

## Olerup SSP® HLA-A-B-DR-DQ SSP Combi Tray

Product number:	101.708-24 – including <i>Taq</i> pol.
Lot number:	10F
Expiry date:	2010-September-01
Number of tests:	24 tests
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. 10F.**

### CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® HLA-A-B-DR-DQ 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-DR-DQ SSP Combi Tray* lot was made (**Lot No. Y19**).

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

Well	5'-primer	3'-primer	rationale
15	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-DR-DQ SSP Combi Tray* lot was made (**Lot No. Y19**).

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

The **HLA-DR low resolution** specificity and interpretation tables have been updated for the HLA-DRB alleles described since the previous *Olerup SSP® HLA-A-B-DR-DQ SSP Combi Tray* lot was made (**Lot No. Y19**).

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

Well	5'-primer	3'-primer	rationale
67	Added	-	Primer added for the DRB1*1528 allele.

The **DQ low resolution** specificity and interpretation tables have been updated for the HLA-DQB1 alleles described since the previous *Olerup SSP® HLA-A-B-DR-DQ SSP Combi Tray* lot was made (**Lot No. Y19**).

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

Well	5'-primer	3'-primer	rationale
94	Modified	-	Increased yield of specific PCR product
95	Exchanged	-	Primer exchanged to amplify the DQB1*0403 allele.

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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
<b>5'-primer<sup>1</sup></b>	<b>164</b>	<b>340</b>	<b>440</b>	<b>45</b>	<b>45</b>	<b>43</b>
	5'-CAC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-TTA <sup>3'</sup>	5'-Tg g <sup>3'</sup>	5'-Tg g <sup>3'</sup>	5'-Tg g <sup>3'</sup>
<b>3'-primer<sup>2</sup></b>	<b>231</b>	<b>2<sup>nd</sup> I</b>	<b>507</b>	<b>59</b>	<b>58</b>	<b>57</b>
	5'-TgC <sup>3'</sup>	5'-AAA <sup>3'</sup>	5'-TTg <sup>3'</sup>	5'-CTC <sup>3'</sup>	5'-ggC <sup>3'</sup>	5'-CTC <sup>3'</sup>
<b>A*</b>	<b>+</b>	<b>+</b>	<b>+</b>			
<b>B*</b>	<b>+</b>	<b>+</b>	<b>+</b>			
<b>Cw*</b>	<b>+</b>	<b>+</b>	<b>+</b>			
<b>DRB1</b>				<b>+</b>	<b>+</b>	
<b>DRB3</b>				<b>+</b>	<b>+</b>	
<b>DRB5</b>				<b>+</b>		
<b>DQB1</b>						<b>+</b>
<b>DPB1</b>						<b>+</b>

<sup>1</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codonnumbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>2</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> exon or the 2<sup>nd</sup> 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](http://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-DR-DQ 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 DRB1\*0101 to DRB1\*1003 alleles into the corresponding serological groups DR1 to DR18 as well as primer pairs for recognizing the DRB3, DRB4 and DRB5 groups of alleles.

The primer set contains 5'- and 3'-primers for grouping the DQB1 alleles into the serological groups DQ2 to DQ9.

*Please note that DQB1 amplifications usually are somewhat less pronounced than e.g. DRB and DQA1 amplifications even when using the same DNA preparation and exactly the same experimental procedures.*

#### 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 21 – HLA-A low resolution primers.

Wells 22 to 64 – HLA-B low resolution primers.

Wells 65 to 87 – HLA-DR low resolution primers.

Wells 88 to 95 – HLA-DQ low resolution primers.

Well 96 – Negative Control.

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

Well No. 1 is marked with the Lot No. '10F'.

The PCR plates are covered with a PCR-compatible foil.

#### INTERPRETATION

Only HLA-A alleles will be amplified by the 21 wells of the HLA-A low resolution primer set, **wells 1 to 21**, except that primer mix 5 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.

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Only HLA-B alleles will be amplified by the 43 wells of the HLA-B low resolution primer set, **wells 22 to 64**, except that the HLA-Cw\*0305, 0325 and 0327 alleles will be amplified by primer mix 24, that the Cw\*0746 allele will be amplified by primer mix 29, that the Cw\*0206 allele will be weakly amplified by primer mix 31 and that the Cw\*150204 allele will amplified by primer mix 58. Thus, the 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-DRB alleles will be amplified by the 23 wells the DR low resolution primer set, **wells 65 to 87**. Thus, the interpretation of DR low resolution typings is not influenced by other HLA class II genes.

Only the DQB1 alleles will be amplified by the 8 wells the DQ low resolution primer set, wells **88 to 95**. Thus, the interpretation of DQ low resolution typings is not influenced the DQB2 and DQB3 genes.

### **UNIQUELY IDENTIFIED ALLELES**

All the HLA-A alleles, i.e. **A\*0101 to A\*8001**, recognized by the HLA Nomenclature Committee in July 2008<sup>1</sup> will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 21**. The HLA-A alleles will be grouped into their corresponding serological specificities<sup>3</sup>.

All the HLA-B alleles<sup>2</sup>, i.e. **B\*0702 to B\*8301**, recognized by the HLA Nomenclature Committee in July 2008<sup>1</sup> will be amplified by the primers in the HLA-B low resolution primer set, **wells 22 to 64**. The HLA-B alleles will be grouped into their corresponding serological specificities<sup>4</sup>.

All the HLA-DRB1, -DRB3, -DRB4<sup>5</sup> and –DRB5 alleles, i.e. **DRB1\*010101 to 1003, DRB3\*010101 to DRB3\*0303, DRB4\*010101 to DRB4\*0107, DRB5\*010101 to DRB5\*0205**, recognized by the HLA Nomenclature Committee in July 2008<sup>2</sup> will be amplified by the primers in the DR low resolution primer set, **wells 65 to 87**. The HLA-DRB alleles will be grouped into their corresponding serological specificities<sup>6</sup>.

All the DQB1 alleles, i.e. **DQB1\*050101 to 0505, DQB1\*060101 to 0634, DQB1\*020101 to 0205, DQB1\*030101 to 0321 and DQB1\*0401 to 0403**, recognized by the HLA Nomenclature Committee in July 2008<sup>2</sup> will be amplified by the primers in the DQ low resolution primer set. The DQB1 alleles will be grouped into their corresponding serological specificities, i.e.:

DQ5(1) =	DQB1*050101-0505 <sup>7</sup>
DQ6(1) =	DQB1*060101-0634 <sup>7</sup>
DQ2 =	DQB1*020101-0205
DQ3 =	DQB1*030101-0321 <sup>7</sup>
DQ7(3) =	DQB1*030101-030103, DQB1*0304
DQ8(3) =	DQB1*030201, DQB1*030501, DQB1*0310
DQ9(3) =	DQB1*030302
DQ4 =	DQB1*0401-0403 <sup>7</sup>

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<sup>1</sup>HLA-A, HLA-B, HLA-DRB and HLA-DQB1 alleles listed on the IMGT/HLA web page 2008-July-11, release 2.22.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

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

<sup>3</sup>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.

<sup>4</sup>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 wih 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 wih the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

<sup>5</sup>The DRB4\*0201N and DRB4\*0301N null alleles will not be amplified by the DR low resolution primer set.

<sup>6</sup>The DRB1\*0809, DRB1\*0821 and DRB4\*1415 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1415 allele.

The DRB1\*0820, DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles.

The DRB1\*0831 and DRB1\*1167 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1167 allele.

<sup>7</sup>The serological split of the DQB1\*0505, DQB1\*0606 to 0608 alleles, the DQB1\*0610 to 0634, the DQB1\*030202-030204, DQB1\*030303, DQB1\*030502 to 0321 and the DQB1\*0403 alleles is not known. In this table we have inferred the serological grouping from the naming of the sequence-defined allele.

## SPECIFICITY TABLE

### HLA-A low resolution primer set

Specificities and sizes of the PCR products of the 21 primer mixes used for HLA-A low resolution SSP typing

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	HLA-A serology <sup>3</sup>	Amplified HLA-A alleles <sup>4,10,11</sup>
1 <sup>5</sup>	120, 145 bp	<b>800 bp</b>	A1, A36	01010101-0104N, 0106-0130, 3601-3604
2 <sup>6</sup>	135, 200, 255 bp	1070 bp	A2	02010101-020115, 020117-0222, 0224-023501, 023503-0247, 0249-0297, 0299, 9201-9221, 9223-9228, 9230-9248
3 <sup>7</sup>	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
4 <sup>7</sup>	190 bp	<b>800 bp</b>	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	165, 200 bp	<b>800 bp</b>	A2, A23, A24, A29, A80	9222, 2301-2319Q, 2405, 241302, 2424, 2907, 8001, <b>B*1827</b>
6	175, 205 bp	1070 bp	A2, A23, A24, A26, A33	021701-021702 <sup>weakly</sup> , 2314, 24020101-2411N, 241301-241302, 2417-2450, 2454-2456, 2458-2463, 2466-2491, 2616, 3319
7	165, 200 bp	<b>800 bp</b>	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
8 <sup>5</sup>	75 bp	<b>800 bp</b>	A25, A32	250101-2506, 320101-3202, 3204, 3206-3216
9 <sup>5</sup>	85 bp	1070 bp	A2, A26, A33	9246, 260101-2602, 2604, 260701-2618, 2620, 2622-2629, 2632-2637, 3313
10 <sup>5,7,8</sup>	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

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11	185 bp	<b>800 bp</b>	A11, A25, A26, A31, A34, A43, A66	1111, 2506, 2609, 3103, 3104, 340101-3408, 4301, 6602, 6603
12 <sup>7</sup>	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 <sup>weakly</sup> , 2603, 2605-2608, 2610-2633, 2635-2637, 3408, 4301, 6601, 6604-6607
13	200, 240 bp	1070 bp	A29, A33	29010101-2917, 3313
14 <sup>5</sup>	90, 135 bp	1070 bp	A1, A30	0113, 0128, 300101-3004, 3006-3020, 3022-3025
15	370, 400 bp	1070 bp	A31, A32	2914, 310102-3122, 3205
16	180 bp	1070 bp	A29, A32	2913, 320101-3203, 3205-3216
17	200 bp	1070 bp	A33, A68	3301, 330301-3319, 6829
18	160, 200 bp	<b>800 bp</b>	A74	7401-7412N
19 <sup>9</sup>	155, 240 bp	<b>800 bp</b>	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
20	240, 375 bp	<b>800 bp</b>	A2, A24, A26, A68, A69	0255, 2482, 2622, 6829, 6901
21 <sup>5</sup>	75, 160 bp	<b>800 bp</b>	A2, A26, A68, A80	0255, 2603, 2605, 2606, 2621, 2630, 6805, 6815, 6820, 8001

<sup>1</sup>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 inherit feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low

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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.

<sup>2</sup>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, 7, 8, 11, 18 to 21 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.

<sup>3</sup>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](http://www.ebi.ac.uk/imgt/hla) web site and the information available at the [www.worldmarrow.org](http://www.worldmarrow.org) web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

<sup>4</sup>For several HLA-A alleles only partial 1<sup>st</sup> 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.

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

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

<sup>7</sup>Primer mixes 3, 4, 10 and 12 may give rise to nonspecific amplifications.

<sup>6</sup>The primer pairs in vial 10 will in most samples give rise to two to three specific PCR fragments.

<sup>9</sup>Primer mix 19 may give rise to nonspecific amplifications.

<sup>10</sup>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.

