

**Olerup SSP<sup>®</sup> DRB1\*13**

Product number:	101.116-24u/03u – without <i>Taq</i> pol.
Lot number:	55K
Expiry date:	2013-June- 01
Number of tests:	24 tests – Product No. 101.116-24u 3 tests – Product No. 101.116-03u
Number of wells per test:	40
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. 55K.**

**CHANGES COMPARED TO THE PREVIOUS *OLERUP SSP<sup>®</sup>*  
DRB1\*13 LOT**

The DRB1\*13 specificity and interpretation tables have been updated for the DRB alleles described since the previous *Olerup SSP<sup>®</sup>* DRB1\*13 lot was made (**Lot No. 03G**).

Eight wells have been added to the DRB1\*13 kit,  
wells **33 to 40**.

The amplification patterns for some rare DRB1\*13 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
7	Modified	Added	Increased yield of specific PCR product, primer added for the DRB1*13:02:04 allele.
9	-	Added	Primer added for the DRB1*13:02:04 allele.
14	Added	-	Increased yield of specific PCR product.
15	-	Exchanged	Decreased tendency or primer oligomer formation.
17	-	Moved	Primer moved to well 34 for improved allelic resolution.
18	-	Modified	Increased specificity of amplification.

19	Moved	Moved	Primer pair moved to well 35.
21	Added	-	Primer added for the DRB1*13:103 allele.
26	-	-	Exchanged positive control primer pair.
31	Removed	Removed	Decreased tendency or primer oligomer formation.
32	Moved	Moved	Primer pair moved to well 34 for improved allelic resolution.
33	New	New	Primer pair for the DRB1*13:43 and 13:43 alleles, replacing one primer pair in well 31.
34	Added	Added	Primer pair from wells 17 and 32.
35	Added	Added	Primer pair from well 19.
36	New	New	New primer pairs for the DRB1*13:90, 13:92 and 13:98 alleles.
37	New	New	New primer pair for the DRB1*13:93 allele.
38	New	New	New primer pair for the DRB1*13:96 allele.
39	New	New	New primer pairs for the DRB1*13:95 and 13:102 alleles.
40	New	New	New primer pairs for the DRB1*13:91, 13:99 and 13:101 alleles.

Change in revision R01 compared to R00:

1. The DRB1\*13:10, 13:81, 13:89 and 13:94 alleles are amplified in primer mix 30. This has been corrected in the specificity and interpretation tables.

Change in revision R02 compared to R01:

1. The DRB1\*13:26 and DRB1\*14:27 alleles are not amplified by primer mix 26. This has been corrected in the specificity and interpretation tables.

## PRODUCT DESCRIPTION

### DRB1\*13 SSP subtyping

#### CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1\*13:01 to DRB1\*13:103 alleles.

#### PLATE LAYOUT

Each test consists of 40 PCR reactions in a 48 well cut PCR plate. Wells 41 to 48 are empty

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
empty	empty	empty	empty	empty	empty	empty	empty

The 48 well cut PCR plate is marked with 'DRB1\*13' in silver/gray ink.

Well No. 1 is marked with the Lot No '55K'.

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

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

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

#### INTERPRETATION

The interpretation of DRB1\*13 PCR-SSP subtypings will be influenced by the DRB1\*03, six DRB1\*04, six DRB1\*08, most DRB1\*11, the DRB1\*12, most DRB1\*14, most DRB1\*15 and the DRB1\*16:08 allele, when present on the other haplotype. In addition, the DRB3\*01:14 allele will be amplified by primer mixes 1, 9, 13, 18 and 22 to 24 and the DRB3\*01:08, DRB3\*02:06 and DRB3\*02:20 alleles will be amplified by primer mix 7.

#### UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DRB1\*13 alleles, i.e. **DRB1\*13:01 to DRB1\*13:103**, recognized by the HLA Nomenclature Committee in October 2010<sup>1</sup> will give rise to unique amplification patterns by the primers in the DRB1\*13 subtyping kit.

The DRB1\*13 subtyping kit cannot distinguish the DRB1\*13:01:01-13:01:02, 13:01:04-13:01:08 alleles, the DRB1\*13:02:01, 13:02:03-13:02:04 alleles, the DRB1\*13:03:01-13:03:06 alleles, DRB1\*13:05:01-13:05:02, the DRB1\*13:07:01-13:07:02, the DEB1\*13:11:01-13:11:02 alleles, the DRB1\*13:14:01-13:14:03 alleles, the DRB1\*13:21:01-13:21:02 alleles, the DRB1\*13:33:02-13:33:03 alleles, the DRB1\*13:50:01-13:50:02 alleles and the DRB1\*13:66:01-13:66:02 alleles.

The DRB1\*13:92 and 13:98 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

<sup>1</sup>HLA-A alleles listed on the IMGT/HLA web page 2010-October-15, release 3.2.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

**RESOLUTION IN HOMO- AND HETEROZYGOTES**

A total of 128 alleles generate 105 amplification patterns that can be combined in 5565 homozygous and heterozygous combinations. 1623 of these genotypes do not give rise to unique amplification patterns. The different lengths of the specific PCR products were not considered in these calculations.

++++++-+ +-----+ -+----- +----- -++-----	*13:47, *13:65 = *13:55, *13:65
++++++-+ +-----+ -----+ +----- -++-----	*13:14:01, *13:65 = *13:21:01, *13:65
++++++-+ +-----+ -----+ +----- -++-----	*13:02:01, *13:49 = *13:21:01, *13:36
++++++-+ +-----+ -----+ +----- -++-----	*13:07:01, *13:65 = *13:49, *13:65
++++++-+ +-----+ -----+ +----- -++-----	*13:50:01, *13:65 = *13:62, *13:65
++++++-+ +-----+ -+----- +----- -++-----	*13:49, *13:87 = *13:55, *13:87
++++++-+ +-----+ -+----- +----- -++-----	*13:47, *13:93 = *13:55, *13:93
++++++-+ +-----+ -+----- +----- -++-----	*13:01:01, *13:55 = *13:49, *13:61 = *13:55, *13:61
++++++-+ +-----+ -+----- +----- -++-----	*13:32, *13:47 = *13:32, *13:55
++++++-+ +-----+ -+----- +----- -++-----	*13:07:01, *13:93 = *13:49, *13:93
++++++-+ +-----+ -+----- +----- -++-----	*13:14:01, *13:32 = *13:21:01, *13:32
++++++-+ +-----+ -+----- +----- -++-----	*13:07:01, *13:32 = *13:32, *13:49
++++++-+ +-----+ -+----- +----- -++-----	*13:21:01, *13:35 = *13:21:01, *13:79
++++++-+ +-----+ -+----- +----- -++-----	*13:14:01, *13:93 = *13:21:01, *13:93
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:33:01 = *13:33:01, *13:75
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:33:02 = *13:33:02, *13:75
++++++-+ +-----+ -+----- +----- -++-----	*13:04, *13:47 = *13:04, *13:55 = *13:13, *13:24 = *13:13, *13:75 = *13:22, *13:55
++++++-+ +-----+ -+----- +----- -++-----	*13:47, *13:48 = *13:48, *13:55 = *13:55, *13:70
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:90 = *13:75, *13:90
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:95 = *13:75, *13:95
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:101 = *13:75, *13:101
++++++-+ +-----+ -+----- +----- -++-----	*13:03:01, *13:24 = *13:03:01, *13:75 = *13:37, *13:75
++++++-+ +-----+ -+----- +----- -++-----	*13:04, *13:07:01 = *13:04, *13:49 = *13:12, *13:24 = *13:12, *13:75 = *13:22, *13:49
++++++-+ +-----+ -+----- +----- -++-----	*13:14:01, *13:48 = *13:21:01, *13:48 = *13:21:01, *13:70 = *13:48, *13:62
++++++-+ +-----+ -+----- +----- -++-----	*13:07:01, *13:48 = *13:48, *13:49 = *13:49, *13:70
++++++-+ +-----+ -+----- +----- -++-----	*13:04, *13:100 = *13:30, *13:54
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:66:01 = *13:66:01, *13:75
++++++-+ +-----+ -+----- +----- -++-----	*13:04, *13:14:01 = *13:04, *13:21:01 = *13:04, *13:62 = *13:21:01, *13:22 = *13:24, *13:30 = *13:30, *13:75 = *13:75, *13:82
++++++-+ +-----+ -+----- +----- -++-----	*13:38, *13:47 = *13:38, *13:55
++++++-+ +-----+ -+----- +----- -++-----	*13:14:01, *13:38 = *13:21:01, *13:38 = *13:23, *13:49 = *13:38, *13:62
++++++-+ +-----+ -+----- +----- -++-----	*13:07:01, *13:38 = *13:38, *13:49
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:94 = *13:75, *13:94
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:81 = *13:75, *13:81
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:89 = *13:75, *13:89
++++++-+ +-----+ -+----- +----- -++-----	*13:24, *13:58 = *13:58, *13:75
++++++-+ +-----+ -+----- +----- -++-----	*13:26, *13:58 = *13:26, *13:81
++++++-+ +-----+ -+----- +----- -++-----	*13:13, *13:26 = *13:26, *13:33:02
++++++-+ +-----+ -+----- +----- -++-----	*13:26, *13:30 = *13:26, *13:66:01
++++++-+ +-----+ -+----- +----- -++-----	*13:03:01, *13:26 = *13:12, *13:26

Lot No.: **55K**

Lot-specific information

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+++++--+	++-+----	-+-----	+++++--+	-----	*13:03:01, *13:18 = *13:18, *13:33:02 = *13:33:02, *13:42
+++++--+	++-+----	-+-----	+++++---	-----	*13:12, *13:18 = *13:13, *13:18 = *13:13, *13:42
+++++---	++-+-+--	-+-----	+-----+	-----+	*13:47, *13:94 = *13:55, *13:94
+++++---	++-+-+--	-+-----	+-----+	-----+	*13:14:01, *13:94 = *13:21:01, *13:94 = *13:62, *13:94
+++++---	++-+-+--	-+-----	+-----+	-----+	*13:07:01, *13:94 = *13:49, *13:94
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:81 = *13:55, *13:81
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:89 = *13:55, *13:89
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:81 = *13:21:01, *13:81 = *13:62, *13:81
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:89 = *13:21:01, *13:89 = *13:62, *13:89
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:81 = *13:49, *13:81
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:89 = *13:49, *13:89
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:58 = *13:55, *13:58
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:58 = *13:21:01, *13:58 = *13:58, *13:62
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:58 = *13:49, *13:58
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:33:01, *13:47 = *13:33:01, *13:55
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:33:01 = *13:21:01, *13:33:01 = *13:33:01, *13:62
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:33:01 = *13:33:01, *13:49
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:33:02 = *13:21:01, *13:33:02 = *13:33:02, *13:62 = *13:47, *13:66:01 = *13:55, *13:66:01
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:90 = *13:55, *13:90
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:95 = *13:55, *13:95
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:47, *13:101 = *13:55, *13:101
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:03:01, *13:47 = *13:03:01, *13:55 = *13:07:01, *13:33:02 = *13:33:02, *13:47 = *13:33:02, *13:49 = *13:33:02, *13:55 = *13:37, *13:55
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:90 = *13:21:01, *13:90 = *13:62, *13:90
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:95 = *13:21:01, *13:95 = *13:62, *13:95
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:101 = *13:21:01, *13:101 = *13:62, *13:101
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:03:01, *13:14:01 = *13:03:01, *13:21:01 = *13:03:01, *13:62 = *13:07:01, *13:66:01 = *13:21:01, *13:37 = *13:49, *13:66:01
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:90 = *13:49, *13:90
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:95 = *13:49, *13:95
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:101 = *13:49, *13:101
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:03:01, *13:07:01 = *13:03:01, *13:49 = *13:37, *13:49
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:66:01 = *13:21:01, *13:66:01 = *13:62, *13:66:01
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:13, *13:14:01 = *13:13, *13:21:01 = *13:13, *13:62 = *13:30, *13:47 = *13:30, *13:55 = *13:55, *13:82
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:13 = *13:12, *13:47 = *13:12, *13:55 = *13:13, *13:47 = *13:13, *13:49 = *13:13, *13:55
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:30 = *13:12, *13:14:01 = *13:12, *13:21:01 = *13:12, *13:62 = *13:30, *13:49 = *13:49, *13:82
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:07:01, *13:12 = *13:12, *13:49
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:14:01, *13:30 = *13:21:01, *13:30 = *13:21:01, *13:82 = *13:30, *13:62
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:24, *13:65 = *13:65, *13:75
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:24, *13:32 = *13:32, *13:75
+++++---	++-+-+--	-+-----	+-----+	-+-----	*13:35, *13:75 = *13:75, *13:79

