

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

Product number:	101.702-24/06 – including <i>Taq</i> pol.
Lot number:	04F
Expiry date:	2010-September-01
Number of tests:	24 tests – Product No. 101.702-24 6 tests – Product No. 101.702-06
Number of wells per test:	95 +1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 04F.

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. 01E**).

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
16	Exchanged	-	To amplify the A*3121 allele.

The **HLA-B low resolution** specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP*[®] HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 01E**).

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

Changes in revision R01 compared to R00:

1. The HLA-Cw alleles amplified by primer mix 84 have been corrected in the Specificity and Interpretation Tables.

Changes in revision R02 compared to R01:

1. Size of internal positive control band corrected to 800 bp for well 72.

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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. 01E**).

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

Well	5'-primer	3'-primer	rationale
73	-	Added	Primer added for the Cw*0121 allele.
74	-	Removed	Increased resolution.
82	Added	Added	Primer pair added for the Cw*0813 allele.
84	Exchanged	-	Primer exchanged to not amplify the Cw*040105 allele.
85	Exchange	-	Primer exchanged to not amplify the Cw*0753 allele.
91	Added	Added	Primer pair added for the Cw*0433 allele.
94	Exchanged	Added	Increased resolution.

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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*1802 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. '04F'.

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*0305, 0325 and 0327 alleles will be amplified by primer mix 27, that the Cw*0746 allele will be amplified by primer mix 32, that the Cw*0206 allele will be weakly amplified by primer mixes 34 and 67 and that the Cw*150204 allele will amplified by primer mix 64. Thus, the

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interpretation of HLA-B low resolution typings is only influenced by these six 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 alleles, i.e. **A*0101 to A*8001**, recognized by the HLA Nomenclature Committee in July 2008¹ 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 July 2008¹ 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 alleles, i.e. **Cw*0102 to Cw*1802**, recognized by the HLA Nomenclature Committee in July 2008¹ 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 2008-July-11, release 2.22.0, www.ebi.ac.uk/imgt/hla.

²The nucleotide sequences of the B*3589 and 4093 alleles are not yet retrievable from the GenBank or EMBL data banks.

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 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.

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 ^{4,11,12}
1⁵	120, 145 bp	800 bp	A1, A36	01010101-0104N, 0106-0130, 3601-3604
2⁶	135, 200, 255 bp	1070 bp	A2	02010101-020115, 020117-0222, 0224-023501, 023503-0247, 0249-0297, 0299, 9201-9221, 9223-9228, 9230-9248
3⁷	205, 235 bp	1070 bp	A1, A3, A11, A32, A34, A36	0112, 0119, 0121, 03010101-0317, 0319-0339, 1125, 3204, 3402-3404, 3407, 3408, 3602
4⁷	190 bp	800 bp	A1, A2, A3, A11, A26, A30, A36	01010101-0104N, 0106, 0107, 0109-0111N, 0113, 0116N-0118N, 0120-0129, 0278, 0312, 0318, 110101-1127, 1129-1136, 2619, 3008, 3604
5	160, 535 bp	800 bp	A3, A23, A24, A31, A32	0330, 2301-2319Q, 24020101-2411N, 241301-2415, 2417-2464, 2466-2488, 2490N, 2491, 3108, 3205, 3213
6	165, 200 bp	800 bp	A2, A23, A24, A29, A80	9222, 2301-2319Q, 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, 2616, 3319
8	165, 200 bp	800 bp	A2, A3, A11, A25, A26, A32, A34, A66, A68, A69	0255, 0324, 1110, 250101-2506, 260101-2606, 2608-2615, 2617, 2618, 2620-2637, 3215, 340101-3408, 6601-6607, 680101-6843, 6901
9⁵	75 bp	800 bp	A25, A32	250101-2506, 320101-3202, 3204, 3206-3216
10⁵	85 bp	1070 bp	A2, A26, A33	9246, 260101-2602, 2604, 260701-2618, 2620, 2622-2629, 2632-2637, 3313

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11 ^{5,7,8}	80, 175, 500 bp	1070 bp	A1, A11, A24, A26, A31, A34, A66	0113, 0128, 110101-1127, 1129-1136, 2419, 2444, 2603, 2606, 2621, 3103, 340101-3408, 6601, 6604-6607
12	185 bp	800 bp	A11, A25, A26, A31, A34, A43, A66	1111, 2506, 2609, 3103, 3104, 340101-3408, 4301, 6602, 6603
13 ⁷	175, 225 bp	1070 bp	A1, A2, A3, A25, A26, A34, A43, A66	0113, 0234-023503, 0256, 0262, 9203, 9235, 03010101-0307, 0309-0311N, 0313-0331, 0333-0335, 0337-0339, 250101-2505, 260101-260106, 2602 ^{weakly} , 2603, 2605-2608, 2610-2633, 2635-2637, 3408, 4301, 6601, 6604-6607
14	200, 240 bp	1070 bp	A29, A33	29010101-2917, 3313
15 ⁵	90, 135 bp	1070 bp	A1, A30	0113, 0128, 300101-3004, 3006-3020, 3022-3025
16	370, 400 bp	1070 bp	A31, A32	2914, 310102-3122, 3205
17	180 bp	1070 bp	A29, A32	2913, 320101-3203, 3205-3216
18	200 bp	1070 bp	A33, A68	3301, 330301-3319, 6829
19	160, 200 bp	800 bp	A74	7401-7412N
20 ⁹	155, 240 bp	800 bp	A2, A210, A25, A30, A68	0210, 0234-023503, 0239, 0246, 0248, 0250, 0252, 0256, 0262, 0270, 0273, 0278, 0293, 0295, 9203, 9210, 9214, 9217, 9222, 9229, 2505, 3008, 680101-6843
21	240, 375 bp	800 bp	A2, A24, A26, A68, A69	0255, 2482, 2622, 6829, 6901
22 ^{5,10}	85, 240 bp	800 bp	A2, A30, A36	0234-023503, 0246, 0248, 0256, 0262, 0270, 0278, 9203, 9229, 3008, 3601-3604
23 ⁵	75, 160 bp	800 bp	A2, A26, A68, A80	0255, 2603, 2605, 2606, 2621, 2630, 6805, 6815, 6820, 8001
24	360 bp	1070 bp	A1, A11, A33, A36, A74, A80	01010101-0104N, 0106, 0108-0129, 110101-1111, 1113-1117, 1119-1127, 1129-1136, 3313, 3601-3604, 7410, 8001

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

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

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

In addition, wells number 4, 5, 6, 8, 9, 11, 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.

³ The serological reactivity of all HLA-A alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the www.ebi.ac.uk/imgt/hla web site 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.

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

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

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

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

⁷ Primer mixes 3, 4, 11 and 13 may give rise to nonspecific amplifications.

⁶ The primer pairs in vial 11 will in most samples give rise to two to three specific PCR fragments.

⁹ Primer mix 20 will give rise to nonspecific amplifications.

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

¹¹ The 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.

¹² Primer mix 6 will amplify the B*1827 allele.

'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^{5,6}	110 bp	800 bp	7, 15, 37, 40, 41, 42, 48	070201-071802, 0720-0732, 0734-0739, 0741-0747, 0749N, 0750, 0752, 0754-0759, 0761-0766, 9538, 3707, 4015, 4016, 4023, 4032, 4108, 420501-420502, 4805, 4808, 4815
26	215 bp	1070 bp	8, 15, 44	080101-0825, 0827-0836, 9542, 4449
27⁷	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, 1310-1322, 150106-150108, 1507, 152702-152703, 1536, 1545, 1555, 1568, 1589, 9526, 9535-9537, 9539-9542, 9544-9549N, 3505, 3516, 3517, 3522, 3530, 3551, 3558, 3572, 4005, 4071, 4408, 4454, 4457, 4460, 4611- 4616, 5314, 5714, 5715, 5717, 5818, Cw*0305, Cw*0325, Cw*0327
28⁸	130, 265 bp	1070 bp	13, 14, 15, 35, 40, 41, 44, 45, 47, 49, 50	1301-1304, 1306-1313, 1315-1322, 1401-1404, 1407N, 1409, 1546, 1553, 9506, 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-446402, 4501-4509, 47010101-4705, 4901, 4902, 4904, 4905, 5001, 5002, 5004
29⁹	185, 235 bp	1070 bp	14, 16, 27, 37, 38, 39,	1401, 1407N, 1408, 2701-270402, 270502-2706, 2708-2710, 2712,

