

Olerup SSP® HLA-A*11

Product number:	101.416-12/04 – including <i>Taq</i> pol.
Lot number:	16M
Expiry date:	2013-October-01
Number of tests:	12 tests – Product No. 101.416-12 4 tests – Product No. 101.416-04
Number of wells per test:	48
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. 16M.

CHANGES COMPARED TO THE PREVIOUS *OLERUP SSP*® HLA-A*11 LOT

The HLA-A*11 specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP*® HLA-A*11 lot was made (Lot No. 01H).

Sixteen wells have been added to the HLA-A*11 kit,
wells **33 to 48**.
The amplification patterns for some rare HLA-A*11 alleles
only differ by the length of the specific PCR products.

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

Well	5'-primer	3'-primer	rationale
33	New	New	New primer pairs for the A*11:56, 11:61 and 11:74 alleles.
34	New	New	New primer pairs for the A*11:46, 11:58 and 11:67 alleles.
35	New	New	New primer pairs for the A*11:62 and 11:68 alleles.
36	New	New	New primer pairs for the A*11:64 and 11:65 alleles.
37	New	New	New primer pairs for the A*11:66 and 11:72 alleles.
38	New	New	New primer pairs for the A*11:75 and 11:78N alleles.

39	New	New	New primer pairs for the A*11:52Q and 11:74 alleles.
40	New	New	New primer pairs for the A*11:57 and 11:59 alleles.
41	New	New	New primer pair for the A*11:60 allele.
42	New	New	New primer pairs for the A*11:63 and 11:69N alleles.
43	New	New	New primer pairs for the A*11:70 and 11:77 alleles.
44	New	New	New primer pair for the A*11:76 allele.
45	New	New	New primer pair for the A*11:79 allele.
46	New	New	New primer pair for the A*11:80 allele.
47	New	New	New primer pair improved allelic resolution.
48	New	New	New primer pair for the A*11:71 allele.

Change in revision R01 compared to R00:

1. Modified sequences as of allele database 3.7.0: A*11:02:01 corrected at position 899 and the A*11:53 allele shown to be identical to the correct sequence of A*11:02:01. As a consequence, the A*11:02:01-11:02:03 alleles are not amplified by primer mix 5.

Change in revision R02 compared to R01:

1. The HLA-A*34:02:01-34:02:02, 34:04 and 34:07-34:09 alleles are weakly amplified by primer mix 3. This has been changed in the Specificity and Interpretation Tables.

Change in revision R03 compared to R02:

1. Primer mix 43 does not amplify the A*11:77 and the A*03:26 alleles. Thus, this lot of the HLA-A*03 subtyping kit cannot distinguish the A*11:77 and the A*11:02:01-11:02:03 alleles.

PRODUCT DESCRIPTION

HLA-A*11 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the HLA-A*11:01 to A*11:80 alleles.

PLATE LAYOUT

Each test consists of 48 PCR reactions in a 48 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	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48

The 48 well cut PCR plate is marked with ‘HLA-A*11’ in silver/gray ink.

Well No. 1 is marked with Lot No ‘16M’.

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded.

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

Please note: When removing each 48 well PCR plate, make sure that the remaining plates stay covered. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

INTERPRETATION

The interpretation of HLA-A*11 SSP subtypings will be influenced by most A*01 alleles, several A*02 alleles, the A*03, the A*23:07N, seven A*24, the A*25, the A*26, most A*29, the A*30, two A*31, two A*32, most A*33, the A*34, the A*36, the A*43:01, the A*66, the A*68, the A*69:01, three A*74 and the A*80 alleles when present on the other haplotype. In addition, the B*07:102, B*08:18, B*73:01 and B*73:02 alleles will be amplified by primer mix 10, the B*44:36 allele will be amplified by primer mix 36, the B*07:117 allele will be amplified by primer mix 38, the B*57:04 and B*57:32 alleles will be amplified by primer mix 43 and the C*03:82 allele will be amplified by primer mix 1.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A*11 alleles¹, i.e. **A*11:01 to A*11:80**, recognized by the HLA Nomenclature Committee in October 2010² will give rise to unique amplification patterns by the primers in the HLA-A*11 subtyping kit³.

¹The HLA-A*11 subtyping kit cannot distinguish the A*11:01:01-11:01:20 and 11:01:22-11:01:27 alleles, the A*11:02:01-11:02:03 alleles or the A*11:33:01-11:33:02 alleles.

The A*11:13 and A*11:54 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16.

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The A*11:32 and A*11:51 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 32.

The A*11:58 and A*11:67 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 34.

The A*11:62 and A*11:68 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 35.

The A*11:63 and A*11:69 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 42.

The A*11:64 and A*11:65 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

The A*11:66 and A*11:72 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 37.

²HLA-A alleles listed on the IMGT/HLA web page 2010-October-20, release 3.2.0, www.ebi.ac.uk/imgt/hla.

³This lot of the HLA-A*03 subtyping kit cannot distinguish the A*11:77 and the A*11:02:01-11:02:03 alleles.

RESOLUTION IN HOMO- AND HETEROZYGOTES

A total of 124 alleles generate 74 amplification patterns that can be combined in 2775 homozygous and heterozygous combinations. 1082 of these genotypes do not give rise to unique amplification patterns. The different lengths of the specific PCR products were not considered in these calculations.

++-+-----	+++-+---	-----	-+-----	-----	-----	*11:04, *11:38 = *11:27, *11:38 = *11:27, *11:53
++-+-----	---+----+	-----	-----+	-----	-----	*11:16, *11:35 = *11:35, *11:53
++-+-----	+++-+---	-----	-+-----	-----	-----	*11:02:01, *11:39 = *11:05, *11:38
++-+-----	---+----+	-----	-----	-----	-----	*11:02:01, *11:12 = *11:02:01, *11:24:02
++-+-----	---+----+	-----	-----	-----	-----	*11:02:01, *11:23 = *11:02:01, *11:73 = *11:05, *11:16
++-+-----	---+----+	-----	-----	-----	-----	*11:02:01, *11:21N = *11:02:01, *11:48
++-+-----	---+----+	-----	-+-----	-----	-----	*11:02:01, *11:26 = *11:02:01, *11:41
++-+-----	---+----+	-----	-----	-----	---+-----	*11:02:01, *11:70 = *11:05, *11:77
++-+-----	---+----+	-----	-----	-----	-----	*11:01:01, *11:02:01 = *11:01:21, *11:02:01 = *11:02:01, *11:05 = *11:05, *11:53
++-----+	---+----+	+-----	-----+	-----	-----	*11:14, *11:50Q = *11:50Q, *11:53
++-----	+++-+---	-----	-+-----	-----	-----	*11:12, *11:38 = *11:24:02, *11:38
++-----	+++-+---	---+-----	-+-----	-----	-----	*11:16, *11:39 = *11:23, *11:38 = *11:38, *11:73
++-----	+++-+---	-----	-+-----	-----	-----	*11:21N, *11:38 = *11:38, *11:48
++-----	+++-+---	-----	-+-----	-----	-----	*11:26, *11:38 = *11:38, *11:41
++-----	+++-+---	-----	-+-----	-----	-----	*11:29, *11:38 = *11:38, *11:55
++-----	+++-+---	-----	-+-----	-----	---+-----	*11:38, *11:70 = *11:39, *11:77
++-----	+++-+---	-----	-+-----	-----	-----	*11:01:01, *11:38 = *11:01:21, *11:38 = *11:38, *11:39 = *11:39, *11:53
++-----	---+----+	+-----	-----	-----	-----	*11:12, *11:14 = *11:14, *11:24:02
++-----	---+----+	---+-----	-----	-----	-----	*11:12, *11:57 = *11:24:02, *11:57
++-----	---+----+	---+-----	-----	-----	-----	*11:12, *11:16 = *11:16, *11:24:02
++-----	---+----+	-----	-----	-----	---+-----	*11:12, *11:77 = *11:24:02, *11:77
++-----	---+----+	-----	-----	-----	-----	*11:12, *11:53 = *11:24:02, *11:53
++-----	---+----+	++-----	-----	-----	-----	*11:14, *11:23 = *11:14, *11:73
++-----	---+----+	+-----	-----	-----	-----	*11:14, *11:21N = *11:14, *11:48
++-----	---+----+	+-----	-+-----	-----	-----	*11:14, *11:26 = *11:14, *11:41
++-----	---+----+	+-----	-----	-----	-----	*11:01:01, *11:14 = *11:01:21, *11:14
++-----	---+----+	---+-----	-----	-----	-----	*11:36, *11:57 = *11:42, *11:57
++-----	---+----+	---+-----	-----	-----	-----	*11:16, *11:36 = *11:16, *11:42 = *11:42, *11:53
++-----	---+----+	---+-----	-----	-----	-----	*11:21N, *11:57 = *11:48, *11:57
++-----	---+----+	---+-----	-----	-----	-----	*11:16, *11:21N = *11:16, *11:48

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++-----	---+---+	---+-----	---+-----	-----+	-----	*11:26, *11:57 = *11:41, *11:57
++-----	---+---+	---+-----	---+-----	-----	-----	*11:16, *11:26 = *11:16, *11:41
++-----	---+---+	---+-----	-----	---+-----	-----	*11:46, *11:57 = *11:57, *11:58
++-----	---+---+	---+-----	-----	---+-----	-----	*11:16, *11:46 = *11:16, *11:58 = *11:46, *11:53
++-----	---+---+	---+-----	-----	-----+	-----	*11:01:01, *11:57 = *11:01:21, *11:57 = *11:16, *11:59 = *11:23, *11:57 = *11:57, *11:59 = *11:57, *11:73
++-----	---+---+	---+-----	-----	-----	---+-----	*11:16, *11:70 = *11:23, *11:77 = *11:73, *11:77
++-----	---+---+	---+-----	-----	-----	-----	*11:01:01, *11:16 = *11:01:21, *11:16 = *11:16, *11:23 = *11:16, *11:73 = *11:23, *11:53 = *11:53, *11:73
++-----	---+---+	-----+	-----	-----	---+-----	*11:21N, *11:77 = *11:48, *11:77
++-----	---+---+	-----+	-----	-----	-----	*11:21N, *11:53 = *11:48, *11:53
++-----	---+---+	-----	---+	-----	---+-----	*11:26, *11:77 = *11:41, *11:77
++-----	---+---+	-----	---+	-----	-----	*11:26, *11:53 = *11:41, *11:53
++-----	---+---+	-----	-----	-----	---+-----	*11:01:01, *11:77 = *11:01:21, *11:77 = *11:53, *11:70 = *11:70, *11:77
++-----	---+---+	-----	-----	-----	-----	*11:01:01, *11:53 = *11:01:21, *11:53
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:06 = *11:03, *11:18
+-+-----	---+---+	-----+	-----	-----	-----	*11:06, *11:33:01 = *11:18, *11:33:01
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:08 = *11:08, *11:33:01
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:12 = *11:03, *11:24:02 = *11:03, *11:25 = *11:25, *11:33:01
+-+-----	---+---+	-----	-----	-----	-----	*11:12, *11:33:01 = *11:24:02, *11:33:01
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:23 = *11:03, *11:73
+-+-----	---+---+	-----+	-----	-----	-----	*11:23, *11:33:01 = *11:33:01, *11:73
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:21N = *11:03, *11:48
+-+-----	---+---+	-----+	---+	-----	-----	*11:03, *11:26 = *11:03, *11:41
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:29 = *11:03, *11:45
+-+-----	---+---+	-----+	-----	-----	-----	*11:03, *11:75 = *11:03, *11:78N
+-+-----	---+---+	-----+	-----	-----	-----	*11:01:01, *11:03 = *11:01:21, *11:03 = *11:03, *11:03 = *11:03, *11:20 = *11:03, *11:33:01 = *11:20, *11:33:01
+-+-----	---+---+	-----+	-----	-----	-----	*11:21N, *11:33:01 = *11:33:01, *11:48
+-+-----	---+---+	-----	---+	-----	-----	*11:26, *11:33:01 = *11:33:01, *11:41
+-+-----	---+---+	-----	-----	-----	-----	*11:29, *11:33:01 = *11:33:01, *11:45
+-+-----	---+---+	-----	-----	-----	-----	*11:33:01, *11:75 = *11:33:01, *11:78N
+-+-----	---+---+	-----	-----	-----	-----	*11:01:01, *11:33:01 = *11:01:21, *11:33:01 = *11:33:01, *11:33:01
+-+-----	---+---+	-----	---+	-----	-----	*11:06, *11:27 = *11:18, *11:27
+-+-----	---+---+	-----	-----	-----	-----	*11:06, *11:35 = *11:18, *11:35
+-+-----	---+---+	-----	-----	-----	-----	*11:04, *11:06 = *11:04, *11:18
+-+-----	---+---+	-----	---+	-----	-----	*11:12, *11:27 = *11:24:02, *11:27
+-+-----	---+---+	-----	-----	-----	-----	*11:23, *11:27 = *11:27, *11:73
+-+-----	---+---+	-----	---+	-----	-----	*11:17, *11:27 = *11:27, *11:40
+-+-----	---+---+	-----	---+---+	-----	-----	*11:27, *11:29 = *11:27, *11:45 = *11:27, *11:55
+-+-----	---+---+	-----	---+	-----	-----	*11:27, *11:75 = *11:27, *11:78N
+-+-----	---+---+	-----	-----	-----	-----	*11:01:01, *11:27 = *11:04, *11:39 = *11:27, *11:39
+-+-----	---+---+	-----	---+	-----	-----	*11:01:21, *11:27 = *11:04, *11:27 = *11:27, *11:27
+-+-----	---+---+	-----	---+	-----	-----	*11:35, *11:36 = *11:35, *11:42
+-+-----	---+---+	-----	---+	-----	-----	*11:29, *11:35 = *11:35, *11:45
+-+-----	---+---+	-----	---+	-----	-----	*11:35, *11:46 = *11:35, *11:58
+-+-----	---+---+	-----	---+	-----	-----	*11:35, *11:75 = *11:35, *11:78N
+-+-----	---+---+	-----	---+	-----	-----	*11:01:01, *11:35 = *11:12, *11:35 = *11:32, *11:35 = *11:35, *11:60 = *11:35, *11:73
+-+-----	---+---+	-----	-----	-----	-----	*11:04, *11:12 = *11:04, *11:24:02
+-+-----	---+---+	-----	-----	-----	-----	*11:04, *11:23 = *11:04, *11:73
+-+-----	---+---+	-----	---+	-----	-----	*11:04, *11:29 = *11:04, *11:45
+-+-----	---+---+	-----	-----	-----	-----	*11:04, *11:75 = *11:04, *11:78N
+-+-----	---+---+	-----	---+	-----	-----	*11:01:21, *11:35 = *11:04, *11:35
+-+-----	---+---+	-----	-----	-----	-----	*11:01:21, *11:04 = *11:04, *11:04
+-+-----	---+---+	-----	---+	-----	-----	*11:23, *11:35 = *11:24:02, *11:35 = *11:31, *11:35
+-+-----	---+---+	-----	-----	-----	-----	*11:05, *11:06 = *11:05, *11:18
+-+-----	---+---+	-----	-----	-----	-----	*11:05, *11:12 = *11:05, *11:24:02