<sup>11</sup>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 43 primer mixes used for HLA-B low resolution SSP typing**

<b>Primer Mix</b>	<b>Size of spec. PCR product<sup>1</sup></b>	<b>Size of control band<sup>2</sup></b>	<b>HLA-B serol.<sup>3</sup></b>	<b>Amplified HLA-B alleles<sup>4</sup></b>
<b>22<sup>5,6</sup></b>	110 bp	<b>800 bp</b>	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
<b>23</b>	215 bp	1070 bp	8, 15, 44	080101-0825, 0827-0836, 9542, 4449
<b>24<sup>7</sup></b>	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, <b>Cw*0305, Cw*0325, Cw*0327</b>
<b>25<sup>8</sup></b>	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
<b>26<sup>9</sup></b>	185, 235 bp	1070 bp	14, 16, 27, 37, 38, 39, 47, 64, 67	1401, 1407N, 1408, 2701-270402, 270502-2706, 2708-2710, 2712, 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 <sup>?</sup> , 3908, 3909,

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				3911, 3914, 3915, 3918, 391902, 3922, 3924-3944, 4704, 4705, 670101
<b>27<sup>9</sup></b>	185 bp	<b>800 bp</b>	14, 35, 38, 39, 65	140201-140602, 1409, 3526, 3805, 3904, 3907 <sup>?</sup>
<b>28</b>	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
<b>29</b>	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, <b>Cw*0746</b>
<b>30<sup>5,9,10</sup></b>	165, 390 bp	<b>800 bp</b>	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, 520101-5207, 5209-5213, 560501-5606, 5621, 5808, 7801-7806
<b>31<sup>9</sup></b>	180, 395 bp	<b>800 bp</b>	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, <b>Cw*0206</b> <sup>weakly</sup>
<b>32<sup>5,6</sup></b>	105, 195 bp	1070 bp	7, 8, 15, 27, 38, 39, 40, 44, 45,	0727, 0750, 0804, 0817, 1503, 1547, 1549, 1554, 1561, 1562, 1564, 1568, 1569, 1591, 1598, 9503, 9523, 9527,

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			48, 55, 72	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
<b>33</b>	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
<b>34<sup>6</sup></b>	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
<b>35<sup>6</sup></b>	115 bp	1070 bp	18	180101-1815, 1817N-1828
<b>36<sup>6</sup></b>	80 bp	1070 bp	27, 40, 44	2701-270402, 270502-2721, 2723- 2743, 4046, 4440, 4444
<b>37</b>	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
<b>38</b>	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
<b>39<sup>5,6</sup></b>	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
<b>40<sup>5,9,11</sup></b>	205 bp	<b>800 bp</b>	7, 8, 15, 18, 37, 38	0727, 0802, 9515, 1809, 370101-3704, 3705 <sup>weakly</sup> , 3706-3710, 3712, 3713,

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<b>41</b>	170 bp	<b>800 bp</b>	15, 35, 38, 39, 67	380201-3804, 3808, 3815, 3817 1569, 9536, 3535, 380101-3809, 3811- 3817, 39010101-39010102L, 390103- 3920, 3922-3924, 3926-3929, 3931, 3935, 3937-3942, 3944, 3945, 670101- 6702
<b>42<sup>6</sup></b>	110 bp	1070 bp	38	380101-3803, 3805, 3808-3817
<b>43</b>	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
<b>44</b>	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
<b>45<sup>5,11</sup></b>	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
<b>46<sup>6</sup></b>	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
<b>47</b>	325 bp	1070 bp	7, 15, 27, 35, 42, 45, 46, 54, 55, 56, 67, 73, 81	070201-070207, 0704-0707, 0709- 0712, 0713 <sup>weakly</sup> , 0714, 0715 <sup>weakly</sup> , 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 <sup>weakly</sup> , 4603-4616, 5401-

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				5415, 550101-5505, 5507-5517, 5519-5532, 5601-5616, 5618-5622, 670101-670102, 6702 <sup>weakly</sup> , 7301, 8101-8104N, 8201, 8202, 8301
<b>48<sup>6,12</sup></b>	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
<b>49</b>	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
<b>50<sup>6</sup></b>	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
<b>51<sup>6</sup></b>	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
<b>52</b>	145 bp	1070 bp	40, 44, 49	4013, 4019, 4418, 4425, 4450, 4901, 4904, 4905
<b>53<sup>6</sup></b>	120, 210 bp	<b>800 bp</b>	13, 15, 45, 49, 50, 51, 52, 55, 56, 58, 62, 63, 78	1316, 1504 <sup>weakly</sup> , 1516, 1542, 1567, 1595, 9537, 4901-4905, 5001, 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
<b>54</b>	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
<b>55</b>	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 <sup>?</sup> , 4106-4108, 4409, 4446, 4501-

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<b>56<sup>9</sup></b>	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	4509, 4702, 5001, 5002, 5004 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, 5001, 5002, 5004, 520101-5214, 5518, 5712-5717, 580102, 5815-5819, 7805, 7806
<b>57</b>	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
<b>58<sup>9</sup></b>	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, <b>Cw*150204</b>
<b>59<sup>13</sup></b>	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
<b>60<sup>6</sup></b>	90, 240 bp	<b>800 bp</b>	55, 57	5514, 570101-5715, 5717
<b>61<sup>6</sup></b>	95 bp	1070 bp	7, 8, 18,	0765, 0832, 180101-1811, 1813-1815,

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				35, 37, 38, 39, 44, 51, 52, 53, 78	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
62 <sup>5,6</sup>	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	
63	360 bp	1070 bp	Bw4 <sup>14</sup>		
64	355 bp	1070 bp	Bw6		

<sup>1</sup>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-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 inherit 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.

<sup>2</sup>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-B low resolution typing.

In addition, wells number 27, 30, 31, 40, 41, 53 and 60 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

<sup>3</sup>The 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](http://www.ebi.ac.uk/imgt/hla) web site and the information available at the [www.worldmarrow.org](http://www.worldmarrow.org) web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

<sup>4</sup>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.

The nucleotide sequences of the B\*3589 and B\*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.

<sup>5</sup>Primer mixes 22, 30, 32, 39, 40, 45 and 62 may give rise to a primer oligomer artifact.

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

<sup>7</sup>Primer mix 24 will amplify the Cw\*0305, Cw\*0325 and Cw\*0327 alleles.

<sup>8</sup>Primer mix 25 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.

<sup>9</sup>Primer mixes 26, 27, 30, 31, 40, 56 and 58 have a higher tendency than other primer mixes to give rise to nonspecific amplifications.

<sup>10</sup>The B\*57 and B\*58 alleles might be faintly amplified by primer mix 30.

<sup>11</sup>The Cw\*1701 to Cw\*1704 alleles might be faintly amplified by primer mix 45.

<sup>12</sup>Primer mix 48 might generate a false band of about 500 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

<sup>13</sup>The Cw\*0312 allele might be faintly amplified by primer mix 59.

<sup>14</sup>The 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**

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

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	DR serology <sup>3</sup>	Amplified HLA-DRB <sup>4</sup> alleles
65	205 bp	<b>515 bp</b>	1	010101-010204, 0104-0120
66	195 bp	430 bp	103	0103
67 <sup>6</sup>	215, 260 bp	430 bp	15	150101-1531
68	210 bp	430 bp	16	160101-160502, 1607-1613N
69	220 bp	430 bp	3, 17, 18, 11	030101-0340, 1107, 1153
70 <sup>5,6</sup>	80, 210 bp	430 bp	3, 17, 11, 13, 14	030101-030106, 0304-0306, 0308-0316, 0318-0320, 0322, 0323, 0325, 0326, 0328, 0330, 0331, 0333, 0334, 0336, 0337, 110201-1103, 111101- 111102, 111401-111402, 1116, 1120, 1121, 1136, 1140, 1141, 1148, 1159, 1163, 116501-116502, 1168, 130101-1304, 1308, 1310, 1315-1317, 1319, 1320, 1322- 1324, 1327-1329, 1331-1341, 1343, 1345, 1348, 1351-1354, 1357, 1359, 1361, 1363-1366, 1368-1376, 1378-1381, 1383- 1385, 1416, 1419, 1421
71 <sup>5,6</sup>	80, 210 bp	430 bp	3, 18, 11, 13, 14	030201-0303, 0327, 0329, 0338, 1126, 1134, 1315, 1319, 1326, 1344, 1353, 1357, 1385, 1386, 1402-140302, 1406, 1409, 1412, 1413, 1417-1421, 1424, 1427, 1429, 1430, 1433, 1440, 1441, 1447-1449, 1451, 1463, 1467, 1477, 1478, 1480, 1481
72 <sup>5,6</sup>	100, 175 bp	430 bp	4	040101-0477
73	205, 230 bp	430 bp	7, 13, 14	070101-070102, 0703-0715, 1317, 1450
74 <sup>5,6</sup>	165, 215, 250 bp	<b>515 bp</b>	8, 12, 14	080101-080203, 080302-0819, 0821-0835, 1167, 1204, 1216, 1411, 1415, 1468
75 <sup>5</sup>	85, 130,	430 bp	3, 9, 11	0308, 090102-0907, 1107,

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	180 bp		1153
<b>76</b>	205 bp	430 bp	10
<b>77<sup>5</sup></b>	100, 170 bp	430 bp	11, 3, 8
<b>78<sup>5</sup></b>	85, 105 bp	430 bp	12, 8
<b>79</b>	210 bp	430 bp	13, 8, 11, 14
<b>80<sup>6</sup></b>	195, 210 bp	430 bp	13, 8, 11, 12, 14
<b>81</b>	175 bp	430 bp	3, 13, 14, 8

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<b>82<sup>5-7</sup></b>	100, 140 bp	430 bp	14, 4, 8,13	1465, 1467, 1477, 1478, 1480, 1481 0462, 0469, 0473, 0808, 1169, 1345, 140101-140102, 1404, 140701-140702, 1410, 1416, 1422, 1425, 1426, 1428, 1431- 143202, 1435, 1437-1439, 1449, 1450, 1453-1455, 1457, 1458, 1460-1462, 1468-1471, 1473-1476, 1479
<b>83<sup>5-7,8</sup></b>	110, 135, 170 bp	<b>515 bp</b>	14, 3, 9, 11, 12, 13, 15	0308, 0310, 090102-0902, 0904-0907, 110404, 1109, 1110, 111202, 1113, 1116, 1117, 1120, 1122, 1140, 1146, 1152, 1158, 1159, 1204, 1343, 140101-1402, 1404-1411, 1413, 1414, 1416-142302, 1426, 1428-1436, 1438, 1439, 1441, 1443-1452, 1454-1457, 1459-1462, 1464, 1465, 1468, 1470-1476, 1479-1481, 1527
<b>84<sup>5-7</sup></b>	110, 175, 225 bp	430 bp	14, 3, 8, 11, 13, 15, 16	0310, 0809, 0820, 0821, 0832, 0835, 090104, 1113, 1117, 1123, 1125, 1131, 1145, 1152, 1155, 1164, 1313, 1318, 1343, 1345, 1347, 1355, 140101- 140103, 140301-140503, 140701-1408, 1410-1412, 1414-1416, 1418, 1422- 142302, 1425-1428, 1431- 143202, 1434-1436, 1438- 1440, 1442-1445, 1449, 1450, 1453-1465, 1467-1479, 1481, 1521 <sup>weakly</sup> , 1604 <sup>weakly</sup>
<b>85</b>	230 bp	430 bp	52	DRB3*01010201-0111, 0201- 0223, 030101-0303
<b>86<sup>9</sup></b>	215 bp	430 bp	53	DRB4*01010101-0107
<b>87</b>	260 bp	430 bp	51	DRB1*0907, DRB5*010101- 0113, 0202-0205

<sup>1</sup>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 DR 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, e.g. the primers in wells 67, 82, 83 and 84.

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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 inherit 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.

<sup>2</sup>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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 65 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DR low resolution typing.

In addition, wells number 74 and 83 contain the primer pair giving rise to the longer, 515 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.

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

<sup>4</sup>For several DRB alleles only partial second exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the SSP set are completely matched with the target sequences or not. We assume that unknown sequences in the first hyperpolymorphic region of the second exon of DRB alleles are conserved within allelic groups and that unknown sequences of codons 87 to 92 are identical with the DRB1\*0101 consensus sequence.