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			47, 64, 67	2713, 2716-2718, 2720, 2723, 2726, 2727, 2729, 2731, 2735-2737, 2739-2742, 3702, 380101-3803, 3807-3817, 39010101-39010102L, 390103-390201, 3903, 3905-390602, 3907 [?] , 3908, 3909, 3911, 3914, 3915, 3918, 391902, 3922, 3924-3944, 4704, 4705, 670101
30⁹	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, 150106-150107, 1502, 1504-1508, 151101-1515, 15170101-151702, 1519-1521, 1524-152701, 152703, 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, 9535-9549N, 460101-4616
32	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, 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, 3587, 3712, 4012, 4101-410302, 4105-4108, 4201, 4202, 4204-4208, 4414, 4415, 4418, 4420, 4462, 4501-4509, 5108, 5120, 5136, 5144N, 5613, 5709, 8201, 8202, Cw*0746
33^{5,9,10}	165, 390 bp	800 bp	15, 35, 40, 44, 51, 52, 56, 58, 62, 63, 70, 78	150102, 1509, 1516-151702, 1567, 1595, 350402, 4026, 4028, 4462, 510101-510103, 510105-510902, 5111N, 5112, 511302, 5114, 5117-5120, 5122, 5123, 5126-5130, 5132, 5133, 5137-5141N, 5143, 5144N, 5146, 5148-5157, 520101-

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				5207, 5209-5213, 560501-5606, 5621, 5808, 7801-7806
34⁹	180, 395 bp	800 bp	13, 15, 40, 55, 62, 70, 71, 72, 75	1301-130204, 1307N-1309, 1311, 1314-1320, 1322, 1509, 1510, 1518, 1521, 1523, 1537, 1544, 1551, 1552, 1566, 1572, 1580, 1590, 1593, 1599, 9508, 9514, 9515, 9519, 9524, 9533, 9534, 4048, 5522, 5524, Cw*0206^{weakly}
35^{5,6}	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, 2718, 2729, 3803, 390201-390202, 3908, 391301-391302, 3923, 3939, 4012, 4046, 4410, 4415, 4418, 4440, 4444, 4501, 4505-4507, 480101-4805, 4807-4819, 5002, 5518, 8201, 8202
36	275 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, 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, 180101-1815, 1817N- 1825, 1827-1829, 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, 3590-3594, 3907, 3943, 4003, 4020, 4038, 4052, 4059, 4060, 4209, 4417, 4443, 4509, 460101- 4610, 4612-4616, 4802, 4814, 4904, 4905, 5137, 5145, 530101- 5303, 5305, 5306, 5308-5316, 5406, 5409, 5414, 5514, 5523, 5532, 5603, 5609, 5618, 570101- 570103, 5706, 5708, 5710, 5711, 5713-5716, 580101-5802, 5804- 5807, 5809-5819

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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, 5807
38⁶	105, 435	1070 bp	7, 15, 41, 42, 59, 62, 63, 77	0704, 0725, 1513, 1516-151702, 1523, 1524, 1567, 1587, 1595, 4108, 420501-420502
39⁶	115 bp	1070 bp	18	180101-1815, 1817N-1828
40⁶	80 bp	1070 bp	27, 40, 44	2701-270402, 270502-2721, 2723- 2743, 4046, 4440, 4444
41	150 bp	1070 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, 1502, 1513, 1520, 1521, 1525, 1536, 1544, 1562, 1577, 1580, 1585, 1588, 1589, 9506, 9512, 9521, 9539, 9544, 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, 3590-3594, 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, 4802, 5104, 5142, 5146, 5156, 530101-5313, 5315, 5316, 5514, 5609, 5611, 5612, 570101- 5710, 5712, 5714-5717, 580101- 580102, 5804, 5805, 5809-5815, 5817N, 5819, 8301
42	135 bp	1070 bp	7, 8, 18, 35, 37, 39, 56, 78	0765, 0832, 180101-1808, 1810- 1815, 1817N-1829, 350101-3518, 352001-3524, 3528-3545, 3548, 3550-3555, 3557-3562, 3564-3572, 3774-3588, 3590-3594, 3711, 3714, 391901-391902, 5606, 7801-7805
43^{5,6}	245, 400 bp	1070 bp	15, 62, 63, 70, 71, 72, 75, 76, 77, 40, 44	15010101-150104, 150106-1521, 1523-1540, 1542-1558, 1560-1599, 9501-9529, 9531-9549N, 4012, 4410, 8201, 8202
44^{5,9,11}	205 bp	800 bp	7, 8, 15, 18, 37, 38	0727, 0802, 9515, 1809, 370101- 3704, 3705 ^{weakly} , 3706-3710, 3712, 3713, 380201-3804, 3808, 3815, 3817

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45	170 bp	800 bp	15, 35, 38, 39, 67	1569, 9536, 3535, 380101-3809, 3811-3817, 39010101-39010102L, 390103-3920, 3922-3924, 3926- 3929, 3931, 3935, 3937-3942, 3944, 3945, 670101-6702
46⁶	110 bp	1070 bp	38	380101-3803, 3805, 3808-3817
47	400 bp	1070 bp	14, 38, 39, 64, 65	1401-1409, 380101-380202, 3804, 3805, 3808-3817, 39010101- 39010102L, 390103-390105, 3903- 3907, 3909, 3911, 3912, 3914, 3915, 3918-391902, 3922, 3924- 3938Q, 3940N, 3941, 3944, 3945
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, 080101-080105, 0804-0835, 1401-1409, 39010101- 39010102L, 390103-3920, 3922- 3945, 400101-400106, 4007, 4009- 4011 [?] , 401401-4016 [?] , 4018 [?] , 4021 [?] , 4022N [?] , 4023, 4024-4038 [?] , 4040 [?] , 4042-4046 [?] , 4048-4050 [?] , 4051, 4052-4058 [?] , 4059, 4060, 4061-4069 [?] , 4071 [?] , 407201 [?] , 407202, 4073-4076 [?] , 4077, 4078 [?] , 4079, 4080-4088 [?] , 4101-4108, 4201, 4202, 4204-4209, 4501-4509, 480101-4817, 4819, 5001, 5002, 5004, 670101-6702, 7301, 8102
49^{5,11}	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, 4081, 4084, 4087, 4088, 4092, 4431, 4606, 480301-480302, 4817
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
51⁶	110 bp	1070 bp	7, 8, 35, 41, 42, 55	0704, 0719, 0725, 080101-0805, 0807-0812, 0814-0819N, 0821- 0824, 0826-0836, 3587, 4101-4108, 4201, 4202, 4204-4207, 4209, 5520
52	325 bp	1070 bp	7, 15, 27, 35, 42, 45,	070201-070207, 0704-0707, 0709- 0712, 0713 ^{weakly} , 0714, 0715 ^{weakly} ,

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			46, 54, 55, 56, 67, 73, 81	0717-0726, 0728-0731, 0733-0736, 0739-0749N, 0751-0766, 1576, 9501, 2701-270402, 270502-2711, 2713-2715, 2717, 2719-2721, 2724-2728, 2730-2738, 2740-2743, 3576, 4201, 4202, 4204-4206, 4208, 4209, 4506, 460101-460102, 4602 ^{weakly} , 4603-4616, 5401-5415, 550101-5505, 5507-5517, 5519- 5532, 5601-5616, 5618-5622, 670101-670102, 6702 ^{weakly} , 7301, 8101-8104N, 8201, 8202, 8301
53 ^{6,12}	110, 195, 225, 260 bp	1070 bp	35, 37, 44, 47, 51, 57	3538, 3545, 3571, 370101-370104, 3703N-3706, 3708, 3710-3713, 44020101-4414, 4416, 4417, 4419N-4436, 4438-4463, 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, 5155-5157, 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	1822, 3521, 3524, 3581, 3704, 4028, 460101-4616, 5104, 5146, 5156, 5302, 5306, 5714, 5809
56 ⁶	90, 410 bp	1070 bp	7, 27, 35, 47, 54, 55, 56, 81	0765, 2702-270402, 270502-2711, 2713-2715, 2717, 2719-2721, 2724-2728, 2730-2738, 2740-2743, 3576, 47010101-4703, 5401-5415, 550101-5505, 5507-5517, 5519- 5532, 5601-5616, 5618-5622, 8101, 8201, 8202, 8301
57 ⁶	90, 175 bp	1070 bp	15, 27, 35, 40, 48, 62, 75, 77, 81	1502, 1508, 151101-151103, 1513, 1515, 1521, 1531, 1544, 1555, 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 bp	1070 bp	40, 44, 49	4013, 4019, 4418, 4425, 4450, 4901, 4904, 4905
59 ⁶	120, 210 bp	800 bp	13, 15, 45, 49, 50, 51,	1316, 1504 ^{weakly} , 1516, 1542, 1567, 1595, 9537, 4901-4905, 5001,

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			52, 55, 56, 58, 62, 63, 78	5002, 5004, 510101-5103, 5105, 5107-510902, 5111N-5114, 5116- 152402, 5126-5141N, 5143, 5144N, 5148-5155, 5157, 520101-5214, 550101-550104, 5503, 5505, 5509, 5511, 5515, 5517, 5521, 5524, 5525, 5528, 5529, 5531, 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, 5149, 5151-5153, 5155, 520101-5212, 530101-5302, 5304-5308, 5310, 5314-5316, 570101-5711, 5713-5716, 580101- 5802, 5804-5816, 5902
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, 4101-4104, 4105 [?] , 4106-4108, 4409, 4446, 4501-4509, 4702, 5001, 5002, 5004
62⁹	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, 1301-1304, 1306, 1308Q-1322, 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, 9502-9507, 9509-9511N, 9513, 9516-9518, 9522, 9523, 9525-9529, 9531, 9532, 9535-9538, 9540-9542, 9545-9547, 1812, 2701-270402, 270502-2721, 2724-2743, 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, 4070-4092, 4101-4108, 44020101- 4405, 4407-4411, 4413-446402, 4501-4505, 4507-4509, 4610-4616, 47010101-4705, 480101-4805, 4807-4815, 4817-4819, 4901-4905,