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+-----	-----	-----	-----	-----	-----	*11:05, *11:23 = *11:05, *11:73
+-----	-----	-----	-----	-----	-----	*11:05, *11:21N = *11:05, *11:48
+-----	-----	-----	-----	-----	-----	*11:05, *11:26 = *11:05, *11:41
+-----	-----	-----	-----	-----	-----	*11:05, *11:29 = *11:05, *11:45
+-----	-----	-----	-----	-----	-----	*11:05, *11:75 = *11:05, *11:78N
+-----	-----	-----	-----	-----	-----	*11:01:01, *11:05 = *11:01:21, *11:05 = *11:05, *11:05
+-----	-----	-----	-----	-----	-----	*11:06, *11:50Q = *11:18, *11:50Q
+-----	-----	-----	-----	-----	-----	*11:06, *11:08 = *11:08, *11:18
+-----	-----	-----	-----	-----	-----	*11:06, *11:44 = *11:18, *11:44
+-----	-----	-----	-----	-----	-----	*11:06, *11:34 = *11:18, *11:34
+-----	-----	-----	-----	-----	-----	*11:06, *11:09 = *11:09, *11:18
+-----	-----	-----	-----	-----	-----	*11:06, *11:39 = *11:18, *11:39
+-----	-----	-----	-----	-----	-----	*11:06, *11:52Q = *11:18, *11:52Q
+-----	-----	-----	-----	-----	-----	*11:06, *11:10 = *11:10, *11:18
+-----	-----	-----	-----	-----	-----	*11:06, *11:43 = *11:18, *11:43
+-----	-----	-----	-----	-----	-----	*11:06, *11:11 = *11:11, *11:18
+-----	-----	-----	-----	-----	-----	*11:07, *11:12 = *11:07, *11:24:02
+-----	-----	-----	-----	-----	-----	*11:06, *11:25 = *11:18, *11:25
+-----	-----	-----	-----	-----	-----	*11:06, *11:31 = *11:18, *11:31
+-----	-----	-----	-----	-----	-----	*11:06, *11:12 = *11:06, *11:24:02 = *11:18, *11:24:02
+-----	-----	-----	-----	-----	-----	*11:12, *11:22 = *11:22, *11:24:02
+-----	-----	-----	-----	-----	-----	*11:07, *11:23 = *11:07, *11:73
+-----	-----	-----	-----	-----	-----	*11:06, *11:07 = *11:06, *11:13 = *11:07, *11:18 = *11:07, *11:37 = *11:13, *11:18
+-----	-----	-----	-----	-----	-----	*11:07, *11:21N = *11:07, *11:48
+-----	-----	-----	-----	-----	-----	*11:07, *11:26 = *11:07, *11:41
+-----	-----	-----	-----	-----	-----	*11:07, *11:29 = *11:07, *11:45
+-----	-----	-----	-----	-----	-----	*11:07, *11:75 = *11:07, *11:78N
+-----	-----	-----	-----	-----	-----	*11:01:01, *11:07 = *11:01:21, *11:07 = *11:07, *11:07 = *11:07, *11:13 = *11:07, *11:22 = *11:13, *11:22
+-----	-----	-----	-----	-----	-----	*11:06, *11:47 = *11:18, *11:47
+-----	-----	-----	-----	-----	-----	*11:06, *11:15:01 = *11:15:01, *11:18
+-----	-----	-----	-----	-----	-----	*11:06, *11:42 = *11:18, *11:42
+-----	-----	-----	-----	-----	-----	*11:06, *11:46 = *11:18, *11:46
+-----	-----	-----	-----	-----	-----	*11:06, *11:23 = *11:06, *11:73 = *11:18, *11:23 = *11:18, *11:73
+-----	-----	-----	-----	-----	-----	*11:22, *11:23 = *11:22, *11:73
+-----	-----	-----	-----	-----	-----	*11:06, *11:36 = *11:18, *11:36
+-----	-----	-----	-----	-----	-----	*11:06, *11:20 = *11:18, *11:20
+-----	-----	-----	-----	-----	-----	*11:06, *11:21N = *11:06, *11:48 = *11:18, *11:21N = *11:18, *11:48
+-----	-----	-----	-----	-----	-----	*11:06, *11:24:01 = *11:18, *11:24:01
+-----	-----	-----	-----	-----	-----	*11:06, *11:26 = *11:06, *11:41 = *11:18, *11:26 = *11:18, *11:41
+-----	-----	-----	-----	-----	-----	*11:06, *11:55 = *11:18, *11:55
+-----	-----	-----	-----	-----	-----	*11:06, *11:49 = *11:18, *11:49
+-----	-----	-----	-----	-----	-----	*11:06, *11:15:02 = *11:15:02, *11:18
+-----	-----	-----	-----	-----	-----	*11:06, *11:29 = *11:06, *11:45 = *11:18, *11:29
+-----	-----	-----	-----	-----	-----	*11:06, *11:30 = *11:18, *11:30
+-----	-----	-----	-----	-----	-----	*11:06, *11:32 = *11:18, *11:32
+-----	-----	-----	-----	-----	-----	*11:06, *11:74 = *11:18, *11:74
+-----	-----	-----	-----	-----	-----	*11:06, *11:56 = *11:18, *11:56
+-----	-----	-----	-----	-----	-----	*11:06, *11:58 = *11:18, *11:58
+-----	-----	-----	-----	-----	-----	*11:06, *11:62 = *11:18, *11:62
+-----	-----	-----	-----	-----	-----	*11:06, *11:64 = *11:18, *11:64
+-----	-----	-----	-----	-----	-----	*11:06, *11:66 = *11:18, *11:66
+-----	-----	-----	-----	-----	-----	*11:06, *11:75 = *11:06, *11:78N = *11:18, *11:75
+-----	-----	-----	-----	-----	-----	*11:06, *11:59 = *11:18, *11:59
+-----	-----	-----	-----	-----	-----	*11:06, *11:60 = *11:18, *11:60
+-----	-----	-----	-----	-----	-----	*11:06, *11:63 = *11:18, *11:63
+-----	-----	-----	-----	-----	-----	*11:06, *11:70 = *11:18, *11:70

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+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:06, *11:76 = *11:18, *11:76
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:06, *11:79 = *11:18, *11:79
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:06, *11:80 = *11:18, *11:80
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:06 = *11:01:01, *11:18 = *11:01:21, *11:06 = *11:01:21, *11:18 = *11:06, *11:06 = *11:06, *11:18 = *11:06, *11:22 = *11:06, *11:37 = *11:18, *11:22 = *11:18, *11:37 = *11:22, *11:37
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:21N, *11:22 = *11:22, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:22, *11:26 = *11:22, *11:41
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:22, *11:29 = *11:22, *11:45
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:22, *11:75 = *11:22, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:22 = *11:01:21, *11:22 = *11:22, *11:22
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:29, *11:50Q = *11:45, *11:50Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:50Q, *11:75 = *11:50Q, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:50Q = *11:32, *11:50Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:08, *11:29 = *11:08, *11:45
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:08, *11:75 = *11:08, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:08 = *11:01:21, *11:08 = *11:08, *11:20
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:29, *11:44 = *11:44, *11:45
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:44, *11:75 = *11:44, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:44 = *11:01:21, *11:44
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:08, *11:24:02 = *11:08, *11:25
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:12, *11:34 = *11:24:02, *11:34
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:23, *11:34 = *11:34, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:21N, *11:34 = *11:34, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:26, *11:34 = *11:34, *11:41
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:29, *11:34 = *11:34, *11:45
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:34, *11:75 = *11:34, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:34 = *11:01:21, *11:34 = *11:09, *11:11 = *11:09, *11:34 = *11:11, *11:34 = *11:34, *11:34
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:12 = *11:09, *11:24:02
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:23 = *11:09, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:21N = *11:09, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:26 = *11:09, *11:41
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:29 = *11:09, *11:45
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:09, *11:75 = *11:09, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:09 = *11:01:21, *11:09 = *11:09, *11:09
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:12, *11:39 = *11:24:02, *11:39
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:23, *11:39 = *11:39, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:17, *11:39 = *11:39, *11:40
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:21N, *11:39 = *11:39, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:26, *11:39 = *11:39, *11:41
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:29, *11:39 = *11:39, *11:45 = *11:39, *11:55
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:39, *11:75 = *11:39, *11:78N
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:01:01, *11:39 = *11:01:21, *11:39 = *11:39, *11:39
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:12, *11:52Q = *11:24:02, *11:52Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:10, *11:12 = *11:10, *11:24:02
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:12, *11:43 = *11:24:02, *11:43
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:23, *11:52Q = *11:52Q, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:10, *11:23 = *11:10, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:23, *11:43 = *11:43, *11:73
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:21N, *11:52Q = *11:48, *11:52Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:10, *11:21N = *11:10, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:21N, *11:43 = *11:43, *11:48
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:26, *11:52Q = *11:41, *11:52Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:10, *11:26 = *11:10, *11:41
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:26, *11:43 = *11:41, *11:43
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:29, *11:52Q = *11:45, *11:52Q
+-----+ -+++-+ ------+ ------+ ------+ -++-----	*11:30, *11:52Q = *11:43, *11:52Q = *11:49, *11:52Q

