

101.103.48/12 – including *Taq* pol., IFU-01  
101.103.48u/12u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4E9**

Lot-specific information

## **Olerup SSP® DR low resolution screening**

<b>Product number:</b>	<b>101.103-48/12 – including <i>Taq</i> pol. 101.103-48u/12u – without <i>Taq</i> pol.</b>
<b>Lot number:</b>	<b>4E9</b>
<b>Expiry date:</b>	<b>2019-05-01</b>
<b>Number of tests:</b>	<b>48 tests – Product No. 101.103-48/48u 12 tests – Product No. 101.103-12/12u</b>
<b>Number of wells per test:</b>	<b>23 + 1</b>
<b>Storage - pre-aliquoted primers:</b>	<b>dark at -20°C</b>
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

### **This Product Description is only valid for Lot No. 4E9.**

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

### **CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® DR LOW RESOLUTION SCREENING LOT (38Y)**

The **DR low resolution Screening** specificity and interpretation tables have been updated for the HLA-DRB alleles described since the previous *Olerup SSP®* DR low resolution Screening lot was made (**Lot No. 38Y**). The kit design is based on IMGT/HLA database 3.25.0.

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

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

<b>Well</b>	<b>5'-primer</b>	<b>3'-primer</b>	<b>rationale</b>
3	Added	Added, exchanged, removed	5'-primer added for increased yield of the DRB1*15:69 allele, 3'-primer added for the DRB1*15:127 allele, 3'-primer exchanged for improved HLA-specific amplification, 3'-primer removed.
4	Added	Added	5'-primer added for the DRB1*12:57 allele, 3'-primer added for the DRB1*16:40 allele.
5	-	Added	3'-primers added for the DRB1*03:17 allele and for allelic resolution of the DRB1*03:125 allele. Exchanged positive control primer pairs.

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9	Added	-	5'-primers added for the DRB1*07:64 and DRB1*10:11 alleles.
10	Added	-	5'-primer added for the DRB1*10:11 allele.
11	Added	-	5'-primer added for increased yield of the DRB1*11:07 allele.
12	-	Removed, added	3'-primer removed for decreased tendency of primer oligomer formation, 3'-primer added for the DRB1*03:126 allele.
13	-	Added	3'-primer added for the DRB1*11:04:13 allele.
14	-	Added	3'-primer added for the DRB1*12:58 allele.
15	-	Added	3'-primer added for the DRB1*13:167 allele.
16	Added	-	5'-primers added for the DRB1*11:01:28 and DRB1*13:183 alleles.
17	Added	-	5'-primer added for the DRB1*13:183 allele.
22	Added, exchanged	Added	5'-primer added for the DRB4*01:27 allele, primer pair added for the DRB4*02:01N and DRB4*03:01N alleles, 5'-primer exchanged for improved HLA-specific amplification.

Change in revision R01 compared to R00:

1. Due to sharing of sequence motifs, DRB3\*01:14 will also be amplified in primer mixes 5, 6 and 17 in addition to primer mix 21. DRB3\*01:23 and DRB3\*02:32 will also be amplified in primer mix 5.
2. The DRB1\*13:02:02 allele is amplified in primer mix 6. Thus, the DRB1\*03:15:02 and DRB1\*13:02:02 alleles will give rise to identical amplification patterns with the DR low resolution screening primer set. These alleles can be separated by the respective high resolution primer sets. The Specificity and Interpretation Tables have been changed.

Change in revision R02 compared to R01:

1. Primer mix 6 does not amplify the DRB1\*14:137N and 14:152N alleles. Primer mix 15 does not amplify the DRB1\*14:137N allele. This has been corrected in the Specificity and Interpretation Tables.

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Well **24** contains Negative Control primer pairs, that will amplify more than 95% of the Olerup SSP<sup>®</sup> HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

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

Length of PCR product	105	200	105	80	75	80	85
<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>	<b>36</b>
	5'-CAC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-TTA <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-TAC <sup>3'</sup>
							36
							5'-TAT <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>	<b>47</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>	5'-ACA <sup>3'</sup>
							48
							5'-gCA <sup>3'</sup>
							48
							5'-gCC <sup>3'</sup>
							52
							5'-TgT <sup>3'</sup>
<b>A*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>B*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>C*</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>	
<b>DQA1</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 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.

<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.

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## PRODUCT DESCRIPTION

### DR low resolution screening

#### CONTENT

The primer set contains 5'- and 3'-primers for grouping the DRB1\*01:01 to DRB1\*10:17 alleles into the corresponding serological groups DR1 to DR18 as well as primer pairs for recognizing the DRB3, DRB4 and DRB5 groups of alleles.

#### PLATE LAYOUT

Each test consists of 24 PCR reactions in a 24 well cut 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	NC

The 24 well cut PCR plate is marked with 'DR low screening' in silver/gray ink.

Well No. 1 is marked with the Lot No. '4E9'.

Wells 1 to 23 – DR low resolution screening primers.

Well 24 – Negative Control.

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded. The PCR plates are covered with a PCR-compatible foil.

