101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8 **Lot-specific information**

Olerup SSP® DQA-DQB-DR Enhanced SSP Combi Tray

Product number:	**101.713-24/06 – including *Taq* pol.** **101.713-24u/06u – without *Taq* pol.**
Lot number:	**5D8**
Expiry date:	**2018-08-01**
Number of tests:	**24 tests – Product No. 101.713-24/24u** **6 tests – Product No. 101.713-06/06u**
Number of wells per test:	**95 +1**
Storage - pre-aliquoted primers:	**dark at -20ºC**
- PCR Master Mix:	**-20ºC**
- Adhesive PCR seals	**RT**
- Product Insert	**RT**

This Product Description is only valid for Lot No. 5D8.

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

CHANGES COMPARED TO THE PREVIOUS *OLERUP* SSP® DQA-DQB-DR ENHANCED SSP COMBI TRAY LOT (17X)

The extended Class II tray features:

• High resolution DQA1 alleles.

• DRB1, DRB345, and DQB1 low resolution typing with the following enhancements:
- Resolution of the DRB4*01:03N and DRB5*01:08N null alleles.
- Resolution of the DRB3*01, DRB3*02, DRB3*03 alleles, i.e. the common DR52 groups.
- Resolution of the DRB5*01 and DRB5*02 alleles, i.e. the common DR51 groups.
- Enhanced DRB1 resolution of common DRB1*04 alleles: DRB1*04:01, 04:02, 04:03, 04:05 and 04:07 alleles.
- Enhanced DRB1 resolution of DRB1*14 alleles: DRB1*14:01 and 14:54.
- Enhanced DQB1 resolution of common DQB1*06 alleles: DQB1*06:01, 06:02, 06:03, 06:04 and 06:09.

The DQA1 low resolution specificity and interpretation tables have been updated for the HLA-DQA1 alleles described since the previous *Olerup* SSP® DQA-DQB-DR Enhanced SSP Combi Tray Tray lot was made **(Lot No. 17X)**. The kit design is based on IMGT/HLA database 3.22.0.

The DQA1 low primer set is unchanged compared to the previous lot.

Lot No.: 5D8 **Lot-specific information**

The DQ low resolution specificity and interpretation tables have been updated for the HLA-DQB1 alleles described since the previous *Olerup* SSP® DQA-DQB-DR Enhanced SSP Combi Tray Tray lot was made **(Lot No. 17X)**. The kit design is based on IMGT/HLA database 3.22.0.

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

Well	5'-primer	3'-primer	rationale
32	Added	-	5'-primer added for the DQB1*05:105 allele.
33	-	Added	3'-primer added for the DQB1*06:01:13 allele.
35	-	Added	3'-primer added for the DQB1*03:154 allele.
36	Added	-	5'-primer added for the DQB1*03:02:16 allele.
38	-	Added	3'-primer added for the DQB1*03:189 allele.
40	Exchanged	Exchanged	Primer pair exchanged for improved resolution of DQB1*04 alleles, strength of control band has been optimized.
41	-	Added	3'-primer added for the DQB1*05:98 allele.
44	Added	-	5'-primer added for the DQB1*06:169 allele.
46	-	Added	3'-primer added for the DQB1*06:172 allele.

The DR low resolution specificity and interpretation tables have been updated for the HLA-DRB1 alleles described since the previous *Olerup* SSP® DQA-DQB-DR Enhanced SSP Combi Tray Tray lot was made **(Lot No. 17X)**. The kit design is based on IMGT/HLA database 3.22.0.

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

Well	5'-primer	3'-primer	rationale
51	Added	Added	5'-primer added for improved amplification of the DRB1*15:69, 3'-primers added for the DRB1*15:127 and DRB1*15:115N alleles.
52	Added	-	5'-primer added for the DRB1*12:57 allele.
53	-	Added	3'-primer added for the allelic resolution of the DRB1*03:125 allele.
54	-	Added	3'-primer added for the DRB1*13:193 allele.
57	Added	Added	5'-primer added for the DRB1*07:64, 3'-primer added for the DRB1*07:61 alleles.
59	Added	-	5'-primer added for the DRB1*09:23 allele.
60	-	Added	3'-primer added for the DRB1*10:11 allele.
62	-	Added	3'-primer added for the DRB1*12:58 allele.
64	Added	-	5'-primer added for the DRB1*13:183 allele.
69	Added	-	5'-primer added for the DRB1*08:57 allele.
70	-	-	Exchanged positive control primer pair for decreased tendency of primer oligomer formation.

Lot No.: 5D8 **Lot-specific information**

Change in revision R01 compared to R00:
1. Primer mix 53 does not amplify the DRB1*03:97 and *11:53 alleles. This has been corrected in the Specificity and Interpretation Tables.
Change in revision R02 compared to R01:
1. Primer mix 69 does not amplify the DRB1*08:14 allele. This has been corrected in the Specificity and Interpretation Tables.
Change in revision R03 compared to R02:
1. Due to sharing of sequence motifs in codon 38 and 47, DRB3*01:23 will be amplified in primer mix 53, in addition to primer mix 77.
2. The DRB1*13:02:02 allele is amplified in primer mix 54.
The Specificity and Interpretation Tables have been changed.
Changes in revision R04 compared to R03:
1. Primer mix 51 does not amplify the DRB1*16:05:01-16:05:02 and 16:07 alleles. This has been corrected in the Specificity and Interpretation Tables.
Change in revision R05 compared to R04:
1. Primer mix 54 does not amplify the DRB1*14:137N and 14:152N alleles. Primer mix 63 does not amplify the DRB1*14:137N allele. This has been corrected in the Specificity and Interpretation Tables.

Lot No.: 5D8 **Lot-specific information**

Well **96** contains Negative Control primer pairs, that will amplify more than 95% of the *Olerup* SSP® HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

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

Length of PCR product	**105**	**200**	**105**	**80**	**75**	**80**	**85**
5'-primer[1]	**164**	**340**	**440**	**45**	**45**	**43**	**36**
	5'-CAC3'	5'-Agg3'	5'-TTA3'	5'-Tgg3'	5'-Tgg3'	5'-Tgg3'	5'-TAC3'
							36
							5'-TAT3'
3'-primer[2]	**231**	**2nd I**	**507**	**59**	**58**	**57**	**47**
	5'-TgC3'	5'-AAA3'	5'-TTg3'	5'-CTC3'	5'-ggC3'	5'-CTC3'	5'-ACA3'
							48
							5'-gCA3'
							48
							5'-gCC3'
							52
							5'-TgT3'
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

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

Lot No.: 5D8 **Lot-specific information**

PRODUCT DESCRIPTION

DQA-DQB-DR Enhanced SSP Combi Tray

CONTENT

- The primer set contains 5'- and 3'-primers for identifying the DQA1*01:01 to DQA1*06:02 alleles.
- The primer set contains 5'- and 3'-primers for grouping the DQB1 alleles into the serological groups DQ2 to DQ9 as well as 5'- and 3'-primers for enhanced resolution of the DQB1*06:01, DQB1*06:02, DQB1*06:03, DQB1*06:04 and DQB1*06:09 alleles.
- The primer set contains 5'- and 3'-primers for grouping the DRB1*01:01 to DRB1*10:16 alleles into the corresponding serological groups DR1 to DR18, 5'- and 3'-primers for the resolution of the DRB4*01:03N and DRB5*01:08N null alleles, enhanced resolution of common DR52 groups DRB3*01, DRB3*02 and DRB3*03 alleles, enhanced resolution of the DRB5*01 and DRB5*02 alleles, enhanced resolution of the DRB1*04:01, 04:02, 04:03, 04:05 and 04:07 alleles as well as resolution of the DRB1*14:01 and 14:54 alleles.

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	NC

The 96 well PCR plate is marked with 'DQA-DQB-DR' in silver/gray ink.
Well No. 1 is marked with the Lot No. '5D8'.
Wells 1 to 31 – DQA1 high resolution primers.
Wells 32 to 48 – DQB1 resolution primers.
Wells 49 to 95 – DRB resolution primers.
Well 96 – Negative Control.

Lot No.: 5D8 **Lot-specific information**

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

INTERPRETATION

Only DQA1 alleles will be amplified by the 31 wells of the DQA1 resolution primer set, **wells 1 to 31**. Thus, the interpretation of DQA1 typings is not influenced by the DQA2 gene.
For further details see Specificity Table.

Only the DQB1 alleles will be amplified by the 17 wells of the DQB1 resolution primer set, **wells 32 to 48**. Thus, the interpretation of DQB1 resolution typings is not influenced by the DQB2 and DQB3 genes.
For further details see Specificity Table.

Only DRB alleles will be amplified by the 47 wells the DRB resolution primer set, **wells 49 to 95**. Thus, the interpretation of DRB resolution typings is not influenced by other HLA class II genes.

UNIQUELY IDENTIFIED ALLELES

All the DQA1 alleles, i.e. **DQA1*01:01 to 01:12, DQA1*02:01, DQA1*03:01 to 03:03, DQA1*04:01 to DQA1*04:04, DQA1*05:01 to 05:11 and DQA1*06:01 to DQA1*06:02**, recognized by the HLA Nomenclature Committee in October 2015[1,2] will give rise to unique amplification patterns by the primers in the DQA1 primer set, **wells 1 to 31.**
The DQA1 typing kit cannot distinguish the DQA1*01:01:01-01:01:03 alleles, the DQA1*01:02:01:01-01:02:03 alleles, the DQA1*01:03:01:01-01:03:01:02 alleles, the DQA1*01:04:01:01-01:04:02 alleles, the DQA1 *01:05:01-01:05:02, the DQA1*03:01:01 and 03:01:03 alleles, the DQA1*03:03:01-03:03:02 alleles, the DQA1*04:01:02:01-04:01:02:02, the DQA1*05:01:01:01-05:01:02 alleles, the DQA1*05:05:01:01-05:05:01:03 alleles and the DQA1*06:01:01-06:01:02 alleles.

