

Olerup SSP® DRB1*11

Product number:	101.115-24u/03u – without <i>Taq</i> pol.
Lot number:	36K
Expiry date:	2012-September-01
Number of tests:	24 tests – Product No. 101.115-24u 3 tests – Product No. 101.115-03u
Number of wells per test:	32
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. 36K.

**CHANGES COMPARED TO THE PREVIOUS *OLERUP SSP*®
DRB1*11 LOT**

The DRB1*11 specificity and interpretation tables have been updated for the DRB1 alleles described since the previous *Olerup SSP*® DRB1*11 lot was made (Lot No. 55G).

The amplification patterns for some rare DRB1*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
11	-	Modified, added	Improved yield of specific PCR product, primer added for the DRB1*11:94 allele.
12	Added	-	Primer added for the DRB1*11:90 allele.
16	-	Added	Primer added for the DRB1*11:91 allele.
17	-	Added	Improved yield of specific PCR product.
19	-	Added	Primer added for the DRB1*11:86 allele.
20	-	Added	Improved yield of specific PCR product, primer added for the DRB1*11:88 allele.
22	-	Added	Primer added for the DRB1*11:94 allele.
24	-	Modified	Improved yield of specific PCR product.
25	Added	-	Primer added for the DRB1*11:58:02 allele.
28	Added	-	Improved yield of specific PCR product.

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Change in revision R01 compared to R00:

1. Primer mixes 11 and 22 have pronounced tendencies of primer oligomer formation.

Change in revision R02 compared to R01:

1. Primer mix 31 may give a lower yield of specific PCR product than the other DRB1*11 primer mixes.

Change in revision R03 compared to R02:

1. Primer mix 18 may give a lower yield of specific PCR product in the DRB1*11:27:01, DRB1*11:84 and DRB3*02:18 alleles.

PRODUCT DESCRIPTION

DRB1*11 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1*11:01 to DRB1*11:94 alleles.

PLATE LAYOUT

Each test consists of 32 PCR reactions in a 32 well cut PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32

The 32 well cut PCR plate is marked with 'DRB1*11', in silver/gray ink.

Well No. 1 is marked with the Lot No. '36K'.

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

The PCR plates are heat-sealed with a PCR-compatible foil.

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

INTERPRETATION

The interpretation of DRB1*11 PCR-SSP subtypings will be influenced by four DRB1*01 alleles, several DRB1*03 alleles, fourteen DRB1*04 alleles, most DRB1*07 alleles, most DRB1*08 alleles, the DRB1*12, the DRB1*13, most DRB1*14 alleles, several DRB1*15 and six DRB1*16 alleles when present on the other haplotype. In addition, the DRB3*01:14 allele is amplified by primer mixes 14 and 16, the DRB3*02:11, DRB5*01:07, DRB5*01:11 and DRB5*02:03 alleles are amplified by primer mix 29, the DRB3*02:18 allele is amplified by primer mixes 7, 10, 12, 18 and 25 and the DRB5*01:13 allele is amplified by primer mixes 3, 5 and 7.

UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DRB1*11 alleles, i.e. **DRB1*11:01 to DRB1*11:94**, recognized by the HLA Nomenclature Committee in April 2010¹ will give rise to unique amplification patterns by the primers in the DRB1*11 subtyping kit.

The DRB1*11 subtyping kit cannot distinguish the DRB1*11:01:01 to 11:01:11 alleles, the DRB1*11:02:01 and 11:02:02 alleles, the DRB1*11:04:01 to 11:04:03 and 11:04:05 alleles, the DRB1*11:06:01 and 11:06:02 alleles, the DRB1*11:08:01 and 11:08:02 alleles, the DRB1*11:10:01 and 11:10:02 alleles, the DRB1*11:11:01 and 11:11:02 alleles, the DRB1*11:13:01 and 11:13:02 alleles, the DRB1*11:14:01 and 11:14:02 alleles, the DRB1*11:19:01 and 11:19:02 alleles, the DRB1*11:27:01 and 11:27:02 alleles, the DRB1*11:54:01 and 11:54:02 alleles, the DRB1*11:58:01 and 11:58:02 alleles and the DRB1*11:65:01 and 11:65:02 alleles.

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The DRB1*11:24 and 11:91 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16.

The DRB1*11:61 and 11:90 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 12.

¹DRB1 alleles listed on the IMGT/HLA web page 2010-April-01, release 3.0.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

The 93 DRB1*11 alleles give rise to 93 different amplification patterns that can be combined in 4371 homozygous and heterozygous combinations. 1778 of these genotypes do not give rise to unique amplification patterns. (The different lengths of the specific PCR products in wells 9-13, 15, 16, 19- 22, 24 and 26 were not considered in these calculations.)

++++++ +----- +-+----- -----++	11:31,11:67 = 11:45,11:67
+++-++ +----- +----- -----++	11:08,11:67 = 11:67,11:75
+++-++ +----- +-+----- -----++	11:05,11:25 = 11:23,11:67 = 11:32,11:67
+++-++ +----- +-----+-----++	11:33,11:67 = 11:67,11:69
+++-++ +----- +----- -----++	11:01,11:67 = 11:26,11:67 = 11:53,11:67 =
	11:67,11:74 = 11:67,11:79
+++-++ -+----- -----+-----++	11:05,11:06 = 11:05,11:57
+++-++ -+----- -----+-----++	11:05,11:26 = 11:05,11:74 = 11:05,11:79
+++-++ -+----- -----+-----++	11:05,11:08 = 11:05,11:75
+++-++ -+----- -----+-----++	11:05,11:33 = 11:05,11:69
+++-++ +----- +-----+-----++	11:06,11:67 = 11:57,11:67
+++-++ +----- +-+----- -----++	11:07,11:67 = 11:67,11:84
+++-++ +----- +----- -----++	11:04,11:67 = 11:34,11:67 = 11:54,11:67 =
	11:67,11:77
++++++ +----- +-+----- --++++-	11:14,11:55 = 11:55,11:73
++++++ +----- +-+----- --++++-	11:03,11:45 = 11:19,11:55 = 11:31,11:55 =
	11:45,11:55
++++++ +----- +-+----- --++++-	11:02,11:23 = 11:23,11:70
++++++ +----- --+----- --++++-	11:30,11:70 = 11:61,11:70
++++++ +----- --+----- ++-+--	11:09,11:70 = 11:16,11:32
++++++ +----- --+----- ++-+--	11:32,11:65 = 11:33,11:70
++++++ +----- --+----- --++++-	11:01,11:70 = 11:02,11:32 = 11:32,11:70
++++++ --+----- -----+-----++	11:21,11:30 = 11:21,11:61
++++++ --+----- -----+-----++	11:21,11:33 = 11:21,11:81 = 11:21,11:94
++++++ --+----- -----+-----++	11:02,11:94 = 11:65,11:75 = 11:65,11:94
++++++ --+----- -----+-----++	11:01,11:21 = 11:21,11:39 = 11:21,11:75
++++++ --+----- -----++-+--	11:16,11:30 = 11:16,11:61
++++++ --+----- -----++-+--	11:30,11:48 = 11:48,11:61
++++++ --+----- -----++-+--	11:30,11:65 = 11:61,11:65
++++++ --+----- -----++-+--	11:02,11:30 = 11:02,11:61
++++++ --+----- -----++-+--	11:14,11:83 = 11:20,11:83
++++++ --+----- -----++-+--	11:10,11:16 = 11:12:01,11:16 = 11:12:02,11:16
++++++ --+----- -----++-+--	11:02,11:87 = 11:16,11:22 = 11:16,11:72 =
	11:16,11:80 = 11:16,11:87
++++++ --+----- -----++-+--	11:09,11:65 = 11:16,11:33
++++++ --+----- -----++-+--	11:04,11:20 = 11:04:04,11:20 = 11:20,11:46 =
	11:20,11:58 = 11:20,11:60 = 11:20,11:78
++++++ --+----- -----++-+--	11:01,11:16 = 11:02,11:09 = 11:09,11:16 =
	11:16,11:28 = 11:16,11:62
++++++ --+----- -----++-+--	11:02,11:37 = 11:37,11:48
++++++ --+----- -----++-+--	11:02,11:15 = 11:15,11:65 = 11:24,11:65
++++++ --+----- -----++-+--	11:02,11:81 = 11:39,11:65 = 11:65,11:81
++++++ --+----- -----++-+--	11:01,11:65 = 11:02,11:33 = 11:33,11:65
++++++ +----- +-+----- --++++-	11:11,11:45 = 11:14,11:23
++++++ --+----- -----++-+--	11:20,11:30 = 11:20,11:61
++++++ --+----- -----++-+--	11:30,11:86 = 11:61,11:86

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+-+-----	+-+-----	+-+-----	+-+-----	11:33,11:55 = 11:55,11:69
+-+-----	+-+-----	+-+-----	+-+-----	11:11,11:55 = 11:55,11:93
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:55 = 11:03,11:23 = 11:23,11:55 =
				11:26,11:55 = 11:32,11:55 = 11:53,11:55 =
				11:55,11:74 = 11:55,11:79
+-+-----	+-+-----	+-+-----	+-+-----	11:26,11:59 = 11:59,11:74
+-+-----	+-+-----	+-+-----	+-+-----	11:26,11:40 = 11:40,11:74
+-+-----	+-+-----	+-+-----	+-+-----	11:26,11:85 = 11:74,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:26,11:76 = 11:74,11:76
+-+-----	+-+-----	+-+-----	+-+-----	11:26,11:63 = 11:63,11:74
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:26 = 11:03,11:74
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:36 = 11:36,11:61
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:59 = 11:36,11:87 = 11:59,11:75
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:40 = 11:09,11:36 = 11:40,11:75
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:41 = 11:36,11:37
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:85 = 11:36,11:49 = 11:75,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:15,11:36 = 11:76,11:94
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:76 = 11:24,11:36 = 11:75,11:76
+-+-----	+-+-----	+-+-----	+-+-----	11:11,11:47 = 11:47,11:68
+-+-----	+-+-----	+-+-----	+-+-----	11:08,11:63 = 11:29,11:36 = 11:63,11:75
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:94 = 11:33,11:36 = 11:36,11:94
+-+-----	+-+-----	+-+-----	+-+-----	11:06,11:11 = 11:06,11:68 = 11:11,11:57 =
				11:43,11:68
+-+-----	+-+-----	+-+-----	+-+-----	11:04,11:68 = 11:11,11:42
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:36 = 11:03,11:08 = 11:03,11:75 =
				11:36,11:75
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:59 = 11:59,11:61
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:40 = 11:40,11:61
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:41 = 11:41,11:61
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:85 = 11:61,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:76 = 11:61,11:76
+-+-----	+-+-----	+-+-----	+-+-----	11:30,11:63 = 11:61,11:63
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:30 = 11:03,11:61
+-+-----	+-+-----	+-+-----	+-+-----	11:37,11:59 = 11:41,11:87
+-+-----	+-+-----	+-+-----	+-+-----	11:09,11:41 = 11:37,11:40
+-+-----	+-+-----	+-+-----	+-+-----	11:10,11:59 = 11:12:01,11:59 = 11:12:02,11:59
+-+-----	+-+-----	+-+-----	+-+-----	11:10,11:40 = 11:12:01,11:40 = 11:12:02,11:40
+-+-----	+-+-----	+-+-----	+-+-----	11:49,11:59 = 11:85,11:87
+-+-----	+-+-----	+-+-----	+-+-----	11:09,11:85 = 11:40,11:49
+-+-----	+-+-----	+-+-----	+-+-----	11:24,11:59 = 11:76,11:87
+-+-----	+-+-----	+-+-----	+-+-----	11:09,11:76 = 11:24,11:40
+-+-----	+-+-----	+-+-----	+-+-----	11:29,11:59 = 11:63,11:87
+-+-----	+-+-----	+-+-----	+-+-----	11:09,11:63 = 11:29,11:40
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:59 = 11:03,11:87 = 11:09,11:59 =
				11:22,11:40 = 11:22,11:59 = 11:28,11:59 =
				11:40,11:72 = 11:40,11:80 = 11:40,11:87 =
				11:59,11:62 = 11:59,11:72 = 11:59,11:80 =
				11:59,11:87
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:40 = 11:03,11:09 = 11:09,11:40 =
				11:28,11:40 = 11:40,11:62
+-+-----	+-+-----	+-+-----	+-+-----	11:37,11:85 = 11:41,11:49
+-+-----	+-+-----	+-+-----	+-+-----	11:24,11:41 = 11:37,11:76
+-+-----	+-+-----	+-+-----	+-+-----	11:29,11:41 = 11:37,11:63
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:41 = 11:03,11:37
+-+-----	+-+-----	+-+-----	+-+-----	11:10,11:76 = 11:10,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:12:02,11:76 = 11:12:02,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:12:01,11:76 = 11:12:01,11:85 = 11:66,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:10 = 11:10,11:63
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:12:02 = 11:12:02,11:63
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:12:01 = 11:12:01,11:63 = 11:63,11:66
+-+-----	+-+-----	+-+-----	+-+-----	11:15,11:63 = 11:15,11:85 = 11:33,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:01,11:85 = 11:03,11:49 = 11:24,11:63 =
				11:24,11:85 = 11:29,11:76 = 11:29,11:85 =
				11:49,11:63 = 11:49,11:76 = 11:49,11:85
+-+-----	+-+-----	+-+-----	+-+-----	11:03,11:15 = 11:15,11:76 = 11:33,11:76

