

101.622-12 – including *Taq* pol., IFU-01
101.622-12u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **96Y**

Lot-specific information
Olerup SSP® HLA-C*02

Product number:	101.622-12 – including <i>Taq</i> polymerase 101.622-12u – without <i>Taq</i> polymerase
Lot number:	96Y
Expiry date:	2018-April-01
Number of tests:	12
Number of wells per test:	36+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. 96Y.

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*02 Lot (81X)**

The HLA-C*02 kit is updated for new alleles to enable separation of:

- Confirmed¹ alleles as listed in the IMGT/HLA database
- Polymorphisms in exons outside of the region encoding the peptide binding domain
- Null and Alternatively expressed alleles

A well containing Negative Control primer pairs has been added.

The format of the Product Insert and Worksheet have been changed.

Five wells have been added to HLA-C*02, wells **33 to 37**.

¹As described in section Uniquely Identified Alleles.

The HLA-C*02 primer set, specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup SSP®* HLA-C*02 lot was made (**Lot No. 81X**). The kit design is based on IMGT/HLA database 3.21.1.

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

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

Well	5'-primer	3'-primer	rationale
5	Added	-	5'-primer added for the C*02:81 allele.
15	Modified	-	5'-primer modified for improved HLA-specific amplification.
20	Modified, moved	Moved	5'-primer modified for improved HLA-specific amplification, primer pair moved to well 36.
26	-	Added	3'-primer added for the C*02:53:02 allele.
27	-	Added	3'-primer added for the C*02:53:02 allele.
32	Added	Added	Negative Control moved to well 37, primer pairs added for the C*02:81 and C*02:92N alleles.
33	New	New	New primer pair added for the C*02:87 allele.
34	New	New	New primer pair added for the C*02:105N allele.
35	New	New	New primer pair added for the C*02:106 allele.
36	Added	Added, exchanged	Primer pair added from well 20, 5'-primer exchanged for longer HLA-specific PCR product.
37	-	-	Negative Control added from well 32.

Change in revision R01 compared to R00:

1. Primer mix 30 does not amplify the B*58:02 allele. This has been corrected in the Specificity and Interpretation Tables.

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Well **37** 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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Lot-specific information
PRODUCT DESCRIPTION

HLA-C*02 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the C*02:02 to C*02:106 alleles.

PLATE LAYOUT

Each HLA-C*02 test consists of 37 PCR reactions in a 48 well cut PCR plate. Wells 38 to 48 are empty.

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	NC	empty	empty	empty
empty	empty	empty	empty	empty	empty	empty	empty

The 48 well PCR plate is marked with ‘HLA-C*02’ in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘96Y’.

Wells 1 to 36 – HLA-C*02 high resolution primers.

Well 37 – 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 48 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*02 alleles will be amplified by primer mixes 1 to 8, 10, 12 to 14, 16 to 18, 21, 22, 24, 25, 28 to 31, 33 and 36. In addition, a few HLA-A and HLA-B alleles will be amplified by primer mixes 3 to 5, 12, 15, 16, 19, 20, 22, 25, 26, 28, 31 and 33.

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-C*02 alleles, i.e. **C*02:02 to C*02:106**, recognized by the HLA Nomenclature Committee in August 2015^{1,2} will be amplified by the primers in the HLA-C*02 SSP kit³.

The HLA-C*02 kit enables separation of the confirmed HLA-C*02 alleles as listed in the IMGT/HLA database. 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*02 alleles is listed below.

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The HLA-C*02 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*02 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix	Alleles	Primer mix
C*02:05:02-02:05:03, 02:22	5	C*02:35, 02:69, 02:70	23
C*02:15, 02:21	15	C*02:37, 02:52N	28
C*02:25Q, 02:30	21		

The HLA-C*02 primer set cannot distinguish the following silent mutations: the C*02:02:01-02:02:03, 02:02:06-02:02:12, 02:02:15-02:02:25 and 02:02:27-02:02:30 alleles, the C*02:02:05 and 02:02:13-02:02:14 alleles, the C*02:05:02-02:05:03 alleles, the C*02:14:01-02:14:02 alleles, the C*02:26:01-02:26:03 or the C*02:53:01-02:53:02 alleles.