All the DQB1 alleles, i.e. **DQB1*05:01:01:01 to 05:109, DQB1*06:01:01 to 06:197, DQB1*02:01:01 to 02:64, DQB1*03:01:01:01 to 03:215 and DQB1*04:01:01 to 04:32**, recognized by the HLA Nomenclature Committee in October 2015[1,2] will be amplified by the primers in the DQB1 primer set, **wells 32 to 48.** The DQB1 alleles will be grouped into their corresponding serological specificities[3,4], i.e.:

DQ5(1) =	DQB1*05:01:01-05:05
DQ6(1) =	DQB1*06:01:01-06:44
DQ2 =	DQB1*02:01:01-02:05
DQ3 =	DQB1*03:06, 03:10, 03:14
DQ7(3) =	DQB1*03:01:01-03:01:06, 03:04, 03:09, 03:13, 03:16, 03:19
DQ8(3) =	DQB1*03:02:01-03:02:05, 03:05:01-03:05:04, 03:07-03:08, 03:11, 03:18
DQ9(3) =	DQB1*03:03:02:01-03:03:04, 03:12, 03:15, 03:17, 03:20
DQ4 =	DQB1*04:01-04:02

Lot No.: 5D8 **Lot-specific information**

All the DRB1, DRB3, DRB4 and DRB5 alleles, i.e. **DRB1*01:01:01 to 10:16, DRB3*01:01:02:01 to DRB3*03:03, DRB4*01:01:01:01 to DRB4*03:01N, DRB5*01:01:01 to DRB5*02:06**, recognized by the HLA Nomenclature Committee in October 2015[1,2] will be amplified by the primers in the DRB low resolution SSP primer set, **wells 49 to 95**. The DRB alleles will be grouped into their corresponding serological specificities.

[1]DQA1, DQB1 and DRB1, DRB3, DRB4 and DRB5 alleles listed on the IMGT/HLA web page 2015-October-10, release 3.22.0, www.ebi.ac.uk/imgt/hla.
[2]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.
[3]The DQA1, DQB1 and the DRB1, DRB3, DRB4 and DRB5 alleles will be grouped into their corresponding serological specificities, except that following alleles give rise to identical amplification patterns:

Alleles
DQB1*05:98, 06:169

These alleles may be separated by the respective high resolution kits.

[4]The serological split of the DQB1*05:05 to 05:109, DQB1*06:06 to 06:07, 06:10, 06:13, 06:15 to 06:24 and 06:27 to 06:197, the DQB1*02:04 to 02:64 the DQB1*03:02:02 to 03:02:04, 03:03:03, 03:05:02, 03:07 to 03:09 and 03:11 to 03:215 and the DQB1*04:03:01 to 04:32 alleles is not known. The grouping of not serologically defined alleles is taken from the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.

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101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8

Lot-specific information

SPECIFICITY TABLE

DQA1 high resolution primer set

Specificities and sizes of the PCR products of the 31 primer mixes used for DQA1 SSP typing

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	Amplified DQA1 alleles[3]
1	145 bp	**515 bp**	*01:01:01-01:01:03, 01:04:01:01-01:05:02, 01:07Q, 01:12
2	170 bp	**515 bp**	*01:01:01-01:02:04, 01:04:01:01-01:09, 01:11-01:12
3[6]	145 bp	430 bp	*01:02:01:01-01:03:01:02, 01:06, 01:08-01:11
4[6]	170 bp	430 bp	*01:03:01:01-01:03:01:02, 01:10
5	220 bp	430 bp	*01:04:01:01-01:05:02, 01:06[?], 01:07Q, 01:08[?]-01:09[?], 01:12[?]
6[4]	100 bp	430 bp	*01:04:01:01-01:04:02, 01:06[?], 01:07Q, 01:08[?]-01:09[?], 01:12[?]
7[4]	95 bp	430 bp	*01:06
8[4]	65 bp	430 bp	*01:01:01-01:02:03, 01:03:01:01-01:03:01:02, 01:06[?], 01:08[?]-01:09[?], 01:10-01:11, 01:12[?], 02:01, 03:01:01, 03:01:03-03:03:02, 04:01:01-04:04, 05:01:01:01-05:11, 06:01:01-06:02
9	175 bp	430 bp	*02:01
10	185 bp	430 bp	*03:01:01, 03:01:03-03:03:02
11	215 bp	430 bp	*03:02
12	225 bp	**515 bp**	*03:02-03:03:02
13	225 bp	**515 bp**	*01:01:01-01:12, 02:01, 03:01:01, 03:01:03, 04:01:01, 04:02-04:04, 05:01:01:01-05:11, 06:01:01-06:02
14[4,6]	125 bp	430 bp	*04:01:01-04:02, 04:04, 05:01:01:01-05:11
15	165 bp	430 bp	*05:01:01:01-05:09, 05:11
16[4]	95 bp	**515 bp**	*05:02, 05:07
17	200 bp	430 bp	*05:01:01:01-05:01:02, 05:02[?], 05:04[?], 05:05:01:01-05:05:01:03, 05:08-05:11
18	200 bp	430 bp	*05:02[?], 05:03, 05:04[?], 05:06-05:07
19	205 bp	430 bp	*05:01:01:01-05:03, 05:05:01:01-05:09, 05:11
20	135 bp	430 bp	*05:04
21[4]	100 bp, 210 bp	430 bp	*01:09, 05:02[?], 05:04[?], 05:05:01:01-05:05:01:03, 05:08-05:09, 05:10[?], 05:11
22[4,5]	120 bp, 215 bp	**515 bp**	*01:10, 06:01:01-06:02
23[4]	85 bp	430 bp	*04:01:01-04:04, 06:01:01-06:02
24	220 bp	430 bp	*01:01:01-01:12, 02:01[w], 03:01:01, 03:01:03-03:03:02, 04:01:01-04:04, 05:01:01:01-05:01:02, 05:02[?], 05:03, 05:04[?], 05:06-05:07, 05:10[?], 06:01:01-06:02

Lot No.: 5D8 **Lot-specific information**

25[4]	80 bp, 175 bp	430 bp	*01:07Q, 05:09
26	160 bp	430 bp	*04:02, 05:10
27[4,6]	90 bp, 135 bp	430 bp	*01:11, 04:03N
28[4]	105 bp	430 bp	*04:04
29	150 bp, 250 bp	430 bp	*01:08, 01:12, 06:02
30[4]	115 bp, 215 bp	430 bp	*05:06, 05:11
31	135 bp	430 bp	*05:08

[1]Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DQA1 SSP typings.
When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.
Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.
PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.
PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.
Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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.
[2]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.
[3]For several DQB1 alleles 1st and/or 3rd exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.
[4]Specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.
[5]Primer mix 22 may have tendencies of unspecific amplifications.
[6]Primer mixes 3, 4 and 14 may give rise to a lower yield of HLA-specific PCR product than the other DQA1 primer mixes.
'w', may be weakly amplified.
'?', nucleotide sequence information not available for the primer matching sequence.

Lot No.: 5D8

Lot-specific information

SPECIFICITY TABLE

DQB1 resolution primer set

Specificities and sizes of the PCR products of the 17 primer mixes of the DQB1 resolution primer set

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	DQ serology[3]	Amplified DQB1 alleles[4]
32	135 bp, 230 bp	**515 bp**	5	*05:01:01:01-05:01:15, 05:01:17-05:59, 05:61-05:81, 05:83-05:97, 05:99-05:109
33	140 bp,185 bp, 220 bp, 270 bp	**515 bp**	1, 5, 6	*06:01:01-06:145, 06:147-06:168, 06:170-06:197
34	210 bp	430 bp	2	*02:01:01-02:64
35[7]	135 bp, 220 bp	**515 bp**	3, 7	*03:01:01:01-03:01:31, 03:04:01-03:04:02, 03:09-03:10:02, 03:13-03:14:02, 03:16, 03:19, 03:21-03:22, 03:24, 03:27-03:29, 03:35-03:36, 03:42, 03:44, 03:46-03:60, 03:69, 03:71, 03:73, 03:75-03:77, 03:80, 03:82-03:84N, 03:92-03:94, 03:101-03:103, 03:108-03:109, 03:114-03:116, 03:118N-03:122, 03:127-03:131, 03:133-03:135, 03:138-03:140, 03:142-03:144, 03:147-03:148, 03:150, 03:152, 03:154, 03:157-03:160, 03:162-03:167, 03:169-03:173, 03:180, 03:182-03:183, 03:186-03:188, 03:191-03:198, 03:201-03:202, 03:206-03:208
36[5]	130 bp, 220 bp	**515 bp**	6, 8	*03:02:01-03:02:19, 03:05:01-03:05:04, 03:07-03:08, 03:11, 03:18, 03:32, 03:37, 03:45, 03:61, 03:63-03:64, 03:66N-03:68, 03:70, 03:85, 03:104, 03:106-03:107, 03:125, 03:132, 03:146, 03:153, 03:161, 03:174-03:175, 03:178-03:179, 03:181, 03:184-03:185, 03:189-03:190, 03:199, 03:203-03:205, 03:210-03:211, 03:213N-03:215, 06:29, 06:123, 06:139
37[5,7]	135 bp	**515 bp**	2, 3, 6, 9	*02:03, 03:03:02:01-03:03:13, 03:06, 03:12, 03:15, 03:20, 03:25-03:26, 03:30-03:31, 03:33-03:34, 03:38-03:41, 03:43, 03:65, 03:74, 03:79, 03:86-03:91Q, 03:95N-03:99Q, 03:104-03:105, 03:111-03:113, 03:117, 03:123-03:124, 03:126, 03:136-03:137, 03:141, 03:145, 03:149, 03:155-03:156, 03:168, 03:176-03:177, 03:200, 03:209, 03:212, 04:03:01-04:03:02, 06:03:10, 06:51:01, 06:66, 06:96, 06:168, 06:172
38[5,6,7]	85 bp	**515 bp**	3, 7, 8, 9	*03:01:01:01-03:01:06, 03:01:08-03:02:17, 03:02:19-03:05:04, 03:07, 03:09-03:24, 03:26-03:57, 03:59-03:64, 03:66N-03:103, 03:105-03:106, 03:108-03:136, 03:138-03:193, 03:195-03:215
39	160 bp,	430 bp	4	*03:132, 04:01:01-04:02:07,