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+--+++++	-----+	-----	---+---	11:01,11:76	= 11:03,11:24	= 11:24,11:76
+--+++++	-----	---+---	---+---	11:01,11:63	= 11:03,11:29	= 11:29,11:63
+--+++++	+++-----	+--+---	---+---	11:11,11:64	= 11:23,11:68	
+--+++++	---+---	-----	---+---	11:11,11:26	= 11:11,11:74	
+--+++++	---+---	-----	---+---	11:30,11:68	= 11:61,11:68	
+--+++++	---+---	-----	---+---	11:11,11:94	= 11:33,11:68	= 11:68,11:94
+--+++++	---+---	-----	---+---	11:01,11:68	= 11:08,11:11	= 11:11,11:75 =
				11:68,11:75		
+--+++++	---+---	-----	---+---	11:11,11:30	= 11:11,11:61	
+--+++++	+++-----	+--+---	---+---	11:06,11:55	= 11:55,11:57	
+--+++++	+++-----	+--+---	---+---	11:25,11:36	= 11:42,11:55	
+--+++++	+++-----	+--+---	+++-----	11:17,11:55	= 11:52,11:55	
+--+++++	+++-----	+--+---	---+---	11:25,11:41	= 11:55,11:56	
+--+++++	+++-----	+--+---	---+---	11:25,11:85	= 11:44,11:55	
+--+++++	+++-----	+--+---	---+---	11:25,11:63	= 11:55,11:88	
+--+++++	+++-----	+--+---	---+---	11:03,11:25	= 11:04,11:55	= 11:25,11:55 =
				11:54,11:55	= 11:55,11:77	
+--+++++	+++-----	+--+---	---+---	11:03,11:55	= 11:34,11:55	= 11:55,11:55
+--+++++	---+---	+++-----	+++-----	11:52,11:76	= 11:52,11:85	
+--+++++	---+---	+++-----	+++-----	11:17,11:76	= 11:17,11:85	
+--+++++	---+---	+++-----	+++-----	11:03,11:52	= 11:52,11:63	
+--+++++	---+---	+++-----	+++-----	11:03,11:17	= 11:17,11:63	
+--+++++	---+---	---+---	+++-----	11:13,11:76	= 11:13,11:85	
+--+++++	---+---	---+---	+++-----	11:03,11:13	= 11:13,11:63	
+--+++++	---+---	---+---	+++-----	11:06,11:59	= 11:57,11:59	
+--+++++	---+---	---+---	+++-----	11:06,11:40	= 11:40,11:57	
+--+++++	---+---	---+---	---+---	11:36,11:56	= 11:41,11:42	
+--+++++	---+---	---+---	---+---	11:06,11:85	= 11:47,11:76	= 11:47,11:85 =
				11:57,11:85		
+--+++++	---+---	---+---	---+---	11:36,11:44	= 11:42,11:85	
+--+++++	---+---	---+---	---+---	11:06,11:76	= 11:57,11:76	
+--+++++	---+---	---+---	---+---	11:03,11:47	= 11:06,11:63	= 11:36,11:47 =
				11:47,11:63	= 11:57,11:63	
+--+++++	---+---	---+---	---+---	11:03,11:06	= 11:03,11:57	= 11:06,11:36 =
				11:36,11:43		
+--+++++	---+---	---+---	---+---	11:03,11:42	= 11:04,11:36	
+--+++++	---+---	---+---	+++-----	11:03,11:83	= 11:40,11:83	= 11:56,11:59 =
				11:59,11:83		
+--+++++	---+---	---+---	+++-----	11:04,11:59	= 11:04:04,11:59	= 11:40,11:92 =
				11:46,11:59	= 11:58,11:59	= 11:59,11:60 =
				11:59,11:78	= 11:59,11:92	
+--+++++	---+---	---+---	+++-----	11:04,11:40	= 11:04:04,11:40	= 11:40,11:46 =
				11:40,11:58	= 11:40,11:60	= 11:40,11:78
+--+++++	---+---	---+---	---+---	11:03,11:50	= 11:50,11:63	= 11:50,11:76 =
				11:50,11:85		
+--+++++	---+---	---+---	---+---	11:41,11:44	= 11:56,11:85	
+--+++++	---+---	---+---	---+---	11:03,11:56	= 11:04,11:41	
+--+++++	---+---	---+---	---+---	11:03,11:44	= 11:04,11:85	= 11:44,11:63 =
				11:44,11:76	= 11:44,11:85	= 11:76,11:88 =
				11:85,11:88		
+--+++++	---+---	---+---	---+---	11:03,11:88	= 11:04,11:63	= 11:63,11:88
+--+++++	+++-----	+--+---	---+---	11:23,11:47	= 11:47,11:64	
+--+++++	+++-----	+--+---	---+---	11:25,11:94	= 11:35,11:64	
+--+++++	+++-----	+--+---	---+---	11:06,11:23	= 11:06,11:64	= 11:23,11:57 =
				11:43,11:64		
+--+++++	+++-----	+--+---	---+---	11:04,11:64	= 11:08,11:25	= 11:23,11:42 =
				11:25,11:64	= 11:25,11:75	= 11:54,11:64 =
				11:64,11:77		
+--+++++	+++-----	+--+---	---+---	11:25,11:30	= 11:25,11:61	
+--+++++	+++-----	+--+---	---+---	11:07,11:30	= 11:07,11:61	
+--+++++	+++-----	+--+---	+++-----	11:23,11:58	= 11:25,11:28	
+--+++++	+++-----	+--+---	+++-----	11:17,11:23	= 11:17,11:32	= 11:23,11:52 =
				11:32,11:52		
+--+++++	+++-----	+--+---	---+---	11:23,11:56	= 11:25,11:37	
+--+++++	+++-----	+--+---	---+---	11:23,11:44	= 11:25,11:49	

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+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:84 = 11:25,11:27
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:88 = 11:25,11:29
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:92 = 11:25,11:72
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:35 = 11:25,11:33 = 11:25,11:69
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:43 = 11:25,11:39
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:78 = 11:25,11:62
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:25 = 11:04,11:23 = 11:23,11:25 =
+-+-++	+-+-++	+-+-++	+-+-++	11:23,11:54 = 11:23,11:77 = 11:25,11:26 =
+-+-++	+-+-++	+-+-++	+-+-++	11:25,11:32 = 11:25,11:53 = 11:25,11:74 =
+-+-++	+-+-++	+-+-++	+-+-++	11:25,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:07 = 11:07,11:27 = 11:07,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:77 = 11:74,11:77 = 11:77,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:32 = 11:32,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:77 = 11:75,11:77
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:77 = 11:61,11:77
+-+-++	+-+-++	+-+-++	+-+-++	11:04,11:32 = 11:32,11:77
+-+-++	+-+-++	+-+-++	+-+-++	11:33,11:77 = 11:69,11:77
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:47 = 11:47,11:74 = 11:47,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:26 = 11:06,11:74 = 11:06,11:79 =
+-+-++	+-+-++	+-+-++	+-+-++	11:57,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:52 = 11:52,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:17,11:30 = 11:17,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:13,11:30 = 11:13,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:34 = 11:34,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:09,11:52 = 11:28,11:52
+-+-++	+-+-++	+-+-++	+-+-++	11:09,11:17 = 11:17,11:28
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:83 = 11:79,11:83
+-+-++	+-+-++	+-+-++	+-+-++	11:09,11:13 = 11:13,11:28
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:58 = 11:58,11:74 = 11:58,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:60 = 11:60,11:74 = 11:60,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:24,11:52 = 11:49,11:52
+-+-++	+-+-++	+-+-++	+-+-++	11:17,11:24 = 11:17,11:49
+-+-++	+-+-++	+-+-++	+-+-++	11:22,11:52 = 11:52,11:72 = 11:52,11:80
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:52 = 11:10,11:52 = 11:12:01,11:52 =
+-+-++	+-+-++	+-+-++	+-+-++	11:12:02,11:52 = 11:29,11:52 = 11:51,11:52 =
+-+-++	+-+-++	+-+-++	+-+-++	11:52,11:62 = 11:52,11:66 = 11:52,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:17,11:22 = 11:17,11:72 = 11:17,11:80
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:17 = 11:10,11:17 = 11:12:01,11:17 =
+-+-++	+-+-++	+-+-++	+-+-++	11:12:02,11:17 = 11:17,11:29 = 11:17,11:51 =
+-+-++	+-+-++	+-+-++	+-+-++	11:17,11:62 = 11:17,11:66 = 11:17,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:50 = 11:50,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:56 = 11:56,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:13,11:24 = 11:13,11:49
+-+-++	+-+-++	+-+-++	+-+-++	11:13,11:22 = 11:13,11:72 = 11:13,11:80
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:13 = 11:10,11:13 = 11:12:01,11:13 =
+-+-++	+-+-++	+-+-++	+-+-++	11:12:02,11:13 = 11:13,11:29 = 11:13,11:51 =
+-+-++	+-+-++	+-+-++	+-+-++	11:13,11:62 = 11:13,11:66 = 11:13,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:44 = 11:44,11:74 = 11:44,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:54 = 11:54,11:74 = 11:54,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:84 = 11:74,11:84 = 11:79,11:84
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:88 = 11:79,11:88
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:92 = 11:74,11:92 = 11:79,11:92
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:35 = 11:35,11:74 = 11:35,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:38 = 11:38,11:74 = 11:38,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:43 = 11:43,11:74 = 11:43,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:46 = 11:46,11:74 = 11:46,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:04:04,11:26 = 11:04:04,11:74 =
+-+-++	+-+-++	+-+-++	+-+-++	11:04:04,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:26,11:78 = 11:74,11:78 = 11:78,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:04,11:26 = 11:04,11:74 = 11:04,11:79
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:34 = 11:34,11:74
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:47 = 11:47,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:30 = 11:06,11:61 = 11:30,11:57 =
+-+-++	+-+-++	+-+-++	+-+-++	11:57,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:42 = 11:42,11:61

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+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:87 = 11:57,11:87
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:09 = 11:09,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:28 = 11:28,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:58 = 11:28,11:42 = 11:58,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:60 = 11:60,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:56 = 11:37,11:42
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:10 = 11:10,11:47 = 11:10,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:12:02 = 11:12:02,11:47 = 11:12:02,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:12:01 = 11:12:01,11:47 = 11:12:01,11:57 = 11:47,11:66
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:66 = 11:57,11:66
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:49 = 11:24,11:47 = 11:47,11:49 = 11:49,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:44 = 11:42,11:49 = 11:44,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:15 = 11:15,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:24 = 11:24,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:54 = 11:54,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:27 = 11:27,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:84 = 11:27,11:42 = 11:75,11:84
+-+-++	+-+-++	+-+-++	+-+-++	11:33,11:47 = 11:47,11:69 = 11:47,11:81 = 11:47,11:94
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:47 = 11:06,11:29 = 11:08,11:47 = 11:29,11:47 = 11:29,11:57 = 11:39,11:47 = 11:47,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:29,11:42 = 11:75,11:88
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:22 = 11:22,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:80 = 11:57,11:80
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:72 = 11:57,11:72
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:92 = 11:42,11:72 = 11:75,11:92
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:33 = 11:06,11:69 = 11:06,11:81 = 11:06,11:94 = 11:33,11:57 = 11:42,11:81 = 11:43,11:94 = 11:57,11:81 = 11:57,11:94
+-+-++	+-+-++	+-+-++	+-+-++	11:04,11:94 = 11:08,11:35 = 11:33,11:42 = 11:35,11:75 = 11:35,11:94 = 11:42,11:94
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:38 = 11:38,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:62 = 11:57,11:62
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:93 = 11:57,11:93
+-+-++	+-+-++	+-+-++	+-+-++	11:06,11:51 = 11:51,11:57
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:06 = 11:01,11:57 = 11:06,11:08 = 11:06,11:39 = 11:06,11:75 = 11:08,11:43 = 11:39,11:42 = 11:39,11:57 = 11:43,11:75 = 11:57,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:46 = 11:46,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:04:04,11:08 = 11:04:04,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:08,11:78 = 11:42,11:62 = 11:75,11:78
+-+-++	+-+-++	+-+-++	+-+-++	11:01,11:42 = 11:04,11:08 = 11:04,11:75 = 11:42,11:75
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:83 = 11:61,11:83
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:58 = 11:58,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:60 = 11:60,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:50 = 11:50,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:56 = 11:56,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:44 = 11:44,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:54 = 11:54,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:89 = 11:61,11:89
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:84 = 11:61,11:84
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:88 = 11:61,11:88
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:92 = 11:61,11:92
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:35 = 11:35,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:38 = 11:38,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:43 = 11:43,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:46 = 11:46,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:04:04,11:30 = 11:04:04,11:61
+-+-++	+-+-++	+-+-++	+-+-++	11:30,11:78 = 11:61,11:78

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+-+-++	-----	-----	-----	11:04,11:30 = 11:04,11:61
+-+-++	-----	-----	-----	11:10,11:83 = 11:12:01,11:83 = 11:12:02,11:83
+-+-++	-----	-----	-----	11:01,11:83 = 11:09,11:83 = 11:22,11:83 =
				11:28,11:83 = 11:56,11:87 = 11:62,11:83 =
				11:72,11:83 = 11:80,11:83 = 11:83,11:87
+-+-++	-----	-----	-----	11:28,11:56 = 11:37,11:58
+-+-++	-----	-----	-----	11:10,11:58 = 11:10,11:60
+-+-++	-----	-----	-----	11:12:01,11:58 = 11:12:02,11:58 =
				11:12:02,11:60
+-+-++	-----	-----	-----	11:28,11:44 = 11:49,11:58
+-+-++	-----	-----	-----	11:28,11:54 = 11:53,11:58
+-+-++	-----	-----	-----	11:27,11:58 = 11:28,11:84
+-+-++	-----	-----	-----	11:28,11:88 = 11:29,11:58
+-+-++	-----	-----	-----	11:04,11:87 = 11:04:04,11:87 = 11:09,11:92 =
				11:46,11:87 = 11:58,11:80 = 11:58,11:87 =
				11:60,11:87 = 11:78,11:87 = 11:87,11:92
+-+-++	-----	-----	-----	11:22,11:58 = 11:22,11:60 = 11:28,11:92 =
				11:58,11:72
+-+-++	-----	-----	-----	11:28,11:35 = 11:33,11:58 = 11:58,11:69
+-+-++	-----	-----	-----	11:33,11:60 = 11:60,11:69
+-+-++	-----	-----	-----	11:28,11:43 = 11:39,11:58
+-+-++	-----	-----	-----	11:04,11:09 = 11:04:04,11:09 = 11:09,11:46 =
				11:09,11:58 = 11:09,11:60 = 11:09,11:78 =
				11:28,11:46 = 11:28,11:78 = 11:58,11:62
+-+-++	-----	-----	-----	11:01,11:58 = 11:04,11:28 = 11:04:04,11:28 =
				11:28,11:58 = 11:28,11:60
+-+-++	-----	-----	-----	11:12:01,11:50 = 11:50,11:66
+-+-++	-----	-----	-----	11:15,11:50 = 11:33,11:50 = 11:50,11:81
+-+-++	-----	-----	-----	11:01,11:50 = 11:24,11:50 = 11:29,11:50 =
				11:39,11:50 = 11:49,11:50
+-+-++	-----	-----	-----	11:37,11:44 = 11:49,11:56
+-+-++	-----	-----	-----	11:27,11:56 = 11:37,11:84
+-+-++	-----	-----	-----	11:37,11:92 = 11:56,11:72
+-+-++	-----	-----	-----	11:33,11:56 = 11:35,11:37
+-+-++	-----	-----	-----	11:37,11:43 = 11:39,11:56
+-+-++	-----	-----	-----	11:37,11:78 = 11:56,11:62
+-+-++	-----	-----	-----	11:01,11:56 = 11:04,11:37
+-+-++	-----	-----	-----	11:12:01,11:44 = 11:44,11:66
+-+-++	-----	-----	-----	11:04,11:10 = 11:04:04,11:10 = 11:10,11:46 =
				11:10,11:78 = 11:10,11:88 = 11:12:01,11:46 =
				11:12:02,11:46 = 11:12:02,11:78
+-+-++	-----	-----	-----	11:04,11:12:02 = 11:04:04,11:12:01 =
				11:04:04,11:12:02 = 11:12:02,11:88
+-+-++	-----	-----	-----	11:04,11:12:01 = 11:12:01,11:88 = 11:66,11:88
+-+-++	-----	-----	-----	11:44,11:53 = 11:49,11:54
+-+-++	-----	-----	-----	11:27,11:44 = 11:49,11:84
+-+-++	-----	-----	-----	11:44,11:72 = 11:49,11:92
+-+-++	-----	-----	-----	11:15,11:44 = 11:15,11:88 = 11:33,11:44 =
				11:35,11:49 = 11:44,11:69
+-+-++	-----	-----	-----	11:39,11:44 = 11:43,11:49
+-+-++	-----	-----	-----	11:44,11:62 = 11:49,11:78
+-+-++	-----	-----	-----	11:01,11:44 = 11:04,11:49 = 11:24,11:44 =
				11:24,11:88 = 11:29,11:44 = 11:44,11:49 =
				11:49,11:88
+-+-++	-----	-----	-----	11:04,11:15 = 11:15,11:35 = 11:24,11:35
+-+-++	-----	-----	-----	11:27,11:54 = 11:53,11:84
+-+-++	-----	-----	-----	11:53,11:92 = 11:54,11:72
+-+-++	-----	-----	-----	11:33,11:54 = 11:35,11:53 = 11:54,11:69
+-+-++	-----	-----	-----	11:39,11:54 = 11:43,11:53
+-+-++	-----	-----	-----	11:53,11:78 = 11:54,11:62
+-+-++	-----	-----	-----	11:01,11:54 = 11:04,11:53 = 11:53,11:54
+-+-++	-----	-----	-----	11:01,11:89 = 11:51,11:89
+-+-++	-----	-----	-----	11:27,11:88 = 11:29,11:84
+-+-++	-----	-----	-----	11:27,11:92 = 11:72,11:84
+-+-++	-----	-----	-----	11:27,11:35 = 11:33,11:84 = 11:69,11:84