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				5001, 5002, 5004, 520101-5214, 5518, 5712-5717, 580102, 5815-5819, 7805, 7806
63	160, 215 bp	1070 bp	15, 37, 44, 54	150104, 370104, 44020101-440205, 4406, 4408, 4409, 4411, 4412, 4416, 4419N-4424, 4427, 4433, 4434, 4441, 4444, 4448, 4449, 4451-4453, 4455, 4459, 4463, 5401-5415, 8301
64⁹	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, 5401, 5402, 5405N, 5407, 5408N, 5410, 5412, 5413, 550101-5503, 5505, 5507, 5510-5512, 5515, 5516, 5518, 5519, 5521, 5525, 5526, 5529-5531, 560501, 5606, 5610, 5623, 5901, 7801, 780202, 7803, Cw*150204
65¹³	180 bp	1070 bp	13, 15, 40, 44, 45, 46, 49, 50, 51, 54, 56	1303, 1573, 4071, 4410, 4415, 4418, 4501, 4504-4507, 4611, 4901-4903, 5001, 5002, 5004, 5115, 5403, 5601, 5602, 5604, 5607, 5608, 5613, 5614, 5616, 5617, 5620, 8201, 8202
66⁶	90, 240 bp	800 bp	55, 57	5514, 570101-5715, 5717
67^{6,14}	90 bp	1070 bp	13, 15, 39, 40, 56, 58	1311, 1573, 3917, 4048, 4071, 5602, 5604, 5610, 580101-5802, 5804-5819, Cw*0206^{weakly}
68⁶	95 bp	1070 bp	7, 8, 18, 35, 37, 38, 39, 44, 51, 52, 53, 78	0765, 0832, 180101-1811, 1813-1815, 1817N-1829, 350101-350902, 3511, 3512, 351401-3515, 3517, 3518, 352001-3524, 3527, 3529-3545, 3548, 3550-3562, 3564-356802, 3570-3572, 3574-3579, 3581-3588, 3590-3594, 3708, 3806, 3807, 391901-391902, 4406, 510101-512402, 5126-5146, 5148-5157, 530101-5316, 7801-7804
69^{5,6}	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, 1819, 2725, 351401-351402, 3543, 3544, 3562, 3567, 3579, 3586, 3918, 3936, 460101-4602, 4604, 4605, 4607N, 4609, 4610, 4612, 4614-4616, 5406, 5521, 5603, 7301
70	360 bp	1070 bp	Bw4 ¹⁶	
71	355 bp	1070 bp	Bw6	
72⁵	290 bp	800 bp	7, 8, 35, 37, 40, 41, 42, 48, 53, 81	070201-0706, 0708-0732, 0734-0741, 0743-0752, 0754-0759, 0761-0766, 080101-0808N, 0810, 0811, 0813-0815, 0817-0830N, 0832-0836, 3566, 3587, 3707, 4015, 4016, 4030-4032, 4034, 4045, 4059, 4080, 4102, 4104, 4201, 4202, 420501-4207, 4209, 480101-480102, 4805-4812, 4814-4819, 5315, 8101-8104N

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, 33, 34, 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.

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

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.

⁵Primer mixes 25, 33, 35, 43, 44, 49, 69 and 72 may give rise to a primer oligomer artifact.

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

⁷Primer mix 27 will amplify the Cw*0305, Cw*0325 and Cw*0327 alleles.

⁸Primer mix 28 may yield less specific PCR product than the other HLA-B low resolution primer mixes in B*40, B*41, B*45, B*49 and B*50 alleles.

⁹Primer mixes 29, 30, 33, 34, 44, 62 and 64 have a higher tendency than other primer mixes to give rise to nonspecific amplifications.

¹⁰The B*57 and B*58 alleles might be faintly amplified by primer mix 33.

¹¹The Cw*1701 to Cw*1704 alleles might be faintly amplified by primer mix 49.

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 Cw*0312 allele might be faintly amplified by primer mix 65.

¹⁴Primer mix 67 will amplify the Cw*0206 allele.

¹⁵The 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
73⁴	155, 370 bp	800 bp	010201-0122
74⁵	270 bp	800 bp	0110, 020201-020203, 020205-0222, 0432, 0608, 1701-1704, 1803
75	280 bp	800 bp	020201-020203, 020205-0203, 0204 ^{weakly} , 0205-0213, 0214 ^{weakly} , 0215-0222, 030201-030203, 030401-0310, 0314-0317, 0319, 0323-0329, 0332-033802, 0340-0342, 0344-0348, 0403, 0406, 0416, 0603, 150201-1509, 151002, 1511, 1513, 1515-1521
76⁶	155 bp	1070 bp	030201-030406, 0305-0315, 0317-0340, 0342-0350
77	280 bp	800 bp	030301-030305, 031101-0313, 0320N-0322Q, 0330, 0331, 0343, 0349, 0350, 1512
78⁷	125 bp	1070 bp	020201-020203, 020205-0220, 0222, 04010101-040105, 0403-041502, 0417-0420, 0423-0434, 1511
79	165 bp	1070 bp	050101-050104, 0503-0519, 0605, 0810, 1221
80⁴	130, 240, 355 bp	800 bp	0206, 0339, 06020101-06020102, 060203-0616N, 1215, 1216, 150201-1503, 1507, 1508, 151001-1513, 1515-1518, 1521
81⁴	245, 425 bp	800 bp	070101-0733N, 0735-0757
82^{6,7}	115, 175, 240 bp	800 bp	080101-0816
83	340 bp	1070 bp	0114, 020201-020203, 020205-0211, 0213-0222, 0307, 0315, 0345, 04010101-040105, 0403-0410, 0412-0420, 0423-0428, 0430-0434, 050101-050104, 0503-0519, 06020101-06020102, 060203-0610, 0612-0617, 0707, 0709, 0749, 0810, 120401-1205,

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			1209, 1221, 1404, 150201-1506, 1508-1513, 1515-1520, 1602, 1609, 1701-1704, 1801-1803
84	100, 160, 220 bp	1070 bp	0104, 0121, 120201-12030102, 120303-120306, 120402-1208, 1210-1213, 1215-1221
85⁶	130, 250 bp	800 bp	0121, 0212, 04010101-040105, 0403-0409N, 0412-0420, 0423-0434, 0805, 120201-120303, 120305, 120306, 120402, 1206-1208, 1210-1220, 1503, 1516, 160101-1602, 1606-1611, B*6702
86⁸	220 bp	800 bp	0104, 0109, 0205, 0217, 06020101-06020102, 060203, 0603, 0607-0613, 0615-0617, 12030101-1207, 1211-1213, 1215, 1219, 160401
87	255 bp	800 bp	020201 ^{weakly} , 020202-020203, 020205-0213, 0215-0222, 0307, 0310, 0315, 0329, 0345, 0403, 0406, 0416, 050101-050104, 0503-0519, 0603, 0810, 120401-1205, 1209, 1221, 150201-1506, 1508-1513, 1515-1521, 1602, 1609, 1701-1704
88^{6,7}	95, 255 bp	1070 bp	0411, 0429, 0511, 0517, 0804, 0813, 140201-1409
89^{5,6,7}	110, 335 bp	1070 bp	0206, 1208, 1215, 150201-1513, 1515-1521
90⁵	190, 250 bp	1070 bp	0213, 0218, 04010101-040105, 0403-0410, 0412-0420, 0423-0432, 0434, 0517, 0605, 0731, 080101-080102, 0803, 0806, 0808-0811, 0814, 0816, 1214, 160101-1602, 160401, 1606-1611
91	225, 260 bp	800 bp	0411, 0433, 0807, 1214, 1701-1704
92	220, 425 bp	800 bp	010201-0103, 0106-0108, 0110-0120, 0516, 0605, 0606, 0617, 0707, 0709, 0749, 0812, 1209, 140201-1405, 1407N, 1801-1803, B*1403
93	325, 380 bp	1070 bp	0103, 0222, 030301-030407, 0306-0312, 0314, 0318-0324, 0326, 0328-0332, 0334, 0337-0350, 04010101-040105, 0403-0420, 0424-0434, 050101-050104, 0503, 0505-0519, 0609, 0614, 0710,

			0728, 0741, 0743, 080101-0808, 0810, 0812-0816, 150201-1513, 1515-1521, 1701-1704, 1801-1803
94⁷	135 bp	1070 bp	030201-0317, 0319-033802, 0340-0350, 0432, 0603, 1803
95	160, 235 bp	1070 bp	06020101-06020102, 060203, 0604, 0606-0617, 070101-0725, 072701-0732N, 0735-0738, 0741-0757, 1216, 160101-1602, 1606-1611, 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, 82, 85, 86, 87, 91 and 92 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.

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 73, 80 and 81 will in most samples give rise to two specific PCR fragments.