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++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:24, *13:93 = *13:75, *13:93
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:01:01, *13:75 = *13:69, *13:75
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:24, *13:38 = *13:38, *13:75
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:08, *13:75 = *13:75, *13:84
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:24, *13:48 = *13:48, *13:75 = *13:70, *13:75
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:52, *13:75 = *13:75, *13:83
++++-+-+ -+-+--+ -	-----	+---+---	-----	*13:04, *13:24 = *13:04, *13:75 = *13:22, *13:75
+++-++++ +++++-+	+-----	-++++-+	-----	*13:01:03, *13:26 = *13:26, *13:28
+++-++++ +++++-+	+-----	-++++-+	-----	*13:05:01, *13:35 = *13:05:01, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:35, *13:50:01 = *13:50:01, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:42 = *13:06, *13:63
+++-++++ +++++-+	+-----	-++++-+	-----	*13:16, *13:26 = *13:26, *13:74
+++-++++ +++++-+	+-----	-++++-+	-----	*13:07:01, *13:31 = *13:36, *13:46
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:07:01 = *13:14:01, *13:36
+++-++++ +++++-+	+-----	-++++-+	-----	*13:36, *13:50:01 = *13:36, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:50:01, *13:96 = *13:62, *13:96
+++-++++ +++++-+	+-----	-++++-+	-----	*13:05:01, *13:16 = *13:05:01, *13:74
+++-++++ +++++-+	+-----	-++++-+	-----	*13:16, *13:50:01 = *13:50:01, *13:74 = *13:62, *13:74
+++-++++ +++++-+	+-----	-++++-+	-----	*13:50:01, *13:73 = *13:62, *13:73
+++-++++ +++++-+	+-----	-++++-+	-----	*13:41, *13:50:01 = *13:41, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:100 = *13:31, *13:100 = *13:39, *13:46 = *13:39, *13:100
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:46 = *13:14:01, *13:31 = *13:31, *13:46
+++-++++ +++++-+	+-----	-++++-+	-----	*13:31, *13:50:01 = *13:31, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:34, *13:50:01 = *13:34, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:39, *13:50:01 = *13:39, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:05:01, *13:97 = *13:63, *13:82
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:14:01 = *13:50:01, *13:97
+++-++++ +++++-+	+-----	-++++-+	-----	*13:50:01, *13:99 = *13:62, *13:99
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:01, *13:50:01 = *13:02:01, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:02:02, *13:50:01 = *13:02:02, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:07:01, *13:87 = *13:47, *13:87
+++-++++ +++++-+	+-----	-++++-+	-----	*13:01:01, *13:47 = *13:07:01, *13:61 = *13:47, *13:61
+++-++++ +++++-+	+-----	-++++-+	-----	*13:01:01, *13:100 = *13:35, *13:46 = *13:35, *13:100 = *13:46, *13:79 = *13:79, *13:100
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:35 = *13:14:01, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:35, *13:62 = *13:62, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:24, *13:77 = *13:54, *13:77
+++-++++ +++++-+	+-----	-++++-+	-----	*13:18, *13:87 = *13:42, *13:87
+++-++++ +++++-+	+-----	-++++-+	-----	*13:18, *13:35 = *13:18, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:01:01, *13:18 = *13:18, *13:61 = *13:42, *13:61
+++-++++ +++++-+	+-----	-++++-+	-----	*13:11:01, *13:35 = *13:11:01, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:35, *13:42 = *13:42, *13:79
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:19 = *13:19, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:76 = *13:62, *13:76
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:72 = *13:62, *13:72
+++-++++ +++++-+	+-----	-++++-+	-----	*13:08, *13:14:01 = *13:08, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:70 = *13:62, *13:70
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:84 = *13:62, *13:84
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:57 = *13:57, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:83 = *13:62, *13:83
+++-++++ +++++-+	+-----	-++++-+	-----	*13:22, *13:100 = *13:54, *13:82
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:22 = *13:22, *13:62 = *13:24, *13:82
+++-++++ +++++-+	+-----	-++++-+	-----	*13:52, *13:100 = *13:68, *13:100
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:68 = *13:46, *13:52 = *13:46, *13:68
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:52 = *13:52, *13:62
+++-++++ +++++-+	+-----	-++++-+	-----	*13:14:01, *13:45 = *13:45, *13:62

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+++---+---	+---+---+---	-----	+---+---+---	-----	*13:14:01, *13:23 = *13:23, *13:62
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:14:01, *13:97 = *13:62, *13:97
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:06, *13:26 = *13:10, *13:26
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:50:01, *13:85 = *13:62, *13:85
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:14:01, *13:77 = *13:46, *13:77 = *13:77, *13:100
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:14:01, *13:37 = *13:37, *13:62
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:14:01, *13:82 = *13:62, *13:82
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:35, *13:63 = *13:63, *13:79
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:08, *13:63 = *13:63, *13:70
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:54 = *13:31, *13:54 = *13:39, *13:54
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:22, *13:63 = *13:63, *13:83
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:16, *13:63 = *13:63, *13:74
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:54 = *13:35, *13:54 = *13:54, *13:69 = *13:54, *13:79
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:24, *13:35 = *13:24, *13:79
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:24 = *13:24, *13:69
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:08, *13:54 = *13:54, *13:84
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:08, *13:24 = *13:24, *13:84
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:52, *13:54 = *13:54, *13:68 = *13:54, *13:83
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:24, *13:52 = *13:24, *13:83
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:94 = *13:89, *13:96 = *13:94, *13:96
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:02, *13:58 = *13:02:02, *13:81
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:29, *13:33:01 = *13:88, *13:96
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:29, *13:101 = *13:88, *13:99
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:88 = *13:03:01, *13:29
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:33:01, *13:99 = *13:96, *13:101
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:33:01 = *13:03:01, *13:96 = *13:33:01, *13:96
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:101 = *13:03:01, *13:99 = *13:99, *13:101
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:03:01 = *13:36, *13:66:01
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:30, *13:65 = *13:65, *13:82
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:01, *13:12 = *13:30, *13:36
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:65 = *13:37, *13:65
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:02, *13:13 = *13:02:02, *13:33:02
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:02, *13:03:01 = *13:02:02, *13:12
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:02:02, *13:30 = *13:02:02, *13:66:01
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:20, *13:33:02 = *13:61, *13:88
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:71 = *13:27, *13:88
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:78 = *13:79, *13:88
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:20, *13:90 = *13:88, *13:92
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:20, *13:95 = *13:88, *13:102
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:20, *13:101 = *13:88, *13:91
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:88 = *13:03:01, *13:20
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:09 = *13:09, *13:88
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:87 = *13:33:02, *13:87
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:12, *13:87 = *13:13, *13:87
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:33:02, *13:92 = *13:61, *13:90
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:33:02, *13:102 = *13:61, *13:95
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:33:02, *13:91 = *13:61, *13:101
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:33:02 = *13:03:01, *13:61 = *13:33:02, *13:61
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:13 = *13:12, *13:61 = *13:13, *13:61
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:90, *13:102 = *13:92, *13:95
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:90, *13:91 = *13:92, *13:101
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:01:01, *13:90 = *13:03:01, *13:92 = *13:90, *13:92
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:03:01, *13:93 = *13:37, *13:93
+++---+---	+---+---+---	-----	+---+---+---	-----	*13:91, *13:95 = *13:101, *13:102

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++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:01:01, *13:95 = *13:03:01, *13:102 = *13:95, *13:102
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:01:01, *13:101 = *13:03:01, *13:91 = *13:91, *13:101
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:30, *13:32 = *13:32, *13:82
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:32 = *13:32, *13:37
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:35, *13:66:01 = *13:66:01, *13:79
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:30, *13:35 = *13:30, *13:79
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:30, *13:93 = *13:82, *13:93
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:01:01, *13:81 = *13:80, *13:81 = *13:80, *13:89
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:01:01, *13:58 = *13:58, *13:80
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:88 = *13:22, *13:88
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:88 = *13:70, *13:88
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:33:01 = *13:22, *13:33:01
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:33:01, *13:48 = *13:33:01, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:33:02 = *13:22, *13:33:02
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:13 = *13:13, *13:22
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:33:02, *13:48 = *13:33:02, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:13, *13:48 = *13:13, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:90 = *13:22, *13:90
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:95 = *13:22, *13:95
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:101 = *13:22, *13:101
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:04 = *13:03:01, *13:22 = *13:04, *13:37
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:12 = *13:12, *13:22
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:66:01 = *13:66:01, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:30, *13:48 = *13:30, *13:70 = *13:48, *13:82
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:90 = *13:70, *13:90
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:95 = *13:70, *13:95
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:101 = *13:70, *13:101
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:48 = *13:03:01, *13:70 = *13:37, *13:48
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:12, *13:48 = *13:12, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:66:01 = *13:22, *13:66:01
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:30 = *13:04, *13:82 = *13:22, *13:30
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:23 = *13:38, *13:66:01
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:12, *13:23 = *13:30, *13:38 = *13:38, *13:82
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:38 = *13:37, *13:38
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:94 = *13:22, *13:94
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:94 = *13:70, *13:94
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:81 = *13:22, *13:81
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:89 = *13:22, *13:89
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:04, *13:58 = *13:22, *13:58
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:81 = *13:70, *13:81
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:89 = *13:70, *13:89
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:48, *13:58 = *13:58, *13:70
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:58, *13:85 = *13:81, *13:85
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:13, *13:85 = *13:33:02, *13:85
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:30, *13:85 = *13:66:01, *13:85
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:85 = *13:12, *13:85
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:88 = *13:10, *13:88
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:33:01 = *13:10, *13:33:01
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:13, *13:77 = *13:33:02, *13:77
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:77 = *13:12, *13:77
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:33:02 = *13:10, *13:13 = *13:10, *13:33:02
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:90 = *13:10, *13:90
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:95 = *13:10, *13:95
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:06, *13:101 = *13:10, *13:101
++-++-++-++	++-++-++-++	-----	++-++-++-++	-----	*13:03:01, *13:06 = *13:03:01, *13:10 = *13:10,



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+++---+ +---+ +-----+ +---+ +-----	*13:12
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:77 = *13:66:01, *13:77
+++---+ +---+ +-----+ +---+ +-----	*13:06, *13:66:01 = *13:10, *13:30 = *13:10, *13:66:01
+++---+ +---+ +-----+ +---+ +-----	*13:06, *13:94 = *13:10, *13:94
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:77 = *13:77, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:06, *13:81 = *13:10, *13:58 = *13:10, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:06, *13:89 = *13:10, *13:89
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:60 = *13:60, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:88 = *13:81, *13:88
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:94 = *13:33:02, *13:94
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:94 = *13:66:01, *13:94 = *13:82, *13:94 = *13:86, *13:94
+++---+ +---+ +-----+ +---+ +-----	*13:33:01, *13:58 = *13:33:01, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:94 = *13:12, *13:94 = *13:33:01, *13:89 = *13:33:01, *13:94 = *13:37, *13:94
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:81 = *13:33:02, *13:58 = *13:33:02, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:89 = *13:33:02, *13:89
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:81 = *13:58, *13:66:01 = *13:66:01, *13:81 = *13:81, *13:82
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:89 = *13:66:01, *13:89 = *13:82, *13:89
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:90 = *13:81, *13:90
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:95 = *13:81, *13:95
+++---+ +---+ +-----+ +---+ +-----	*13:58, *13:101 = *13:81, *13:101
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:58 = *13:03:01, *13:81 = *13:12, *13:81 = *13:37, *13:58 = *13:37, *13:81
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:89 = *13:12, *13:89 = *13:37, *13:89
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:58 = *13:58, *13:82
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:60 = *13:33:02, *13:60
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:60 = *13:60, *13:66:01
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:60 = *13:12, *13:60
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:88 = *13:33:02, *13:88
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:25 = *13:30, *13:88 = *13:66:01, *13:88 = *13:82, *13:88
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:88 = *13:12, *13:88 = *13:37, *13:88
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:33:01 = *13:33:01, *13:33:02
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:33:01 = *13:33:01, *13:66:01 = *13:33:01, *13:82 = *13:33:01, *13:86
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:33:01 = *13:12, *13:33:01 = *13:33:01, *13:33:01 = *13:33:01, *13:33:01 = *13:33:01, *13:37
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:66:01 = *13:30, *13:33:02 = *13:33:02, *13:66:01 = *13:33:02, *13:82
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:90 = *13:33:02, *13:90
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:95 = *13:33:02, *13:95
+++---+ +---+ +-----+ +---+ +-----	*13:13, *13:101 = *13:33:02, *13:101
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:13 = *13:03:01, *13:33:02 = *13:12, *13:33:02 = *13:13, *13:33:02 = *13:13, *13:37 = *13:33:02, *13:33:02 = *13:33:02, *13:37
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:90 = *13:66:01, *13:90 = *13:82, *13:90
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:95 = *13:66:01, *13:95 = *13:82, *13:95
+++---+ +---+ +-----+ +---+ +-----	*13:30, *13:101 = *13:66:01, *13:101 = *13:82, *13:101
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:30 = *13:03:01, *13:66:01 = *13:03:01, *13:82 = *13:12, *13:66:01 = *13:30, *13:37 = *13:37, *13:66:01
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:90 = *13:12, *13:90 = *13:37, *13:90 = *13:90, *13:90
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:95 = *13:12, *13:95 = *13:37, *13:95 = *13:95, *13:95
+++---+ +---+ +-----+ +---+ +-----	*13:03:01, *13:101 = *13:12, *13:101 = *13:37, *13:101 = *13:101, *13:101

