411, 0433, 0523, 0807, 121401-

92	220, 425 bp	800 bp	121402, 1701-1705 010201-0103, 0106-0108, 0110-0120, 0123-0127, 0358, 0437, 0516, 0605, 0606, 0617, 0707, 0709, 0749, 0812, 1209, 140201-1405, 1407N, 1410, 1411, 1801-1803, B*1403
93	325, 380 bp	1070 bp	0103, 0124, 0222, 030301-030407, 0306-0312, 0314, 0318-0324, 0326, 0328-0332, 0334, 0337-0350, 0357, 0358, 04010101-040106, 0403-0420, 0424-0438, 0440, 05010101-050104, 0503, 0505-0521, 0523-0525, 0609, 0614, 0710, 0728, 0741, 0743, 080101-0808, 0810, 0812-0823, 150201-1513, 1515-1521, 1701-1705, 1801-1803
94	135 bp	1070 bp	030201-0317, 0319-033802, 0340-0350, 0357, 0358, 0432, 0603, 1803
95	160, 235 bp	1070 bp	06020101-06020102, 060203, 0604, 0606-0620, 0622, 0623, 070101-0725, 072701-0732N, 0735-0738, 0741-0763, 0766-0772, 1216, 160101-1602, 1606-1612, 1801-1803

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-Cw 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 length 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, 80, 81, 85, 86, 91 and 92 contain the primer pair giving rise

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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.

⁴The primer pairs in vials 80, 81 and 82 will in most samples give rise to two specific PCR fragments.

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

⁶Primer mixes 73 and 87 yield somewhat less intense specific PCR fragments than the other HLA-C low resolution primer mixes.

⁷Primer mixes 80 and 85 may give rise to nonspecific amplifications.

⁸Primer mix 88 has a tendency of giving rise to primer oligomer artifacts.

⁹Primer mix 86 might faintly amplify the Cw*010201 to 0103, the Cw*0105 to Cw*0121 and the Cw*140201 to 1408 alleles.

INTERPRETATION TABLE																									
HLA-A low resolution SSP typing																									
Amplification patterns of the A*0101 to A*8001 alleles																									
		Well ⁶																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec. PCR product(s)		145 120	255 200 135	235 205	190	535 160	200 165	205 175	200 165	75	85	500 175 80	185	225 175	240 200	205 135 90	400 370	180 150	200	200 160	240 155	375 240	240 85	160 75	360
Length of int. pos. control ¹		800	1070	1070	800	800	800	1070	800	800	1070	1070	800	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
5'-primer(s) ²		98	78	363	98	144	106	98	98	266	257	302	103	98	98	203	41	180	98	180	78	28	78	176	341
		5'-CTT ³	5'-TCT ³	5'-ATA ³	5'-CTA ³	5'-gCC ³	5'-CCA ³	5'-CTC ³	5'-CTA ³	5'-ACg ³	5'-Cgg ³	5'-ggA ³	5'-CCT ³	5'-CTT ³	5'-CAC ³	5'-gAA ³	5'-CTT ³	5'-TTT ³	5'-CAC ³	5'-TTT ³	5'-TCT ³	5'-TCg ³	5'-TCT ³	5'-gCA ³	5'-ggA ³
		123	106		413	317	176	368	102	266	261	385	423	423		362		418			391	261	527	261	
		5'-AgT ³	5'-CCA ³		5'-CCg ³	5'-gCT ³	5'-gCA ³	5'-gTT ³	5'-ACA ³	5'-ACg ³	5'-AAC ³	5'-ggC ³	5'-gCT ³	5'-gCT ³		5'-ggT ³		5'-AgC ³			5'-ACg ³	5'-AAC ³	5'-TgC ³	5'-AAC ³	
			144				368		413							363					391				
			5'-gCA ³				5'-gTT ³		5'-CCg ³							5'-ATA ³					5'-ACg ³				
			144																						
			5'-TCA ³																						
3'-primer(s) ³		203	240	527	256	265	256	259	259	302	299	341	257	282	257	299	238	317	256	299	265	97	265	292	418
		5'-TCT ³	5'-ggA ³	5'-CCA ³	5'-CTg ³	5'-CCC ³	5'-CCC 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'-CCA ³	5'-CCT ³	5'-ggA ³	5'-CCC ³	5'-CCA ³	5'-CCC ³	5'-ggT ³	5'-CCC ³	5'-gTg ³	5'-gTC ³
			292	527	559	570	292	502	538			521	559	282	299	411	265	527	256	299	282	355	282	292	
			5'-gTg ³	5'-CCT ³	5'-CCg ³	5'-CCg ³	5'-gTT ³	5'-CTT ³	5'-CCA ³			5'-ggg ³	5'-CTC ³	5'-gAC ³	5'-Tcg ³	5'-TCA ³	5'-CCC ³	5'-CCT ³	5'-CTC ³	5'-CTC ³	5'-CCA ³	5'-gAC ³	5'-gAC ³	5'-gTT ³	
				555			502	539					559	559		526			259	341	282		282	299	
				5'-gCA ³			5'-CTg ³	5'-TCT ³				5'-CgT ³	5'-CCg ³		5'-CCA ³				5'-gTT ³	5'-CgT ³	5'-gAC ³		5'-gAC ³	5'-TCT ³	
				555		538															506	570			
				5'-CCA ³		5'-CAg ³															5'-TgT ³		5'-CAC ³		
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HLA-A allele ⁴	ser ⁵																								
*01010101-0104N, 0106, 0109-0111N, 0116N-0118N, 0120, 0122N-0127N, 0129, 0131N-0135	A1, null	1			4																				24
*0107	-	1			4																				
*0108, 0114, 0115N	-	1																							24
*0112, 0119	-	1		3																					24
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
*0113	-	1			4							11		13		15									24
*0121	-	1		3	4																				24
*0128	-	1			4							11				15									24
*0130	-	1																							
*02010101-020115, 020117-020119, 020121- 0209, 0211-0216, 0218- 0222, 0224-0233, 0236- 0238, 0240-0245, 0247, 0249, 0251, 0253N, 0254, 0257-0261, 0263- 0269, 0271, 0272, 027401-0277, 0279- 0292, 0294N, 0296, 0297, 0299, 9201, 9202, 9204-9209, 9211- 9213N, 9215, 9216, 9218-9221, 9223-9228, 9230-9234, 9236-9245, 9247-9255, 9257	A2, A203, null	2																							
*0210, 0239, 0250, 0252, 0273, 0293, 0295, 9210, 9214, 9217, 9256	A210		2																	20					
*021701-021702	A2		2					w																	
*0234, 023501, 023503, 025601-025602, 0262, 9203	-		2											13						20		22			
*023502	-													13						20		22			
*0246, 0270	-		2																	20		22			
*0248, 9229	-																			20		22			
*0255	-		2						8													21		23	
*0278	-		2		4															20		22			
*9222	-						6													20					
*9235	-		2											13											
*9246	-		2								10														
*03010101-0307, 0309- 0311N, 0313-0317, 0319- 0323, 0325-0329, 0331, 0333-0335, 0337-0340, 0342, 0344-0347, 0351	A3				3									13											
*0308, 0332, 0336N	-			3																					
*0312	-			3	4																				
*0318, 2619 ⁷	-				4									13											
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
*0324, 0350	-			3					8					13											
*0330	-			3		5								13											
*0341	-			3																					24
*0343	-			3										13		15		17							
*110101-1109, 1113- 1117, 1119-112402, 1126, 1127, 1129-1140, 1142	A11				4							11													24
*1110	-				4				8			11													24
*1111	-				4							11	12												24
*1112, 1118, 1141	-				4							11													
*1125	-			3	4							11													24
*2301-2313, 2315-2321	A23					5	6																		
*2314, 2405, 241302, 2424	-					5	6	7																	
*24020101-2404, 2406- 2411N, 241301, 2417, 2418, 2420-2423, 2425- 2443, 2445N-2450, 2454 2456, 2458-2463, 2466- 2481, 2483N-2488, 2490N, 2491, 2493, 2495-2499	A24					5		7																	
*2414, 2415, 2451-2453, 2457, 2464	A24					5																			
*2419, 2444	-					5		7				11													
*2482	-					5		7															21		
*2489	-							7																	
*2492	-			3		5																			
*2494	-					5															20				
*250101-2504, 2507, 2508	A25								8	9				13											
*2505	-								8	9				13						20					
*2506	-								8	9			12												
*260101-260107, 2608, 2610-2615, 2617, 2618, 2620, 2623-2629, 2632, 2633, 2635-2638	A26, null								8			10		13											
*2602	-								8			10		w											
*2603, 2606, 2621	A26								8			11		13										23	
*2604, 2634	A26								8			10													
*2605, 2630	A26								8					13										23	
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
*260701-260702	A26										10			13											
*2609	-								8		10		12												
*2616	-							7			10			13											
*2622	-								8		10			13								21			
*2631	-								8					13											
*29010101-2906, 2908N-2912, 2915-2918	A29														14										
*2907	-						6								14										
*2913	-														14			17							
*2914	-														14		16								
*2919	-														14				19						
*300101-3004, 3006, 3007, 3009-3020, 3022-3028	A30														15										
*3008	-				4											15				20		22			
*310102-3102, 3105-3107, 3109-3124	A31															16									
*3103	-											11	12				16								
*3104	A31												12				16								
*3108	-					5											16								
*320101-3202, 3206-3212, 3214, 3216-3218	A32									9								17							
*3203	-																	17							
*3204	-			3						9															
*3205	-					5											16	17							
*3213	-					5				9								17							
*3215	-								8	9								17							
*3301, 330301-3312, 3314-3318, 3320, 3321, 3323	A33																	18							
*3313	-										10				14			18							24
*3319	-							7										18							
*3322	-																	18			21				
*340101-340102, 3405, 3406	A34								8			11	12												
*3402-3404, 3407	A34			3					8			11	12												
*3408	-			3					8			11	12	13											
*3601, 3603	A36	1																					22		24
*3602	-	1		3																			22		24
*3604	-	1			4																		22		24
*4301	A43												12	13											
*6601, 6604-6608	A66								8			11		13											
*6602, 6603	A66								8				12												
*6609	-								8			11		13								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

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
*680101-6804, 6806-6814, 6816-6819, 6821-6828, 6830-6844, 6846, 6847	A68								8											20					
*6805, 6815, 6820	-								8											20				23	
*6829	-								8										18	20	21				
*6845	-							7	8											20					
*6901	A69								8														21		
*7401-7409, 7411, 7412N	A74																			19					
*7410	-																			19				24	
*7413	-													13						19					
*8001	A80						6																23	24	
HLA-A allele ⁴	ser ⁵																								
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
B*1827	-						6																		
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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

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

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

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

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

⁴The sequence of the A*0105N has been shown to be identical to A*0104N.

The A*020116 allele has been renamed to A*9234.

The A*020120 has been renamed to A*020118.

The sequence of the A*0223 allele has been shown to be identical to A*0222.

The sequence of the A*0298 allele has been shown to be identical to A*0296.

The A*1128 allele has been renamed to A*111502.

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*2408.

The A*2416 allele has been renamed to A*3108.

The A*2465 allele has been renamed to A*241302.

The sequence of the A*3005 allele has been shown to be identical to A*3004.

The A*3021 allele has been renamed to A*301102.

