

Lot No.: 4G0

Lot-specific information

Olerup SSP® HLA-C*01

Product number:	101.621-12 – including <i>Taq</i> polymerase 101.621-12u – without <i>Taq</i> polymerase
Lot number:	4G0
Expiry date:	2022-05-01
Number of tests:	12
Number of wells per test:	31+1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 4G0.

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

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® HLA-C*01 LOT (2E2)

The HLA-C*01 kit is updated for new alleles to enable separation of:

- Null and Alternatively expressed alleles
- The product documentation has been updated for new alleles of IMGT 3.31

The format of the Worksheet has been changed.

The HLA-C*01 specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup SSP®* HLA-C*01 lot was made (**Lot No. 2E2**).

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

Well	5'-primer	3'-primer	rationale
8	-	Added	3'-primer added for the C*01:143N allele.
11	Added	-	5'-primer added for the C*01:137N allele.
18	Added	-	5'-primer added for the C*01:145N allele.
22	Added	-	5'-primer added for the C*01:120 allele.
24	-	Added	3'-primer added for the C*01:143N allele.
28	Added	-	5'-primer added for the C*01:145N allele.

Changes in revision R01 compared to R00:

1. The expiration date has been altered due to extension of shelf-life.

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Well **32** 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'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

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

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

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PRODUCT DESCRIPTION

HLA-C*01 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the C*01:02 to C*01:148 alleles.

PLATE LAYOUT

Each HLA-C*01 test consists of 32 PCR reactions in a 32 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	24
25	26	27	28	29	30	31	NC

The 32 well PCR plate is marked with 'HLA-C*01' in silver/gray ink.

Well No. 1 is marked with the Lot No. '4G0'.

Wells 1 to 31 – HLA-C*01 high resolution primers.

Well 32 – Negative Control (NC).

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 heat-sealed with a PCR-compatible foil.

Please note: When removing each 32 well PCR plate, make sure that the remaining plates stay sealed. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

INTERPRETATION

Due to the sharing of sequence motifs between HLA-C alleles, non-HLA-C*01 alleles will be amplified by some primer mixes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-C*01 alleles, i.e. **C*01:02 to C*01:148**, recognized by the HLA Nomenclature Committee in January 2018^{1,2} will be amplified by the primers in the HLA-C*01 SSP kit³.

The HLA-C*01 kit enables separation of the confirmed HLA-C*01 alleles as listed in the IMGT/HLA database 3.25.0. An HLA allele is listed as confirmed by IMGT/HLA if it has been sequenced by more than a single laboratory or from multiple sources. Current allele confirmation status for HLA-C*01 alleles is listed below.

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The HLA-C*01 kit also enables identification of polymorphisms in exons outside of the region encoding the peptide binding domain and of null and alternatively expressed alleles.

The following HLA-C*01 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix	Alleles	Primer mix
C*01:06, 01:38	5	C*01:29, 01:33	21
C*01:10, 01:52	9	C*01:31, 01:44	23
C*01:17, 01:41, 01:128	14	C*01:32:01-01:32:02, 01:40	22
C*01:18, 01:42	15	C*01:39, 01:137N	11
C*01:19, 01:43, 01:58	16	C*01:70, 01:99	25
C*01:27, 01:45	19	C*01:89N, 01:109N	29
C*01:28, 01:56N	20	C*01:93, 01:121Q	30

¹HLA-C alleles listed on the IMGT/HLA web page 2018-January-19, release 3.31.0, www.ebi.ac.uk/imgt/hla.

²Alleles 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>.

³The HLA-C*01 primer set cannot separate the C*01:21 from the C*12:215 allele. These alleles can be distinguished by the HLA-C low resolution kit and/or by the HLA-C*12 high resolution kit.

The HLA-C*01 primer set cannot separate the C*01:123 and the C*01:125 from the C*03:86, 03:94 and 03:99:01-01:99:02 alleles. These alleles can be distinguished by the HLA-C low resolution kit and/or by the HLA-C*03 high resolution kit.