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.

The DRB1\*0809, DRB1\*0821 and DRB4\*1415 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1415 allele.

The DRB1\*0820, DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles.

The DRB1\*0831 and DRB1\*1167 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1167 allele.

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

<sup>6</sup>Individual alleles can give to rise to two differently sized specific PCR fragments in these primer mixes.

<sup>7</sup>These primer mixes may give rise to nonspecific amplifications.

<sup>8</sup>Primer mix 83 has a tendency of primer oligomer formation and also has an intense primer cloud due to the high number of primers present in the primer mix.

<sup>9</sup>The DRB4\*01030102N allele is amplified by the primer pair in well No. 86, whereas the DRB4\*0201N and DRB4\*0301N null alleles are not amplified by this primer pair.

**SPECIFICITY TABLE****DQ low resolution SSP typing**

**Specificities and sizes of the PCR products of the 8 primer mixes used for DQ low resolution SSP typing**

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	DQ serology <sup>3</sup>	Amplified DQB1 alleles <sup>4</sup>
<b>88</b>	220 bp	<b>515 bp</b>	5	050101-0505
<b>89</b>	220, 270 bp	430 bp	6	060101-0630
<b>90</b>	205 bp	430 bp	2	020101-0205
<b>91<sup>5</sup></b>	130, 145 bp	<b>515 bp</b>	2, 3, 6, 8	020101-0202, 0204, 0205, 030201-030204, 030501, 030503, 0307, 0308, 0311, 0318, 0629
<b>92<sup>5</sup></b>	220 bp	<b>515 bp</b>	3, 7, 8	030101-030104, 0304, 0309, 0310, 0313, 0314, 0316, 0319, 0321
<b>93<sup>5</sup></b>	220 bp	<b>515 bp</b>	2, 3, 4, 8, 9	020101-0205, 030201- 030204, 030302-030303, 0306-0308, 0311, 0312, 0315, 0318, 0320, 0403
<b>94<sup>5,6</sup></b>	135 bp	<b>515 bp</b>	3, 7, 8, 9	030101-030204, 030302- 0321
<b>95<sup>5</sup></b>	210 bp	430 bp	4	0401-0403

<sup>1</sup> 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 DQ 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 inherit 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.

<sup>2</sup>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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DQ low resolution typing.

In addition, wells number 91, 92, 93 and 94 contain the primer pair giving rise to the longer, 515

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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.

<sup>3</sup>The serological reactivity of the DQB1\*0505, DQB1\*0606 to 0608 alleles, the DQB1\*0610 to 0633, the DQB1\*030202-030204, DQB1\*030303, DQB1\*030502 to 0321 and the DQB1\*0403 alleles is not known. In this table we have inferred the serological grouping from the naming of the sequence-defined allele.

<sup>4</sup>For several DQB1 alleles only partial second exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. We assume that unknown sequences in the 5'- and 3'-ends of the second exon of the DQB1 gene are conserved within allelic groups.

<sup>5</sup>These primer mixes may yield somewhat less intense specific PCR fragments than the other DQ low resolution primer mixes.

<sup>6</sup>This primer mix may give rise to nonspecific amplifications.

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		INTERPRETATION TABLE																				
		HLA-A low resolution SSP typing																				
		Amplification patterns of the A*0101 to A*8001 alleles																				
		Well <sup>6</sup>																				
Length of spec.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Length of int.		120	135	205	190	155	165	165	75	85	80	185	175	200	90	370	180	200	160	155	240	75
PCR product(s)		145	200	235		200	205	200			175		225	240	135	400			200	240	375	160
				255							500											
Length of int.					800																	
pos. control <sup>1</sup>																						
5'-primer(s) <sup>2</sup>																						
3'-primer(s) <sup>3</sup>																						
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HLA-A allele <sup>4</sup>	ser <sup>5</sup>																					
*01010101-0104N, 0106, 0109-0111N, 0116N-0118N, 0120, 0122N-0127N, 0129	A1, null	1																				
*0107	-	1																				
*0108, 0114, 0115N	1	1																				
*0112, 0119	-	1																				
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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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
*0113	-	1		4						10		12		14								
*0121	-	1		3	4																	
*0128	-	1		4						10				14								
*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, A2, 0272, 027401-0277, A203 0279-0292, 0294N, , null 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, A210 9210, 9214, 9217	A210		2																	19		
*021701-021702	A2		2					w														
*0234, 023501, 023503, 0256, 0262, 9203	-		2										12						19			
*023502	-												12						19			
*0246, 0270	-		2																19			
*0248, 9229	-																		19			
*0255	-		2					7											20	21		
*0278	-		2	4															19			
*9222	-				5														19			
*9235	-		2										12									
*9246	-		2						9													
*03010101-0307, 0309- 0311N, 0313-0317, 0319- 0323, 0325-0329, 0331, 0333-0335, 0337-0339	A3			3									12									
*0308, 0332, 0336N	-			3																		
*0312	-			3	4																	
*0318, 2619 <sup>7</sup>	-				4								12									
*0324	-			3		7							12									
*0330	-			3									12									
*110101-1109, 1113- 1117, 1119-112402, 1126, 1127, 1129-1136	A11				4				10													
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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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
*1110	-			4		7				10												
*1111	-			4						10	11											
*1112, 1118	-				4						10											
*1125	-			3	4						10											
*2301-2313, 2315- 2319Q	A23					5																
*2314, 2405, 241302, 2424 <sup>8</sup>	-				5	6																
*24020101-2404, 2406- 2411N, 241301, 2417, 2418, 2420-2423, 2425- 2443, 2445N-2450, 2454	A24								6													
2456, 2458-2463, 2466- 2481, 2483N-2488, 2490, 2491																						
*2414, 2415, 2451-2453, 2457, 2464	A24																					
*2419, 2444	-						6				10											
*2482	-						6														20	
*2489	-					6																
*250101-2504	A25						7	8			12											
*2505	-						7	8			12									19		
*2506	-						7	8	11													
*260101-260106, 2608, 2610-2615, 2617, 2618, 2620, 2623-2629, 2632, 2633, 2635-2637	A26, null							7	9		12											
*2602	A26							7	9		w											
*2603, 2606, 2621	A26							7		10	12										21	
*2604, 2634	A26							7	9													
*2605, 2630	A26							7			12											21
*260701-260702	A26									9	12											
*2609	A26							7	9	11												
*2616	-						6		9		12											
*2622	-						7	9		12											20	
*2631	-						7			12												
*29010101-2906, 2908N- 2912, 2915-2917	A29															13						
*2907	-						5				13											
*2913	-										13					16						
*2914	-										13	15										
*300101-3004, 3006, 3007, 3009-3020, 3022- 3025	A30															14						
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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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
*3008	-							4								14				19		
*310102-3102, 3105-3107, 3109-3122	A31																				15	
*3103	-										10	11				15						
*3104	A31											11				15						
*3108	-															15						
*320101-3202, 3206-3212, 3214, 3216	A32										8							16				
*3203	-																	16				
*3204	A3				3					8												
*3205	-																15	16				
*3213	-									8								16				
*3215	-								7	8								16				
*3301, 330301-3312, 3314-3318	A33																		17			
*3313	-									9			13					17				
*3319	-							6										17				
*340101-340102, 3405, 3406	A34								7		10	11										
*3402-3404, 3407	-							3		7		10	11									
*3408	-							3		7		10	11	12								
*3601, 3603	A36	1																				
*3602	-	1	3																			
*3604	-	1		4																		
*4301	A43											11	12									
*6601, 6604-6607	A66								7		10		12									
*6602, 6603	A66								7		11											
*680101-6804, 6806-6814, 6816-6819, 6821-6828, 6830-6843	A68									7									19			
*6805, 6815, 6820	-									7									19	21		
*6829	-									7								17	19	20		
*6901	A69								7										20			
*7401-7409, 7411, 7412N	A74																		18			
*7410	-																		18			
*8001	A80							5												21		
HLA-A allele <sup>4</sup>	ser <sup>5</sup>																					
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
B*1827								5														
Well No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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<sup>1</sup>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 SSP typing.

In addition, wells number 4, 5, 7, 8, 11, 18 to 21 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

<sup>3</sup>The nucleotide position, in the 2<sup>nd</sup>, or 3<sup>rd</sup> 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>4</sup>The 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.

<sup>5</sup>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](http://www.ebi.ac.uk/imgt/hla) web site and the information available at the [www.worldmarrow.org](http://www.worldmarrow.org) web site and have also inferred the serological grouping from the naming of the sequence-defined allele.

<sup>6</sup>The primer pairs in vials 2 and 10 will in most samples give rise to two specific PCR fragments.

<sup>7</sup>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.

<sup>8</sup>The 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.

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Lot-specific information

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## INTERPRETATION TABLE

### HLA-B low resolution SSP

#### Amplification patterns of the B\*0702 to B\*8301 alleles<sup>6</sup>

		Well																							
		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Length of spec.		110	215	140	130	185	185	290	165	165	180	105	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 <sup>1</sup>																									
5'-primer(s) <sup>2</sup>																									
3'-primer(s) <sup>3</sup>																									
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
HLA-B allele <sup>4</sup>	ser. <sup>5</sup>																								
*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	22																						44	

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## **Lot-specific information**

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## **INTERPRETATION TABLE**

## **HLA-B low resolution SSP**

## Amplification patterns of the B\*0702 to B\*8301 alleles<sup>6</sup>

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Lot-specific information

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
*0703, 0708, 0716, 0732, 0737	B7, B703	22																						44
*0704, 0725	B7	22																						44
*0707, 0742	B7	22																						44
*0709, 0711, 0717	B7	22																						44
*0713, 0715	-	22																						44
*0719	-																							44
*0720, 0724	-	22	24																					44
*0727	-	22																						40
*0733, 0753	-																							44
*0736	-	22																						
*0738	-	22																						
*0740, 0748, 0751	-																							44
*0750	-	22																						44
*0754	-	22																						44
*0760	-		24																					44
*0765	-	22																						38
*080101-080105, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834	B8, Null		23																					44
*0802	B8	23																						40
*0803	B8	23																						
*0804	-	23																						44
*0806, 0813, 0820	B8	23																						44
*0807, 0814	-	23																						44
*0809	-	23																						44
*0812, 0816, 0831	-	23																						44
*0817		23																						44
*0821	-	23	24																					44
*0825	-	23	24																					44
*0826, 4207	-																							44
*0828	-		23																					44
*0832	-		23																					44
*0835	-		23																					44
*0836	-		23																					
*1301, 1317, 1320, 1322	B13		24	25																				37
*130201-130204, 1308Q, 1315, 1318, 1319	B13		24	25																				
*1303	-		24	25																				
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
																			64	B7, B703	*0703, 0708, 0716, 0732, 0737	
46	47																		64	B7	*0704, 0725	
	47																		64	B7	*0707, 0742	
	47																		64	B7	*0709, 0711, 0717	
	W																		64	-	*0713, 0715	
46	47																		64	-	*0719	
	47																		64	-	*0720, 0724	
																			63	-	*0727	
	47																		64	-	*0733, 0753	
	47																		63	-	*0736	
																			63	-	*0738	
	47																		64	-	*0740, 0748, 0751	
																			64	-	*0750	
	47																		56	-	*0754	
	47																		64	-	*0760	
	47		50															61		64	-	*0765
46																			64	B8, Null	*080101-080105, 0805, 0808N, 0810, 0811, 0815, 0818, 0819N, 0822-0824, 0827, 0829, 0830N, 0833, 0834	
46																			63	B8	*0802	
46																			63	B8	*0803	
46																			64	-	*0804	
																			64	B8	*0806, 0813, 0820	
46																			64	-	*0807, 0814	
46																			64	-	*0809	
46																			64	-	*0812, 0816, 0831	
46																			56	-	*0817	
46																			64	-	*0821	
46																			64	-	*0825	
46																			64	-	*0826, 4207	
46																			64	-	*0828	
46																			61	64	-	*0832
46																			64	-	*0835	
46																			64	-	*0836	
																			56	B13	*1301, 1317, 1320, 1322	
																			56	B13	*130201-130204, 1308Q, 1315, 1318, 1319	
																			59	-	*1303	
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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*1304, 1310	-			24	25																						
*1306	-			24	25													37									
*1307N	Null				24	25					31						37										
*1309	-					25					31																
*1311	-				24	25					31																
*1312, 1313	-				24	25												37									
*1314	-					24					31																
*1316	-					24	25				31																
*1321	-					24	25																				
*1401, 1407N	B64				25	26																43	44				
*140201-1404, 1409	B65					25		27															43	44			
*1405-140602	-						27																43	44			
*1408, 3925N, 3930, 3932-3934	-							26																43	44		
*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							28										39									
*150102	B62								28	30										39							
*150104	B62																		39								
*150106-150107, 1507	B62			24			28												39								
*150108				24															39								
*1502, 1588, 9512, 9521	B75							28										37	39								
*1503, 1547, 1549, 1561, 1598, 9503, 9523, 9527, 9532	B72								29	32								39									
*1504								28											39								
*1505, 1506, 1533, 1539, 1540, 1565, 1578, 1584, 9507	B62, B15							28											39								
*1508, 151101-151103, 1515	B75								28										39								
*1509	B70								29	30	31								39								
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44			