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+-----	-+++--	-----	---+--	-----	-----	*11:15:02, *11:43 = *11:43, *11:49
+-----	-+++--	-----	---+--	+-----	-----	*11:52Q, *11:56 = *11:52Q, *11:74
+-----	-+++--	-----	---+--	-----	-----	*11:52Q, *11:75 = *11:52Q, *11:78N
+-----	-+++--	-----	---+--	-----	-----	*11:01:01, *11:52Q = *11:01:21, *11:52Q = *11:15:02, *11:52Q = *11:52Q, *11:52Q
+-----	-+++--	-----	---+--	-----	-----	*11:10, *11:29 = *11:10, *11:45
+-----	-+++--	-----	---+--	-----	-----	*11:10, *11:30 = *11:10, *11:43
+-----	-+++--	-----	---+--	-----	-----	*11:10, *11:75 = *11:10, *11:78N
+-----	-+++--	-----	---+--	-----	-----	*11:01:01, *11:10 = *11:01:21, *11:10 = *11:10, *11:10
+-----	-+++--	-----	---+--	-----	-----	*11:29, *11:43 = *11:43, *11:45
+-----	-+++--	-----	---+--	-----	-----	*11:43, *11:75 = *11:43, *11:78N
+-----	-+++--	-----	---+--	-----	-----	*11:01:01, *11:43 = *11:01:21, *11:43 = *11:30, *11:43 = *11:43, *11:43
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:12 = *11:11, *11:24:02
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:23 = *11:11, *11:73
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:21N = *11:11, *11:48
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:26 = *11:11, *11:41
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:29 = *11:11, *11:45
+-----	-+++++	-----	-----	-----	-----	*11:11, *11:75 = *11:11, *11:78N
+-----	-+++++	-----	-----	-----	-----	*11:01:01, *11:11 = *11:01:21, *11:11 = *11:11, *11:11
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:13 = *11:13, *11:24:02
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:47 = *11:24:02, *11:47
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:15:01 = *11:15:01, *11:24:02
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:42 = *11:24:02, *11:42
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:46 = *11:24:02, *11:46
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:23 = *11:12, *11:73 = *11:24:02, *11:73
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:36 = *11:24:02, *11:36
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:37 = *11:24:02, *11:37
+-----	-+++---	-----	-----	-----	-----	*11:25, *11:29 = *11:25, *11:45
+-----	-+++---	-----	-----	-----	-----	*11:25, *11:75 = *11:25, *11:78N
+-----	-+++---	-----	-----	-----	-----	*11:01:01, *11:25 = *11:01:21, *11:25 = *11:12, *11:20 = *11:12, *11:25 = *11:20, *11:24:02 = *11:20, *11:25
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:21N = *11:12, *11:48 = *11:21N, *11:24:02
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:26 = *11:12, *11:41 = *11:24:02, *11:41
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:55 = *11:24:02, *11:55
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:49 = *11:24:02, *11:49
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:15:02 = *11:15:02, *11:24:02
+-----	-+++---	-----	-----	-----	-----	*11:29, *11:31 = *11:31, *11:45
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:29 = *11:12, *11:45 = *11:24:02, *11:29 = *11:24:02, *11:45
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:30 = *11:24:02, *11:30
+-----	-+++---	-----	-----	-----	-----	*11:31, *11:75 = *11:31, *11:78N
+-----	-+++---	-----	-----	-----	-----	*11:01:01, *11:31 = *11:01:21, *11:31 = *11:12, *11:31 = *11:31, *11:32 = *11:31, *11:60
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:32 = *11:24:02, *11:32
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:74 = *11:24:02, *11:74
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:56 = *11:24:02, *11:56
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:58 = *11:24:02, *11:58
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:62 = *11:24:02, *11:62
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:64 = *11:24:02, *11:64
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:66 = *11:24:02, *11:66
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:75 = *11:12, *11:78N = *11:24:02, *11:75 = *11:24:02, *11:78N
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:59 = *11:24:02, *11:59
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:60 = *11:24:02, *11:60
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:63 = *11:24:02, *11:63
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:70 = *11:24:02, *11:70
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:76 = *11:24:02, *11:76
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:79 = *11:24:02, *11:79
+-----	-+++---	-----	-----	-----	-----	*11:12, *11:80 = *11:24:02, *11:80

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+-----	---+---+	-----	-----	-----	-----	+-----	*11:12, *11:71 = *11:24:02, *11:71
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:12 = *11:01:01, *11:24:02 = *11:01:21, *11:12 = *11:01:21, *11:24:02 = *11:12, *11:24:02
+-----	---+---+	-----	-----	-----	-----	+-----	*11:13, *11:23 = *11:13, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:13, *11:21N = *11:13, *11:48
+-----	---+---+	-----	-----	-----	-----	+-----	*11:13, *11:26 = *11:13, *11:41
+-----	---+---+	-----	-----	-----	-----	+-----	*11:13, *11:29 = *11:13, *11:45
+-----	---+---+	-----	-----	-----	-----	+-----	*11:13, *11:75 = *11:13, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:13 = *11:01:21, *11:13 = *11:13, *11:13
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:47 = *11:47, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:01, *11:23 = *11:15:01, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:21N, *11:47 = *11:47, *11:48
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:01, *11:21N = *11:15:01, *11:48
+-----	---+---+	-----	-----	-----	-----	+-----	*11:26, *11:47 = *11:41, *11:47
+-----	---+---+	-----	-----	-----	-----	+-----	*11:29, *11:47 = *11:45, *11:47
+-----	---+---+	-----	-----	-----	-----	+-----	*11:47, *11:75 = *11:47, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:47 = *11:01:21, *11:47 = *11:15:01, *11:24:01 = *11:15:01, *11:47 = *11:24:01, *11:47 = *11:47, *11:47
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:01, *11:26 = *11:15:01, *11:41
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:01, *11:29 = *11:15:01, *11:45
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:01, *11:75 = *11:15:01, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:15:01 = *11:01:21, *11:15:01 = *11:15:01, *11:15:01
+-----	---+---+	-----	-----	-----	-----	+-----	*11:17, *11:23 = *11:17, *11:42 = *11:17, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:19, *11:42 = *11:23, *11:40 = *11:40, *11:42 = *11:40, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:21N, *11:42 = *11:42, *11:48
+-----	---+---+	-----	-----	-----	-----	+-----	*11:26, *11:42 = *11:41, *11:42
+-----	---+---+	-----	-----	-----	-----	+-----	*11:29, *11:42 = *11:42, *11:45
+-----	---+---+	-----	-----	-----	-----	+-----	*11:36, *11:46 = *11:42, *11:46 = *11:42, *11:58
+-----	---+---+	-----	-----	-----	-----	+-----	*11:42, *11:75 = *11:42, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:42 = *11:01:21, *11:42 = *11:23, *11:36 = *11:23, *11:42 = *11:36, *11:42 = *11:36, *11:73 = *11:42, *11:42 = *11:42, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:19, *11:23 = *11:19, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:37 = *11:37, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:20, *11:23 = *11:20, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:21N, *11:46 = *11:46, *11:48
+-----	---+---+	-----	-----	-----	-----	+-----	*11:21N, *11:23 = *11:21N, *11:73 = *11:48, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:26, *11:46 = *11:41, *11:46
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:41 = *11:26, *11:73 = *11:41, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:55 = *11:55, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:49 = *11:49, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:15:02, *11:23 = *11:15:02, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:29, *11:46 = *11:45, *11:46
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:29 = *11:23, *11:45 = *11:29, *11:73 = *11:45, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:30 = *11:30, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:32 = *11:32, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:74 = *11:73, *11:74
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:56 = *11:56, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:46, *11:75 = *11:46, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:01:01, *11:46 = *11:01:21, *11:46 = *11:23, *11:46 = *11:23, *11:58 = *11:46, *11:46 = *11:46, *11:58 = *11:46, *11:73 = *11:58, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:62 = *11:62, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:64 = *11:64, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:66 = *11:66, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:75 = *11:23, *11:78N = *11:73, *11:75 = *11:73, *11:78N
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:59 = *11:59, *11:73
+-----	---+---+	-----	-----	-----	-----	+-----	*11:23, *11:60 = *11:60, *11:73

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+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:63 = *11:63, *11:73
+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:70 = *11:70, *11:73
+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:76 = *11:73, *11:76
+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:79 = *11:73, *11:79
+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:80 = *11:73, *11:80
+-----	---+---	---+-----	-----	-----	---+-----	*11:23, *11:71 = *11:71, *11:73
+-----	---+---	---+-----	-----	-----	---+-----	*11:01:01, *11:23 = *11:01:01, *11:73 = *11:01:21, *11:23 = *11:01:21, *11:73 = *11:23, *11:73 = *11:73, *11:73
+-----	---+---	---+-----	---+-----	-----	-----	*11:17, *11:21N = *11:17, *11:48
+-----	---+---	---+-----	---+-----	-----	-----	*11:21N, *11:40 = *11:40, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:17, *11:26 = *11:17, *11:41
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:26, *11:40 = *11:40, *11:41
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:17, *11:29 = *11:17, *11:55 = *11:40, *11:55
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:01:01, *11:17 = *11:01:21, *11:17 = *11:17, *11:36
+-----	---+---	---+-----	---+-----	-----	-----	*11:01:01, *11:40 = *11:01:21, *11:40 = *11:19, *11:36 = *11:36, *11:40
+-----	---+---	---+-----	---+-----	-----	-----	*11:21N, *11:36 = *11:36, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:26, *11:36 = *11:36, *11:41
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:29, *11:36 = *11:36, *11:45
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:36, *11:75 = *11:36, *11:78N
+-----	---+---	---+-----	---+-----	-----	-----	*11:01:01, *11:36 = *11:01:21, *11:36 = *11:36, *11:36
+-----	---+---	---+-----	---+-----	-----	-----	*11:19, *11:21N = *11:19, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:19, *11:26 = *11:19, *11:41
+-----	---+---	---+-----	---+-----	-----	-----	*11:01:01, *11:19 = *11:01:21, *11:19
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:37 = *11:37, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:26, *11:37 = *11:37, *11:41
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:29, *11:37 = *11:37, *11:45
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:37, *11:75 = *11:37, *11:78N
+-----	---+---	---+-----	---+-----	-----	-----	*11:01:01, *11:37 = *11:01:21, *11:37 = *11:37, *11:37
+-----	---+---	---+-----	---+-----	-----	-----	*11:20, *11:21N = *11:20, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:20, *11:26 = *11:20, *11:41
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:20, *11:29 = *11:20, *11:45
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:20, *11:75 = *11:20, *11:78N
+-----	---+---	---+-----	---+-----	-----	-----	*11:01:01, *11:20 = *11:01:21, *11:20 = *11:20, *11:20
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:26 = *11:21N, *11:41 = *11:41, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:55 = *11:48, *11:55
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:49 = *11:48, *11:49
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:15:02, *11:21N = *11:15:02, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:29 = *11:21N, *11:45 = *11:29, *11:48 = *11:45, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:30 = *11:30, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:32 = *11:32, *11:48
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:74 = *11:48, *11:74
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:56 = *11:48, *11:56
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:58 = *11:48, *11:58
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:62 = *11:48, *11:62
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:64 = *11:48, *11:64
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:66 = *11:48, *11:66
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:75 = *11:21N, *11:78N = *11:48, *11:75 = *11:48, *11:78N
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:59 = *11:48, *11:59
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:60 = *11:48, *11:60
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:63 = *11:48, *11:63
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:70 = *11:48, *11:70
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:76 = *11:48, *11:76
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:79 = *11:48, *11:79
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:80 = *11:48, *11:80
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:21N, *11:71 = *11:48, *11:71
+-----	---+---	---+-----	---+-----	---+-----	-----	*11:01:01, *11:21N = *11:01:01, *11:48 = *11:01:21,

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+-----	-----	-----	+-----	-----	-----	*11:21N = *11:21N, *11:21N = *11:21N, *11:48
+-----	-----	-----	+-----	-----	-----	*11:24:01, *11:29 = *11:24:01, *11:45
+-----	-----	-----	+-----	-----	-----	*11:24:01, *11:75 = *11:24:01, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:24:01 = *11:01:21, *11:24:01
+-----	-----	-----	+-----	-----	-----	*11:26, *11:55 = *11:41, *11:55
+-----	-----	-----	+-----	-----	-----	*11:26, *11:49 = *11:41, *11:49
+-----	-----	-----	+-----	-----	-----	*11:15:02, *11:26 = *11:15:02, *11:41
+-----	-----	-----	+-----	-----	-----	*11:26, *11:29 = *11:26, *11:45 = *11:29, *11:41 = *11:41, *11:45
+-----	-----	-----	+-----	-----	-----	*11:26, *11:30 = *11:30, *11:41
+-----	-----	-----	+-----	-----	-----	*11:26, *11:32 = *11:32, *11:41
+-----	-----	-----	+-----	-----	-----	*11:26, *11:74 = *11:41, *11:74
+-----	-----	-----	+-----	-----	-----	*11:26, *11:56 = *11:41, *11:56
+-----	-----	-----	+-----	-----	-----	*11:26, *11:58 = *11:41, *11:58
+-----	-----	-----	+-----	-----	-----	*11:26, *11:62 = *11:41, *11:62
+-----	-----	-----	+-----	-----	-----	*11:26, *11:64 = *11:41, *11:64
+-----	-----	-----	+-----	-----	-----	*11:26, *11:66 = *11:41, *11:66
+-----	-----	-----	+-----	-----	-----	*11:26, *11:75 = *11:26, *11:78N = *11:41, *11:75 = *11:41, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:26, *11:59 = *11:41, *11:59
+-----	-----	-----	+-----	-----	-----	*11:26, *11:60 = *11:41, *11:60
+-----	-----	-----	+-----	-----	-----	*11:26, *11:63 = *11:41, *11:63
+-----	-----	-----	+-----	-----	-----	*11:26, *11:70 = *11:41, *11:70
+-----	-----	-----	+-----	-----	-----	*11:26, *11:76 = *11:41, *11:76
+-----	-----	-----	+-----	-----	-----	*11:26, *11:79 = *11:41, *11:79
+-----	-----	-----	+-----	-----	-----	*11:26, *11:80 = *11:41, *11:80
+-----	-----	-----	+-----	-----	-----	*11:26, *11:71 = *11:41, *11:71
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:26 = *11:01:01, *11:41 = *11:01:21, *11:41 = *11:26, *11:41 = *11:41, *11:41
+-----	-----	-----	+-----	-----	-----	*11:55, *11:75 = *11:55, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:55 = *11:01:21, *11:55 = *11:29, *11:55 = *11:45, *11:55 = *11:55, *11:55
+-----	-----	-----	+-----	-----	-----	*11:29, *11:49 = *11:45, *11:49
+-----	-----	-----	+-----	-----	-----	*11:15:02, *11:29 = *11:15:02, *11:45
+-----	-----	-----	+-----	-----	-----	*11:49, *11:75 = *11:49, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:49 = *11:01:21, *11:49 = *11:15:02, *11:30 = *11:15:02, *11:49 = *11:30, *11:49 = *11:49, *11:49
+-----	-----	-----	+-----	-----	-----	*11:15:02, *11:75 = *11:15:02, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:15:02 = *11:01:21, *11:15:02 = *11:15:02, *11:15:02
+-----	-----	-----	+-----	-----	-----	*11:29, *11:30 = *11:30, *11:45
+-----	-----	-----	+-----	-----	-----	*11:29, *11:32 = *11:32, *11:45
+-----	-----	-----	+-----	-----	-----	*11:29, *11:74 = *11:45, *11:74
+-----	-----	-----	+-----	-----	-----	*11:29, *11:56 = *11:45, *11:56
+-----	-----	-----	+-----	-----	-----	*11:29, *11:58 = *11:45, *11:58
+-----	-----	-----	+-----	-----	-----	*11:29, *11:62 = *11:45, *11:62
+-----	-----	-----	+-----	-----	-----	*11:29, *11:64 = *11:45, *11:64
+-----	-----	-----	+-----	-----	-----	*11:29, *11:66 = *11:45, *11:66
+-----	-----	-----	+-----	-----	-----	*11:29, *11:75 = *11:29, *11:78N = *11:45, *11:75
+-----	-----	-----	+-----	-----	-----	*11:29, *11:59 = *11:45, *11:59
+-----	-----	-----	+-----	-----	-----	*11:29, *11:60 = *11:45, *11:60
+-----	-----	-----	+-----	-----	-----	*11:29, *11:63 = *11:45, *11:63
+-----	-----	-----	+-----	-----	-----	*11:29, *11:70 = *11:45, *11:70
+-----	-----	-----	+-----	-----	-----	*11:29, *11:76 = *11:45, *11:76
+-----	-----	-----	+-----	-----	-----	*11:29, *11:79 = *11:45, *11:79
+-----	-----	-----	+-----	-----	-----	*11:29, *11:80 = *11:45, *11:80
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:29 = *11:01:01, *11:45 = *11:01:21, *11:29 = *11:01:21, *11:45 = *11:29, *11:29 = *11:29, *11:45
+-----	-----	-----	+-----	-----	-----	*11:30, *11:75 = *11:30, *11:78N
+-----	-----	-----	+-----	-----	-----	*11:01:01, *11:30 = *11:01:21, *11:30 = *11:30, *11:30
+-----	-----	-----	+-----	-----	-----	*11:32, *11:75 = *11:32, *11:78N