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ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
C*01:02:01	Confirmed	C*01:12:01	Confirmed	C*01:59	Confirmed	C*01:107	Confirmed
C*01:02:02	Unconfirmed	C*01:12:02	Unconfirmed	C*01:60	Unconfirmed	C*01:108	Unconfirmed
C*01:02:03	Confirmed	C*01:13	Confirmed	C*01:61	Unconfirmed	C*01:109N	Unconfirmed
C*01:02:04	Confirmed	C*01:14	Unconfirmed	C*01:62	Unconfirmed	C*01:110	Unconfirmed
C*01:02:05	Unconfirmed	C*01:15	Unconfirmed	C*01:63:01	Unconfirmed	C*01:111N	Unconfirmed
C*01:02:06	Unconfirmed	C*01:16	Confirmed	C*01:63:02	Unconfirmed	C*01:112	Unconfirmed
C*01:02:07	Confirmed	C*01:17	Confirmed	C*01:64	Unconfirmed	C*01:113	Unconfirmed
C*01:02:08	Confirmed	C*01:18	Confirmed	C*01:65	Unconfirmed	C*01:114	Unconfirmed
C*01:02:09	Unconfirmed	C*01:19	Unconfirmed	C*01:66	Confirmed	C*01:115	Unconfirmed
C*01:02:10	Unconfirmed	C*01:20	Unconfirmed	C*01:67	Confirmed	C*01:116	Unconfirmed
C*01:02:11	Unconfirmed	C*01:21	Confirmed	C*01:68	Unconfirmed	C*01:117N	Unconfirmed
C*01:02:12	Unconfirmed	C*01:22	Confirmed	C*01:69N	Unconfirmed	C*01:118	Unconfirmed
C*01:02:13	Unconfirmed	C*01:23	Unconfirmed	C*01:70	Confirmed	C*01:119	Unconfirmed
C*01:02:14	Unconfirmed	C*01:24	Unconfirmed	C*01:71	Unconfirmed	C*01:120	Unconfirmed
C*01:02:15	Unconfirmed	C*01:25	Unconfirmed	C*01:72	Unconfirmed	C*01:121Q	Unconfirmed
C*01:02:16	Confirmed	C*01:26	Confirmed	C*01:73	Unconfirmed	C*01:122	Unconfirmed
C*01:02:17	Unconfirmed	C*01:27	Confirmed	C*01:74	Confirmed	C*01:123	Unconfirmed
C*01:02:18	Confirmed	C*01:28	Unconfirmed	C*01:75	Unconfirmed	C*01:124	Unconfirmed
C*01:02:19	Unconfirmed	C*01:29	Unconfirmed	C*01:76	Unconfirmed		
C*01:02:20	Unconfirmed	C*01:30	Confirmed	C*01:77	Unconfirmed		
C*01:02:21	Unconfirmed	C*01:31	Unconfirmed	C*01:78	Unconfirmed		
C*01:02:22	Confirmed	C*01:32:01	Confirmed	C*01:79:01	Unconfirmed		
C*01:02:23	Unconfirmed	C*01:32:02	Unconfirmed	C*01:79:02	Unconfirmed		
C*01:02:24	Unconfirmed	C*01:33	Unconfirmed	C*01:80	Unconfirmed		
C*01:02:25	Unconfirmed	C*01:34	Unconfirmed	C*01:81	Confirmed		
C*01:02:26	Unconfirmed	C*01:35	Unconfirmed	C*01:82	Unconfirmed		
C*01:02:27	Unconfirmed	C*01:36	Unconfirmed	C*01:83	Unconfirmed		
C*01:02:28	Unconfirmed	C*01:37N	Unconfirmed	C*01:84	Unconfirmed		
C*01:02:29	Unconfirmed	C*01:38	Unconfirmed	C*01:85	Unconfirmed		
C*01:02:30	Unconfirmed	C*01:39	Unconfirmed	C*01:86N	Unconfirmed		
C*01:02:31	Unconfirmed	C*01:40	Confirmed	C*01:87	Unconfirmed		
C*01:02:32	Confirmed	C*01:41	Confirmed	C*01:88	Unconfirmed		
C*01:02:33	Unconfirmed	C*01:42	Unconfirmed	C*01:89N	Unconfirmed		
C*01:02:34	Unconfirmed	C*01:43	Unconfirmed	C*01:90	Unconfirmed		
C*01:02:35	Unconfirmed	C*01:44	Confirmed	C*01:91	Unconfirmed		
C*01:02:36	Unconfirmed	C*01:45	Confirmed	C*01:92	Unconfirmed		
C*01:02:37	Unconfirmed	C*01:46	Unconfirmed	C*01:93	Confirmed		
C*01:02:38	Unconfirmed	C*01:47	Unconfirmed	C*01:94	Unconfirmed		
C*01:02:39	Unconfirmed	C*01:48	Unconfirmed	C*01:95	Unconfirmed		
C*01:02:40	Unconfirmed	C*01:49:01	Confirmed	C*01:96	Unconfirmed		
C*01:03	Confirmed	C*01:49:02	Unconfirmed	C*01:97	Unconfirmed		
C*01:04	Unconfirmed	C*01:50	Confirmed	C*01:98N	Unconfirmed		
C*01:05	Unconfirmed	C*01:51	Unconfirmed	C*01:99	Confirmed		
C*01:06	Confirmed	C*01:52	Confirmed	C*01:100	Unconfirmed		
C*01:07:01	Unconfirmed	C*01:53	Unconfirmed	C*01:101	Unconfirmed		
C*01:07:02	Confirmed	C*01:54	Confirmed	C*01:102	Unconfirmed		
C*01:08	Confirmed	C*01:55	Unconfirmed	C*01:103	Confirmed		
C*01:09	Unconfirmed	C*01:56N	Unconfirmed	C*01:104	Unconfirmed		
C*01:10	Confirmed	C*01:57	Unconfirmed	C*01:105	Unconfirmed		
C*01:11	Unconfirmed	C*01:58	Confirmed	C*01:106	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2016-July-14, release 3.25.0, www.ebi.ac.uk/imgt/hla.