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44				
*1510, 1537, 1590, 1599, 9533	B71								29		31								39									
*1512, 1514, 1519	B76								28				33						39									
*1513	B77								28					34				37		39								
*1516, 1567, 1595	B63									30			34						39									
*15170101-151702	B63								28	30			34						39									
*1518, 1551, 1552, 1572, 1593, 9508, 9514, 9519, 9534	B71									29		31							39									
*1520, 1525	B62								28									37		39								
*1521, 1544	B75									28		31						37		39								
*1523	-									29		31		34					39									
*1524, 1587	B62								28				34					39										
*152702	-			24															39									
*152703	-		24						28										39									
*1528	B15								28										39									
*1529	B15									29									39									
*1530, 1558, 1563	B62, B15								28										39									
*1531	B75									28									39									
*1536	-		24						28									37		39								
*1542	-								28										39									
*1543	-								28										39									
*1545	B62		24						28										39									
*1546	B72			25					28	29									39									
*1548	B62								28										39									
*1553	-			25						29									39									
*1554	-									29		32							39									
*1555	-		24						28										39									
*1562	-									29		32						37		39								
*1564	-									29		32							39									
*1566	-									28		31							39									
*1568	-		24						28	29			32						39									
*1569	-									29		32							39		41							
*1573	-									28									39									
*1574	-									29									39									
*1576, 9501	-									28									39									
*1577	-									28								37		39								
*1580	-										29		31					37		39								
*1583	-									28	29								39									
*1585	-									28								37		39								
*1586	-									28									39									
*1589	-		24						28									37		39								
*1591, 9531	-									29		32	33						39									
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44				

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.
																			64	B71	*1510, 1537, 1590, 1599, 9533
																			64	B76	*1512, 1514, 1519
																			63	B77	*1513
																			63	B63	*1516, 1567, 1595
																			63	B63	*15170101-151702 *1518, 1551, 1552, 1572, 1593, 9508, 9514, 9519, 9534
																			64	B71	*1520, 1525
																			64	B62	*1521, 1544
																			63	-	*1523
																			62	B62	*1524, 1587
																			63	-	*152702
																			64	B15	*152703
																			62	B15	*1528
																			64	B15	*1529
																			64	B62, B15	*1530, 1558, 1563
																			64	B75	*1531
																			63	-	*1536
																			64	-	*1542
																			62	B62	*1543
																			63	-	*1545
																			64	B72	*1546
																			64	B62	*1548
																			62	-	*1553
																			64	-	*1554
																			64	-	*1555
																			64	-	*1562
																			64	-	*1564
																			62	B62	*1566
																			64	-	*1568
																			64	-	*1569
																			59	62	*1573
																			64	-	*1574
																			62	B62	*1576, 9501
																			64	-	*1577
																			62	-	*1580
																			64	-	*1583
																			62	B62	*1585
																			64	-	*1586
																			51	-	*1589
																			56	-	*1591, 9531
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44		
*9506	-			25		28	29										37	39								
*9515	-							29		31									39	40						
*9516	-							28											39							
*9520	-							28											39							
*9524	-								29	31								39								
*9526, 9535, 9540, 9545-9547	-			24				28											39							
*9536	-			24				28											39		41					
*9537	-			24				28											39							
*9538	-		22					28											39							
*9539	-			24				28										37	39							
*9541	-			24				28											39							
*9542	-		23	24				28											39							
*9543	-							28	29										39							
*9544	-			24				28										37	39							
*9548	-			24				28											39							
*9549N	-			24				28											39							
*180101-1803, 1805- 1808, 1810, 1811, 1813 1815, 1817N, 1818, 1820, 1821, 1823N- 1825, 1827, 1828	B18																35		38							
*1804	-																35		38							
*1809	-																35			40						
*1812	-																35		38							
*1819	-																35		38							
*1822	-																35	37	38							
*1826	-																35		38							
*1829, 3532, 3537, 3553N, 3564, 356801- 356802																			38							
*2701	B27					26											36									
*2702	B27					26											36									
*2703-270402, 270502- 2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735-2737	B27					26											36									
*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743	B27																	36								
*2708, 2726, 2740, 2742	B2708					26											36									
*2712	-					26											36									
*2716, 2739	-					26											36									
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44		

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
										55	56								64	-	*9506	
																			63	-	*9515	
45										56									64	-	*9516	
																			62	64	-	*9520
45																			64	-	-	*9524
												56						62	64	-	*9526, 9535, 9540, 9545-9547	
												56							64	-	-	*9536
												53	56					62	64	-	-	*9537
												56							64	-	-	*9538
												51							64	-	-	*9539
												56							64	-	-	*9541
												56						62	64	-	-	*9542
												55						62	64	-	-	*9543
												51						62	64	-	-	*9544
												51						62	64	-	-	*9548
																		62	64	-	-	*9549N
																		61	64	B18	*180101-1803, 1805- 1808, 1810, 1811, 1813 1815, 1817N, 1818, 1820, 1821, 1823N- 1825, 1827, 1828	
																		58	61	64	-	*1804
																		61	63	-	-	*1809
													56						64	-	-	*1812
																		61	62	64	-	*1819
													49					61	64	-	-	*1822
																		61	64	-	-	*1826
																			64		*1829, 3532, 3537, 3553N, 3564, 356801- 356802	
		47									56							63		B27	*2701	
		47		50						54	56						63		B27	*2702		
																			B27	*2703-270402, 270502- 2706, 2709, 2710, 2713, 2717, 2720, 2727, 2731, 2735-2737		
																			B27	*2707, 2711, 2714, 2715, 2721, 2728, 2732, 2734, 2738, 2743		
																			B2708	*2708, 2726, 2740, 2742		
																			B2708	-	*2712	
																			B2708	*2716, 2739		
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
*2718	-					26					32				36										
*2719	-															36	37								
*2723	-						26									36									
*2724	-															36									
*2725	-															36									
*2729	-						26					32				36									
*2730	-															36	37								
*2733	-															36									
*2741	-					26										36									
*350101-350107, 3507-350803, 3511, 3515, 352001-352002, 3523, 3529, 3540N-3542, 3548, 3550, 3552, 3554, 3557, 3561, 3577, 3578, 3582, 3590, 3594	B35																	37	38						
*350201-350401, 350403, 3506, 3512, 3533, 3534, 3536, 3539, 3555, 3559, 3565Q, 3570, 3574, 3583-3585	B35																		37	38					
*350402	-									30								37	38						
*3505, 3551, 3558, 3572	B35					24													38						
*350901-350902, 3518, 3531, 3575, 3588	B35																		38						
*3510, 3528, 3569, 3580	-																	37	38						
*3513	B35																	37	38						
*351401-351402, 3562	B35																	37	38						
*3516	-			24														37	38						
*3517, 3530	B35			24														37	38						
*3519	B35																	37							
*3521, 3524	-																	37	38						
*3522	-			24														38							
*3525, 3549	-																	37							
*3526	-						27											37							
*3527	B35																	37							
*3535	-																	37	38		41				
*3538	-																	37	38						
*3543, 3567, 3579, 3586	B35																	38							
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
										56							64		-		*2718	
		47			50					56							63		-		*2719	
		47				50	51			56							63		-		*2723	
		47				50				56							63		-		*2724	
		47					50			56						62	63		-		*2725	
										56							63		-		*2729	
		47						50		54	56						63		-		*2730	
		47								56							64		-		*2733	
		47								56							63		-		*2741	
																				B35	*350101-350107, 3507-350803, 3511, 3515, 352001-352002, 3523, 3529, 3540N-3542, 3548, 3550, 3552, 3554, 3557, 3561, 3577, 3578, 3582, 3590 3594	
																				B35	*350201-350401, 350403, 3506, 3512, 3533, 3534, 3536, 3539, 3555, 3559, 3565Q, 3570, 3574, 3583-3585	
																	61		64		-	*350402
																	61		64	B35	*3505, 3551, 3558, 3572	
																	61		64	B35	*350901-350902, 3518, 3531, 3575, 3588	
																	61		64		-	*3510, 3528, 3569, 3580
																	56		64	B35		
																	61		64	B35	*3513	
																	61	62	64	B35	*351401-351402, 3562	
																	56		64		-	*3516
																	61		64	B35	*3517, 3530	
																	55		64	B35		
																	61		64		-	*3519
																	49				-	*3521, 3524
																	61		64		-	*3522
																						*3525, 3549
																						*3526
																				B35		
																	61		64		-	*3527
																	61		64		-	*3535
																	48				-	*3538
																	61	62	64	B35		
																						*3543, 3567, 3579, 3586
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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*3544	-																38										
*3545, 3571	-												33				37	38									
*3546	-																37										
*3547	-				25												37										
*3556	-																37										
*3560	-																38										
*3563	-				25												37										
*3566	-																38										
3576	-																37	38									
*3581	-																37	38									
*3587	-								29									38									
*370101-370103, 3703N, 3706, 3713	B37, Null												33				37		40								
*370104	-												33				37		40								
*3702	-					26							33						40								
*3704	-												33				37		40								
*3705	-												33				37		w								
*3707	-	22											33						40								
*3708	-												33				37		40								
*3709	-												33						40								
*3710	-																37		40								
*3711	-																37	38									
*3712	-								29				33						40								
*3714	-																	38									
*380101-380102, 3809, 3811-3814, 3816	B38					26														41	42	43					
*380201-380202, 3808, 3815	B38						26												40	41	42	43					
*3803	B16					26							32						40	41	42						
*3804	-																	40	41	43							
*3805	-						27												41	42	43						
*3806	-																		41								
*3807	-						26												41								
*3810	-							26												42	43						
*3817	-						26						33						40	41	42	43					
*39010101-39010102L, 390103-390105, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926-3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944	B3901, B39						26													41	43	44					
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44			

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.			
			48											61	62	64	-				*3544			
						51									61		64	-				*3545, 3571		
										55							64	-				*3546		
															61		64	-				*3547		
															58	61		64	-			*3556		
															55	56		64	-			*3563		
																61		64	-				*3566	
			47		50											61		64	-				3576	
					49											61		64	-				*3581	
			46													61		64	-				*3587	
						48								56				63	B37,			*370101-370103, 3703N, 3706, 3713		
						48								56	57			63	-				*370104	
														56				63	-				*3702	
						48	49							56				63	-				*3704	
						48								56				64	-				*3705	
														56				63	-				*3707	
						48										61	63		-				*3708	
														56				63	-				*3709	
						48								56				63	-				*3710	
						48								56				64	-				*3711	
						48								56				63	-				*3712	
														56				63	-				*3714	
																	63	B38				*380101-380102, 3809, 3811-3814, 3816		
																	63	B38					*380201-380202, 3808, 3815	
														56				63	B16					*3803
														56				63	-					*3804
																	63	-					*3805	
																61	63	-					*3806	
																61	63	-					*3807	
																	63	-						*3810
																	63	-						*3817
																	64	B3901, B39						*39010101-39010102L, 390103-390105, 3903, 3905-390602, 3909, 3911, 3914, 3915, 3924, 3926-3929, 3931, 3935, 3937, 3938Q, 3940N, 3941, 3944
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.			