The sequence of the A*31011 allele has been shown to be identical to A*310102.

The sequence of the A*3302 allele has been shown to be identical to A*3303.

⁵The serological reactivity of all HLA-A alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site and the information available at the www.worldmarrow.org web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

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

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⁷The A*0318 and A*2619 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets.

⁸The A*2314, A*2405, A*2424 and A*2465 alleles will give rise to identical amplification patterns. These two alleles can be separated by the respective high resolution SSP primer sets. ‘w’, may be weakly amplified.

INTERPRETATION TABLE																																															
HLA-B low resolution SSP																																															
Amplification patterns of the B*0702 to B*8301 alleles ⁶																																															
		Well																																													
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																						
Length of spec.		110	215	140	130	185	185	290	165	165	180	105	280	195	105	115	80	150	135	245	210	170	110	400	430																						
PCR product(s)				235	265	235			220	390	400	195			435					400																											
									330																																						
Length of int.		800	1070	1070	1070	1070	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070	1070																						
pos. control ¹																																															
5'-primer(s) ²		527	97	209	103	103	103	45	45	45	45	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'-ggA 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'-TCI ³	5'-ggC ³	5'-gAA ³	5'-ggC ³																							
		540		363	103	363			357	435	420	420		419	540					368	368	420																									
		5'-gAC ³		5'-AgC ³	5'-CCg ³	5'-AAI ³			5'-Tgg ³	5'-AAA ³	5'-TTA ³	5'-TTA ³		5'-gTC ³	5'-gAC ³					5'-gTT ³	5'-gTC ³	5'-TTA ³																									
				363	361				412																																						
				5'-AgC ³	5'-AgI ³				5'-ATA ³																																						
3'-primer(s) ³		605	272	309	193	246	246	165	206	266	272	272	3rd	301	309	234	204	463	302	259	311	544	317	272	301																						
		5'-gCI ³	5'-Tgg ³	5'-gTg ³	5'-CgI ³	5'-TAT ³	5'-TAT ³	5'-Tgg ³	5'-CCT ³	5'-TCC ³	5'-TgC ³	5'-Tgg ³	5'-TAT ³	5'-gTC ³	5'-ATC ³	5'-TCT ³	5'-TCT ³	5'-gCI ³	5'-ggC ³	5'-gTT ³	5'-ggg ³	5'-ggT ³	5'-ggA ³	5'-TgC ³	5'-ggI ³																						
			272	559	193	246			538	559	559	572		301	605					266	311				302																						
			5'-TgA ³	5'-CAg ³	5'-CgI ³	5'-TAT ³			5'-gTC ³	5'-CAg ³	5'-CTC ³	5'-gCg ³		5'-gTC ³	5'-gCI ³					5'-TCC ³	5'-ggg ³				5'-ggI ³																						
					583	559								570						272	538																										
					5'-gTg ³	5'-CTC ³								5'-CCg ³						5'-Tgg ³	5'-gTC ³																										
														572						292																											
														5'-gCg ³						5'-gTA ³																											
																				572																											
																				5'-gCg ³																											
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																						