¹HLA-C alleles listed on the IMGT/HLA web page 2015-August-11, release 3.21.1, 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*02 primer set cannot separate the C*02:10 and 02:89 alleles from C*06:18. These alleles can be distinguished by the HLA-C low resolution kit and/or the HLA-C*06 high resolution kit.

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ALLELE CONFIRMATION STATUS

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

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2015-August-11, release 3.21.1, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in HLA-C*02 homo- and heterozygotes is available upon request.

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SPECIFICITY TABLE

HLA-C*02 SSP subtyping

Specificities and sizes of the PCR products of the 36+1 primer mixes used for HLA-C*02 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-C*02 alleles ³	Other amplified HLA Class I alleles ⁴
1	250 bp	800 bp	*02:02:01-02:02:03, 02:02:05-02:02:30, 02:04- 02:15, 02:17, 02:19-02:31, 02:33-02:40:02, 02:42-02:71, 02:73-02:106	*01:04, 01:09, 01:21, 04:94:01- 04:94:02, 05:08, 05:52, 05:89, 05:106, 06:02:01:01-06:02:01:03, 06:02:03- 06:03:02, 06:07-06:39, 06:41-06:78, 06:80-06:117, 06:119-06:152N, 06:154-06:164, 08:27, 08:29, 08:31, 12:02:01-12:08, 12:10:01-12:13, 12:15-12:17, 12:21-12:23, 12:25- 12:82, 12:84N, 12:86-12:136, 12:138- 12:152, 12:154-12:162, 14:16, 15:74, 16:04:01, 16:04:03, 16:29, 16:33, 16:42, 16:55, 16:61, 16:66, 16:78, 16:82, 18:03
2⁵	95 bp	800 bp	*02:02:01-02:02:03, 02:02:06-02:02:12, 02:02:15- 02:02:30, 02:04, 02:05:02- 02:05:03, 02:07-02:09, 02:11, 02:13, 02:15, 02:19- 02:27:01, 02:28-02:31, 02:34-02:40:01, 02:42-02:50, 02:52N-02:57, 02:59-02:71, 02:74-02:75, 02:77-02:88, 02:90-02:93, 02:96-02:106	*03:287, 05:106, 12:03:17
3⁵	100 bp	800 bp	*02:03, 02:16:02, 02:18, 02:31	*03:03:22, 03:04:34, B*27:34, B*35:01:30^w, B*40:02:07, B*40:06:02, B*51:01:52^w, B*57:01:16^w, B*57:03:02^w
4⁵	135 bp 65 bp	1070 bp	*02:20 *02:56	B*35:01:30, B*51:01:52, B*57:01:16, B*57:03:02
5	150 bp 145 bp 240 bp	1070 bp	*02:04 *02:22 *02:05:01-02:05:03, 02:17, 02:81	*04:198, 08:119, 12:115, 14:41 *05:105, 08:31, B*07:02:07, B*27:05:15, B*48:04:02 *01:10, 06:08, 12:119, 14:25, 16:29, 16:50, 17:21, B*07:239, B*14:46, B*40:243
6	160 bp 210 bp	800 bp	*02:06, 02:47 *02:46, 02:64	*12:15, 15:74 *12:162
7	130 bp	800 bp	*02:07, 02:97	*16:10, 16:67
8⁵	70 bp 280 bp	1070 bp	*02:08 *02:33	*03:18:02, 03:64:01, 12:03:23, 15:10:02-15:10:03