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RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in HLA-C*01 homo- and heterozygotes is available upon request.

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SPECIFICITY TABLE

HLA-C*01 SSP subtyping

Specificities and sizes of the PCR products of the 31+1 primer mixes used for
HLA-C*01 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-C*01 alleles ³	Other amplified HLA Class I alleles
1^{4,6}	90 bp	800 bp	*01:02:01:01-01:02:43, 01:06-01:11, 01:13-01:20, 01:22-01:23, 01:25-01:33, 01:35, 01:38-01:48, 01:51- 01:53, 01:56N-01:76, 01:80- 01:85, 01:87-01:96, 01:98N- 01:100, 01:103-01:113, 01:115-01:119, 01:121Q- 01:130, 01:132-01:145N, 01:147-01:148	*03:86, 03:94, 03:99:01-03:99:02, 03:302, 05:107, 06:179, 06:204, 07:177, 15:37, 15:102, B*40:243, B*54:38
2⁴	90 bp 270 bp	1070 bp	*01:03, 01:24, 01:78, 01:146 *01:15:01	*03:58, 04:37, 05:85, 07:364
3	150 bp	800 bp	*01:04, 01:111N	
4⁷	210 bp	800 bp	*01:05, 01:77	*04:240, 05:111, 07:37, 07:307, B*07:77, B*07:193
5⁴	105 bp 150 bp 200 bp	800 bp	*01:38 *01:20 *01:06	
6⁵	195 bp 230 bp	1070 bp	*01:07:01-01:07:02 *01:37N, 01:83	*06:43:01, 14:24:02 *14:35N
7^{4,5}	70 bp	1070 bp	*01:67	*03:03:10, 03:04:28, 04:01:11, 06:02:21, 07:01:58, 07:02:36, 12:03:36, 16:01:19, A*01:01:33, A*02:01:29, A*03:01:42, A*11:01:40, A*24:07:02, A*26:01:09, A*32:01:09, A*33:01:07, A*68:01:06, B*07:02:21, B*13:02:03, B*15:01:39, B*27:05:06, B*35:08:07, B*40:01:10, B*40:02:11, B*44:02:37, B*44:03:08, B*51:01:24, B*73:01- 73:02, B*82:02:02
	150 bp 195 bp		*01:20 *01:08	
8	210 bp 260 bp	800 bp	*01:04, 01:09, 01:22, 01:35 *01:143N	*03:302, 06:23, 06:179, 07:177, 12:178, 15:37, B*40:243, B*54:38
9	160 bp 225 bp	800 bp	*01:52 *01:10, 01:83	B*40:243
10	210 bp 255 bp 290 bp	1070 bp	*01:22, 01:35 *01:30 *01:11	*03:302, 07:177, 15:37, B*40:243, B*54:38