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+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:32 = *11:01:21, *11:32 = *11:32, *11:32
+-----	---+---	-----	-----	+-----	-----	*11:74, *11:75 = *11:74, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:56, *11:75 = *11:56, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:74 = *11:01:21, *11:74 = *11:56, *11:74 = *11:74, *11:74
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:56 = *11:01:21, *11:56 = *11:56, *11:56
+-----	---+---	-----	-----	+-----	-----	*11:58, *11:75 = *11:58, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:58 = *11:01:21, *11:58 = *11:58, *11:58
+-----	---+---	-----	-----	+-----	-----	*11:62, *11:75 = *11:62, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:62 = *11:01:21, *11:62 = *11:62, *11:62
+-----	---+---	-----	-----	+-----	-----	*11:64, *11:75 = *11:64, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:64 = *11:01:21, *11:64 = *11:64, *11:64
+-----	---+---	-----	-----	+-----	-----	*11:66, *11:75 = *11:66, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:66 = *11:01:21, *11:66 = *11:66, *11:66
+-----	---+---	-----	-----	+-----	-----	*11:59, *11:75 = *11:59, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:60, *11:75 = *11:60, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:63, *11:75 = *11:63, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:70, *11:75 = *11:70, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:75, *11:76 = *11:76, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:75, *11:79 = *11:78N, *11:79
+-----	---+---	-----	-----	+-----	-----	*11:75, *11:80 = *11:78N, *11:80
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:75 = *11:01:01, *11:78N = *11:01:21, *11:75 = *11:01:21, *11:78N = *11:75, *11:75 = *11:75, *11:78N
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:59 = *11:01:21, *11:59 = *11:59, *11:59
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:60 = *11:01:21, *11:60 = *11:60, *11:60
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:63 = *11:01:21, *11:63 = *11:63, *11:63
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:70 = *11:01:21, *11:70 = *11:70, *11:70
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:76 = *11:01:21, *11:76 = *11:76, *11:76
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:79 = *11:01:21, *11:79 = *11:79, *11:79
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:80 = *11:01:21, *11:80 = *11:80, *11:80
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:71 = *11:01:21, *11:71
+-----	---+---	-----	-----	+-----	-----	*11:01:01, *11:01:01 = *11:01:01, *11:01:21
+-----	---+---	-----	-----	+-----	-----	*11:24:02, *11:25 = *11:25, *11:25
+-----	---+---	-----	-----	+-----	-----	*11:24:02, *11:31 = *11:31, *11:31
+-----	---+---	-----	-----	+-----	-----	*11:02:01, *11:02:01 = *11:02:01, *11:53
+-----	---+---	-----	-----	+-----	-----	*11:17, *11:38 = *11:38, *11:40
+-----	---+---	-----	-----	+-----	-----	*11:38, *11:38 = *11:38, *11:53
+-----	---+---	-----	-----	+-----	-----	*11:14, *11:14 = *11:14, *11:53
+-----	---+---	-----	-----	+-----	-----	*11:16, *11:57 = *11:53, *11:57 = *11:57, *11:57
+-----	---+---	-----	-----	+-----	-----	*11:16, *11:16 = *11:16, *11:53
+-----	---+---	-----	-----	+-----	-----	*11:53, *11:77 = *11:77, *11:77
+-----	---+---	-----	-----	+-----	-----	*11:17, *11:17 = *11:17, *11:19 = *11:17, *11:40
+-----	---+---	-----	-----	+-----	-----	*11:19, *11:40 = *11:40, *11:40

*11:01:01 = *11:01:01-11:01:20, 11:01:22-11:01:27
 *11:02:01 = *11:02:01-11:02:03
 *11:33:01 = *11:33:01-11:33:02
 *11:13 = *11:13 and 11:54
 *11:32 = *11:32 and 11:51
 *11:56 = *11:56 and 11:61

*11:62 = *11:62 and 11:68
 *11:63 = *11:63 and 11:69N
 *11:64 = *11:64 and 11:65
 *11:66 = *11:66 and 11:72

SPECIFICITY TABLE

HLA-A*11 SSP subtyping

Specificities and sizes of the PCR products of the 48 primer mixes used for HLA-A*11 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-A*11 alleles ³	Other amplified HLA-A alleles ⁴
1 ⁶	195 bp	800 bp	*11:01:01-11:01:27, 11:03-11:13, 11:15:01-11:15:02, 11:20-11:27, 11:29-11:37, 11:39, 11:41-11:44, 11:46-11:52Q, 11:54-11:56, 11:58-11:70, 11:72-11:76, 11:79-11:80	*01:13, 02:34-02:35:03, 02:56:01-02:56:02, 02:62, 02:78, 02:103, 03:01:01-01-03:01:08, 03:01:10-03:01:22, 03:02-03:07, 03:09-03:31, 03:33-03:35, 03:37-03:40, 03:42-03:56, 03:58-03:88, 03:90-03:106, 03:109-03:110, 03:112, 24:19, 30:18, 34:01:01-34:09, 66:01-66:02, 66:04, 66:06-66:10, 66:12-66:14, 68:01:01:01-68:02:04, 68:06-68:14, 68:16-68:19, 68:21:01-68:30, 68:32-68:35, 68:37-68:45, 68:47-68:56, 68:58-68:66, 69:01, 74:13, C*03:82
2	270 bp	1070 bp	*11:02:01-11:02:03, 11:14, 11:16, 11:38, 11:57, 11:77	
3	190 bp	1070 bp	*11:03, 11:33:01-11:33:02	*01:61, 03:22, 03:42, 30:01:01-30:04:02, 30:06-30:20, 30:22-30:27N, 30:29-30:34, 30:36-30:46, 31:03-31:04, 34:02:01-34:02:02 ^w , 34:03, 34:04 ^w , 34:07-34:09 ^w
4 ⁶	235 bp	1070 bp	*11:04, 11:27, 11:35	*01:12, 01:14, 01:19, 02:156, 03:01:01:01-03:17, 03:19-03:39, 03:41-03:74, 03:76-03:94, 03:96-03:97, 03:99-03:104, 03:106-03:112, 24:92, 30:01:01-30:04:02, 30:06-30:13, 30:15-30:20, 30:22-30:27N, 30:29-30:42, 30:44-30:46, 31:03-31:04, 32:04, 34:02:01-34:04,

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				34:07-34:09, 36:01-36:02, 36:05
5¹⁰	180 bp, 210 bp	800 bp	*11:05	*66:08
6¹¹	195 bp, 550 bp	1070 bp	*11:06-11:07, 11:18, 11:22	*01:79 ^w , 02:38, 02:101:01, 02:135, 02:154, 25:11, 26:03:01-26:03:02, 26:06, 26:21, 26:30, 26:36
7^{6,7}	215 bp	1070 bp	*11:08, 11:44, 11:50Q	*01:01:01:01-01:01:02, 01:04N, 01:07-01:11N, 01:13-01:18N, 01:21-01:24, 01:26-01:40, 01:42-01:62, 01:64, 01:67- 01:72, 01:74-01:81, 03:18, 03:50, 03:66, 30:04:01- 30:04:02, 30:06, 30:17, 30:29, 30:46, 36:01-36:02, 36:04-36:05
8^{5,8}	100 bp	800 bp	*11:09, 11:34	
9^{5,8}	85 bp	800 bp	*11:27, 11:38-11:39	*01:26, 24:59
10^{5,12}	120 bp, 280 bp	1070 bp	*11:10, 11:43, 11:52Q	*01:51, 25:01:01-25:12N, 26:01:01-26:06, 26:08-26:18, 26:20-26:29, 26:32-26:43:02, 26:45-26:56, 31:03, 33:13, 34:01:01-34:08, 66:01, 66:04- 66:11, 66:13-66:15, B*07:102, B*08:18, B*73:01-73:02
11	215 bp	800 bp	*11:01:01-11:07, 11:09-11:22, 11:27, 11:29-11:30, 11:32- 11:34, 11:36-11:43, 11:45-11:47, 11:49, 11:51-11:52, 11:54- 11:80	*01:12, 01:19, 01:25 ^w , 03:02, 03:10, 03:31-03:32, 03:65, 03:69N, 03:73, 03:76, 03:82, 03:90, 03:106, 24:92
12	235 bp	1070 bp	*11:01:01-11:01:20, 11:01:22-11:03, 11:05-11:25, 11:29- 11:34, 11:36-11:47, 11:49, 11:51-11:52, 11:54-11:80	*01:01:01:01-01:01:22, 01:01:24-01:02, 01:04N, 01:06- 01:07, 01:09-01:11N, 01:13, 01:16N-01:18N, 01:21-01:40, 01:42-01:62, 01:64-01:65, 01:67-01:72, 01:74-01:81, 03:18, 36:04
13^{5,8,13}	90 bp, 195 bp	800 bp	*11:11, 11:34	*43:01
14^{5,7}	100 bp	1070 bp	*11:01:01-11:11, 11:13-11:16, 11:20- 11:27, 11:29-11:39, 11:41-11:52, 11:54- 11:60, 11:61 ^w , 11:62-11:80	*01:13, 01:17, 03:63, 03:88, 25:02, 26:13, 26:19, 26:33, 34:01:01 ^w -34:01:02 ^w , 34:02:01- 34:04, 34:05 ^w , 34:06, 34:08, 66:01, 66:04, 66:06-66:11, 66:13-66:14