Lot No.: 5D8 **Lot-specific information**

	205 bp			04:02:09-04:29, 04:31-04:32
40	225 bp	430 bp	4	*04:01:01-04:03:02, 04:06-04:21, 04:22[w], 04:23, 04:25N-04:32
41	215 bp	430 bp	5	*05:01:01:01-05:03:09, 05:03:11-05:03:17, 05:05:01-05:33, 05:35-05:43, 05:45-05:51, 05:53, 05:55-05:71, 05:73-05:76, 05:78-05:104, 05:106-05:109, 06:156, 06:162, 06:169
42	185 bp	430 bp	8, 9	*03:03:11, 03:05:01, 03:05:03, 03:17:01, 03:61, 03:72, 03:100, 03:181
43[7]	185 bp	430 bp	4, 7, 8, 9	*03:01:01:01-03:01:01:03, 03:01:03-03:01:07, 03:01:09-03:02:02, 03:02:04-03:02:12, 03:02:14-03:03:02:04, 03:03:04-03:04:02, 03:05:03-03:17:01, 03:18-03:19, 03:21-03:22, 03:23:02-03:36, 03:38-03:60, 03:62-03:71, 03:74, 03:76-03:98, 03:101-03:103, 03:106-03:108, 03:110-03:111, 03:113-03:117, 03:119-03:131, 03:133-03:153, 03:155, 03:157-03:161, 03:163-03:180, 03:182, 03:184-03:188, 03:190-03:203, 03:205-03:215, 04:01:03
44[8]	220 bp	**515 bp**	6	*05:73, 05:98, 06:01:01-06:01:12, 06:01:14-06:01:15, 06:23, 06:35, 06:43, 06:45, 06:53-06:57, 06:82, 06:98-06:105, 06:108, 06:120, 06:132, 06:140, 06:153, 06:156-06:157, 06:162, 06:169, 06:177, 06:181, 06:194
45	190 bp	430 bp	6	*04:10, 06:02:01-06:02:25, 06:14:01-06:16, 06:19:01-06:20, 06:23-06:24, 06:33, 06:37, 06:46-06:50, 06:51:02, 06:68, 06:70-06:84, 06:95, 06:97, 06:107, 06:109, 06:111-06:117, 06:122, 06:124-06:127, 06:136-06:138, 06:146:01-06:147, 06:150-06:152, 06:156, 06:159, 06:161-06:163, 06:166, 06:173-06:175, 06:178-06:179N, 06:182-06:183, 06:188, 06:192, 06:197
46[5]	115 bp, 160 bp, 210 bp	**515 bp**	6	*03:38, 06:03:01-06:03:21, 06:08:01-06:08:03, 06:14:01-06:14:03, 06:21, 06:27:01-06:28, 06:30-06:32:02, 06:40-06:41, 06:44, 06:59-06:65, 06:67, 06:87, 06:90-06:92, 06:110, 06:128, 06:133-06:134, 06:141, 06:143-06:145, 06:148, 06:154, 06:168, 06:170, 06:172, 06:184-06:185, 06:187, 06:190-06:191, 06:195-06:196
47	210 bp	**515 bp**	6	*06:04:01-06:04:10, 06:07:01-06:07:02, 06:17, 06:21, 06:25, 06:34, 06:36, 06:38-06:39, 06:52, 06:58, 06:69, 06:85-06:86, 06:89, 06:92-06:93, 06:135, 06:149, 06:155, 06:158N, 06:160, 06:164, 06:172, 06:180, 06:193N

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48	210 bp	430 bp	5, 6	*06:05:01, 06:05:02?-06:06?, 06:09:01-06:09:06, 06:12, 06:15:01-06:15:02, 06:22:01-06:22:03, 06:42, 06:46, 06:66, 06:88, 06:94, 06:118:01-06:119, 06:121, 06:142, 06:189

[1]Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DQB1 resolution SSP typings.
When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.
Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.
PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.
PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.
Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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.
[2]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 32 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases. In the presence of a specific amplification the intensity of the control band often decreases.
[3]The serological split of the DQB1*05:05 to 05:109, DQB1*06:06 to 06:07, 06:10, 06:13, 06:15 to 06:24 and 06:27 to 06:197, the DQB1*02:04 to 02:64 the DQB1*03:02:02 to 03:02:04, 03:03:03, 03:05:02, 03:07 to 03:09 and 03:11 to 03:215 and the DQB1*04:03:01 to 04:32 alleles is not known. The grouping of not serologically defined alleles is taken from the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170.
[4]For several DQB1 alleles 1st and/or 3rd exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.
[5]Specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.
[6]The primer pairs in well 38 will in some samples give rise to two HLA-specific PCR fragments.
[7]Primer mixes 35, 38 and 43 may give a most pronounced lower yield of HLA-specific PCR products than the other DQB1 primer mixes.
[8]Primer mix 44 may have tendency of unspecific amplification.
'ser', serological HLA specificity
'w', may be weakly amplified.
'?', nucleotide sequence information not available for the primer matching sequence.

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Lot-specific information

SPECIFICITY TABLE

DRB resolution primer set

Specificities and sizes of the PCR products of the 47+1 primer mixes used for DRB resolution primer set

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	DR serology[3]	Amplified HLA-DRB alleles[4,6]
49[6,7]	210 bp, 235 bp, 260 bp	**515 bp**	1	*01:01:01-01:02:12, 01:04-01:38, 01:40N-01:72
50	200 bp	430 bp	1/103	*01:03, 01:39N, 01:42, 01:61
51[6,8]	210 bp, 230 bp	430 bp	2, 15, 16	*15:01:01:01-15:127
52[8]	210 bp	430 bp	11, 16	*11:30, 12:57, 16:01:01-16:05:02, 16:07-16:37
53[5,6,10]	125 bp, 225 bp	430 bp	3, 11, 13, 14, 17, 18	*03:01:01:01-03:16, 03:18-03:26, 03:28-03:34, 03:36-03:96, 03:98-03:125, 11:07, 11:27:02-11:27:03, 11:84:02-11:84:03, 11:103:01-11:103:02, 11:105, 11:107, 11:125, 11:173, 13:33:01, 13:61:02, 13:94:01, 13:96:01, 14:38:02, 15:25, 15:37:01, 15:100, 15:104
54[5,6,10,12]	75 bp, 205 bp	430 bp	3, 6, 11, 13, 14, 17	*03:01:01:01-03:01:23, 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, 03:121-03:125, 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, 13:190-13:191, 13:193-13:194, 13:196, 13:198, 13:200N-13:202, 13:204-13:205, 13:207-13:209, 14:16, 14:19, 14:21, 14:45, 14:82, 14:95, 14:109, 14:120, 14:122, 14:132
55[5,6]	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, 11:13:01[w]-11:13:02[w], 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[w]-14:32:02[w], 14:33, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:65[w], 14:67,

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				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
56[5,6]	100 bp, 175 bp	430 bp	3, 4	*04:01:01-04:05:11, 04:05:13-04:202
57	235 bp	430 bp	7	*07:01:01:01-07:01:18, 07:03-07:66
58[6]	170 bp, 215 bp, 250 bp	**515 bp**	8, 11, 12, 14	*08:01:01-08:19, 08:21-08:56, 08:58-08:66, 08:68-08:77, 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
59[5,6]	90 bp, 135 bp, 160 bp, 190 bp	430 bp	3, 9, 11	*03:08, 03:65, 03:112, 09:01:02-09:27, 11:07, 11:103:01-11:103:02, 11:105, 11:107, 11:125, 11:173
60	175 bp	430 bp	10, 11, 13	*03:76, 03:125, 10:01:01-10:16, 11:59, 11:80, 11:83, 11:87, 11:135, 11:142, 11:182, 13:27, 13:41, 13:71, 13:129, 13:176
61[5,6]	100 bp, 170 bp	430 bp	3, 8, 11, 13, 14	*03:08, 03:65, 08:31, 08:41, 08:63, 08:75, 11:01:01-11:11:01, 11:11:03-11:70, 11:72-11:191, 11:193-11:194
62[5,6]	85 bp, 110 bp	430 bp	12, 14	*08:32, 08:53, 12:01:01-12:56, 12:58, 14:52
63	220 bp	430 bp	6, 8, 11, 13, 14, 1403	*03:76, 03:125, 08:20-08:21, 11:01:01-11:04:12, 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, 11:174-11:191, 11:194, 12:57, 13:01:01-13:02:01, 13:02:03-13:08, 13:10-13:16, 13:18-13:43, 13:45-13:85, 13:87-13:115, 13:117-13:128, 13:130-13:145, 13:147-13:166, 13:168-13:174, 13:176-13:182, 13:184-13:191, 13:194-13:205, 13:207-13:209, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:16, 14:19, 14:21-14:22, 14:25, 14:27, 14:40, 14:53, 14:63, 14:67, 14:69, 14:74, 14:77-14:78, 14:84-14:85, 14:98, 14:102, 14:105, 14:109, 14:115-14:116, 14:128, 14:135, 14:144, 14:156, **DRB3*02:27**
64[6]	200 bp, 225 bp	430 bp	6, 8, 11, 12, 13, 14	*03:125, 08:01:01-08:01:05, 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, 11:01:01-11:01:17, 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, 11:193-11:194, 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, 13:01:01-13:02:01, 13:02:03-13:02:12,