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
*390201, 3908	B3902, B39					26						32									41			44	
*390202, 391301- 391302, 3923	B3902, B39											32									41			44	
*3904	B39						27														41		43	44	
*3907	-							?	?												41		43	44	
*3910, 3916, 3920	B39																				41			44	
*3912, 3945	-																				41		43	44	
*3917	-																				41			44	
*3918	-					26															41		43	44	
*391901	-																38			41		43	44		
*391902	-					26											38			41		43	44		
*3922	-					26															41		43	44	
*3936	-					26																		43	44
*3939	-					26						32									41			44	
*3942	-					26											37			41				44	
*3943	-					26																			44
*400101-400106, 4007	B60, B40				25																				44
*400201-400203, 4004, 40060101-400602, 4039	B61, B40																								
*4003, 4020	B40																								
*4005	B4005			24																					
*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					25																			?
*4012	-								29			32							39						
*4013, 4019	-																								
*401401-401403, 4053, 407201	-					25																			?
*4015, 4016, 4032	B61	22		25																					?
*4021	-																								?
*4023	-	22		25																					44
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
										56									64	B3902, B39	*390201, 3908	
										56									64	B3902, B39	*390202, 391301- 391302, 3923	
																			64	B39	*3904	
																			64	-	*3907	
																			64	B39	*3910, 3916, 3920	
																			64	-	*3912, 3945	
											58								64	-	*3917	
																			62	64	-	*3918
																			61	64	-	*391901
																			61	64	-	*391902
											56								64	-		*3922
																			62	64	-	*3936
																			64	-		*3939
																			64	-		*3942
																			64	-		*3943
45										55	56								64	B60, B40	*400101-400106, 4007	
										55	56								64	B61, B40	*400201-400203, 4004, 40060101-400602, 4039	
										55	56							64	B40	*4003, 4020		
										55	56							64	B4005	*4005		
										55								64	-		*4008	
										55	56							64	B61, B40	*4009, 4011, 4018, 4024, 4027, 4029, 4035, 4037, 4040, 4044, 4050, 4056, 4057, 4064, 4075, 4078, 4082, 4085, 4086		
45										55	56							64	Null, B40, B60	*4010, 4022N, 4033, 4036, 4042, 4043, 4049, 4054, 4055, 4061 4063, 4065-4067, 4073, 4081, 4084, 4087, 4088		
45										55	56							64	-		*4012	
										52	54	56						63	-		*4013, 4019	
										55	56							64	-		*401401-401403, 4053, 407201	
45										55	56							64	B61	*4015, 4016, 4032		
45										55	56							64	-		*4021	
45										55	56							64	-		*4023	
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
*4025	-			25																				?	
*4026	B21									30														?	
*4028	-									30							37							?	
*4030, 4034	-			25																				?	
*4031, 4045, 4080	-			25																				?	
*4038, 4052	-			25																				?	
*4046	-										32				36									?	
*4047	-			25																				?	
*4048	-			25						31														?	
*4051, 4079	-			25																				44	
*4058	-			25																				?	
*4059	-			25																				44	
*4060	-			25																				44	
*4068	-																							?	
*4069	-			25																				?	
*4070, 4089-4091	-				24																			?	
*4071	-			24																				?	
*407202, 4077	-			25																				44	
*4074	-																							?	
*4076	-			25																				?	
*4083	-																							?	
*4092	-			25																				?	
*4101, 4106, 4107	B41			25				29																44	
*4102	B41			25				29																44	
*410301-410302	B41			25				29																44	
*4104	-			25																				44	
*4105	-			25				29																44	
*4108	-	22	25			29				34														44	
*4201, 4202, 4206	B42							29																	44
*4204	-							29																	44
*420501-420502	-	22						29								34								44	
*4208	-							29																	44
*4209	-																								44
*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4451, 4452N, 4455, 4459, 4463	B44, B47, Null				25																				
*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4456N, 4458N, 4461N	B44				25														37						
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
45										55									64	-	*4025	
										55	56								64	B21	*4026	
			49							55	56								64	-	*4028	
						51				55	56								64	-	*4030, 4034	
										55	56								64	-	*4031, 4045, 4080	
45										55	56								64	-	*4038, 4052	
45											56								64	-	*4046	
45											56								63	-	*4047	
45										55	56								64	-	*4048	
45										55	56								64	-	*4051, 4079	
										55	56	58							64	-	*4058	
										55	56								64	-	*4059	
45										55	56								64	-	*4060	
										55									64	-	*4068	
45										55									64	-	*4069	
										55	56								64	-	*4070, 4089-4091	
										55	56		59						64	-	*4071	
										55	56								64	-	*407202, 4077	
45										55	56								64	-	*4074	
45											56									-		*4076
										55	56								64	-	*4083	
45										55	56								64	-	*4092	
	46									55	56								64	B41	*4101, 4106, 4107	
	46									55	56								64	B41	*4102	
	46									55	56								64	B41	*410301-410302	
	46									55	56								64	-	*4104	
	46									?	56								64	-	*4105	
	46									55	56								64	-	*4108	
	46	47																	64	B42	*4201, 4202, 4206	
	46	47																	64	-	*4204	
	46	47																	64	-	*420501-420502	
		47																	64	-	*4208	
	46	47																	64	-	*4209	
			48																	B44, B47, Null	*44020101-440205, 4411, 4416, 4419N, 4421-4424, 4427, 4433, 4434, 4448, 4451, 4452N, 4455, 4459, 4463	
				48																B44	*440301-4405, 4413, 4426, 442801-4430, 4432, 4435, 4436, 4438, 4439, 4442, 4445, 4456N, 4458N, 4461N	
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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*4406	B44																37										
*4407																	37										
*4408	B44			24													37										
*4409	B12			25													37										
*4410	-			25								32					37	39									
*4412	-			25													37										
*4414	-			25				29									37										
*4415	-			25				29			32																
*4417, 4443	-			25							33						37										
*4418	-			25				29		32																	
*4420	-			25				29																			
*4425, 4450	-			25													37										
*4431	-			25																							
*4437	-			25													37										
*4440	-										32			36	37												
*4441	-			25																							
*4444	-										32			36	37												
*4446	-			25													37										
*4447	-			25																							
*4449	-		23	25													37										
*4450	-			25													37										
*4453	-			25																							
*4454	-		24	25																							
*4457	-		24														37										
*4460	-		24	25													37										
*4462	-			25				29	30								37										
*446401-446402	-			25													37										
*4501, 4505, 4507	B45			25				29		32															44		
*4502, 4503	-			25				29																	44		
*4504	-			25				29																	44		
*4506	-			25				29	32																44		
*4508	-			25				29																	44		
*4509	-			25				29	33																44		
*460101-460102, 4604, 4605, 4607N, 4609	B46							28																			
*4602	-							28																			
*4603, 4608	-							28																			
*4606	-							28																			
*4610	-							28																			
*4611	-			24				28																			
*4612, 4614-4616	-			24				28																			
*4613	-			24				28																			
*47010101-47010102	B47			25																							
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44			

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	
			48						54		56	57			61		63	B44		*4406		
			48							56							63				*4407	
			48							56	57						63	B44		*4408		
			48							55	56	57					64	B12		*4409		
			48							56		59					63	-			*4410	
			48								57					63		-			*4412	
			48							56					63			-			*4414	
										56		59			63			-			*4415	
			48							56					63			-			*4417, 4443	
						52				56		59			63			-			*4418	
			48							56	57				63			-			*4420	
			48			52	54			56					63			-			*4425, 4450	
45			48							56					63			-			*4431	
										56					63			-			*4437	
			48							56					63			-			*4440	
			48							56	57				63			-			*4441	
			48							56	57				63			-			*4444	
			48							55	56					64			-			*4446
			48							56					63			-			*4447	
			48							56	57				63			-			*4449	
			48			52	54			56					63			-			*4450	
			48							56	57				63			-			*4453	
			48							56					63			-			*4454	
			48							56					63			-			*4457	
			48							56					63			-			*4460	
			48							56					63			-			*4462	
										56					63			-			*446401-446402	
										55	56			59			64	B45		*4501, 4505, 4507		
										55	56				64			-			*4502, 4503	
										55	56			59			64	-			*4504	
		47								55		59			64			-			*4506	
										55	56	58				64		-			*4508	
										55	56				64			-			*4509	
			47	49												62	64	B46			*460101-460102, 4604, 4605, 4607N, 4609	
			w	49											62	64		-			*4602	
			47	49												64		-			*4603, 4608	
45	47	49															64	-			*4606	
	47	49								56					62	64		-			*4610	
	47	49								56		59			64			-			*4611	
	47	49								56					62	64		-			*4612, 4614-4616	
	47	49								56					64			-			*4613	
					50					56						63		B47			*47010101-47010102	
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.	

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*4702	-				25																			
*4703	-				25																			
*4704, 4705	-				25	26																		
*480101-480102, 4807, 4809, 4811, 4819	B48											32												44
*4802	-											32					37							44
*480301-480302	B48											32												44
*4804	B48											32												44
*4805, 4808	B48	22										32												44
*4806	-											32												44
*4810, 4812	-											32												44
*4813	-											32												44
*4814	-											32												44
*4815	-	22										32												44
*4816	-											32												44
*4817	-											32												44
*4818	-											32												
*4901	B49			25																				
*4902	-			25																				
*4903	-																							
*4904, 4905	-			25																				
*5001, 5004	B50			25																				44
*5002	B45			25								32												44
*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											30												
*510102, 510109, 510202, 5105, 510902	B51											30												
*510104, 511301, 5116, 5121, 512401- 512402, 5131, 5134, 5135	B51, B52																							
*5104, 5146	B51											30						37						
*5106	B51											30												
*5108, 5120, 5144N	B51									29	30													
*5110	-																							
*5115	-																							
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

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*5136	-								29																		
*5137	-									30																	
*5142	-																				37						
*5145	-																										
*5150, 5154	-									30																	
*5156	-									30							37										
*5157	-									30																	
*520101, 520103, 5204, 5205, 5207, 5210 5212	B52									30																	
*520102, 520104-5203, 520601-520602, 5209	B52									30																	
*5208	-																										
*5213										30																	
*5214	-																										
*530101-530104, 5305, 5308, 5310, 5316	B53																	37									
*5302	B53																37										
*5303, 5309, 5311- 5313	-																	37									
*5304, 5307	-																37										
*5306	B53																37										
*5314	-			24																							
*5315	-																37										
*5401, 5402, 5405N, 5407, 5408N, 5410, 5413	B54																										
*5403	-																										
*5404, 5411, 5415	-																										
*5406	-																										
*5409, 5414	-																										
*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	-																37										
*5518	-														32												
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44			