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+++--- +---+--- - - - - - + - - - - -	*13:03:01, *13:03:01 = *13:03:01, *13:12 =
+++--- +---+--- - - - - - + - - - - -	*13:03:01, *13:37 = *13:12, *13:37
+++--- +---+--- - - - - - + - - - - -	*13:30, *13:66:01 = *13:66:01, *13:66:01 =
+++--- +---+--- - - - - - + - - - - -	*13:66:01, *13:82
+++--- +---+--- - - - - - + - - - - -	*13:13, *13:30 = *13:13, *13:82
+++--- +---+--- - - - - - + - - - - -	*13:12, *13:13 = *13:13, *13:13
+++--- +---+--- - - - - - + - - - - -	*13:12, *13:30 = *13:12, *13:82
+++--- +---+--- - - - - - + - - - - -	*13:30, *13:30 = *13:30, *13:82
+++--- +---+--- - - - - - + - - - - -	*13:58, *13:94 = *13:81, *13:94
+++--- +---+--- - - - - - + - - - - -	*13:89, *13:94 = *13:94, *13:94
+++--- +---+--- - - - - - + - - - - -	*13:58, *13:81 = *13:58, *13:89 = *13:81, *13:81 =
+++--- +---+--- - - - - - + - - - - -	*13:81, *13:89
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:65 = *13:36, *13:93 = *13:65, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:32, *13:36 = *13:32, *13:65 = *13:40, *13:65
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:65 = *13:22, *13:65 = *13:65, *13:83
+++--- +---+--- - - - - - + - - - - -	*13:08, *13:65 = *13:48, *13:65 = *13:65, *13:70
+++--- +---+--- - - - - - + - - - - -	*13:16, *13:65 = *13:65, *13:74
+++--- +---+--- - - - - - + - - - - -	*13:36, *13:65 = *13:65, *13:65
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:38 = *13:38, *13:69
+++--- +---+--- - - - - - + - - - - -	*13:09, *13:32 = *13:20, *13:32
+++--- +---+--- - - - - - + - - - - -	*13:09, *13:93 = *13:20, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:19, *13:93 = *13:32, *13:57
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:53 = *13:15, *13:48
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:32 = *13:08, *13:93 = *13:22, *13:32 =
+++--- +---+--- - - - - - + - - - - -	*13:32, *13:83 = *13:48, *13:93 = *13:70, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:48 = *13:04, *13:40 = *13:48, *13:69
+++--- +---+--- - - - - - + - - - - -	*13:08, *13:32 = *13:32, *13:48 = *13:32, *13:70
+++--- +---+--- - - - - - + - - - - -	*13:15, *13:32 = *13:53, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:32, *13:52 = *13:84, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:32 = *13:32, *13:93 = *13:40, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:32, *13:32 = *13:32, *13:40
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:35 = *13:04, *13:79
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:93 = *13:22, *13:93 = *13:83, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:04 = *13:04, *13:69
+++--- +---+--- - - - - - + - - - - -	*13:35, *13:93 = *13:79, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:93 = *13:93, *13:93
+++--- +---+--- - - - - - + - - - - -	*13:38, *13:52 = *13:38, *13:83
+++--- +---+--- - - - - - + - - - - -	*13:08, *13:38 = *13:38, *13:84
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:38 = *13:22, *13:38
+++--- +---+--- - - - - - + - - - - -	*13:38, *13:48 = *13:38, *13:70
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:19 = *13:48, *13:57
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:76 = *13:48, *13:64
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:08 = *13:04, *13:84 = *13:48, *13:52 =
+++--- +---+--- - - - - - + - - - - -	*13:48, *13:83
+++--- +---+--- - - - - - + - - - - -	*13:08, *13:48 = *13:48, *13:84
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:48 = *13:04, *13:70 = *13:22, *13:48
+++--- +---+--- - - - - - + - - - - -	*13:48, *13:48 = *13:48, *13:70
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:52 = *13:04, *13:83
+++--- +---+--- - - - - - + - - - - -	*13:04, *13:04 = *13:04, *13:22
+++--- +---+--- - - - - - + - - - - -	*13:35, *13:56 = *13:56, *13:79
+++--- +---+--- - - - - - + - - - - -	*13:01:01, *13:85 = *13:15, *13:85
+++--- +---+--- - - - - - + - - - - -	*13:40, *13:85 = *13:53, *13:85
+++--- +---+--- - - - - - + - - - - -	*13:02:01, *13:77 = *13:31, *13:77 = *13:39, *13:77
+++--- +---+--- - - - - - + - - - - -	*13:02:02, *13:06 = *13:02:02, *13:10
+++--- +---+--- - - - - - + - - - - -	*13:57, *13:85 = *13:83, *13:85
+++--- +---+--- - - - - - + - - - - -	*13:08, *13:85 = *13:19, *13:85
+++--- +---+--- - - - - - + - - - - -	*13:16, *13:56 = *13:56, *13:74
+++--- +---+--- - - - - - + - - - - -	*13:02:01, *13:25 = *13:29, *13:82 = *13:56, *13:97
+++--- +---+--- - - - - - + - - - - -	*13:16, *13:85 = *13:74, *13:85
+++--- +---+--- - - - - - + - - - - -	*13:82, *13:96 = *13:86, *13:96

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++-++-++	++++-++	+-----+	++-++-++	-----	*13:01:03, *13:60 = *13:28, *13:60
++-++-++	++++-++	-----+	++-++-++	-----	*13:25, *13:27 = *13:71, *13:82
++-++-++	++++-++	-----+	++-++-++	-----	*13:25, *13:35 = *13:25, *13:79 = *13:78, *13:82
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:25 = *13:20, *13:82
++-++-++	++++-++	-----+	++-++-++	-----	*13:09, *13:25 = *13:09, *13:82
++-++-++	++++-++	-----+	++-++-++	-----	*13:53, *13:82 = *13:53, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:86 = *13:79, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:15, *13:82 = *13:15, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:82 = *13:79, *13:82
++-++-++	++++-++	-----+	++-++-++	-----	*13:20, *13:77 = *13:77, *13:78
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:84 = *13:40, *13:44
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:83 = *13:44, *13:69
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:77 = *13:28, *13:77
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:77 = *13:35, *13:77 = *13:68, *13:77 = *13:77, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:44 = *13:44, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:10, *13:35 = *13:10, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:35 = *13:06, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:44 = *13:06, *13:52
++-++-++	++++-++	-----+	++-++-++	-----	*13:19, *13:82 = *13:19, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:57, *13:82 = *13:57, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:85 = *13:10, *13:85
++-++-++	++++-++	-----+	++-++-++	-----	*13:82, *13:85 = *13:85, *13:86
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:60 = *13:10, *13:60
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:37 = *13:10, *13:37
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:77 = *13:10, *13:77 = *13:77, *13:77
++-++-++	++++-++	-----+	++-++-++	-----	*13:06, *13:10 = *13:10, *13:10
++-++-++	++++-++	-----+	++-++-++	-----	*13:39, *13:71 = *13:41, *13:78
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:01, *13:71 = *13:20, *13:41 = *13:27, *13:29 = *13:41, *13:71
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:29 = *13:20, *13:34
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:01, *13:78 = *13:20, *13:39 = *13:29, *13:35 = *13:29, *13:79 = *13:39, *13:78
++-++-++	++++-++	-----+	++-++-++	-----	*13:20, *13:99 = *13:29, *13:91
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:29 = *13:02:01, *13:20
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:01, *13:09 = *13:09, *13:29
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:96 = *13:79, *13:96
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:02:02 = *13:02:02, *13:28
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:01, *13:28 = *13:28, *13:34
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:02, *13:35 = *13:02:02, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:02:01, *13:87 = *13:61, *13:74 = *13:74, *13:87
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:74 = *13:74, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:73 = *13:73, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:41 = *13:27, *13:34
++-++-++	++++-++	-----+	++-++-++	-----	*13:27, *13:39 = *13:35, *13:41 = *13:41, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:27, *13:99 = *13:41, *13:91
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:41 = *13:02:01, *13:27 = *13:27, *13:41
++-++-++	++++-++	-----+	++-++-++	-----	*13:31, *13:35 = *13:31, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:39 = *13:34, *13:35 = *13:34, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:03, *13:99 = *13:34, *13:91
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:34 = *13:01:03, *13:02:01 = *13:01:03, *13:34
++-++-++	++++-++	-----+	++-++-++	-----	*13:35, *13:99 = *13:39, *13:91 = *13:79, *13:99
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:39 = *13:02:01, *13:35 = *13:02:01, *13:79 = *13:35, *13:39 = *13:39, *13:79
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:99 = *13:02:01, *13:91 = *13:91, *13:99
++-++-++	++++-++	-----+	++-++-++	-----	*13:01:01, *13:103 = *13:27, *13:103
++-++-++	++++-++	-----+	++-++-++	-----	*13:08, *13:29 = *13:29, *13:70

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++---++	+++++--	-----	+---+--	-----	*13:22, *13:29 = *13:29, *13:83
++---++	+++++++	-----	+---+--	-----	*13:08, *13:96 = *13:70, *13:96
++---++	+++++++	-----	+---+--	-----	*13:08, *13:74 = *13:70, *13:74
++---++	+++++++	-----	+---+--	-----	*13:08, *13:73 = *13:70, *13:73
++---++	+++++++	-----	+---+--	-----	*13:08, *13:41 = *13:41, *13:70
++---++	+++++++	-----	+---+--	-----	*13:08, *13:31 = *13:31, *13:70
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:76 = *13:08, *13:34 = *13:34, *13:70 = *13:34, *13:76
++---++	+++++++	-----	+---+--	-----	*13:08, *13:39 = *13:39, *13:70
++---++	+++++++	-----	+---+--	-----	*13:22, *13:36 = *13:36, *13:83
++---++	+++++++	-----	+---+--	-----	*13:08, *13:99 = *13:70, *13:99
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:08 = *13:02:01, *13:70
++---++	+++++++	-----	+---+--	-----	*13:08, *13:36 = *13:36, *13:70
++---++	+++++++	-----	+---+--	-----	*13:22, *13:96 = *13:83, *13:96
++---++	+++++++	-----	+---+--	-----	*13:22, *13:74 = *13:74, *13:83
++---++	+++++++	-----	+---+--	-----	*13:22, *13:73 = *13:73, *13:83
++---++	+++++++	-----	+---+--	-----	*13:22, *13:41 = *13:41, *13:83
++---++	+++++++	-----	+---+--	-----	*13:22, *13:31 = *13:31, *13:83
++---++	+++++++	-----	+---+--	-----	*13:22, *13:34 = *13:34, *13:83
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:64 = *13:34, *13:64
++---++	+++++++	-----	+---+--	-----	*13:22, *13:39 = *13:39, *13:83
++---++	+++++++	-----	+---+--	-----	*13:22, *13:99 = *13:83, *13:99
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:22 = *13:02:01, *13:83
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:68 = *13:31, *13:68
++---++	+++++++	-----	+---+--	-----	*13:16, *13:29 = *13:29, *13:74
++---++	+++++++	-----	+---+--	-----	*13:16, *13:36 = *13:36, *13:74
++---++	+++++++	-----	+---+--	-----	*13:23, *13:67 = *13:23, *13:73
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:17 = *13:17, *13:73
++---++	+++++++	-----	+---+--	-----	*13:23, *13:41 = *13:23, *13:103
++---++	+++++++	-----	+---+--	-----	*13:16, *13:96 = *13:74, *13:96
++---++	+++++++	-----	+---+--	-----	*13:67, *13:96 = *13:73, *13:96
++---++	+++++++	-----	+---+--	-----	*13:41, *13:96 = *13:96, *13:103
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:96 = *13:96, *13:96
++---++	+++++++	-----	+---+--	-----	*13:02:02, *13:16 = *13:02:02, *13:74
++---++	+++++++	-----	+---+--	-----	*13:02:02, *13:67 = *13:02:02, *13:73
++---++	+++++++	-----	+---+--	-----	*13:02:02, *13:41 = *13:02:02, *13:103
++---++	+++++++	-----	+---+--	-----	*13:16, *13:73 = *13:67, *13:74 = *13:73, *13:74
++---++	+++++++	-----	+---+--	-----	*13:16, *13:41 = *13:41, *13:74 = *13:74, *13:103
++---++	+++++++	-----	+---+--	-----	*13:16, *13:31 = *13:31, *13:74
++---++	+++++++	-----	+---+--	-----	*13:16, *13:34 = *13:34, *13:74
++---++	+++++++	-----	+---+--	-----	*13:16, *13:39 = *13:39, *13:74
++---++	+++++++	-----	+---+--	-----	*13:16, *13:99 = *13:74, *13:99
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:16 = *13:02:01, *13:74 = *13:16, *13:74 = *13:74, *13:74
++---++	+++++++	-----	+---+--	-----	*13:41, *13:67 = *13:41, *13:73 = *13:73, *13:103
++---++	+++++++	-----	+---+--	-----	*13:31, *13:67 = *13:31, *13:73
++---++	+++++++	-----	+---+--	-----	*13:34, *13:67 = *13:34, *13:73
++---++	+++++++	-----	+---+--	-----	*13:39, *13:67 = *13:39, *13:73
++---++	+++++++	-----	+---+--	-----	*13:67, *13:97 = *13:73, *13:97
++---++	+++++++	-----	+---+--	-----	*13:67, *13:99 = *13:73, *13:99
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:67 = *13:02:01, *13:73 = *13:67, *13:73 = *13:73, *13:73
++---++	+++++++	-----	+---+--	-----	*13:31, *13:41 = *13:31, *13:103
++---++	+++++++	-----	+---+--	-----	*13:34, *13:41 = *13:34, *13:103
++---++	+++++++	-----	+---+--	-----	*13:39, *13:41 = *13:39, *13:103
++---++	+++++++	-----	+---+--	-----	*13:41, *13:97 = *13:97, *13:103
++---++	+++++++	-----	+---+--	-----	*13:41, *13:99 = *13:99, *13:103
++---++	+++++++	-----	+---+--	-----	*13:02:01, *13:41 = *13:02:01, *13:103 = *13:41, *13:41 = *13:41, *13:103