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65[10]	175 bp	430 bp	3, 6, 11, 13, 14, 1403, 17, 18	*03:01:01:01-03:07, 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, 03:112-03:125, 08:20, 13:01:01-13:16, 13:18-13:42, 13:44, 13:46-13:66:02, 13:68-13:102, 13:104-13:115, 13:117-13:121, 13:123-13:158, 13:161-13:164, 13:166-13:170, 13:171:02-13:174, 13:176-13:178, 13:180-13:182, 13:184-13:190, 13:192-13:194, 13:196, 13:198-13:210, 14:02:01-14:03:02, 14:05:01-14:06:03, 14:09, 14:12:01-14:14, 14:17-14:21, 14:23:01, 14:23:03-14:24, 14:27, 14:29-14:30, 14:33, 14:36-14:37, 14:40-14:45, 14:47-14:48, 14:51, 14:56, 14:59, 14:63-14:65, 14:67, 14:77-14:78, 14:80-14:81, 14:83-14:85, 14:89, 14:91, 14:94-14:96, 14:98, 14:100, 14:102-14:103, 14:106, 14:108-14:109, 14:115-14:116, 14:121, 14:123, 14:127:01-14:127:02, 14:134-14:136, 14:144, 14:154-14:156, 14:159-14:161, 14:165, 14:167
66[5,6,11]	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[w], **DRB4*01:03:01:02N**
67[5,6,7,9]	110 bp, 145 bp, 170 bp	430 bp	3, 4, 6, 9, 11, 13, 14, 1404	*03:10, 09:01:02-09:01:05, 09:01:07-09:02:02, 09:04-09:22, 09:24-09:27, 11:13:01-11:13:02, 11:17, 11:52, 13:43, 13:159, 13:171:01, 13:179, 13:191, 13:193, 14:01:01-14:02:02, 14:04:01-14:11, 14:13-14:14, 14:16-14:18, 14:19[w], 14:20, 14:21[w], 14:22-14:23:04, 14:26, 14:28-14:36, 14:38:01-14:39, 14:41, 14:43-14:52, 14:54:01-14:54:03, 14:54:04[w], 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[w], 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, 15:27, 15:34, 15:66:01-15:66:02, 15:122[w]
68[5,6]	110 bp, 150 bp, 180 bp,	430 bp	2[w], 3, 4, 6, 8, 11, 13, 14, 1403, 1404,	*03:10, 08:09, 08:20-08:21, 08:32, 08:35, 08:36:02, 08:53, 08:68[w], 08:70[w], 11:13:01-11:13:02, 11:17, 11:23:01-11:23:02, 11:25, 11:31, 11:45, 11:52, 11:55,

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69	170 bp	430 bp	8, 12, 13, 14	*03:92, 08:01:01-08:04:05, 08:04:07-08:06, 08:09-08:10, 08:12-08:13, 08:16-08:18, 08:21-08:24, 08:26-08:30:03, 08:32-08:33, 08:35-08:40, 08:42-08:51, 08:53-08:62, 08:64-08:74, 08:76-08:77, 12:09, 12:46, 12:48[w], 13:17, 13:116, 13:175, 14:15, 14:52, 14:126:01
70[5,6,7]	75 bp, 175 bp	**515 bp**	2, 4, 8, 11, 13, 14	*04:12, 04:18, 04:25, 04:58, 08:04:01, 08:04:02[w]-08:04:03[w], 08:04:04-08:04:07, 08:06, 08:10, 08:12, 08:14, 08:20, 08:22, 08:28, 08:54, 08:59, 08:67, 08:70, 08:75, 11:25, 11:67, 11:119, 13:18, 13:144, 13:156, 13:164, 14:12:01-14:12:02, 14:15, 14:78, 14:84, 14:156, 15:21
71	135 bp	430 bp	8, 12, 13	*03:92, 08:17, 08:28, 08:37, 08:45, 08:63, 11:67, 11:193, 12:01:01-12:20, 12:22-12:37, 12:39-12:41, 12:43-12:52, 12:54-12:56, 12:58, 13:17, 13:175, 14:138
72[9]	180 bp	430 bp	3, 6, 11, 13, 14	*03:12, 13:03:01-13:04, 13:12:01-13:13, 13:21:01-13:21:02, 13:30, 13:32-13:33:03, 13:38, 13:48-13:49, 13:55, 13:58, 13:65-13:66:02, 13:75, 13:81, 13:88-13:90, 13:93-13:95, 13:101, 13:108, 13:115, 13:118, 13:120, 13:122, 13:133-13:134, 13:139, 13:151-13:152, 13:154, 13:161, 13:164, 13:167, 13:169, 13:174, 13:188, 13:194, 14:13, 14:63, 14:65, 14:78, 14:85, **DRB5*01:08N**
73	150 bp	430 bp	2, 4, 6, 11, 13	*03:125, 11:16, 11:20, 11:40, 11:59, 11:63:02, 11:118, 11:122, 13:01:01-13:02:01, 13:02:03-13:02:12, 13:08, 13:15-13:16, 13:19-13:20, 13:27-13:29, 13:31-13:32, 13:34-13:36, 13:39-13:41, 13:43, 13:51-13:53, 13:57, 13:59, 13:61:01-13:61:02, 13:63-13:65, 13:67-13:69, 13:71-13:74, 13:76, 13:78-13:80, 13:83-13:84, 13:87, 13:91-13:93, 13:96:01-13:97:01, 13:98-13:99, 13:102-13:107, 13:109, 13:111-13:114, 13:117, 13:121, 13:123-13:128, 13:130-13:131, 13:135, 13:138-13:143, 13:145, 13:147-13:148, 13:153, 13:155, 13:159-13:160, 13:165-13:166, 13:168, 13:171:01-13:171:02, 13:173, 13:175, 13:177, 13:179, 13:182-13:187, 13:190-13:191, 13:195, 13:198, 13:200N-13:202, 13:205, 13:207-13:210, 14:16, 14:57, 15:10
74	145 bp	430 bp	3, 4, 6, 11, 13, 14, 17	*03:01:01:01-03:01:22, 03:01:24-03:01:25, 03:04:01-03:05:03, 03:07-03:16, 03:18-03:25, 03:28-03:30, 03:32-03:34, 03:36-03:37, 03:39-03:40, 03:43-03:52, 03:54-03:59, 03:61-03:68N, 03:70-03:73, 03:76-03:79, 03:81, 03:83-03:84, 03:86, 03:89, 03:91, 03:93-03:101, 03:104-03:110, 03:112-03:114, 03:116-03:121, 03:123-03:125, 11:01:01-11:01:06, 11:01:08-11:04:12, 11:06:01-11:11:01, 11:11:03-11:16, 11:18-11:21, 11:23:01-11:29:02, 11:31-11:36, 11:38-11:40, 11:42-

				11:47, 11:49:01-11:49:02, 11:51, 11:53-11:55, 11:57-11:66, 11:68-11:70, 11:72-11:82, 11:84:01-11:87, 11:89-11:103:02, 11:105-11:106, 11:108-11:144, 11:146-11:148, 11:150-11:169N, 11:172-11:182, 11:185-11:188, 11:190-11:191, 11:194, 13:01:01-13:01:08, 13:01:10-13:02:12, 13:04-13:06, 13:09-13:11:02, 13:14:01-13:16, 13:18, 13:20-13:25, 13:27-13:31, 13:34, 13:39, 13:41-13:46, 13:50:01-13:52, 13:54, 13:56-13:57, 13:59, 13:61:01-13:64, 13:66:01-13:66:02, 13:68-13:69, 13:71, 13:73-13:75, 13:77-13:80, 13:82-13:83, 13:86-13:87, 13:91-13:93, 13:96:01-13:100, 13:102, 13:104-13:107, 13:109-13:114, 13:117, 13:119, 13:121, 13:123-13:132, 13:136-13:148, 13:150, 13:153-13:158, 13:162-13:163, 13:165-13:166, 13:168-13:173, 13:176, 13:178-13:179, 13:181, 13:184-13:187, 13:190, 13:192-13:193, 13:196-13:197, 13:199-13:210, 14:17, 14:21, 14:30, 14:33, 14:35, 14:42, 14:53, 14:64-14:65, 14:72, 14:95, 14:128, 14:132, 14:134
75[6]	145 bp, 210 bp, 235 bp	430 bp	4, 6, 8, 11, 13, 14, 1403, 1404	*08:09, 08:20-08:21, 08:35, 11:13:01-11:13:02, 11:17, 11:23:01-11:23:02, 11:25, 11:45, 11:52, 11:55, 11:64, 11:89, 11:119, 11:149, 11:159, 13:08, 13:13, 13:18, 13:47, 13:55, 13:119, 13:144, 13:146, 13:154, 13:156, 13:158, 13:164, 14:01:01-14:01:04, 14:02:02?, 14:03:01-14:05:04, 14:07:01-14:08, 14:09?, 14:10-14:12:02, 14:14-14:15, 14:16?, 14:18, 14:19?-14:20?, 14:22?, 14:23:01-14:23:04, 14:25?, 14:26-14:28, 14:29?-14:30?, 14:31-14:32:02, 14:33?, 14:34-14:36, 14:37?, 14:38:01-14:40, 14:41?, 14:42-14:45, 14:47?-14:49?, 14:50, 14:51?-14:53?, 14:54:01-14:65, 14:67-14:68:02, 14:69?, 14:70-14:72, 14:73?-14:74?, 14:75, 14:76?, 14:77-14:78, 14:79?-14:80?, 14:81-14:82, 14:83?, 14:84-14:93, 14:94?, 14:95-14:97, 14:98?, 14:99-14:103, 14:104?-14:109?, 14:110, 14:111?, 14:112-14:118, 14:119?, 14:120, 14:121?, 14:122-14:127:02, 14:128?, 14:129-14:145, 14:146?, 14:147-14:158, 14:159?, 14:160-14:164, 14:165?, 14:166N-14:168
76	140 bp	430 bp	6, 13, 14	*03:76, 13:10, 13:85, 13:120, 13:170, 13:176, 13:178, 13:193, 13:196, 14:02:01-14:02:02, 14:06:01-14:06:03, 14:09, 14:13, 14:17, 14:19, 14:21, 14:29-14:30, 14:33, 14:46-14:48, 14:51-14:52, 14:80, 14:83, 14:106, 14:108-14:109, 14:121, 14:165
77[6]	160 bp, 240 bp	430 bp	52	*14:141, **DRB3*01:01:02:01-01:17, DRB3*02:01-02:29N, DRB3*03:01:01-03:03**
78[11]	215 bp	430 bp	53	**DRB4*01:01:01:01-01:10**
79	175 bp	430 bp	51	**DRB5*01:01:01-01:16, DRB5*02:02-02:06**
80	215 bp	**515 bp**	4	*04:01:01-04:01:14, 04:01:16, 04:09, 04:13, 04:16, 04:21, 04:26, 04:33, 04:35, 04:38, 04:62-04:63, 04:67, 04:72:01-04:72:02, 04:76, 04:100, 04:111-04:115, 04:117, 04:119N, 04:123, 04:125, 04:127, 04:130, 04:135, 04:139, 04:145, 04:150-04:151, 04:153, 04:158N-04:159, 04:171, 04:174-04:175, 04:179, 04:184, 04:187, 04:190, 04:192, 04:194, 04:196, 04:200
81	215 bp	430 bp	4, 6	*04:02:01-04:02:05, 04:14, 04:37, 04:106, 04:124, 04:132-04:134, 04:138, 04:143, 04:161, 14:57