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+-+-++	-----	-+-----	-----++	11:27,11:43 = 11:39,11:84
+-+-++	-----	-+-----	-----++	11:27,11:78 = 11:62,11:84
+-+-++	-----	-+-----	-----++	11:01,11:84 = 11:04,11:27 = 11:27,11:84
+-+-++	-----	-----++	-----++	11:29,11:92 = 11:72,11:88
+-+-++	-----	-----++	-----++	11:29,11:35 = 11:33,11:88
+-+-++	-----	-----++	-----++	11:29,11:43 = 11:39,11:88
+-+-++	-----	-----++	-----++	11:29,11:78 = 11:62,11:88
+-+-++	-----	-----++	-----++	11:01,11:88 = 11:04,11:29 = 11:29,11:88
+-+-++	-----	-----++	-----++	11:33,11:92 = 11:35,11:72 = 11:69,11:92
+-+-++	-----	-----++	-----++	11:39,11:92 = 11:43,11:72
+-+-++	-----	-----++	-----++	11:04:04,11:80 = 11:22,11:46 = 11:22,11:78 =
				11:46,11:72 = 11:46,11:80
+-+-++	-----	-----++	-----++	11:04,11:22 = 11:04:04,11:22 = 11:04:04,11:72
				= 11:22,11:92
+-+-++	-----	-----++	-----++	11:04,11:80 = 11:62,11:92 = 11:72,11:78 =
				11:78,11:80 = 11:80,11:92
+-+-++	-----	-----++	-----++	11:01,11:92 = 11:04,11:72 = 11:72,11:92
+-+-++	-----	-----++	-----++	11:33,11:38 = 11:38,11:69
+-+-++	-----	-----++	-----++	11:04,11:81 = 11:33,11:43 = 11:35,11:39 =
				11:35,11:81 = 11:43,11:69 = 11:43,11:81
+-+-++	-----	-----++	-----++	11:33,11:46 = 11:46,11:69
+-+-++	-----	-----++	-----++	11:04:04,11:33 = 11:04:04,11:69
+-+-++	-----	-----++	-----++	11:33,11:78 = 11:35,11:62 = 11:69,11:78
+-+-++	-----	-----++	-----++	11:04,11:82 = 11:35,11:82
+-+-++	-----	-----++	-----++	11:01,11:35 = 11:04,11:33 = 11:04,11:69 =
				11:33,11:35 = 11:35,11:69
+-+-++	-----	-----++	-----++	11:39,11:78 = 11:43,11:62
+-+-++	-----	-----++	-----++	11:01,11:43 = 11:04,11:39 = 11:39,11:43
+-+-++	-----	-----++	-----++	11:01,11:46 = 11:04:04,11:62 = 11:46,11:62
+-+-++	-----	-----++	-----++	11:01,11:78 = 11:04,11:62 = 11:62,11:78
+-+-++	++++-----	+-+------	-----++	11:30,11:64 = 11:61,11:64
+-+-++	++++-----	+-+------	-----++	11:23,11:94 = 11:33,11:64 = 11:64,11:94
+-+-++	++++-----	+-+------	-----++	11:01,11:64 = 11:08,11:23 = 11:23,11:64 =
				11:23,11:75 = 11:32,11:64 = 11:64,11:74 =
				11:64,11:75
+-+-++	+-+------	+-+------	-----++	11:23,11:30 = 11:23,11:61
+-+-++	+-+------	+-+------	-----++	11:23,11:33 = 11:23,11:69
+-+-++	+-+------	+-+------	-----++	11:01,11:23 = 11:23,11:23 = 11:23,11:26 =
				11:23,11:32 = 11:23,11:53 = 11:23,11:74 =
				11:23,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:32 = 11:32,11:74 = 11:32,11:79
+-+-++	+-+------	+-+------	-----++	11:08,11:32 = 11:32,11:75
+-+-++	+-+------	+-+------	-----++	11:30,11:32 = 11:32,11:61
+-+-++	+-+------	+-+------	-----++	11:32,11:33 = 11:32,11:69
+-+-++	+-+------	+-+------	-----++	11:01,11:32 = 11:32,11:32
+-+-++	+-+------	+-+------	-----++	11:26,11:94 = 11:74,11:94 = 11:79,11:94
+-+-++	+-+------	+-+------	-----++	11:08,11:74 = 11:26,11:75 = 11:74,11:75 =
				11:75,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:30 = 11:26,11:61 = 11:30,11:74 =
				11:30,11:79 = 11:61,11:74 = 11:61,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:87 = 11:74,11:87 = 11:79,11:87
+-+-++	+-+------	+-+------	-----++	11:09,11:26 = 11:09,11:74 = 11:09,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:28 = 11:28,11:74 = 11:28,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:37 = 11:37,11:79
+-+-++	+-+------	+-+------	-----++	11:10,11:26 = 11:10,11:74 = 11:10,11:79
+-+-++	+-+------	+-+------	-----++	11:12:02,11:26 = 11:12:02,11:74 =
				11:12:02,11:79
+-+-++	+-+------	+-+------	-----++	11:12:01,11:26 = 11:12:01,11:74 =
				11:12:01,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:66 = 11:66,11:74 = 11:66,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:49 = 11:49,11:74 = 11:49,11:79
+-+-++	+-+------	+-+------	-----++	11:15,11:26 = 11:15,11:74 = 11:15,11:79
+-+-++	+-+------	+-+------	-----++	11:24,11:26 = 11:24,11:74 = 11:24,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:27 = 11:27,11:74 = 11:27,11:79
+-+-++	+-+------	+-+------	-----++	11:26,11:29 = 11:29,11:74 = 11:29,11:79

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++-++-+-	-+-----	-----+	+-----+	11:22,11:26 = 11:22,11:74 = 11:22,11:79
++-++-+-	-+-----	-----+	-+-----	11:26,11:80 = 11:74,11:80 = 11:79,11:80
++-++-+-	-+-----	-----+	-----+	11:26,11:72 = 11:72,11:74 = 11:72,11:79
++-++-+-	-+-----	-----+	-----+	11:26,11:81 = 11:74,11:81 = 11:79,11:81
++-++-+-	-+-----	-----+	-----+	11:26,11:33 = 11:33,11:74 = 11:33,11:79 =
				11:69,11:74
++-++-+-	-+-----	-----+	-----+	11:26,11:39 = 11:39,11:74 = 11:39,11:79
++-++-+-	-+-----	-----+	-+-----	11:26,11:62 = 11:62,11:74 = 11:62,11:79
++-++-+-	-+-----	-----+	-+-----	11:26,11:93 = 11:74,11:93
++-++-+-	-+-----	-----+	-----+	11:26,11:51 = 11:51,11:74
++-++-+-	-+-----	-----+	-----+	11:01,11:26 = 11:01,11:74 = 11:01,11:79 =
				11:26,11:74 = 11:74,11:74 = 11:74,11:79
++-++-+-	-+-----	-----+	-----+	11:30,11:94 = 11:61,11:94
++-++-+-	-+-----	-----+	-----+	11:08,11:30 = 11:08,11:61 = 11:30,11:75 =
				11:61,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:87 = 11:75,11:87
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:09 = 11:09,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:28 = 11:28,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:10 = 11:10,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:12:02 = 11:12:02,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:12:01 = 11:12:01,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:66 = 11:66,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:49 = 11:49,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:15 = 11:15,11:75 = 11:15,11:94 =
				11:24,11:94
++-++-+-	-+-----	-----+	-----+	11:08,11:24 = 11:24,11:75
++-++-+-	-+-----	-+-----	-----+	11:08,11:27 = 11:27,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:29 = 11:29,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:08,11:22 = 11:22,11:75
++-++-+-	-+-----	-----+	-+-----	11:08,11:80 = 11:75,11:80
++-++-+-	-+-----	-----+	-----+	11:08,11:72 = 11:72,11:75
++-++-+-	-+-----	-----+	-----+	11:08,11:81 = 11:39,11:94 = 11:75,11:81 =
				11:81,11:94
++-++-+-	-+-----	-----+	-----+	11:75,11:82 = 11:82,11:94
++-++-+-	-+-----	-----+	-----+	11:01,11:94 = 11:08,11:33 = 11:08,11:94 =
				11:33,11:75 = 11:33,11:94 = 11:69,11:75 =
				11:69,11:94 = 11:75,11:94 = 11:94,11:94
++-++-+-	-+-----	-----+	-----+	11:08,11:39 = 11:39,11:75
++-++-+-	-+-----	-----+	-+-----	11:08,11:62 = 11:62,11:75
++-++-+-	-+-----	-----+	-+-----	11:08,11:93 = 11:75,11:93
++-++-+-	-+-----	-----+	-----+	11:08,11:51 = 11:51,11:75
++-++-+-	-+-----	-----+	-----+	11:01,11:08 = 11:01,11:75 = 11:08,11:75 =
				11:75,11:75
++-++-+-	-+-----	-----+	++-++-+-	11:30,11:87 = 11:61,11:87
++-++-+-	-+-----	-----+	++-++-+-	11:09,11:30 = 11:09,11:61
++-++-+-	-+-----	-----+	++-++-+-	11:28,11:30 = 11:28,11:61
++-++-+-	-+-----	-----+	-----+	11:30,11:37 = 11:37,11:61
++-++-+-	-+-----	-----+	++-++-+-	11:10,11:30 = 11:10,11:61
++-++-+-	-+-----	-----+	++-++-+-	11:12:02,11:30 = 11:12:02,11:61
++-++-+-	-+-----	-----+	-----+	11:12:01,11:30 = 11:12:01,11:61
++-++-+-	-+-----	-----+	-----+	11:30,11:66 = 11:61,11:66
++-++-+-	-+-----	-----+	-----+	11:30,11:49 = 11:49,11:61
++-++-+-	-+-----	-----+	-----+	11:15,11:30 = 11:15,11:61
++-++-+-	-+-----	-----+	-----+	11:24,11:30 = 11:24,11:61
++-++-+-	-+-----	-----+	-----+	11:30,11:53 = 11:53,11:61
++-++-+-	-+-----	-+-----	-----+	11:27,11:30 = 11:27,11:61
++-++-+-	-+-----	-----+	-----+	11:29,11:30 = 11:29,11:61
++-++-+-	-+-----	-----+	-+-----	11:30,11:80 = 11:61,11:80
++-++-+-	-+-----	-----+	-----+	11:30,11:72 = 11:61,11:72
++-++-+-	-+-----	-----+	-----+	11:30,11:81 = 11:61,11:81
++-++-+-	-+-----	-----+	-----+	11:30,11:82 = 11:61,11:82
++-++-+-	-+-----	-----+	-----+	11:30,11:33 = 11:30,11:69 = 11:33,11:61 =
				11:61,11:69
++-++-+-	-+-----	-----+	-----+	11:30,11:39 = 11:39,11:61
++-++-+-	-+-----	-----+	-+-----	11:30,11:62 = 11:61,11:62