INTERPRETATION TABLE																							
HLA-B low resolution SSP																							
Amplification patterns of the B*0702 to B*8301 alleles ⁶																							
Well																							
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
175	130	105	325	115	215	130	90	90	145	120	430	145	300	160	180	180	90	90	95	115	360	350	290
				195		270	410	175	430	210				215	210		240			150			
				225																			
				260																			
1070	1070	1070	1070	1070	800	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	800
363	106	540	1 st	355	141	209	41	209	48	357	49	206	1 st	1 st	141	420	209	209	206	165	1 st	1 st	355
5'-Agg ^{3'}	5'-CCg ^{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'}	5'-gAA ^{3'}	5'-CAg ^{3'}	5'-CAg ^{3'}	5'-ATT ^{3'}	5'-TTA ^{3'}	5'-ggC ^{3'}	5'-ggA ^{3'}	5'-gAC ^{3'}	5'-ACC ^{3'}	5'-CAg ^{3'}	5'-CAg ^{3'}	5'-TCA ^{3'}
				418	357	209	368	363	206					418	420		362	369		463			363
				5'-Agg ^{3'}	5'-Tgg ^{3'}	5'-ggg ^{3'}	5'-gTT ^{3'}	5'-AGC ^{3'}	5'-gAA ^{3'}					5'-Agg ^{3'}	5'-TTA ^{3'}		5'-ggT ^{3'}	5'-TAC ^{3'}		5'-TgA ^{3'}			5'-AgC ^{3'}
				499		355																	
				5'-TCT ^{3'}		5'-TCA ^{3'}																	
499	193	603	282	538	309	299	282	259	309	435	309	311	259	175	311	559	256	256	259	272	317	311	610
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'}	5'-ggT ^{3'}	5'-CTC ^{3'}	5'-CCg ^{3'}	5'-ggT ^{3'}	5'-CAg ^{3'}	5'-CCC ^{3'}	5'-CCC ^{3'}	5'-gTT ^{3'}	5'-TgC ^{3'}	5'-ggA ^{3'}	5'-ggT ^{3'}	5'-CTC ^{3'}
		605		572	538	583	418	499		527			259	538	559		559	256		538			
		5'-gCT ^{3'}		5'-gCg ^{3'}	5'-gTC ^{3'}	5'-gTg ^{3'}	5'-gTC ^{3'}	5'-ggA ^{3'}		5'-CCT ^{3'}			5'-CTC ^{3'}	5'-gTC ^{3'}	5'-CgT ^{3'}		5'-CgT ^{3'}	5'-CTC ^{3'}		5'-CCA ^{3'}			
																		420					
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																								
*070201-070207, 070501-0706, 0710, 0712, 0714, 071801, 071802, 0721-0723, 0726, 0728-0731, 0734, 0735, 0739, 0741, 0743-0747, 0749N, 0752, 0755- 0759, 0761-0764, 0766- 0768, 0770-0772, 0775, 0776	B7	25																							48
*0703, 0708, 0716, 0732, 0737	B7, B703	25																							48
*0704, 0725	B7	25													38										48
*0707, 0742	B7	25																							48
*0709, 0711, 0717	B7	25											36												48
*0713, 0715	-	25																							48
*0719, 0740, 0748, 0751	-																								48
*0720, 0724	-	25		27																					48
*0727	-	25										35								44					
*0733, 0753	-																								48
*0736	-	25																							
*0738	-	25																							
*0750	-	25										35													48
*0754	-	25																							48
*0760	-			27																					48
*0765	-	25																	42						
*0769	-	25																						47	48
*080101-080106, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834	B8, Null		26						32																48
*0802, 0803	B8		26						32																
*0804	-		26						32			35													48
*0806, 0813, 0820, 0840	B8		26																						48
*0807, 0814	B8		26																						48
*0809	-		26						32																48
*0812, 0816, 0831	-		26						32																48
*0817	-		26						32			35													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	*070201-070207, 070501-0706, 0710, 0712, 0714, 071801, 071802, 0721-0723, 0726, 0728-0731, 0734, 0735, 0739, 0741, 0743-0747, 0749N, 0752, 0755- 0759, 0761-0764, 0766 0768, 0770-0772, 0775, 0776
																						71	72	B7, B703	*0703, 0708, 0716, 0732, 0737
		51	52																			71	72	B7	*0704, 0725
			52																			71		B7	*0707, 0742
			52																			71	72	B7	*0709, 0711, 0717
			w																			71	72	-	*0713, 0715
			52																			71	72	-	*0719, 0740, 0748, 0751
			52																			71	72	-	*0720, 0724
																					70		72	-	*0727
			52																			71		-	*0733, 0753
			52																		70		72	-	*0736
																					70		72	-	*0738
																						71	72	-	*0750
			52									62										71	72	-	*0754
			52																			71		-	*0760
			52				56						64						w			71	72	-	*0765
																						71	72	-	*0769
		51																				71	72	B8, Null	*080101-080106, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834
		51																			70		72	B8	*0802, 0803
		51																				71	72	-	*0804
																						71	72	B8	*0806, 0813, 0820, 0840
		51																				71	72	B8	*0807, 0814
		51			54																	71		-	*0809
		51																				71		-	*0812, 0816, 0831
		51										62										71	72	-	*0817
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
*0821			26	27					32																48
*0825	-		26	27																					48
*0826, 4207	-								32																48
*0828, 0837	-		26										36												48
*0832	-		26						32										42						48
*0835	-		26						32				36												48
*0836	-		26						32																
*0838	-		26						32																48
*1301, 1317, 1320, 1322-1324	B13			27	28						34								41						
*130201-130205, 1308Q, 1315, 1318, 1319	B13				27	28					34														
*1303	-			27	28																				
*1304, 1310	-			27	28								36												
*1306	-			27	28														41						
*1307N	Null			27	28						34								41						
*1309	-				28						34														
*1311	-			27	28						34														
*1312, 1313	-			27	28														41						
*1314	-			27							34														
*1316	-			27	28						34														
*1321	-			27	28																				
*1401, 1407N	B64				28	29																		47	48
*140201-1404, 1409	B65				28		30																	47	48
*1405-140602	-						30																		48
*1408, 3925N, 3930, 3932-3934, 3947	-					29																		47	48
*1410	-					29													41					47	48
*15010101, 15010102N, 150103, 150106-150108, 1526N- 152703, 1532, 1534, 1535, 1538, 1550, 1556, 1560, 1570, 1571, 1575, 1579N, 1581, 1582, 1592, 1594N, 1596, 1597, 9502, 9504, 9505, 9509, 9511N, 9513, 9517, 9518, 9522, 9525, 9528, 9529, 9535, 9540, 9545-9547, 9552, 9559, 9560	B62, Null, B15							31				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.	
		51																			71	72			*0821
																					71	72	-		*0825
		51																			71	72	-		*0826, 4207
		51																			71	72	-		*0828, 0837
		51																	68		71	72	-		*0832
		51																			71	72	-		*0835
		51																			71	72	-		*0836
		51											62								71	72	-		*0838
												62									70			B13	*1301, 1317, 1320, 1322-1324
												62									70			B13	*130201-130205, 1308Q, 1315, 1318, 1319
												62				65					70			-	*1303
												62									70			-	*1304, 1310
												62		64							70			-	*1306
																					70			Null	*1307N
												62									71			-	*1309
												62						67			70			-	*1311
												62									70			-	*1312, 1313
												62									70			-	*1314
									59			62									70			-	*1316
												62									70			-	*1321
																					71			B64	*1401, 1407N
																					71			B65	*140201-1404, 1409
																					71			-	*1405-140602
																					71			-	*1408, 3925N, 3930, 3932-3934, 3947
						55															71			-	*1410
													62								69	71		B62, Null, B15	*15010101, 15010102N, 150103, 150106-150108, 1526N 152703, 1532, 1534, 1535, 1538, 1550, 1556, 1560, 1570, 1571, 1575, 1579N, 1581, 1582, 1592, 1594N, 1596, 1597, 9502, 9504, 9505, 9509 9511N, 9513, 9517, 9518, 9522, 9525, 9528, 9529, 9535, 9540, 9545-9547, 9552, 9559, 9560
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
*150102	B62							31		33			36						43						
*150104	B62												36						43						
*1502, 1588, 9512, 9521, 9539	B75							31					36					41		43					
*1503, 1547, 1549, 1561, 1598, 9503, 9523, 9527, 9532, 9551, 9556, 9558	B72								32			35	36							43					
*1504								31					36							43					
*1505, 1506, 1533, 1539, 1540, 1565, 1578, 1584, 9507, 9536, 9541, 9555	B62, B15							31					36							43					
*1507, 9526			27					31					36							43					
*1508, 151101-151103, 1515, 9548	B75							31					36							43					
*1509	B70								32	33	34									43					
*1510, 1537, 1590, 1599, 9533	B71								32		34									43					
*1512, 1514, 1519	B76							31					36	37						43					
*1513	B77							31					36		38			41		43					
*1516, 1567, 1595	B63									33			36		38					43					
*15170101-151702	B63							31		33					38					43					
*1518, 1551, 1552, 1572, 1593, 9508, 9514, 9519, 9534, 9553	B71								32		34		36							43					
*1520, 1525	B62							31					36					41		43					
*1521, 1544	B75							31			34		36					41		43					
*1523	-								32		34		36		38					43					
*1524, 1587, 9557	B62							31					36		38					43					
*1528, 9520, 9549N	B15							31					36							43					
*1529	B15								32				36							43					
*1530, 1558, 1563	B62, B15							31												43					
*1531	B75							31					36							43					
*1536	-			w				31					36					41		43					
*1542	-							31												43					
*1543	-							31					36							43					
*1545	B62			27				31												43					
*1546	B72				28			31	32				36							43					
*1548, 9550	B62							31												43					
*1553	-				28				32				36							43					
*1554	-								32			35	36							43					
*1555	-			27				31					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.
													62							69	71			B62	*150102
													62	63						69	71			B62	*150104
								57													71			B75	*1502, 1588, 9512, 9521, 9539
													62									71		B72	*1503, 1547, 1549, 1561, 1598, 9503, 9523, 9527, 9532, 9551, 9556, 9558
								w					62							69	71				*1504
													62									71		B62, B15	*1505, 1506, 1533, 1539, 1540, 1565, 1578, 1584, 9507, 9536, 9541, 9555
													62							69	71				*1507, *9526
								57												69	71			B75	*1508, 151101-151103, 1515, *9548
																					71			B70	*1509
																						71		B71	*1510, 1537, 1590, 1599, *9533
													62							69	71			B76	*1512, 1514, 1519
								57													70			B77	*1513
								59													70			B63	*1516, 1567, 1595
																					70			B63	*15170101-151702
																						71		B71	*1518, 1551, 1552, 1572, 1593, 9508, 9514, 9519, 9534, 9553
													62									71		B62	*1520, 1525
								57														71		B75	*1521, 1544
																					70			-	*1523
													62							69	70			B62	*1524, 1587, 9557
																				69	71			B15	*1528, 9520, 9549N
																						71		B15	*1529
													62							69	71			B62, B15	*1530, 1558, 1563
								57														71		B75	*1531
													62								70			-	*1536
								59					62	64								71		-	*1542
													62							69	70			-	*1543
													62							69	71			B62	*1545
												61	62							69	71			B72	*1546
													62									71		B62	*1548, 9550
												61	62							69	71			-	*1553
													62							69	71			-	*1554
								57														71		-	*1555
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
*1557	-							31				36							43						
*1562	-								32			35	36					41		43					
*1564	-								32			35	36						43						
*1566	-							31			34		36						43						
*1568	-			27				31	32			35	36						43						
*1569	-								32			35	36						43			45			
*1573	-							31											43						
*1574	-								32				36						43						
*1576	-							31				36							w						
*1577	-							31										41		43					
*1580	-								32		34		36					41		43					
*1583	-							31	32										43						
*1585, 9554	-							31				36						41		43					
*1586	-							31											43						
*1589	-			w				31				36						41		43					
*1591, 9531	-								32			35	36	37					43						
*9501	-							31				36							43						
*9506	-				28			31	32				36					41		43					
*9515	-								32		34		36						43						
*9516	-							31				36							43						
*9524	-								32		34		36						43						
*9537	-							31											43						
*9538	-	25						31				36							43						
*9542	-		26					31				36							43						
*9543	-							31	32			36							43						
*9544	-							31				36						41		43					
*180101-1803, 1805- 1808, 1810, 1811, 1813 1815, 1817N, 1818, 1820, 1821, 1823N- 1825, 1827, 1828, 1830 1833	B18											36				39			42						
*1804	-											36			39				42						
*1809	-											36			39										
*1812	-											36			39				42						
*1819	-											36			39				42						
*1822	-											36			39			41	42						
*1826	-														39				42						
*1829, 3532, 3537, 3553N, 3564, 356801- 356802, 3599	-											36							42						
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.
													62							69	71			-	*1557
													62								71			-	*1562
																					71			-	*1564
													62							69	71			-	*1566
													62							69	71			-	*1568
													62								71			-	*1569
													62			65	67			69	71			-	*1573
													62								71			-	*1574
			52																	69	71			-	*1576
													62							69	71			-	*1577
																					71			-	*1580
					54								62								71			-	*1583
													62							69	71			-	*1585, 9554
													62		64						71			-	*1586
																					70			-	*1589
													62								71			-	*1591, 9531
			52										62							69	71			-	*9501
												61	62								71			-	*9506
																					70			-	*9515
49													62								71			-	*9516
49																					71			-	*9524
													62							69	71			-	*9537
													62								71			-	*9538
													62							69	71			-	*9542
																				69	71			-	*9543
													61							69	71			-	*9544
								57												69	71			-	
																			68		71				*180101-1803, 1805- 1808, 1810, 1811, 1813 1815, 1817N, 1818, 1820, 1821, 1823N- 1825, 1827, 1828, 1830 1833
															64				68		71			-	*1804
																			68		70			-	*1809
													62								71			-	*1812
																			68	69	71			-	*1819
																			68		71			-	*1822
																			68		71			-	*1826
																									*1829, 3532, 3537, 3553N, 3564, 356801, 356802, 3599
																			68		71			-	
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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*2701	B27					29											40								
*2702	B27					29											40								
*2703-2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735, 2737, 2745, 2746	B27					29											40								
*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743	B27																40								
*2708, 2726, 2740, 2742, 2744	B2708					29											40								
*2712	-					29											40								
*2716, 2739	-					29											40								
*2718	-					29						35					40								
*2719	-																40	41							
*2723	-					29											40								
*2724	-																40								
*2725	-																40								
*2729	-					29						35					40								
*2730	-																40	41							
*2733	-																40								
*2741						29							36				40								
*2750	-					29						35					40								
*350101-350107, 3507- 350803, 3511, 3515, 352001, 352002, 3523, 3529, 3540N-3542, 3548, 3550, 3552, 3554, 3557, 3561, 3577, 3578, 3582, 3590, 3594	B35											36						41	42						
*350201-350401, 350403, 3506, 3512, 3533, 3534, 3536, 3539, 3555, 3559, 3565Q, 3570, 3574, 3583-3585, 3595	B35																	41	42						
*350402	-									33								41	42						
*3505, 3551, 3558, 3572, 3589, 3597	B35			27								36						42							
*350901-350902, 3518, 3531, 3575, 3588	B35																	42							
*3510, 3528, 3569, 3580	-											36						41	42						
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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			52									62									70			B27	*2701
			52				56				60	62									70			B27	*2702
			52				56					62									70			B27	*2703-2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735 2737, 2745, 2746
			52				56					62									70			B27	*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743
			52				56					62									71			B2708	*2708, 2726, 2740, 2742, 2744
												62										71		-	*2712
												62									70			-	*2716, 2739
												62										71		-	*2718
			52				56					62									70			-	*2719
																					70			-	*2723
			52				56	57				62									70			-	*2724
			52				56					62								69	70			-	*2725
												62									70			-	*2729
			52				56				60	62									70			-	*2730
			52				56					62									71			-	*2733
			52				56					62									70				*2741
			52				56					62									70			-	*2750
																			68			71		B35	*350101-350107, 3507- 350803, 3511, 3515, 352001, 352002, 3523, 3529, 3540N-3542, 3548, 3550, 3552, 3554, 3557, 3561, 3577, 3578, 3582, 3590 3594
																			68			71		B35	*350201-350401, 350403, 3506, 3512, 3533, 3534, 3536, 3539, 3555, 3559, 3565Q, 3570, 3574, 3583-3585, 3595
																			68			71		-	*350402
																			68			71		B35	*3505, 3551, 3558, 3572, 3589, 3597
																			68			71		B35	*350901-350902, 3518, 3531, 3575, 3588
												62									71			-	*3510, 3528, 3569, 3580
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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*3513	B35																	41	42						
*351401-351402, 3562	B35											36						41	42						
*3516	-			27								36						41	42						
*3517, 3530	B35			27								36						41	42						
*3519	B35											36						41							
*3521, 3524	-											36						41	42						
*3522	-			27															42						
*3525, 3549	-											36						41							
*3526	-						30					36						41							
*3527	B35											36						41							
*3535	-											36						41	42			45			
*3538	-																	41	42						
*3543, 3567, 3579, 3586	-											36							42						
*3544	-																	42							
*3545, 3571	-											36	37					41	42						
*3546	-				28							36						41							
*3547	-				28							36						41							
*3556	-																	41							
*3560	-																		42						
*3563	-				28							36						41							
*3566	-											36							42						
*3576	-											36						41	42						
*3581	-																	41	42						
*3587	-								32										42						
*370101-370103, 3703N, 3706, 3713	B37, Null													37				41			44				
*370104	B37													37				41			44				
*370105	B37													37							44				
*3702	-					29								37							44				
*3704	-													37				41			44				
*3705	-													37				41			44				
*3707	-	25												37							44				
*3708	-													37				41			44				
*3709	-													37							44				
*3710	-																	41			44				
*3711	-																	41	42		44				
*3712	-								32					37							44				
*3714	-																				44				
*380101-380202, 3808, 3809, 3811-3816, 3818, 3819	B38					29																45	46	47	
*3803	B16					29						35										45	46		
*3804	-																					45		47	
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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												62										71		B35	*3513
																			68	69		71		B35	*351401-351402, 3562
												62										71		-	*3516
																			68			71		B35	*3517, 3530
												61										71		B35	*3519
						55													68			71		-	*3521, 3524
																			68			71		-	*3522
																						71		-	*3525, 3549
																						71		-	*3526
																			68			71		B35	*3527
																			68			71		-	*3535
				53															68			71		-	*3538
																			68	69		71		-	*3543, 3567, 3579, 3586
																			68	69		71		-	*3544
				53															68			71		-	*3545, 3571
								57														71		-	*3546
												61										71		-	*3547
																			68			71		-	*3556
															64				68			71		-	*3560
												61	62									71		-	*3563
																			68			71	72	-	*3566
			52				56												w			71		-	*3576
						55													68			71		-	*3581
		51																	68			71	72	-	*3587
				53								62									70			B37, Null	*370101-370103, 3703N, 3706, 3713
				53								62	63								70			B37	*370104
				53								62									70			B37	*370105
												62									70			-	*3702
				53		55						62									70			-	*3704
				53								62										71		-	*3705
												62								70		72	-	*3707	
				53														68		70			-	*3708	
												62								70			-	*3709	
				53								62								70			-	*3710	
				53								62									71		-	*3711	
				53								62									70		-	*3712	
												62									70	w	-	*3714	
																					70		B38	*380101-380202, 3808, 3809, 3811-3816, 3818, 3819	
												62									70		B16	*3803	
												62									70		-	*3804	
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
*3805	-						30															45	46	47	
*3806	-																					45			
*3807	-					29																45			
*3810	-					29																	46	47	
*3817	-					29								37							44	45	46	47	
*39010101-390106, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926- 3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944, 3946, 3948	B3901, B39					29																45		47	48
*390201, 3908	B3902, B39					29						35										45			48
*390202, 391301- 391302, 3923	B3902, B39											35										45			48
*3904	B39						30															45		47	48
*3907	-					? ?						36										45		47	48
*3910, 3916, 3920	B39																					45			48
*3912, 3945	B39																					45		47	48
*3917	-																					45			48
*3918	-					29																45		47	48
*391901	-																		42			45		47	48
*391902	-					29													42			45		47	48
*3922	-					29																45		47	48
*3936	-					29																		47	48
*3939	-					29						35										45			48
*3942	-					29												41				45		47	48
*3943	-					29							36											47	48
*400101-400106, 4007, 4051, 4066, 4073, 4079	B60, B40				28																				48
*400201-400204, 4004, 40060101-400602, 4039, 4070, 4089	B61, B40																								
*4003, 4020	B40											36													
*4005	B4005			27																					
*4008	-																								
*4009, 4011, 4018, 4024, 4027, 4029, 4035, 4037, 4040, 4044, 4050, 4056, 4057, 4064, 4075, 4078, 4082, 4085, 4086, 4090, 4091	B61, B40																								?
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
																					70			-	*3805
																			68		70			-	*3806
																			68		70			-	*3807
																					70			-	*3810
																					70			-	*3817
																						71		B3901, B39	*39010101-390106, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926- 3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944, 3946, 3948
												62										71		B3902, B39	*390201, 3908
												62										71		B3902, B39	*390202, 391301- 391302, 3923
																						71		B39	*3904
																						71		-	*3907
																						71		B39	*3910, 3916, 3920
																						71		B39	*3912, 3945
															64			67				71		-	*3917
																				69		71		-	*3918
																			68			71		-	*391901
																			68			71		-	*391902
												62										71		-	*3922
																				69		71		-	*3936
																						71		-	*3939
																						71		-	*3942
																						71		-	*3943
49												61	62									71		B60, B40	*400101-400106, 4007, 4051, 4066, 4073, 4079
	50											61	62									71		B61, B40	*400201-400204, 4004, 40060101-400602, 4039, 4070, 4089
	50											61	62									71		B40	*4003, 4020
	50											61	62									71		B4005	*4005
	50											61										71		-	*4008
													61	62								71		B61, B40	*4009, 4011, 4018, 4024, 4027, 4029, 4035, 4037, 4040, 4044, 4050, 4056, 4057, 4064, 4075, 4078, 4082, 4085, 4086, 4090, 4091
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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*4010, 4022N, 4033, 4036, 4042, 4043, 4049, 4054, 4055, 4061, 4063, 4065, 4067, 4081, 4084, 4087, 4088, 4092	B60, B40				28																				48
*4012	-								32			35								43					
*4013, 4019	-																								
*401401-401403, 4053	-				28																				?
*4015, 4032	B61	25			28																				?
*4016	B61	25			28																				48
*4021	-																								?
*4023	-	25			28																				48
*4025, 4069	-				28																				?
*4026	B21									33															?
*4028	-									33								41							?
*4030, 4034	-				28																				?
*4031, 4045, 4080	-				28																				?
*4038, 4052	-				28								36												?
*4046	-											35					40								?
*4047	-				28																				
*4048	-				28					34															?
*4058	-				28																				?
*4059	-				28							36													48
*4060	-				28							36													48
*4068	-																								?
*4071	-			27																					?
*407201-407202, 4077	-				28																				48
*4074	-																								?
*4076	-				28																				
*4083	-																								?
*4093	-											35					40								?
*4094	-																								
*4095	-																								?
*4096	-																								
*4101, 4106, 4107	B41				28				32																48
*4102	B41				28				32																48
*410301-410302	B41				28				32																48
*4104	-				28																				48
*4105	B41				28				32																48
*4108	-	25			28				32							38									48
*4201, 4202, 4206, 4210	B42								32																48
*4204	-								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.
49												61	62								71			B60, B40	*4010, 4022N, 4033, 4036, 4042, 4043, 4049, 4054, 4055, 4061 4063, 4065, 4067, 4081, 4084, 4087, 4088, 4092
49												62									71			-	*4012
	50							58	60			62									70			-	*4013, 4019
												61	62								71			-	*401401-401403, 4053
												61	62								71	72		B61	*4015, 4032
												61	62								71	72		B61	*4016
49												62									71			-	*4021
49												61	62								71			-	*4023
49												61									71			-	*4025, 4069
	50											61	62								71			B21	*4026
	50					55						61	62								71			-	*4028
												61	62								71	72		-	*4030, 4034
								57				61	62								71	72		-	*4031, 4045, 4080
49												61	62								71			-	*4038, 4052
49												62									71			-	*4046
49												62									70			-	*4047
49												61	62			67					71			-	*4048
												61	62		64						71			-	*4058
												61	62								71	72		-	*4059
49												61	62								71			-	*4060
	50											61									71			-	*4068
	50											61	62			65	67				71			-	*4071
												61	62								71			-	*407201-407202, 4077
49	50											61	62								71			-	*4074
49												62												-	*4076
												61	62								71			-	*4083
												62									71			-	*4093
	50											61	62	63							71			-	*4094
	50							59				61	62								71			-	*4095
	50											62									70			-	*4096
	51				54							61	62								71			B41	*4101, 4106, 4107
	51											61	62								71	72		B41	*4102
	51											61	62								71			B41	*410301-410302
	51											61	62								71	72		-	*4104
	51				54							61	62								71			B41	*4105
	51											61	62								71			-	*4108
	51	52																			71	72		B42	*4201, 4202, 4206, 4210
		51	52		54																71			-	*4204
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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*420501-420502	-	25							32						38										48
*4208	-								32																48
*4209	-											36													48
*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4452N, 4455, 4459, 4463, 4466, 4467	B44, Null				28													41							
*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4451, 4456N, 4458N, 4461N, 4469	B44				28													41							
*4406	B44																	41							
*4407																		41							
*4408	B44			w														41							
*4409	B12				28													41							
*4410	-				28							35						41		43					
*4412	-				28													41							
*4414	-				28				32									41							
*4415	-				28				32			35													
*4417, 4443	-				28								36	37				41							
*4418	-				28				32			35													
*4420	-				28				32																
*4425, 4450	-				28													41							
*4431	-				28																				
*4437, 446401-446402	-				28													41							
*4440	-											35					40	41							
*4441, 4453	-				28																				
*4444	-											35					40	41							
*4446	-				28													41							
*4447, 4465	-				28																				
*4449	-			26	28													41							
*4454	-				27	28																			
*4457	-				w													41							
*4460	-				27	28												41							
*4462	-				28				32	33								41							
*4501, 4505, 4507	B45				28				32			35													48
*4502, 4503	-				28				32																48
*4504	-				28				32																48
*4506	-				28				32			35													48
*4508	-				28				32																48
*4509	-				28				32				36	37											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.				
51 52																				71 72				-	*420501-420502				
			52																				71		-	*4208			
51 52																				71 72				-	*4209				
				53									62	63								70			B44, Null	*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4452N, 4455, 4459, 4463, 4466, 4467			
				53								62								70				B44	*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4451, 4456N, 4458N, 4461N, 4469				
				53	54			60						63					68		70			B44	*4406				
				53								62								70				*4407					
				53									62	63								70		B44	*4408				
				53								61	62	63						71				B12	*4409				
				53									62			65					70			-	*4410				
				53								63								70				-	*4412				
				53									62								70			-	*4414				
				54								62				65				70				-	*4415				
				53									62								70			-	*4417, 4443				
				54				58				62				65				70				-	*4418				
				53	54								62	63							70			-	*4420				
				53				58				60	62						70				-	*4425, 4450					
49				53									62								70			-	*4431				
												62								70				-	*4437, 446401-446402				
				53									62								70			-	*4440				
				53								62				63					70				-	*4441, 4453			
				53									62	63								70		-	*4444				
				53								61	62								71				-	*4446			
				53									62								70			-	*4447, 4465				
				53								62				63					70				-	*4449			
				53									62								70			-	*4454				
				53								62								70				-	*4457				
				53									62								70			-	*4460				
				53								62								70				-	*4462				
					54							61	62				65						71		B45	*4501, 4505, 4507			
				54								61				62					71				-	*4502, 4503			
					54							61	62				65						71		-	*4504			
52				54								61				62					65					71	-	*4506	
					54							61	62			64							71		-	*4508			
				54								61				62					71				-	*4509			
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
*460101-460102, 4604, 4605, 4607N, 4609, 4610, 4614-4616	B46							31					36												
*4602	B46							31					36												
*4603, 4608, 461301-461302	-							31					36												
*4606	-							31					36												
*4611	-							31																	
*4612	-			27				31					36												
*4617	-							31					36	37											
*4618	-							31																	
*47010101-47010102	B47				28																				
*4702	-				28																				
*4703	-				28																				
*4704, 4705	-				28	29																			
*480101-480102, 4807, 4809, 4811, 4819	B48												35												48
*4802	-												35	36				41							48
*480301-480302	B48												35												48
*4804	-												35												48
*4805, 4808	B48	25											35												48
*4806	-																								48
*4810, 4812, 4817	-												35												48
*4813	-												35												48
*4814	-												35	36											48
*4815	-	25											35												48
*4816	-												35												48
*4818	-												35												
*490101	B49				28																				
*490102	B49				28																				
*4902	-				28																				
*4903	-																								
*4904, 4905	-				28								36												
*5001, 5004	B50				28																				48
*5002	B45				28								35												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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Lot-specific information