Lot No.: 5D8 **Lot-specific information**

82	225 bp	430 bp	4, 14	*04:03:01-04:03:11, 04:06:01-04:07:05, 04:11:01-04:11:04, 04:17:01-04:17:02, 04:20, 04:27, 04:39, 04:41, 04:46, 04:49-04:52, 04:59-04:60, 04:65, 04:69, 04:71, 04:78, 04:85, 04:88, 04:91-04:93, 04:95:02-04:97, 04:100-04:102, 04:109-04:110, 04:114, 04:129, 04:136, 04:142N, 04:144, 04:146, 04:148, 04:150, 04:154, 04:156, 04:163, 04:165, 04:169-04:170, 04:172, 04:176, 04:181, 04:183, 04:188, 04:195, 04:197-04:199, 14:10, 14:143
83	170 bp	430 bp	4	*04:05:01-04:05:11, 04:05:13-04:05:17, 04:09-04:11:02, 04:11:04-04:12, 04:17:01-04:17:02, 04:24, 04:28-04:30, 04:45, 04:48, 04:57, 04:67, 04:77, 04:80-04:81N, 04:83-04:84, 04:86-04:87, 04:89-04:91, 04:103-04:104, 04:106-04:107, 04:116, 04:125-04:126, 04:131:01-04:131:02, 04:136-04:137, 04:147, 04:152, 04:162, 04:173, 04:178N, 04:191, 04:201-04:202
84[5]	75 bp	430 bp	4, 9, 14	*01:17, 04:07:01-04:07:05, 04:17:01-04:17:02, 04:20, 04:69, 04:74, 04:92, 04:94:02N, 04:102, 04:129, 04:160, 04:170, 04:172, 04:197, 04:199, 09:01:02-09:01:05, 09:01:08-09:02:02, 09:04-09:05, 09:07-09:08, 09:10-09:27, 14:07:01-14:07:02, 14:14, 14:36, 14:42, 14:44:01-14:44:03, 14:51, 14:68:01-14:68:02, 14:93, 14:134, 14:143, **DRB5*01:12**
85[10]	250 bp	**515 bp**	14	*14:01:01-14:01:04
86	210 bp	430 bp	6, 11, 14	*11:13:01-11:13:02, 11:17, 11:52, 11:89, 11:159, 14:01:01-14:01:04, 14:05:01-14:05:04, 14:07:01-14:08, 14:14, 14:18, 14:23:01-14:23:04, 14:26, 14:32:01-14:32:02, 14:34-14:36, 14:38:01-14:39, 14:42-14:45, 14:54:01-14:54:05, 14:56, 14:58-14:60, 14:62, 14:64-14:65, 14:70, 14:72, 14:75, 14:81-14:82, 14:86-14:88, 14:90-14:92N, 14:95-14:97, 14:99-14:101, 14:103, 14:110, 14:112-14:114, 14:117-14:118, 14:122-14:125, 14:127:01-14:127:02, 14:129-14:134, 14:139-14:140, 14:142, 14:147, 14:149-14:151, 14:153-14:155, 14:157-14:158, 14:160-14:163, 14:166N-14:168
87	135 bp	430 bp	6,11, 12, 13, 14, 15, 17	*01:44:01-01:44:02, 03:01:17, 03:97, 11:01:05, 11:01:10, 11:04:03, 11:06:02, 11:13:01-11:13:02, 11:54:01, 11:159, 12:01:01, 12:01:04-12:02:01, 12:02:03-12:02:06, 12:03:03-12:10, 12:12-12:15, 12:16:02, 12:17-12:20, 12:23-12:37, 12:39-12:42, 12:44-12:52, 12:54, 12:56, 12:58, 13:01:03, 13:163, 13:193, 14:35, 14:42, 14:64-14:65, 14:72, 14:95, 14:132, 14:134, 14:138, 15:01:03, 15:02:06
88	165 bp	430 bp	52	*14:141, **DRB3*01:07, DRB3*02:01-02:08, DRB3*02:11-02:29N**
89[5]	95 bp	430 bp	14, 52	*03:42, 14:46, **DRB3*01:01:02:01-01:08, DRB3*01:10-01:13, DRB3*01:15-01:17**
90[5]	120 bp	430 bp	53	*12:57, 13:195, **DRB3*02:03, DRB3*03:01:01-03:03**
91	155 bp	430 bp	53	**DRB4*01:03:01:02N**
92	130 bp	430 bp	53	**DRB4*01:01:01:01, DRB4*01:04[?]-01:05[?], DRB4*01:06, DRB4*01:07[?]-01:08[?], DRB4*02:01N, DRB4*03:01N**
93[5]	100 bp	430 bp	51	**DRB5*01:01:01-01:01:02, DRB5*01:04, DRB5*01:06-01:07, DRB5*01:09, DRB5*01:11, DRB5*01:15-01:16**
94	185 bp	430 bp		**DRB5*02:02, DRB5*02:04-02:06**

Lot No.: 5D8 **Lot-specific information**

95	195 bp	430 bp	**DRB5*01:08N**
96[13]			**Negative Control**

[1]Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DRB resolution SSP typings.

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

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

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

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

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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.

[2]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 49 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases. In the presence of a specific amplification the intensity of the control band often decreases.

[3]The serological reactivity of all DRB alleles is not known. The grouping of not serologically defined alleles is taken from Tissue Antigens 73, 95-170, 2009.

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

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

[6]Individual alleles can give to rise to two differently sized specific PCR fragments in primer mixes 49, 51, 53 to 56, 58, 59, 61, 62, 66 to 68, 70, 75 and 77.

[7]Primer mixes 49, 67 and 70 have a tendency to giving rise to primer oligomer formation.

[8]Primer mixes 51 and 52 may have tendencies of unspecific amplifications.

[9]Primer mixes 67 and 72 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.

[10]Due to sharing of sequence motifs in codon 38 and 47, DRB3*01:14 will also be amplified in primer mixes 53, 54 and 65, and DRB3*01:23 in primer mix 53 in addition to primer mix 85.

[11]The DRB4*01:03:01:02N allele is amplified by primer mixes 66 and 78, whereas the DRB4*02:01N and DRB4*03:01N null alleles are not amplified by this primer pair.

[12]Primer mix 54 may give a lower yield of HLA-specific PCR products than the other DRB primer mixes.

[13]Primer mix 96 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 information not available for the primer matching sequence.

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8 **Lot-specific information**

DQA1 PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	145	170	145	170	220	100	95	65	175	185	215	225
Length of int. pos. control[1]	515	515	430	430	430	430	430	430	430	430	430	515
5'-primer(s)[2]	33(169) 5' -Agg 3'	25(143) 5' -gTA 3'	33(169) 5' -AgC 3'	25(143) 5' -gTT 3'	-7(49) 5' -CCA 3'	198(664) 5' -gCA 3'	25(143) 5' -gTA 3'	-7(49) 5' -CCg 3'	7(90) 5' -CAC 3'	7(90) 5' -CAT 3'	-6(53) 5' -gAC 3'	99(366) 5' -CCC 3'
3'-primer(s)[3]	68(274) 5' -TgC 3'	68(274) 5' -TgC 3'	68(274) 5' -TgC 3'	68(274) 5' -TgC 3'	1st I 5' -TTT 3'	218(722) 5' -CTT 3'	43(199) 5' -AgC 3'	2(74) 5' -TgT 3'	52(224) 5' -TgT 3'	54(232) 5' -TCT 3'	1st I 5' -TTT 3'	160(548) 5' -CAT 3'
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec. PCR product	225	125	165	95	200	200	205	135	100 210	120 215	85	220
Length of int. pos. control[1]	515	430	430	515	430	430	430	430	430	515	430	430
5'-primer(s)[2]	99(366) 5' -CCC 3'	25(143) 5' -gTA 3'	33(169) 5' -AgC 3'	59(245) 5' -CCg 3' 188(634) 5' -CTA 3'	107(389) 5' -CAT 3'	107(389) 5' -CAT 3'	21(131) 5' -TCC 3'	21(131) 5' -TCT 3'	-13(31) 5' -ggA 3' 103(377) 5' -ggA 3'	25(143) 5' -gTT 3'	32(165) 5' -gAC 3'	up[4] 5' -ACT 3'
3'-primer(s)[3]	160(548) 5' -CAg 3' 160(548) 5' -CAg 3'	52(226) 5' -TTg 3'	75(293) 5' -gAC 3'	75(293) 5' -gAC 3' 207(691) 5' -gCA 3'	159(547) 5' -AgC 3'	159(547) 5' -AgA 3'	75(293) 5' -gAC 3'	51(223) 5' -TCT 3'	1st I 5' -TgC 3' 160(548) 5' -CAg 3'	51(223) 5' -TCT 3' 83(319) 5' -AgT 3'	46(208) 5' -ACA 3'	-13(31) 5' -ggC 3'
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