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++-----+	+-----+	-----+	-----+	-----+	*13:02:01, *13:31 = *13:31, *13:31
++-----+	+-----+	-----+	-----+	-----+	*13:02:01, *13:34 = *13:34, *13:34
++-----+	+-----+	-----+	-----+	-----+	*13:02:01, *13:39 = *13:39, *13:39
++-----+	+-----+	-----+	-----+	-----+	*13:02:01, *13:99 = *13:99, *13:99
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:67 = *13:67, *13:70
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:103 = *13:70, *13:103
++-----+	+-----+	-----+	-----+	-----+	*13:22, *13:67 = *13:67, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:22, *13:103 = *13:83, *13:103
++-----+	+-----+	-----+	-----+	-----+	*13:20, *13:45 = *13:23, *13:43
++-----+	+-----+	-----+	-----+	-----+	*13:35, *13:45 = *13:45, *13:79
++-----+	+-----+	-----+	-----+	-----+	*13:23, *13:35 = *13:23, *13:79
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:45 = *13:45, *13:69
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:23 = *13:23, *13:69 = *13:69, *13:97
++-----+	+-----+	-----+	-----+	-----+	*13:35, *13:97 = *13:79, *13:97
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:19 = *13:19, *13:20
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:71 = *13:70, *13:71
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:76 = *13:20, *13:76
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:78 = *13:70, *13:78
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:72 = *13:20, *13:72
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:43 = *13:43, *13:70
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:09 = *13:08, *13:20 = *13:20, *13:70
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:53 = *13:20, *13:53
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:84 = *13:20, *13:84
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:40 = *13:20, *13:40
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:57 = *13:20, *13:57
++-----+	+-----+	-----+	-----+	-----+	*13:22, *13:71 = *13:71, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:64 = *13:20, *13:64
++-----+	+-----+	-----+	-----+	-----+	*13:22, *13:78 = *13:78, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:22, *13:43 = *13:43, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:83 = *13:20, *13:22 = *13:20, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:69 = *13:20, *13:69
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:15 = *13:15, *13:20
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:28 = *13:20, *13:28
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:87 = *13:20, *13:87
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:61 = *13:20, *13:61
++-----+	+-----+	-----+	-----+	-----+	*13:27, *13:78 = *13:35, *13:71 = *13:71, *13:79
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:71 = *13:09, *13:27 = *13:09, *13:71 = *13:20, *13:27 = *13:27, *13:71
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:68 = *13:20, *13:68
++-----+	+-----+	-----+	-----+	-----+	*13:01:03, *13:09 = *13:01:03, *13:20
++-----+	+-----+	-----+	-----+	-----+	*13:35, *13:43 = *13:43, *13:79
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:78 = *13:09, *13:35 = *13:09, *13:78 = *13:09, *13:79 = *13:20, *13:35 = *13:20, *13:79 = *13:35, *13:78 = *13:78, *13:79
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:52 = *13:20, *13:52
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:59 = *13:20, *13:59
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:43 = *13:09, *13:43
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:80 = *13:20, *13:80
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:51 = *13:20, *13:51
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:92 = *13:20, *13:92
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:102 = *13:20, *13:102
++-----+	+-----+	-----+	-----+	-----+	*13:09, *13:91 = *13:20, *13:91
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:09 = *13:01:01, *13:20 = *13:09, *13:20
++-----+	+-----+	-----+	-----+	-----+	*13:01:03, *13:19 = *13:15, *13:76
++-----+	+-----+	-----+	-----+	-----+	*13:15, *13:72 = *13:19, *13:59
++-----+	+-----+	-----+	-----+	-----+	*13:01:01, *13:19 = *13:08, *13:15 = *13:15, *13:19 = *13:15, *13:70 = *13:19, *13:69 = *13:22, *13:53 = *13:40, *13:57 = *13:53, *13:57 = *13:53, *13:83
++-----+	+-----+	-----+	-----+	-----+	*13:08, *13:53 = *13:19, *13:40 = *13:19, *13:53 =

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++-----+ -+++++--+ +-----+ -+++++--+ -----	*13:53, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:28 = *13:28, *13:70 = *13:28, *13:76
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:87 = *13:70, *13:87
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:61 = *13:61, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:27 = *13:27, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:03, *13:72 = *13:59, *13:76
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:76 = *13:01:03, *13:08 = *13:01:03, *13:70 = *13:01:03, *13:76 = *13:69, *13:76
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:79 = *13:70, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:35 = *13:35, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:72 = *13:08, *13:59 = *13:59, *13:70 = *13:59, *13:72 = *13:69, *13:72
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:80 = *13:70, *13:80
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:51 = *13:51, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:92 = *13:70, *13:92
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:102 = *13:70, *13:102
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:91 = *13:70, *13:91
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:08 = *13:01:01, *13:70 = *13:08, *13:69 = *13:22, *13:40 = *13:40, *13:83 = *13:69, *13:70 = *13:69, *13:84
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:08, *13:40 = *13:40, *13:70
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:15, *13:84 = *13:52, *13:53
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:53 = *13:15, *13:40 = *13:15, *13:53
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:40, *13:53 = *13:53, *13:53
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:84 = *13:40, *13:52
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:35, *13:57 = *13:57, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:57 = *13:15, *13:22 = *13:15, *13:57 = *13:15, *13:83 = *13:57, *13:69
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:28 = *13:28, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:28, *13:64 = *13:28, *13:69
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:87 = *13:83, *13:87
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:61 = *13:61, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:17 = *13:17, *13:69
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:27 = *13:27, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:35, *13:64 = *13:64, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:03, *13:22 = *13:01:03, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:64 = *13:01:03, *13:64 = *13:01:03, *13:69 = *13:64, *13:69
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:35 = *13:22, *13:79 = *13:35, *13:83 = *13:79, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:35, *13:69 = *13:69, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:59 = *13:59, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:80 = *13:80, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:51 = *13:51, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:92 = *13:83, *13:92
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:102 = *13:83, *13:102
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:22, *13:91 = *13:83, *13:91
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:22 = *13:01:01, *13:83 = *13:22, *13:69 = *13:52, *13:69 = *13:69, *13:83
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:69 = *13:69, *13:69
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:15, *13:35 = *13:15, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:15 = *13:15, *13:15
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:28, *13:35 = *13:28, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:28 = *13:01:03, *13:28 = *13:28, *13:28
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:35, *13:87 = *13:79, *13:87
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:87 = *13:16, *13:61 = *13:16, *13:87 = *13:61, *13:87 = *13:87, *13:87
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:35, *13:61 = *13:61, *13:79
++-----+ -+++++--+ -+++++--+ -+++++--+ -----	*13:01:01, *13:61 = *13:61, *13:61

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++-----+ -+-----+ -+-----+ -+-----+ -----	*13:16, *13:35 = *13:16, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:27, *13:35 = *13:27, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:27 = *13:27, *13:27
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:68 = *13:68, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:03, *13:35 = *13:01:03, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:01:03 = *13:01:03, *13:01:03
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:52 = *13:52, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:59 = *13:59, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:80 = *13:79, *13:80
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:51 = *13:51, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:92 = *13:79, *13:92
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:102 = *13:79, *13:102
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:35, *13:91 = *13:79, *13:91
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:35 = *13:01:01, *13:79 = *13:35, *13:79 = *13:79, *13:79
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:59 = *13:59, *13:59
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:80 = *13:80, *13:80
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:51 = *13:51, *13:51
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:92 = *13:92, *13:92
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:102 = *13:102, *13:102
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:01:01, *13:91 = *13:91, *13:91
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:19, *13:23 = *13:19, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:23, *13:76 = *13:76, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:23, *13:72 = *13:72, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:45 = *13:45, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:23 = *13:08, *13:97 = *13:23, *13:84 = *13:70, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:23, *13:57 = *13:57, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:23, *13:64 = *13:64, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:45, *13:52 = *13:45, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:97 = *13:23, *13:52 = *13:23, *13:83 = *13:83, *13:97
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:19, *13:64 = *13:57, *13:76
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:57 = *13:19, *13:22 = *13:19, *13:52 = *13:19, *13:57 = *13:19, *13:83 = *13:57, *13:70 = *13:57, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:19 = *13:19, *13:19 = *13:19, *13:70 = *13:19, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:16 = *13:16, *13:70
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:17 = *13:17, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:68 = *13:68, *13:70
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:64 = *13:22, *13:76 = *13:52, *13:76 = *13:64, *13:70 = *13:64, *13:76 = *13:64, *13:84 = *13:76, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:76 = *13:70, *13:76 = *13:76, *13:76 = *13:76, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:72 = *13:52, *13:72 = *13:72, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:22 = *13:08, *13:52 = *13:08, *13:83 = *13:22, *13:84 = *13:52, *13:70 = *13:70, *13:83 = *13:83, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:72 = *13:70, *13:72 = *13:72, *13:72 = *13:72, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:08, *13:08 = *13:08, *13:70 = *13:08, *13:84 = *13:70, *13:84
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:57 = *13:52, *13:57 = *13:57, *13:57 = *13:57, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:16, *13:22 = *13:16, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:17, *13:52 = *13:17, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:68 = *13:68, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:64 = *13:52, *13:64 = *13:64, *13:83
++-----+ -+-----+ -+-----+ -+-----+ -----	*13:22, *13:52 = *13:22, *13:83 = *13:52, *13:83 =

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+-----	+++++	-----	+-----	-----	*13:83, *13:83
+-----	+++++	-----	+-----	-----	*13:24, *13:88 = *13:75, *13:88
+-----	+++++	-----	+-----	-----	*13:24, *13:55 = *13:47, *13:75 = *13:55, *13:75
+-----	+++++	-----	+-----	-----	*13:07:01, *13:75 = *13:24, *13:49 = *13:49, *13:75
+-----	+++++	-----	+-----	-----	*13:21:01, *13:54 = *13:75, *13:100
+-----	+++++	-----	+-----	-----	*13:14:01, *13:75 = *13:21:01, *13:24 = *13:21:01, *13:75 = *13:62, *13:75
+-----	+++++	-----	+-----	-----	*13:11:01, *13:75 = *13:44, *13:75
+-----	+++++	-----	+-----	-----	*13:18, *13:49 = *13:18, *13:55 = *13:42, *13:55
+-----	+++++	-----	+-----	-----	*13:11:01, *13:55 = *13:44, *13:55
+-----	+++++	-----	+-----	-----	*13:11:01, *13:49 = *13:44, *13:49
+-----	+++++	-----	+-----	-----	*13:11:01, *13:21:01 = *13:21:01, *13:44
+-----	+++++	-----	+-----	-----	*13:47, *13:88 = *13:55, *13:88
+-----	+++++	-----	+-----	-----	*13:14:01, *13:88 = *13:21:01, *13:88 = *13:62, *13:88
+-----	+++++	-----	+-----	-----	*13:07:01, *13:88 = *13:49, *13:88
+-----	+++++	-----	+-----	-----	*13:14:01, *13:55 = *13:21:01, *13:47 = *13:21:01, *13:55 = *13:55, *13:62
+-----	+++++	-----	+-----	-----	*13:07:01, *13:55 = *13:47, *13:49 = *13:47, *13:55 = *13:49, *13:55 = *13:55, *13:55
+-----	+++++	-----	+-----	-----	*13:07:01, *13:21:01 = *13:14:01, *13:49 = *13:21:01, *13:49 = *13:49, *13:62
+-----	+++++	-----	+-----	-----	*13:07:01, *13:49 = *13:49, *13:49
+-----	+++++	-----	+-----	-----	*13:14:01, *13:21:01 = *13:21:01, *13:21:01 = *13:21:01, *13:62
+-----	+++++	-----	+-----	-----	*13:24, *13:75 = *13:75, *13:75
+-----	+++++	-----	+-----	-----	*13:11:01, *13:63 = *13:44, *13:63
+-----	+++++	-----	+-----	-----	*13:05:01, *13:29 = *13:56, *13:63
+-----	+++++	-----	+-----	-----	*13:29, *13:50:01 = *13:29, *13:62
+-----	+++++	-----	+-----	-----	*13:05:01, *13:63 = *13:50:01, *13:63 = *13:62, *13:63
+-----	+++++	-----	+-----	-----	*13:20, *13:100 = *13:46, *13:78 = *13:78, *13:100
+-----	+++++	-----	+-----	-----	*13:14:01, *13:54 = *13:24, *13:100 = *13:46, *13:54 = *13:54, *13:62 = *13:54, *13:100
+-----	+++++	-----	+-----	-----	*13:14:01, *13:24 = *13:24, *13:62
+-----	+++++	-----	+-----	-----	*13:11:01, *13:54 = *13:44, *13:54
+-----	+++++	-----	+-----	-----	*13:11:01, *13:24 = *13:24, *13:44
+-----	+++++	-----	+-----	-----	*13:05:01, *13:18 = *13:18, *13:50:01
+-----	+++++	-----	+-----	-----	*13:05:01, *13:42 = *13:42, *13:50:01
+-----	+++++	-----	+-----	-----	*13:11:01, *13:26 = *13:26, *13:44
+-----	+++++	-----	+-----	-----	*13:05:01, *13:11:01 = *13:05:01, *13:44
+-----	+++++	-----	+-----	-----	*13:11:01, *13:50:01 = *13:44, *13:50:01
+-----	+++++	-----	+-----	-----	*13:14:01, *13:56 = *13:25, *13:50:01
+-----	+++++	-----	+-----	-----	*13:50:01, *13:56 = *13:56, *13:62
+-----	+++++	-----	+-----	-----	*13:14:01, *13:26 = *13:26, *13:86
+-----	+++++	-----	+-----	-----	*13:05:01, *13:26 = *13:26, *13:50:01 = *13:26, *13:62
+-----	+++++	-----	+-----	-----	*13:50:01, *13:67 = *13:62, *13:67
+-----	+++++	-----	+-----	-----	*13:50:01, *13:103 = *13:62, *13:103
+-----	+++++	-----	+-----	-----	*13:05:01, *13:05:01 = *13:05:01, *13:50:01 = *13:05:01, *13:62
+-----	+++++	-----	+-----	-----	*13:50:01, *13:50:01 = *13:50:01, *13:62
+-----	+++++	-----	+-----	-----	*13:07:01, *13:18 = *13:18, *13:47 = *13:42, *13:47
+-----	+++++	-----	+-----	-----	*13:11:01, *13:18 = *13:18, *13:44
+-----	+++++	-----	+-----	-----	*13:18, *13:18 = *13:18, *13:42
+-----	+++++	-----	+-----	-----	*13:11:01, *13:42 = *13:42, *13:44
+-----	+++++	-----	+-----	-----	*13:11:01, *13:47 = *13:44, *13:47
+-----	+++++	-----	+-----	-----	*13:07:01, *13:11:01 = *13:07:01, *13:44
+-----	+++++	-----	+-----	-----	*13:11:01, *13:100 = *13:44, *13:100
+-----	+++++	-----	+-----	-----	*13:11:01, *13:46 = *13:44, *13:46