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++-++-+-	---+-----	-----	--+---+-	11:30,11:93 = 11:61,11:93
++-++-+-	---+-----	-----	-----++	11:30,11:51 = 11:51,11:61
++-++-+-	---+-----	-----	-----+-	11:01,11:30 = 11:01,11:61 = 11:30,11:61 =
				11:61,11:61
++-++-+-	---+---+	---+---+	++-++-+-	11:10,11:87 = 11:12:01,11:87 = 11:12:02,11:87
++-++-+-	---+---+	---+---+	++-++-+-	11:09,11:10 = 11:09,11:12:01 = 11:09,11:12:02
				= 11:10,11:28
++-++-+-	---+---+	---+---+	++-++-+-	11:12:01,11:28 = 11:12:02,11:28
++-++-+-	---+---+	---+---+	++-++-+-	11:33,11:87 = 11:69,11:87
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:87 = 11:09,11:22 = 11:09,11:72 =
				11:09,11:80 = 11:09,11:87 = 11:22,11:87 =
				11:28,11:80 = 11:28,11:87 = 11:62,11:87 =
				11:72,11:87 = 11:80,11:87 = 11:87,11:87
++-++-+-	---+---+	---+---+	++-++-+-	11:22,11:28 = 11:28,11:72
++-++-+-	---+---+	---+---+	++-++-+-	11:09,11:33 = 11:09,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:28,11:33 = 11:28,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:09 = 11:09,11:09 = 11:09,11:28 =
				11:09,11:62 = 11:28,11:62
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:28 = 11:28,11:28
++-++-+-	---+---+	---+---+	++-++-+-	11:10,11:24 = 11:10,11:49
++-++-+-	---+---+	---+---+	++-++-+-	11:12:02,11:24 = 11:12:02,11:49
++-++-+-	---+---+	---+---+	++-++-+-	11:12:01,11:24 = 11:12:01,11:49 = 11:49,11:66
++-++-+-	---+---+	---+---+	++-++-+-	11:10,11:22 = 11:10,11:72 = 11:10,11:80 =
				11:12:02,11:80
++-++-+-	---+---+	---+---+	++-++-+-	11:12:01,11:22 = 11:12:02,11:22 =
				11:12:02,11:72
++-++-+-	---+---+	---+---+	++-++-+-	11:10,11:33 = 11:10,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:12:02,11:33 = 11:12:02,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:12:01,11:33 = 11:12:01,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:10 = 11:10,11:10 = 11:10,11:12:01 =
				11:10,11:12:02 = 11:10,11:29 = 11:10,11:62 =
				11:10,11:66 = 11:12:02,11:62
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:12:02 = 11:12:01,11:12:02 =
				11:12:02,11:12:02 = 11:12:02,11:29 =
				11:12:02,11:66
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:12:01 = 11:12:01,11:12:01 =
				11:12:01,11:29 = 11:12:01,11:66 = 11:29,11:66
++-++-+-	---+---+	---+---+	++-++-+-	11:33,11:66 = 11:66,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:66 = 11:66,11:66
++-++-+-	---+---+	---+---+	++-++-+-	11:15,11:29 = 11:15,11:49 = 11:33,11:49 =
				11:49,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:49 = 11:24,11:29 = 11:24,11:49 =
				11:29,11:49 = 11:49,11:49
++-++-+-	---+---+	---+---+	++-++-+-	11:15,11:39 = 11:15,11:81 = 11:24,11:81
++-++-+-	---+---+	---+---+	++-++-+-	11:15,11:82 = 11:24,11:82
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:15 = 11:15,11:15 = 11:15,11:24 =
				11:15,11:33 = 11:15,11:69 = 11:24,11:33 =
				11:24,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:24 = 11:24,11:24
++-++-+-	---+---+	---+---+	++-++-+-	11:27,11:33 = 11:27,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:27 = 11:27,11:27
++-++-+-	---+---+	---+---+	++-++-+-	11:29,11:33 = 11:29,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:29 = 11:29,11:29
++-++-+-	---+---+	---+---+	++-++-+-	11:22,11:33 = 11:22,11:69
++-++-+-	---+---+	---+---+	++-++-+-	11:33,11:80 = 11:69,11:80
++-++-+-	---+---+	---+---+	++-++-+-	11:33,11:72 = 11:69,11:72
++-++-+-	---+---+	---+---+	++-++-+-	11:22,11:62 = 11:22,11:80
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:22 = 11:22,11:72
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:80 = 11:62,11:72 = 11:62,11:80 =
				11:72,11:80 = 11:80,11:80
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:72 = 11:72,11:72
++-++-+-	---+---+	---+---+	++-++-+-	11:39,11:82 = 11:81,11:82
++-++-+-	---+---+	---+---+	++-++-+-	11:01,11:81 = 11:33,11:39 = 11:33,11:81 =
				11:39,11:69 = 11:39,11:81 = 11:69,11:81 =
				11:81,11:81

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+--+--+--	-----	-----+--	+--+--+--	11:33,11:62 = 11:62,11:69
+--+--+--	-----	-----+--	+--+--+--	11:01,11:82 = 11:33,11:82
+--+--+--	-----	-----+--	+--+--+--	11:01,11:33 = 11:01,11:69 = 11:33,11:33 = 11:33,11:69
+--+--+--	-----	-----+--	+--+--+--	11:01,11:39 = 11:39,11:39
+--+--+--	-----	-----+--	+--+--+--	11:01,11:62 = 11:62,11:62
+--+--+--	+++-----	+--+--+--	+--+--+--	11:06,11:25 = 11:25,11:57
+--+--+--	+++-----	+--+--+--	+--+--+--	11:17,11:25 = 11:25,11:52 = 11:52,11:77
+--+--+--	+++-----	+++-----	+--+--+--	11:07,11:25 = 11:25,11:84
+--+--+--	+++-----	+--+--+--	+--+--+--	11:04,11:25 = 11:25,11:25 = 11:25,11:34 = 11:25,11:54 = 11:25,11:77
+--+--+--	+++-----	+--+--+--	+--+--+--	11:04,11:07 = 11:07,11:77 = 11:07,11:84
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:77 = 11:57,11:77
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:77 = 11:77,11:77
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:52 = 11:47,11:52
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:17 = 11:17,11:47
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:13 = 11:13,11:47
+--+--+--	+++-----	+++-----	+--+--+--	11:52,11:58 = 11:52,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:17,11:58 = 11:17,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:13,11:58 = 11:13,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:52 = 11:04:04,11:52 = 11:46,11:52 = 11:52,11:54 = 11:52,11:78
+--+--+--	+++-----	+++-----	+--+--+--	11:52,11:56 = 11:52,11:88
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:17 = 11:04:04,11:17 = 11:17,11:46 = 11:17,11:54 = 11:17,11:78
+--+--+--	+++-----	+++-----	+--+--+--	11:17,11:56 = 11:17,11:88
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:13 = 11:04:04,11:13 = 11:13,11:46 = 11:13,11:78
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:58 = 11:57,11:58
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:60 = 11:57,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:50 = 11:47,11:50
+--+--+--	+++-----	+++-----	+--+--+--	11:42,11:50 = 11:50,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:44 = 11:44,11:47 = 11:44,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:54 = 11:54,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:84 = 11:57,11:84
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:47 = 11:06,11:47 = 11:06,11:88 = 11:42,11:47 = 11:43,11:47 = 11:47,11:47 = 11:47,11:57 = 11:47,11:88
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:92 = 11:57,11:92
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:35 = 11:35,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:38 = 11:38,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:46 = 11:46,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:04:04,11:06 = 11:04:04,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:06,11:78 = 11:57,11:78
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:06 = 11:04,11:57 = 11:06,11:06 = 11:06,11:42 = 11:06,11:43 = 11:06,11:57 = 11:42,11:43 = 11:43,11:57
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:83 = 11:04:04,11:83 = 11:46,11:83 = 11:58,11:83 = 11:60,11:83 = 11:78,11:83 = 11:83,11:92
+--+--+--	+++-----	+++-----	+--+--+--	11:56,11:83 = 11:83,11:83
+--+--+--	+++-----	+++-----	+--+--+--	11:46,11:58 = 11:46,11:60 = 11:58,11:78
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:58 = 11:04:04,11:58 = 11:04:04,11:60 = 11:58,11:58 = 11:58,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:60 = 11:60,11:60
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:50 = 11:43,11:50 = 11:44,11:50
+--+--+--	+++-----	+++-----	+--+--+--	11:50,11:50 = 11:50,11:56 = 11:50,11:88
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:44 = 11:44,11:44 = 11:44,11:88
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:89 = 11:54,11:89
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:54 = 11:54,11:54
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:84 = 11:84,11:84
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:92 = 11:92,11:92
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:35 = 11:35,11:35
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:38 = 11:38,11:38
+--+--+--	+++-----	+++-----	+--+--+--	11:04,11:43 = 11:43,11:43

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+++-----	-----	-----	++++--	11:04,11:46 = 11:04:04,11:46 = 11:04:04,11:78 = 11:46,11:46 = 11:46,11:78
+++-----	-----	-----	++++--	11:04,11:04:04 = 11:04:04,11:04:04
+++-----	-----	-----	++++--	11:04,11:78 = 11:78,11:78
++++-----	-----	-----	++++--	11:03,11:68 = 11:11,11:36 = 11:36,11:93
++++-----	-----	-----	++++--	11:11,11:59 = 11:59,11:93
++++-----	-----	-----	++++--	11:11,11:40 = 11:40,11:93
++++-----	-----	-----	++++--	11:11,11:41 = 11:41,11:93
++++-----	-----	-----	++++--	11:11,11:85 = 11:85,11:93
++++-----	-----	-----	++++--	11:11,11:76 = 11:76,11:93
++++-----	-----	-----	++++--	11:11,11:63 = 11:63,11:93
++++-----	-----	-----	++++--	11:03,11:11 = 11:03,11:93
++++-----	-----	-----	++++--	11:11,11:68 = 11:68,11:93
++++-----	-----	-----	++++--	11:11,11:11 = 11:11,11:93
++++-----	-----	-----	++++--	11:03,11:59 = 11:40,11:59 = 11:59,11:59
++++-----	-----	-----	++++--	11:03,11:40 = 11:40,11:40
++++-----	-----	-----	++++--	11:03,11:85 = 11:63,11:76 = 11:63,11:85 = 11:76,11:85 = 11:85,11:85
++++-----	-----	-----	++++--	11:03,11:76 = 11:76,11:76
++++-----	-----	-----	++++--	11:03,11:63 = 11:63,11:63
++++-----	++++-----	++++-----	++++--	11:02,11:64 = 11:64,11:70
++++-----	++++-----	++++-----	++++--	11:02,11:45 = 11:45,11:70
++++-----	++++-----	++++-----	++++--	11:19,11:70 = 11:31,11:70
++++-----	++++-----	++++-----	++++--	11:14,11:64 = 11:45,11:68
++++-----	++++-----	++++-----	++++--	11:08,11:14 = 11:19,11:68
++++-----	++++-----	++++-----	++++--	11:19,11:86 = 11:31,11:86
++++-----	++++-----	++++-----	++++--	11:17,11:70 = 11:52,11:70
++++-----	++++-----	++++-----	++++--	11:02,11:52 = 11:48,11:52
++++-----	++++-----	++++-----	++++--	11:17,11:86 = 11:52,11:86
++++-----	++++-----	++++-----	++++--	11:02,11:17 = 11:17,11:48
++++-----	++++-----	++++-----	++++--	11:02,11:57 = 11:18,11:21 = 11:21,11:42 = 11:21,11:57
++++-----	++++-----	++++-----	++++--	11:02,11:42 = 11:18,11:36
++++-----	++++-----	++++-----	++++--	11:17,11:45 = 11:45,11:52
++++-----	++++-----	++++-----	++++--	11:17,11:31 = 11:19,11:52 = 11:31,11:52
++++-----	++++-----	++++-----	++++--	11:18,11:26 = 11:18,11:79
++++-----	++++-----	++++-----	++++--	11:08,11:45 = 11:19,11:64 = 11:31,11:64 = 11:45,11:64
++++-----	++++-----	++++-----	++++--	11:45,11:69 = 11:45,11:82
++++-----	++++-----	++++-----	++++--	11:19,11:45 = 11:26,11:45 = 11:31,11:45 = 11:45,11:45 = 11:45,11:53 = 11:45,11:79
++++-----	++++-----	++++-----	++++--	11:26,11:31 = 11:31,11:79
++++-----	++++-----	++++-----	++++--	11:19,11:26 = 11:19,11:79
++++-----	++++-----	++++-----	++++--	11:31,11:69 = 11:31,11:82
++++-----	++++-----	++++-----	++++--	11:19,11:31 = 11:31,11:31
++++-----	++++-----	++++-----	++++--	11:19,11:69 = 11:19,11:82
++++-----	++++-----	++++-----	++++--	11:14,11:70 = 11:70,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:21 = 11:21,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:36 = 11:36,11:73
++++-----	++++-----	++++-----	++++--	11:02,11:20 = 11:14,11:16 = 11:16,11:20 = 11:16,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:48 = 11:48,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:65 = 11:65,11:73
++++-----	++++-----	++++-----	++++--	11:02,11:82 = 11:65,11:82
++++-----	++++-----	++++-----	++++--	11:02,11:69 = 11:65,11:69
++++-----	++++-----	++++-----	++++--	11:02,11:14 = 11:02,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:68 = 11:68,11:73
++++-----	++++-----	++++-----	++++--	11:20,11:69 = 11:20,11:82
++++-----	++++-----	++++-----	++++--	11:14,11:20 = 11:20,11:20 = 11:20,11:73
++++-----	++++-----	++++-----	++++--	11:14,11:86 = 11:73,11:86
++++-----	++++-----	++++-----	++++--	11:14,11:69 = 11:14,11:82
++++-----	++++-----	++++-----	++++--	11:14,11:14 = 11:14,11:73
++++-----	++++-----	++++-----	++++--	11:02,11:70 = 11:70,11:70 = 11:70,11:86
++++-----	++++-----	++++-----	++++--	11:02,11:21 = 11:21,11:21 = 11:21,11:36
++++-----	++++-----	++++-----	++++--	11:02,11:16 = 11:16,11:16

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+---+---+ -	-----+--	-----	---+-----	11:02,11:48 = 11:48,11:48
+---+---+ -	-----	-----+--	---+-----	11:02,11:65 = 11:65,11:65
+---+---+ -	-----	-----+--	---+-----	11:69,11:73 = 11:73,11:82
+---+---+ +	++++---+--	+---+---	++-----+	11:17,11:64 = 11:52,11:64
+---+---+ +	+---+---	-----+	-----+	11:26,11:57 = 11:57,11:79
+---+---+ +	+---+---	-----	-----+	11:26,11:42 = 11:42,11:79
+---+---+ +	+---+---	+---+---	++-----+	11:26,11:52 = 11:52,11:53 = 11:52,11:79
+---+---+ +	+---+---	+---+---	++-----+	11:17,11:26 = 11:17,11:53 = 11:17,11:79
+---+---+ +	+---+---	-----	++-----+	11:13,11:26 = 11:13,11:79
+---+---+ +	+---+---	+---+---	-----+	11:26,11:89 = 11:79,11:89
+---+---+ +	+---+---	-----	-----	11:26,11:34 = 11:34,11:79
+---+---+ +	++++---+--	+---+---	-----	11:08,11:64 = 11:26,11:64 = 11:53,11:64 =
				11:64,11:64 = 11:64,11:79
+---+---+ -	+---+---	-----	-----	11:08,11:26 = 11:08,11:79
+---+---+ -	+---+---	-----	-----	11:26,11:26 = 11:26,11:79
+---+---+ +	+---+---	+---+---	++-----+	11:13,11:52 = 11:17,11:52 = 11:34,11:52 =
				11:52,11:52 = 11:52,11:89
+---+---+ +	+---+---	+---+---	++-----+	11:13,11:17 = 11:17,11:17 = 11:17,11:34 =
				11:17,11:89
+---+---+ +	+---+---	-----	++-----+	11:13,11:13 = 11:13,11:34
+---+---+ -	+---+---	-----	-----+	11:42,11:57 = 11:57,11:57
+---+---+ -	-----	-----+--	-----+	11:69,11:82 = 11:82,11:82