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45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.
						53	54							61		63		-			*5136
						53	54								61		63		-		*5137
			48					54						61		63		-			*5142
								54						61		63		-			*5145
								53						61		63		-			*5150, 5154
			49											61		63		-			*5156
						53								61		63		-			*5157
							53	54		56							63		B52		*520101, 520103, 5204, 5205, 5207, 5210 5212
							53	54		56							63		B52		*520102, 520104-5203, 520601-520602, 5209
							53	54		56							63		-		*5208
							53		56								63				*5213
							53		56								63		-		*5214
								54						61		63		B53		*530101-530104, 5305, 5308, 5310, 5316	
			49					54						61		63		B53		*5302	
														61		63		-			*5303, 5309, 5311- 5313
								54						61		63		-			*5304, 5307
			49					54						61		63		B53		*5306	
								54						61		63		-			*5314
								54						61		63		-			*5315
			47		50					57	58						64	B54		*5401, 5402, 5405N, 5407, 5408N, 5410, 5413	
			47		50					57	59						64	-			*5403
			47		50					57							64	-			*5404, 5411, 5415
			47		50					57					62		64	-			*5406
			47		50					57							64	-			*5409, 5414
			47		50					57	58					63		-			*5412
			47		50			53					58				64	B55		*550101-550104, 5503, 5505, 5511, 5515, 5525, 5529, 5531	
			47		50					58							64	B54, B55		*550201-550202, 5507, 5510, 5512, 5516, 5519, 5526, 5530	
			47		50												64	B55		*5504, 5508, 5513, 5527, 5615, 5619N, 5622	
			47		50			53								64	-			*5509, 5517, 5528	
			47		50					56	58			60		64		-			*5514
																	64	-			*5518
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
*5520	-																								
*5521	-																								
*5522	-										31														
*5523, 5532, 5618	-																								
*5524	-										31														
*5601, 5608, 5614, 5616, 5620	B56																								
*5602, 5604	B56																								
*5603	B22																								
*560501	-									30															
*560502	-									30															
*5606	B78									30								38							
*5607	-																								
*5609	-																	37							
*5610	-																								
*5611, 5612	-																	37							
*5613	-									29															
*5617	-																								
*5621	-										30														
*5623	-																								
*570101-570103, 5706, 5708, 5710	B57																		37						
*5702-5705	B57																	37							
*5707	-																	37							
*5709	-									29								37							
*5711	-																								
*5712	-																	37							
*5713	-																								
*5714	-			24														37							
*5715	-			24														37							
*5716	-																	37							
*5717	-			24														37							
*580101, 5804, 5805, 5810N-5814	B58																		37						
*580102, 5815	-																		37						
*5802, 5806	B58																								
*5807	-																	33							
*5808	-										30														
*5809	-																		37						
*5816	-																								
*5817N, 5819	-																		37						
*5818	-			24																					
*5901	B59																								
*5902	-																								
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	

Lot No.: 10F

Lot-specific information

45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.		
	46	47			50														64	-	*5520		
		47			50			53					58				62	64		-	*5521		
			47		50													64		-	*5522		
			47		50													64		-	*5523, 5532, 5618		
			47		50			53										64		-	*5524		
				47	50									59				64	B56	*5601, 5608, 5614, 5616, 5620			
					47	50								59				64	B56	*5602, 5604			
						47	50								62	64		B22		*5603			
							47	50	53				58				64		-	*560501			
							47	50	53								64		-	*560502			
								47	50	53			58				64	B78		*5606			
								47	50	53				59				64		-	*5607		
								47	50	53					59	63				-	*5609		
								47	50	53					58			64		-	*5610		
								47	50	53						64				-	*5611, 5612		
								47	50	53					59		64			-	*5613		
									47	50	53				59			64		-	*5617		
									47	50	53					63				-	*5621		
										47	50	53				58			64		-	*5623	
											54				60		63		B57	*570101-570103, 5706, 5708, 5710			
												54				60	63		B57		*5702-5705		
												48	54			60	63			-	*5707		
												48		54		60	63			-	*5709		
													54			60	63			-	*5711		
														56		60		64		-	*5712		
														54	56	60	63			-	*5713		
														49	54	56	60	63		-	*5714		
															54	56	60	63		-	*5715		
															54	56		63		-	*5716		
																56	60	63		-	*5717		
																54			63		B58	*580101, 5804, 5805, 5810N-5814	
																54	56		63		-	*580102, 5815	
																54			63		B58	*5802, 5806	
																54			63			*5807	
																53	54		63			*5808	
																49	54		63			*5809	
																54	56		63			*5816	
																	56		63			*5817N, 5819	
																	56			63			*5818
																	58			63		B59	*5901
																	54					-	*5902
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.		

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Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
*5903	-																								
*670101	B67					26															41			44	
*670102	B67																				41			44	
*6702	-																				41			44	
*7301	B73																								44
*7801, 780202, 7803	B78									30								38							
*780201, 7804	B78									30								38							
*7805	-									30								38							
*7806	-									30															
*8101	B81																								
*8102	-																								44
*8103, 8104N	-																								
*8201, 8202	-							29			32							39							
*8301	-																	37							
HLA-B allele <sup>4</sup>	ser. <sup>5</sup>																								
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Cw*0206																w									
Cw*0305, 0325, 0327					24																				
Cw*0746									29																
Cw*150204																									
Well No.		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	

<sup>1</sup>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-B low resolution typing.

In addition, wells number 27, 30, 31, 40, 41, 53 and 60 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

<sup>3</sup>The nucleotide position, in the 2<sup>nd</sup>, or 3<sup>rd</sup> exon or the 1<sup>st</sup> or 3<sup>rd</sup> 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

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Lot-specific information

45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.
																			63	-	*5903
		47																	64	B67	*670101
		47																	64	B67	*670102
		w																	64	-	*6702
		47																62	64	B73	*7301
						53					58			61					64	B78	*7801, 780202, 7803
						53								61					64	B78	*780201, 7804
						53			56										64	-	*7805
						53			56										64	-	*7806
			47		50	51													64	B81	*8101
			47			51													64	-	*8102
			47			51													64	-	*8103, 8104N
			47		50									59					64	-	*8201, 8202
			47	48	50						57								64	-	*8301
																			ser. <sup>5</sup>	HLA-B allele <sup>4</sup>	
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.
																					Cw*0206
																					Cw*0305, 0325, 0327
																					Cw*0746
																					Cw*150204
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		Well No.

<sup>4</sup>The 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.

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.

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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.

<sup>5</sup>The 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](http://www.ebi.ac.uk/imgt/hla) web site and the information available at the [www.worldmarrow.org](http://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.

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## INTERPRETATION TABLE

### DR low resolution SSP typing

#### Amplification patterns of the DRB1\*0101 to DRB1\*1001 alleles

		Well																								
		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87		
Length of spec.		205	195	215	210	220	80	80	100	205	165	85	205	100	85	210	195	175	100	110	110	230	215	260		
PCR product(s)					260				210	210	175	230	215	130		170	105		210	140	135	175				
Length of int.										250	180										170	225				
pos. control <sup>1</sup>																										
5'-primer(s) <sup>2</sup>																										
3'-primer(s) <sup>3</sup>																										
Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87		
DRB1 allele <sup>4</sup>	ser <sup>5</sup>																									
*010101-010204, 0104-0120	1	65																								
*0103	103	66																								
Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87		

Lot No.: 10F

Lot-specific information

Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	
*030101-030106, 0304-0306, 0309, 0311-0316, 0318-0320, 0322, 0323, 0325, 0326, 0328, 0330, 0331, 0333, 0334, 0336, 0337	17					69	70											81							
*030201-0303, 0327, 0329, 0338	18					69	71											81							
*0307, 0317, 0321, 0324, 0332, 0335, 0339, 0340	-					69												81							
*0308	-					69	70				75		77						83						
*0310	-					69	70											83	84						
*040101-0461, 0463-0468, 0470-0472, 0474-0477	4							72																	
*0462, 0469, 0473	-						72											82							
*070101-070102, 0703-0715	7							73																	
*080101-080203, 080401-0807, 0811, 0816, 0817, 0822, 0824, 0826, 0828	8									74					80										
*080302, 0810, 0812-0815, 0818, 0819, 0823, 0825, 0827, 0829, 0830, 0833, 0834	8									74															
*0808	-									74					80		82								
*0809, 0821, 1415	8									74					80		80		84						
*0820, 1318, 1347, 1355	8,13														79	80	81	84							
*0831, 1167	-									74		77		80											
*0832	-									74		78						84							
*0835										74								84							
*090102-090103, 0902, 0904-0906	9									75								83							
*090104										75								83	84						
*0903	9									75															
*0907										75								83					87		
*100101-1003	10									76															
*110101-110107, 110401-110403, 110601-110602, 111201, 1115, 1124, 112701-1130, 1132, 1133, 1135, 1137-1139, 1143, 1144, 1147, 1149-1151, 115401-115402, 1156, 1160-1162, 1166	11													77	79	80									
Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	

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Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87				
*110201-1103, 111101-111102, 111401-111402, 1121, 1136, 1141, 1148, 1163, 116501-116502, 1168	11						70						77	79	80													
*110404, 1109, 1110, 111202, 1146, 1158	11												77	79	80			83										
*1105	11												77		80													
*1107, 1153	-					69					75		77															
*110801-110802, 1118-111902, 1142, 1157	11												77	79														
*1113, 1117, 1152	11												77					83	84									
*1116, 1120, 1140, 1159	-						70						77	79	80			83										
*1122	-												77					83										
*1123, 1125	11												77	79	80			84										
*1126, 1134	11							71					77															
*1131, 1145, 1164	-												77	79				84										
*1155	-												77		80			84										
*1169	-												77	80		82												
*120101-120102, 120302, 1205-1212, 1214	12														78													
*120201-120203, 1213, 1215	12														78	80												
*1204	-										74			78					83									
*1216	-									74			78	80														
*130101-130201, 130203, 1304, 1308, 1316, 1320, 1322-1324, 1327-1329, 1331, 1332, 1334-1336, 1338-1341, 1348, 1351, 1352, 1354, 1359, 1361, 1363-1365, 1368-1376, 1378-1380, 1383, 1384	13							70									79	80	81									
*130202, 130301-130302, 1310, 1333, 1337, 1366, 1381	13							70									79	81										
*130501-130502, 130701-130702, 131101-131102, 131401-131403, 1321, 1342, 1346, 1349-135002, 1362	13																79	80	81									
*1306, 1312, 1325, 1330, 1356, 1358, 1360, 1377, 1382	13																79	81										
Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87				

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Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87											
*1309	13															80	81																		
*1313	-															79	81		84																
*1315, 1319, 1353, 1357	-						70	71								79	80	81																	
*1317	13						70			73							80																		
*1326	-							71								79	80	81																	
*1343	-						70									79	80		83	84															
*1344, 1386	-							71										81																	
*1345	-						70									79	80		82	84															
*1367	-																79	80																	
*1385	-						70	71								79		81																	
*140101-140102, 1404, 140701-140702, 1410, 1426, 1428, 1431-143202, 1435, 1438, 1439, 1454, 1455, 1457, 1460-1462, 1470, 1471, 1475, 1476, 1479	14																		82	83	84														
*140103, 1408, 142302, 1434, 1472	-																		83	84															
*1402, 1406, 1409, 1413, 1417, 1420, 1429, 1430, 1433, 1441, 1447, 1448, 1451, 1480	14								71										81	83															
*140301-140302, 1412, 1440, 1463, 1467, 1477, 1478	14								71								79		81		84														
*140501-140503, 1414, 142301, 1436, 1443-1445, 1456, 1459, 1464, 1465	14																		81	83	84														
*1411	-									74									83	84															
*1416	6						70										79	80		82	83	84													
*1418, 1481	-							71											81	83	84														
*1419, 1421	-						70	71									79		81		83														
*1422	-																79	80		82	83	84													
*1424	-							71									80		81																
*1425, 1453	-																79	80		82	84														
*1427	14							71									79	80		81		84													
*1437	-																80		81	82															
*1442	-																		81		84														
*1446, 1452	-																		83																
*1449	-							71											82	83	84														
*1450	-									73									82	83	84														
*1458	-																		82		84														
*1468	-									74									82	83	84														
Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87											

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Well No.	DR	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
*1469	-															79		82	84					
*1473	-																80	82	83	84				
*1474	-															79		82	83	84				
*150101-1520, 1522-1526, 1528-1531	15			67																				
*1521	-			67															w					
*1527	-			67															83					
*160101-1603, 160501- 160502, 1607-1613N	16			68																				
*1604	16			68															w					
Well No.		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
DRB1 allele <sup>4</sup>	ser <sup>5</sup>																							
DRB3*01010201-0111, 0201-0223, 030101-0303	52																					85		
DRB4*01010101-0107	53																					86		
DRB5*010101-0113, 0202- 0205	51																							87
Well No.	ser <sup>5</sup>	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87

<sup>1</sup>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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 65 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DR low resolution typing.