**Please note:** When removing each 24 well PCR plate, make sure that the remaining plates stay covered. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

#### INTERPRETATION

Only HLA-DRB alleles will be amplified by the 23 wells of the DR low resolution screening primer set, **wells 1 to 23**. Thus, the interpretation of DR low resolution screening typings is not influenced by other HLA class II genes.

#### UNIQUELY IDENTIFIED ALLELES

All the HLA-DRB1, -DRB3, -DRB4 and -DRB5 alleles, i.e. **DRB1\*01:01:01 to DRB1\*10:17, DRB3\*01:01:02:01 to DRB3\*03:11, DRB4\*01:01:01:01 to DRB4\*03:01N, DRB5\*01:01:01 to DRB5\*02:09**, recognized by the HLA Nomenclature Committee in July 2016<sup>1,2</sup> will be amplified by the primers in the DR low resolution screening SSP kit. The HLA-DRB alleles will be grouped into their corresponding serological specificities.

The following alleles give rise to identical amplification patterns with the DR low resolution screening primer set. These alleles can be separated by the respective high resolution primer sets.

Alleles	Alleles
DRB1*08:20, 13:18, 13:47, 13:55, 13:158, 13:164	DRB1*03:15:02, 13:02:02
DRB1*08:31, 08:41, 08:75, 11:67, 11:193	DRB1*13:13, 13:119, 13:154, 13:156, 14:84, 14:116, 14:144

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<sup>1</sup>DRB alleles listed on the IMGT/HLA web page 2016-July-14, release 3.25.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

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

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**SPECIFICITY TABLE**

**DR low resolution screening primer set**

**Specificities and sizes of the PCR products of the 23+1 primer mixes of the DR low resolution screening primer set**

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
<b>1<sup>6,7</sup></b>	210 bp, 235 bp, 260 bp	<b>515 bp</b>	1	*01:01:01-01:02:12, 01:04-01:38, 01:40N-01:75
<b>2</b>	200 bp	430 bp	1/103	*01:03, 01:39N, 01:42, 01:61
<b>3<sup>6,7,8</sup></b>	200 bp, 230 bp	430 bp	2, 15	*15:01:01-15:137N
<b>4<sup>8</sup></b>	210 bp	430 bp	11, 16	*11:30, 12:57, 16:01:01-16:05:02, 16:07-16:41N
<b>5<sup>5,6,11</sup></b>	125 bp, 230 bp	<b>515 bp</b>	3, 11, 13, 14, 17, 18	*03:01:01-03:15:01, 03:16-03:125, 03:127-03:132, 11:07:01-11:07:02, 11:27:02-11:27:03, 11:84:02-11:84:03, 11:103:01-11:103:02, 11:105, 11:107, 11:125, 11:136, 11:173, 13:33:01, 13:61:02, 13:94:01, 13:96:01, 14:38:02, 14:171, 15:25, 15:37:01, 15:100, 15:104
<b>6<sup>5,6</sup></b>	75 bp, 210 bp	430 bp	3, 6, 11, 13, 14, 17	*03:01:01-03:01:23, 03:01:25, 03:04:01-03:06, 03:08-03:16, 03:18-03:20, 03:22-03:23, 03:25-03:26, 03:28, 03:30-03:31, 03:33-03:34, 03:36-03:37, 03:43-03:48, 03:50-03:52, 03:54-03:68N, 03:70-03:73, 03:75-03:86, 03:89, 03:91-03:93, 03:95-03:96, 03:98-03:100:02, 03:104, 03:106-03:110, 03:112-03:114, 03:116-03:118, 03:121-03:130, 03:132, 08:40, 11:02:01-11:03:02, 11:11:01, 11:11:03, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40-11:41, 11:48, 11:59, 11:63:01-11:63:02, 11:65:01-11:65:02, 11:68, 11:70, 11:73, 11:76, 11:79-11:80, 11:83, 11:85-11:87, 11:93, 11:118, 11:122, 11:124, 11:127, 11:131-11:132, 11:135, 11:138-11:139, 11:142, 11:151, 11:153, 11:161, 11:168, 11:171, 11:176, 11:182, 11:184, 13:01:01-13:04, 13:08, 13:10, 13:15-13:17, 13:19-13:20, 13:22-13:24, 13:27-13:29, 13:31-13:41, 13:43, 13:45, 13:48, 13:51-13:54, 13:57, 13:59, 13:61:01-13:61:02, 13:63-13:66:02, 13:68-13:76, 13:78-13:81, 13:83-13:85, 13:87-13:99, 13:101-13:102, 13:104-13:107, 13:109, 13:111-13:117, 13:120-13:131, 13:133, 13:135, 13:137N-13:145, 13:147-13:149, 13:151-13:153, 13:155, 13:159, 13:162, 13:165-13:168, 13:170-13:180, 13:182, 13:184-13:188,