11:01 = 11:01:01 - 11:01:11
 11:02 = 11:02:01 - 11:02:02
 11:04 = 11:04:01 - 11:04:03, 11:04:05
 11:06 = 11:06:01 - 11:06:02
 11:08 = 11:08:01 - 11:08:02
 11:10 = 11:10:01 - 11:10:02
 11:11 = 11:11:01 - 11:11:02
 11:13 = 11:13:01 - 11:13:02
 11:14 = 11:14:01 - 11:14:02
 11:19 = 11:19:01 - 11:19:02
 11:27 = 11:27:01 - 11:27:02
 11:28 = 11:28:01 - 11:28:02
 11:54 = 11:54:01 - 11:54:02
 11:58 = 11:58:01 - 11:58:02
 11:65 = 11:65:01 - 11:65:02
 11:24 = 11:24 and 11:91
 11:61 = 11:61 and 11:90

SPECIFICITY TABLE

DRB1*11 SSP subtyping

Specificities and sizes of the PCR products of the 32 primer mixes used for DRB1*11 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DRB1*11 alleles ^{3,5}	Other amplified DRB alleles ^{3,4}
1	175 bp	515 bp	*11:01:01-11:04:05, 11:06:01-11:21, 11:23- 11:29, 11:31-11:66, 11:68-11:70, 11:72- 11:94	*03:08
2	175 bp	430 bp	*11:05, 11:67	*08:31, 12:04, 14:11
3⁶	65 bp	430 bp	*11:01:01-11:01:11, 11:03-11:06:02, 11:09- 11:12:02, 11:15, 11:22-11:25, 11:27:01- 11:30, 11:32-11:33, 11:35, 11:37-11:41, 11:43-11:44, 11:46- 11:47, 11:49-11:51, 11:54:01-11:56, 11:58:01-11:63, 11:66- 11:67, 11:72, 11:74- 11:78, 11:80-11:81, 11:83-11:85, 11:87- 11:88, 11:90-11:94	*04:15, 08:31, DRB5*01:13
4^{7,9}	200 bp	430 bp	*11:02:01-11:02:02, 11:14:01-11:14:02, 11:16, 11:18-11:21, 11:31, 11:45, 11:48, 11:65:01-11:65:02, 11:70, 11:73, 11:86	*13:01:01-13:01:06, 13:02:01-13:04, 13:06, 13:08, 13:10, 13:12- 13:13, 13:15-13:16, 13:19, 13:22-13:23, 13:27-13:28, 13:30- 13:41, 13:45, 13:48, 13:51-13:53, 13:57- 13:59, 13:61, 13:64- 13:66:02, 13:68-13:70, 13:72-13:73, 13:76- 13:77, 13:79-13:85, 13:87, 13:89-13:98, 14:16, 14:63, 14:67, 14:78
5⁶	85 bp	515 bp	*11:01:01-11:01:11, 11:04:01-11:06:02,	*04:15, 04:61, 08:31, 12:04, 14:11, 16:16,

			11:08:01-11:10:02, 11:12:01-11:13:02, 11:15, 11:17-11:19:02, 11:22-11:35, 11:37- 11:39, 11:42-11:47, 11:49-11:50, 11:52, 11:54:01-11:58:02, 11:60-11:62, 11:64, 11:66-11:67, 11:72, 11:74-11:75, 11:77- 11:78, 11:80-11:81, 11:83-11:84, 11:87- 11:92, 11:94	DRB5*01:13
6^{6,9,10}	80 bp	515 bp	*11:02:01-11:03, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:16, 11:20-11:21, 11:36, 11:40-11:41, 11:48, 11:55, 11:59, 11:63, 11:65:01- 11:65:02, 11:68, 11:70, 11:76, 11:85-11:86	
7⁶	125 bp	430 bp	*11:01:01-11:01:11, 11:05, 11:08:01- 11:12:02, 11:14:01- 11:15, 11:19:01-11:20, 11:22-11:24, 11:26- 11:33, 11:37, 11:39, 11:45, 11:49, 11:51, 11:53, 11:61-11:62, 11:64, 11:66, 11:68- 11:69, 11:72-11:75, 11:79-11:82, 11:87, 11:90-11:91, 11:93- 11:94	*04:61, 16:16, DRB3*02:18, DRB5*01:13
8⁶	125 bp	430 bp	*11:02:01-11:04:05, 11:06:01-11:07, 11:13:01-11:13:02, 11:16-11:18, 11:21, 11:25, 11:34-11:36, 11:38, 11:40-11:44, 11:46-11:48, 11:50, 11:52, 11:54:01-11:60, 11:63, 11:65:01- 11:65:02, 11:67, 11:70, 11:76-11:78, 11:83- 11:85, 11:88-11:89, 11:92	*03:08, 04:15, 08:31, 12:04, 14:11

9^{6,14}	85 bp, 115 bp	430 bp	*11:07, 11:23, 11:25, 11:32, 11:45, 11:55, 11:64, 11:67, 11:70, 11:77	*03:08
10^{6,8,15}	65 bp, 85 bp, 120 bp	430 bp	*11:07, 11:13:01- 11:13:02, 11:17, 11:23, 11:25-11:26, 11:34, 11:45, 11:52, 11:55, 11:64, 11:67, 11:74, 11:79	*03:08, 04:61, 14:11, DRB3*02:18
11^{9,10,16}	160 bp, 200 bp, 255 bp	515 bp	*11:06:01-11:06:02, 11:08:01-11:08:02, 11:21, 11:36, 11:42, 11:47, 11:57, 11:64, 11:68, 11:75, 11:94	*03:20, 13:20, 13:25, 13:29, 13:43, 13:56, 13:58, 13:60, 13:71, 13:78, 13:81, 13:88, 14:03:01-14:03:02, 14:12, 14:29, 14:40, 14:69, 14:74, 14:77, 14:84- 14:85, 14:98-14:99
12^{6,17}	95 bp, 145 bp, 185 bp,	430 bp	*11:30, 11:61, 11:90	DRB3*02:18
13^{6,9,10,18}	70 bp, 105 bp	430 bp	*11:09, 11:16, 11:20, 11:28:01-11:28:02, 11:40, 11:58:01-11:60, 11:83, 11:87	*03:08
14	145 bp	430 bp	*11:17, 11:37, 11:41, 11:48, 11:50, 11:52, 11:56, 11:83	*03:02:01-03:03, 03:06, 03:17, 03:26-03:27, 03:31, 03:35, 03:38, 03:41, 08:20, 13:03:01- 13:03:05, 13:07:01-13:08, 13:12-13:13, 13:19, 13:26, 13:32-13:33:03, 13:36-13:38, 13:40, 13:47-13:49, 13:53, 13:55, 13:58, 13:60, 13:65, 13:70, 13:72, 13:76, 13:81, 13:84- 13:85, 13:88-13:90, 13:94-13:95, 14:01:01- 14:03:01, 14:05:01-14:09, 14:12-14:14, 14:16, 14:18-14:20, 14:22- 14:27, 14:29, 14:32:01- 14:32:02, 14:34, 14:36- 14:41, 14:43-14:45, 14:47-14:49, 14:51,

				14:54-14:56, 14:58-14:60, 14:62-14:63, 14:67, 14:69-14:70, 14:74-14:75, 14:77-14:78, 14:80-14:92N, 14:94, 14:96-14:99, DRB3*01:14
15^{6,19}	60 bp, 105 bp	430 bp	*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:52, 11:66	*14:11
16^{6,20}	110 bp, 255 bp	430 bp	*11:15, 11:24, 11:44, 11:49-11:50, 11:76, 11:85, 11:91	*03:26, 03:33, 03:43-03:44, 13:34, 13:62, 13:64, 13:68, 14:41, 14:77, 14:97, DRB3*01:14
17^{6,11}	90 bp	430 bp	*11:17, 11:23, 11:25, 11:45, 11:52-11:55, 11:64, 11:67, 11:89	*14:11
18^{6,13}	95 bp	515 bp	*11:07, 11:27:01-11:27:02, 11:84	*03:08, DRB3*02:18
19^{10,21}	180 bp, 225 bp, 260 bp	430 bp	*11:23, 11:25, 11:31-11:32, 11:45, 11:52, 11:55, 11:64, 11:70, 11:86	*03:10, 08:20, 13:13, 13:16, 13:18, 13:43, 13:45, 13:47, 13:55, 14:01:01-14:01:03, 14:03:01-14:03:02, 14:07:01-14:08, 14:12, 14:16, 14:22, 14:25-14:27, 14:32:01-14:32:02, 14:34-14:35, 14:38-14:40, 14:49, 14:53-14:55, 14:58, 14:60, 14:62-14:63, 14:67, 14:69-14:70, 14:72, 14:74-14:75, 14:77-14:78, 14:82, 14:84-14:90, 14:92N, 14:97, 14:99
20^{6,12,22}	115 bp, 145 bp	515 bp	*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:29, 11:44, 11:47, 11:49-11:50, 11:52, 11:63, 11:85, 11:88	*03:04, 03:21, 03:26, 03:30, 03:33, 03:35, 03:44, 13:08, 13:19, 13:57, 13:60, 13:72, 13:76, 13:83-13:84, 13:87, 14:01:01-14:01:03, 14:05:01-14:05:03, 14:07:01-14:08, 14:14, 14:16, 14:20,

				14:22-14:23:03, 14:26, 14:32:01-14:32:02, 14:34-14:40, 14:43- 14:45, 14:49, 14:54- 14:56, 14:60, 14:62, 14:65, 14:70, 14:72, 14:74-14:75, 14:82, 14:84, 14:86-14:88, 14:90-14:92N, 14:94, 14:96-14:97, 14:99
21²³	135 bp, 175 bp	430 bp	*11:22, 11:59, 11:72, 11:80, 11:83, 11:87, 11:92	*03:08, 04:15, 04:61
22^{6,9,24}	115 bp, 170 bp, 215 bp, 245 bp	430 bp	*11:15, 11:33, 11:35, 11:65:01-11:65:02, 11:69, 11:81-11:82, 11:94	*13:09, 13:62, 14:24, 14:37
23⁶	120 bp	430 bp	*11:38	
24²⁵	155 bp, 250 bp	430 bp	*11:06:01-11:06:02, 11:21, 11:39, 11:43, 11:47, 11:50, 11:57, 11:81	*03:17, 03:20, 03:37, 13:58, 13:81, 14:29, 14:59, 14:86, 14:96, 14:99
25⁶	110 bp	515 bp	*11:04:04, 11:09- 11:10:02, 11:12:02- 11:13:02, 11:16-11:17, 11:20, 11:22, 11:28:01, 11:28:02 ^w , 11:40, 11:46, 11:52, 11:58:01-11:59, 11:83, 11:87	*03:08, 12:04, 14:11, 16:16, DRB3*02:18
26^{6,26}	120 bp, 160 bp	430 bp	*11:09-11:10:02, 11:13:01-11:13:02, 11:16-11:17, 11:20, 11:40, 11:46, 11:52, 11:59, 11:62, 11:78, 11:80, 11:83, 11:87	*03:08, 14:11
27⁶	85 bp	430 bp	*11:11:01-11:11:02, 11:14:01-11:14:02, 11:20, 11:68, 11:73, 11:93	*01:03, 04:14, 08:40, 13:02:01-13:03:05, 13:23, 13:29, 13:31, 13:33:01- 13:34, 13:36-13:39, 13:41, 13:45, 13:63, 13:65-13:66:01, 13:67, 13:73-13:74, 13:85, 13:88, 13:90, 13:95-13:97
28⁶	85 bp	430 bp	*11:02:01-11:03, 11:16, 11:21, 11:36,	*04:02, 04:37, 13:01:01- 13:01:06, 13:04, 13:08,

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			11:40-11:41, 11:48, 11:55, 11:59, 11:63, 11:65:01-11:65:02, 11:70, 11:76, 11:85	13:10, 13:15, 13:17, 13:19-13:20, 13:22, 13:24, 13:27-13:28, 13:32, 13:35, 13:40, 13:43, 13:48, 13:51- 13:54, 13:57, 13:59, 13:61, 13:64, 13:68- 13:72, 13:75-13:76, 13:78-13:81, 13:83- 13:84, 13:87, 13:89, 13:91-13:94, 13:98, 14:16, 14:57, 15:10
29⁶	100 bp	515 bp	*11:14:01-11:14:02, 11:19:01-11:20, 11:31, 11:45, 11:73, 11:82	*01:03, 01:15, 01:24, 04:14, 04:38, 04:82, 04:86, 07:01:01:01- 07:01:03, 07:03-07:04, 07:06-07:17, 08:03:02, 08:14-08:15, 08:18- 08:19, 08:23, 08:25, 08:27, 08:29-08:30:02, 08:32-08:38, 08:40, 13:02:01-13:03:05, 13:12-13:13, 13:23, 13:30-13:31, 13:33:01- 13:34, 13:36-13:39, 13:41, 13:45, 13:65- 13:67, 13:73-13:74, 13:82, 13:85, 13:90, 13:95-13:97, 14:24, 14:63, 14:67, 15:02:01- 15:02:07, 15:11, 15:14, 15:19, 15:26, 15:29- 15:30, 15:38-15:39, 15:44, 16:05:01-16:05:02, 16:07, DRB3*02:11, DRB5*01:07, DRB5*01:11, DRB5*02:03
30⁶	100 bp	515 bp	*11:01:01-11:01:11, 11:03-11:06:02, 11:09- 11:12:02, 11:15, 11:22-11:25, 11:27:01- 11:30, 11:32-11:33, 11:35, 11:38-11:40, 11:43-11:44, 11:46- 11:47, 11:49, 11:51, 11:54:01-11:55, 11:58:01-11:63,	*08:17, 08:28, 12:02:01- 12:02:04, 12:13, 12:15- 12:16, 12:18-12:20, 13:05:01-13:05:02, 13:11:01-13:11:02, 13:14:01-13:14:03, 13:18, 13:21:01-13:21:02, 13:24, 13:42, 13:46, 13:50:01- 13:50:02, 13:54, 13:62- 13:63, 13:75, 14:53, 16:09

			11:66-11:67, 11:72, 11:74-11:78, 11:80- 11:81, 11:84-11:85, 11:87, 11:90-11:94	
31^{6,11}	85 bp	515 bp	*11:04:01-11:04:05, 11:06:01-11:06:02, 11:18, 11:25, 11:35, 11:38, 11:42-11:44, 11:46-11:47, 11:50, 11:54:01-11:54:02, 11:56-11:58:02, 11:60, 11:67, 11:77-11:78, 11:83-11:84, 11:88, 11:92	*01:23, 04:12, 04:15, 04:18, 04:25, 04:36, 04:53, 04:58, 08:04:01, 08:04:04-08:04:05, 08:06, 08:10, 08:12, 08:20, 08:22, 08:28, 08:31, 12:01:01-12:15, 12:17- 12:21, 13:06, 13:11:01- 13:11:02, 13:18, 13:42, 13:58, 13:77, 14:12, 14:15, 14:73-14:74, 14:78, 14:84, 15:21, 16:15
32^{6,12}	75 bp	430 bp	*11:13:01-11:13:02, 11:17, 11:51-11:52, 11:89	*14:11

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DRB1*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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DRB1*11 subtyping.