In addition, wells number 74 and 83 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

<sup>2</sup>The codon, in the 2<sup>nd</sup> exon, matching the specificity-determining 3'-end of the primer is given. Codon numbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

<sup>3</sup>The codon, in the 2<sup>nd</sup> exon, 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

<sup>4</sup>The DRB1\*0809, DRB1\*0821 and DRB4\*1415 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1415 allele.

The DRB1\*0820, DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1318, DRB1\*1347 and DRB1\*1355 alleles.

The DRB1\*0831 and DRB1\*1167 alleles yield identical amplification patterns except for the specific PCR product yielded by the DRB3 gene in linkage disequilibrium with the DRB1\*1167 allele.

The sequence of the DRB1\*0702 allele has been shown to be identical to DRB1\*070101.

The sequence of the DRB1\*08031 allele has been shown to be identical to DRB1\*080302.

The sequence of the DRB1\*09011 allele has been shown to be identical to DRB1\*090102.

The sequence of the DRB1\*12031 allele has been shown to be identical to DRB1\*1201.

The sequence of the DRB1\*1466 allele has been shown to be identical to DRB1\*142302.

The sequence of the DRB1\*1606 allele has been shown to be identical to DRB1\*1605.

The sequence of the DRB3\*010101 allele has been shown to be identical to DRB3\*01010201.

The DRB4\*0101102N allele has been renamed DRB4\*01030102N.

The sequence of the DRB5\*0201 allele has been shown to be identical to DRB5\*0202.

<sup>5</sup>The serological reactivity of all DRB alleles is not known. In this table we use the information in the HLA Dictionary 2004 on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site and the information available at the [www.worldmarrow.org](http://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', may be weakly amplified.

'f', may be faintly amplified.

'?', nucleotide sequence information for the primer matching region(s) is not known.

INTERPRETATION TABLE									
DQ low resolution SSP typing									
Amplification patterns of the DQB1*0501 to DQB1*0403 alleles									
		Well							
		88	89	90	91	92	93	94	95
Length of spec.		220	220	205	130	220	220	135	210
PCR product(s)			270		145				
Length of int.		515	430	430	515	515	515	515	430
pos. control <sup>1</sup>									
5'-primer(s) <sup>2</sup>		26	9	30	21	26	26	55	21
		5'-g gg <sup>3</sup>	5'-g TT <sup>3</sup>	5'-A Ag <sup>3</sup>	5'-ACC <sup>3</sup>	5'-T TA <sup>3</sup>	5'-T CT <sup>3</sup>	5'-g CC <sup>3</sup>	5'-ACC <sup>3</sup>
			26		26			55	
			5'-T TA <sup>3</sup>		5'-T CT <sup>3</sup>			5'-g CA <sup>3</sup>	
			26						
			5'-T CT <sup>3</sup>						
3'-primer(s) <sup>3</sup>		87	86	86	57	86	86	86	77
		5'-g gT <sup>3</sup>	5'-A Cg <sup>3</sup>	5'-g CT <sup>3</sup>	5'-C gg <sup>3</sup>	5'-g CT <sup>3</sup>	5'-g CT <sup>3</sup>	5'-g CT <sup>3</sup>	5'-AC g <sup>3</sup>
			86						
			5'-A CC <sup>3</sup>						
Well No.		88	89	90	91	92	93	94	95
DQB1 allele <sup>4</sup>	ser. <sup>5</sup>								
*050101-0505	5	88							
*060101-0628, 0630-0634	6		89						
*0629	6		89		91				
*020101-0202, 0204, 0205	2			90	91		93		
*0203	2			90			93		
*030101-030104, 0304, 0309, 0310, 0313, 0314, 0316, 0319, 0321	3, 7, 8					92		94	
*030201-030204, 0307, 0308, 0311, 0318	3, 8				91		93	94	
*030302-030303, 0306, 0312, 0315, 0320	3, 9					93	94		
*030501, 030503	3, 8				91			94	
*030502, 030504, 0317								94	
*0401, 0402	4								95
*0403	4						93		95
DQB1 allele <sup>4</sup>	ser. <sup>5</sup>								
Well No.		88	89	90	91	92	93	94	95

**Lot No.: 10F**

**Lot-specific information**

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<sup>1</sup>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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DQ low resolution typing.

In addition, wells number 91, 92, 93 and 94 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

<sup>2</sup>The codon, in the 2<sup>nd</sup> exon, matching the specificity-determining 3'-end of the primer is given. Codon numbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

<sup>3</sup>The codon, in the 2<sup>nd</sup> exon, 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

<sup>4</sup>The sequence of the DQB1\*030301 allele has been shown to be identical to DQB1\*030302.

<sup>5</sup>The serological reactivity of the DQB1\*0505, DQB1\*0606 to 0608 alleles, the DQB1\*0610 to 0634, the DQB1\*030202-030204, DQB1\*030303, DQB1\*030502 to 0321 and the DQB1\*0403 alleles is not known. In this table we have inferred the serological grouping from the naming of the sequence-defined allele.

**Lot No.: 10F**

**Lot-specific information**

<b>CELL LINE VALIDATION SHEET</b>															
<b>HLA-A low resolution primer set</b>															
	IHWC cell line	A*	A*	Well											
				1	2	3	4	5	6	7	8	9	10	11	
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.: 10F**

**Lot-specific information**

<b>CELL LINE VALIDATION SHEET</b>							
<b>HLA-A low resolution primer set</b>							
		<b>Well</b>					
		16	17	18	19	20	21
		Lot No.:	200739717	200739718	200739719	200739720	200739721
							200739723
	<b>IHWC cell line</b>	<b>A*</b>	<b>A*</b>				
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	-	-	-	-

Lot No.: 10F

Lot-specific information

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CELL LINE VALIDATION SHEET																
HLA-B low resolution SSP kit																
	Prod. No.:	Well														
		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
		2008480101	2008480102	2008480103	2008480104	2008480105	2008480106	2008480107	2008480108	2008480109	2008480110	2008480111	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	-	-	-	+	-	-	-	-	-	-	-	-	-

Lot No.: 10F

Lot-specific information

[www.olerup.com](http://www.olerup.com)

CELL LINE VALIDATION SHEET																	
HLA-B low resolution SSP kit																	
	IHWC cell line	B*	Prod. No.:	Well													
				37	38	39	40	41	42	43	44	45	46	47	48	49	50
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	+	+	-	-	-	-	-	-	-	+	-	-	-	-

Lot No.: 10F

Lot-specific information

[www.olerup.com](http://www.olerup.com)

CELL LINE VALIDATION SHEET													
HLA-B low resolution SSP kit													
	Prod. No.:	Well											
		51	52	53	54	55	56	57	58	59	60	61	
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	-	-	-	-	+	-	-	+	-	+

Lot No.: 10F

Lot-specific information

[www.olerup.com](http://www.olerup.com)

	Prod. No.:	Well															
		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
<b>IHWG cell line</b>		<b>DRB1</b>															
<b>1</b> 9001 SA		*0101															
<b>2</b> 9280 LK707		*1502	*0405	-	-	+	-	-	-	+	-	-	-	-	-	-	
<b>3</b> 9011 E4181324		*1502		-	-	+	-	-	-	-	-	-	-	-	-	-	
<b>4</b> 9275 GU373		*0301		-	-	-	+	+	-	-	-	-	-	-	-	-	
<b>5</b> 9009 KAS011		*1601		-	-	-	+	-	-	-	-	-	-	-	-	-	
<b>6</b> 9353 SM		*0407	*0803	-	-	-	-	-	-	+	-	+	-	-	-	-	
<b>7</b> 9020 QBL		*0301		-	-	-	+	+	-	-	-	-	-	-	-	-	
<b>8</b> 9007 DEM		*0401	*1602	-	-	-	+	-	-	+	-	-	-	-	-	-	
<b>9</b> 9026 YAR		*0402		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>10</b> 9107 LKT3		*0405		-	-	-	-	-	+	-	-	-	-	-	-	-	
<b>11</b> 9051 PITOUT		*0701		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>12</b> 9052 DBB		*0701		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>13</b> 9067 BTB		*0801		-	-	-	-	-	-	-	+	-	-	-	-	+	
<b>14</b> 9071 OLGA		*0802		-	-	-	-	-	-	-	+	-	-	-	-	+	
<b>15</b> 9075 DKB		*0901		-	-	-	-	-	-	-	-	+	-	-	-	-	
<b>16</b> 9037 SWEIG007		*1101		-	-	-	-	-	-	-	-	-	-	-	+	+	
<b>17</b> 9008 WILJON		*1501		-	-	+	-	-	-	-	-	-	-	-	-	-	
<b>18</b> 9257 32367		*0901	*1101	-	-	-	-	-	-	-	-	+	-	+	-	+	
<b>19</b> 9038 BM16		*1201		-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>20</b> 9059 SLE005		*1302		-	-	-	-	+	-	-	-	-	-	-	-	+	
<b>21</b> 9064 AMALA		*1402		-	-	-	-	-	+	-	-	-	-	-	-	-	
<b>22</b> 9056 KOSE		*1302	*1401	-	-	-	-	+	-	-	-	-	-	-	-	+	
<b>23</b> 9124 IHL		*0803	*1414	-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>24</b> 9035 JBUSH		*1101		-	-	-	-	-	-	-	-	-	-	-	+	+	
<b>25</b> 9049 IBW9		*0701		-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>26</b> 9285 WT49		*0301		-	-	-	-	+	+	-	-	-	-	-	-	-	
<b>27</b> 9191 CH1007		*0405	*1001	-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>28</b> 9320 BEL5GB		*0416	*0701	-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>29</b> 9050 MOU		*0701		-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>30</b> 9021 RSH		*0302		-	-	-	-	+	-	+	-	-	-	-	-	-	
<b>31</b> 9019 DUCAF		*0301		-	-	-	-	+	+	-	-	-	-	-	-	-	
<b>32</b> 9297 HAG		*1303		-	-	-	-	-	+	-	-	-	-	-	-	+	
<b>33</b> 9098 MT14B		*0404		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>34</b> 9104 DHIF		*1101		-	-	-	-	-	-	-	-	-	-	-	+	+	
<b>35</b> 9302 SSTO		*0403		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>36</b> 9024 KT17		*0403	*0406	-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>37</b> 9065 HHKB		*1301		-	-	-	-	-	+	-	-	-	-	-	-	+	
<b>38</b> 9099 LZL		*1402		-	-	-	-	-	-	+	-	-	-	-	-	-	
<b>39</b> 9315 CML		*0301	*0401	-	-	-	-	+	+	-	+	-	-	-	-	-	
<b>40</b> 9134 WHONP199		*0701	*0901	-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>41</b> 9055 H0301		*1302		-	-	-	-	-	+	-	-	-	-	-	-	+	
<b>42</b> 9066 TAB089		*0803		-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>43</b> 9076 T7526		*0901		-	-	-	-	-	-	-	-	+	-	-	-	-	
<b>44</b> 9057 TEM		*1401		-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>45</b> 9239 SHJO		*0701		-	-	-	-	-	-	-	+	-	-	-	-	-	
<b>46</b> 9013 SCHU		*1501		-	-	+	-	-	-	-	-	-	-	-	-	-	
<b>47</b> 9045 TUBO		*1104	*1201	-	-	-	-	-	-	-	-	-	-	-	+	+	
<b>48</b> 9303 TER-ND		*0103		-	+	-	-	-	-	-	-	-	-	-	-	-	