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<b>7<sup>5,6</sup></b>	85 bp, 210 bp	430 bp	3, 6, 11, 13, 14, 1403, 18	*03:02:01-03:03, 03:27, 03:29, 03:38, 03:53, 03:74, 03:88, 03:90, 03:102-03:103, 03:115, 03:119, 03:126, 03:131, 11:13:01 <sup>w</sup> -11:13:02 <sup>w</sup> , 11:26, 11:34, 13:15, 13:19, 13:26:01-13:26:02, 13:44, 13:53, 13:57, 13:85-13:86, 13:104, 13:193, 13:198, 13:206, 14:02:01-14:03:02, 14:06:01-14:06:03, 14:09, 14:12:01-14:13, 14:17-14:21, 14:24, 14:27, 14:29-14:30, 14:32:01 <sup>w</sup> -14:32:02 <sup>w</sup> , 14:33, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:65 <sup>w</sup> , 14:67, 14:77-14:78, 14:80-14:81, 14:83, 14:85, 14:89, 14:94, 14:98, 14:102, 14:106, 14:108-14:109, 14:115, 14:119, 14:121, 14:135, 14:146, 14:154, 14:156, 14:159-14:160, 14:165, 14:170, 14:174, 14:176-14:177
<b>8<sup>5,6</sup></b>	100 bp, 175 bp	430 bp	3, 4	*04:01:01:01-04:05:11, 04:05:13-04:214N
<b>9<sup>6,8</sup></b>	200 bp, 230 bp	430 bp	7, 13, 14	*07:01:01:01-07:01:19, 07:03-07:70, 08:67, 10:11, 12:22, 13:17, 13:116, 13:175, 13:214, 14:50
<b>10<sup>6</sup></b>	170 bp, 210 bp, 250 bp	<b>515 bp</b>	8, 10, 11, 12, 14	*08:01:01-08:01:02, 08:01:04-08:19, 08:21-08:56, 08:58-08:66, 08:68-08:79, 08:81-08:82, 10:01:01:01-10:01:09, 10:03-10:11, 10:13-10:17, 11:67, 11:193, 12:04, 12:16:01-12:16:03, 12:22, 12:39, 12:49, 14:11, 14:15, 14:68:01-14:68:02, 14:93, 14:148
<b>11<sup>5,6</sup></b>	90 bp, 135 bp, 165 bp, 195 bp	430 bp	3, 9, 11	*03:08, 03:65, 03:112, 09:01:02-09:29, 11:07:01-11:07:02, 11:103:01-11:103:02, 11:105, 11:107, 11:125, 11:173
<b>12</b>	180 bp	430 bp	9, 10, 11, 13	*03:76, 03:125-03:126, 09:05, 10:01:01:01-10:10, 10:12-10:17, 11:59, 11:80, 11:83, 11:87, 11:135, 11:142, 11:182, 13:27, 13:41, 13:71, 13:129, 13:176, 14:82, 14:95, 14:132
<b>13<sup>5,6</sup></b>	100 bp, 170 bp	430 bp	3, 8, 11, 13, 14	*03:08, 03:65, 08:31, 08:41, 08:63, 08:75, 11:01:01:01-11:11:01, 11:11:03-11:70, 11:72-11:202
<b>14<sup>5,6</sup></b>	85 bp, 110 bp	430 bp	12, 14	*08:32, 08:53, 12:01:01:01-12:56, 12:58-12:59, 14:52
<b>15<sup>12</sup></b>	220 bp	430 bp	6, 8, 11, 13, 14, 1403	*03:76, 03:125, 08:20-08:21, 11:01:01:01-11:01:27, 11:01:28 <sup>?</sup> , 11:02:01-11:04:13, 11:06:01-11:06:03, 11:08:01-11:11:01, 11:11:03-11:12:03, 11:14:01-11:16, 11:18-11:21, 11:23:01-11:25, 11:27:01-11:33, 11:35-11:51, 11:54:01-11:54:02, 11:56-11:66, 11:68, 11:70, 11:72-11:81, 11:83-11:88, 11:90-11:97, 11:99-11:102:02, 11:106, 11:108-11:124, 11:126-11:135, 11:137-11:142, 11:144-11:158, 11:160-11:172, 11:174-11:192, 11:194-11:201,