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Lot No.	Product	Product	Product	Product
9	200 bp	1070 bp	*02:02:01-02:02:03, 02:02:05-02:09, 02:11-02:13, 02:15-02:28, 02:30-02:40:02, 02:42-02:57, 02:59-02:88, 02:90-02:106	
10⁷	130 bp	1070 bp	*02:02:01-02:02:03, 02:02:05-02:02:25, 02:02:27- 02:25Q, 02:27:01-02:38N, 02:40:01-02:40:02, 02:42- 02:44, 02:46-02:86, 02:88- 02:100, 02:101 ^w , 02:102- 02:106	*04:03:01-04:03:02, 04:06, 04:80, 04:107, 04:147, 04:160, 04:171, 04:190, 05:26, 06:18, 07:272, 07:326, 15:11, 16:34
11⁵	85 bp 170 bp	800 bp	*02:18, 02:32 *02:09	
12	150 bp	1070 bp	*02:11, 02:14:01-02:14:02	*04:42:01-04:42:02, 05:43, 06:05 ^w , 07:02:09, 08:37, 12:16, 12:147, 15:23, 15:63, 16:21, 16:80, B*27:84
	230 bp		*02:17	*14:25
13⁶	225 bp 265 bp	1070 bp	*02:12, 02:27:01-02:27:02 *02:49, 02:75	*16:34 *04:03:01-04:03:02, 04:06, 04:80, 04:147, 04:160, 04:171, 04:190
14⁵	80 bp 115 bp	800 bp	*02:13 *02:43	*05:106, 12:03:17
15	130 bp 190 bp	1070 bp	*02:21 *02:15, 02:71	B*07:221
16^{6,7}	250 bp	1070 bp	*02:03, 02:16:01-02:16:02, 02:18	*01:22, 01:35, 04:04:01-04:04:02, 04:06, 04:13, 04:34, 04:58, 04:122, 04:160, 04:178, 05:11, 05:17, 05:27, 05:68, 05:70, 05:79, 05:115, 06:04, 06:118, 06:153, 08:01:01-08:01:19, 08:03:01-08:04:03, 08:06, 08:08:01- 08:11, 08:13-08:14, 08:16:01- 08:16:02, 08:20-08:22, 08:24, 08:26N, 08:36N, 08:38-08:42, 08:44, 08:46, 08:50, 08:54, 08:56-08:61, 08:65- 08:66, 08:72:01-08:72:02, 08:78- 08:89N, 08:91, 08:93, 08:95-08:99, 08:101-08:102, 08:104-08:106, 08:109, 08:113, 08:117, 08:119, 08:121N-08:122, 12:14:01-12:14:02, 12:18:01-12:18:02, 12:20, 12:83, 14:06, 14:15, 14:53, 15:02:01:01- 15:07, 15:09-15:13, 15:15-15:19, 15:21-15:24, 15:26-15:73, 15:76- 15:83, 15:85-15:101, 15:103-15:117, 16:35, 16:40, 16:48, 17:01:01:01- 17:16, 17:18-17:30, B*58:02
17⁵	110 bp 160 bp	1070 bp	*02:31, 02:43 *02:23	*05:106, 12:03:17
18	235 bp	800 bp	*02:26:01-02:26:03	*03:07, 03:10, 03:15, 03:29, 03:45, 03:163, 03:268, 03:297, 04:16, 04:42:01-04:42:02, 04:103, 05:01:01:01-05:01:25, 05:01:27- 05:01:28, 05:01:30-05:01:31, 05:03- 05:12, 05:14-05:19, 05:21-05:25,