⁵Primer mixes 74, 89 and 90 have a tendency of giving rise to primer oligomer artifacts.

⁶Primer mixes 76, 82, 85, 88 and 89 yield somewhat less intense specific PCR fragments than the other HLA-C low resolution primer mixes.

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

⁸Primer 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.		120	135	205	190	160	165	175	165	75	85	80	185	175	200	90	370	180	200	160	155	240	85	75	360
PCR product(s)		145	200	235		535	200	205	200			175		225	240	135	400			200	240	375	240	160	
			255									500													
Length of int.		800	1070	1070	800	800	800	1070	800	800	1070	1070	800	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
pos. control ¹																									
5'-primer(s) ²		98	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		363					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'-ATA ³					5'-ACg ³	5'-AAC ³	5'-TgC ³	5'-AAC ³	
			144				368		413												391				
			5'-gCA ³				5'-gTT ³		5'-CCg 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'-gTT ³	5'-gTC ³
			292	527	559	570	292	502	538			521	559	559	299	411	265		259	299	282	355	282	292	
			5'-gTg ³	5'-CCT ³	5'-CCg ³	5'-CCg ³	5'-gTT ³	5'-CCT ³	5'-CCA ³			5'-ggg ³	5'-CTC ³	5'-CCg ³	5'-TCg ³	5'-TCA ³	5'-CCC ³		5'-gTT ³	5'-CCA ³	5'-gAC ³	5'-gAC ³	5'-gAC ³	5'-gTg ³	
				555			502	539					559							341	506		570	299	
				5'-CCA ³			5'-CTg ³	5'-TCT ³					5'-CgT ³							5'-CgT ³	5'-TgT ³		5'-CAC ³	5'-TCT ³	
			555				538																		
			5'-gCA ³				5'-Cag 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	A1, null	1			4																				24
*0107	-	1			4																				
*0108, 0114, 0115N	1	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, 020117-0209, 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, 9248																										
*0210, 0239, 0250, 0252, 0273, 0293, 0295, 9210, 9214, 9217			2																		20					
*021701-021702		A2	2					w																		
*0234, 023501, 023503, 0256, 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, 0337-0339		A3			3										13											
*0308, 0332, 0336N		-			3																					
*0312		-			3	4																				
*0318, 2619 ⁷		-			4									13												
*0324		-			3				8					13												
*0330		-			3		5							13												
*110101-1109, 1113-1117, 1119-112402, 1126, 1127, 1129-1136		A11			4							11													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
*1110	-				4				8			11													24
*1111	-				4							11	12												24
*1112, 1118	-				4							11													
*1125	-			3	4							11													24
*2301-2313, 2315-2319Q	A23					5	6																		
*2314, 2405, 241302, 2424 ⁸	-					5	6	7																	
*24020101-2404, 2406-2411N, 241301, 2417, 2418, 2420-2423, 2425-2443, 2445N-2450, 2454-2456, 2458-2463, 2466-2481, 2483N-2488, 2490, 2491	A24					5		7																	
*2414, 2415, 2451-2453, 2457, 2464	A24					5																			
*2419, 2444	-					5		7				11													
*2482	-					5		7																21	
*2489	-							7																	
*250101-2504	A25								8	9				13											
*2505	-								8	9				13								20			
*2506	-								8	9			12												
*260101-260106, 2608, 2610-2615, 2617, 2618, 2620, 2623-2629, 2632, 2633, 2635-2637	A26, null								8		10			13											
*2602	A26								8		10			w											
*2603, 2606, 2621	A26								8			11		13											23
*2604, 2634	A26								8			10													
*2605, 2630	A26								8					13											23
*260701-260702	A26										10			13											
*2609	A26								8		10		12												
*2616	-							7			10			13											
*2622	-								8		10			13										21	
*2631	-								8					13											
*29010101-2906, 2908N-2912, 2915-2917	A29														14										
*2907	-						6								14										
*2913	-														14				17						
*2914	-														14		16								
*300101-3004, 3006, 3007, 3009-3020, 3022-3025	A30															15									
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

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Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
*3008	-	4												15				20				22							
*310102-3102, 3105-3107, 3109-3122	A31													16															
*3103	-									11 12				16															
*3104	A31									12				16															
*3108	-					5								16															
*320101-3202, 3206-3212, 3214, 3216	A32									9								17											
*3203	-													17															
*3204	A3	3								9																			
*3205	-					5								16				17											
*3213	-					5				9								17											
*3215	-									8				9				17											
*3301, 330301-3312, 3314-3318	A33																	18											
*3313	-									10				14				18				24							
*3319	-					7												18											
*340101-340102, 3405, 3406	A34									8				11 12															
*3402-3404, 3407	-	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, 6604-6607	A66									8				11				13											
*6602, 6603	A66									8				12															
*680101-6804, 6806-6814, 6816-6819, 6821-6828, 6830-6843	A68									8												20							
*6805, 6815, 6820	-									8												20		23					
*6829	-									8								18		20		21							
*6901	A69									8												21							
*7401-7409, 7411, 7412N	A74																					19							
*7410	-																					19		24					
*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				

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

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

In addition, wells number 4, 5, 6, 8, 9, 11, 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 two specific PCR fragments.

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 alleles⁶																																															
		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	275	195	105	115	80	150	135	245	205	170	110	400	430																								
PCR product(s)				235	265	235			220	390	395	195			435					400																													
									330																																								
Length of int. pos. control ¹		800	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070	1070	1070	1070	1070	1070	1070	1070	800	800	1070	1070																									
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'-TCT ^{3'}	5'-ggC ^{3'}	5'-gAA ^{3'}	5'-ggC ^{3'}	5'-ggC ^{3'}																								
		540		363	361	363			357	435	420	420		419	540					368		420																											
		5'-gAC ^{3'}		5'-AgC ^{3'}	5'-AgT ^{3'}	5'-AAT ^{3'}			5'-Tgg ^{3'}	5'-AAA ^{3'}	5'-TTA ^{3'}	5'-TTA ^{3'}		5'-gTC ^{3'}	5'-gAC ^{3'}					5'-gTT ^{3'}		5'-TTA ^{3'}																											
									412																																								
									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	301	544	317	272	301																								
		5'-gCT ^{3'}	5'-Tgg ^{3'}	5'-gTg ^{3'}	5'-Cgt ^{3'}	5'-TAT ^{3'}	5'-TAT ^{3'}	5'-Tgg ^{3'}	5'-CCT ^{3'}	5'-TCC ^{3'}	5'-TgC ^{3'}	5'-Tgg ^{3'}	5'-TAT ^{3'}	5'-gTC ^{3'}	5'-ATC ^{3'}	5'-TCT ^{3'}	5'-TCT ^{3'}	5'-gCT ^{3'}	5'-ggC ^{3'}	5'-gTT ^{3'}	5'-gTC ^{3'}	5'-ggT ^{3'}	5'-ggA ^{3'}	5'-TgC ^{3'}	5'-ggC ^{3'}																								
			272	559	583	559			538	559	559	572		570	605					266	309				302																								
			5'-TgA ^{3'}	5'-CAG ^{3'}	5'-gTg ^{3'}	5'-CTC ^{3'}			5'-gTC ^{3'}	5'-CAG ^{3'}	5'-CTC ^{3'}	5'-gCg ^{3'}		5'-gTC ^{3'}	5'-gCT ^{3'}					272	309				302																								
														572							272																												
														5'-gCg ^{3'}							272																												
																					292																												
																				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																								
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	B7	25																							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	110	325	110	215	130	90	90	145	120	430	145	300	160	180	180	90	90	95	115	360	355	290				
				190		270	410	175		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	206	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'-gAA ^{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						418	420		362	369		463			363				
				5'-Agg ^{3'}	5'-Tgg ^{3'}	5'-ggg ^{3'}	5'-gTT ^{3'}	5'-AgC ^{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'}				
		610		572	538	583	418	499		527				538	559		559	256		538							
		5'-CTC ^{3'}		5'-gCg ^{3'}	5'-gTC ^{3'}	5'-gTg ^{3'}	5'-gTC ^{3'}	5'-ggA ^{3'}		5'-CCT ^{3'}				5'-gTC ^{3'}	5'-CgT ^{3'}		5'-CgT ^{3'}	5'-CTC ^{3'}		5'-CCA ^{3'}							
																		420									
																		5'-gCT ^{3'}									
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72				
ser. ⁵																											
Well No.																											
HLA-B allele ⁴																											
*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																											
52																				71 72				B7			