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15 ^{5,14}	100 bp, 215 bp	800 bp	*11:12, 11:24:02- 11:25, 11:31, 11:35	*01:06, 02:34 ^W -02:35:03 ^W , 02:56:01-02:56:02, 02:62, 02:78, 02:103, 02:156, 03:01:01:01-03:31, 03:33-03:112, 24:24, 29:01:01:01-29:03, 29:04 ^W , 29:05-29:18, 29:21-29:27, 30:01:01-30:02:04, 30:03, 30:07-30:20, 30:22-30:27N, 30:30-30:45, 31:03-31:04, 32:04, 32:17, 34:02:01-34:04, 34:06-34:09, 66:02, 66:06, 66:12, 68:01:01:01-68:02:04, 68:06-68:14, 68:16-68:19, 68:21:01-68:23, 68:25-68:30, 68:32-68:39, 68:41-68:66, 69:01, 74:13
16 ^{5,8,15}	95 bp, 205 bp	1070 bp	*11:07, 11:13, 11:54	
17	205 bp	1070 bp	*11:14, 11:50Q	*01:10, 30:01:01-30:03, 30:07- 30:08, 30:10-30:16, 30:18- 30:20, 30:22, 30:24-30:26, 30:30-30:45, 80:01-80:02
18	235 bp	1070 bp	*11:15:01, 11:47	
19 ^{6,8,16}	175 bp, 220 bp, 265 bp	1070 bp	*11:16, 11:23, 11:35, 11:42, 11:46, 11:57, 11:73	*02:156
20 ¹⁷	175 bp, 240 bp	800 bp	*11:17, 11:36, 11:40, 11:42	*01:43, 26:01:01-26:02, 26:04, 26:07:01-26:15, 26:17-26:19, 26:22-26:29, 26:31-26:34, 26:36-26:43:02, 26:45-26:56, 43:01
21 ^{5,7}	100 bp	1070 bp	*11:17, 11:19, 11:40	*01:01:01:01-01:04N, 01:06, 01:08-01:12, 01:14-01:16N, 01:18N-01:70, 01:72-01:81, 03:41, 24:44 ^W , 24:109 ^W , 25:01:01-25:01:04, 25:03- 25:12N, 26:01:01-26:12, 26:14- 26:18, 26:20-26:29, 26:31- 26:32, 26:34-26:43:02, 26:45- 26:56, 31:03, 33:13, 36:01- 36:05, 43:01, 66:05, 66:15, 74:10, 80:01-80:02
22 ¹⁸	150 bp, 230 bp	1070 bp	*11:06, 11:18, 11:37	*02:05:01-02:06:04, 02:06:06- 02:06:10, 02:08, 02:10, 02:14, 02:21, 02:28, 02:41, 02:44,

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				02:51, 02:54, 02:57, 02:61, 02:72, 02:79:01-02:79:02, 02:84, 02:91, 02:99, 02:106, 02:108, 02:122, 02:126-02:127, 02:137, 02:142-02:144, 02:154, 02:169-02:170, 02:172, 02:178- 02:180, 02:229, 02:232, 02:244, 02:248, 02:259, 02:271, 02:278, 26:03:01-26:03:02, 26:06, 26:21, 26:30, 68:15
23⁵	80 bp	800 bp	*11:03, 11:08, 11:20, 11:25	*02:03:01 ^w -02:03:03 ^w , 02:13, 02:26, 02:38, 02:99, 02:117 ^w , 02:148 ^w , 02:171:01-02:171:02, 02:253 ^w , 02:258 ^w , 02:264 ^w , 02:281 ^w , 68:42 ^w , 68:54 ^w , 68:61 ^w , 68:63
24^{6,19}	295 bp, 470 bp	1070 bp	*11:21N, 11:48	*01:04N, 01:41, 03:21N, 23:07N, 24:11N
25⁷	220 bp	1070 bp	*11:24:01, 11:47	*03:01:02, 30:02:05, 80:01- 80:02
26²⁰	305 bp, 370 bp	1070 bp	*11:26, 11:41	*01:03, 26:32, 33:13, 36:03, 74:10
27²¹	210 bp, 260 bp	1070 bp	*11:17, 11:27, 11:38-11:39, 11:55	*01:01:01:01-01:02, 01:04N, 01:06-01:19, 01:21-01:40, 01:42-01:62, 01:64-01:65, 01:67-01:71, 01:74-01:81, 03:18, 03:97, 24:92, 80:01- 80:02
28²²	240 bp, 280 bp	800 bp	*11:15:02, 11:49, 11:52Q	*26:35
29⁵	80 bp	1070 bp	*11:10	*02:55, 03:24, 26:03:01- 26:03:02, 26:06, 26:21, 26:30, 33:01:01-33:01:05, 33:03:01- 33:07, 33:10-33:12, 33:14- 33:16, 33:18-33:20, 33:22- 33:34, 34:01:01-34:09, 66:01- 66:10, 66:12-66:15, 68:01:01:01-68:09, 68:11N- 68:12, 68:15-68:29, 68:31- 68:35, 68:37-68:45, 68:47- 68:65, 69:01
30²³	235 bp, 265 bp	1070 bp	*11:29, 11:45, 11:55	*66:11
31^{9,24}	230 bp, 285 bp	1070 bp	*11:30, 11:43, 11:49	*03:87, 31:03, 33:13
32^{6,25}	205 bp,	1070 bp	*11:31-11:32,	*01:21, 02:156, 03:07, 03:42,

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	265 bp, 295 bp		11:35, 11:50Q- 11:51	30:04:01-30:04:02, 30:06, 30:09, 30:17, 30:29, 30:46, 31:03-31:04
33 ^{5,26}	110 bp, 280 bp, 305 bp	1070 bp	*11:56, 11:61, 11:74	
34 ^{5,27}	85 bp, 180 bp, 265 bp	1070 bp	*11:46, 11:58, 11:67	
35 ^{5,28}	105 bp, 290 bp	1070 bp	*11:62, 11:68	
36 ^{5,6,29}	65 bp, 380 bp	1070 bp	*11:64-11:65	B*44:36
37 ^{5,30}	105 bp, 290 bp	1070 bp	*11:66, 11:72	
38 ^{5,31}	120 bp, 225 bp	1070 bp	*11:75, 11:78N	B*07:117
39	280 bp	1070 bp	*11:52Q, 11:74	
40 ^{5,32}	90 bp, 185 bp	1070 bp	*11:57, 11:59	*02:156
41	205 bp	1070 bp	*11:31, 11:35, 11:60	*01:12, 01:19, 01:21, 02:156, 03:02, 03:07, 03:10, 03:31- 03:32, 03:42, 03:73, 03:76, 03:82, 03:90, 03:106, 24:92, 30:04:01 ^w -30:04:02 ^w , 30:06 ^w , 30:09, 30:17 ^w , 30:29 ^w , 30:46 ^w , 31:03-31:04
42 ³³	175 bp, 560 bp	1070 bp	*11:63, 11:69N	*01:56N
43	445 bp	1070 bp	*11:70	*02:65, 02:80, 02:114, 02:117, 02:152, 02:246, 02:279, 03:23:01, 03:89, 33:08-33:09, 68:30, 74:04, B*57:04, B*57:32
44	145 bp	800 bp	*11:76	
45	210 bp	1070 bp	*11:79	
46 ⁵	120 bp	1070 bp	*11:80	
47 ⁵	55 bp	1070 bp	*11:44	
48	200 bp	1070 bp	*11:71	

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 HLA-A*11 SSP typings.

When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

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

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

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

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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 two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A*11 subtyping.

In addition, wells number 5, 8, 9, 11, 13, 15, 20, 23, 28 and 44 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

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

³The A*11:13 and A*11:54 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16.

The A*11:32 and A*11:51 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 32.

The A*11:58 and A*11:67 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 34.

The A*11:62 and A*11:68 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 35.

The A*11:63 and A*11:69 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 42.

The A*11:64 and A*11:65 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

The A*11:66 and A*11:72 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 37.

⁴Due to the sharing of sequence motifs between HLA-A alleles some non-HLA-A*11 alleles will be amplified by primer mixes 1, 3 to 7, 9 to 15, 17, 19 to 32 and 40 to 43. In addition, the B*07:102, B*08:18, B*73:01 and B*73:02 alleles will be amplified by primer mix 10, the B*44:36 allele will be amplified by primer mix 36, the B*07:117 allele will be amplified by primer mix 38, the B*57:04 and B*57:32 alleles will be amplified by primer mix 43 and the C*03:82 allele will be amplified by primer mix 1.

⁵Short specific PCR fragments are less intense and not as sharp as longer specific bands.

⁶Primer mixes 1, 4, 7, 19, 24, 32 and 36 may give rise to nonspecific amplifications.

⁷Primer mixes 7, 14, 21 and 25 may give a lower yield of specific PCR product than the other A*11 primer mixes.

⁸Primer mixes 8, 9, 13, 16 and 19 have a tendency of giving rise to primer oligomer formation.

⁹Primer mix 31 may give rise to a long unspecific amplification product of about 700 bp. This band should be disregarded when interpreting the A*11 SSP typings.

¹⁰Primer mix 5: Specific PCR product of 180 bp in the A*11:05 allele. Specific PCR product of 210 bp in the A*66:08 allele.

¹¹Primer mix 6: Specific PCR product of 195 bp in the A*11:07 and 11:22 and the A*01:79^W alleles. Specific PCR product of 550 bp in the A*11:06 and 11:18 and the A*02:38, 02:101:01, 02:135, 02:154, 25:11, 26:03:01-26:03:02, 26:06, 26:21, 26:30 and 26:36 alleles.

¹²Primer mix 10: Specific PCR fragment of 120 bp in the A*11:10 and the A*01:51, 25:01:01-25:12N, 26:01:01-26:06, 26:08-26:18, 26:20-26:29, 26:32-26:34, 26:36-26:43:02, 26:45-26:56, 34:01:01-34:08, 66:01, 66:04-66:11 and 66:13-66:15 and in the B*07:102, B*08:18 and B*73:01-73:02 alleles. Specific PCR fragment of 280 bp in the A*11:43 and 11:52Q and the A*31:03 alleles. Specific PCR fragment of 120 and 280 bp in the A*26:35 and 33:13 alleles.

¹³Primer mix 13: Specific PCR fragment of 90 bp in the A*11:34 allele. Specific PCR fragment of 195 bp in the A*11:11 and A*43:01 alleles.

¹⁴Primer mix 15: Specific PCR fragment of 100 bp in the A*11:12 and the A*02:34^W-02:35:03^W, 02:56:01-02:56:02, 02:62, 02:78, 02:103, 03:01:02, 03:02, 03:10, 03:18, 03:31, 03:50, 03:65-03:66, 03:69, 03:73, 03:75-03:76, 03:82, 03:90, 03:95, 03:106, 24:24, 29:01:01:01-29:03, 29:04^W, 29:05-29:18, 29:21-29:27,

30:17, 32:17, 66:02, 66:12, 68:01:01:01-68:02:04, 68:06-68:14, 68:16-68:19, 68:21:01-68:23, 68:25-68:30, 68:32-68:39, 68:41-68:66, 69:01 and 74:13 alleles. Specific PCR fragment of 215 bp in the A*11:24:02-11:25, 11:31 and 11:35 and the A*01:06, 02:156, 03:01:10, 03:08, 03:29-03:30, 03:34, 03:36, 03:41, 03:62-03:63, 03:88-03:89, 30:02:01-30:02:04, 30:03, 30:07, 30:09, 30:10, 30:12-30:13, 30:22, 30:27N, 30:31-30:34, 30:44-30:45, 31:03-31:04, 32:04, 34:02:01-34:04 and 34:07-34:08 alleles. Specific PCR fragment of 100 and 215 bp in the A*03:01:01:01-03:01:01:03, 03:01:03-03:01:09, 03:01:11-03:11:23, 03:03N-03:07, 03:09, 03:11N-03:17, 03:19-03:28, 03:33, 03:35, 03:37-03:40, 03:42-03:49, 03:51-03:61, 03:64, 03:67-03:68N, 03:70-03:72, 03:74, 03:77-03:81, 03:83-03:87, 03:91N-03:94, 03:96-03:105, 03:109-03:112, 30:01:01-30:01:04, 30:08, 30:11:01-30:11:02, 30:14L-30:16, 30:18-30:20, 30:23-30:26, 30:30, 30:35-30:43 and 34:09 alleles. Both PCR fragments may not always be obtained.

¹⁵Primer mix 16: Specific PCR fragment of 95 bp in the A*11:13 allele. Specific PCR fragment of 205 bp in the A*11:07 and 11:54 alleles.

¹⁶Primer mix 19: Specific PCR product of 175 bp in the A*11:16, 11:35, 11:42, 11:57, 11:73, 02:156 alleles. Specific PCR product of 220 bp in the A*11:23 allele. Specific PCR product of 265 bp in the A*11:46 allele.

¹⁷Primer mix 20: Specific PCR fragment of 175 bp in the A*11:42 allele. Specific PCR fragment of 240 bp in the A*11:17, 11:36 and 11:40 and the A*01:43, 26:01:01-26:02, 26:04, 26:07:01-26:15, 26:17-26:19, 26:22-26:29, 26:31-26:34, 26:36-26:43:02, 26:45-26:56 and 43:01 alleles.

¹⁸Primer mix 22: Specific PCR fragment of 150 bp in the A*11:37 allele. Specific PCR fragment of 230 bp in the A*11:06 and 11:18 and the A*02:05:01-02:06:04, 02:06:06-02:06:10, 02:08, 02:10, 02:14, 02:21, 02:28, 02:41, 02:44, 02:51, 02:54, 02:57, 02:61, 02:72, 02:79:01-02:79:02, 02:84, 02:91, 02:99, 02:106, 02:108, 02:122, 02:126-02:127, 02:137, 02:142-02:144, 02:154, 02:169-02:170, 02:172, 02:178-02:180, 02:229, 02:232, 02:244, 02:248, 02:259, 02:271, 02:278, 26:03:01-26:03:02, 26:06, 26:21, 26:30 and 68:15 alleles.