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
			52			55														69		71		B46	*460101-460102, 4604, 4605, 4607N, 4609, 4610, 4614-4616
			w			55														69		71		B46	*4602
			52			55																71		-	*4603, 4608, 461301-461302
49			52			55																71		-	*4606
			52			55										65						71		-	*4611
			52			55														69		71		-	*4612
			52			55														69		71		-	*4617
			52			55									64							71		-	*4618
							56						62								70			B47	*47010101-47010102
							56					61	62									71		-	*4702
							56					w	62								70	w		-	*4703
													62								70			-	*4704, 4705
								57					62									71	72	B48	*480101-480102, 4807, 4809, 4811, 4819
													62									71		-	*4802
49													62									71		B48	*480301-480302
								57					62									71		-	*4804
													62									71	72	B48	*4805, 4808
								57														71	72	-	*4806
													62									71	72	-	*4810, 4812, 4817
													62									71		-	*4813
													62									71	72	-	*4814
								57					62									71	72	-	*4815
								57														71	72	-	*4816
								57					62								70	72	-	*4818	
									58	59			62			65					70			B49	*490101
									58				62			65					70			B49	*490102
										59			62			65					70			-	*4902
										59			62			65					70			-	*4903
									58	59			62								70			-	*4904, 4905
									59			61	62			65					71			B50	*5001, 5004
										59		61	62			65						71		B45	*5002
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
*510101, 510103, 510105-510108, 510201, 510203, 5103, 5107, 510901, 5111N, 5112, 511302, 5114, 5117-5119, 5122, 5123, 5126- 5130, 5132, 5133, 5138-5141N, 5143, 5148-5153, 5155, 5157, 5158, 5160, 5165	B51, B5102, B5103, Null									33															
*510102, 510109, 510202, 5105, 510902	B51									33															
*510104, 510204, 511301, 5116, 5121, 512401, 512402, 5131, 5134, 5135	B51, B52																								
*5104, 5146, 5156	B51									33								41							
*5106, 5159	B51									33															
*5108, 5120, 5144N	B51								32	33															
*5110	-																								
*5115	-																								
*5136	-								32																
*5137, 5163	-									33			36												
*5142	-																	41							
*5145	-												36												
*5154	-									33															
*5161	-									33															
*5162	-																								
*5164	-			27						33															
*520101, 520103, 5204, 5205, 5207, 5210-5213	B52									33															
*520102, 520104- 5203, 520601-520602, *5208, 5214	B52 -									33															
*530101-530104, 5305, 5308, 5310, *5302	B53												36					41							
*5303, 5309, 5311- 5313	-												36					41							
*5304, 5307																		41							
*5306	-												36					41							
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
					54					59	60								68		70			B51, B5102, B5103, Null	*510101, 510103, 510105-510108, 510201, 510203, 5103, 5107, 510901, 5111N, 5112, 511302, 5114, 5117-5119, 5122, 5123, 5126-5130, 5132, 5133, 5138-5141N, 5143, 5148-5153, 5155, 5157, 5158, 5160, 5165
										59	60								68		70			B51	*510102, 510109, 510202, 5105, 510902
					54					59	60								68		70			B51, B52	*510104, 510204, 511301, 5116, 5121, 512401, 512402, 5131, 5134, 5135
					54	55					60								68		70			B51	*5104, 5146, 5156
					54						60								68		70			B51	*5106, 5159
					54					59	60								68		70			B51	*5108, 5120, 5144N
					54						60								68		70			-	*5110
											60					65			68		70			-	*5115
					54					59	60								68		70			-	*5136
					54					59	60								68		70			-	*5137, 5163
				53	54						60								68		70			-	*5142
					54						60								68		70			-	*5145
										59									68		70			-	*5154
					54					59	60								68	69	70			-	*5161
					54						60					65		67	68		70			-	*5162
					54						60								68		70			-	*5164
										59	60		62								70			B52	*520101, 520103, 5204, 5205, 5207, 5210-5213
					54					59	60		62								70			B52	*520102, 520104-5203, 520601-520602, *5208, 5214
										59	60		62								70			-	
											60								68		70			B53	*530101-530104, 5305, 5308, 5310, *5302
					55						60								68		70				
																			68		70			-	*5303, 5309, 5311-5313
											60								68		70				*5304, 5307
					54	55					60								68		70			-	*5306
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
*5314	-			27									36												
*5315	-												36					41							
*5317	-												36					41							
*5401, 5402, 5405N, 5407, 5408N, 5410, 5413, 5416, 5417	B54																								
*5403	-																								
*5404, 5411, 5415	-																								
*5406	-												36												
*5409, 5414	-												36												
*5412	-																								
*550101-550104, 5503, 5505, 5511, 5515, 5525, 5529, 5531, 5533	B55																								
*550201-550203, 5507, 5510, 5512, 5516, 5519, 5526, 5530	B54, B55																								
*5504, 5508, 5513, 5527, 5615, 5619N, 5622	B55																								
*5509, 5524	-											34													
*5514	-												36					41							
*5517, 5528	-																								
*5518	-											35													
*5520	-								32																
*5521	-																								
*5522	-											34													
*5523, 5532, 5618	-												36												
*5534	-																								
*5601, 5608, 5614, 5616, 5620, 5624	B56																								
*5602, 5604	B56																								
*5603	B56												36												
*560501	-											33													
*560502	-											33													
*5606	-											33							42						
*5607	-																								
*5609	-												36					41							
*5610	-																								
*5611, 5612	-																	41							
*5613	-								32																
*5617	-																								
*5621	-											33													
*5623	-																								
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.			
								60								68				70				-	*5314			
											60								68		70		72	-	*5315			
								60				62								70				-	*5317			
			52				56							63	64							71		B54	*5401, 5402, 5405N, 5407, 5408N, 5410, 5413, 5416, 5417			
52				56								63				65				71				-	*5403			
			52				56							63								71		-	*5404, 5411, 5415			
52				56								63								69				71	-	*5406		
			52				56							63								71		-	*5409, 5414			
52				56				58				63				64								70	-	*5412		
			52				56			59					64							71		B55	*550101-550104, 5503, 5505, 5511, 5515, 5525, 5529, 5531, 5533			
52				56								64								71				B54, B55	*550201-550203, 5507, 5510, 5512, 5516, 5519, 5526, 5530			
			52				56															71		B55	*5504, 5508, 5513, 5527, *5615, 5619N, 5622			
52				56				59												71				-	*5509, 5524			
			52				56										66					71		-	*5514			
52				56				59												71				-	*5517, 5528			
														62	64							71		-	*5518			
51			52	54			56													71				-	*5520			
			52				56			w					64					69		71		-	*5521			
52				56																71				-	*5522			
			52				56															71		-	*5523, 5532, *5618			
52				56								62				64								71	-	*5534		
			52				56									65						71		B56	*5601, 5608, 5614, 5616, 5620, 5624			
52				56												65				67					71	B56	*5602, 5604	
			52				56													69		71		B56	*5603			
52				56				59				64								71				-	*560501			
			52				56			59												71		-	*560502			
52				56				59				64								71				-	*5606			
			52				56									65					70		-	*5607				
52				56																71				-	*5609			
			52				56								64			67				71		-	*5610			
52				56																71				-	*5611, 5612			
			52		54		56									65						71		-	*5613			
																65				71				-	*5617			
			52				56		58	59											70		-	*5621				
												64								71				-	*5623			
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
*570101-570103, 5706, 5708, 5710, 5715, 5718, 5719	B57												36					41							
*5702-5705, 5717	B57																	41							
*5707	-																	41							
*5709	-								32									41							
*5711, 5713	-												36												
*5712	-																	41							
*5714	-												36					41							
*5716	-												36					41							
*580101, 580102, 5804, 5805, 5810N-5815, 5819, 5821	B58												36					41							
*5802, 5806, 5816	B58												36												
*5807	-												36	37											
*5808	-									33															
*5809	-												36					41							
*5817N	-												36					41							
*5818	-			27									36												
*5820	-																					45			
*5901	B59																								
*5902, 5903	-																								
*5904	-																								
*670101	B67					29																45			48
*670102	B67																					45			48
*6702	B67																					45			48
*7301	B73																								48
*7801, 780202, 7803	B78									33								42							
*780201, 7804	B78									33								42							
*7805	-									33								42							
*7806	-									33															
*8101	B81																								
*8102	-																								48
*8103, 8104N	-																								
*8201, 8202	-								32			35							43						
*8301	-																	41							
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
Cw*0206																									
Cw*0223		25																							
Cw*0305, 0325, 0327				27																					
Cw*0746									32																
Cw*150204																									
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.
											60						66				70			B57	*570101-570103, 5706, 5708, 5710, 5715, 5718, 5719
											60						66				70			B57	*5702-5705, 5717
				53							60						66				70			-	*5707
				53							60						66				70			-	*5709
											60						66				70			-	*5711, 5713
																	66				71			-	*5712
						55					60						66				70			-	*5714
											60										70			-	*5716
											60							67				70		B58	*580101, 580102, 5804, 5805, 5810N-5815, 5819, 5821
											60						67				70			B58	*5802, 5806, 5816
											60						67				70			-	*5807
				54						59	60						67				70			-	*5808
						55					60						67				70			-	*5809
																	67				70			-	*5817N
											60						67				70			-	*5818
											60						67				70			-	*5820
									58					64							70			B59	*5901
									58												70			-	*5902, 5903
									58								65				70			-	*5904
			52																		71			B67	*670101
			52																		71			B67	*670102
			w																		71			B67	*6702
			52																		69	71		B73	*7301
										59				64					68			71		B78	*7801, 780202, 7803
										59									68			71		B78	*780201, 7804
										59			62									71		-	*7805
										59			62									71		-	*7806
			52				56	57														71	72	B81	*8101
			52					57														71	72	-	*8102
			52					57														71	72	-	*8103, 8104N
			52				56										65					71		-	*8201, 8202
			52	53			56							63								71		-	*8301
																								ser. ⁵	HLA-B allele ⁴
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.
																		w							Cw*0206
																									Cw*0223
																									Cw*0305, 0325, 0327
																									Cw*0746
															64										Cw*150204
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.