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				05:27-05:29:02, 05:31-05:77, 05:79-05:122, 06:02:01:01-06:02:01:03, 06:02:03-06:02:08, 06:02:10-06:02:20, 06:02:22-06:10, 06:12-06:17, 06:19-06:32, 06:34-06:81, 06:83-06:103, 06:105-06:118, 06:121-06:124, 06:126-06:146, 06:148-06:164, 07:07, 07:09, 07:76:01-07:76:02, 07:315, 07:328, 07:406, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 12:60, 12:72, 12:135, 12:146, 12:154, 15:02:01:01-15:02:20, 15:02:22-15:06:03, 15:08-15:10:03, 15:12-15:13, 15:15-15:19, 15:21-15:24, 15:26-15:35, 15:37-15:42, 15:44-15:84Q, 15:86-15:117, 16:02:01-16:02:07, 16:02:09-16:02:13, 16:09, 16:12, 16:19, 16:25, 16:37, 16:46-16:48, 16:60, 16:63, 16:69-16:70, 16:74, 16:77N, 16:84, 17:01:01:01-17:01:08, 17:01:10-17:21, 17:23-17:30, 18:01-18:09
19⁵	80 bp	1070 bp	*02:03, 02:28	B*27:34, B*35:01:30^w, B*40:02:07, B*40:06:02, B*57:01:16^w, B*57:03:02^w
20	180 bp 215 bp	1070 bp	*02:24, 02:71 *02:72	B*07:113, B*08:64, B*40:192 B*07:52
21⁵	115 bp 210 bp	1070 bp	*02:30 *02:25Q, 02:64, 02:67Q	*15:19 *12:162
22⁵	65 bp	1070 bp	*02:56	B*35:01:30, B*51:01:52, B*57:01:16, B*57:03:02
23⁵	110 bp 85 bp 210 bp 390 bp	1070 bp	*02:34 *02:70 *02:29, 02:69 *02:35	*16:09
24	325 bp	1070 bp	*02:06, 02:23, 02:36, 02:68	*01:90, 01:101-01:102, 03:81, 03:175, 03:199, 03:245, 04:108, 04:178, 06:89, 07:123, 07:173, 07:294, 08:113, 12:15, 12:113, 15:02:01:01-15:02:17, 15:02:19-15:02:21, 15:02:23-15:03, 15:05:01-15:13, 15:15-15:19, 15:21-15:24, 15:26-15:29, 15:31-15:39, 15:41-15:63, 15:67-15:75, 15:78-15:101, 15:103-15:104, 15:106-15:109, 15:111-15:117, 16:20
25	160 bp 215 bp	1070 bp	*02:19, 02:23 *02:60	*01:09, 03:21, 03:80, 03:142, 03:287, 06:107, B*07:55, B*07:100, B*15:45, B*15:63, B*15:248, B*15:287 B*07:55, B*07:100, B*08:70, B*15:07:01-15:07:03, B*15:45, B*15:68, B*15:126, B*15:207, B*15:324, B*15:331, B*46:12, B*48:19

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Well	Product Size	Control Size	Product	Control
26	140 bp 255 bp	1070 bp	*02:39 *02:40:01-02:40:02, 02:53:01-02:53:02	*12:124, B*15:363, B*18:91
27	140 bp	800 bp	*02:44-02:45, 02:53:01- 02:53:02	
28 ^{5,8}	90 bp 215 bp	800 bp	*02:52N *02:37, 02:46, 02:60, 02:67Q	*06:81, B*07:55, B*07:100, B*08:70, B*15:07:01-15:07:03, B*15:45, B*15:68, B*15:126, B*15:207, B*15:324, B*15:331, B*46:12, B*48:19
29	165 bp 210 bp	1070 bp	*02:83 *02:12, 02:49, 02:55	*08:24 *04:03:01, 04:06, 04:80, 04:107, 04:147, 04:160, 04:171, 04:190
30 ^{5,7}	80 bp 270 bp	1070 bp	*02:38N *02:58	*01:35, 01:107, 04:08, 04:34, 04:147, 05:27, 05:39, 06:96, 08:41, 08:115, 12:83, 12:106, 12:122, 14:20, 15:15, 15:77, 17:07, 18:08
31 ⁵	100 bp	1070 bp	*02:42	*01:02:34, 01:21, 04:140, 04:166, 05:98, 06:05, 07:02:09, 08:14, 08:80, 08:103, 12:16, 12:147, 15:63, 15:113, 16:80, B*67:02
	165 bp		*02:83	*08:24
32	215 bp 245 bp	1070 bp	*02:92N *02:81	
33	320 bp	1070 bp	*02:87, 02:94	*07:101, 07:148, 07:161, 15:107, A*11:166, A*30:56, A*31:85, A*80:01:01-01-80:03, B*18:96, B*44:157, B*55:74
34	160 bp	1070 bp	*02:105N	
35	210 bp	1070 bp	*02:106	
36	235 bp	1070 bp	*02:27:01-02:27:02, 02:65	*16:34
37 ⁹			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*02 high 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 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

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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.

⁴Due to the sharing of sequence motifs between HLA-C alleles, non-HLA-C*02 alleles will be amplified by primer mixes 1 to 8, 10, 12 to 14, 16 to 18, 21, 22, 24, 25, 28 to 31, 33 and 36. In addition, a few HLA-A and HLA-B alleles will be amplified by primer mixes 3 to 5, 12, 15, 16, 19, 20, 22, 25, 26, 28, 31 and 33.

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

⁶Primer mixes 13 and 16 may give a lower yield of HLA-specific PCR product than the other C*02 primer mixes.