In addition, wells number 5, 6, 11, 18, 20, 25 and 29 to 31 contain the primer pair giving rise to the longer, 515 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.

³For several DRB alleles only partial second exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. We assume that unknown sequences in the first hyperpolymorphic region of the second exon of DRB alleles are conserved within allelic groups and that unknown sequences of codons 87 to 92 are identical with the DRB1*0101 consensus sequence.

⁴Due to the sharing of sequence motifs within the DR52 group of DRB1 alleles, other DRB1 alleles are amplified by primer mixes 1 to 5, 7 to 11, 13 to 22 and 24 to 32. In addition, the DRB3*01:14 allele is amplified by primer mixes 14 and 16, the DRB3*02:11, DRB5*01:07, DRB5*01:11 and DRB5*02:03 alleles are amplified by primer mix 29, the DRB3*02:18 allele is amplified by primer mixes 7, 10, 12, 18 and 25 and the DRB5*01:13 allele is amplified by primer mixes 3, 5 and 7.

⁵The DRB1*11:24 and 11:91 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16. The DRB1*11:61 and 11:90 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 12.

⁶Specific PCR fragments shorter than 125 base pairs have a lower intensity than longer PCR bands. In order to have as little co-amplification as possible of non-DRB1*11 alleles by the primer pairs of the DRB1*11 subtyping kit, the DRB1*11 characteristic sequence motif in codon 58, ‘Ag’, has been used in either the 5’-primer or the 3’-primer in many of the DRB1*11 primer mixes and consequently many of the specific PCR products are shorter than 100 base pairs.

⁷Primer mix 4 may faintly amplify the DRB1*13:29 allele.

⁸Primer mix 10 may faintly amplify the DRB1*11:53 allele.

⁹Primer mixes 4, 6, 11, 13 and 22 may give rise to a primer oligomer artifact, most pronounced in primer mixes 11 and 22.

¹⁰Primer mixes 6, 11, 13 and 19 may give rise to nonspecific amplification.

¹¹In primer mixes 17 and 31, the yield of specific PCR product may be lower than for the other DRB1*11 primer mixes.

¹²Primer mixes 20 and 32 might generate a long unspecific PCR product. This band should be disregarded when interpreting the DRB1*11 typings.

¹³Primer mix 18 may give a lower yield of specific PCR product in the DRB1*11:27:01, DRB1*11:84 and DRB3*02:18 alleles.

¹⁴Primer mix 9: Specific PCR fragment of 85 bp in the DRB1*11:07, 11:23, 11:25, 11:32, 11:45, 11:55, 11:64, 11:67 and 11:70 and in the DRB1*03:08 alleles. Specific PCR fragment of 115 bp in the DRB1*11:77 allele.

¹⁵Primer mix 10: Specific PCR fragment of 65 bp in the DRB1*11:07, 11:13:01-11:13:02, 11:17, 11:26, 11:34, 11:52 and 11:79 and in the DRB1*03:08, 04:61 and 14:11 and in the DRB3*02:18 alleles. Specific PCR fragment of 85 bp in the DRB1*11:07, 11:23, 11:25, 11:45, 11:55, 11:64 and 11:67 and in the DRB1*03:08 alleles. Specific PCR fragment of 120 bp in the DRB1*11:74 allele.

¹⁶Primer mix 11: Specific PCR fragment of 160 bp in the DRB1*11:75 and 11:94 alleles. Specific PCR fragment of 200 bp in the DRB1*11:08:01-11:08:02, 11:36, 11:42, 11:57, 11:64 and 11:68 and in the DRB1*13:20, 13:25, 13:29, 13:43, 13:56, 13:60, 13:71, 13:78, 13:88, 14:03:01-14:03:02, 14:12, 14:40, 14:69, 14:74, 14:77, 14:84-14:85 and 14:98 alleles. Specific PCR fragment of 255 bp in the DRB1*11:06:01-11:06:02, 11:21, 11:47 and 11:57 and in the DRB1*03:20, 13:58, 13:81, 14:29 and 14:99 alleles.

¹⁷Primer mix 12: Specific PCR fragment of 95 bp in the DRB1*11:61 allele. Specific PCR fragment of 145 bp in the DRB1*11:90 allele. Specific PCR fragment of 185 bp in the DRB1*11:30 and the DRB3*02:18 alleles.

¹⁸Primer mix 13: Specific PCR fragment of 70 bp in the DRB1*11:60 allele. Specific PCR fragment of 105 bp in the DRB1*11:09, 11:16, 11:20, 11:28:01-11:28:02, 11:40, 11:58:01-11:59, 11:83 and 11:87 and in the DRB1*03:08 alleles.

¹⁹Primer mix 15: Specific PCR fragment of 60 bp in the DRB1*11:66 allele. Specific PCR fragment of 105 bp in the DRB1*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:52 and in the DRB1*14:11 alleles.

²⁰Primer mix 16: Specific PCR fragment of 110 bp in the DRB1*11:15, 11:24, 11:44, 11:49-11:50, 11:76 and 11:85 and in the DRB1*03:26, 03:33, 03:43-03:44, 13:34, 13:62, 13:64, 13:68, 14:41, 14:77 and 14:97 and in the DRB3*01:14 alleles. Specific PCR fragment of 255 bp in the DRB1*11:91 allele.

²¹Primer mix 19: Specific PCR fragment of 180 bp in the DRB1*11:31 and 11:52 and in the DRB1*03:10, 13:43, 13:45, 14:01:01-14:01:03, 14:07:01-14:08, 14:16, 14:22, 14:25-14:26, 14:32:01-14:32:02, 14:34-14:35, 14:38-14:39, 14:49, 14:53-14:55, 14:58, 14:60, 14:62, 14:69-14:70, 14:72, 14:74-14:75, 14:82, 14:86-14:88, 14:90, 14:92N, 14:97 and 14:99 alleles. Specific PCR fragment of 225 bp in the DRB1*11:23, 11:25, 11:32, 11:45, 11:55, 11:64 and 11:70 and in the DRB1*08:20, 13:13, 13:18, 13:47, 13:55, 14:03:01-14:03:02, 14:12, 14:27, 14:40, 14:55, 14:63, 14:67, 14:77-14:78, 14:84-14:85 and 14:89 alleles. Specific PCR fragment of 260 bp in the

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DRB1*11:86 and in the DRB1*13:16 alleles.

²²Primer mix 20: Specific PCR fragment of 115 bp in the DRB1*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:29, 11:44, 11:47, 11:49-11:50, 11:52, 11:63 and 11:85 and in the DRB1*03:04, 03:21, 03:26, 03:30, 03:33, 03:35, 03:44, 13:08, 13:19, 13:57, 13:60, 13:72, 13:76, 13:83-13:84, 13:87, 14:01:01-14:01:03, 14:05:01-14:05:03, 14:07:01-14:08, 14:14, 14:16, 14:20, 14:22-14:23:03, 14:26, 14:32:01-14:32:02, 14:34-14:40, 14:43-14:45, 14:49, 14:54-14:56, 14:60, 14:62, 14:65, 14:70, 14:72, 14:74-14:75, 14:82, 14:84, 14:86-14:88, 14:90-14:92N, 14:94, 14:96-14:97 and 14:99 alleles. Specific PCR fragment of 145 bp in the DRB1*11:88 allele.

²³Primer mix 21: Specific PCR fragment of 135 bp in the DRB1*11:59, 11:72, 11:80, 11:83, 11:87 and 11:92 and in the DRB1*03:08 alleles. Specific PCR fragment of 175 bp in the DRB1*11:22 and in the DRB1*04:15 and 04:61 alleles.

²⁴Primer mix 22: Specific PCR fragment of 115 bp in the DRB1*11:15 and the DRB1*13:62 alleles. Specific PCR fragment of 170 bp in the DRB1*11:33, 11:35, 11:65:01-11:65:02 and 11:94 alleles. Specific PCR fragment of 215 bp in DRB1*11:69, 11:82 and DRB1*13:09, 14:24 and 14:37 alleles. Specific PCR fragment of 245 bp in DRB1*11:81 allele.

²⁵Primer mix 24: Specific PCR fragment of 155 bp in the DRB1*11:39, 11:43 and 11:50 and in the DRB1*03:17, 03:37, 14:59, 14:86 and 14:96 alleles. Specific PCR fragment of 250 bp in the DRB1*11:06:01-11:06:02, 11:21, 11:47, 11:57 and 11:81 and the DRB1*03:20, 13:58, 13:81, 14:29 and 14:99 alleles.

²⁶Primer mix 26: Specific PCR fragment of 120 bp in the DRB1*11:09-11:10:02, 11:13:01-11:13:02, 11:16-11:17, 11:20, 11:40, 11:46, 11:52, 11:59, 11:62, 11:80, 11:83 and 11:87 and in the DRB1*03:08, 14:11 alleles. Specific PCR fragment of 160 bp in the DRB1*11:78 allele.

‘w’, might be weakly amplified.

INTERPRETATION TABLE																
DRB1*11 SSP subtyping																
Amplification patterns of the DRB1*11:01 to DRB1*11:94 alleles																
	Well ⁷															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Length of int. pos. control ¹	515	430	430	430	515	515	430	430	430	430	515	430	430	430	430	430
5'-primer(s) ²	13(125) 5' -gTC 3'	13(125) 5' -ggg 3'	58(261) 5' -gAg 3'	13(125) 5' -gTC 3'	58(260) 5' -TgA 3'	58(261) 5' -gAg 3'	58(261) 5' -gAg 3'	58(261) 5' -gAg 3'	58(261) 5' -gAg 3'	58(261) 5' -gAg 3'	13(125) 5' -gTC 3'	10(116) 5' -gCT 3'	37(196) 5' -AGa 3'	13(125) 5' -gTC 3'	37(197) 5' -gTT 3'	13(125) 5' -gTC 3'
												24(157) 5' -ggA 3'	37(196) 5' -AGa 3'		37(197) 5' -gTT 3'	
												41(208) 5' -TCA 3'	49(233) 5' -ggA 3'		51(239) 5' -gAT 3'	
3'-primer(s) ³	58(260) 5' -CCT 3'	58(260) 5' -CCT 3'	67(286) 5' -gAA 3'	67(286) 5' -gAT 3'	71(298) 5' -CCT 3'	71(298) 5' -CTC 3'	86(344) 5' -CAC 3'	86(344) 5' -CCA 3'	73(305) 5' -ggC 3'	67(286) 5' -gAg 3'	51(238) 5' -CgC 3'	58(260) 5' -CCT 3'	58(260) 5' -CCT 3'	47(227) 5' -ggT 3'	58(260) 5' -CCT 3'	37(196) 5' -gTC 3'
	58(260) 5' -CCT 3'		67(286) 5' -gAA 3'	67(286) 5' -gAT 3'	72(303) 5' -gCg 3'				74(308) 5' -CCA 3'	73(305) 5' -ggC 3'	55(251) 5' -gCT 3'					
	58(260) 5' -CCT 3'				74(307) 5' -Cag 3'				83(334) 5' -gTg 3'	74(307) 5' -Cag 3'	67(286) 5' -gAg 3'					
										84(338) 5' -CCT 3'	85(341) 5' -Cag 3'					
																85(340) 5' -AAT 3'
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Amplification patterns of the DRB1*11:01 to DRB1*11:94 alleles																
Well ⁷																
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
430	515	430	515	430	430	430	430	515	430	430	430	515	515	515	430	Length of int. pos. control ¹
58(260)	58(261)	13(125)	13(125)	13(125)	13(125)	59(263)	13(125)	34(189)	19(143)	71(299)	71(299)	67(286)	47(227)	71(299)	58(261)	5'-primer(s) ²
5' -TgA 3'	5' -gAg 3'	5' -gTC 3'	5' -gTC 3'	5' -ACA 3'	5' -gTC 3'	5' -ggg 3'	5' -gTC 3'	5' -Cag 3'	5' -Cag 3'	5' -CgA 3'	5' -CgA 3'	5' -ACA 3'	5' -gTT 3'	5' -Cag 3'	5' -gAg 3'	
				5' -gTA 3'				5' -AgA 3'	5' -TCC 3'							
				26(164)				37(196)	32(181)							
				26(165)												
				5' -TTg 3'												
74(307)	77(317)	60(265)	37(197)	58(260)	38(199)	86(344)	51(239)	58(260)	58(260)	86(344)	86(344)	86(344)	67(286)	86(344)	70(296)	3'-primer(s) ³
5' -Cag 3'	5' -AAT 3'	5' -gTg 3'	5' -Cgg 3'	5' -CCT 3'	5' -CAA 3'	5' -CCA 3'	5' -CCC 3'	5' -CCT 3'	5' -CCT 3'	5' -CAC 3'	5' -CCA 3'	5' -CAC 3'	5' -gAA 3'	5' -CCA 3'	5' -TCC 3'	
74(308)	77(317)	74(308)	37(197)		55(251)		81(330)						67(286)		72(302)	
5' -CCT 3'	5' -AgT 3'	5' -CCA 3'	5' -CgA 3'		5' -gCT 3'		5' -TTT 3'						5' -gAA 3'		5' -CCT 3'	
		86(344)	38(200)		59(264)		85(341)									
		5' -CAT 3'	5' -gCg 3'		5' -TAG 3'		5' -Cag 3'									
			48(230)		71(299)											
			5' -CCT 3'		5' -gCg 3'											
					81(330)											
					5' -TTT 3'											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