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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	
*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	-																									48
*0720, 0724	-	25		27																						48
*0727	-	25										35											44			
*0733, 0753	-																									48
*0736	-	25																								
*0738	-	25																								
*0740, 0748, 0751	-																									48
*0750	-	25										35														48
*0754	-	25																								48
*0760	-			27																						48
*0765	-	25																	42							
*080101-080105, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834	B8, Null		26						32																	48
*0802	B8		26						32													44				
*0803	B8		26						32																	
*0804	-		26						32			35														48
*0806, 0813, 0820	B8		26																							48
*0807, 0814	-		26																							48
*0809	-		26						32																	48
*0812, 0816, 0831	-		26						32																	48
*0817			26						32			35														48
*0821	-		26	27					32																	48
*0825	-		26	27																						48
*0826, 4207	-								32																	48
*0828	-		26										36													48
*0832	-		26						32										42							48
*0835	-		26						32				36													48
*0836	-		26						32																	
*1301, 1317, 1320, 1322	B13			27	28						34								41							
*130201-130204, 1308Q, 1315, 1318, 1319	B13				27	28					34															
*1303	-				27	28																				
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.
																						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
		51	52																			71	72	-	*0719
			52																			71	72	-	*0720, 0724
																					70	72	-	*0727	
			52																			71		-	*0733, 0753
			52																		70	72	-	*0736	
																					70	72	-	*0738	
			52																			71	72	-	*0740, 0748, 0751
																						71	72	-	*0750
			52									62										71	72	-	*0754
			52																			71		-	*0760
			52				56						64						68			71	72	-	*0765
		51																				71	72	B8, Null	*080101-080105, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834
		51																			70	72	B8	*0802	
		51																			70	72	B8	*0803	
		51																				71	72	-	*0804
																						71	72	B8	*0806, 0813, 0820
		51																				71	72	-	*0807, 0814
		51			54																	71		-	*0809
		51																				71		-	*0812, 0816, 0831
		51										62										71	72		*0817
		51																				71	72	-	*0821
																						71	72	-	*0825
		51																				71	72	-	*0826, 4207
		51																				71	72	-	*0828
		51																	68			71	72	-	*0832
		51																				71	72	-	*0835
		51																				71	72	-	*0836
												62										70		B13	*1301, 1317, 1320, 1322
												62										70		B13	*130201-130204, 1308Q, 1315, 1318, 1319
												62				65						70		-	*1303
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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*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																		47	48
*1408, 3925N, 3930, 3932-3934	-					29																			47	48
*15010101- 15010102N, 150103, 1526N, 152701, 1532, 1534, 1535, 1538, 1550, 1556, 1557, 1560, 1570, 1571, 1575, 1579N, 1581, 1582, 1592, 1594N, 1596, 1597, 9502, 9504, 9505, 9509- 9511N, 9513, 9517, 9518, 9522, 9525, 9528, 9529	B62, Null, B15							31				36							43							
*150102	B62							31		33			36							43						
*150104	B62												36							43						
*150106-150107, 1507	B62			27				31					36							43						
*150108				27									36							43						
*1502, 1588, 9512, 9521	B75							31					36					41		43						
*1503, 1547, 1549, 1561, 1598, 9503, 9523, 9527, 9532	B72								32			35	36							43						
*1504								31					36							43						
*1505, 1506, 1533, 1539, 1540, 1565, 1578, 1584, 9507	B62, B15							31					36							43						
*1508, 151101-151103, 1515	B75							31					36							43						
*1509	B70								32	33	34									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								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
													62								69	71		B62, Null, B15	*15010101-15010102N, 150103, 1526N, 152701, 1532, 1534, 1535, 1538, 1550, 1556, 1557, 1560, 1570, 1571, 1575, 1579N, 1581, 1582, 1592, 1594N, 1596, 1597, 9502, 9504, 9505, 9509-9511N, 9513, 9517, 9518, 9522, 9525, 9528, 9529
													62								69	71		B62	*150102
													62	63							69	71		B62	*150104
													62								69	71		B62	*150106-150107, 1507
													62								69	71			*150108
										57												71		B75	*1502, 1588, 9512, 9521
													62									71		B72	*1503, 1547, 1549, 1561, 1598, 9503, 9523, 9527, 9532
										w			62								69	71			*1504
													62									71		B62, B15	*1505, 1506, 1533, 1539, 1540, 1565, 1578, 1584, 9507
										57											69	71		B75	*1508, 151101-151103, 1515
																						71		B70	*1509

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*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	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	B62							31				36		38						43					
*152702	-			27								36								43					
*152703	-			27				31				36								43					
*1528	B15							31				36								43					
*1529	B15								32			36								43					
*1530, 1558, 1563	B62, B15							31												43					
*1531	B75							31				36								43					
*1536	-			27				31				36						41		43					
*1542	-							31												43					
*1543	-							31				36								43					
*1545	B62			27				31												43					
*1546	B72				28			31	32			36								43					
*1548	B62							31												43					
*1553	-				28				32			36								43					
*1554	-								32			35	36							43					
*1555	-			27				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, 9501	-							31				36								43					
*1577	-							31										41		43					
*1580	-								32		34	36						41		43					
*1583	-							31	32											43					
*1585	-							31				36						41		43					
*1586	-							31												43					
*1589	-			27				31				36						41		43					
*1591, 9531	-								32			35	36	37						43					

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																						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
													62										71	B62	*1520, 1525
								57															71	B75	*1521, 1544
																						70		-	*1523
													62								69	70		B62	*1524, 1587
													62								69	71		-	*152702
													62								69	71		-	*152703
																					69	71		B15	*1528
																							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
												61	62								69	71		-	*1553
													62								69	71		-	*1554
								57															71	-	*1555
													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, 9501
													62								69	71		-	*1577
																							71	-	*1580
				54									62									71		-	*1583
													62								69	71		-	*1585
													62	64									71	-	*1586
								57														70		-	*1589
													62										71	-	*1591, 9531
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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*9506	-				28			31	32				36					41		43					
*9515	-								32		34		36							43	44				
*9516	-							31					36							43					
*9520	-							31					36							43					
*9524	-								32		34		36							43					
*9526, 9535, 9540, 9545-9547	-			27				31					36							43					
*9536	-			27				31					36							43		45			
*9537	-			27				31												43					
*9538	-	25						31					36							43					
*9539	-			27				31					36					41		43					
*9541	-			27				31					36							43					
*9542	-		26	27				31					36							43					
*9543	-							31	32				36							43					
*9544	-			27				31					36					41		43					
*9548	-			27				31					36							43					
*9549N	-			27				31					36							43					
*180101-1803, 1805- 1808, 1810, 1811, 1813- 1815, 1817N, 1818, 1820, 1821, 1823N- 1825, 1827, 1828	B18												36			39			42						
*1804	-												36			39			42						
*1809	-												36			39					44				
*1812	-												36			39			42						
*1819	-												36			39			42						
*1822	-												36			39		41	42						
*1826	-															39			42						
*1829, 3532, 3537, 3553N, 3564, 356801- 356802													36						42						
*2701	B27					29											40								
*2702	B27					29											40								
*2703-270402, 270502- 2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735-2737	B27					29											40								
*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743	B27																40								
*2708, 2726, 2740, 2742	B2708					29											40								
*2712	-					29											40								
*2716, 2739	-					29											40								
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72		Well No.	
												61	62									71		-	*9506	
																						70		-	*9515	
49													62									71		-	*9516	
																					69	71		-	*9520	
49																						71		-	*9524	
													62									69	71	-	*9526, 9535, 9540, 9545-9547	
													62										71	-	*9536	
										59			62									69	71	-	*9537	
													62										71	-	*9538	
								57															71	-	*9539	
													62										71	-	*9541	
													62									69	71	-	*9542	
												61										69	71	-	*9543	
								57														69	71	-	*9544	
								57														69	71	-	*9548	
																						69	71	-	*9549N	
																				68			71	B18	*180101-1803, 1805-1808, 1810, 1811, 1813, 1815, 1817N, 1818, 1820, 1821, 1823N-1825, 1827, 1828	
													64						68			71		-	*1804	
																			68		70			-	*1809	
													62									71		-	*1812	
																			68	69		71		-	*1819	
						55															68		71		-	*1822
																				68			71		-	*1826
																				68			71		-	*1829, 3532, 3537, 3553N, 3564, 356801-356802
			52										62									70		B27	*2701	
			52				56				60		62									70		B27	*2702	
			52				56						62									70		B27	*2703-270402, 270502-2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735-2737	
			52				56						62									70		B27	*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743	
			52				56						62									71		B2708	*2708, 2726, 2740, 2742	
													62										71	-	*2712	
													62									70		-	*2716, 2739	
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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*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								
*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	B35																	41	42						
*350402	-									33								41	42						
*3505, 3551, 3558, 3572	B35			27								36						42							
*350901-350902, 3518, 3531, 3575, 3588	B35																		42						
*3510, 3528, 3569, 3580	-											36						41	42						
*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	B35											36							42						

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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									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
																			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
																			68				71		-	*350402
																			68				71		B35	*3505, 3551, 3558, 3572
																			68				71		B35	*350901-350902, 3518, 3531, 3575, 3588
													62										71		-	*3510, 3528, 3569, 3580
													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		B35	*3543, 3567, 3579, 3586
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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*3544	-																		42						
*3545, 3571	-												36	37				41	42						
*3546	-												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	-													37				41			44				
*3702	-					29								37							44				
*3704	-													37				41			44				
*3705	-													37				41			w				
*3707	-	25												37							44				
*3708	-													37				41			44				
*3709	-													37							44				
*3710	-																	41			44				
*3711	-																	41	42						
*3712	-								32					37							44				
*3714	-																		42						
*380101-380102, 3809, 3811-3814, 3816	B38					29																45	46	47	
*380201-380202, 3808, 3815	B38					29															44	45	46	47	
*3803	B16					29						35									44	45	46		
*3804	-																				44	45		47	
*3805	-						30															45	46	47	
*3806	-																					45			
*3807	-					29																45			
*3810	-					29																	46	47	
*3817	-					29								37							44	45	46	47	
*39010101-39010102L, 390103-390105, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926-3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944	B3901, B39					29																45		47	48
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