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11	140 bp 355 bp	800 bp	*01:39 *01:12:01-01:12:02, 01:34, 01:79:01-01:79:02, 01:97, 01:101-01:102, 01:114, 01:131, 01:137N	
12⁴	80 bp 155 bp	1070 bp	*01:84 *01:13	*03:213 *02:51, 03:87:01-03:87:02, 04:223:01-04:223:02, 05:09:01- 05:09:03, 05:17, 05:52, 07:130, 08:15:01-08:15:02, 08:51, 12:144, 12:185, 16:27, B*15:33, B*15:248
13⁶	255 bp 155 bp	800 bp	*01:82 *01:02:01:01-01:66, 01:68- 01:72, 01:74-01:79:02, 01:81-01:116, 01:118- 01:122, 01:124, 01:126- 01:148	*07:316, 07:338, 07:579, 12:215, 15:104, B*54:18
14^{4,5}	120 bp 240 bp	1070 bp	*01:41 *01:17, 01:21, 01:23, 01:69N, 01:128	*07:316, 07:338, 07:579, 12:215
15⁴	115 bp	800 bp	*01:42, 01:73	B*13:102, B*15:393, B*46:60, B*51:129
16	230 bp 130 bp 255 bp 295 bp	1070 bp	*01:16, 01:18, 01:74 *01:43 *01:19 *01:23, 01:58	*07:316, 07:338, 07:579, A*01:24
17⁴	75 bp 255 bp	800 bp	*01:24-01:25 *01:82	
18⁵	195 bp 260 bp 295 bp 345 bp	800 bp	*01:26 *01:34, 01:146 *01:145N *01:36, 01:49:01, 01:55	
19⁴	100 bp 265 bp	800 bp	*01:27 *01:30, 01:45	
20⁴	80 bp 110 bp 285 bp	800 bp	*01:84 *01:28 *01:56N	*03:213 *03:59, 03:123, 06:157
21⁴	125 bp 160 bp 245 bp	800 bp	*01:33 *01:80 *01:29, 01:69N	
22^{4,5}	110 bp 250 bp 335 bp 355 bp	1070 bp	*01:40 *01:32:01-01:32:02 *01:50, 01:131 *01:05, 01:36, 01:55, 01:79:01-01:79:02, 01:120	*06:110
23⁴	90 bp 120 bp 235 bp	1070 bp	*01:04, 01:54, 01:103 *01:44 *01:31, 01:35, 01:107	*06:23, 12:178, 14:45, 16:18 *03:302
24⁴	90 bp 165 bp 260 bp	1070 bp	*01:86N, 01:103 *01:66 *01:143N	
25^{4,7}	85 bp 240 bp 270 bp	1070 bp	*01:99 *01:16 *01:70	A*24:112, B*13:102, B*51:129

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26	155 bp 230 bp	1070 bp	*01:117N *01:74, 01:98N	
27	350 bp 545 bp	1070 bp	*01:14, 01:59, 01:118 *01:85	*04:37, 05:85, 05:107, 06:23, 06:179, 06:204, 15:37, 15:102 *04:277, 08:22, 08:56, 08:102, 08:154, 15:29, 15:87
28	155 bp 295 bp 325 bp 360 bp	800 bp	*01:35, 01:107, 01:131 *01:145N *01:81 *01:49:01-01:50, 01:131	
29	135 bp 295 bp 350 bp	1070 bp	*01:109N *01:89N *01:14, 01:59, 01:118	*04:37, 05:85, 05:107, 06:23, 06:179, 06:204, 15:37, 15:102
30 ⁴	125 bp 235 bp	1070 bp	*01:93 *01:121Q	
31	155 bp 265 bp	1070 bp	*01:117N *01:14	*15:104
32 ⁸	-	-	Negative Control	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-C*01 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 inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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.

³For several HLA Class I alleles 1st and/or 4th 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.

⁴HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁵Primer mixes 6, 7, 14, 18 and 22 may have tendencies of unspecific amplifications.