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Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DRB1 allele ⁴																
*11:01:01-11:01:11	1		3		5		7									
*11:02:01-11:02:02	1			4		6		8								
*11:03	1		3			6		8								
*11:04:01-11:04:03, 11:04:05	1		3		5			8								
*11:04:04	1		3		5			8								
*11:05		2	3		5		7									
*11:06:01-11:06:02	1		3		5			8			11					
*11:07	1							8	9	10						
*11:08:01-11:08:02	1				5		7				11					
*11:09	1		3		5		7						13			
*11:10:01-11:10:02	1		3		5		7								15	
*11:11:01-11:11:02	1		3			6	7									
*11:12:01	1		3		5		7								15	
*11:12:02	1		3		5		7								15	
*11:13:01-11:13:02	1				5			8		10					15	
*11:14:01-11:14:02	1			4		6	7									
*11:15	1		3		5		7									16
*11:16	1			4		6		8					13			
*11:17	1				5			8		10				14	15	
*11:18	1			4	5			8								
*11:19:01-11:19:02	1			4	5		7									
*11:20	1			4		6	7						13			
*11:21	1			4		6		8			11					
*11:22			3		5		7									
*11:23	1		3		5		7		9	10						
*11:24, 11:91 ⁵	1		3		5		7									16
*11:25	1		3		5			8	9	10						
*11:26	1				5		7			10						
*11:27:01-11:27:02	1		3		5		7									
*11:28:01	1		3		5		7						13			
*11:28:02	1		3		5		7						13			
*11:29	1		3		5		7									
*11:30			3		5		7					12				
*11:31	1			4	5		7									
*11:32	1		3		5		7		9							
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																DRB1 allele ⁴
													30			*11:01:01-11:01:11
											28					*11:02:01-11:02:02
											28		30			*11:03
													30	31		*11:04:01- 11:04:03, 11:04:05
								25					30	31		*11:04:04
													30			*11:05
							24						30	31		*11:06:01-11:06:02
	18															*11:07
																*11:08:01-11:08:02
								25	26				30			*11:09
			20					25	26				30			*11:10:01-11:10:02
										27			30			*11:11:01-11:11:02
			20										30			*11:12:01
			20					25					30			*11:12:02
			20					25	26						32	*11:13:01-11:13:02
										27		29				*11:14:01-11:14:02
					22								30			*11:15
								25	26		28					*11:16
17			20					25	26						32	*11:17
														31		*11:18
												29				*11:19:01-11:19:02
								25	26	27		29				*11:20
							24				28					*11:21
				21				25					30			*11:22
17		19											30			*11:23
													30			*11:24, 11:91 ⁵
17		19											30	31		*11:25
																*11:26
	18												30			*11:27:01-11:27:02
								25					30			*11:28:01
								w					30			*11:28:02
			20										30			*11:29
													30			*11:30
		19										29				*11:31
		19											30			*11:32
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

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Length of spec. PCR product(s)	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*11:33	1		3		5		7									
*11:34	1				5			8		10						
*11:35	1		3		5			8								
*11:36	1					6		8			11					
*11:37	1		3		5		7							14		
*11:38	1		3		5			8								
*11:39	1		3		5		7									
*11:40	1		3			6		8					13			
*11:41	1		3			6		8						14		
*11:42	1				5			8			11					
*11:43	1		3		5			8								
*11:44	1		3		5			8								16
*11:45	1			4	5		7		9	10						
*11:46	1		3		5			8								
*11:47	1		3		5			8			11					
*11:48	1			4		6		8						14		
*11:49	1		3		5		7									16
*11:50	1		3		5			8						14		16
*11:51	1		3				7									
*11:52	1				5			8		10				14	15	
*11:53	1						7									
*11:54:01-11:54:02	1		3		5			8								
*11:55	1		3		5	6		8	9	10						
*11:56	1		3		5			8						14		
*11:57	1				5			8			11					
*11:58:01-11:58:02	1		3		5			8					13			
*11:59	1		3			6		8					13			
*11:60	1		3		5			8					13			
*11:61, 11:90 ⁶	1		3		5		7					12				
*11:62	1		3		5		7									
*11:63	1		3			6		8								
*11:64	1				5		7		9	10	11					
*11:65:01-11:65:02	1			4		6		8								
*11:66	1		3		5		7								15	
*11:67		2	3		5			8	9	10						
*11:68	1					6	7				11					
*11:69	1						7									
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
					22								30			*11:33
																*11:34
					22								30	31		*11:35
											28					*11:36
																*11:37
						23							30	31		*11:38
							24						30			*11:39
								25	26		28		30			*11:40
											28					*11:41
														31		*11:42
							24						30	31		*11:43
			20										30	31		*11:44
17		19										29				*11:45
								25	26				30	31		*11:46
			20				24						30	31		*11:47
											28					*11:48
			20										30			*11:49
			20				24							31		*11:50
													30		32	*11:51
17		19	20					25	26						32	*11:52
17																*11:53
17													30	31		*11:54:01-11:54:02
17		19									28		30			*11:55
														31		*11:56
							24							31		*11:57
								25					30	31		*11:58:01-11:58:02
				21				25	26		28		30			*11:59
													30	31		*11:60
													30			*11:61, 11:90 ⁶
									26				30			*11:62
			20								28		30			*11:63
17		19														*11:64
					22						28					*11:65:01-11:65:02
													30			*11:66
17													30	31		*11:67
										27						*11:68
					22											*11:69
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

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Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*11:70	1			4		6		8	9							
*11:72	1		3		5		7									
*11:73	1			4			7									
*11:74	1		3		5		7			10						
*11:75	1		3		5		7				11					
*11:76	1		3			6		8								16
*11:77	1		3		5			8	9							
*11:78	1		3		5			8								
*11:79	1						7			10						
*11:80	1		3		5		7									
*11:81	1		3		5		7									
*11:82	1						7									
*11:83	1		3		5			8					13	14		
*11:84	1		3		5			8								
*11:85	1		3			6		8								16
*11:86	1			4		6										
*11:87	1		3		5		7						13			
*11:88	1		3		5			8								
*11:89	1				5			8								
*11:92	1		3		5			8								
*11:93	1		3				7									
*11:94	1		3		5		7				11					
*01:03, 04:14, 08:40, 13:67, 13:74																
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
		19									28					*11:70
				21									30			*11:72
										27		29				*11:73
													30			*11:74
													30			*11:75
											28		30			*11:76
													30	31		*11:77
									26				30	31		*11:78
																*11:79
				21					26				30			*11:80
					22		24						30			*11:81
					22							29				*11:82
				21				25	26					31		*11:83
	18												30	31		*11:84
			20								28		30			*11:85
		19														*11:86
				21				25	26				30			*11:87
			20											31		*11:88
17															32	*11:89
				21									30	31		*11:92
										27			30			*11:93
					22								30			*11:94
										27		29				*01:03, 04:14, 08:40, 13:67, 13:74
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

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Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*01:15, 01:24, 04:38, 04:82, 04:86, 07:01:01:01-07:01:03, 07:03-07:04, 07:06- 07:17, 08:03:02, 08:14- 08:15, 08:18-08:19, 08:23, 08:25, 08:27, 08:29-08:30:02, 08:32- 08:38, 15:02:01- 15:02:07, 15:11, 15:14, 15:19, 15:26, 15:29-15:30, 15:38- 15:39, 15:44, 16:05:01- 16:05:02, 16:07, <i>DRB3*02:11,</i> <i>DRB5*01:07,</i> <i>DRB5*01:11,</i> <i>DRB5*02:03</i>																
*01:23, 04:12, 04:18, 04:25, 04:36, 04:53, 04:58, 08:04:01, 08:04:04-08:04:05, 08:06, 08:10, 08:12, 08:22, 12:01:01- 12:01:03, 12:03:02, 12:05-12:12, 12:14, 12:17, 12:21, 14:15, 14:73, 15:21, 16:15																
*03:02:01-03:03, 03:06, 03:27, 03:31, 03:38, 03:41, 13:07:01- 13:07:02, 13:26, 13:49, 14:02, 14:06:01- 14:06:02, 14:09, 14:13, 14:18-14:19, 14:47-14:48, 14:51, 14:80-14:81, 14:83														14		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Lot No.: **36K**

Lot-specific information

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
												29				*01:15, 01:24, 04:38, 04:82, 04:86, 07:01:01:01-07:01:03, 07:03-07:04, 07:06- 07:17, 08:03:02, 08:14 08:15, 08:18-08:19, 08:23, 08:25, 08:27, 08:29-08:30:02, 08:32- 08:38, 15:02:01- 15:02:07, 15:11, 15:14, 15:19, 15:26, 15:29-15:30, 15:38- 15:39, 15:44, 16:05:01- 16:05:02, 16:07, <i>DRB3*02:11</i> , <i>DRB5*01:07</i> , <i>DRB5*01:11</i> , <i>DRB5*02:03</i>
														31		*01:23, 04:12, 04:18, 04:25, 04:36, 04:53, 04:58, 08:04:01, 08:04:04-08:04:05, 08:06, 08:10, 08:12, 08:22, 12:01:01- 12:01:03, 12:03:02, 12:05-12:12, 12:14, 12:17, 12:21, 14:15, 14:73, 15:21, 16:15
																*03:02:01-03:03, 03:06, 03:27, 03:31, 03:38, 03:41, 13:07:01- 13:07:02, 13:26, 13:49, 14:02, 14:06:01- 14:06:02, 14:09, 14:13, 14:18-14:19, 14:47-14:48, 14:51, 14:80-14:81, 14:83
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Lot No.: **36K**

Lot-specific information

www.olerup-ssp.com

Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*03:04, 03:21, 03:30, 14:65																
*03:08	1							8	9	10			13			
*03:10																
*03:17, 14:59														14		
*03:20											11					
*03:26														14		16
*03:33, 03:44																16
*03:35, 14:05:01- 14:05:03, 14:14, 14:20, 14:23:01- 14:23:03, 14:36, 14:43-14:45, 14:56, 14:91, 14:94														14		
*03:37																
*03:43																16
*04:02, 04:37, 13:17, 14:57, 15:10																
*04:15			3		5			8								
*04:61					5		7			10						
*08:17, 12:16, 13:05:01-13:05:02, 13:14:01-13:14:03, 13:21:01-13:21:02, 13:46, 13:50:01- 13:50:02, 16:09																
*08:20														14		
*08:28, 12:02:01- 12:02:04, 12:13, 12:15, 12:18-12:20, 13:11:01-13:11:02, 13:42																
*08:31		2	3		5			8								
*12:04		2			5			8								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Lot No.: **36K**

Lot-specific information

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
			20													*03:04, 03:21, 03:30, 14:65
	18			21				25	26							*03:08
		19														*03:10
							24									*03:17, 14:59
							24									*03:20
			20													*03:26
			20													*03:33, 03:44
			20													*03:35, 14:05:01- 14:05:03, 14:14, 14:20, 14:23:01- 14:23:03, 14:36, 14:43-14:45, 14:56, 14:91, 14:94
							24									*03:37
																*03:43
										28						*04:02, 04:37, 13:17, 14:57, 15:10
				21										31		*04:15
				21												*04:61
													30			*08:17, 12:16, 13:05:01-13:05:02, 13:14:01-13:14:03, 13:21:01-13:21:02, 13:46, 13:50:01- 13:50:02, 16:09
		19												31		*08:20
													30	31		*08:28, 12:02:01- 12:02:04, 12:13, 12:15, 12:18-12:20, 13:11:01-13:11:02, 13:42
														31		*08:31
								25						31		*12:04
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Lot No.: **36K**

Lot-specific information

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Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*13:01:01- 13:01:06, 13:04, 13:10, 13:15, 13:22, 13:27-13:28, 13:35, 13:51-13:52, 13:59, 13:61, 13:69, 13:79-13:80, 13:91-13:93, 13:98				4												
*13:02:01- 13:02:03, 13:23, 13:31, 13:39, 13:41, 13:66:01, 13:73, 13:96-13:97				4												
*13:03:01- 13:03:05, 13:33:01- 13:33:03, 13:36- 13:38, 13:65, 13:85, 13:90, 13:95				4										14		
*13:06, 13:77				4												
*13:08, 13:19, 13:72, 13:76, 13:84				4										14		
*13:09																
*13:12				4										14		
*13:13, 14:63, 14:67				4										14		
*13:16				4												
*13:18																
*13:20, 13:71, 13:78											11					
*13:24, 13:54, 13:75																
*13:25, 13:56											11					
*13:29											11					
*13:30, 13:66:02, 13:82				4												
*13:32, 13:40, 13:48, 13:53, 13:70, 13:89, 13:94				4										14		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Lot No.: **36K**

Lot-specific information

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
											28					*13:01:01- 13:01:06, 13:04, 13:10, 13:15, 13:22, 13:27-13:28, 13:35, 13:51-13:52, 13:59, 13:61, 13:69, 13:79-13:80, 13:91-13:93, 13:98
										27		29				*13:02:01- 13:02:03, 13:23, 13:31, 13:39, 13:41, 13:66:01, 13:73, 13:96-13:97
										27		29				*13:03:01- 13:03:05, 13:33:01- 13:33:03, 13:36- 13:38, 13:65, 13:85, 13:90, 13:95
														31		*13:06, 13:77
			20								28					*13:08, 13:19, 13:72, 13:76, 13:84
					22											*13:09
												29				*13:12
		19										29				*13:13, 14:63, 14:67
		19														*13:16
		19											30	31		*13:18
											28					*13:20, 13:71, 13:78
											28		30			*13:24, 13:54, 13:75
																*13:25, 13:56
										27						*13:29
												29				*13:30, 13:66:02, 13:82
											28					*13:32, 13:40, 13:48, 13:53, 13:70, 13:89, 13:94
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Lot No.: **36K**