Well No.	25	26	27	28	29	30	31
Length of spec. PCR product	80 175	160	90 135	105	150 250	115 215	135
Length of int. pos. control[1]	430	430	430	430	430	430	430
5'-primer(s)[2]	-13(31) 5' -ggA 3' 33(169) 5' -Agg 3'	33(169) 5' -AgC 3' 101(372) 5' -ACg 3'	52(226) 5' -gAT 3' 186(626) 5' -TCT 3'	152(526) 5' -gTC 3'	99(366) 5' -CCC 3'	101(373) 5' -CAg 3' 194(650) 5' -Agg 3'	107(389) 5' -CAT 3'
3'-primer(s)[3]	0(70) 5' -TTT 3' 78(304) 5' -gCA 3'	76(298) 5' -AAC 3' 138(482) 5' -TgA 3'	68(274) 5' -TgT 3' 218(722) 5' -CTT 3'	174(591) 5' -TCg 3'	134(470) 5' -CAg 3' 138(484) 5' -gCg 3' 168(574) 5' -CTg 3'	159(547) 5' -AgA 3' 218(722) 5' -CTC 3'	139(485) 5' -AgA 3'
Well No.	25	26	27	28	29	30	31

[1]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.

[2]The nucleotide position matching the specificity-determining 3'-end of the primer is given.

101.713-24/06 – including *Taq* polymerase, IFU-01 Visit www.olerup.com for
101.713-24u/06u – without *Taq* polymerase, IFU-02 **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

[3]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 web site. The sequence of the 3 terminal nucleotides of the primer is given.

[4]Primer located upstream of the 1st exon.

DQB1 PRIMER SPECIFICATION

Well No.	32	33	34	35	36	37	38	39	40	41	42	43
Length of spec.	135	140	210	135	130	135	85	160	225	215	185	185
PCR product	230	185		220	220			205				
		220										
		270										
Length of int.	515	515	430	515	515	515	515	430	430	430	430	430
pos. control[1]												
5'-primer(s)[2]	25(170)	9(122)	29(184)	26(173)	28(179)	26(173)	71(309)	23(164)	9(122)	29(184)	21(159)	38(210)
	5' -gCA 3'	5' -gTT 3'	5' -gAg 3'	5' -TTA 3'	5' -gAC 3'	5' -TCT 3'	5' -ACC 3'	5' -gCT 3'	5' -gTT 3'	5' -gAC 3'	5' -ACC 3'	5' -gCA 3'
	26(173)	24(169)	30(185)		28(179)		71(309)	38(210)				
	5' -ggA 3'	5' -TgT 3'	5' -AAg 3'		5' -gAC 3'		5' -ACC 3'	5' -gCg 3'				
	26(173)	26(173)			28(179)							
	5' -ggg 3'	5' -TTA 3'			5' -gAC 3'							
		26(173)										
		5' -TCT 3'										
3'-primer(s)[3]	57(266)	57(266)	86(353)	55(260)	57(266)	57(266)	86(353)	77(327)	69(304)	87(356)	69(304)	86(353)
	5' -CAA 3'	5' -CAA 3'	5' -gCT 3'	5' -gCg 3'	5' -Cgg 3'	5' -CgT 3'	5' -gCT 3'	5' -ACg 3'	5' -CTC 3'	5' -ggA 3'	5' -CCT 3'	5' -gCT 3'
	87(356)	86(353)		86(353)	57(266)		86(354)			87(356)		
	5' -ggT 3'	5' -ACg 3'		5' -gCT 3'	5' -CAg 3'		5' -AgT 3'			5' -ggT 3'		
	87(356)	86(353)		86(354)	57(266)		86(355)					
	5' -ggT 3'	5' -ACC 3'		5' -AgT 3'	5' -Cgg 3'		5' -gAC 3'					
	88(361)	86(354)			87(356)		87(356)					
	5' -CCT 3'	5' -TAT 3'			5' -ggg 3'		5' -ggC 3'					
		86(354)					87(358)					
		5' -AAA 3'					5' -gCC 3'					
		86(354)										
		5' -AAg 3'										
		86(354)										
		5' -AAT 3'										
Well No.	32	33	34	35	36	37	38	39	40	41	42	43

Well No.	44	45	46	47	48
Length of spec.	220	190	115	210	210
PCR product			160		
			210		
Length of int.	515	430	515	515	430
pos. control[1]					
5'-primer(s)[2]	26(173)	9(122)	29(184)	29(184)	29(184)
	5' -ggg 3'	5' -gTT 3'	5' -gAC 3'	5' -gAC 3'	5' -gAT 3'
	26(173)				
	5' -TTA 3'				
3'-primer(s)[3]	86(353)	57(266)	55(260)	86(353)	86(353)
	5' -ACg 3'	5' -CAT 3'	5' -gCg 3'	5' -ACC 3'	5' -ACC 3'
		58(270)	69(304)	86(354)	
		5' -TCC 3'	5' -CCC 3'	5' -TAT 3'	
			86(353)		
			5' -ACg 3'		
Well No.	44	45	46	47	48

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

[1]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 32 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.

[2]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 web site. The sequence of the 3 terminal nucleotides of the primer is given.

[3]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 web site. The sequence of the 3 terminal nucleotides of the primer is given.

DRB PRIMER SPECIFICATION

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec.	210	200	210	210	125	75	85	100	235	170	90	175
PCR product	235		230		225	205	210	175		215	135	
	260									250	160	
											190	
Length of int. pos. control [1]	515	430	430	430	430	430	430	430	430	515	430	430
5'-primer(s) [2]	12(124)	14(129)	11(121)	11(119)	13(125)	13(125)	13(125)	13(125)	10(118)	15(133)	26(165)	26(164)
	5'-A.T 3'	5'-gAA 3'	5'-CTg 3'	5'-gCT 3'	5'-gTC 3'	5'-gTC 3'	5'-gTC 3'	5'-ACA 3'	5'-AgA 3'	5'-gTT 3'	5'-TAT 3'	5'-gTA 3'
	14(129)		13(126)	13(126)	47(227)	15(133)		13(125)	13(127)	15(133)	36(196)	30(178)
	5'-gAA 3'		5'-AgA 3'	5'-AAg 3'	5'-gTT 3'	5'-gTT 3'		5'-ACC 3'	5'-gTA 3'	5'-gTT 3'	5'-AgA 3'	5'-gCg 3'
			13(126)	13(126)				13(125)	13(127)	15(133)	58(261)	
			5'-AAg 3'	5'-Agg 3'				5'-ATA 3'	5'-ATA 3'	5'-gCT 3'	5'-gAg 3'	
			13(126)					13(125)	13(127)			
			5'-Agg 3'					5'-gTC 3'	5'-ATA 3'			
3'-primer(s) [3]	66(286)	66(286)	66(286)	66(286)	73(305)	26(164)	28(171)	32(184)	77(319)	58(260)	57(257)	72(303)
	5'-gAg 3'	5'-gAT 3'	5'-gAT 3'	5'-gAA 3'	5'-ggC 3'	5'-ggT 3'	5'-CTC 3'	5'-gTg 3'	5'-CgC 3'	5'-CCT 3'	5'-CgA 3'	5'-gCA 3'
	66(286)		66(286)	66(286)	73(305)	66(286)	69(295)	58(260)	77(319)	73(307)	73(305)	73(307)
	5'-gAg 3'		5'-gAT 3'	5'-gAg 3'	5'-ggC 3'	5'-gAT 3'	5'-CTg 3'	5'-Cgg 3'	5'-gTA 3'	5'-CAg 3'	5'-ggC 3'	5'-CgC 3'
	66(286)		69(295)	70(296)	73(305)	71(299)			77(319)	86(344)	77(319)	
	5'-gAT 3'		5'-.Tg 3'	5'-TgT 3'	5'-ggC 3'	5'-gCT 3'			5'-CAA 3'	5'-CAC 3'	5'-CAC 3'	
	70(297)		69(295)	71(301)	74(308)				77(319)			
	5'-CTg 3'		5'-CTg 3'	5'-ggC 3'	5'-CCC 3'				5'-CAC 3'			
	71(299)		70(298)		74(310)							
	5'-gCg 3'		5'-CgC 3'		5'-CAA 3'							
	77(317)		71(299)		77(317)							
	5'-AgT 3'		5'-gCT 3'		5'-AgT 3'							
	86(344)		73(305)									
	5'-CCA 3'		5'-Cgg 3'									
			73(305)									
			5'-ggC 3'									
			77(317)									
			5'-AgT 3'									
Well No.	49	50	51	52	53	54	55	56	57	58	59	60