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+--+-----	++-----	-----	+--+-----	-----	*13:11:01, *13:14:01 = *13:11:01, *13:62 =
					*13:14:01, *13:44 = *13:44, *13:62
+--+-----	+-----	+-----	+--+-----	-----	*13:14:01, *13:60 = *13:60, *13:62
+--+-----	+-----	-----	+--+-----	-----	*13:14:01, *13:25 = *13:25, *13:62
+--+-----	+-----	+-----	+--+-----	-----	*13:14:01, *13:47 = *13:47, *13:62
+--+-----	+-----	+-----	+--+-----	-----	*13:07:01, *13:47 = *13:47, *13:47
+--+-----	+-----	-----	+--+-----	-----	*13:07:01, *13:14:01 = *13:07:01, *13:62
+--+-----	+-----	+-----	+--+-----	-----	*13:14:01, *13:86 = *13:62, *13:86
+--+-----	+-----	+-----	+--+-----	-----	*13:14:01, *13:100 = *13:46, *13:100 = *13:62,
					*13:100 = *13:100, *13:100
+--+-----	+-----	+-----	+--+-----	-----	*13:14:01, *13:46 = *13:46, *13:46 = *13:46, *13:62
+--+-----	+-----	-----	+--+-----	-----	*13:14:01, *13:14:01 = *13:14:01, *13:62
+--+-----	+-----	-----	+--+-----	-----	*13:11:01, *13:11:01 = *13:11:01, *13:44
+--+-----	+-----	+-----	+--+-----	-----	*13:20, *13:54 = *13:54, *13:78
+--+-----	+-----	+-----	+--+-----	-----	*13:24, *13:54 = *13:54, *13:54
+-----	+-----	+-----	+-----	-----	*13:20, *13:103 = *13:71, *13:103
+-----	+-----	+-----	+-----	-----	*13:20, *13:71 = *13:71, *13:71
+-----	+-----	+-----	+-----	-----	*13:20, *13:78 = *13:78, *13:78

\*13:01:01 = \*13:01:01-13:01:02 and 13:01:04-13:01:08

\*13:02:01 = \*13:02:01 and 13:02:03-13:02:04

\*13:03:01 = \*13:03:01-13:03:06

\*13:05:01 = \*13:05:01-13:05:02

\*13:07:01 = \*13:07:01-13:07:02

\*13:11:01 = \*13:11:01-13:11:02

\*13:14:01 = \*13:14:01-13:14:03

\*13:21:01 = \*13:21:01-13:21:02

\*13:33:02 = \*13:33:02-13:33:03

\*13:50:01 = \*13:50:01-13:50:02

\*13:66:01 = \*13:66:01-13:66:02

\*13:92 = \*13:92 and 13:98

**SPECIFICITY TABLE****DRB1\*13 SSP subtyping**

Specificities and sizes of the PCR products of the 40 primer mixes used for DRB1\*13 SSP subtyping

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of contr. band <sup>2</sup>	Amplified DRB1*13 alleles <sup>3</sup>	Other amplified DRB alleles <sup>3,4</sup>
<b>1</b>	175 bp	<b>515 bp</b>	*13:01:01-13:16, 13:18-13:42, 13:44, 13:46-13:66:02, 13:68- 13:102	*03:01:01:01-03:01:05, 03:01:07-03:01:08, 03:02:01- 03:07, 03:09, 03:11:01-03:41, 03:43-03:45, 03:47-03:58, 08:20, 14:02-14:03:02, 14:05:01-14:06:02, 14:09, 14:12:01-14:14, 14:17-14:21, 14:23:01, 14:23:02 <sup>w</sup> , 14:23:03- 14:24, 14:27, 14:29-14:30, 14:33, 14:36-14:37, 14:40- 14:45, 14:47-14:48, 14:51, 14:56, 14:59, 14:63-14:65, 14:67, 14:77-14:78, 14:80- 14:81, 14:83-14:85, 14:89, 14:91, 14:94-14:96, 14:98, 14:100, <b>DRB3*01:14</b>
<b>2<sup>5</sup></b>	200 bp	430 bp	*13:01:01-13:04, 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, 13:74 <sup>w</sup> , 13:76-13:77, 13:79-13:85, 13:87, 13:89-13:99, 13:101- 13:102	*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, 11:82, 11:86, 11:98, 14:16, 14:24, 14:37, 14:63, 14:67, 14:78
<b>3</b>	200 bp	430 bp	*13:05:01-13:05:02, 13:07:01-13:07:02, 13:11:01-13:11:02, 13:14:01-13:14:03, 13:18, 13:21:01- 13:21:02, 13:24, 13:26, 13:42, 13:46-	*08:20, 11:01:01-11:01:12, 11:03-11:04:06, 11:06:01- 11:06:02, 11:09-11:12:02, 11:15, 11:23-11:25, 11:27:01- 11:29, 11:32-11:33, 11:35, 11:37-11:41, 11:43-11:44, 11:46-11:47, 11:49-11:51,

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			13:47, 13:49-13:50:02, 13:54-13:55, 13:62- 13:63, 13:75, 13:100	11:54:01-11:56, 11:58:01-11:63, 11:66, 11:72, 11:74-11:78, 11:80-11:81, 11:83-11:85, 11:87-11:88, 11:90-11:97, 14:22, 14:25, 14:27, 14:53
<b>4</b>	170 bp	430 bp	*13:03:01-13:04, 13:12-13:13, 13:21:01- 13:21:02, 13:30, 13:32-13:33:03, 13:38, 13:48-13:49, 13:55, 13:58, 13:65-13:66:02, 13:75, 13:81, 13:88- 13:90, 13:93-13:95, 13:101	*03:12, 14:13, 14:63, 14:65, 14:78, 14:85
<b>5</b>	220 bp	430 bp	*13:03:01-13:03:06, 13:05:01-13:07:02, 13:10-13:14:03, 13:18, 13:21:01-13:21:02, 13:25-13:26, 13:30, 13:33:01-13:33:03, 13:37, 13:42, 13:44, 13:46-13:47, 13:49- 13:50:02, 13:55-13:56, 13:58, 13:60, 13:62, 13:66:01-13:66:02, 13:77, 13:81-13:82, 13:85-13:86, 13:88- 13:90, 13:94-13:95, 13:100-13:101	*08:20, 11:01:01-11:01:12, 11:04:01-11:04:06, 11:06:01- 11:06:02, 11:08:01-11:10:02, 11:12:01-11:13:02, 11:15, 11:17-11:19:02, 11:23-11:29, 11:31-11:35, 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, 11:72-11:75, 11:77-11:81, 11:83-11:84, 11:87-11:97, 14:01:01-14:03:02, 14:05:01- 14:09, 14:12:01-14:14, 14:17- 14:23:03, 14:25-14:27, 14:29- 14:30, 14:32:01-14:36, 14:38- 14:45, 14:47-14:49, 14:51, 14:53-14:55, 14:58-14:60, 14:62-14:65, 14:67, 14:69- 14:70, 14:72, 14:74-14:75, 14:77-14:78, 14:80-14:86, 14:88-14:92N, 14:94-14:97, 14:99-14:100
<b>6</b>	215 bp	<b>515 bp</b>	*13:01:01-13:02:04, 13:04, 13:08-13:09, 13:15-13:16, 13:19- 13:20, 13:22-13:24, 13:27-13:29, 13:31- 13:32, 13:34-13:36, 13:38-13:41, 13:43, 13:45, 13:48, 13:51- 13:54, 13:57, 13:59, 13:61, 13:63-13:65, 13:68-13:76, 13:78- 13:80, 13:83-13:84,	*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, 11:82, 11:85-11:86, 14:16, 14:24, 14:37

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			13:87, 13:91-13:93, 13:96-13:99, 13:102	
<b>7</b>	200 bp	430 bp	*13:02:01-13:02:04, 13:05:01-13:05:02, 13:26, 13:29, 13:31, 13:34, 13:36, 13:39, 13:41, 13:50:01- 13:50:02, 13:56, 13:63, 13:65, 13:67, 13:73-13:74, 13:85, 13:96, 13:99, 13:103	*03:02:01-03:02:02, 03:05:01- 03:05:03, 03:09, 03:14, 03:27, 03:29, 03:38, 03:53, 04:77, 11:09, 11:20, 11:28:01- 11:28:02, 11:87, 14:02- 14:03:02, 14:09, 14:13, 14:19, 14:24, 14:27, 14:30, 14:46- 14:48, 14:51, 14:63, 14:67, 14:85, 14:89, 14:98, 16:08, <b>DRB3*01:08, DRB3*02:06, DRB3*02:20</b>
<b>8</b>	190 bp	430 bp	*13:01:01-13:01:08, 13:06, 13:09-13:10, 13:15, 13:18, 13:20, 13:27-13:28, 13:32, 13:35, 13:40, 13:42- 13:43, 13:51, 13:53, 13:59, 13:61, 13:69, 13:71, 13:77-13:80, 13:87, 13:91-13:93, 13:98, 13:102	*03:01:01:01-03:01:09, 03:03, 03:06-03:08, 03:10-03:13:02, 03:15-03:16, 03:18-03:20, 03:22-03:24, 03:26, 03:28, 03:32-03:34, 03:36-03:37, 03:39, 03:42, 03:45-03:48, 03:50-03:51, 03:54-03:56, 03:58, 11:16, 11:40, 11:58:01, 11:59, 11:83, 14:06:01- 14:06:02, 14:12:01-14:12:02, 14:17-14:18, 14:21, 14:29, 14:33, 14:52, 14:59, 14:64, 14:78, 14:80-14:81, 14:83, 14:95, 15:32
<b>9</b>	270 bp	430 bp	*13:02:01-13:03:06, 13:05:01-13:05:02, 13:07:01-13:07:02, 13:12-13:14:03, 13:21:01-13:21:02, 13:23, 13:25-13:26, 13:29-13:31, 13:33:01- 13:34, 13:36-13:39, 13:41, 13:45-13:47, 13:49-13:50:02, 13:55- 13:56, 13:60, 13:62- 13:63, 13:65-13:66:02, 13:73-13:74, 13:82, 13:85-13:86, 13:88, 13:90, 13:95-13:97, 13:99-13:101	*03:02:01-03:02:02, 03:05:01- 03:05:03, 03:09, 03:14, 03:17, 03:27, 03:29, 03:35, 03:38, 03:40-03:41, 03:53, 11:01:01- 11:01:12, 11:08:01-11:12:02, 11:14:01-11:15, 11:19:01-11:20, 11:23-11:24, 11:26-11:29, 11:31-11:33, 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, 11:93-11:97, 14:02- 14:03:02, 14:07:01-14:07:02, 14:09, 14:13-14:14, 14:19, 14:22, 14:24-14:25, 14:27, 14:30, 14:36, 14:40-14:42, 14:44:01-14:44:02, 14:47-14:49, 14:51, 14:53, 14:63, 14:67,