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

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

In addition, wells number 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 nucleotide sequences of the B*3589 and B*4093 alleles are not yet retrievable from the GenBank or EMBL data banks.

The sequence of the B*0701 allele has been shown to be in error.

The sequence of the B*1305 allele has been shown to be identical to B*1304.

The B*150105 allele has been renamed B*9520.

The B*1522 allele has been renamed B*3543.

The sequence of the B*1541 allele has been shown to be identical to B*1539.

The B*1559 allele has been renamed B*3544.

The sequence of the B*1816 allele has been shown to be identical to B*1814.

The sequence of the B*27051 allele has been shown to be identical to B*270502.

The sequence of the B*2722 allele has been shown to be identical to the corrected B*2706 sequence.

The B*3573 allele has been renamed B*350803.

The sequence of the B*39012 allele has been shown to be identical to B*390101.

The sequence of the B*3921 allele has been shown to be identical to B*3924.

The sequence of the B*4017 allele has been shown to be identical to B*4016.

The sequence of the B*4041 allele has been shown to be identical to B*4040.

The sequence of the B*4203 allele has been shown to be in error.

The sequence of the B*4401 allele has been shown to be identical to B*4402.

The sequence of the B*5003 allele has been shown to be identical to B*5002.

The sequence of the B*5125 allele has been shown to be identical to B*5122.

The B*5147 allele has been renamed B*510902.

The sequence of the B*5506 allele has been shown to be identical to B*5504.

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

The B*7901 allele has been renamed B*1518.

The B*9530 allele has been renamed B*152702.

The B*0826 and the B*4207 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*1408 and the B*3925N, B*3930 and B*3932 to 3934 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*1829 and the B*3523, B*3537, B*3553N, B*3564, B*3566 and B*356801-356802 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*5504, B*5508, B*5513, B*5527 and the B*5615, B*5619N and B*5622 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*5523, B*5532 and the B*5618 give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

⁵The serological reactivity of all HLA-B alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site and the information available at the www.worldmarrow.org web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

'ser', serological HLA specificity.

'w', might be weakly amplified.