⁶Primer mixes 1 and 13 may give rise to a lower yield of HLA-specific PCR product than the other HLA-C*01 primer mixes.

⁷Primer mix 25 has a tendency to giving rise to primer oligomer formation.

⁸Primer mix 32 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.

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PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	90	90	150	210	105	195	70	210	160	210	140	80
PCR product		270			150	230	150	260	225	255	355	155
					200		195			290		255
Length of int.	800	1070	800	800	800	1070	1070	800	800	1070	800	1070
pos. control ¹												
5'-primer(s) ²	368 5'-gTg 3'	368 5'-gTg 3'	368 5'-gTg 3'	368 5'-gTC 3'	368 5'-gTg 3'	363 5'-TgA 3'	89 5'-gAg 3'	368 5'-gTg 3'	368 5'-gTg 3'	368 5'-gTg 3'	101 5'-CAT 3'	485 5'-CAA 3'
						406 5'-gCA 3'	368 5'-gTg 3'		667 5'-AgA 3'		355 5'-CC 3'	632 5'-gAg 3'
						667 5'-AgA 3'					368 5'-gTT 3'	806 5'-ggT 3'
											368 5'-gTA 3'	
3'-primer(s) ³	419 5'-CgT 3'	419 5'-CgA 3'	470 5'-TCT 3'	538 5'-CCg 3'	430 5'-gCT 3'	559 5'-CgT 3'	117 5'-CCA 3'	538 5'-CCA 3'	488 5'-CCA 3'	539 5'-TCA 3'	201 5'-CTC 3'	601 5'-CTC 3'
	420 5'-gCT 3'	595 5'-CCT 3'	477 5'-gCA 3'		479 5'-CCA 3'	846 5'-CAC 3'	479 5'-CCA 3'	539 5'-TCA 3'	559 5'-CTC 3'	583 5'-gTg 3'	3 rd 5'-ATg 3'	846 5'-CAC 3'
					527 5'-CCA 3'		523 5'-ACA 3'	585 5'-AgT 3'	846 5'-CAC 3'	619 5'-TTT 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.	155	120	115	130	75	195	100	80	125	110	90	90
PCR product		240	230	255	255	260	265	110	160	250	120	165
				295		295		285	245	335	235	260
						345				355		
Length of int.	800	1070	800	1070	800	800	800	800	800	1070	1070	1070
pos. control ¹												
5'-primer(s) ²	89 5'-gAA 3'	89 5'-gAA 3'	89 5'-gAA 3'	89 5'-gAA 3'	632 5'-gAg 3'	89 5'-gAA 3'	368 5'-gTg 3'	89 5'-gAA 3'	89 5'-gAA 3'	74 5'-C 3'	368 5'-gTg 3'	368 5'-gTg 3'
	89 5'-gAA 3'				806 5'-ggA 3'	368 5'-gTT 3'		530 5'-ggT 3'	368 5'-gTg 3'	361 5'-AgA 3'	3 rd 5'-Cgg 3'	
					818 5'-ggC 3'	369 5'-TAC 3'		806 5'-ggT 3'		379 5'-Acg 3'		
						420 5'-TAA 3'				463 5'-TgA 3'		
						453 5'-AAT 3'						
3'-primer(s) ³	201 5'-CTT 3'	170 5'-Cgg 3'	164 5'-gCA 3'	176 5'-ACT 3'	846 5'-CAC 3'	244 5'-CTg 3'	427 5'-gTA 3'	331 5'-CTA 3'	172 5'-CAT 3'	142 5'-TgA 3'	418 5'-gTg 3'	418 5'-gTg 3'
	201 5'-CTC 3'	289 5'-AgC 3'	165 5'-Tgg 3'	301 5'-gCA 3'		3 rd 5'-ATg 3'	583 5'-gTg 3'	601 5'-CTC 3'	209 5'-gCC 3'	3 rd 5'-ATg 3'	419 5'-Cgg 3'	419 5'-gT 3'
		295 5'-TCA 3'	274 5'-CTg 3'	341 5'-CgT 3'			601 5'-CTg 3'	846 5'-CAC 3'	295 5'-TCA 3'		560 5'-ACA 3'	493 5'-CTT 3'
			278 5'-ggT 3'						573 5'-AgA 3'		671 5'-ggA 3'	585 5'-AgT 3'
			287 5'-TCg 3'									
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