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				14:69, 14:77, 14:85, 14:89, 14:94, 14:98, <b>DRB3*01:14</b>
<b>10</b>	260 bp	430 bp	*13:01:01-13:01:08, 13:04, 13:06, 13:08- 13:11:02, 13:15, 13:18-13:20, 13:22, 13:24, 13:27-13:28, 13:32, 13:35, 13:40, 13:42-13:44, 13:48, 13:51-13:54, 13:57- 13:59, 13:61, 13:64, 13:68-13:72, 13:75- 13:81, 13:83-13:84, 13:87, 13:89, 13:91- 13:94, 13:98, 13:102	*03:01:01:01-03:01:09, 03:03- 03:04, 03:06-03:08, 03:10- 03:13:02, 03:15-03:16, 03:18- 03:26, 03:28, 03:30-03:34, 03:36-03:37, 03:39, 03:43- 03:52, 03:54-03:56, 03:58, 08:20, 11:02:01-11:04:06, 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, 11:70, 11:76-11:78, 11:83- 11:85, 11:88-11:89, 11:92, 11:98, 14:01:01-14:01:03, 14:05:01-14:06:02, 14:08, 14:12:01-14:12:02, 14:16-14:18, 14:20-14:21, 14:23:01-14:23:03, 14:26, 14:29, 14:32:01-14:35, 14:37-14:39, 14:43, 14:45, 14:54-14:56, 14:58-14:60, 14:62, 14:64-14:65, 14:70, 14:72, 14:74-14:75, 14:78, 14:80-14:84, 14:86-14:88, 14:90-14:92N, 14:95-14:97, 14:99-14:100
<b>11</b>	205 bp	430 bp	*13:09, 13:20, 13:25, 13:29, 13:43, 13:56, 13:60, 13:71, 13:78, 13:88	*11:08:01-11:08:02, 11:36, 11:42, 11:57, 11:64, 11:68- 11:69, 11:82, 14:03:01- 14:03:02, 14:12:01-14:12:02, 14:24, 14:37, 14:40, 14:69, 14:74, 14:77, 14:84-14:85, 14:98
<b>12</b>	215 bp	430 bp	*13:01:01-13:04, 13:08, 13:10, 13:15- 13:16, 13:19-13:20, 13:22-13:24, 13:26- 13:29, 13:31-13:41, 13:43, 13:45, 13:48, 13:51-13:54, 13:57, 13:59-13:61, 13:63- 13:66:02, 13:68-13:81, 13:83-13:85, 13:87- 13:99, 13:101-13:102	*11:01:03, 11:01:10-11:01:11, 11:02:01-11:03, 11:11:01- 11:11:02, 11:14:01-11:14:02, 11:16, 11:19:02-11:21, 11:36, 11:40-11:41, 11:48, 11:59, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:73, 11:76, 11:79, 11:85-11:86, 11:93, 14:16, 14:19, 14:21

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<b>13</b>	145 bp	<b>515 bp</b>	*13:03:01-13:03:06, 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, 13:101	*03:02:01-03:03, 03:06, 03:17, 03:26-03:27, 03:31, 03:35, 03:38, 03:41, 08:20, 11:17, 11:37, 11:41, 11:48, 11:50, 11:52, 11:56, 11:83, 14:01:01- 14:03:01, 14:05:01-14:09, 14:12:01-14:14, 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- 14:100, <b>DRB3*01:14</b>
<b>14</b>	150 bp	430 bp	*13:04, 13:08, 13:17, 13:19, 13:22-13:24, 13:38, 13:45, 13:48, 13:54, 13:57, 13:64, 13:69-13:70, 13:72, 13:75-13:76, 13:83	*04:02, 04:14, 04:37, 11:02:01- 11:03, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:21, 11:36, 11:41, 11:48, 11:63, 11:65:01-11:65:02, 11:68, 11:70, 11:76, 11:85-11:86, 14:16, 14:57, 15:10
<b>15<sup>6,9</sup></b>	85 bp, 235 bp	<b>515 bp</b>	*13:15, 13:19, 13:26, 13:33:01, 13:53, 13:57, 13:85-13:86, 13:94, 13:96	*03:01:01:01-03:01:01:02, 03:01:03-03:05:02, 03:06- 03:11:01, 03:12-03:13:01, 03:16, 03:18-03:23, 03:25- 03:34, 03:36-03:41, 03:43- 03:58, 11:07, 11:27:02, 14:02- 14:03:02, 14:06:01-14:06:02, 14:12:01-14:13, 14:18-14:20, 14:24, 14:27, 14:29, 14:40- 14:41, 14:47-14:49, 14:51, 14:63, 14:67, 14:77-14:78, 14:81, 14:83, 14:85, 14:89, 14:94, 14:98
<b>16</b>	150 bp	430 bp	*13:01:01-13:02:01, 13:02:03-13:02:04, 13:08, 13:15-13:16, 13:19-13:20, 13:27- 13:29, 13:31-13:32, 13:34-13:36, 13:39- 13:41, 13:43, 13:51- 13:53, 13:57, 13:59, 13:61, 13:63-13:65, 13:67-13:69, 13:71- 13:74, 13:76, 13:78- 13:80, 13:83-13:84,	*11:16, 11:20, 11:40, 11:59, 14:16, 14:57, 15:10

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			13:87, 13:91-13:93, 13:96-13:99, 13:102- 13:103	
<b>17<sup>10</sup></b>	220 bp, 255 bp	430 bp	*13:02:02, 13:26, 13:28, 13:60, 13:77	*11:01:03, 11:01:10-11:01:11, 11:19:02
<b>18<sup>6,11</sup></b>	110 bp, 230 bp	430 bp	*13:13, 13:18, 13:33:02-13:33:03, 13:47, 13:55, 13:61, 13:87	*03:01:02, 03:02:02, 03:05:03, 03:11:02, 03:13:02, 03:17, 03:24, 03:27, 03:35, 08:20, 11:23, 11:25, 11:27:01, 11:45, 11:55, 11:64, 11:84, 14:03:01- 14:03:02, 14:12:01-14:12:02, 14:27, 14:38, 14:40, 14:47, 14:55, 14:63, 14:67, 14:77- 14:78, 14:84-14:85, 14:89, 14:98, <b>DRB3*01:14</b>
<b>19<sup>6,12</sup></b>	110 bp, 205 bp, 260 bp	430 bp	*13:16, 13:74, 13:87	*11:86
<b>20<sup>13</sup></b>	180 bp 205 bp, 225 bp,	<b>515 bp</b>	*13:17, 13:67, 13:73	*08:40
<b>21<sup>7,14</sup></b>	175 bp, 220 bp	430 bp	*13:27, 13:41, 13:71, 13:103	*11:59
<b>22<sup>6,8,15</sup></b>	110 bp, 175 bp	430 bp	*13:31, 13:46, 13:54, 13:68, 13:77, 13:100	*03:38, 11:24, 14:48, <b>DRB3*01:14</b>
<b>23<sup>6,16</sup></b>	115 bp, 235 bp, 255 bp	430 bp	*13:01:03, 13:28, 13:34, 13:64, 13:76	*03:43, 11:01:05, 11:01:10, 11:04:03, 11:06:02, 11:13:01- 11:13:02, 11:17, 11:52, 11:54:01, 11:76, 14:01:01, 14:01:03, 14:05:01-14:05:02, 14:07:01-14:08, 14:14, 14:18, 14:23:01-14:23:03, 14:26, 14:32:02, 14:34-14:36, 14:39, 14:41-14:44:01, 14:45, 14:54- 14:56, 14:58-14:60, 14:62, 14:64-14:65, 14:70, 14:72, 14:77, 14:82, 14:86-14:88, 14:90-14:92N, 14:95-14:97, 14:99-14:100, <b>DRB3*01:14</b>
<b>24<sup>17</sup></b>	145 bp, 180 bp	430 bp	*13:35, 13:39, 13:54, 13:77-13:79, 13:100	*03:13:01-03:13:02, 03:38, 14:48, 14:64, <b>DRB3*01:14</b>
<b>25<sup>6</sup></b>	110 bp	430 bp	*13:03:01-13:04, 13:07:01-13:08, 13:11:01-13:14:03, 13:19, 13:21:01-13:25,	*03:04, 03:17, 03:21, 03:25, 03:30-03:31, 03:35, 03:40- 03:41, 03:49, 08:20, 11:01:01- 11:04:06, 11:06:01-11:08:02,

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			13:30, 13:33:01-13:33:03, 13:37-13:38, 13:44-13:49, 13:52, 13:54-13:55, 13:57-13:58, 13:60, 13:66:01-13:66:02, 13:70, 13:72, 13:75-13:76, 13:81-13:84, 13:86, 13:88-13:90, 13:94-13:95, 13:97, 13:100-13:101	11:10:01-11:14:02, 11:17-11:19:02, 11:21, 11:23, 11:25-11:27:02, 11:29, 11:31-11:39, 11:41-11:43, 11:45-11:48, 11:51-11:57, 11:60-11:66, 11:68-11:70, 11:72-11:75, 11:77-11:82, 11:84, 11:86, 11:88-11:98, 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, 14:25-14:26, 14:32:01-14:32:02, 14:34-14:40, 14:42-14:45, 14:49, 14:53-14:56, 14:58, 14:60, 14:62, 14:65, 14:69-14:70, 14:72, 14:74-14:75, 14:82, 14:84, 14:86-14:88, 14:90-14:92N, 14:94, 14:96, 14:99-14:100
<b>26</b>	145 bp	430 bp	*13:05:01-13:05:02, 13:18, 13:42, 13:63	*08:09, 08:21, 11:09-11:10:02, 11:40, 11:46, 11:59, 11:62, 11:80, 11:83, 11:87, 14:15, 14:22, 14:73
<b>27</b>	145 bp	<b>515 bp</b>	*13:01:01-13:02:04, 13:04-13:06, 13:09-13:11:02, 13:14:01-13:16, 13:18, 13:20-13:25, 13:27-13:31, 13:34, 13:39, 13:41-13:46, 13:50:01-13:52, 13:54, 13:56-13:57, 13:59, 13:61-13:64, 13:66:01-13:66:02, 13:68-13:69, 13:71, 13:73-13:75, 13:77-13:80, 13:82-13:83, 13:86-13:87, 13:91-13:93, 13:96-13:100, 13:102	*03:01:01:01-03:01:09, 03:04-03:05:03, 03:07-03:16, 03:18-03:25, 03:28-03:30, 03:32-03:34, 03:36-03:37, 03:39-03:40, 03:43-03:52, 03:54-03:58, 11:01:01-11:01:06, 11:01:08-11:04:06, 11:06:01-11:16, 11:18-11:21, 11:23-11:29, 11:31-11:36, 11:38-11:40, 11:42-11:47, 11:49, 11:51, 11:53-11:55, 11:57-11:66, 11:68-11:70, 11:72-11:82, 11:84-11:87, 11:89-11:98, 14:17, 14:21, 14:30, 14:33, 14:35, 14:42, 14:53, 14:64-14:65, 14:72, 14:95
<b>28</b>	160 bp	430 bp	*13:01:01-13:01:08, 13:04, 13:06, 13:09-13:11:02, 13:15, 13:17-13:18, 13:20, 13:22, 13:24, 13:27-13:28, 13:35, 13:42-13:44, 13:51-13:52, 13:54, 13:57, 13:59, 13:61, 13:64, 13:68-13:69, 13:71, 13:75,	*03:01:01:01-03:01:09, 03:04, 03:07-03:08, 03:10-03:13:02, 03:15-03:16, 03:18-03:25, 03:28, 03:30, 03:32-03:34, 03:36-03:37, 03:39, 03:42-03:52, 03:54-03:56, 03:58, 04:42, 04:59, 08:28, 11:02:01-11:04:06, 11:06:01-11:07, 11:13:01-11:13:02, 11:16, 11:18, 11:21, 11:25, 11:34-



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			13:77-13:80, 13:83, 13:87, 13:91-13:93, 13:98, 13:102	11:36, 11:38, 11:40, 11:42- 11:44, 11:46-11:47, 11:54:01- 11:55, 11:57-11:60, 11:63, 11:65:01-11:65:02, 11:67, 11:70, 11:76-11:78, 11:84- 11:85, 11:89, 11:92, 11:98, 12:01:01-12:10, 12:12-12:15, 12:17-12:20, 12:23-12:26, 14:17, 14:21, 14:33, 14:35, 14:64-14:65, 14:72, 14:95, 15:01:01:01-15:01:12, 15:03:01:01-15:06, 15:09-15:10, 15:12-15:13, 15:16-15:18, 15:20-15:25, 15:28, 15:32- 15:33, 15:35-15:37, 15:40- 15:43, 15:45-15:46, 15:49-15:51
<b>29<sup>8</sup></b>	155 bp	430 bp	*13:15, 13:19, 13:53, 13:57, 13:85	*08:32, 12:01:01-12:01:03, 12:03:02-12:06, 12:08-12:11, 12:14, 12:17, 12:22, 12:24N- 12:25, 14:63, 14:67, 14:78
<b>30<sup>6,7</sup></b>	85 bp	<b>515 bp</b>	*13:01:01-13:01:08, 13:04, 13:08, 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, 13:102	*04:02, 04:37, 11:02:01-11:03, 11:16, 11:21, 11:36, 11:40- 11:41, 11:48, 11:55, 11:59, 11:63, 11:65:01-11:65:02, 11:70, 11:76, 11:85, 14:16, 14:57, 15:10
<b>31<sup>18</sup></b>	175 bp, 205 bp	430 bp	*13:59, 13:72	
<b>32</b>	220 bp	430 bp	*13:02:02, 13:03:01- 13:03:06, 13:10, 13:26, 13:33:01- 13:33:03, 13:37, 13:60, 13:66:01- 13:66:02, 13:77, 13:81, 13:85, 13:88- 13:90, 13:94-13:95, 13:101	*11:01:03, 11:01:10-11:01:11, 11:19:02, 11:73, 11:79, 11:93, 14:19, 14:21
<b>33<sup>6</sup></b>	80 bp	430 bp	*13:43, 13:45	*03:10, 11:31, 11:96, 14:35, 14:53, 14:72

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<b>34</b> <sup>19</sup>	145 bp, 255 bp	430 bp	*13:58, 13:80-13:81	*03:16, 03:20, 11:06:01- 11:06:02, 11:21, 11:47, 11:57, 14:29, 14:99
<b>35</b>	150 bp	430 bp	*13:51	
<b>36</b> <sup>6,20</sup>	75 bp, 170 bp, 260 bp	430 bp	*13:90, 13:92, 13:98	*14:26
<b>37</b> <sup>6</sup>	100 bp	<b>515 bp</b>	*13:32, 13:65, 13:93	*03:12, 14:13, 14:63, 14:78, 14:85
<b>38</b> <sup>6</sup>	70 bp	430 bp	*13:33:01, 13:94, 13:96	*03:19, 15:37
<b>39</b> <sup>6,21</sup>	80 bp, 130 bp	430 bp	*13:95, 13:102	
<b>40</b> <sup>6,22</sup>	90 bp, 120 bp, 155 bp	430 bp	*13:91, 13:99, 13:101	

<sup>1</sup>Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DRB1\*13 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.