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

INTERPRETATION TABLE																								
HLA-Cw low resolution SSP typing																								
Amplification patterns of the Cw*0102 to Cw*1803 alleles																								
	Well																							
	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
Length of spec.	155	270	280	155	280	125	390	130	245	115	340	100	130	220	130	95	110	190	225	220	325	135	160	
PCR product(s)								355	425	165		160	250		255	255	325	250	270	425	380		235	
										260		220												
										390														
Length of int.	800	800	800	1070	800	1070	1070	800	800	1070	1070	1070	800	800	1070	1070	1070	1070	800	800	1070	1070	1070	
pos. control ¹																								
5'-primer(s) ²	89	2 nd I	105	477	105	112	1 st I	28	47	1 st I	1 st I	361	201	361	98	98	201	201	112	47	355	105	97	
	5'-gAA ³	5'-CCA ³	5'-gCT ³	5'-gCC ³	5'-gCT ³	5'-CCT ³	5'-CgA ³	5'-TCA ³	5'-Agg ³	5'-CgA ³	5'-CgA ³	5'-AgT ³	5'-CCA ³	5'-AgT ³	5'-CTA ³	5'-CTC ³	5'-CCA ³	5'-CCA ³	5'-CCT ³	5'-Agg ³	5'-TCA ³	5'-gCT ³	5'-TCg ³	
						118		2 nd I	648	176		419	2 nd I		368	485	409	2 nd I	2 nd I	361	412	459	418	
						5'-CCA ³		5'-CCA ³	5'-CAC ³	5'-gCA ³		5'-gTC ³	5'-CCA ³		5'-gTg ³	5'-CAA ³	5'-ggC ³	5'-CCA ³	5'-CCA ³	5'-AgT ³	5'-ATA ³	5'-gAT ³	5'-Agg ³	
										527								361					419	
										5'-TAC ³								5'-AgT ³					5'-gTC ³	
3'-primer(s) ³	201	559	343	589	343	201	302	213	302	175	302	474	289	538	312	311	270	341	341	302	3 rd I	201	289	
	5'-CTC ³	5'-CTC ³	5'-C ³	5'-CTT ³	5'-T ³	5'-CTT ³	5'-ggT ³	5'-Cgg ³	5'-ggC ³	5'-CCg ³	5'-ggT ³	5'-gCA ³	5'-AgC ³	5'-CCA ³	5'-AgT ³	5'-ggT ³	5'-TAG ³	5'-CgT ³	5'-Cgg ³	5'-ggT ³	5'-CTC ³	5'-CTC ³	5'-AgC ³	
	201							420	853	302		477	289	538	459	538	3 rd I	341	512	538		559	289	
	5'-CTT ³							5'-gCT ³	5'-CAT ³	5'-ggC ³		5'-gCA ³	5'-AgC ³	5'-gCA ³	5'-AgA ³	5'-CAG ³	5'-CTC ³	5'-ggT ³	5'-CCA ³	5'-CCg ³		5'-CTC ³	5'-AgC ³	
										601		538	539					527					539	
										5'-CTT ³		5'-gCA ³	5'-TCT ³					5'-CCg ³					5'-TCT ³	
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-Cw allele ⁴																								
*010201-010206, 0106-0108, 0111-0113, 0115-0120, 0123, 0125-0127	73																			92				
*0103, 0124	73																			92	93			
*0104	73											84		86										
*0105, 0122	73																							
*0109	73													86										
*0110	73	74																		92				
*0114	73										83									92				
*0121	73											84	85											
*020201		74	75			78					83				w									
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	

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
*020202-020203, 020205-0203, 0207-0211, 0215-021602, 0219, 0220		74	75			78					83				87								
*0204		74	w			78					83				87								
*0205, 0217		74	75			78					83			86	87								
*0206		74	75			78		80			83				87		89						
*0212		74	75			78							85		87								
*0213, 0218		74	75			78					83				87			90					
*0214		74	w			78					83												
*0221		74	75								83				87								
*0222		74	75			78					83				87						93		
*0223		74	75			78					83				87		89						
*0226		74									83				87								
*0227		74	75			78																	
*030201-030203, 0305, 0317, 0325, 0327, 0333, 0335, 0336			75	76																		94	
*030301-030305, 031101-0312, 0320N-0322Q, 0330, 0331, 034301-034302, 0349, 0350					76	77															93	94	
*030401-030406, 0306, 0308, 0309, 0314, 0319, 0323, 0324, 0326, 0328, 0332, 0334, 0337-033802, 0340, 0342, 0344, 0346-0348, 0357				75	76																	93	94
*030407, 0341			75																		93	94	
*0307, 0345			75	76							83				87						93	94	
*0310, 0329			75	76											87						93	94	
*0313				76	77																	94	
*0315			75	76							83				87							94	
*0316			75																			94	
*0318, 0339				76																	93		
*0358					77														92		93	94	
*04010101-040106, 040401-0405, 0407-0409N, 0412-041502, 0417-0420, 0424-0428, 0430, 0431, 0434, 0435, 0438, 0440						78					83			85				90				93	
*0403, 0406			75			78					83			85		87		90				93	
*0410						78					83							90				93	
*0411						78										88			91			93	
*0416			75								83			85		87		90				93	
*0423						78					83			85				90					
*0429						78								85		88		90				93	
*0432			74			78					83			85				90				93	94
*0433						78					83			85					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

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
*0436						78										88		90			93		
*0437						78					83		85		87			90		92	93		
*05010101-050104, 0503, 0505-0510, 0512-0515, 0518, 0519, 0521, 0524							79				83				87						93		
*0504, 0522							79				83				87								
*0511							79				83				87	88					93		
*0516							79				83				87					92	93		
*0517							79				83				87	88		90			93		
*0520							79				83										93		
*0523							79				83				87				91		93		
*0525							79				83				87			90			93		
*06020101-06020102, 060203, 0607, 0610, 0612, 0613, 0615, 0616N, 0618-0620, 0622, 0623								80			83				86								95
*0603			75					80			83			86	87							94	
*0604								80			83												95
*0605								80			83							90		92			
*0606								80			83									92			95
*0608		74						80			83			86									95
*0609								80			83			86							93		95
*0611								80						86									95
*0614								80			83										93		95
*0617											83			86						92			95
*070101-0706, 0708, 0711-0725, 072701-072702, 0729, 0730, 0732N, 0735-0738, 0742, 0744-0748, 0750-0763, 0766-0772											81												95
*0707, 0709, 0749											81	83								92			95
*0710, 0728, 0741, 0743											81										93		95
*0726, 0733N, 0739, 0740											81												
*0731											81							90					95
*0764											81					88							
*080101-080102, 0803, 0806, 0808, 0814, 0816, 0820, 0822											82							90				93	
*0802, 0815, 0817-0819, 0823											82										93		
*0804, 0813											82					88					93		
*0805											82			85							93		
*0807											82								91		93		
*0809, 0811											82							90					
*0810							79				82	83			87			90			93		
*0812											82									92	93		
*0821											82			85				90			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

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
*120201-120203, 1210, 1217, 1218, 1220												84	85										
*12030101-12030102, 120303, 120305-120306, 1206, 1207, 1211-1213, 1219												84	85	86									
*120302													85	86									
*120304												84		86									
*120401											83			86	87								
*120402											83	84	85	86	87								
*1205											83	84		86	87								
*1208												84	85				89						
*1209											83				87				92				
*121401													85				90	91					
*121402												84	85				90	91					
*1215								80				84	85	86			89						
*1216												84	85										95
*1221											83	84			87								
*140201-1403, 1405, 1407N, 1410, 1411																88			92				
*1404											83					88			92				
*1406, 1408, 1409																88							
*150201-150204, 1508, 151002, 1513, 1515, 1517, 1518			75					80			83			87			89				93		
*1503, 1516			75					80			83		85	87			89				93		
*1504-1506, 1509, 1519, 1520			75								83			87			89				93		
*1507			75					80									89				93		
*151001								80			83			87			89				93		
*1511			75			78		80			83			87			89				93		
*1512					77			80			83			87			89				93		
*1521			75					80						87			89				93		
*160101-160103, 1606-1608, 1610, 1611													85				90					95	
*1602, 1609, 1612											83		85	87			90					95	
*160401														86			90						
*1701-1705		74									83				87			91			93		
*1801, 1802											83							92			93		95
*1803		74									83							92			93	94	95
HLA-Cw allele ⁴																							
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
B*1403																			92				
B*6702													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

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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-C low resolution SSP typing.

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

²The nucleotide position, in the 1st, 2nd, 3rd or 4th exon or the 1st or 2nd intron, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position, in the 1st, 2nd, 3rd or 4th exon or the 3rd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

⁴The sequence of the Cw*0101 allele has been shown to be identical to Cw*0102.

The sequence of the Cw*0201 allele has been shown to be identical to Cw*02022.

The sequence of the Cw*020204 allele has been shown to be identical to Cw*0210.

The sequence of the Cw*021603 allele has been shown to be identical to Cw*021602.

The sequence of the Cw*0301 allele has been shown to be identical to Cw*0304.

The sequence of the Cw*0402 allele has been shown to be identical to Cw*04011.

The sequence of the Cw*0421 allele has been shown to be identical to Cw*041502.

The sequence of the Cw*0422 allele has been shown to be identical to Cw*0421.

The sequence of the Cw*0601 allele has been shown to be identical to Cw*0602.

The sequence of the Cw*060202 allele has been renamed Cw*0617.

The sequence of the Cw*0734 allele has been shown to be identical to Cw*072702.

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 Cw*12022.

The nucleotide 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 Cw*1402.

The sequence of the Cw*1501 allele has been shown to be identical to Cw*1502.

The sequence of the Cw*1514 allele has been shown to be identical to Cw*151002.

The sequence of the Cw*1603 allele has been shown to be identical to Cw*1403.

The sequence of the Cw*16042 allele has been shown to be identical to Cw*16041.

The sequence of the Cw*1605 allele has been shown to be identical to Cw*16041.