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<b>16<sup>6,7</sup></b>	200 bp, 225 bp	430 bp	6, 8, 11, 12, 13, 14	*03:125, 08:01:01-08:01:02, 08:01:04-08:01:05, 08:02:01-08:02:04, 08:04:01-08:09, 08:11, 08:16-08:17, 08:20-08:22, 08:24, 08:26, 08:28, 08:31, 08:39, 08:41-08:44, 08:50, 08:52, 08:54-08:55, 08:57, 08:59, 08:64, 08:67, 08:70, 08:72-08:73, 08:75, 08:77-08:80, 08:82, 11:01:01:01-11:01:17, 11:01:20-11:06:03, 11:09-11:11:01, 11:11:03-11:12:03, 11:14:01-11:16, 11:20-11:21, 11:23:01-11:25, 11:27:01-11:30, 11:32-11:33, 11:35-11:41, 11:43-11:44, 11:46:01-11:51, 11:54:01-11:56, 11:58:01-11:63:02, 11:65:01-11:70, 11:72, 11:74:01-11:78, 11:80-11:88, 11:90-11:97, 11:99-11:102:02, 11:106, 11:108-11:118, 11:120-11:124, 11:126-11:129, 11:133-11:135, 11:137-11:142, 11:144-11:152, 11:154-11:158, 11:160-11:172, 11:174-11:183, 11:185-11:190, 11:192-11:201, 12:02:01-12:02:06, 12:13, 12:15-12:16:03, 12:18-12:21, 12:23, 12:26-12:27, 12:31N-12:33, 12:37, 12:42-12:45, 12:49-12:52, 12:55-12:57, 13:01:01:01-13:02:01, 13:02:03-13:02:12, 13:04-13:05:03, 13:07:01-13:09, 13:11:01-13:11:02, 13:14:01-13:24, 13:26:01-13:29, 13:31-13:32, 13:34-13:36, 13:38-13:43, 13:45-13:55, 13:57, 13:59, 13:61:01-13:65, 13:67-13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96:01-13:100, 13:102-13:109, 13:111-13:114, 13:116-13:117, 13:121, 13:123-13:132, 13:135-13:136, 13:138-13:150, 13:153, 13:155, 13:158-13:160, 13:162, 13:164-13:166, 13:168-13:169, 13:171:01-13:171:02, 13:173, 13:175, 13:177, 13:179, 13:182-13:187, 13:189-13:192, 13:195, 13:197-13:205, 13:207-13:215, 13:217-13:218, 14:15-14:16, 14:22, 14:24-14:25, 14:27, 14:37, 14:53, 14:73, 14:105, 14:128
<b>17<sup>6</sup></b>	175 bp, 240 bp	430 bp	3, 4, 6, 8, 11, 13, 14, 1403, 1404, 17, 18	*03:01:01:01-03:01:05, 03:01:07-03:01:08, 03:01:10-03:07, 03:09, 03:11:01-03:41:02, 03:43-03:45, 03:47-03:63, 03:66-03:68N, 03:70-03:86, 03:88-03:91, 03:93-03:110, 03:112-03:129, 03:131-03:132, 08:20, 11:13:01-11:13:02, 11:149, 11:202, 12:20,