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

Well No.	61	62	63	64	65	66	67	68	69	70	71	72
Length of spec.	100	85	220	200	175	100	110	110	170	75	135	180
PCR product	170	110		225		150	145	150		175		
						195	170	180				
						240		220				
Length of int.	430	430	430	430	430	430	430	430	430	515	430	430
pos. control[1]												
5'-primer(s)[2]	13(125)	12(124)	10(116)	10(116)	13(125)	5(101)	26(164)	13(125)	13(125)	12(122)	15(133)	13(125)
	5'-gTC 3'	5'-Cgg 3'	5'-gCT 3'	5'-gCT 3'	5'-gTC 3'	5'-CAA 3'	5'-gTA 3'	5'-gTC 3'	5'-ggg 3'	5'-TAg 3'	5'-gTT 3'	5'-gTC 3'
	15(133)	15(133)	12(122)	12(122)		37(197)	34(189)	34(189)	15(133)	74(308)		107(409)
	5'-gTC 3'	5'-gTT 3'	5'-TAT 3'	5'-TAT 3'		5'-gTT 3'	5'-CAg 3'	5'-CAg 3'	5'-gTT 3'	5'-CCT 3'		5'-AgA 3'
	38(200)		13(125)	13(125)		37(197)		36(196)	15(133)			
	5'-CgT 3'		5'-gTC 3'	5'-gTC 3'		5'-gTA 3'		5'-AgC 3'	5'-gCT 3'			
				13(125)								
				5'-gTg 3'								
				15(133)								
				5'-gTT 3'								
				15(133)								
				5'-gTC 3'								
	58(260)	28(171)	69(295)	66(286)	58(260)	42(213)	57(257)	57(257)	56(256)	56(256)	47(227)	56(256)
	5'-CCT 3'	5'-CTC 3'	5'-gTC 3'	5'-gAA 3'	5'-Cgg 3'	5'-TCA 3'	5'-CAg 3'	5'-CAg 3'	5'-gCT 3'	5'-gCT 3'	5'-ggA 3'	5'-gCT 3'
	58(260)	29(175)	71(299)	70(298)	58(260)	57(257)	69(295)	59(265)	57(257)	86(344)		159(565)
	5'-CCT 3'	5'-gTg 3'	5'-gCT 3'	5'-CgC 3'	5'-CAg 3'	5'-CAg 3'	5'-CTg 3'	5'-gTg 3'	5'-CAT 3'	5'-CCA 3'		5'-CAT 3'
3'-primer(s)[3]	58(260)	37(199)	71(299)	70(298)		70(298)	70(296)	70(296)	57(257)			
	5'-CCT 3'	5'-CAg 3'	5'-ACT 3'	5'-CTC 3'		5'-CgC 3'	5'-TCC 3'	5'-TCC 3'	5'-CAT 3'			
								73(307)				
								5'-CAg 3'				
Well No.	61	62	63	64	65	66	67	68	69	70	71	72

Well No.	73	74	75	76	77	78	79	80	81	82	83	84
Length of spec.	150	145	145	140	160	215	175	215	215	225	170	75
PCR product			210		240							
			235									
Length of int.	430	430	430	430	430	430	430	515	430	430	430	430
pos. control[1]												
5'-primer(s)[2]	34(189)	13(125)	13(125)	36(196)	10(116)	28(170)	13(125)	13(125)	13(125)	13(125)	13(125)	74(308)
	5'-CAg 3'	5'-gTC 3'	5'-gTC 3'	5'-AgA 3'	5'-gCT 3'	5'-gAT 3'	5'-gTA 3'	5'-ACA 3'	5'-ACA 3'	5'-ACA 3'	5'-ACA 3'	5'-CgA 3'
	34(189)		37(197)		10(116)							
	5'-CAg 3'		5'-gTT 3'		5'-gCT 3'							
			114(429)		37(199)							
			5'-CTg 3'		5'-TCC 3'							
3'-primer(s)[3]	70(298)	47(227)	70(296)	69(295)	51(239)	86(346)	57(258)	70(298)	70(298)	74(308)	56(256)	86(344)
	5'-CTC 3'	5'-ggA 3'	5'-TCC 3'	5'-CTg 3'	5'-CCC 3'	5'-CTC 3'	5'-gCg 3'	5'-CTT 3'	5'-CTC 3'	5'-CCT 3'	5'-gCT 3'	5'-CAC 3'
		47(229)	73(307)	70(298)	77(317)	86(346)	58(260)					
		5'-CCA 3'	5'-CAg 3'	5'-CTT 3'	5'-AAT 3'	5'-CTT 3'	5'-CCT 3'					
			181(630)									
			5'-CTT 3'									
Well No.	73	74	75	76	77	78	79	80	81	82	83	84

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8 **Lot-specific information**

Well No.	85	86	87	88	89	90	91	92	93	94	95
Length of spec. PCR product	250	210	135	165	95	120	155	130	100	185	195
Length of int. pos. control[1]	515	430	430	430	430	430	430	430	430	430	430
5'-primer(s)[2]	111(421) 5' -ACT 3'	13(125) 5' -gTC 3'	47(227) 5' -gTT 3'	10(116) 5' -gCT 3'	11(119) 5' -gCg 3'	11(119) 5' -gCT 3'	5(101) 5' -CAA 3'	105(401) 5' -AAA 3'	37(199) 5' -ACT 3'	36(196) 5' -AgA 3'	107(409) 5' -AgA 3'
				10(116) 5' -gCT 3'	11(119) 5' -gTg 3'						
3'-primer(s)[3]	181(630) 5' -CTT 3'	70(296) 5' -TCC 3'	78(321) 5' -CAA 3'	51(239) 5' -CCC 3'	28(171) 5' -CTg 3'	37(197) 5' -Cgg 3'	42(213) 5' -TCA 3'	134(490) 5' -gCT 3'	57(258) 5' -gCg 3'	85(341) 5' -CAg 3'	159(565) 5' -CAT 3'
					28(171) 5' -ATg 3'	37(197) 5' -CgA 3'					
					28(171) 5' -CTC 3'						
Well No.	85	86	87	88	89	90	91	92	93	94	95

[1]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 49 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.

[2]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 web site. The sequence of the 3 terminal nucleotides of the primer is given.

[3]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 web site. The sequence of the 3 terminal nucleotides of the primer is given.

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DQA1 resolution primer set[2]

					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:	201439801	201439802	201439803	201439804	201555105	201439806	201439807	201439808	201439809	201439810	201439811	201555112	201439813	201439814	201439815	201439816
	IHWC cell line[1]		DQA1*																	
1	9001	SA	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-
2	9280	LK707	*01:03	*03:03	-	-	+	+	-	-	-	+	-	+	-	+	+	-	-	-
3	9011	E4181324	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
4	9275	GU373	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
5	9009	KAS011	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
6	9353	SM	*01:03	*03:01	-	-	+	+	-	-	-	+	-	+	-	-	+	-	-	-
7	9020	QBL	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
8	9025	DEU	*03		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
9	9026	YAR	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
10	9107	LKT3	*03:03		-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-
11	9051	PITOUT	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
12	9052	DBB	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
13	9004	JESTHOM	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-
14	9071	OLGA	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-
15	9075	DKB	*03:02		-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-
16	9037	SWEIG007	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
17	9282	CTM3953540	*01:03	*05:01	-	-	+	+	-	-	-	+	-	-	-	-	+	+	+	-
18	9257	32367	*01:02	*03:03	-	+	+	-	-	-	-	+	-	+	-	+	+	-	-	-
19	9038	BM16	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
20	9059	SLE005	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
21	9064	AMALA	*05:03		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
22	9056	KOSE	*01:02	*01:04	+	+	+	-	-	+	-	+	-	-	-	-	+	-	-	-
23	9124	IHL	*01:03	*01:04	+	+	+	+	-	+	-	+	-	-	-	-	+	-	-	-
24	9035	JBUSH	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
25	9049	IBW9	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
26	9285	WT49	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
27	9191	CH1007	*03:03	*01:05	+	+	-	-	+	-	-	+	-	+	-	+	+	-	-	-
28	9320	BEL5GB	*02:01	*03:03	-	-	-	-	-	-	-	+	+	+	-	+	+	-	-	-
29	9050	MOU	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
30	9021	RSH	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-
31	9019	DUCAF	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
32	9297	HAG	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
33	9098	MT14B	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
34	9104	DHIF	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
35	9302	SSTO	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
36	9024	KT17	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
37	9065	HHKB	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
38	9099	LZL	*05:03		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
39	9315	CML	*03:03	*05:01	-	-	-	-	-	-	-	+	-	+	-	+	+	+	+	-
40	9134	WHONP199	*02:01	*03:02	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-
41	9055	H0301	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
42	9066	TAB089	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
43	9076	T7526	*03:02		-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-
44	9057	TEM	*01:04		+	+	-	-	-	+	-	-	-		-	-	+	-	-	-
45	9239	SHJO	*02:01	*03:03	-	-	+	+	-	-	-	+	-	+	-	+	+	-	-	-
46	9013	SCHU	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
47	9045	TUBO	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
48	9303	TER-ND	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

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Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DQA1 resolution primer set[2]

					Well														
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
				Prod. No.:	201439817	201439818	201439819	201439820	201439821	201555122	201439823	201439824	201439825	201439826	201439827	201439828	201439829	201439830	201439831
	IHWC cell line[1]		DQA1*																
1	9001	SA	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
2	9280	LK707	*01:03	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
3	9011	E4181324	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
4	9275	GU373	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
5	9009	KAS011	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
6	9353	SM	*01:03	*03:01	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
7	9020	QBL	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
8	9025	DEU	*03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
9	9026	YAR	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
10	9107	LKT3	*03:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
11	9051	PITOUT	*02:01		-	-	-	-	-	-	-	w	-	-	-	-	-	-	-
12	9052	DBB	*02:01		-	-	-	-	-	-	-	w	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
14	9071	OLGA	*04:01		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
15	9075	DKB	*03:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
16	9037	SWEIG007	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*01:03	*05:01	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
18	9257	32367	*01:02	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
19	9038	BM16	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
21	9064	AMALA	*05:03		-	+	+	-	-	-	-	+	-	-	-	-	-	-	-
22	9056	KOSE	*01:02	*01:04	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
23	9124	IHL	*01:03	*01:04	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
24	9035	JBUSH	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*02:01		-	-	-	-	-	-	-	w	-	-	-	-	-	-	-
26	9285	WT49	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
27	9191	CH1007	*03:03	*01:05	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
28	9320	BEL5GB	*02:01	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
29	9050	MOU	*02:01		-	-	-	-	-	-	-	w	-	-	-	-	-	-	-
30	9021	RSH	*04:01		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
31	9019	DUCAF	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
32	9297	HAG	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
34	9104	DHIF	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
36	9024	KT17	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
37	9065	HHKB	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
38	9099	LZL	*05:03		-	+	+	-	-	-	-	+	-	-	-	-	-	-	-
39	9315	CML	*03:03	*05:01	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
40	9134	WHONP199	*02:01	*03:02	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
41	9055	H0301	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
42	9066	TAB089	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
43	9076	T7526	*03:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
44	9057	TEM	*01:04		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
45	9239	SHJO	*02:01	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
46	9013	SCHU	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
47	9045	TUBO	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

[1]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.