<sup>2</sup>The 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\*13 subtyping.

In addition, wells number 6, 13, 15, 20, 27, 30 and 37 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.

<sup>3</sup>For 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.

The DRB1\*13:92 and 13:98 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

<sup>4</sup>Due to the sharing of sequence motifs within the DR52 group of DRB1 alleles, all DRB1\*03 alleles, as well as most DRB1\*11 and DRB1\*14 alleles are amplified by some of the DRB1\*13 primer mixes. In addition, six DRB1\*04 alleles, six DRB1\*08 alleles, the DRB1\*12 alleles, most DRB1\*15 allele, the DRB1\*16:08 will be amplified by one or a few DRB1\*13 primer mixes. In addition, the DRB3\*01:14 allele will be amplified by primer mixes 1, 9, 13, 18 and 22 to 24 and the DRB3\*01:08, DRB3\*02:06 and DRB3\*02:20 alleles will be amplified by primer mix 7.

<sup>5</sup>Primer mix 2 may faintly amplify the DRB1\*13:29 allele.

<sup>6</sup>Specific PCR fragments shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR bands.

<sup>7</sup>Primer mixes 21 and 30 may give rise to nonspecific amplifications.

<sup>8</sup>Primer mixes 22 and 29 have a tendency of giving rise to a primer oligomer artefact.

<sup>9</sup>Primer mix 15: 85 bp fragment in the DRB1\*13:15, 13:19, 13:26, 13:53, 13:57 and 13:85-13:86 and the DRB1\*03:02:02, 03:27, 03:53, 14:02-14:03:02, 14:06:01-14:06:02, 14:12:01-14:13, 14:18-14:20, 14:24, 14:27, 14:29, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:67, 14:77-14:78, 14:81, 14:83, 14:85, 14:89, 14:94 and 14:98 alleles. 235 bp fragment in the DRB1\*13:33:01, 13:94, 13:96, 03:01:01:01-03:01:01:02, 03:01:03-03:01:09, 03:04-03:05:02, 03:06-03:11:01, 03:12-03:13:01, 03:16, 03:18-03:23, 03:25-03:26, 03:28, 03:30-03:34, 03:36-03:37, 03:39-03:41, 03:43-03:58, 11:07, 11:27:02 alleles. 85 and 235 bp fragments in DRB1\*03:02:01, 03:03 and 03:29, 03:38 alleles. Both specific PCR fragments may not be visible.

<sup>10</sup>Primer mix 17: 220 bp fragment in the DRB1\*13:02:02, 13:26, 13:60 and 13:77 and in the DRB1\*11:01:03, 11:01:10-11:01:11 and 11:19:02 alleles. 255 bp fragment in the DRB1\*13:28 allele.

<sup>11</sup>Primer mix 18: 110 bp fragment in the DRB1\*13:87 allele. 230 bp fragment in the DRB1\*13:13, 13:18, 13:33:02-13:33:03, 13:47, 13:55 and 13:61 and in the DRB1\* 03:01:02, 03:02:02, 03:05:03, 03:11:02, 03:13:02, 03:17, 03:24, 03:27, 03:35, 08:20, 11:23, 11:25, 11:27:01, 11:45, 11:55, 11:64, 11:84, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:27, 14:38, 14:40, 14:47, 14:55, 14:63, 14:67, 14:77-14:78, 14:84-14:85, 14:89 and 14:98 and in the DRB3\*01:14 alleles.

<sup>12</sup>Primer mix 19: 110 bp fragment in the DRB1\*13:87 allele. 205 bp fragment in the DRB1\*13:74 allele. 260 bp fragment in the DRB1\*13:16 and in the DRB1\*11:86 alleles.

<sup>13</sup>Primer mix 20: 180 bp fragment in the DRB1\*13:73 allele. 205 bp fragment in the DRB1\*13:17 and in the DRB1\*08:40 alleles. 225 bp fragment in the DRB1\*13:67 allele.

<sup>14</sup>Primer mix 21: 175 bp fragment in the DRB1\*13:27, 13:41 and 13:71 and the DRB1\*11:59 alleles. 220 bp fragment in the DRB1\*13:103 allele.

<sup>15</sup>Primer mix 22: 110 bp fragment in the DRB1\*13:68 and the 11:24 alleles. 175 bp fragment in the DRB1\*13:31, 13:46, 13:54, 13:77 and 13:100 and the DRB1\*03:38 and 14:48 and in the DRB3\*01:14 alleles.

<sup>16</sup>Primer mix 23: 115 bp fragment in the DRB1\*13:34 and 13:64 and the DRB1\*03:43, 11:76, 14:41 and 14:77 and in the DRB3\*01:14 alleles. 235 bp fragment in the DRB1\*13:01:03 and 13:76 and the DRB1\*11:01:05, 11:01:10, 11:04:03, 11:06:02, 11:13:01-11:13:02, 11:17, 11:52, 11:54:01, 14:01:01, 14:01:03, 14:05:01-14:05:02, 14:07:01-14:08, 14:14, 14:18, 14:23:01-14:23:03, 14:26, 14:32:02, 14:34-14:36, 14:39, 14:42-14:44:01, 14:45, 14:54-14:56, 14:58-14:60, 14:62, 14:64-14:65, 14:70, 14:72, 14:82, 14:86-14:88, 14:90-14:92N, 14:95-14:97 and 14:99-14:100 alleles. 255 bp fragment in the DRB1\*13:28 allele.

<sup>17</sup>Primer mix 24: 145 bp fragment in the DRB1\*13:35 allele. 180 bp fragment in the DRB1\*13:39, 13:54, 13:77-13:79 and 13:100 and the DRB1\*03:13:01-03:13:02, 03:38, 14:48 and 14:64 and in the DRB3\*01:14 alleles.

<sup>18</sup>Primer mix 31: Specific PCR fragment of 175 bp in the DRB1\*13:59 allele. Specific PCR fragment of 205 bp in the DRB1\*13:72 allele.

<sup>19</sup>Primer mix 34: Specific PCR fragment of 145 bp in the DRB1\*13:80 and the DRB1\*03:16 alleles. Specific PCR fragment of 255 bp in the DRB1\*13:58 and 13:81 and the DRB1\*03:20, 11:06:01-11:06:02, 11:21, 11:47, 11:57, 14:29 and 14:99 alleles.

<sup>20</sup>Primer mix 36: Specific PCR fragment of 75 bp in the DRB1\*13:92 and the DRB1\*14:26 alleles. Specific PCR fragment of 170 bp in the DRB1\*13:90 allele. Specific PCR fragment of 260 bp in the DRB1\*13:98 allele.

<sup>21</sup>Primer mix 39: Specific PCR fragment of 80 bp in the DRB1\*13:102 allele. Specific PCR fragment of 130 bp in the DRB1\*13:95 allele.

<sup>22</sup>Primer mix 40: Specific PCR fragment of 90 bp in the DRB1\*13:101 allele. Specific PCR fragment of 120 bp in the DRB1\*13:91 allele. Specific PCR fragment of 155 bp in the DRB1\*13:99 allele.

'w', may be weakly amplified.





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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	110	110	180	220	175	110	115	145		
PCR product(s)															235		255	230	260	205	225	205	180	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
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*13:01:03	1	2				6		8		10		12				16									23		
*13:02:01, 13:02:03- 13:02:04	1	2				6	7		9			12				16											
*13:02:02	1	2				6	7		9			12					17										
*13:03:01-13:03:06	1	2		4	5				9			12	13														
*13:04	1	2		4		6				10		12		14													
*13:05:01-13:05:02	1		3		5		7		9																		
*13:06	1	2			5			8		10																	
*13:07:01-13:07:02	1		3		5				9				13														
*13:08	1	2				6				10		12	13	14		16											
*13:09	1	2				6		8		10	11																
*13:10	1	2			5			8		10		12															
*13:11:01-13:11:02	1		3		5					10																	
*13:12	1	2		4	5				9				13														
*13:13	1	2		4	5				9				13					18									
*13:14:01-13:14:03	1		3		5				9																		
*13:15	1	2				6		8		10		12			15	16											
*13:16	1	2				6						12				16			19								
*13:17													14							20							
*13:18	1		3		5			8		10								18									
*13:19	1	2				6				10		12	13	14	15	16											
*13:20	1					6		8		10	11	12				16											
*13:21:01-13:21:02	1		3	4	5				9																		
*13:22	1	2				6				10		12		14													
*13:23	1	2				6			9			12		14													
*13:24	1		3			6				10		12		14													
*13:25	1				5				9		11																
*13:26	1		3		5		7		9			12	13		15		17										
*13:27	1	2				6		8		10		12				16							21				
*13:28	1	2				6		8		10		12				16	17							23			
*13:29	1					6	7		9		11	12				16											
*13:30	1	2		4	5				9																		
*13:31	1	2				6	7		9			12				16								22			
*13:32	1	2		4		6		8		10		12	13			16											
*13:33:01	1	2		4	5				9			12	13		15												
*13:33:02-13:33:03	1	2		4	5				9			12	13					18									
*13:34	1	2				6	7		9			12				16									23		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec.
						205			255		260			130	120	PCR product(s)
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
		27	28		30											*13:01:01-13:01:02, 13:01:04-13:01:08
		27	28		30											*13:01:03
		27														*13:02:01, 13:02:03- 13:02:04
		27					32									*13:02:02
25							32									*13:03:01-13:03:06
25		27	28		30											*13:04
	26	27														*13:05:01-13:05:02
		27	28													*13:06
25																*13:07:01-13:07:02
25					30											*13:08
		27	28													*13:09
		27	28		30		32									*13:10
25		27	28													*13:11:01-13:11:02
25																*13:12
25																*13:13
25		27														*13:14:01-13:14:03
		27	28	29	30											*13:15
		27														*13:16
			28		30											*13:17
	26	27	28													*13:18
25				29	30											*13:19
		27	28		30											*13:20
25		27														*13:21:01-13:21:02
25		27	28		30											*13:22
25		27														*13:23
25		27	28		30											*13:24
25		27														*13:25
							32									*13:26
		27	28		30											*13:27
		27	28		30											*13:28
		27														*13:29
25		27														*13:30
		27														*13:31
					30							37				*13:32
25							32						38			*13:33:01
25							32									*13:33:02-13:33:03
		27														*13:34
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	220	110	110	180	175	110	115	145
PCR product(s)															235		255	230	205	205	220	175	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*13:35	1	2				6		8		10		12				16								24	
*13:36	1	2				6	7		9			12	13			16									
*13:37	1	2			5				9			12	13												
*13:38	1	2		4		6			9			12	13	14											
*13:39	1	2				6	7		9			12				16								24	
*13:40	1	2				6		8		10		12	13			16									
*13:41	1	2				6	7		9			12				16					21				
*13:42	1		3		5			8		10															
*13:43						6		8		10	11	12				16									
*13:44	1				5					10															
*13:45		2				6			9			12		14											
*13:46	1		3		5				9													22			
*13:47	1		3		5				9				13				18								
*13:48	1	2		4		6				10		12	13	14											
*13:49	1		3	4	5				9				13												
*13:50:01-13:50:02	1		3		5		7		9																
*13:51	1	2				6		8		10		12				16									
*13:52	1	2				6				10		12				16									
*13:53	1	2				6		8		10		12	13		15	16									
*13:54	1		3			6				10		12		14								22		24	
*13:55	1		3	4	5				9				13				18								
*13:56	1				5		7		9		11														
*13:57	1	2				6				10		12		14	15	16									
*13:58	1	2		4	5					10			13												
*13:59	1	2				6		8		10		12				16									
*13:60	1				5				9		11	12	13				17								
*13:61	1	2				6		8		10		12				16		18							
*13:62	1		3		5				9																
*13:63	1		3			6	7		9			12				16									
*13:64	1	2				6				10		12		14		16								23	
*13:65	1	2		4		6	7		9			12	13			16									
*13:66:01-13:66:02	1	2		4	5				9			12													
*13:67							7									16			20						
*13:68	1	2				6				10		12				16						22			
*13:69	1	2				6		8		10		12		14		16									
*13:70	1	2				6				10		12	13	14											
*13:71	1					6		8		10	11	12				16					21				
*13:72	1	2				6				10		12	13	14		16									
*13:73	1	2				6	7		9			12				16			20						
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	