CELL LINE VALIDATION SHEET																
HLA-A low resolution primer set																
						Well										
						1	2	3	4	5	6	7	8	9	10	11
					Lot No.:	200855001	200855002	200855003	200855004	200855005	200855006	200855007	200855008	200855009	200855010	200855011
						12	13	14	15	16	17	18	19	20	21	22
	IHWC cell line	A*	A*													
1	9001 SA	*2402				-	-	-	-	+	-	+	-	-	-	-
2	9280 LK707	*0201				-	+	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*0101				+	-	-	+	-	-	-	-	-	-	-
4	9275 GU373	*3001				-	-	-	-	-	-	-	-	-	-	+
5	9009 KAS011	*0101				+	-	-	+	-	-	-	-	-	-	-
6	9353 SM	*0201	*2603			-	+	-	-	-	-	-	+	-	-	-
7	9020 QBL	*2601				-	-	-	-	-	-	-	+	-	+	-
8	9025 DEU	*3101				-	-	-	-	-	-	-	-	-	-	+
9	9026 YAR	*2601				-	-	-	-	-	-	-	+	-	+	-
10	9107 LKT3	*2402				-	-	-	-	+	-	+	-	-	-	-
11	9051 PITOUT	*2902				-	-	-	-	-	-	-	-	-	-	+
12	9052 DBB	*0201				-	+	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*0201				-	+	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*3101				-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*2402				-	-	-	-	+	-	+	-	-	-	-
16	9037 SWEIG007	*2902				-	-	-	-	-	-	-	-	-	-	+
17	9282 CTM3953540	*0301	*8001			-	-	+	-	-	+	-	-	-	-	+
18	9257 32367	*3303	*7401			-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*0201				-	+	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*0201				-	+	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*0217				-	+	-	-	-	-	W	-	-	-	-
22	9056 KOSE	*0201				-	+	-	-	-	-	-	-	-	-	-
23	9124 IHL	*0201	*3401			-	+	-	-	-	-	-	+	-	+	+
24	9035 JBUSH	*3201				-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*3301				-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*0205				-	+	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*2410	*2901			-	-	-	-	+	-	+	-	-	-	+
28	9320 BEL5GB	*0201	*2902			-	+	-	-	-	-	-	-	-	-	+
29	9050 MOU	*2902				-	-	-	-	-	-	-	-	-	-	+
30	9021 RSH	*3001	*6802			-	-	-	-	-	-	-	+	-	-	+
31	9019 DUCAF	*3002				-	-	-	-	-	-	-	-	-	-	+
32	9297 HAG	*0201				-	+	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*3101				-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*3101				-	-	-	-	-	-	-	-	-	-	-
35	9302 SСТО	*3201				-	-	-	-	-	-	-	+	-	-	-
36	9024 KT17	*0206	*1101			-	+	-	+	-	-	-	-	-	+	-
37	9065 HHKB	*0301				-	-	+	-	-	-	-	-	-	-	+
38	9099 LZL	*0217				-	+	-	-	-	-	W	-	-	-	-
39	9315 CML	*0101	*0301			+	-	+	+	-	-	-	-	-	-	+
40	9134 WHONP199	*0207	*3001			-	+	-	-	-	-	-	-	-	-	+
41	9055 H0301	*0301				-	-	+	-	-	-	-	-	-	-	+
42	9066 TAB089	*0207				-	+	-	-	-	-	-	-	-	-	-
43	9076 T7526	*0207				-	+	-	-	-	-	-	-	-	-	-
44	9057 TEM	*6601				-	-	-	-	-	-	-	+	-	+	-
45	9239 SHJO	*2301	*2402			-	-	-	-	+	+	+	-	-	-	-
46	9013 SCHU	*0301				-	-	+	-	-	-	-	-	-	-	+
47	9045 TUBO	*0216	*0301			-	+	+	-	-	-	-	-	-	-	+
48	9303 TER-ND	*0201	*1101			-	+	-	+	-	-	-	-	-	-	-

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CELL LINE VALIDATION SHEET												
HLA-A low resolution primer set												
					Well							
					17	18	19	20	21	22	23	24
				Lot No.:	200855017	200855018	200855019	200855020	200855021	200855022	200855023	200739724
	IHWC cell line		A*	A*								
1	9001	SA	*2402		-	-	-	-	-	-	-	-
2	9280	LK707	*0201		-	-	-	-	-	-	-	-
3	9011	E4181324	*0101		-	-	-	-	-	-	-	+
4	9275	GU373	*3001		-	-	-	-	-	-	-	-
5	9009	KAS011	*0101		-	-	-	-	-	-	-	+
6	9353	SM	*0201	*2603	-	-	-	-	-	-	+	-
7	9020	QBL	*2601		-	-	-	-	-	-	-	-
8	9025	DEU	*3101		-	-	-	-	-	-	-	-
9	9026	YAR	*2601		-	-	-	-	-	-	-	-
10	9107	LKT3	*2402		-	-	-	-	-	-	-	-
11	9051	PITOUT	*2902		-	-	-	-	-	-	-	-
12	9052	DBB	*0201		-	-	-	-	-	-	-	-
13	9004	JESTHOM	*0201		-	-	-	-	-	-	-	-
14	9071	OLGA	*3101		-	-	-	-	-	-	-	-
15	9075	DKB	*2402		-	-	-	-	-	-	-	-
16	9037	SWEIG007	*2902		-	-	-	-	-	-	-	-
17	9282	CTM3953540	*0301	*8001	-	-	-	-	-	-	+	+
18	9257	32367	*3303	*7401	-	+	+	-	-	-	-	-
19	9038	BM16	*0201		-	-	-	-	-	-	-	-
20	9059	SLE005	*0201		-	-	-	-	-	-	-	-
21	9064	AMALA	*0217		-	-	-	-	-	-	-	-
22	9056	KOSE	*0201		-	-	-	-	-	-	-	-
23	9124	IHL	*0201	*3401	-	-	-	-	-	-	-	-
24	9035	JBUSH	*3201		+	-	-	-	-	-	-	-
25	9049	IBW9	*3301		-	+	-	-	-	-	-	-
26	9285	WT49	*0205		-	-	-	-	-	-	-	-
27	9191	CH1007	*2410	*2901	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*0201	*2902	-	-	-	-	-	-	-	-
29	9050	MOU	*2902		-	-	-	-	-	-	-	-
30	9021	RSH	*3001	*6802	-	-	-	+	-	-	-	-
31	9019	DUCAF	*3002		-	-	-	-	-	-	-	-
32	9297	HAG	*0201		-	-	-	-	-	-	-	-
33	9098	MT14B	*3101		-	-	-	-	-	-	-	-
34	9104	DHIF	*3101		-	-	-	-	-	-	-	-
35	9302	SSTO	*3201		+	-	-	-	-	-	-	-
36	9024	KT17	*0206	*1101	-	-	-	-	-	-	-	+
37	9065	HHKB	*0301		-	-	-	-	-	-	-	-
38	9099	LZL	*0217		-	-	-	-	-	-	-	-
39	9315	CML	*0101	*0301	-	-	-	-	-	-	-	+
40	9134	WHONP199	*0207	*3001	-	-	-	-	-	-	-	-
41	9055	H0301	*0301		-	-	-	-	-	-	-	-
42	9066	TAB089	*0207		-	-	-	-	-	-	-	-
43	9076	T7526	*0207		-	-	-	-	-	-	-	-
44	9057	TEM	*6601		-	-	-	-	-	-	-	-
45	9239	SHJO	*2301	*2402	-	-	-	-	-	-	-	-
46	9013	SCHU	*0301		-	-	-	-	-	-	-	-
47	9045	TUBO	*0216	*0301	-	-	-	-	-	-	-	-
48	9303	TER-ND	*0201	*1101	-	-	-	-	-	-	-	+

Lot No.: 85F

Lot-specific information

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CELL LINE VALIDATION SHEET																				
HLA-B low resolution SSP kit																				
					Well															
					41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
				Prod. No.:	200959417	200959418	200959419	200959420	200959421	200959422	200959423	200959424	200959425	200959426	200959427	200959428	200959429	200959430	200959431	200959432
	IHC cell line		B*																	
1	9001	SA	*0702		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
2	9280	LK707	*5201		*7301	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
3	9011	E4181324	*52011			-	-	-	-			-	-	-	-	-	-	-	-	-
4	9275	GU373	*1510		*5301	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*3701			+	-	-	+	-	-	-	-	-	-	-	+	-	-	-
6	9353	SM	*3901		*5101	-	-	-	-	+	-	+	+	-	-	-	-	+	-	-
7	9020	QBL	*1801			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*3501			+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*3801			-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
10	9107	LKT3	*5401			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+
11	9051	PITOUT	*4403			+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052	DBB	*5701			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*2705			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+
14	9071	OLGA	*1501		*1520	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*4001			-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
16	9037	SWEIG007	*4002			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
17	9282	CTM3953540	*0801		*5501	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
18	9257	32367	*1401		*5601	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+
19	9038	BM16	*1801			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*4001			-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
21	9064	AMALA	*1501			-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*3503			+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*4002		*5602	-	-	-	-	-	-	-	-	+	-	+	-	-	-	+
24	9035	JBUSH	*3801			-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
25	9049	IBW9	*1402			-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
26	9285	WT49	*5801			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*0705		*5101	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-
28	9320	BEL5GB	*4402		*4403	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
29	9050	MOU	*4403			+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021	RSH	*4201			-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
31	9019	DUCAF	*1801			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*4102			-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
33	9098	MT14B	*4001			-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
34	9104	DHIF	*3801			-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
35	9302	SSTO	*4402			+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
36	9024	KT17	*1501		*3501	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*0702			-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
38	9099	LZL	*1501			-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*0801		*2705	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
40	9134	WHONP199	*1302		*4601	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
41	9055	H0301	*1402			-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
42	9066	TAB089	*4601			-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
43	9076	T7526	*4601			-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
44	9057	TEM	*3801			-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
45	9239	SHJO	*4201		*5001	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
46	9013	SCHU	*0702			-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
47	9045	TUBO	*5101			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
48	9303	TER-ND	*3501		*4403	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-

CELL LINE VALIDATION SHEET																					
HLA-B low resolution SSP kit																					
					Well																
					57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	
				Prod. No.:	200959433	200959434	200959435	200959436	200959437	200959438	200959439	200959440	200959441	200959442	200959443	200959444	200959445	200959446	200959447	200734348	
	IHC cell line		B*																		
1	9001	SA	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	
2	9280	LK707	*5201		*7301	-	-	+	+	-	+	-	-	-	-	-	+	+	+	-	
3	9011	E4181324	*52011			-	-	+	+	-	+	-	-	-	-	-	-	+	-	-	
4	9275	GU373	*1510		*5301	-	-	-	+	-	-	-	-	-	-	+	-	+	+	-	
5	9009	KAS011	*3701			-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	
6	9353	SM	*3901		*5101	-	-	+	+	-	-	-	-	-	-	-	-	+	+	-	
7	9020	QBL	*1801			-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	
8	9025	DEU	*3501			-	-	-	+	-	-	-	-	-	-	+	-	-	+	-	
9	9026	YAR	*3801			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
10	9107	LKT3	*5401			-	-	-	-	-	-	+	+	-	-	-	-	-	+	-	
11	9051	PITOUT	*4403			-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	
12	9052	DBB	*5701			-	-	-	+	-	-	-	-	-	+	-	-	+	-	-	
13	9004	JESTHOM	*2705			-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	
14	9071	OLGA	*1501		*1520	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-	
15	9075	DKB	*4001			-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	
16	9037	SWEIG007	*4002			-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	
17	9282	CTM3953540	*0801		*5501	-	-	+	-	-	-	-	+	-	-	-	-	-	+	+	
18	9257	32367	*1401		*5601	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	
19	9038	BM16	*1801			-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	
20	9059	SLE005	*4001			-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	
21	9064	AMALA	*1501			-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	
22	9056	KOSE	*3503			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	
23	9124	IHL	*4002		*5602	-	-	-	-	+	+	-	-	+	-	+	-	-	-	+	
24	9035	JBUSH	*3801			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
25	9049	IBW9	*1402			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
26	9285	WT49	*5801			-	-	-	+	-	-	-	-	-	-	+	-	+	-	-	
27	9191	CH1007	*0705		*5101	-	-	+	+	-	-	-	-	-	-	-	+	-	+	+	
28	9320	BEL5GB	*4402		*4403	-	-	-	-	-	+	+	-	-	-	-	-	+	-	-	
29	9050	MOU	*4403			-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	
30	9021	RSH	*4201			-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	
31	9019	DUCAF	*1801			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	
32	9297	HAG	*4102			-	-	-	-	+	+	-	-	-	-	-	-	-	+	+	
33	9098	MT14B	*4001			-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	
34	9104	DHIF	*3801			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
35	9302	SSTO	*4402			-	-	-	-	-	+	+	-	-	-	-	-	+	-	-	
36	9024	KT17	*1501		*3501	-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	
37	9065	HHKB	*0702			-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	
38	9099	LZL	*1501			-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	
39	9315	CML	*0801		*2705	-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	
40	9134	WHONP199	*1302		*4601	-	-	-	-	-	+	-	-	-	-	-	+	+	+	-	
41	9055	H0301	*1402			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
42	9066	TAB089	*4601			-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	
43	9076	T7526	*4601			-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	
44	9057	TEM	*3801			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
45	9239	SHJO	*4201		*5001	-	-	+	-	+	+	-	-	+	-	-	-	-	+	+	
46	9013	SCHU	*0702			-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	
47	9045	TUBO	*5101			-	-	+	+	-	-	-	-	-	-	-	+	-	+	-	
48	9303	TER-ND	*3501		*4403	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	