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																			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													68			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			-	*370104
													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	71		-	*3714
																							70			B38	*380101-380102, 3809, 3811-3814, 3816
																							70			B38	*380201-380202, 3808, 3815
												62											70			B16	*3803
												62											70			-	*3804
																							70			-	*3805
																				68			70			-	*3806
																				68			70			-	*3807
																							70			-	*3810
																							70			-	*3817
																							71			B3901, B39	*39010101-39010102L, 390103-390105, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926-3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944
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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*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	-																					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		48	
*3943	-					29						36												48	
*400101-400106, 4007	B60, B40				28																				48
*400201-400203, 4004, 40060101-400602, 4039	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	B61, B40																								?
*4010, 4022N, 4033, 4036, 4042, 4043, 4049, 4054, 4055, 4061, 4063, 4065-4067, 4073, 4081, 4084, 4087, 4088	Null, B40, B60				28																				?
*4012	-								32			35									43				
*4013, 4019	-																								
*401401-401403, 4053, 407201	-				28																				?
*4015, 4016, 4032	B61	25			28																				?
*4021	-																								?
*4023	-	25			28																				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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												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		-	*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
	50											61	62									71		B61, B40	*400201-400203, 4004, 40060101-400602, 4039
	50											61	62									71		B40	*4003, 4020
	50											61	62									71		B4005	*4005
	50											61										71		-	*4008
	50											61	62									71		B61, B40	*4009, 4011, 4018, 4024, 4027, 4029, 4035, 4037, 4040, 4044, 4050, 4056, 4057, 4064, 4075, 4078, 4082, 4085, 4086
49												61	62									71		Null, B40, B60	*4010, 4022N, 4033, 4036, 4042, 4043, 4049, 4054, 4055, 4061, 4063, 4065-4067, 4073, 4081, 4084, 4087, 4088
49												62										71		-	*4012
	50							58	60			62										70		-	*4013, 4019
												61	62									71		-	*401401-401403, 4053, 407201
												61	62									71	72	B61	*4015, 4016, 4032
49												62										71		-	*4021
49												61	62									71		-	*4023
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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*4025	-				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															?
*4051, 4079	-				28																					48
*4058	-				28																					?
*4059	-				28								36													48
*4060	-				28								36													48
*4068	-																									?
*4069	-				28																					?
*4070, 4089-4091	-																									?
*4071	-				27																					?
*407202, 4077	-				28																					48
*4074	-																									?
*4076	-				28																					?
*4083	-																									?
*4092	-				28																					?
*4101, 4106, 4107	B41				28				32																	48
*4102	B41				28				32																	48
*410301-410302	B41				28				32																	48
*4104	-				28																					48
*4105	-				28				32																	48
*4108	-	25			28				32								38									48
*4201, 4202, 4206	B42								32																	48
*4204	-								32																	48
*420501-420502	-	25							32								38									48
*4208	-								32																	48
*4209	-												36													48
*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4451, 4452N, 4455, 4459, 4463	B44, B47, Null				28													41								
*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4456N, 4458N, 4461N	B44				28													41								
Well No.		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	

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49												61										71		-	*4025
	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
49												61	62									71		-	*4051, 4079
												61	62		64							71		-	*4058
												61	62									71	72	-	*4059
49												61	62									71		-	*4060
	50											61										71		-	*4068
49												61										71		-	*4069
	50											61	62									71		-	*4070, 4089-4091
	50											61	62			65	67					71		-	*4071
												61	62									71		-	*407202, 4077
49	50											61	62									71		-	*4074
49													62											-	*4076
												61	62									71		-	*4083
49												61	62									71		-	*4092
		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							?	62									71		-	*4105
		51										61	62									71		-	*4108
		51	52																			71	72	B42	*4201, 4202, 4206
		51	52		54																	71		-	*4204
		51	52																			71	72	-	*420501-420502
			52																			71		-	*4208
		51	52																			71	72	-	*4209
					53								62	63								70		B44, B47, Null	*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4451, 4452N, 4455, 4459, 4463
					53								62									70		B44	*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4456N, 4458N, 4461N
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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*4406	B44																	41							
*4407																		41							
*4408	B44			27														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	-				28													41							
*4440	-											35					40	41							
*4441	-				28																				
*4444	-											35					40	41							
*4446	-				28													41							
*4447	-				28																				
*4449	-		26		28													41							
*4450	-				28													41							
*4453	-				28																				
*4454	-				27	28																			
*4457	-				27													41							
*4460	-				27	28												41							
*4462	-				28				32	33								41							
*446401-446402	-				28													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
*460101-460102, 4604, 4605, 4607N, 4609	B46								31				36												
*4602	-								31				36												
*4603, 4608	-								31				36												
*4606	-								31				36												
*4610	-								31				36												
*4611	-				27				31																
*4612, 4614-4616	-				27				31				36												
*4613	-				27				31				36												
*47010101-47010102	B47				28																				
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				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	
				53									62									70			-	*4440	
				53									62	63								70			-	*4441	
				53									62	63								70			-	*4444	
				53								61	62										71		-	*4446	
				53									62									70			-	*4447	
				53									62	63								70			-	*4449	
				53					58		60		62									70			-	*4450	
				53									62	63								70			-	*4453	
				53									62									70			-	*4454	
				53									62									70			-	*4457	
				53									62									70			-	*4460	
				53									62									70			-	*4462	
													62									70			-	*446401-446402	
					54							61	62				65						71		B45	*4501, 4505, 4507	
					54							61	62										71		-	*4502, 4503	
					54							61	62				65						71		-	*4504	
			52		54							61					65						71		-	*4506	
					54							61	62		64								71		-	*4508	
					54							61	62										71		-	*4509	
				52			55															69	71		B46	*460101-460102, 4604, 4605, 4607N, 4609	
				w			55															69	71		-	*4602	
				52			55																71		-	*4603, 4608	
49				52			55																71		-	*4606	
				52			55						62									69	71		-	*4610	
				52			55						62				65						71		-	*4611	
				52			55						62									69	71		-	*4612, 4614-4616	
				52			55						62										71		-	*4613	
							56						62										70		B47	*47010101-47010102	
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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*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	B48											35													48
*4805, 4808	B48	25										35													48
*4806	-																								48
*4810, 4812	-											35													48
*4813	-											35													48
*4814	-											35	36												48
*4815	-	25										35													48
*4816	-											35													48
*4817	-											35													48
*4818	-											35													48
*4901	B49				28																				
*4902	-				28																				
*4903	-																								
*4904, 4905	-				28								36												
*5001, 5004	B50				28																				48
*5002	B45				28							35													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, 5149, 5151-5153, 5155	B51, B5102, B5103, Null										33														
*510102, 510109, 510202, 5105, 510902	B51										33														
*510104, 511301, 5116, 5121, 512401- 512402, 5131, 5134, 5135	B51, B52																								
*5104, 5146	B51										33							41							
*5106	B51										33														
*5108, 5120, 5144N	B51								32	33															
*5110	-																								
*5115	-																								
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.	
							56					61	62									71		-	*4702	
							56						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		B48	*4804
													62										71	72	B48	*4805, 4808
								57															71	72	-	*4806
													62										71	72	-	*4810, 4812
													62										71		-	*4813
													62										71	72	-	*4814
								57					62										71	72	-	*4815
								57															71	72	-	*4816
49													62										71	72	-	*4817
								57					62										70	72	-	*4818
									58	59			62			65							70		B49	*4901
										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
					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, 5149, 5151-5153, 5155
										59	60								68				70		B51	*510102, 510109, 510202, 5105, 510902
					54					59	60								68				70		B51, B52	*510104, 511301, 5116, 5121, 512401-512402, 5131, 5134, 5135
					54	55					60								68				70		B51	*5104, 5146
					54						60								68				70		B51	*5106
					54					59	60								68				70		B51	*5108, 5120, 5144N
					54						60								68				70		-	*5110
											60					65							68	70	-	*5115
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	
*5136	-								32																	
*5137	-									33			36													
*5142	-																	41								
*5145	-												36													
*5150, 5154	-									33																
*5156	-									33								41								
*5157	-									33																
*520101, 520103, 5204, 5205, 5207, 5210 5212	B52									33																
*520102, 520104-5203, 520601-520602, 5209	B52									33																
*5208	-																									
*5213	-									33																
*5214	-																									
*530101-530104, 5305, 5308, 5310, 5316	B53												36					41								
*5302	B53												36					41								
*5303, 5309, 5311- 5313	-												36					41								
*5304, 5307	-																	41								
*5306	B53												36					41								
*5314	-			27									36													
*5315	-												36					41								
*5401, 5402, 5405N, 5407, 5408N, 5410, 5413	B54																									
*5403	-																									
*5404, 5411, 5415	-																									
*5406	-												36													
*5409, 5414	-												36													
*5412	-																									
*550101-550104, 5503, 5505, 5511, 5515, 5525, 5529, 5531	B55																									
*550201-550202, 5507, 5510, 5512, 5516, 5519, 5526, 5530	B54, B55																									
*5504, 5508, 5513, 5527, 5615, 5619N, 5622	B55																									
*5509, 5517, 5528	-																									
*5514	-												36					41								
*5518	-												35													
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					-	*5136
				54				59	60							68			70					-	*5137
				53	54					60						68			70					-	*5142
				54						60						68			70					-	*5145
								59								68			70					-	*5150, 5154
				54	55											68			70					-	*5156
				54				59								68			70					-	*5157
									59	60		62								70				B52	*520101, 520103, 5204, 5205, 5207, 5210 5212
				54				59	60		62									70				B52	*520102, 520104-5203, 520601-520602, 5209
								59	60		62									70				-	*5208
								59			62									70				-	*5213
								59			62									70				-	*5214
									60							68			70					B53	*530101-530104, 5305, 5308, 5310, 5316
					55				60							68			70					B53	*5302
																68			70					-	*5303, 5309, 5311- 5313
									60							68			70					-	*5304, 5307
				54	55				60							68			70					B53	*5306
									60							68			70					-	*5314
									60							68			70			72		-	*5315
			52				56						63	64								71		B54	*5401, 5402, 5405N, 5407, 5408N, 5410, 5413
			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						63	64								70		-	*5412
			52				56		59					64								71		B55	*550101-550104, 5503, 5505, 5511, 5515, 5525, 5529, 5531
			52				56							64								71		B54, B55	*550201-550202, 5507, 5510, 5512, 5516, 5519, 5526, 5530
			52				56															71		B55	*5504, 5508, 5513, 5527, 5615, 5619N, 5622
			52				56		59													71		-	*5509, 5517, 5528
			52				56									66						71		-	*5514
												62	64									71		-	*5518
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	
*5520	-																									
*5521	-																									
*5522	-										34															
*5523, 5532, 5618	-												36													
*5524	-										34															
*5601, 5608, 5614, 5616, 5620	B56																									
*5602, 5604	B56																									
*5603	B22												36													
*560501	-										33															
*560502	-										33															
*5606	B78										33								42							
*5607	-																									
*5609	-												36						41							
*5610	-																									
*5611, 5612	-																		41							
*5613	-										32															
*5617	-																									
*5621	-												33													
*5623	-																									
*570101-570103, 5706, 5708, 5710	B57												36						41							
*5702-5705	B57																		41							
*5707	-																		41							
*5709	-										32								41							
*5711	-												36													
*5712	-																		41							
*5713	-												36													
*5714	-				27								36						41							
*5715	-				27								36						41							
*5716	-												36						41							
*5717	-				27														41							
*580101, 5804, 5805, 5810N-5814	B58												36						41							
*580102, 5815	-												36						41							
*5802, 5806	B58												36													
*5807	-												36	37												
*5808	-											33														
*5809	-												36						41							
*5816	-												36													
*5817N, 5819	-												36						41							
*5818	-				27								36													
*5901	B59																									
*5902	-																									
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		54		56															71		-	*5520	
			52				56			59					64						69	71		-	*5521	
			52				56															71		-	*5522	
			52				56															71		-	*5523, 5532, 5618	
			52				56			59												71		-	*5524	
			52				56									65						71		B56	*5601, 5608, 5614, 5616, 5620	
			52				56									65		67				71		B56	*5602, 5604	
			52				56														69	71		B22	*5603	
			52				56			59					64							71		-	*560501	
			52				56			59												71		-	*560502	
			52				56			59					64							71		B78	*5606	
			52				56									65						70		-	*5607	
			52				56															71		-	*5609	
			52				56								64							71		-	*5610	
			52				56															71		-	*5611, 5612	
			52		54		56									65						71		-	*5613	
																65						71		-	*5617	
			52				56			59												70		-	*5621	
															64							71		-	*5623	
										60							66					70		B57	*570101-570103, 5706, 5708, 5710	
										60							66					70		B57	*5702-5705	
					53					60							66					70		-	*5707	
					53					60							66					70		-	*5709	
										60							66					70		-	*5711	
															62							71		-	*5712	
										60					62							70		-	*5713	
						55				60					62							70		-	*5714	
										60					62							70		-	*5715	
										60					62							70		-	*5716	
															62							70		-	*5717	
										60												67	70		B58	*580101, 5804, 5805, 5810N-5814
										60					62							67	70		-	*580102, 5815
										60												67	70		B58	*5802, 5806
										60												67	70		-	*5807
							54			59	60											67	70		-	*5808
							55				60											67	70		-	*5809
										60					62							67	70			*5816
															62							67	70			*5817N, 5819
															62							67	70			*5818
															64							70		B59	*5901	
										60												70		-	*5902	
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
*5903	-																								
*670101	B67					29																45			48
*670102	B67																					45			48
*6702	-																					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											w														
Cw*0305, 0325, 0327				27																					
Cw*0746									32																
Cw*150204																									