[2]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.

No DNAs carrying the alleles to be amplified by primer solutions 7, 16, 20 and 26 to 29 were available. The specificities of the primers in primer solution 16 were tested by separately adding one 5'-primer, respectively one 3'-primer.

In primer solutions 7, 26 and 29 the 5'-primers were tested by adding one additional 3'-primer, the 3'-primers were not possible to test. In primer solutions 20, 27 and 28 the 3'-primers were tested by adding one additional 5'-primer, the 5'-primers were not possible to test. In primer solutions 16, 21 and 30, one 5'-primer was not possible to test, and in primer solution 16, 22 and 25 one 3'-primer was not possible to test. Additional 3'-primers in primer solutions 21 and 30 were tested by separately adding one 5'-primer, and one additional 5'-primer in primer solution 25 was tested by separately adding one 3'-primer.

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DQB1 resolution primer set[2]

					Well																
					32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
				Production No.	201663501	201663502	201663503	201663504	201663505	201663506	201663507	201663508	201663509	201663510	201663511	201663512	201663601	201439702	201663603	201439704	201439705
	IHWC cell line[1]		DQB1																		
1	9001	SA	*05:01		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
2	9280	LK707	*06:01	*02:02	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
3	9011	E4181324	*06:01		-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
4	9275	GU373	*02:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*05:02		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
6	9353	SM	*03:02	*06:01	-	+	-	-	+	-	+	-	-	-	-	+	+	-	-	-	-
7	9020	QBL	*02:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
9	9026	YAR	*03:02		-	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-
10	9107	LKT3	*04:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
11	9051	PITOUT	*02:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*03:03		-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-
13	9004	JESTHOM	*05:01		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
14	9071	OLGA	*04:02		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
15	9075	DKB	*03:03		-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-
16	9037	SWEIG007	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
17	9282	CTM 3953540	*02:01	*06:03	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-
18	9257	32367	*06:02	*02:02	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
19	9038	BM16	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
20	9059	SLE005	*06:04		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
21	9064	AMALA	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
22	9056	KOSE	*05:03	*06:04	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-
23	9124	IHL	*05:03	*06:01	+	+	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
24	9035	JBUSH	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
25	9049	IBW9	*02:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*02:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:01	*05:01	+	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
28	9320	BEL5GB	*02:02	*03:01	-	-	+	+	-	-	+	-	-	-	-	+	-	-	-	-	-
29	9050	MOU	*02:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*04:02		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
31	9019	DUCAF	*02:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
33	9098	MT14B	*03:02		-	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-
34	9104	DHIF	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
35	9302	SSTO	*03:05		-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-
36	9024	KT17	*03:02		-	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-
37	9065	HHKB	*06:03		-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
38	9099	LZL	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
39	9315	CML	*02:01	*03:01	-	-	+	+	-	-	+	-	-	-	-	+	-	-	-	-	-
40	9134	WHONP199	*02:02	*03:03	-	-	+	-	-	+	+	-	-	-	-	+	-	-	-	-	-
41	9055	H0301	*06:09		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
42	9066	TAB089	*06:01		-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
43	9076	T7526	*03:03		-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-
44	9057	TEM	*05:03		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
45	9239	SHJO	*02:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*06:02		-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
47	9045	TUBO	*03:01		-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-
48	9303	TER-ND	*05:01		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-

Lot No.: 5D8 **Lot-specific information**

[1]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.

[2]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.

In primer solutions 32, 33, 34 and 36 one or two 5'-primers were not possible to test, and in primer solutions 32, 33, 35, 36, 38, 45 and 47 one or two 3'-primers were not possible to test.

Additional 5'-primers in primer solutions 33, 38 and 44 were tested by separately adding another 3'-primer.

Additional 3'-primers in primer solutions 32, 33, 41 and 46 were tested by separately adding one 5'-primer.

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DRB resolution primer set[3]

					Well[2]															
					49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
				Prod. No.:	201553601	201553602	201663303	201663304	201663305	201553606	201553607	201553608	201663309	201553610	201554911	201553612	201553613	201557414	201553615	201553616
	IHWC cell line[1]		DRB1																	
1	9001	SA	*01:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07	*08:03	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-
7	9020	QBL	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
15	9075	DKB	*09:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
16	9037	SWEIG007	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+
17	9282	CTM3953540	*03:01	*13:01	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	+
18	9257	32367	*09:01	*11:01	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+
19	9038	BM16	*12:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
20	9059	SLE005	*13:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
21	9064	AMALA	*14:02		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*13:02	*14:54	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
23	9124	IHL	*08:03	*14:14	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
24	9035	JBUSH	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
26	9285	WT49	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
30	9021	RSH	*03:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*03:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
38	9099	LZL	*14:02		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
41	9055	H0301	*13:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
44	9057	TEM	*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
46	9013	SCHU	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04	*12:01	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
48	9303	TER-ND	*01:03		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DRB resolution primer set[3]

					Well[2]															
					65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
				Prod. No.:	201663317	201553618	201553619	201553620	201557421	201663322	201557423	201557424	201557425	201557426	201557427	201557428	201553629	201553630	201553631	201439501
	IHWC cell line[1]		DRB1																	
1	9001	SA	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
3	9011	E4181324	*15:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
4	9275	GU373	*03:01		+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
6	9353	SM	*04:07	*08:03	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-
7	9020	QBL	*03:01		+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+
9	9026	YAR	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
12	9052	DBB	*07:01		-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
16	9037	SWEIG007	*11:01		-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
17	9282	CTM3953540	*03:01	*13:01	+	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-
18	9257	32367	*09:01	*11:01	-	-	+	-	-	-	-	-	-	+	-	-	+	+	-	-
19	9038	BM16	*12:01		-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-
20	9059	SLE005	*13:02		+	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-
21	9064	AMALA	*14:02		+	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-
22	9056	KOSE	*13:02	*14:54	+	+	+	+	-	-	-	-	+	+	+	-	+	-	-	-
23	9124	IHL	*08:03	*14:14	+	-	+	+	+	-	-	-	-	-	+	-	+	-	-	-
24	9035	JBUSH	*11:01		-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
26	9285	WT49	*03:01		+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
30	9021	RSH	*03:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
31	9019	DUCAF	*03:01		+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
32	9297	HAG	*13:03		+	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
34	9104	DHIF	*11:01		-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
37	9065	HHKB	*13:01		+	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-
38	9099	LZL	*14:02		+	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-
39	9315	CML	*03:01	*04:01	+	-	-	-	-	-	-	-	-	+	-	-	+	+	-	+
40	9134	WHONP199	*07:01	*09:01	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
41	9055	H0301	*13:02		+	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-
42	9066	TAB089	*08:03		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
44	9057	TEM	*14:01		-	+	+	+	-	-	-	-	-	-	+	-	+	-	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
47	9045	TUBO	*11:04	*12:01	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.713-24/06 – including *Taq* polymerase, IFU-01
101.713-24u/06u – without *Taq* polymerase, IFU-02

Visit www.olerup.com for **"Instructions for Use" (IFU)**

Lot No.: 5D8 **Lot-specific information**

CELL LINE VALIDATION SHEET

DRB resolution primer set[3]

					Well[2]														
					81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
				Prod. No.:	201439502	201439503	201439504	201439505	201439506	201439507	201439516	201439508	201439509	201439510	201439511	201439512	201439513	201439514	201439515
	IHWC cell line[1]		DRB1																
1	9001	SA	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
6	9353	SM	*04:07	*08:03	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*11:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:01	*13:01	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
18	9257	32367	*09:01	*11:01	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-
19	9038	BM16	*12:01		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
20	9059	SLE005	*13:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
21	9064	AMALA	*14:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
22	9056	KOSE	*13:02	*14:54	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-
23	9124	IHL	*08:03	*14:14	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-
24	9035	JBUSH	*11:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
26	9285	WT49	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021	RSH	*03:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
31	9019	DUCAF	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
35	9302	SSTO	*04:03		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
38	9099	LZL	*14:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*13:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*14:01		-	-	-	-	+	+	-	+	-	-	-	-	-	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
47	9045	TUBO	*11:04	*12:01	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lot No.: 5D8 **Lot-specific information**

[1]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.
[2]The DRB4*01:03:01:02N allele is amplified by primer mix 66 in the DBB/9052 cell line.
[3]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 52, 59, 66 and 75 were tested by separately adding one 3'-primer, respectively one 5'-primer.
Additional 5'-primers in primer solutions 54, 60, 63 and 64 were tested by separately adding one 3'-primer.
Additional 3'-primers in primer solutions 49, 51, 53, 57, 58, 68, 70 and 89 were tested by separately adding one 5'-primer. One, two or three of the 5'-primers in primer solution 49, 51, 52, 56 to 58, 61 to 64, 68 to 70, 75 and 89 were not possible to test. One or two of the 3'-primers in primer solution 49, 51, 52, 53, 54, 57, 61, 63, 69, 74, 78 and 89 were not possible to test.

Lot No.: 5D8 **Lot-specific information**

Lot No.: 5D8 **Lot-specific information**

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