⁷Primer mixes 10, 16 and 30 may have tendencies of unspecific amplifications.

⁸The C*07 alleles might be faintly amplified by primer mix 28.

⁹Primer mix 37 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.

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Lot-specific information
PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	250	95	100	65	145	160	130	70	200	130	85	150
			135	150	240	210		280			170	230
Length of int. pos. control ¹	800	800	800	1070	1070	800	800	1070	1070	1070	800	1070
5'-primer(s) ²	2 nd I 5'-CCA 3'	486 5'-ACA 3'	486 5'-ACA 3'	92 5'-gTg 3'	356 5'-CCg 3'	364 5'-ggT 3'	2 nd I 5'-CCA 3'	105 5'-gCT 3'	703 5'-CTA 3'	113 5'-CCA 3'	486 5'-ACA 3'	97 5'-TCg 3'
				463 5'-TgA 3'	361 5'-AgT 3'	370 5'-ACT 3'				118 5'-CCA 3'		368 5'-gTT 3'
					453 5'-AAT 3'	420 5'-TTA 3'						449 5'-CCA 3'
3'-primer(s) ³	538 5'-CCA 3'	538 5'-CCA 3'	538 5'-CAG 3'	201 5'-CTT 3'	559 5'-CTC 3'	538 5'-CCA 3'	418 5'-gTC 3'	134 5'-AgC 3'	861 5'-TCg 3'	201 5'-CTT 3'	527 5'-CCg 3'	201 5'-CTT 3'
			555 5'-CCg 3'	486 5'-gCT 3'				343 5'-g 3'		201 5'-CTC 3'	538 5'-CCg 3'	559 5'-CTC 3'
			578 5'-TgT 3'								613 5'-gCA 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	80	130	250	110	235	80	180	115	65	85	325
			190		160			215	210	110	210	390
Length of int. pos. control ¹	1070	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	118 5'-CCA 3'	486 5'-ACA 3'	113 5'-CCA 3'	2 nd I 5'-CCA 3'	486 5'-ACA 3'	118 5'-CCg 3'	486 5'-ACA 3'	369 5'-TAC 3'	125 5'-CgA 3'	244 5'-CgC 3'	322 5'-gCC 3'	409 5'-ggC 3'
			369 5'-TAC 3'			118 5'-CCg 3'			370 5'-ACT 3'	463 5'-TgA 3'	703 5'-CTA 3'	
									373 5'-gCg 3'			
									374 5'-CTA 3'			
3'-primer(s) ³	302 5'-ggC 3'	527 5'-CCg 3'	201 5'-CTT 3'	538 5'-CAG 3'	555 5'-CCg 3'	312 5'-AgT 3'	527 5'-CCA 3'	506 5'-Tgg 3'	201 5'-CTT 3'	312 5'-AgT 3'	419 5'-Cgg 3'	3 rd I 5'-CTC 3'
	302 5'-ggC 3'	559 5'-CgT 3'	515 5'-CCA 3'		559 5'-CgT 3'			515 5'-CCA 3'	538 5'-CCA 3'	486 5'-gCT 3'	745 5'-AgC 3'	
	341 5'-CgT 3'		518 5'-CCA 3'		603 5'-TTg 3'			545 5'-AgA 3'			865 5'-CCT 3'	
											871 5'-CgA 3'	
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

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Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec. PCR product	160	140	140	90	165	80	100	215	320	160	210	235
Length of int. pos. control ¹	1070	1070	800	800	1070	1070	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	363 5'-AgC 3'	105 5'-gCT 3'	105 5'-gCT 3'	105 5'-gCT 3'	118 5'-CCA 3'	2 nd I 5'-CCA 3'	142 5'-TCT 3'	356 5'-CCg 3'	28 5'-TCC 3'	105 5'-gCT 3'	703 5'-CTA 3'	118 5'-CCA 3'
	419 5'-gTA 3'	369 5'-TAC 3'	486 5'-ACA 3'	359 5'-CCg 3'	736 5'-gCA 3'		736 5'-gCA 3'	385 5'-ggC 3'				
			363 5'-AgC 3'									
			364 5'-ggT 3'									
			373 5'-gCg 3'									
3'-primer(s) ³	538 5'-CCA 3'	203 5'-CTg 3'	202 5'-TCC 3'	153 5'-ACT 3'	289 5'-AgC 3'	369 5'-CCT 3'	201 5'-CTT 3'	559 5'-CTC 3'	176 5'-ACT 3'	223 5'-CCA 3'	872 5'-CCA 3'	312 5'-Agg 3'
		580 5'-TCC 3'	578 5'-TgA 3'	538 5'-CCA 3'	289 5'-AgC 3'	558 5'-Agg 3'	861 5'-TCg 3'					
		595 5'-CCg 3'	595 5'-CCT 3'		861 5'-TCg 3'							
		595 5'-CCT 3'	595 5'-CCg 3'									
Well No.	25	26	27	28	29	30	31	32	33	34	35	36