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, 33, 34, 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*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.

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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			-	*5903
			52																			71		B67	*670101
			52																			71		B67	*670102
			w																			71		-	*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.
																									Cw*0206
																									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.

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*1802 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	165	130	245	115	340	100	130	220	255	95	110	190	225	220	325	135	160
PCR product(s)	370							240	425	175		160	250			255	335	250	260	425	380		235
								355		240		220											
Length of int.	800	800	800	1070	800	1070	1070	800	800	800	1070	1070	800	800	800	1070	1070	1070	800	800	1070	1070	1070
pos. control ¹																							
5'-primer(s) ²	89	2 nd	106	477	105	112	176	28	47	1 st	1 st	361	201	361	98	98	201	201	2 nd	47	355	105	97
	5'-gAA ^{3'}	5'-CCA ^{3'}	5'-CTg ^{3'}	5'-gCC ^{3'}	5'-gCT ^{3'}	5'-CCT ^{3'}	5'-gCA ^{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'-CCA ^{3'}	5'-Agg ^{3'}	5'-TCA ^{3'}	5'-gCT ^{3'}	5'-TCg ^{3'}
	368					118	2 nd	648	176			419	2 nd			485	409	2 nd	112	361	412	459	418
	5'-gTg ^{3'}					5'-CCA ^{3'}	5'-CCA ^{3'}	5'-CAC ^{3'}	5'-gCA ^{3'}			5'-gTC ^{3'}	5'-CCA ^{3'}			5'-CAA ^{3'}	5'-ggC ^{3'}	5'-CCA ^{3'}	5'-CCT ^{3'}	5'-AgT ^{3'}	5'-ATA ^{3'}	5'-gAT ^{3'}	5'-Agg ^{3'}
								527		5'-TAC ^{3'}								361					419
																		5'-AgT ^{3'}					5'-gTC ^{3'}
3'-primer(s) ³	201	559	343	589	343	201	302	97	302	175	302	474	289	538	312	311	270	341	341	302	2 nd	201	289
	5'-CTC ^{3'}	5'-CTC ^{3'}	5'-ACC ^{3'}	5'-CTT ^{3'}	5'-ACT ^{3'}	5'-CTT ^{3'}	5'-ggT ^{3'}	5'-gTC ^{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							213	853	311		477	539	538		539	3 rd	341	512	538		559	539
	5'-CTT ^{3'}							5'-Cgg ^{3'}	5'-CAT ^{3'}	5'-ggT ^{3'}		5'-gCA ^{3'}	5'-TCT ^{3'}	5'-gCA ^{3'}		5'-TCA ^{3'}	5'-CTC ^{3'}	5'-ggT ^{3'}	5'-CCA ^{3'}	5'-CCg ^{3'}		5'-CTC ^{3'}	5'-TCT ^{3'}
	3 rd							420		601		538						527					
	5'-CTC ^{3'}							5'-gCT ^{3'}		5'-CTT ^{3'}		5'-gCA ^{3'}						5'-CCg ^{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																							
*010201-010205, 0106-0108, 0111-0113, 0115-0120	73																			92			
*0103	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, 0216, 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		
*030201-030203, 0305, 0317, 0325, 0327, 0333, 0335, 0336			75	76																			94	
*030301-030305, 031101-0312, 0320N-0322Q, 0330, 0331, 0343, 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					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				76																		93		
*0339				76				80															93	
*04010101-040105, 040401-0405, 0407-0409N, 0412-041502, 0417-0420, 0424-0428, 0430, 0431, 0434						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		
*050101-050104, 0503, 0505-0510, 0512-0515, 0518, 0519						79					83				87								93	
*0504							79				83				87									
Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	

Lot No.: **04F**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
*0511							79				83				87	88							93
*0516							79				83				87					92	93		
*0517							79				83				87	88	90						93
*06020101-06020102, 060203, 0607, 0610, 0612, 0613, 0615, 0616N								80			83			86									95
*0603			75					80			83			86	87								94
*0604								80			83												95
*0605							79	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, 0750-0757										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
*080101-080102, 0803, 0808, 0814, 0816											82							90					93
*0802, 0815											82												93
*0804, 0813											82					88							93
*0805											82		85										93
*0806											82							90					93
*0807											82								91				93
*0809, 0811											82							90					
*0810							79				82	83			87			90					93
*0812											82										92		93
*120201-120203, 1210, 1217, 1218												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	85	86	87								
*1208												84	85				89						
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

Lot No.: **04F**

Lot-specific information

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Well No.	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
*1209											83				87					92			
*1214													85					90	91				
*1215								80				84	85	86			89						
*1216								80				84	85										95
*1220												84	85										
*1221							79				83	84			87								
*140201-1403, 1405, 1407N																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											83		85		87			90					95
*160401														86				90					
*1701-1704		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

Lot No.: **04F**

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 73, 74, 77, 80, 81, 82, 85, 86, 87, 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. 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.