CELL LINE VALIDATION SHEET																				
HLA-C low resolution SSP primer set																				
					Well															
					73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
				Prod. No.:	200959501	200959502	200848403	200848405	200848405	200848406	200959507	200959508	200848409	200848410	200848411	200848412	200848413	200848414	200959515	200848416
	IHCW cell line		Cw*																	
1	9001	SA	*0702		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
2	9280	LK707	*0701	*1505	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-
3	9011	E4181324	*1202		-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
4	9275	GU373	*0304	*0401	-	-	+	+	-	+	-	-	-	-	+	-	+	-	-	-
5	9009	KAS011	*0602		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
6	9353	SM	*0304	*0702	-	-	+	+	-	-	-	-	+	-	-	-	-	-	+	-
7	9020	QBL	*0501		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-
8	9025	DEU	*0401		-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	-
9	9026	YAR	*1203		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
10	9107	LKT3	*0102		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*1601		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052	DBB	*0602		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
13	9004	JESTHOM	*0102		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*0102	*0304	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*0304		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*0202		-	+	+	-	-	+	-	-	-	-	+	-	-	-	+	-
17	9282	CTM395354	*0303	*0701	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-
18	9257	32367	*0102	*0705	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
19	9038	BM16	*0701		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
20	9059	SLE005	*0304		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*0303		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*1203		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
23	9124	IHL	*0102	*1502	+	-	+	-	-	-	-	+	-	-	+	-	-	-	+	-
24	9035	JBUSH	*1203		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
25	9049	IBW9	*0802		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
26	9285	WT49	*0701		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
27	9191	CH1007	*0704	*1505	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-
28	9320	BEL5GB	*0501	*1601	-	-	-	-	-	-	+	-	-	-	+	-	+	-	+	-
29	9050	MOU	*1601		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021	RSH	*1701		-	+	-	-	-	-	-	-	-	-	+	-	-	+	-	-
31	9019	DUCAF	*0501		-	-	-	-	-	+	-	-	-	-	+	-	-	-	+	-
32	9297	HAG	*1701	*1703	-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-
33	9098	MT14B	*0304		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*1203		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
35	9302	SSTO	*0501		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-
36	9024	KT17	*0303	*0401	-	-	-	+	+	+	-	-	-	-	+	-	+	-	-	-
37	9065	HHKB	*0702		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
38	9099	LZL	*0303		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*0202	*0701	-	+	+	-	-	+	-	-	+	-	+	-	-	-	+	-
40	9134	WHONP199	*0102	*0602	+	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
41	9055	H0301	*0802		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
42	9066	TAB089	*0102		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*0102	*0801	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
44	9057	TEM	*1203		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
45	9239	SHJO	*0602	*1701	-	+	-	-	-	-	-	+	-	-	+	-	-	+	+	-
46	9013	SCHU	*0702		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
47	9045	TUBO	*0704	*1502	-	-	+	-	-	-	-	+	+	-	+	-	-	-	+	-
48	9303	TER-ND	*0401	*1601	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	-

Lot No.: **85F**

Lot-specific information

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CELL LINE VALIDATION SHEET					Well							
HLA-C low resolution SSP primer set					89	90	91	92	93	94	95	
				Prod. No.:	200848417	200848418	200848419	200848420	200848421	200848422	200848423	
	IHWC cell line		Cw*									
1	9001 SA		*0702		-	-	-	-	-	-	+	
2	9280 LK707		*0701	*1505	+	-	-	-	+	-	+	
3	9011 E4181324		*1202		-	-	-	-	-	-	-	
4	9275 GU373		*0304	*0401	-	+	-	-	+	+	-	
5	9009 KAS011		*0602		-	-	-	-	-	-	+	
6	9353 SM		*0304	*0702	-	-	-	-	+	+	+	
7	9020 QBL		*0501		-	-	-	-	+	-	-	
8	9025 DEU		*0401		-	+	-	-	+	-	-	
9	9026 YAR		*1203		-	-	-	-	-	-	-	
10	9107 LKT3		*0102		-	-	-	+	-	-	-	
11	9051 PITOUT		*1601		-	+	-	-	-	-	+	
12	9052 DBB		*0602		-	-	-	-	-	-	+	
13	9004 JESTHOM		*0102		-	-	-	+	-	-	-	
14	9071 OLGA		*0102	*0304	-	-	-	+	+	+	-	
15	9075 DKB		*0304		-	-	-	-	+	+	-	
16	9037 SWEIG007		*0202		-	-	-	-	-	-	-	
17	9282 CTM395354		*0303	*0701	-	-	-	-	+	+	+	
18	9257 32367		*0102	*0705	-	-	-	+	-	-	+	
19	9038 BM16		*0701		-	-	-	-	-	-	+	
20	9059 SLE005		*0304		-	-	-	-	+	+	-	
21	9064 AMALA		*0303		-	-	-	-	+	+	-	
22	9056 KOSE		*1203		-	-	-	-	-	-	-	
23	9124 IHL		*0102	*1502	+	-	-	+	+	-	-	
24	9035 JBUSH		*1203		-	-	-	-	-	-	-	
25	9049 IBW9		*0802		-	-	-	-	+	-	-	
26	9285 WT49		*0701		-	-	-	-	-	-	+	
27	9191 CH1007		*0704	*1505	+	-	-	-	+	-	+	
28	9320 BEL5GB		*0501	*1601	-	+	-	-	+	-	+	
29	9050 MOU		*1601		-	+	-	-	-	-	+	
30	9021 RSH		*1701		-	-	+	-	+	-	-	
31	9019 DUCAF		*0501		-	-	-	-	+	-	-	
32	9297 HAG		*1701	*1703	-	-	+	-	+	-	-	
33	9098 MT14B		*0304		-	-	-	-	+	+	-	
34	9104 DHIF		*1203		-	-	-	-	-	-	-	
35	9302 SСТО		*0501		-	-	-	-	+	-	-	
36	9024 KT17		*0303	*0401	-	+	-	-	+	+	-	
37	9065 HHKB		*0702		-	-	-	-	-	-	+	
38	9099 LZL		*0303		-	-	-	-	+	+	-	
39	9315 CML		*0202	*0701	-	-	-	-	-	-	+	
40	9134 WHONP199		*0102	*0602	-	-	-	+	-	-	+	
41	9055 H0301		*0802		-	-	-	-	+	-	-	
42	9066 TAB089		*0102		-	-	-	+	-	-	-	
43	9076 T7526		*0102	*0801	-	+	-	+	+	-	-	
44	9057 TEM		*1203		-	-	-	-	-	-	-	
45	9239 SHJO		*0602	*1701	-	-	+	-	+	-	+	
46	9013 SCHU		*0702		-	-	-	-	-	-	+	
47	9045 TUBO		*0704	*1502	+	-	-	-	+	-	+	
48	9303 TER-ND		*0401	*1601	-	+	-	-	+	-	+	

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A-B-C SSP Combi Tray

Product number: 101.702-24u/06u – without *Taq* pol.

Lot number: 85F

Expiry date: 2011-June-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	2008-550-01	9	2008-550-09	17	2008-550-17
2	2008-550-02	10	2008-550-10	18	2008-550-18
3	2008-550-03	11	2008-550-11	19	2008-550-19
4	2008-550-04	12	2008-550-12	20	2008-550-20
5	2008-550-05	13	2009-593-13	21	2008-550-21
6	2008-550-06	14	2008-550-14	22	2008-550-22
7	2008-550-07	15	2008-550-15	23	2008-550-23
8	2008-550-08	16	2008-550-16	24	2007-397-24

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 to 8, 12, 15, 17 and 20 to 22 were tested by separately adding one 3'-primer, respectively one 5'-primer. Additional 5'-primers in primer solutions 10 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 3, 14, 16, 18, 19 and 23 were tested by separately adding one 5'-primer.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
25	2009-594-01	41	2009-594-17	57	2009-594-33
26	2009-594-02	42	2009-594-18	58	2009-594-34
27	2009-594-03	43	2009-594-19	59	2009-594-35
28	2009-594-04	44	2009-594-20	60	2009-594-36
29	2009-594-05	45	2009-594-21	61	2009-594-37
30	2009-594-06	46	2009-594-22	62	2009-594-38
31	2009-594-07	47	2009-594-23	63	2009-594-39
32	2009-594-08	48	2009-594-24	64	2009-594-40
33	2009-594-09	49	2009-594-25	65	2009-594-41
34	2009-594-10	50	2009-594-26	66	2009-594-42
35	2009-594-11	51	2009-594-27	67	2009-594-43
36	2009-594-12	52	2009-594-28	68	2009-594-44
37	2009-594-13	53	2009-594-29	69	2009-594-45
38	2009-594-14	54	2009-594-30	70	2009-594-46
39	2009-594-15	55	2009-594-31	71	2009-594-47
40	2009-594-16	56	2009-594-32	72	2007-343-48

Lot No.: **85F**

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, 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, 48 and 59 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 25 and 45 were tested by separately adding one additional 3'-primer.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2009-595-01	81	2008-484-09	89	2008-484-17
74	2009-595-02	82	2008-484-10	90	2008-484-18
75	2008-484-03	83	2008-484-11	91	2008-484-19
76	2008-484-04	84	2008-484-12	92	2008-484-20
77	2008-484-05	85	2008-484-13	93	2008-484-21
78	2008-484-06	86	2008-484-14	94	2008-484-22
79	2009-595-07	87	2009-595-15	95	2008-484-23
80	2009-595-08	88	2008-484-16		

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

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

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

Date of approval: 2011-February-04

Approved by:

Quality Control, Supervisor

Lot No.: **85F**

Lot-specific information

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Declaration of Conformity

Product name: *Olerup* SSP® HLA-A-B-C SSP Combi Tray
Product number: 101.702-24u/06u
Lot number: 85F

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

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

We, *Olerup* SSP AB, hereby declare that this product, to which this Declaration of Conformity relates is in conformity with the following Standard(s) and other normative document(s) ISO 9001:2000 and ISO 13485:2003, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex II List B, conformity assessed using Annex IV, as transposed into the national laws of the Member States of the European Union.

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

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

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

Saltsjöbaden, Sweden
2011-February-04

Olle Olerup
Managing Director

Lot No.: **85F**

Lot-specific information

www.olerup-ssp.com

ADDRESSES:

Manufacturer:

Olerup SSP AB, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.

Tel: +46-8-717 88 27

Fax: +46-8-717 88 18

E-mail: info-ssp@olerup.com

Web page: <http://www.olerup.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**.