¹⁹Primer mix 24: Specific PCR fragment of 295 bp in the A*11:48 and the A*01:41 alleles. Specific PCR fragment of 470 bp in the A*11:21N and the A*01:04N, 03:21N, 23:07N and A*24:11N alleles.

²⁰Primer mix 26: Specific PCR fragment of 305 bp in the A*11:26 and the A*01:03, 26:32, 33:13, 36:03 and 74:10 alleles. Specific PCR fragment of 370 bp in the A*11:41 allele.

²¹Primer mix 27: Specific PCR fragment of 210 bp in the A*11:17 allele. Specific PCR fragment of 260 bp in the A*11:27, 11:38-11:39 and 11:55 and the A*01:01:01:01-01:01:02, 01:04N, 01:06-01:19, 01:21-01:40, 01:42, 01:44-01:62, 01:64-01:65, 01:67-01:71, 01:74-01:81, 03:18, 03:97, 24:92 and 80:01-80:02 alleles. Specific PCR fragment of 210 and 260 bp in the A*01:43 allele.

²²Primer mix 28: Specific PCR fragment of 240 bp in the A*11:15:02 and 11:49 alleles. Specific PCR fragment of 280 bp in the A*11:52Q and the A*26:35 alleles.

²³Primer mix 30: Specific PCR fragment of 235 bp in the A*11:45 and the A*66:11 alleles. Specific PCR fragment of 265 bp in the A*11:29 and 11:55 alleles.

²⁴Primer mix 31: Specific PCR fragment of 230 bp in the A*11:49 allele. Specific PCR fragment of 285 bp in the A*11:30 and 11:43 and the A*03:87, 31:03 and 33:13 alleles.

²⁵Primer mix 32: Specific PCR fragment of 205 bp in the A*11:31 and 11:35 and the A*01:21, 02:156, 03:07, 03:42, 30:04:01-30:04:02, 30:06, 30:09, 30:17, 30:29, 30:46 and 31:03-31:04 alleles. Specific PCR fragment of 265 bp in the A*11:51 allele. Specific PCR fragment of 295 bp in the A*11:32 and 11:50Q alleles.

²⁶Primer mix 33: Specific PCR fragment of 110 bp in the A*11:61 allele. Specific PCR fragment of 280 bp in the A*11:74 allele. Specific PCR fragment of 305 bp in the A*11:56 allele.

²⁷Primer mix 34: Specific PCR fragment of 85 bp in the A*11:58 allele. Specific PCR fragment of 180 bp in the A*11:67 allele. Specific PCR fragment of 265 bp in the A*11:46 allele.

²⁸Primer mix 35: Specific PCR fragment of 105 bp in the A*11:62 allele. Specific PCR fragment of 290 bp in the A*11:68 allele.

²⁹Primer mix 36: Specific PCR fragment of 65 bp in the A*11:65 and in the B*44:36 alleles. Specific PCR fragment of 380 bp in the A*11:64 allele.

³⁰Primer mix 37: Specific PCR fragment of 105 bp in the A*11:66 allele. Specific PCR fragment of 290 bp in the A*11:72 allele.

³¹Primer mix 38: Specific PCR fragment of 120 bp in the A*11:75 and in the B*07:117 alleles. Specific PCR fragment of 225 bp in the A*11:78N allele.

³²Primer mix 40: Specific PCR fragment of 90 bp in the A*11:59 allele. Specific PCR fragment of 185 bp in the A*11:57 and the A*02:156 alleles.

³³Primer mix 42: Specific PCR fragment of 175 bp in the A*11:63 allele. Specific PCR fragment of 560 bp in the A*11:69N and the A*01:56N alleles.

'w', may be weakly amplified.

INTERPRETATION TABLE																									
HLA-A*11 SSP subtyping																									
Amplification patterns of the A*11:01 to A*11:80 alleles																									
	Well ¹²																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			220	240		230		470	
Length of int. pos control ¹	800	1070	1070	1070	800	1070	1070	800	800	1070	800	1070	800	1070	800	1070	1070	1070	1070	265	800	1070	1070	800	1070
5'-primer(s) ²	5'-ggg ³ 127	5'-TCC ³ 28	5'-ATA ³ 363	5'-ATA ³ 363	5'-ATA ³ 363	5'-CTC ³ 292	5'-ATA ³ 363	5'-TgC ³ 553	5'-TgC ³ 527	5'-TCA ³ 97	5'-ATA ³ 363	5'-ATA ³ 363	5'-ACC ³ 102	5'-Cag ³ 282	5'-Cag ³ 282	5'-ACA ³ 391	5'-ATA ³ 363	5'-TCC ³ 97	5'-CCT ³ 103	5'-CCT ³ 103	5'-CAC ³ 282	5'-CCT ³ 103	5'-gCA ³ 489	5'-gga ³ 341	
					5'-gAg ³ 831	5'-TTA ³ 399		5'-gCA ³ 565		5'-CCA ³ 103			5'-gCA ³ 565		5'-ATA ³ 363	5'-TTA ³ 399		5'-ATA ³ 363	5'-ATA ³ 363	5'-gTg ³ 368			5'-ATA ³ 3 rd I		
						5'-CCC ³ 413				5'-AAC ³ 261						5'-Cag ³ 503									
3'-primer(s) ³	5'-gAC ³ 282	5'-CTT ³ 127	5'-CTg ³ 502	5'-CgT ³ 559	5'-CTC ³ 502	5'-CCg ³ 559	5'-TCC ³ 539	5'-CgT ³ 616	5'-CCg ³ 570	5'-CgT ³ 341	5'-TCT ³ 539	5'-CCg ³ 559	5'-gCA ³ 257	5'-CgT ³ 341	5'-Cgg ³ 341	5'-CCg ³ 559	5'-CCA ³ 526	5'-gAC ³ 282	5'-CCA ³ 236	5'-CCA ³ 236	5'-CgT ³ 341	5'-CCA ³ 214	5'-CCT ³ 527	5'-TgA ³ 353	
			5'-CAC ³ 524	5'-CgT ³ 559	5'-ACg ³ 899							5'-CCg ³ 559	5'-CgT ³ 616		5'-CAA ³ 538		5'-CCA ³ 526	5'-CAG ³ 565	5'-ggC ³ 497	5'-TCg ³ 299		5'-gTg ³ 292	5'-CCT ³ 527	5'-ggg ³ 621	
																			5'-Tgg ³ 497	5'-CAC ³ 570			5'-CCT ³ 527		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
HLA-A allele ⁴																									

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Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295
PCR product(s)					210	550				280			195		215	205			265	220	240		230	470
HLA-A allele ⁴																								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
*11:01:01-11:01:20, 11:01:22-11:01:27	1										11	12		14										
*11:01:21	1										11			14										
*11:02:01-11:02:03, 11:77 ^{13,14}		2									11	12		14										
*11:03	1		3								11	12		14									23	
*11:04	1			4							11			14										
*11:05	1				5						11	12		14										
*11:06	1					6					11	12		14								22		
*11:07	1					6					11	12		14		16								
*11:08	1						7					12		14									23	
*11:09	1							8			11	12		14										
*11:10	1									10	11	12		14										
*11:11	1										11	12	13	14										
*11:12	1										11	12			15									
*11:13, 11:54 ⁵	1										11	12		14		16								
*11:14		2									11	12		14			17							
*11:15:01	1										11	12		14				18						
*11:15:02	1										11	12		14										
*11:16		2									11	12		14					19					
*11:17											11	12								20	21			
*11:18						6					11	12										22		
*11:19											11	12										21		
*11:20	1										11	12		14									23	
*11:21N	1										11	12		14										24
*11:22	1					6					11	12		14										
*11:23	1											12		14				19						
*11:24:01	1											12		14										
*11:24:02	1											12		14	15									
*11:25	1											12		14	15								23	
*11:26	1													14										
*11:27	1			4					9		11			14										
*11:29	1										11	12		14										
*11:30	1										11	12		14										
*11:31	1											12		14	15									
*11:32, 11:51 ⁶	1										11	12		14										
*11:33:01-11:33:02	1		3								11	12		14										
*11:34	1							8			11	12	13	14										
*11:35	1			4										14	15			19						
*11:36	1										11	12		14						20				
*11:37	1										11	12		14								22		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*11:38		2							9		11	12		14											
*11:39	1								9		11	12		14											
*11:40											11	12								20	21				
*11:41	1										11	12		14											
*11:42	1										11	12		14					19	20					
*11:43	1									10	11	12		14											
*11:44	1						7					12		14											
*11:45											11	12		14											
*11:46	1										11	12		14					19						
*11:47	1										11	12		14				18							
*11:48	1													14										24	
*11:49	1										11	12		14											
*11:50Q	1						7							14			17								
*11:52Q	1									10	11	12		14											
*11:55	1										11	12		14											
*11:56	1										11	12		14											
*11:57		2									11	12		14					19						
*11:58, 11:67 ⁷	1										11	12		14											
*11:59	1										11	12		14											
*11:60	1										11	12		14											
*11:61	1										11	12		w											
*11:62, 11:68 ⁸	1										11	12		14											
*11:63, 11:69N ⁹	1										11	12		14											
*11:64, 11:65 ¹⁰	1										11	12		14											
*11:66, 11:72 ¹¹	1										11	12		14											
*11:70	1										11	12		14											
*11:71											11	12		14											
*11:73	1										11	12		14					19						
*11:74	1										11	12		14											
*11:75	1										11	12		14											
*11:76	1										11	12		14											
*11:78N											11	12		14											
*11:79	1										11	12		14											
*11:80	1										11	12		14											
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

220	305	210	240	80	235	230	205	110	85	105	65	105	120	280	90	205	175	445	145	210	120	55	200	Length of spec. PCR product(s)
	370	260	280		265	285	265	305	180	290	380	290	225		185		560							Well No.
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	*11:38
		27																						*11:39
		27																						*11:40
	26																							*11:41
						31																		*11:42
																						47		*11:43
					30																			*11:44
									34															*11:45
25																								*11:46
																								*11:47
																								*11:48
		28				31																		*11:49
							32																	*11:50Q
		28												39										*11:52Q
	27				30																			*11:55
								33																*11:56
														40										*11:57
									34															*11:58, 11:67 ⁷
														40										*11:59
															41									*11:60
								33																*11:61
									35															*11:62, 11:68 ⁸
																	42							*11:63, 11:69N ⁹
										36														*11:64, 11:65 ¹⁰
											37													*11:66, 11:72 ¹¹
																		43						*11:70
																						48		*11:71
																								*11:73
								33						39										*11:74
													38											*11:75
																			44					*11:76
												38												*11:78N
																					45			*11:79
																						46		*11:80
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*01:01:01:01-01:01:22, 01:01:24-01:02, 01:09, 01:11N, 01:16N, 01:18N, 01:22N-01:24, 01:27N- 01:40, 01:42, 01:44- 01:50, 01:52N-01:55, 01:57N-01:60, 01:62, 01:64, 01:67-01:70, 01:74- 01:78, 01:80-01:81							7					12									21				
*01:01:23, 01:08, 01:15N							7														21				
*01:03, 36:03, 74:10																					21				
*01:04N							7					12									21			24	
*01:06												12		15							21				
*01:07, 01:71							7					12													
*01:10							7					12					17				21				
*01:12, 01:19				4							11										21				
*01:13	1						7					12	14												
*01:14				4			7														21				
*01:17							7					12	14												
*01:20, 01:63, 01:66, 01:73																					21				
*01:21							7					12									21				
*01:25											w	12									21				
*01:26							7		9			12									21				
*01:41																					21			24	
*01:43							7					12								20	21				
*01:51							7			10		12									21				
*01:56N							7					12									21				
*01:61			3				7					12									21				
*01:65												12									21				
*01:72, 36:04							7					12									21				
*01:79						w	7					12									21				
*02:03:01-02:03:03, 02:148, 02:253, 02:258, 02:264, 02:281																							w		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