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				13:01:01:01-13:16, 13:18-13:42, 13:44, 13:46-13:66:02, 13:68-13:102, 13:104-13:115, 13:117-13:121, 13:123-13:158, 13:161-13:164, 13:166-13:170, 13:171:02-13:174, 13:176-13:178, 13:180-13:190, 13:192-13:194, 13:196, 13:198-13:213, 13:215-13:216, 13:218-13:220, 14:01:01, 14:01:02 <sup>?</sup> -14:01:04 <sup>?</sup> , 14:02:01-14:04:01, 14:04:02 <sup>?</sup> -14:04:03 <sup>?</sup> , 14:05:01-14:07:01, 14:07:02 <sup>?</sup> , 14:08-14:14, 14:15 <sup>?</sup> -14:16 <sup>?</sup> , 14:17-14:21, 14:22 <sup>?</sup> , 14:23:01, 14:23:02 <sup>?</sup> , 14:23:03-14:24, 14:25 <sup>?</sup> -14:26 <sup>?</sup> , 14:27, 14:28 <sup>?</sup> , 14:29-14:30, 14:31 <sup>?</sup> -14:32:03 <sup>?</sup> , 14:33, 14:34 <sup>?</sup> -14:35 <sup>?</sup> , 14:36-14:37, 14:38:01 <sup>?</sup> -14:39 <sup>?</sup> , 14:40-14:45, 14:47-14:48, 14:49 <sup>?</sup> -14:50 <sup>?</sup> , 14:51, 14:52 <sup>?</sup> -14:53 <sup>?</sup> , 14:54:01-14:54:05, 14:55 <sup>?</sup> , 14:56-14:57, 14:58 <sup>?</sup> , 14:59, 14:60 <sup>?</sup> -14:62 <sup>?</sup> , 14:63-14:65, 14:67, 14:68:01 <sup>?</sup> -14:76 <sup>?</sup> , 14:77-14:78, 14:79 <sup>?</sup> , 14:80-14:85, 14:86 <sup>?</sup> -14:88 <sup>?</sup> , 14:89, 14:90 <sup>?</sup> , 14:91, 14:92N <sup>?</sup> -14:93 <sup>?</sup> , 14:94-14:96, 14:97 <sup>?</sup> , 14:98, 14:99 <sup>?</sup> , 14:100, 14:101 <sup>?</sup> , 14:102-14:103, 14:104 <sup>?</sup> -14:105 <sup>?</sup> , 14:106, 14:107 <sup>?</sup> , 14:108-14:109, 14:110 <sup>?</sup> -14:114 <sup>?</sup> , 14:115-14:116, 14:117 <sup>?</sup> -14:120 <sup>?</sup> , 14:121, 14:122 <sup>?</sup> , 14:123, 14:124 <sup>?</sup> -14:126:02 <sup>?</sup> , 14:127:01-14:127:02, 14:128 <sup>?</sup> -14:133 <sup>?</sup> , 14:134-14:137N, 14:138 <sup>?</sup> -14:140 <sup>?</sup> , 14:141, 14:142 <sup>?</sup> -14:143 <sup>?</sup> , 14:144, 14:145 <sup>?</sup> -14:151 <sup>?</sup> , 14:152N, 14:153 <sup>?</sup> , 14:154-14:156, 14:157 <sup>?</sup> -14:158 <sup>?</sup> , 14:159-14:161, 14:162 <sup>?</sup> -14:164 <sup>?</sup> , 14:165, 14:166N <sup>?</sup> , 14:167, 14:168 <sup>?</sup> , 14:169-14:171, 14:172 <sup>?</sup> -14:173 <sup>?</sup> , 14:174, 14:175 <sup>?</sup> , 14:176-14:177, 14:178 <sup>?</sup>
<b>18<sup>5,6,10</sup></b>	100 bp, 150 bp, 195 bp, 240 bp	430 bp	4, 6, 8,13, 14, 1404	*04:62, 04:69, 04:73, 04:105:01-04:105:02, 04:122, 04:146, 08:08, 11:69, 11:82, 13:45, 13:197, 14:01:01-14:01:02, 14:01:04, 14:04:01-14:04:03, 14:07:01-14:07:02, 14:10, 14:16, 14:22, 14:25-14:26, 14:28, 14:31-14:32:03, 14:35, 14:37-14:39, 14:49-14:50, 14:53-14:54:01, 14:54:03-14:55, 14:57-14:58, 14:60-14:62, 14:68:01-14:71, 14:73-14:76, 14:79, 14:82, 14:86-14:88, 14:90, 14:93, 14:99, 14:101, 14:104-14:105, 14:107, 14:110-14:114, 14:117-14:120, 14:122, 14:124-14:125, 14:128-14:129, 14:131, 14:137N-14:140, 14:142-14:143, 14:145-14:147, 14:149-14:153, 14:157-14:158, 14:163-14:164, 14:166N, 14:168 <sup>w</sup> , 14:171-14:173, 14:178, <b>DRB4*01:03:01:02N</b>
<b>19<sup>5,6,7,9</sup></b>	110 bp, 145 bp, 170 bp	430 bp	3, 4, 6, 9, 11, 13, 14, 1404	*03:10, 03:126, 04:211, 09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:22, 09:24-09:28, 11:13:01-11:13:02, 11:17, 11:52, 11:202, 13:43, 13:159, 13:171:01, 13:179, 13:191, 13:193, 13:217, 14:01:01-14:02:02, 14:04:01-14:11, 14:13-14:14, 14:16-14:18, 14:19 <sup>w</sup> , 14:20, 14:21 <sup>w</sup> , 14:22-14:23:04, 14:26, 14:28-14:36, 14:38:01-14:39, 14:41, 14:43-14:52,

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				14:54:01-14:54:03, 14:54:04 <sup>w</sup> , 14:54:05-14:57, 14:59-14:62, 14:64-14:65, 14:68:01-14:68:02, 14:70-14:76, 14:79-14:83, 14:86-14:88, 14:90-14:97, 14:99-14:101, 14:103-14:108, 14:109 <sup>w</sup> , 14:110-14:114, 14:117-14:127:02, 14:129-14:134, 14:137N-14:140, 14:142-14:143, 14:145-14:155, 14:157-14:160, 14:162-14:167, 14:169-14:173, 14:175-14:178, 15:27, 15:34, 15:66:01-15:66:02, 15:122 <sup>w</sup>
<b>20<sup>5,6</sup></b>	110 bp, 150 bp, 180 bp, 220 bp	430 bp	2 <sup>w</sup> , 3, 4, 6, 8, 11, 13, 14, 1403, 1404, 16 <sup>w</sup>	*03:10, 08:09, 08:20-08:21, 08:32, 08:35, 08:36:02, 08:53, 08:68 <sup>w</sup> , 08:70 <sup>w</sup> , 11:13:01-11:13:02, 11:17, 11:23:01-11:23:02, 11:25, 11:31, 11:45, 11:52, 11:55, 11:64, 11:89, 11:96, 11:119, 11:148, 11:159, 11:202, 13:13, 13:18, 13:43, 13:45, 13:47, 13:55, 13:119, 13:144, 13:146, 13:154, 13:156, 13:158-13:159, 13:164, 13:171:01, 13:179, 13:191, 13:197, 13:217, 14:01:01-14:01:04, 14:03:01-14:05:04, 14:07:01-14:08, 14:10-14:12:02, 14:14-14:16, 14:18, 14:22-14:23:04, 14:25-14:28, 14:31-14:32:03, 14:34-14:36, 14:38:01-14:40, 14:42-14:45, 14:49-14:50, 14:53-14:65, 14:67-14:79, 14:81-14:82, 14:84-14:93, 14:95-14:97, 14:99-14:105, 14:107, 14:110-14:120, 14:122-14:140, 14:142-14:158, 14:160-14:164, 14:166N-14:169, 14:171-14:175, 14:178, 15:21 <sup>w</sup> , 16:04 <sup>w</sup> , 16:18 <sup>w</sup> , <b>DRB4*01:31</b>
<b>21<sup>6,12</sup></b>	160 bp, 240 bp	430 bp	52	*14:141, <b>DRB3*01:01:02:01-01:39, DRB3*02:01-02:54, DRB3*03:01:01-03:01:03, DRB3*03:01:05-03:11</b>
<b>22<sup>5,7,10</sup></b>	130 bp, 215 bp	430 bp	53	<b>DRB4*01:01:01:01-01:36, DRB4*02:01N, DRB4*03:01N</b>
<b>23</b>	175 bp	430 bp	51	<b>DRB5*01:01:01-01:22, DRB5*02:02-02:09</b>
<b>24<sup>13</sup></b>	-	-		<b>Negative control</b>