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. 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.

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*0202.
The sequence of the Cw*020204 allele has been shown to be identical to Cw*0210.
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*0601 allele has been shown to be identical to Cw*0602.
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.

Lot No.: **04F**

Lot-specific information

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CELL LINE VALIDATION SHEET																				
HLA-A low resolution primer set																				
				Lot No.:	Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					200739101	200739102	200739103	200739104	200847005	200739106	200739107	200739108	200739109	200739110	200739111	200739112	200739113	200739114	20847015	200847016
	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	9007 DEM	*0201			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*2601			-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
10	9107 LKT3	*2402			-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*2902			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
12	9052 DBB	*0201			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9067 BTB	*0201			-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*3101			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*2402			-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*2902			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
17	9008 WILJON	*2501			-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
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 SSTO	*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		-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-

Lot No.: **04F**

Lot-specific information

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CELL LINE VALIDATION SHEET											
HLA-A low resolution primer set											
				Well							
				17	18	19	20	21	22	23	24
				Lot No.:							
				200739717	200739718	200739719	200739720	200739721	200739722	200739723	200739724
	IHC 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	9007 DEM	*0201		-	-	-	-	-	-	-	-
9	9026 YAR	*2601		-	-	-	-	-	-	-	-
10	9107 LKT3	*2402		-	-	-	-	-	-	-	-
11	9051 PITOUT	*2902		-	-	-	-	-	-	-	-
12	9052 DBB	*0201		-	-	-	-	-	-	-	-
13	9067 BTB	*0201		-	-	-	-	-	-	-	-
14	9071 OLGA	*3101		-	-	-	-	-	-	-	-
15	9075 DKB	*2402		-	-	-	-	-	-	-	-
16	9037 SWEIG007	*2902		-	-	-	-	-	-	-	-
17	9008 WILJON	*2501		-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	+

CELL LINE VALIDATION SHEET																				
HLA-B low resolution SSP kit																				
				Well																
				25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
				Prod. No.:	2008480101	2008480102	2008480103	2008480104	2008480105	2008480106	2008480107	2008480108	2008480109	2008480110	2008480111	2008480112	2008480113	2008480114	2008480115	2008480116
	IHWC 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	9007 DEM		*5701		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
9	9026 YAR		*3801		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3		*5401		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT		*4403		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB		*5701		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
13	9067 BTB		*2705		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+
14	9071 OLGA		*1501	*1520	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
15	9075 DKB		*4001		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007		*4002		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9008 WILJON		*1801		-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
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																						
				Prod. No.:	Well																	
					41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56		
					200848017	200848018	200848019	200848020	200848021	200848022	200848023	200848024	200848025	200848026	200848027	200848028	200848029	200848030	200848031	200848032		
	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	9007 DEM		*5701		+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR		*3801		-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3		*5401		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
11	9051 PITOUT		*4403		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
12	9052 DBB		*5701		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9067 BTB		*2705		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
14	9071 OLGA		*1501	*1520	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB		*4001		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007		*4002		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
17	9008 WILJON		*1801		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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																				
				Prod. No.:	Well															
					57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
					200848033	200848034	200848035	200848036	200848037	200848038	200848039	200848040	200848041	200848042	200848043	200848044	200848045	200848046	200848047	200848048
	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	9007 DEM	*5701			-	-	-	+	-	-	-	-	-	+	-	-	+	-		
9	9026 YAR	*3801			-	-	-	-	-	-	-	-	-	-	-	-	+	-		
10	9107 LKT3	*5401			-	-	-	-	-	-	+	+	-	-	-	-	-	+		
11	9051 PITOUT	*4403			-	-	-	-	-	+	-	-	-	-	-	-	+	-		
12	9052 DBB	*5701			-	-	-	+	-	-	-	-	-	+	-	-	+	-		
13	9067 BTB	*2705			-	-	-	-	-	+	-	-	-	-	-	-	+	-		
14	9071 OLGA	*1501	*1520		-	-	-	-	-	+	-	-	-	-	-	+	-	+		
15	9075 DKB	*4001			-	-	-	-	+	+	-	-	-	-	-	-	-	+		
16	9037 SWEIG007	*4002			-	-	-	-	+	+	-	-	-	-	-	-	-	+		
17	9008 WILJON	*1801			-	-	-	-	-	-	-	-	-	-	+	-	-	+		
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.:	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401	200848401
	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	9007 DEM		*0602		-	-	-	-	-	-	-	+	-	-	+	-	-	-	+	-	-
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.: **04F**

Lot-specific information

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CELL LINE VALIDATION SHEET												
HLA-C low resolution SSP primer set					Tube							
					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	9007 DEM		*0602		-	-	-	-	-	-	+	
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	-	+	-	-	+	-	+	

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A-B-C SSP Combi Tray

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

Lot number: 04F

Expiry date: 2010-September-01

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

6 tests – Product No. 101.702-06

Number of wells per test: 95 + 1

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2007-397-01	9	2007-397-09	17	2007-397-17
2	2007-397-02	10	2007-397-10	18	2007-397-18
3	2007-397-03	11	2007-332-11	19	2007-397-29
4	2007-397-04	12	2007-397-12	20	2007-397-20
5	2008-470-05	13	2007-397-13	21	2007-397-21
6	2007-332-06	14	2007-397-14	22	2007-397-22
7	2007-397-07	15	2008-470-15	23	2007-397-23
8	2007-397-08	16	2008-470-16	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'-primers in primer solutions 8 and 10 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 3, 4, 8, 14, 16, 18, 19 and 23 were tested by separately adding one 5'-primer. Additional 5'- and 3'-primers in primer solutions 5, 7, 12 and 22 were tested by separately adding one 3'-primer, respectively one 5'-primer.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
25	2008-480-01	41	2008-480-17	57	2008-480-33
26	2008-480-02	42	2008-480-18	58	2008-480-34
27	2008-480-03	43	2008-480-19	59	2008-480-35
28	2008-480-04	44	2008-480-20	60	2008-480-36
29	2008-480-05	45	2008-480-21	61	2008-480-37
30	2008-480-06	46	2008-480-22	62	2008-480-38
31	2008-480-07	47	2008-480-23	63	2008-480-39
32	2008-480-08	48	2008-480-24	64	2008-480-40
33	2008-480-09	49	2008-480-25	65	2008-480-41
34	2008-480-10	50	2008-480-26	66	2008-480-42
35	2008-480-11	51	2008-480-27	67	2008-480-43
36	2008-480-12	52	2008-480-28	68	2008-480-44
37	2008-480-13	53	2008-480-29	69	2008-480-45
38	2008-480-14	54	2008-480-30	70	2008-480-47
39	2008-480-15	55	2008-480-31	71	2008-480-48
40	2008-480-16	56	2008-480-32	72	2008-480-48

Lot No.: **04F**

Lot-specific information

www.qiagen.com/goto/HLA

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 26, 27, 32, 34, 35, 38, 43, 44, 55, 64, 66, 67 and 69 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solutions 37, 48, 53 and 59 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 45 and 53 were tested by separately adding one additional 3'-primer.

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
73	2008-484-01	81	2008-484-09	89	2008-484-17
74	2008-484-02	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	2008-484-07	87	2008-484-15	95	2008-484-23
80	2008-484-08	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 80, 81, 83 and 90 were tested by separately adding one additional 3'-primer, respectively one additional 5'-primer. Additional 3'-primers in primer solutions 75, 76, 91 and 92 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 78, 87 and 88 were tested by separately adding one additional 3'-primer.

The negative control primer pairs, **Production No. 2008-417-01**, can detect contamination with PCR products diluted 10^{-7} .

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

Date of approval: 2009-May-25

Approved by:

Quality Control, Supervisor

Lot No.: **04F**

Lot-specific information

www.qiagen.com/goto/HLA

Declaration of Conformity

Product name: *Olerup* SSP® HLA-A-B-C SSP Combi Tray
Product number: 101.702-24/06
Lot number: 04F

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
2009-May-25

Olle Olerup
Managing Director

Lot No.: **04F**

Lot-specific information

www.qiagen.com/goto/HLA

Lot No.: **04F**

Lot-specific information

www.qiagen.com/goto/HLA

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