220	305	210	240	80	235	230	205	110	85	105	65	105	120	280	90	205	175	445	145	210	120	55	200	Length of spec. PCR product(s)
	370	260	280		265	285	265	305	180	290	380	290	225		185		560							Well No.
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	*01:01:01:01-01:01:22, 01:01:24-01:02, 01:09, 01:11N, 01:16N, 01:18N, 01:22N-01:24, 01:27N- 01:40, 01:42, 01:44- 01:50, 01:52N-01:55, 01:57N-01:60, 01:62, 01:64, 01:67-01:70, 01:74- 01:78, 01:80-01:81
		27																						*01:01:23, 01:08, 01:15N *01:03, 36:03, 74:10 *01:04N
	26																							*01:06 *01:07, 01:71 *01:10 *01:12, 01:19 *01:13 *01:14 *01:17 *01:20, 01:63, 01:66, 01:73
		27														41								*01:21 *01:25 *01:26 *01:41 *01:43 *01:51 *01:56N *01:61 *01:65 *01:72, 36:04 *01:79
							32										41							*02:03:01-02:03:03, 02:148, 02:253, 02:258, 02:264, 02:281
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*02:05:01-02:06:04, 02:06:06-02:06:10, 02:08, 02:10, 02:14, 02:21, 02:28, 02:41, 02:44, 02:51, 02:54, 02:57, 02:61, 02:72, 02:79:01- 02:79:02, 02:84, 02:91, 02:106, 02:108, 02:122, 02:126-02:127, 02:137, 02:142-02:144, 02:169- 02:170, 02:172, 02:178- 02:180, 02:229, 02:232, 02:244, 02:248, 02:259, 02:271, 02:278																						22			
*02:13, 02:26, 02:171:01- 02:171:02																								23	
*02:34-02:35:03	1														w										
*02:38						6																		23	
*02:55, 33:01:01- 33:01:05, 33:03:01-33:07, 33:10-33:12, 33:14-33:16, 33:18-33:20, 33:22-33:34, 66:03, 68:03:01-68:05, 68:20, 68:31																									
*02:56:01-02:56:02, 02:62, 02:78, 02:103, 03:40, 03:75, 03:95, 03:98, 03:105, 68:10, 68:13-68:14, 68:66, 74:13	1														15										
*02:65, 02:80, 02:114, 02:152, 02:246, 02:279, 33:08-33:09, 74:04, B*57:04, B*57:32																									
*02:99																						22	23		
*02:101:01, 02:135						6																			
*02:117																								w	
*02:154						6																22			
*02:156				4											15				19						
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

220	305	210	240	80	235	230	205	110	85	105	65	105	120	280	90	205	175	445	145	210	120	55	200	Length of spec.
	370	260	280		265	285	265	305	180	290	380	290	225		185		560							PCR product(s)
							295	280	265															Well No.
																								*02:05:01-02:06:04, 02:06:06-02:06:10, 02:08, 02:10, 02:14, 02:21, 02:28, 02:41, 02:44, 02:51, 02:54, 02:57, 02:61, 02:72, 02:79:01- 02:79:02, 02:84, 02:91, 02:106, 02:108, 02:122, 02:126-02:127, 02:137, 02:142-02:144, 02:169- 02:170, 02:172, 02:178- 02:180, 02:229, 02:232, 02:244, 02:248, 02:259, 02:271, 02:278
																								*02:13, 02:26, 02:171:01- 02:171:02
																								*02:34-02:35:03
																								*02:38
				29																				*02:55, 33:01:01- 33:01:05, 33:03:01-33:07, 33:10-33:12, 33:14-33:16, 33:18-33:20, 33:22-33:34, 66:03, 68:03:01-68:05, 68:20, 68:31
																								*02:56:01-02:56:02, 02:62, 02:78, 02:103, 03:40, 03:75, 03:95, 03:98, 03:105, 68:10, 68:13-68:14, 68:66, 74:13
																	43							*02:65, 02:80, 02:114, 02:152, 02:246, 02:279, 33:08-33:09, 74:04, B*57:04, B*57:32
																								*02:99
																								*02:101:01, 02:135
																	43							*02:117
																								*02:154
							32								40	41								*02:156
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*03:01:01:01-03:01:01:03, 03:01:03-03:01:08, 03:01:10-03:01:22, 03:03N-03:06, 03:09, 03:11N-03:17, 03:19- 03:20, 03:25-03:30, 03:33- 03:35, 03:37-03:39, 03:43- 03:49, 03:51-03:56, 03:58- 03:62, 03:64, 03:67- 03:68N, 03:70-03:72, 03:74, 03:77-03:81, 03:83- 03:86, 03:91N-03:94, 03:96, 03:99-03:104, 03:109-03:110, 03:112	1			4											15										
*03:01:02	1			4											15										
*03:01:09, 03:01:23, 03:08, 03:36N, 03:57, 03:107-03:108, 03:111, 32:04				4											15										
*03:02, 03:10, 03:31, 03:73, 03:76, 03:82, 03:90, 03:106	1			4							11				15										
*03:07	1			4											15										
*03:18	1						7					12			15										
*03:21N	1			4											15									24	
*03:22	1		3	4											15										
*03:23:01	1			4											15										
*03:24	1			4											15										
*03:32				4							11														
*03:41				4											15							21			
*03:42	1		3	4											15										
*03:50, 03:66	1			4			7								15										
*03:63, 03:88	1			4										14	15										
*03:65, 03:69N	1			4							11				15										
*03:87	1			4											15										
*03:89				4											15										
*03:97	1			4											15										
*23:07N, 24:11N																								24	
*24:19, C*03:82	1																								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

220	305	210	240	80	235	230	205	110	85	105	65	105	120	280	90	205	175	170	145	210	120	55	200	Length of spec. PCR product(s)
	370	260	280		265	285	265	305	180	290	380	290	225		185		560	445						Well No.
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
																								*03:01:01-03:01:03, 03:01:03-03:01:08, 03:01:10-03:01:22, 03:03N-03:06, 03:09, 03:11N-03:17, 03:19- 03:20, 03:25-03:30, 03:33- 03:35, 03:37-03:39, 03:43- 03:49, 03:51-03:56, 03:58- 03:62, 03:64, 03:67- 03:68N, 03:70-03:72, 03:74, 03:77-03:81, 03:83- 03:86, 03:91N-03:94, 03:96, 03:99-03:104, 03:109-03:110, 03:112
25																								*03:01:02
																								*03:01:09, 03:01:23, 03:08, 03:36N, 03:57, 03:107-03:108, 03:111, 32:04
																41								*03:02, 03:10, 03:31, 03:73, 03:76, 03:82, 03:90, 03:106
							32									41								*03:07
	27																							*03:18
																								*03:21N
																								*03:22
																		43						*03:23:01
				29																				*03:24
																41								*03:32
																								*03:41
							32									41								*03:42
																								*03:50, 03:66
																								*03:63, 03:88
																								*03:65, 03:69N
																								*03:87
							31											43						*03:89
	27																							*03:97
																								*23:07N, 24:11N
																								*24:19, C*03:82
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*24:24, 29:01:01:01- 29:03, 29:05-29:18, 29:21- 29:27, 32:17, 68:36, 68:46															15										
*24:44, 24:109																						w			
*24:59									9																
*24:92				4							11														
*25:01:01-25:01:04, 25:03- 25:10, 25:12N, 26:05, 26:16, 26:20										10												21			
*25:02										10				14											
*25:11						6				10												21			
*26:01:01-26:02, 26:04, 26:08-26:12, 26:14-26:15, 26:17-26:18, 26:22-26:29, 26:34, 26:37-26:43:02, 26:45-26:56										10											20	21			
*26:03:01-26:03:02, 26:06, 26:21						6				10												21	22		
*26:07:01-26:07:02, 26:31																					20	21			
*26:13, 26:33										10				14							20				
*26:19														14							20				
*26:30						6																	22		
*26:32										10											20	21			
*26:35										10												21			
*26:36						6				10											20	21			
*29:04																w									
*30:01:01-30:02:04, 30:03, 30:07-30:08, 30:10- 30:13, 30:15-30:16, 30:19- 30:20, 30:22, 30:24- 30:26, 30:30-30:34, 30:36- 30:42, 30:44-30:45			3	4											15		17								
*30:02:05			3	4													17								
*30:04:01-30:04:02, 30:06, 30:29, 30:46			3	4			7																		
*30:09, 31:04			3	4											15										
*30:14L, 30:43			3												15		17								
*30:17			3	4			7								15										
*30:18	1		3	4											15		17								
*30:23, 30:27N			3	4											15										
*30:35				4											15		17								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	195	270	190	235	180	195	215	100	85	120	215	235	90	100	100	95	205	235	175	175	100	150	80	295	
PCR product(s)					210	550				280			195		215	205			265	220	240		230		470
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*31:03			3	4						10					15							21			
*33:13										10												21			
*34:01:01-34:01:02, 34:05	1									10				w											
*34:02:01-34:02:02,34:04, 34:08	1		w	4						10				14	15										
*34:03	1		3	4						10				14	15										
*34:06, 66:06	1									10				14	15										
*34:07	1		w	4						10					15										
*34:09	1		w	4											15										
*36:01-36:02, 36:05				4			7																	21	
*43:01													13								20	21			
*66:01, 66:04, 66:07, 66:09-66:10, 66:13-66:14	1									10				14											
*66:02, 66:12, 68:01:01:01-68:02:04, 68:06-68:09, 68:11N-68:12, 68:16-68:19, 68:21:01-68:23, 68:25-68:29, 68:32-68:35, 68:37-68:39, 68:41, 68:43-68:45, 68:47-68:53, 68:55-68:56, 68:58-68:60, 68:62, 68:64-68:65, 69:01	1														15										
*66:05, 66:15										10														21	
*66:08	1				5					10				14											
*66:11										10				14											
*68:15																								22	
*68:24, 68:40	1																								
*68:30	1														15										
*68:42, 68:54, 68:61	1														15								w		
*68:57															15										
*68:63	1														15									23	
*80:01-80:02																	17				21				
B*07:102, B*08:18, B*73:01-73:02										10															
B*07:117																									
B*44:36																									
HLA-A allele ⁴																									
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

220	305	210	240	80	235	230	205	110	85	105	65	105	120	280	90	205	175	445	145	210	120	55	200	Length of spec. PCR product(s)
	370	260	280		265	285	265	305	180	290	380	290	225		185		560							Well No.
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
						31	32									41								*31:03
	26					31																		*33:13
				29																				*34:01:01-34:01:02, 34:05
				29																				*34:02:01-34:02:02,34:04, 34:08
				29																				*34:03
				29																				*34:06, 66:06
				29																				*34:07
				29																				*34:09
																								*36:01-36:02, 36:05 *43:01
				29																				*66:01, 66:04, 66:07, 66:09-66:10, 66:13-66:14
																								*66:02, 66:12, 68:01:01:01-68:02:04, 68:06-68:09, 68:11N- 68:12, 68:16-68:19, 68:21:01-68:23, 68:25- 68:29, 68:32-68:35, 68:37- 68:39, 68:41, 68:43- 68:45, 68:47-68:53, 68:55- 68:56, 68:58-68:60, 68:62, 68:64-68:65, 69:01
				29																				*66:05, 66:15
				29																				*66:08
					30																			*66:11
				29																				*68:15
				29																				*68:24, 68:40
																	43							*68:30
				29																				*68:42, 68:54, 68:61
				29																				*68:57
				29																				*68:63
25		27																						*80:01-80:02
																								<i>B*07:102, B*08:18, B*73:01-73:02</i>
													38											<i>B*07:117</i>
											36													<i>B*44:36</i>
																								HLA-A allele ⁴
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A*11 subtyping. In addition, wells number 5, 8, 9, 11, 13, 15, 20, 23, 28 and 44 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

²The nucleotide position, in the 1st, 2nd, 3rd or 4th exons or the 3rd intron, 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, in the 2nd, 3rd, 4th or 5th exons, 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.

⁴The A*1128 allele has been renamed to A*11:15:02.

⁵The A*11:13 and A*11:54 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16.

⁶The A*11:32 and A*11:51 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 32.

⁷The A*11:58 and A*11:67 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 34.

⁸The A*11:62 and A*11:68 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 35.

⁹The A*11:63 and A*11:69 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 42.

¹⁰The A*11:64 and A*11:65 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

¹¹The A*11:66 and A*11:72 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 37.

¹²Primer mix 5: Specific PCR product of 180 bp in the A*11:05 allele. Specific PCR product of 210 bp in the A*66:08 allele.

Primer mix 6: Specific PCR product of 195 bp in the A*11:07 and 11:22 and the A*01:79^w alleles. Specific PCR product of 550 bp in the A*11:06 and 11:18 and the A*02:38, 02:101:01, 02:135, 02:154, 25:11, 26:03:01-26:03:02, 26:06, 26:21, 26:30 and 26:36 alleles.

Primer mix 10: Specific PCR fragment of 120 bp in the A*11:10 and the A*01:51, 25:01:01-25:12N, 26:01:01-26:06, 26:08-26:18, 26:20-26:29, 26:32-26:34, 26:36-26:43:02, 26:45-26:56, 34:01:01-34:08, 66:01, 66:04-66:11 and 66:13-66:15 and in the B*07:102, B*08:18 and B*73:01-73:02 alleles. Specific PCR fragment of 280 bp in the A*11:43 and 11:52Q and the A*31:03 alleles. Specific PCR fragment of 120 and 280 bp in the A*26:35 and 33:13 alleles.

Primer mix 13: Specific PCR fragment of 90 bp in the A*11:34 allele. Specific PCR fragment of 195 bp in the A*11:11 and A*43:01 alleles.