<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 screening SSP subtypings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length. Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers, e.g. the primers in wells 3, 18, 19 and 20.

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

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

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

<sup>2</sup>The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the

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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 expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

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

<sup>5</sup>HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

<sup>6</sup>Individual alleles can give rise to two differently sized specific PCR fragments in primer mix 1, 3, 5 to 11, 13, 14, 16 to 21.

<sup>7</sup>Primer mixes 1, 3, 16, 19 and 22 have a tendency to giving rise to primer oligomer formation.

<sup>8</sup>Primer mixes 3, 4 and 9 may have tendencies of unspecific amplification.

<sup>9</sup>Primer mix 19 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>10</sup>The DRB4\*01:03:01:02N allele is amplified by the primer pairs in wells 18 and 22, whereas the DRB4\*02:01N and DRB4\*03:01N null alleles are only amplified by the primer pairs in well 22.

<sup>11</sup>Due to sharing of sequence motifs in codon 38 and 47, DRB3\*01:14 will also be amplified in primer mixes 5, 6, 17, and DRB3\*01:23 and \*02:32 will be amplified in primer mix 5, in addition to primer mix 21.

<sup>12</sup>Due to sharing of sequence motifs, DRB3\*02:27 is amplified by the primer pairs in well 15 in addition to primer mix 21.

<sup>13</sup>Primer mix 24 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 430 base pairs.

‘w’, might be weakly amplified.

‘?’, nucleotide sequence of the primer matching region not known.

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**PRIMER SPECIFICATION**

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	210 235 260	200	200 230	210	125 230	75 210	85 210	100 175	200 230	170 210 250	90 135 165 195	180
Length of int. pos. control <sup>1</sup>	<b>515</b>	430	430	430	<b>515</b>	430	430	430	430	<b>515</b>	430	430
5'-primer(s) <sup>2</sup>	12(124) 5'-A.T 3'	14(129) 5'-gAA 3'	11(121) 5'-CTg 3'	11(119) 5'-gCT 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	13(125) 5'-ACA 3'	10(118) 5'-AgA 3'	15(133) 5'-gTT 3'	26(165) 5'-TAT 3'	26(164) 5'-gTA 3'
	14(129) 5'-gAA 3'	13(126) 5'-AgA 3'	13(126) 5'-AAg 3'	47(227) 5'-gTT 3'	15(133) 5'-gTT 3'		13(125) 5'-ACC 3'	13(127) 5'-gTA 3'	15(133) 5'-gCT 3'	36(196) 5'-AgA 3'	30(178) 5'-gCg 3'	
		13(126) 5'-AAg 3'	13(126) 5'-Agg 3'				13(125) 5'-ATA 3'	13(127) 5'-ATA 3'	15(133) 5'-gTT 3'	58(261) 5'-gAg 3'		
		13(126) 5'-Agg 3'					13(125) 5'-gTC 3'	13(127) 5'-ATA 3'	30(178) 5'-gCg 3'			
								15(133) 5'-gTT 3'				
								30(178) 5'-gCg 3'				
3'-primer(s) <sup>3</sup>	66(286) 5'-gAg 3'	66(286) 5'-gAT 3'	66(286) 5'-gAT 3'	66(286) 5'-gAg 3'	73(305) 5'-ggC 3'	26(164) 5'-ggT 3'	28(171) 5'-CTC 3'	32(184) 5'-gTg 3'	70(298) 5'-CTC 3'	58(260) 5'-CCT 3'	57(257) 5'-CgA 3'	73(307) 5'-CgC 3'
	66(286) 5'-gAg 3'	66(286) 5'-gAT 3'	66(286) 5'-gAA 3'	73(305) 5'-ggC 3'	66(286) 5'-gAT 3'	69(295) 5'-CTg 3'	58(260) 5'-Cgg 3'	73(305) 5'-ggC 3'	73(307) 5'-CAg 3'	73(305) 5'-ggC 3'	74(308) 5'-CCT 3'	
	66(286) 5'-gAT 3'	66(286) 5'-gAT 3'	70(296) 5'-TgT 3'	73(305) 5'-ggC 3'	71(299) 5'-gCT 3'			77(317) 5'-AAT 3'	86(344) 5'-CAC 3'	77(319) 5'-CAC 3'		
	70(297) 5'-CTg 3'	69(295) 5'-Tg 3'	71(301) 5'-ggC 3'	73(306) 5'-Tgg 3'				77(319) 5'-CgC 3'				
	71(299) 5'-gCg 3'	69(295) 5'-CTg 3'	71(301) 5'-gCC 3'	74(308) 5'-CCC 3'				77(319) 5'-CAA 3'				
	77(317) 5'-AgT 3'	71(299) 5'-gCT 3'		74(310) 5'-CAA 3'				77(319) 5'-CAC 3'				
	86(344) 5'-CCA 3'	71(299) 5'-gCg 3'		77(317) 5'-AgT 3'								
		71(301) 5'-Cg 3'										
		73(305) 5'-ggC 3'										
		77(317) 5'-AgT 3'										
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