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.

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Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-C*02 SSP primer set³																				
				Well ²																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				Prod. No.:	201446601	201446602	201446603	201446604	201557905	201446606	201446607	201446608	201446609	201446610	201446611	201446612	201446613	201446614	201557915	201446616
IHCW 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	9025	DEU	*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	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
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	*17:01	*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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.622-12 – including **Taq pol.**, IFU-01
101.622-12u – without **Taq pol.**, IFU-02

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Lot-specific information

CELL LINE VALIDATION SHEET															
HLA-C*02 SSP primer set ³															
			Well ²												
				17	18	19	20	21	22	23	24	25	26	27	28
			Prod. No.:												
			201446617												
			201446618												
			201446619												
			201557920												
			201446621												
			201446622												
			201446623												
			201446624												
			201446625												
			201557926												
			201557927												
			201446628												
			201446629												
			201557930												
			201446631												
			201557932												
	IHWC 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	*07:01	- - - - -												
27	9191 CH1007	*07:04 *15:05	- + - - -												
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	*17:01 *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	- - - - -												

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101.622-12u – without *Taq* pol., IFU-02

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Lot-specific information

CELL LINE VALIDATION SHEET									
HLA-C*02 SSP primer set³									
					Well²				
					33	34	35	36	
					Prod. No.:	201557933	201557934	201557935	201557936
	IHWC cell line¹	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	*07:01			-	-	-	-	
27	9191 CH1007	*07:04	*15:05		-	-	-	-	
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	*17:01	*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		-	-	-	-	

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.

101.622-12 – including *Taq* pol., IFU-01
101.622-12u – without *Taq* pol., IFU-02

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Lot No.: **96Y**

Lot-specific information

²The A*80:01 allele is amplified by primer mix 33 in the 9282 (CTM3953540) cell line.

³The 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 3 to 8, 11, 12, 14, 15, 17, 19 to 23, 26, 27, 30 to 32 and 34 to 36 were available. The specificity of the primers in primer solutions 3 to 8, 11, 12, 14, 15, 17, 19, 22, 23, 26, 30, 31 and 36 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer. In primer solutions 21 and 32 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 20, 27, 34 and 35 it was only possible to test the 5'-primers, the 3'-primers were not possible to test.

In primer solutions 3, 8, 11, 13, 15, 17, 23, 26, 28 and 30 one, two or three of the 3'-primers were not possible to test, and in primer solutions 4 to 6, 10, 12, 15, 22, 23, 28, 29 and 31 one, two or three 5'-primers were not possible to test.

Additional primers in primer solutions 10, 13, 25, 28 and 29 were tested by separately adding either one 5'-primer, one or two 3'-primers.

101.622-12 – including *Taq* pol., IFU-01
101.622-12u – without *Taq* pol., IFU-02

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101.622-12u – without *Taq* pol., IFU-02

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Lot No.: **96Y**

Lot-specific information

ADDRESSES:

Manufacturer:

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

Tel: +46-8-717 88 27

Fax: +46-8-717 88 18

E-mail: info-ssp@olerup.com

Web page: <http://www.olerup-ssp.com>

Distributed by:

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

Tel: +43-1-710 15 00

Fax: +43-1-710 15 00 10

E-mail: support-at@olerup.com

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

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

Tel: 1-877-OLERUP1

Fax: 610-344-7989

E-mail: info.us@olerup.com

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

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