Lot-specific information

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Length of spec. PCR product(s)	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*13:34				4												16
*13:43											11					
*13:45				4												
*13:47, 13:55, 14:25, 14:27, 14:58, 14:89														14		
*13:57, 13:83, 13:87				4												
*13:58				4							11			14		
*13:60											11			14		
*13:62																16
*13:63																
*13:64, 13:68				4												16
*13:81				4							11			14		
*13:88											11			14		
*14:01:01- 14:01:03, 14:07:01- 14:08, 14:22, 14:26, 14:32:01- 14:32:02, 14:34, 14:38-14:39, 14:49, 14:54-14:55, 14:60, 14:62, 14:70, 14:75, 14:82, 14:87- 14:88, 14:90, 14:92N														14		
*14:03:01, 14:69, 14:85											11			14		
*14:03:02											11					
*14:11		2			5			8		10					15	
*14:12											11			14		
*14:16				4										14		
*14:24														14		
*14:29											11			14		
*14:35, 14:72																
*14:37														14		
*14:40											11			14		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Lot No.: **36K**

Lot-specific information

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90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
										27		29				*13:34
		19									28					*13:43
		19								27		29				*13:45
		19														*13:47, 13:55, 14:25, 14:27, 14:58, 14:89
			20								28					*13:57, 13:83, 13:87
							24							31		*13:58
			20													*13:60
					22								30			*13:62
										27			30			*13:63
											28					*13:64, 13:68
							24				28					*13:81
										27						*13:88
			19	20												*14:01:01- 14:01:03, 14:07:01- 14:08, 14:22, 14:26, 14:32:01- 14:32:02, 14:34, 14:38-14:39, 14:49, 14:54-14:55, 14:60, 14:62, 14:70, 14:75, 14:82, 14:87- 14:88, 14:90, 14:92N
		19														*14:03:01, 14:69, 14:85
		19														*14:03:02
17								25	26						32	*14:11
		19												31		*14:12
		19	20								28					*14:16
					22							29				*14:24
							24									*14:29
		19	20													*14:35, 14:72
			20		22											*14:37
		19	20													*14:40
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	175	175	65	200	85	80	125	125	85	65	160	95	70	145	60	110
PCR product(s)									115	85	200	145	105		105	255
										120	255	185				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
*14:41, DRB3*01:14														14		16
*14:53																
*14:74, 14:84											11			14		
*14:77											11			14		16
*14:78				4										14		
*14:86														14		
*14:96														14		
*14:97														14		16
*14:98											11			14		
*14:99											11			14		
*16:16					5		7									
DRB3*02:18							7			10		12				
DRB5*01:13			3		5		7									
DRB1 allele⁴																
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DRB1*11 subtyping.

In addition, wells number 5, 6, 11, 18, 20, 25 and 29 to 31 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

²The codon, and in parenthesis the nucleotide, position, in the 1st, 2nd or 3rd exons, matching the specificity-determining 3'-end of the primer is given. Codon and 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 codon, and in parenthesis the nucleotide, position, in the 2nd or 3rd exons, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Codon and 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 DRB1*11:71 has been shown to be identical to corrected DRB1*11:02:01.

⁵The DRB1*11:24 and 11:91 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 16.

⁶The DRB1*11:61 and 11:90 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 12.

90	95	180	115	135	115	120	155	110	120	85	85	100	100	85	75	Length of spec. PCR product(s)
		225	145	175	170		250		160							
		260			215											
					245											
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*14:41, DRB3*01:14
		19											30			*14:53
		19	20											31		*14:74, 14:84
		19														*14:77
		19												31		*14:78
		19	20				24									*14:86
			20				24									*14:96
		19	20													*14:97
																*14:98
		19	20				24									*14:99
								25								*16:16
	18							25								DRB3*02:18
																DRB5*01:13
																DRB1 allele⁴
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

⁷Primer mix 9: Specific PCR fragment of 85 bp in the DRB1*11:07, 11:23, 11:25, 11:32, 11:45, 11:55, 11:64, 11:67 and 11:70 and in the DRB1*03:08 alleles. Specific PCR fragment of 115 bp in the DRB1*11:77 allele.

Primer mix 10: Specific PCR fragment of 65 bp in the DRB1*11:07, 11:13:01-11:13:02, 11:17, 11:26, 11:34, 11:52 and 11:79 and in the DRB1*03:08, 04:61 and 14:11 and in the DRB3*02:18 alleles. Specific PCR fragment of 85 bp in the DRB1*11:07, 11:23, 11:25, 11:45, 11:55, 11:64 and 11:67 and in the DRB1*03:08 alleles. Specific PCR fragment of 120 bp in the DRB1*11:74 allele.

Primer mix 11: Specific PCR fragment of 160 bp in the DRB1*11:75 and 11:94 alleles. Specific PCR fragment of 200 bp in the DRB1*11:08:01-11:08:02, 11:36, 11:42, 11:57, 11:64 and 11:68 and in the DRB1*13:20, 13:25, 13:29, 13:43, 13:56, 13:60, 13:71, 13:78, 13:88, 14:03:01-14:03:02, 14:12, 14:40, 14:69, 14:74, 14:77, 14:84-14:85 and 14:98 alleles. Specific PCR fragment of 255 bp in the DRB1*11:06:01-11:06:02, 11:21, 11:47 and 11:57 and in the DRB1*03:20, 13:58, 13:81, 14:29 and 14:99 alleles.

Primer mix 12: Specific PCR fragment of 95 bp in the DRB1*11:61 allele. Specific PCR fragment of 145 bp in the DRB1*11:90 allele. Specific PCR fragment of 185 bp in the DRB1*11:30 and the DRB3*02:18 alleles.

Primer mix 13: Specific PCR fragment of 70 bp in the DRB1*11:60 allele. Specific PCR fragment of 105 bp in the DRB1*11:09, 11:16, 11:20, 11:28:01-11:28:02, 11:40, 11:58:01-11:59, 11:83 and 11:87 and in the DRB1*03:08 alleles.

Primer mix 15: Specific PCR fragment of 60 bp in the DRB1*11:66 allele. Specific PCR fragment of 105 bp in the DRB1*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:52 and in the DRB1*14:11 alleles.

Primer mix 16: Specific PCR fragment of 110 bp in the DRB1*11:15, 11:24, 11:44, 11:49-11:50, 11:76 and 11:85 and in the DRB1*03:26, 03:33, 03:43-03:44, 13:34, 13:62, 13:64, 13:68, 14:41, 14:77 and 14:97 and in the DRB3*01:14 alleles. Specific PCR fragment of 255 bp in the DRB1*11:91 allele.

Primer mix 19: Specific PCR fragment of 180 bp in the DRB1*11:31 and 11:52 and in the DRB1*03:10, 13:43, 13:45, 14:01:01-14:01:03, 14:07:01-14:08, 14:16, 14:22, 14:25-14:26,

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14:32:01-14:32:02, 14:34-14:35, 14:38-14:39, 14:49, 14:53-14:55, 14:58, 14:60, 14:62, 14:69-14:70, 14:72, 14:74-14:75, 14:82, 14:86-14:88, 14:90, 14:92N, 14:97 and 14:99 alleles. Specific PCR fragment of 225 bp in the DRB1*11:23, 11:25, 11:32, 11:45, 11:55, 11:64 and 11:70 and in the DRB1*08:20, 13:13, 13:18, 13:47, 13:55, 14:03:01-14:03:02, 14:12, 14:27, 14:40, 14:55, 14:63, 14:67, 14:77-14:78, 14:84-14:85 and 14:89 alleles. Specific PCR fragment of 260 bp in the DRB1*11:86 and in the DRB1*13:16 alleles.

Primer mix 20: Specific PCR fragment of 115 bp in the DRB1*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:29, 11:44, 11:47, 11:49-11:50, 11:52, 11:63 and 11:85 and in the DRB1*03:04, 03:21, 03:26, 03:30, 03:33, 03:35, 03:44, 13:08, 13:19, 13:57, 13:60, 13:72, 13:76, 13:83-13:84, 13:87, 14:01:01-14:01:03, 14:05:01-14:05:03, 14:07:01-14:08, 14:14, 14:16, 14:20, 14:22-14:23:03, 14:26, 14:32:01-14:32:02, 14:34-14:40, 14:43-14:45, 14:49, 14:54-14:56, 14:60, 14:62, 14:65, 14:70, 14:72, 14:74-14:75, 14:82, 14:84, 14:86-14:88, 14:90-14:92N, 14:94, 14:96-14:97 and 14:99 alleles. Specific PCR fragment of 145 bp in the DRB1*11:88 allele.

Primer mix 21: Specific PCR fragment of 135 bp in the DRB1*11:59, 11:72, 11:80, 11:83, 11:87 and 11:92 and in the DRB1*03:08 alleles. Specific PCR fragment of 175 bp in the DRB1*11:22 and in the DRB1*04:15 and 04:61 alleles.

Primer mix 22: Specific PCR fragment of 115 bp in the DRB1*11:15 and the DRB1*13:62 alleles. Specific PCR fragment of 170 bp in the DRB1*11:33, 11:35, 11:65:01-11:65:02 and 11:94 alleles. Specific PCR fragment of 215 bp in DRB1*11:69, 11:82 and DRB1*13:09, 14:24 and 14:37 alleles. Specific PCR fragment of 245 bp in DRB1*11:81 allele.

Primer mix 24: Specific PCR fragment of 155 bp in the DRB1*11:39, 11:43 and 11:50 and in the DRB1*03:17, 03:37, 14:59, 14:86 and 14:96 alleles. Specific PCR fragment of 250 bp in the DRB1*11:06:01-11:06:02, 11:21, 11:47, 11:57 and 11:81 and the DRB1*03:20, 13:58, 13:81, 14:29 and 14:99 alleles.

Primer mix 26: Specific PCR fragment of 120 bp in the DRB1*11:09-11:10:02, 11:13:01-11:13:02, 11:16-11:17, 11:20, 11:40, 11:46, 11:52, 11:59, 11:62, 11:80, 11:83 and 11:87 and in the DRB1*03:08, 14:11 alleles. Specific PCR fragment of 160 bp in the DRB1*11:78 allele.

‘w’, might be weakly amplified.

CELL LINE VALIDATION SHEET																				
DRB1*11 SSP subtyping kit																				
					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:	201075101	201075102	201075103	201075104	201075105	201075106	201075107	201075108	201075109	201075110	201075111	201075112	201075113	201075114	201075115	201075116
	IHCW cell line		DRB1																	
1	9001	SA	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07	*08:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:01	*13:01	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*09:01	*11:01	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
19	9038	BM16	*12:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*13:02		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
22	9056	KOSE	*13:02	*14:01	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
23	9124	IHL	*08:03	*14:14	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
24	9035	JBUSH	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
31	9019	DUCAF	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*13:02		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04	*12:01	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET																				
DRB1*11 SSP subtyping kit																				
					Well															
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
				Prod. No.:	201075117	201075118	201075119	201075120	201075121	201075122	201075123	201075124	201075125	201075126	201075127	201075128	201075129	201075130	201075131	201075132
	IHCW cell line		DRB1																	
1	9001	SA	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
3	9011	E4181324	*15:02		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
	9275	GU373	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07	*08:03	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
7	9020	QBL	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
17	9282	CTM3953540	*03:01	*13:01	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
18	9257	32367	*09:01	*11:01	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
19	9038	BM16	*12:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
20	9059	SLE005	*13:02		-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-
21	9064	AMALA	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*13:02	*14:01	-	-	+	+	-	-	-	-	-	-	+	-	+	-	-	-
23	9124	IHL	*08:03	*14:14	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
24	9035	JBUSH	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
26	9285	WT49	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021	RSH	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
38	9099	LZL	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
41	9055	H0301	*13:02		-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
43	9076	T7526	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*14:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04	*12:01	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-

CERTIFICATE OF ANALYSIS**Olerup SSP® DRB1*11 SSP**

Product number: 101.115-24u/03u – without *Taq* pol.
Lot number: 36K
Expiry date: 2012-September-01
Number of tests: 24 tests – Product No. 101.115-24u
3 tests – Product No. 101.115-03u
Number of wells per test: 32

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2010-751-01	13	2010-751-13	25	2010-751-25
2	2010-751-02	14	2010-751-14	26	2010-751-26
3	2010-751-03	15	2010-751-15	27	2010-751-27
4	2010-751-04	16	2010-751-16	28	2010-751-28
5	2010-751-05	17	2010-751-17	29	2010-751-29
6	2010-751-06	18	2010-751-18	30	2010-751-30
7	2010-751-07	19	2010-751-19	31	2010-751-31
8	2010-751-08	20	2010-751-20	32	2010-751-32
9	2010-751-09	21	2010-751-21		
10	2010-751-10	22	2010-751-22		
11	2010-751-11	23	2010-751-23		
12	2010-751-12	24	2010-751-24		

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 12, 16 and 21 to 23 were available. The specificities of the primers in primer solutions 12, 16, 21 and 22 were tested by separately adding one or several additional 5'-primer(s), respectively, one or several additional 3'-primer(s).

In primer solution 23 the 3'-primer was tested by separately adding one 5'-primer, the 5'-primer was not possible test.

In primer solutions 9 to 11, 16, 19, 22, 24 and 32 one, two or three of the 3'-primers were not possible to test, and in primer solutions 12, 13, 15 and 26 one or two of the 5'-primers were not possible to test. Additional 3'-primers in primer solutions 5, 9, 10, 17 to 20 and 24 were tested by separately adding one or two 5'-primers.

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

Date of approval: 2011-October-06

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: Olerup SSP® DRB1*11

Product number: 101.115-24u/03u

Lot number: 36K

Intended use: DRB1*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
2011-October-06

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **36K**

Lot-specific information

www.olerup-ssp.com**ADDRESSES:****Manufacturer:****Olerup SSP AB**, Franzengatan 5, SE-112 51 Stockholm, Sweden.**Tel:** +46-8-717 88 27**Fax:** +46-8-717 88 18**E-mail:** info-ssp@olerup.com**Web page:** <http://www.olerup-ssp.com>**Distributed by:****Olerup GmbH**, Löwengasse 47 / 6, AT-1030 Vienna, Austria.**Tel:** +43-1-710 15 00**Fax:** +43-1-710 15 00 10**E-mail:** support-at@olerup.com**Web page:** <http://www.olerup.com>**Olerup Inc.**, 901 S. Bolmar St., Suite R, West Chester, PA 19382**Tel:** 1-877-OLERUP1**Fax:** 610-344-7989**E-mail:** info.us@olerup.com**Web page:** <http://www.olerup.com>For information on *Olerup* SSP distributors worldwide, contact **Olerup GmbH**.