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Well No.	13	14	15	16	17	18	19	20	21	22	23
Length of spec.	100	85	220	200	175	100	110	110	160	130	175
PCR product	170	110		225	240	150	145	150	240	215	
						195	170	180			
						240		220			
Length of int. pos. control <sup>1</sup>	430	430	430	430	430	430	430	430	430	430	430
5'-primer(s) <sup>2</sup>	13(125) 5'-gTC 3'	12(124) 5'-Cgg 3'	10(116) 5'-gCT 3'	10(116) 5'-gCT 3'	13(125) 5'-gTC 3'	5(101) 5'-CAA 3'	26(164) 5'-gTA 3'	13(125) 5'-gTC 3'	10(116) 5'-gCT 3'	28(170) 5'-gAT 3'	13(125) 5'-gTA 3'
	15(133) 5'-gTC 3'	15(133) 5'-gTT 3'	12(122) 5'-TAT 3'	12(122) 5'-TAT 3'	13(125) 5'-gTg 3'	37(197) 5'-gTT 3'	34(189) 5'-CAg 3'	34(189) 5'-CAg 3'	10(116) 5'-gCT 3'	28(170) 5'-gAg 3'	
	38(200) 5'-CgT 3'		13(125) 5'-gTC 3'	12(123) 5'-ACA 3'	114(429) 5'-CTg 3'	37(197) 5'-gTA 3'		36(196) 5'-AgC 3'	37(199) 5'-TCC 3'	105(401) 5'-AAA 3'	
				13(125) 5'-gTC 3'							
				13(125) 5'-gTg 3'							
				15(133) 5'-gTC 3'							
				15(133) 5'-gTT 3'							
3'-primer(s) <sup>3</sup>	58(260) 5'-CCT 3'	28(171) 5'-CTC 3'	69(295) 5'-gTC 3'	66(286) 5'-gAA 3'	58(260) 5'-Cgg 3'	42(213) 5'-TCA 3'	57(257) 5'-CAg 3'	57(257) 5'-CAg 3'	51(239) 5'-CCC 3'	86(346) 5'-CTC 3'	57(258) 5'-gCg 3'
	58(260) 5'-CCT 3'	29(175) 5'-gTg 3'	71(299) 5'-ACT 3'	70(298) 5'-CTC 3'	58(260) 5'-CAg 3'	57(257) 5'-CAg 3'	69(295) 5'-CTg 3'	59(265) 5'-gTg 3'	77(317) 5'-AAT 3'	86(346) 5'-CTT 3'	58(260) 5'-CCT 3'
	58(260) 5'-CCT 3'	37(199) 5'-CAg 3'	71(299) 5'-gCT 3'	70(298) 5'-CgC 3'	181(630) 5'-CTT 3'	70(298) 5'-CgC 3'	70(296) 5'-TCC 3'	70(296) 5'-TCC 3'		134(490) 5'-gCT 3'	
	58(261) 5'-TCT 3'		73(307) 5'-CgT 3'					73(307) 5'-CAg 3'			
Well No.	13	14	15	16	17	18	19	20	21	22	23

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

<sup>2</sup>The nucleotide position 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 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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CELL LINE VALIDATION SHEET																				
DR low resolution primer set <sup>3</sup>																				
				Well <sup>2</sup>																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				Prod. No.:	201673401	201673402	201673403	201673404	201673405	201673406	201673407	201673408	201673409	201673410	201673411	201673412	201673413	201673414	201673415	201673416
IHCW cell line <sup>1</sup>		DRB1																		
1	9001	SA	*01:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07	*08:03	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-
7	9020	QBL	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
15	9075	DKB	*09:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
16	9037	SWEIG007	*11:01		-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+
17	9282	CTM3953540	*03:01	*13:01	-	-	-	-	+	+	-	-	-	-	-	-	-	+	+	+
18	9257	32367	*09:01	*11:01	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+
19	9038	BM16	*12:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
20	9059	SLE005	*13:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
21	9064	AMALA	*14:02		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*13:02	*14:54	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
23	9124	IHL	*08:03	*14:14	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
24	9035	JBUSH	*11:01		-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
26	9285	WT49	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
30	9021	RSH	*03:02		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+
38	9099	LZL	*14:02		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
41	9055	H0301	*13:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
44	9057	TEM	*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
46	9013	SCHU	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04	*12:01	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
48	9303	TER-ND	*01:03		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.103.48/12 – including *Taq* pol., IFU-01  
 101.103.48u/12u – without *Taq* pol., IFU-02