Lot No.: **4G0**

Lot-specific information

Well No.	25	26	27	28	29	30	31
Length of spec.	85	155	350	155	135	125	155
PCR product	240	230	545	295	295	235	265
				325	350		
				360			
Length of int. pos. control ¹	1070	1070	1070	800	1070	1070	1070
5'-primer(s) ²	89	89	302	355	302	368	89
	5'-gAA 3'	5'-gAA 3'	5'-gAA 3'	5'-TCA 3'	5'-gAA 3'	5'-gTg 3'	5'-gAA 3'
			972	388	3 rd		
			5'-CTA 3'	5'-CCA 3'	5'-Cgg 3'		
				420			
				5'-TAA 3'			
				560			
				5'-CCT 3'			
3'-primer(s) ³	131	203	361	3 rd	361	454	203
	5'-ggT 3'	5'-CTC 3'	5'-CCA 3'	5'-ATg 3'	5'-CCA 3'	5'-CTg 3'	5'-CTC 3'
	287	274	1034		683	562	312
	5'-TCg 3'	5'-CTg 3'	5'-AgT 3'		5'-CCT 3'	5'-gCT 3'	5'-AgT 3'
	319	283			843		
	5'-gCg 3'	5'-gC 3'			5'-gTC 3'		
Well No.	25	26	27	28	29	30	31

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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.

²The 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.

³The 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.

Lot No.: **4G0**

Lot-specific information

CELL LINE VALIDATION SHEET																			
HLA-C*01 SSP primer set²																			
				Well ³															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:															
				201670801	201431102	201670803	201670804	201431105	201431106	201431107	201892808	201431109	201431110	201892011	201670812	201551813	201431114	201670815	201431116
IHC cell line ¹		C*																	
1	9001 SA	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*07:01	*15:05	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
3	9011 E4181324	*12:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020 QBL	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9007 DEM	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
11	9051 PITOUT	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
14	9071 OLGA	*01:02	*03:04	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
15	9075 DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*01:02	*07:05	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
19	9038 BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*01:02	*15:02	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
24	9035 JBUSH	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*07:18		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*07:04	*15:29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*17:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*17:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199	*01:02	*06:02	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
41	9055 H0301	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
43	9076 T7526	*01:02	*08:01	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
44	9057 TEM	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*06:02	*17:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*07:04	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lot No.: 4G0

Lot-specific information

CELL LINE VALIDATION SHEET																			
HLA-C*01 SSP primer set ²																			
				Well ³															
				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
				Prod. No.:	201670817	201892018	201431119	201551820	201431121	201892022	201670823	201892024	201670825	201670826	201670827	201892028	201670829	201670830	201670831
IHWG cell line ¹			C*																
1	9001	SA	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*12:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9007	DEM	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*01:02	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*07:18		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*17:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*17:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*01:02	*06:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*01:02	*08:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*06:02	*17:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lot No.: 4G0

Lot-specific information

¹The 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.

²The 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.

³The B*73:01 allele is weakly amplified by primer mix 7 in the 9280 (LK707) cell line.

No DNAs carrying the alleles to be amplified by primer solutions 2 to 6, 8 to 12, 14 to 26 and 28 to 31 were available. The specificity of the primers in primer solutions 2 to 5, 8 to 12, 14 to 16, 18 to 20, 22 to 25, 28, 29 and 31 were tested by adding additional 5'-primers respectively 3'-primers.

In primer solutions 6 and 17 it was only possible to test the 3'-primer, the 5'-primer was not possible to test. In primer solutions 21, 26 and 30 it was only possible to test the 5'-primer, the 3'-primers were not possible to test.

In primer solutions 9, 11 to 13, 18, 20, 22 and 28 one or two of the 5'-primers was not possible to test.

In primer solutions 2, 3, 5, 7 to 10, 14 to 16, 18 to 20, 23 to 25, 29 and 31 one to four of the 3'-primers were not possible to test. Additional primers in primer solutions 1, 7, 13 and 27 were tested by separately adding one 5'-primer and/or one 3'-primer.

Lot No.: **4G0**

Lot-specific information

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