Primer mix 15: Specific PCR fragment of 100 bp in the A*11:12 and the A*02:34^w-02:35:03^w, 02:56:01-02:56:02, 02:62, 02:78, 02:103, 03:01:02, 03:02, 03:10, 03:18, 03:31, 03:50, 03:65-03:66, 03:69, 03:73, 03:75-03:76, 03:82, 03:90, 03:95, 03:106, 24:24, 29:01:01:01-29:03, 29:04^w, 29:05-29:18, 29:21-29:27, 30:17, 32:17, 66:02, 66:12, 68:01:01:01-68:02:04, 68:06-68:14, 68:16-68:19, 68:21:01-68:23, 68:25-68:30, 68:32-68:39, 68:41-68:66, 69:01 and 74:13 alleles. Specific PCR fragment of 215 bp in the A*11:24:02-11:25, 11:31 and 11:35 and the A*01:06, 02:156, 03:01:10, 03:08, 03:29-03:30, 03:34, 03:36, 03:41, 03:62-03:63, 03:88-03:89, 30:02:01-30:02:04, 30:03, 30:07, 30:09, 30:10, 30:12-30:13, 30:22, 30:27N, 30:31-30:34, 30:44-30:45, 31:03-31:04, 32:04, 34:02:01-34:04 and 34:07-34:08 alleles. Specific PCR fragment of 100 and 215 bp in the A*03:01:01:01-03:01:01:03, 03:01:03-03:01:09, 03:01:11-03:11:23, 03:03N-03:07, 03:09, 03:11N-03:17, 03:19-03:28, 03:33, 03:35, 03:37-03:40, 03:42-03:49, 03:51-03:61, 03:64, 03:67-03:68N, 03:70-03:72, 03:74, 03:77-03:81, 03:83-03:87, 03:91N-03:94, 03:96-03:105, 03:109-03:112, 30:01:01-30:01:04, 30:08, 30:11:01-30:11:02, 30:14L-30:16, 30:18-30:20, 30:23-30:26, 30:30, 30:35-30:43 and 34:09 alleles. Both PCR fragments may not always be obtained.

Primer mix 16: Specific PCR fragment of 95 bp in the A*11:13 allele. Specific PCR fragment of 205 bp in the A*11:07 and 11:54 alleles.

Lot No.: **16M**

Lot-specific information

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Primer mix 19: Specific PCR product of 175 bp in the A*11:16, 11:35, 11:42, 11:57, 11:73, 02:156 alleles. Specific PCR product of 220 bp in the A*11:23 allele. Specific PCR product of 265 bp in the A*11:46 allele.

Primer mix 20: Specific PCR fragment of 175 bp in the A*11:42 allele. Specific PCR fragment of 240 bp in the A*11:17, 11:36 and 11:40 and the A*01:43, 26:01:01-26:02, 26:04, 26:07:01-26:15, 26:17-26:19, 26:22-26:29, 26:31-26:34, 26:36-26:43:02, 26:45-26:56 and 43:01 alleles.

Primer mix 22: Specific PCR fragment of 150 bp in the A*11:37 allele. Specific PCR fragment of 230 bp in the A*11:06 and 11:18 and the A*02:05:01-02:06:04, 02:06:06-02:06:10, 02:08, 02:10, 02:14, 02:21, 02:28, 02:41, 02:44, 02:51, 02:54, 02:57, 02:61, 02:72, 02:79:01-02:79:02, 02:84, 02:91, 02:99, 02:106, 02:108, 02:122, 02:126-02:127, 02:137, 02:142-02:144, 02:154, 02:169-02:170, 02:172, 02:178-02:180, 02:229, 02:232, 02:244, 02:248, 02:259, 02:271, 02:278, 26:03:01-26:03:02, 26:06, 26:21, 26:30 and 68:15 alleles.

Primer mix 24: Specific PCR fragment of 295 bp in the A*11:48 and the A*01:41 alleles. Specific PCR fragment of 470 bp in the A*11:21N and the A*01:04N, 03:21N, 23:07N and A*24:11N alleles.

Primer mix 26: Specific PCR fragment of 305 bp in the A*11:26 and the A*01:03, 26:32, 33:13, 36:03 and 74:10 alleles. Specific PCR fragment of 370 bp in the A*11:41 allele.

Primer mix 27: Specific PCR fragment of 210 bp in the A*11:17 allele. Specific PCR fragment of 260 bp in the A*11:27, 11:38-11:39 and 11:55 and the A*01:01:01:01-01:02, 01:04N, 01:06-01:19, 01:21-01:40, 01:42, 01:44-01:62, 01:64-01:65, 01:67-01:71, 01:74-01:81, 03:18, 03:97, 24:92 and 80:01-80:02 alleles. Specific PCR fragment of 210 and 260 bp in the A*01:43 allele.

Primer mix 28: Specific PCR fragment of 240 bp in the A*11:15:02 and 11:49 alleles. Specific PCR fragment of 280 bp in the A*11:52Q and the A*26:35 alleles.

Primer mix 30: Specific PCR fragment of 235 bp in the A*11:45 and the A*66:11 alleles. Specific PCR fragment of 265 bp in the A*11:29 and 11:55 alleles.

Primer mix 31: Specific PCR fragment of 230 bp in the A*11:49 allele. Specific PCR fragment of 285 bp in the A*11:30 and 11:43 and the A*03:87, 31:03 and 33:13 alleles.

Primer mix 32: Specific PCR fragment of 205 bp in the A*11:31 and 11:35 and the A*01:21, 02:156, 03:07, 03:42, 30:04:01-30:04:02, 30:06, 30:09, 30:17, 30:29, 30:46 and 31:03-31:04 alleles. Specific PCR fragment of 265 bp in the A*11:51 allele. Specific PCR fragment of 295 bp in the A*11:32 and 11:50Q alleles.

Primer mix 33: Specific PCR fragment of 110 bp in the A*11:61 allele. Specific PCR fragment of 280 bp in the A*11:74 allele. Specific PCR fragment of 305 bp in the A*11:56 allele.

Primer mix 34: Specific PCR fragment of 85 bp in the A*11:58 allele. Specific PCR fragment of 180 bp in the A*11:67 allele. Specific PCR fragment of 265 bp in the A*11:46 allele.

Primer mix 35: Specific PCR fragment of 105 bp in the A*11:62 allele. Specific PCR fragment of 290 bp in the A*11:68 allele.

Primer mix 36: Specific PCR fragment of 65 bp in the A*11:65 and in the B*44:36 alleles. Specific PCR fragment of 380 bp in the A*11:64 allele.

Primer mix 37: Specific PCR fragment of 105 bp in the A*11:66 allele. Specific PCR fragment of 290 bp in the A*11:72 allele.

Primer mix 38: Specific PCR fragment of 120 bp in the A*11:75 and in the B*07:117 alleles. Specific PCR fragment of 225 bp in the A*11:78N allele.

Primer mix 40: Specific PCR fragment of 90 bp in the A*11:59 allele. Specific PCR fragment of 185 bp in the A*11:57 and the A*02:156 alleles.

Primer mix 42: Specific PCR fragment of 175 bp in the A*11:63 allele. Specific PCR fragment of 560 bp in the A*11:69N and the A*01:56N alleles.

Primer mix 43: Specific PCR fragment of 170 bp in the A*11:77 and the A*03:26 alleles. Specific PCR fragment of 445 bp in the A*11:70 and the A*02:65, 02:80, 02:114, 02:117, 02:152, 02:246, 02:279, 03:23:01, 03:89, 33:08-33:09, 68:30 and 74:04 and in the B*57:04 and B*57:32 allele.

¹³Modified sequences as of allele database 3.7.0: A*11:02:01 corrected at position 899 and the A*11:53 allele shown to be identical to the correct sequence of A*11:02:01. As a consequence, the A*11:02:01-11:02:03 alleles are not amplified by primer mix 5.

¹⁴This lot of the HLA-A*03 subtyping kit cannot distinguish the A*11:77 and the A*11:02:01-11:02:03 alleles.

‘w’, may be weakly amplified.

CELL LINE VALIDATION SHEET																			
HLA-A*11 SSP subtyping kit																			
			Prod. No.:	Well															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				200736801	200736802	200853303	200736804	201183805	201070406	200736807	201070408	201070409	201070410	201070411	200736812	201070413	200736814	200853315	201070416
	IHWC cell line	A*																	
1	9001 SA	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
3	9011 E4181324	*01:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-
4	9275 GU373	*30:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
5	9009 KAS011	*01:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-
6	9353 SM	*02:01	*26:03	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-
7	9020 QBL	*26:01		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*26:01		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
10	9107 LKT3	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
12	9052 DBB	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*24:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
16	9037 SWEIG007	*29:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
17	9282 CTM3953540	*03:01	*80:01	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
28	9320 BEL5GB	*02:01	*29:02	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
29	9050 MOU	*29:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
30	9021 RSH	*30:01	*68:02	+	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
31	9019 DUCAF	*30:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
32	9297 HAG	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-
37	9065 HHKB	*03:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
38	9099 LZL	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	+	-	-	+	-	-	+	-	-	-	+	-	-	+	-	-
40	9134 WHONP199	*02:07	*30:01	-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
41	9055 H0301	*03:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
42	9066 TAB089	*02:07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01		+	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
47	9045 TUBO	*02:16	*03:01	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
48	9303 TER-ND	*02:01	*11:01	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-

CELL LINE VALIDATION SHEET																				
HLA-A*11 SSP subtyping kit																				
			Prod. No.:	Well																
				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
				200736817	201070418	201183819	201070420	201183821	201070422	200736823	201070424	201070425	201070426	201070427	201070428	201070429	201070430	201070431	201070432	
	IHWC cell line	A*																		
1	9001 SA	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01		-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-
4	9275 GU373	*30:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*01:01		-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-
7	9020 QBL	*26:01		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*26:01		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01	+	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
19	9038 BM16	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
26	9285 WT49	*02:05		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
31	9019 DUCAF	*30:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*03:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
38	9099 LZL	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-
40	9134 WHONP199	*02:07	*30:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301	*03:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
42	9066 TAB089	*02:07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-A*11 SSP

Product number: 101.416-12/04 – including *Taq* pol.
Lot number: 16M
Expiry date: 2013-October-01
Number of tests: 12 tests – Product No. 101.416-12
4 tests – Product No. 101.416-04
Number of wells per test: 48

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2007-368-01	17	2007-368-17	33	2011-838-33
2	2007-368-02	18	2010-704-18	34	2011-838-34
3	2008-533-03	19	2011-838-19	35	2011-838-35
4	2007-368-04	20	2010-704-20	36	2011-838-36
5	2011-838-05	21	2011-838-21	37	2011-838-37
6	2010-704-06	22	2010-704-22	38	2011-838-38
7	2007-368-07	23	2007-368-23	39	2011-838-39
8	2010-704-08	24	2010-704-24	40	2011-838-40
9	2010-704-09	25	2010-704-25	41	2011-838-41
10	2010-704-10	26	2010-704-26	42	2011-838-42
11	2010-704-11	27	2010-704-27	43	2011-838-43
12	2007-368-12	28	2010-704-28	44	2011-838-44
13	2010-704-13	29	2010-704-29	45	2011-838-45
14	2007-368-14	30	2010-704-30	46	2011-838-46
15	2008-533-15	31	2010-704-31	47	2011-838-47
16	2010-704-16	32	2010-704-32	48	2011-838-48

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

No DNAs carrying the alleles to be amplified by primer solutions 5, 8, 9, 13, 16, 19, 23, 28, 30, 31, 33 to 40 and 42 to 48 were available. The specificities of the primers in primer solutions 5, 9, 13, 23, 28, 31, 40, 43 and 47 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer. In primer solutions 19, 30, 34, 35, 37, 38 and 42 it was only possible to test the 5'-primers, the 3'-primers were not possible to test. In primer solutions 8, 16, 33, 36, 39, 44 to 46 and 48 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 6, 10, 13, 20, 28 and 31 one or two of the 5'-primers were not possible to test. In primer solutions 5, 20, 22, 24, 26 to 28, 31, 32, 40 and 43 one or two of the 3'-primers were not possible to test. Additional primers in primer solutions 3, 10, 18, 20, 24, 25, 27 and 32 were tested by separately adding one additional 5'-primer or one additional 3'-primer.

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

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

Date of approval: 2012-January-24

Approved by:

Production Quality Control

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

Declaration of Conformity

Product name: *Olerup* SSP® HLA-A*11
Product number: 101.416-12/04
Lot number: 16M

Intended use: HLA-A*11 high resolution histocompatibility testing

Manufacturer: *Olerup* SSP AB
Franzengatan 5
SE-112 51 Stockholm, Sweden
Phone: +46-8-717 88 27
Fax: +46-8-717 88 18

We, *Olerup* SSP AB, hereby declare that this product, to which this Declaration of Conformity relates is in conformity with the following Standard(s) and other normative document(s) ISO 9001:2008 and ISO 13485:2003, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex II List B, conformity assessed using Annex IV, as transposed into the national laws of the Member States of the European Union.

The Technical Documentation File is maintained at *Olerup* SSP AB, Franzengatan 5, SE-112 51 Stockholm, Sweden.

Notified Body: Lloyd’s Register Quality Assurance Limited, Hiramford, Middlemarch Office Village, Siskin Drive, Coventry CV3 4FJ, United Kingdom. (Notified Body number: 0088.)

Stockholm, Sweden
2012-January-24

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **16M**

Lot-specific information

www.olerup-ssp.com

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