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Lot No.: **4E9**

Lot-specific information

CELL LINE VALIDATION SHEET											
DR low resolution primer set <sup>3</sup>											
				Well <sup>2</sup>							
				17	18	19	20	21	22	23	
				Prod. No.:	201673417	201673418	201673419	201673420	201673421	201673422	201673423
IHCW cell line <sup>1</sup>			DRB1								
1	9001	SA	*01:01	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	-	-	-	+	+
3	9011	E4181324	*15:02		-	-	-	-	-	-	+
4	9275	GU373	*03:01		+	-	-	-	+	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	+
6	9353	SM	*04:07	*08:03	-	-	-	-	-	+	-
7	9020	QBL	*03:01		+	-	-	-	+	-	-
8	9025	DEU	*04:01		-	-	-	-	-	+	-
9	9026	YAR	*04:02		-	-	-	-	-	+	-
10	9107	LKT3	*04:05		-	-	-	-	-	+	-
11	9051	PITOUT	*07:01		-	-	-	-	-	+	-
12	9052	DBB	*07:01		-	+	-	-	-	+	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	+	-	-	+	-
16	9037	SWEIG007	*11:01		-	-	-	-	+	-	-
17	9282	CTM3953540	*03:01	*13:01	+	-	-	-	+	-	-
18	9257	32367	*09:01	*11:01	-	-	+	-	+	+	-
19	9038	BM16	*12:01		-	-	-	-	+	-	-
20	9059	SLE005	*13:02		+	-	-	-	+	-	-
21	9064	AMALA	*14:02		+	-	+	-	+	-	-
22	9056	KOSE	*13:02	*14:54	+	+	+	+	+	-	-
23	9124	IHL	*08:03	*14:14	+	-	+	+	+	-	-
24	9035	JBUSH	*11:01		-	-	-	-	+	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	+	-
26	9285	WT49	*03:01		+	-	-	-	+	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	+	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	+	-
29	9050	MOU	*07:01		-	-	-	-	-	+	-
30	9021	RSH	*03:02		+	-	-	-	+	-	-
31	9019	DUCAF	*03:01		+	-	-	-	+	-	-
32	9297	HAG	*13:03		+	-	-	-	+	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	+	-
34	9104	DHIF	*11:01		-	-	-	-	+	-	-
35	9302	SSTO	*04:03		-	-	-	-	-	+	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	+	-
37	9065	HHKB	*13:01		+	-	-	-	+	-	-
38	9099	LZL	*14:02		+	-	+	-	+	-	-
39	9315	CML	*03:01	*04:01	+	-	-	-	+	+	-
40	9134	WHONP199	*07:01	*09:01	-	-	+	-	-	+	-
41	9055	H0301	*13:02		+	-	-	-	+	-	-
42	9066	TAB089	*08:03		-	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	+	-	-	+	-
44	9057	TEM	*14:01		+	+	+	+	+	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	+	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	+
47	9045	TUBO	*11:04	*12:01	-	-	-	-	+	-	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-

**101.103.48/12 – including *Taq* pol., IFU-01**  
**101.103.48u/12u – without *Taq* pol., IFU-02**

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**Lot No.: 4E9**

**Lot-specific information**

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

<sup>2</sup>The DRB4\*01:03:01:02N allele is amplified by primer mix 18 in the 9052 (DBB) cell line.

<sup>3</sup>The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

Additional 5'- and 3'-primers in primer solutions 4, 9, 11, 12 and 18 were tested by separately adding one or two 3'-primers, respectively one or three 5'-primers.

Additional 5'-primers in primer solutions 6, 15 and 16 were tested by separately adding one 3'-primer. Additional 3'-primers in primer solutions 1, 3, 10 and 20 were tested by separately adding one or more 5'-primers.

One or more of the 5'-primers in primer solution 1, 3, 4, 8, 9, 10, 13 to 17, 20 and 22 were not possible to test. One or more of the 3'-primers in primer solution 1, 3 to 6, 9, 13, 15 and 22 were not possible to test.



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Lot No.: **4E9**

Lot-specific information

**ADDRESSES:**

**Manufacturer:**

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

**Tel:** +46-8-717 88 27

**Fax:** +46-8-717 88 18

**E-mail:** [olerup-se@caredx.com](mailto:olerup-se@caredx.com)

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

**Distributed by:**

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

**Tel:** +43-1-710 15 00

**Fax:** +43-1-710 15 00 10

**E-mail:** [olerup-at@caredx.com](mailto:olerup-at@caredx.com)

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

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

**Tel:** 1-877-OLERUP1

**Fax:** 610-344-7989

**E-mail:** [olerup-us@caredx.com](mailto:olerup-us@caredx.com)

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

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