Lot No.: 10F

Lot-specific Information

[www.qiagen.com/goto/HLA](http://www.qiagen.com/goto/HLA)

CELL LINE VALIDATION SHEET			Well							
			DR low resolution primer set							
			Prod. No.:	81	82	83	84	85	86	87
				200850217	200850218	200850219	200850220	200850221	200850222	200850223
IHWC cell line			DRB1							
1	9001	SA	*0101	-	-	-	-	-	-	-
2	9280	LK707	*1502	*0405	-	-	-	-	+	+
3	9011	E4181324	*1502		-	-	-	-	-	+
4	9275	GU373	*0301		+	-	-	+	-	-
5	9009	KAS011	*1601		-	-	-	-	-	+
6	9353	SM	*0407	*0803	-	-	-	-	+	-
7	9020	QBL	*0301		+	-	-	+	-	-
8	9007	DEM	*0401	*1602	-	-	-	-	+	+
9	9026	YAR	*0402		-	-	-	-	+	-
10	9107	LKT3	*0405		-	-	-	-	+	-
11	9051	PITOUT	*0701		-	-	-	-	+	-
12	9052	DBB	*0701		-	-	-	-	+	-
13	9067	BTB	*0801		-	-	-	-	-	-
14	9071	OLGA	*0802		-	-	-	-	-	-
15	9075	DKB	*0901		-	-	+	-	+	-
16	9037	SWEIG007	*1101		-	-	-	+	-	-
17	9008	WILJON	*1501		-	-	-	-	-	+
18	9257	32367	*0901	*1101	-	-	+	-	+	+
19	9038	BM16	*1201		-	-	-	+	-	-
20	9059	SLE005	*1302		+	-	-	-	+	-
21	9064	AMALA	*1402		+	-	+	-	+	-
22	9056	KOSE	*1302	*1401	+	+	+	+	+	-
23	9124	IHL	*0803	*1414	+	-	+	+	+	-
24	9035	JBUSH	*1101		-	-	-	+	-	-
25	9049	IBW9	*0701		-	-	-	-	+	-
26	9285	WT49	*0301		+	-	-	-	+	-
27	9191	CH1007	*0405	*1001	-	-	-	-	+	-
28	9320	BEL5GB	*0416	*0701	-	-	-	-	+	-
29	9050	MOU	*0701		-	-	-	-	+	-
30	9021	RSH	*0302		+	-	-	-	+	-
31	9019	DUCAF	*0301		+	-	-	-	+	-
32	9297	HAG	*1303		+	-	-	-	+	-
33	9098	MT14B	*0404		-	-	-	-	+	-
34	9104	DHIF	*1101		-	-	-	+	-	-
35	9302	SSTO	*0403		-	-	-	-	+	-
36	9024	KT17	*0403	*0406	-	-	-	-	+	-
37	9065	HHKB	*1301		+	-	-	-	+	-
38	9099	LZL	*1402		+	-	+	-	+	-
39	9315	CML	*0301	*0401	+	-	-	+	+	-
40	9134	WHONP199	*0701	*0901	-	-	+	-	+	-
41	9055	H0301	*1302		+	-	-	-	+	-
42	9066	TAB089	*0803		-	-	-	-	-	-
43	9076	T7526	*0901		-	-	+	-	-	+
44	9057	TEM	*1401		-	+	+	+	+	-
45	9239	SHJO	*0701		-	-	-	-	+	-
46	9013	SCHU	*1501		-	-	-	-	-	+
47	9045	TUBO	*1104	*1201	-	-	-	+	-	-
48	9303	TER-ND	*0103		-	-	-	-	-	-

Lot No.: 10F

Lot-specific Information

[www.qiagen.com/goto/HLA](http://www.qiagen.com/goto/HLA)

CELL LINE VALIDATION SHEET			Well									
			DQ low resolution primer set									
			Production No.	Well								
				88	89	90	91	92	93	94	95	
<b>IHWC cell line</b>			<b>DQB1</b>									
1	9001	SA	*0501	+	-	-	-	-	-	-	-	
2	9280	LK707	*0601	*0202	-	+	+	+	-	+	-	-
3	9011	E4181324	*0601		-	+	-	-	-	-	-	-
4	9275	GU373	*0201		-	-	+	+	-	+	-	-
5	9009	KAS011	*0502		+	-	-	-	-	-	-	-
6	9353	SM	*0302	*0601	-	+	-	+	-	+	+	-
7	9020	QBL	*0201		-	-	+	+	-	+	-	-
8	9007	DEM	*0302	*0502	+	-	-	+	-	+	+	-
9	9026	YAR	*0302		-	-	-	+	-	+	-	-
10	9107	LKT3	*0401		-	-	-	-	-	-	+	-
11	9051	PITOUT	*0202		-	-	+	+	-	+	-	-
12	9052	DBB	*0303		-	-	-	-	-	+	+	-
13	9067	BTB	*0402		-	-	-	-	-	-	+	-
14	9071	OLGA	*0402		-	-	-	-	-	-	+	-
15	9075	DKB	*0303		-	-	-	-	-	+	+	-
16	9037	SWEIG007	*0301		-	-	-	-	+	-	+	-
17	9008	WILJON	*0602	*0603	-	+	-	-	-	-	-	-
18	9257	32367	*0602	*0202	-	+	+	+	-	+	-	-
19	9038	BM16	*0301		-	-	-	-	+	-	+	-
20	9059	SLE005	*0604		-	+	-	-	-	-	-	-
21	9064	AMALA	*0301		-	-	-	-	+	-	+	-
22	9056	KOSE	*0503	*0604	+	+	-	-	-	-	-	-
23	9124	IHL	*0503	*0601	+	+	-	-	-	-	-	-
24	9035	JBUSH	*0301		-	-	-	-	+	-	+	-
25	9049	IBW9	*0202		-	-	+	+	-	+	-	-
26	9285	WT49	*0201		-	-	+	+	-	+	-	-
27	9191	CH1007	*0401	*0501	+	-	-	-	-	-	+	-
28	9320	BEL5GB	*0202	*0301	-	-	+	+	+	+	+	-
29	9050	MOU	*0202		-	-	+	+	-	+	-	-
30	9021	RSH	*0402		-	-	-	-	-	-	+	-
31	9019	DUCAF	*0201		-	-	+	+	-	+	-	-
32	9297	HAG	*0301		-	-	-	-	+	-	+	-
33	9098	MT14B	*0302		-	-	-	+	-	+	+	-
34	9104	DHIF	*0301		-	-	-	-	+	-	+	-
35	9302	SSTO	*0305		-	-	-	+	-	-	+	-
36	9024	KT17	*0302		-	-	-	+	-	+	+	-
37	9065	HHKB	*0603		-	+	-	-	-	-	-	-
38	9099	LZL	*0301		-	-	-	-	+	-	+	-
39	9315	CML	*0201	*0301	-	-	+	+	+	+	+	-
40	9134	WHONP199	*0202	*0303	-	-	+	+	-	+	+	-
41	9055	H0301	*0609		-	+	-	-	-	-	-	-
42	9066	TAB089	*0601		-	+	-	-	-	-	-	-
43	9076	T7526	*0303		-	-	-	-	-	+	+	-
44	9057	TEM	*0503		+	-	-	-	-	-	-	-
45	9239	SHJO	*0202		-	-	+	+	-	+	-	-
46	9013	SCHU	*0602		-	+	-	-	-	-	-	-
47	9045	TUBO	*0301		-	-	-	-	+	-	+	-
48	9303	TER-ND	*0501		+	-	-	-	-	-	-	-

## **CERTIFICATE OF ANALYSIS**

### **Olerup SSP® HLA-A-B-DR-DQ SSP Combi Tray**

**Product number:** 101.708-24 – including *Taq* pol.  
**Lot number:** 10F  
**Expiry date:** 2010-September-01  
**Number of tests:** 24 tests  
**Number of wells per test:** 95 + 1

#### **Well specifications:**

<b>Well No.</b>	<b>Production No.</b>	<b>Well No.</b>	<b>Production No.</b>	<b>Well No.</b>	<b>Production No.</b>
1	2007-397-01	9	2007-397-10	17	2007-397-18
2	2007-397-02	10	2007-332-11	18	2007-397-29
3	2007-397-03	11	2007-397-12	19	2007-397-20
4	2007-397-04	12	2007-397-13	20	2007-397-21
5	2007-332-06	13	2007-397-14	21	2007-397-23
6	2007-397-07	14	2008-470-15		
7	2007-397-08	15	2008-470-16		
8	2007-397-09	16	2007-397-17		

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 7 and 9 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 3, 4, 7, 13, 15, 17, 18 and 21 were tested by separately adding one 5'-primer. Additional 5'- and 3'-primers in primer solutions 6 and 11 were tested by separately adding one 3'-primer, respectively one 5'-primer.

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

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 23, 24, 29, 31, 32, 34, 39, 40, 49, 58, 60 and 62 were tested by separately adding one additional 3'-primer,

**Lot No.: 10F**

**Lot-specific Information      [www.qiagen.com/goto/HLA](http://www.qiagen.com/goto/HLA)**

respectively one additional 5'-primer. Additional 3'-primers in primer solutions 33, 44, 48 and 53 were tested by separately adding one additional 5'-primer. Additional 5'-primers in primer solutions 41 and 48 were tested by separately adding one additional 3'-primer.

<b>Well No.</b>	<b>Production No.</b>	<b>Well No.</b>	<b>Production No.</b>	<b>Well No.</b>	<b>Production No.</b>
65	2008-502-01	73	2008-502-09	81	2008-502-17
66	2008-502-02	74	2008-502-10	82	2008-502-41
67	2008-502-03	75	2008-502-11	83	2008-502-19
68	2008-502-04	76	2008-502-12	84	2008-502-20
69	2008-502-05	77	2008-502-13	85	2008-502-21
70	2008-502-06	78	2008-502-14	86	2008-502-22
71	2008-502-07	79	2008-502-15	87	2008-502-23
72	2008-502-08	80	2008-502-16		

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

The reactivities of one additional 3'-primer in primer solution 67, one additional 3'-primer in primer solution 68, one additional 5'-primer in primer solution 70, one additional 3'-primer in primer solution 73, one additional primer pair in primer solutions 72, 73 and 75, two additional 5'-primers in primer solution 77, one additional primer pair in primer solution 82, one additional 3'-primer in primer solution 83 and one additional 3'-primer in primer solution 84 were tested by separately adding another 5'-primer or 3'-primer. One of the 5'-primers in primer solution 84 and one of the 5'-primers in primer solution 77 were not possible to test.

<b>Well No.</b>	<b>Production No.</b>
88	2008-446-01
89	2008-446-02
90	2008-446-03
91	2008-446-04
92	2008-446-05
93	2008-446-06
94	2008-446-07
95	2008-471-08

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

The negative control primer pairs, **Production No. 2008-417-01**, can detect contamination with PCR products diluted 10<sup>-7</sup>.

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

**Date of approval:** 2009-May-26

**Approved by**

**Quality Control, Supervisor**

## Declaration of Conformity

**Product name:** Olerup SSP® HLA-A-B-DR-DQ SSP Combi Tray

**Product number:** 101.708-24

**Lot number:** 10F

**Intended use:** HLA-A, HLA-B, HLA-DR and HLA-DQ 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-26

Olle Olerup  
Managing Director

**HLA-A-B-DR-DQ SSP Combi Tray  
101.708-24 – including Taq polymerase**

**Product Insert**

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**General “Instructions for Use”**

IFU-01 Rev. No. 00 can be downloaded from

**Lot No.: 10F**

**Lot-specific Information**

[\*\*www.qiagen.com/goto/HLA\*\*](http://www.qiagen.com/goto/HLA)

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