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Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec. PCR product(s)
					205				255		260			130	120	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
			28		30											*13:35
																*13:36
25							32									*13:37
25																*13:38
		27														*13:39
					30											*13:40
		27														*13:41
	26	27	28													*13:42
		27	28		30			33								*13:43
25		27	28													*13:44
25		27						33								*13:45
25		27														*13:46
25																*13:47
25					30											*13:48
25																*13:49
		27														*13:50:01-13:50:02
		27	28		30					35						*13:51
25		27	28		30											*13:52
				29	30											*13:53
25		27	28		30											*13:54
25																*13:55
		27														*13:56
25		27	28	29	30											*13:57
25									34							*13:58
		27	28		30	31										*13:59
25							32									*13:60
		27	28		30											*13:61
		27														*13:62
	26	27														*13:63
		27	28		30											*13:64
												37				*13:65
25		27					32									*13:66:01-13:66:02
																*13:67
		27	28		30											*13:68
		27	28		30											*13:69
25					30											*13:70
		27	28		30											*13:71
25					30	31										*13:72
		27														*13:73
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

Lot No.: **55K**

Lot-specific information

www.olerup-ssp.com

Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	110	110	180	175	110	115	145	
PCR product(s)															235		255	230	260	205	205	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*13:74	1	w				6	7		9			12				16			19						
*13:75	1		3	4		6				10		12		14											
*13:76	1	2				6				10		12	13	14		16								23	
*13:77	1	2			5			8		10		12					17					22		24	
*13:78	1					6		8		10	11	12				16									24
*13:79	1	2				6		8		10		12				16									24
*13:80	1	2				6		8		10		12				16									
*13:81	1	2		4	5					10		12	13												
*13:82	1	2			5				9																
*13:83	1	2				6				10		12		14		16									
*13:84	1	2				6				10		12	13			16									
*13:85	1	2			5		7		9			12	13		15										
*13:86	1				5				9						15										
*13:87	1	2				6		8		10		12				16		18	19						
*13:88	1			4	5				9		11	12	13												
*13:89	1	2		4	5					10		12	13												
*13:90	1	2		4	5				9			12	13												
*13:91	1	2				6		8		10		12				16									
*13:92, 13:98 <sup>4</sup>	1	2				6		8		10		12				16									
*13:93	1	2		4		6		8		10		12				16									
*13:94	1	2		4	5					10		12	13		15										
*13:95	1	2		4	5				9			12	13												
*13:96	1	2				6	7		9			12			15	16									
*13:97	1	2				6			9			12				16									
*13:99	1	2				6	7		9			12				16									
*13:100	1		3		5				9													22		24	
*13:101	1	2		4	5				9			12	13												
*13:102	1	2				6		8		10		12				16									
*13:103							7									16					21				
*03:01:01:01- 03:01:01:02, 03:01:03- 03:01:05, 03:01:07- 03:01:08, 03:07, 03:11:01, 03:18, 03:22- 03:23, 03:28, 03:32- 03:34, 03:36-03:37, 03:39, 03:45, 03:47- 03:48, 03:50-03:51, 03:54-03:56, 03:58	1							8		10					15										
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec. PCR product(s)
						205			255		260			130	120	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
		27														*13:74
25		27	28		30											*13:75
25					30											*13:76
		27	28				32									*13:77
		27	28		30											*13:78
		27	28		30											*13:79
		27	28		30			34								*13:80
25					30		32	34								*13:81
25	27															*13:82
25	27	28			30											*13:83
25					30											*13:84
				29			32									*13:85
25	27															*13:86
	27	28			30											*13:87
25							32									*13:88
25					30		32									*13:89
25							32			36						*13:90
	27	28			30									40		*13:91
	27	28			30					36						*13:92, 13:98 <sup>4</sup>
	27	28			30							37				*13:93
25					30		32						38			*13:94
25							32							39		*13:95
	27												38			*13:96
25	27															*13:97
	27														40	*13:99
25	27															*13:100
25							32								40	*13:101
	27	28			30									39		*13:102
																*13:103
		27	28													*03:01:01:01- 03:01:01:02, 03:01:03- 03:01:05, 03:01:07- 03:01:08, 03:07, 03:11:01, 03:18, 03:22- 03:23, 03:28, 03:32- 03:34, 03:36-03:37, 03:39, 03:45, 03:47- 03:48, 03:50-03:51, 03:54-03:56, 03:58
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

Lot No.: **55K**

Lot-specific information

www.olerup-ssp.com

Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	220	110	110	180	175	110	115	145
PCR product(s)															235		255	230	260	205	225	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*03:01:02, 03:11:02, 03:24	1							8		10								18							
*03:01:06, 03:01:09, 03:08, 03:46								8		10					15										
*03:02:01	1						7		9				13		15										
*03:02:02, 03:27	1						7		9				13		15			18							
*03:03, 03:06, 03:26	1							8		10			13		15										
*03:04, 03:21, 03:25, 03:30, 03:49	1									10					15										
*03:05:01-03:05:02, 03:09, 03:29	1						7		9						15										
*03:05:03	1						7		9									18							
*03:10								8		10					15										
*03:12	1			4				8		10					15										
*03:13:01	1							8		10					15										24
*03:13:02	1							8		10								18							24
*03:14	1						7		9																
*03:15	1							8		10															
*03:16, 03:20	1							8		10					15										
*03:17, 03:35	1								9				13					18							
*03:19	1							8		10					15										
*03:31	1									10			13		15										
*03:38	1						7		9				13		15							22			24
*03:40	1								9						15										
*03:41	1								9				13		15										
*03:42, 15:32								8																	
*03:43	1									10					15										23
*03:44, 03:52	1									10					15										
*03:53	1						7		9						15										
*03:57	1														15										
*04:02, 04:37															14										
*04:14															14										
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

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Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec. PCR product(s)
					205				255		260			130	120	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
		27	28													*03:01:02, 03:11:02, 03:24
		27	28													*03:01:06, 03:01:09, 03:08, 03:46
																*03:02:01
																*03:02:02, 03:27
25		27	28													*03:03, 03:06, 03:26 *03:04, 03:21, 03:25, 03:30, 03:49
		27														*03:05:01-03:05:02, 03:09, 03:29
		27														*03:05:03
		27	28					33								*03:10
		27	28									37				*03:12
		27	28													*03:13:01
		27	28													*03:13:02
		27														*03:14
		27	28													*03:15
		27	28					34								*03:16, 03:20
25																*03:17, 03:35
		27	28										38			*03:19
25																*03:31
																*03:38
25		27														*03:40
25																*03:41
			28													*03:42, 15:32
		27	28													*03:43
		27	28													*03:44, 03:52
																*03:53
		27														*03:57
					30											*04:02, 04:37
																*04:14
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

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Lot-specific information

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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	220	110	110	180	220	175	110	115	145
PCR product(s)															235		255	230	260	205	205	225	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
*04:42, 04:59, 08:28, 11:67, 12:02:01-12:02:05, 12:07, 12:12-12:13, 12:15, 12:18-12:20, 12:23, 12:26, 15:01:01:01-15:01:12, 15:03:01:01-15:06, 15:09, 15:12-15:13, 15:16-15:18, 15:20-15:25, 15:28, 15:33, 15:35-15:36, 15:40-15:43, 15:45-15:46, 15:49-15:51																										
*04:77, 14:46, 16:08, DRB3*01:08, DRB3*02:06, DRB3*02:20							7																			
*08:09, 08:21, 14:15, 14:73																										
*08:20	1		3		5				10				13				18									
*08:32, 12:11, 12:22																										
*08:40																					20					
*11:01:01-11:01:02, 11:01:04, 11:01:06, 11:01:08-11:01:09, 11:01:12, 11:12:01-11:12:02, 11:29, 11:32-11:33, 11:39, 11:61, 11:66, 11:72, 11:74-11:75, 11:81, 11:90-11:91, 11:94-11:95, 11:97			3		5				9																	
*11:01:03, 11:01:11			3		5				9		12						17									
*11:01:05			3		5				9																23	
*11:01:07			3		5				9																	
*11:01:10			3		5				9		12						17								23	
*11:02:01-11:02:02, 11:65:01-11:65:02, 11:70		2				6			10		12		14													
*11:03, 11:63			3			6			10		12		14													
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		

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Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec.
						205			255		170			130	120	PCR product(s)
											260				155	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
			28													*04:42, 04:59, 08:28, 11:67, 12:02:01- 12:02:05, 12:07, 12:12- 12:13, 12:15, 12:18- 12:20, 12:23, 12:26, 15:01:01:01-15:01:12, 15:03:01:01-15:06, 15:09, 15:12-15:13, 15:16-15:18, 15:20- 15:25, 15:28, 15:33, 15:35-15:36, 15:40- 15:43, 15:45-15:46, 15:49-15:51
																*04:77, 14:46, 16:08, DRB3*01:08, DRB3*02:06, DRB3*02:20
	26															*08:09, 08:21, 14:15, 14:73
25																*08:20
				29												*08:32, 12:11, 12:22 *08:40
25		27														*11:01:01-11:01:02, 11:01:04, 11:01:06, 11:01:08-11:01:09, 11:01:12, 11:12:01- 11:12:02, 11:29, 11:32- 11:33, 11:39, 11:61, 11:66, 11:72, 11:74- 11:75, 11:81, 11:90- 11:91, 11:94-11:95, 11:97
25	27						32									*11:01:03, 11:01:11
25	27															*11:01:05
25																*11:01:07
25	27						32									*11:01:10
25	27	28			30											*11:02:01-11:02:02, 11:65:01-11:65:02, 11:70
25	27	28			30											*11:03, 11:63
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

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Lot-specific information

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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	255	220	110	110	180	175	110	115	145
PCR product(s)															235		255	220	230	205	205	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*11:04:01-11:04:02, 11:04:04-11:04:06, 11:35, 11:38, 11:43, 11:54:02, 11:60, 11:77- 11:78, 11:92			3		5					10															
*11:04:03, 11:54:01			3		5					10														23	
*11:06:01, 11:47			3		5					10															
*11:06:02			3		5					10														23	
*11:07										10					15										
*11:08:01-11:08:02					5				9		11														
*11:09, 11:87			3		5		7		9																
*11:10:01-11:10:02, 11:62, 11:80			3		5				9																
*11:11:01-11:11:02			3		6				9		12		14												
*11:13:01-11:13:02					5					10														23	
*11:14:01-11:14:02		2			6				9		12		14												
*11:15, 11:49			3		5				9																
*11:16		2			6		8		10		12				16										
*11:17, 11:52, 14:01:01, 14:01:03, 14:08, 14:32:02, 14:34, 14:39, 14:54, 14:58, 14:60, 14:62, 14:70, 14:82, 14:86, 14:88, 14:90, 14:92N					5					10			13											23	
*11:18		2			5					10															
*11:19:01		2			5				9																
*11:19:02		2			5				9		12						17								
*11:20		2			6	7			9		12				16										
*11:21		2			6					10	12		14												
*11:23, 11:27:01			3		5				9									18							
*11:24			3		5				9														22		
*11:25, 11:84			3		5					10								18							
*11:26					5				9																
*11:27:02			3		5				9				15												
*11:28:01-11:28:02			3		5		7		9																
*11:31		2			5				9																
*11:34, 11:89					5					10															
*11:36					6					10	11	12	14												
*11:37, 14:25			3		5				9				13												
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	



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Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec.
						205			255		260			130	120	PCR product(s)
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
25		27	28													*11:04:01-11:04:02, 11:04:04-11:04:06, 11:35, 11:38, 11:43, 11:54:02, 11:60, 11:77- 11:78, 11:92
25		27	28													*11:04:03, 11:54:01
25		27	28						34							*11:06:01, 11:47
25		27	28						34							*11:06:02
25		27	28													*11:07
25		27														*11:08:01-11:08:02
	26	27														*11:09, 11:87
25	26	27														*11:10:01-11:10:02, 11:62, 11:80
25		27														*11:11:01-11:11:02
25		27	28													*11:13:01-11:13:02
25		27														*11:14:01-11:14:02
		27														*11:15, 11:49
		27	28		30											*11:16
25																*11:17, 11:52, 14:01:01, 14:01:03, 14:08, 14:32:02, 14:34, 14:39, 14:54, 14:58, 14:60, 14:62, 14:70, 14:82, 14:86, 14:88, 14:90, 14:92N
25		27	28													*11:18
25		27														*11:19:01
25		27					32									*11:19:02
		27														*11:20
25		27	28		30				34							*11:21
25		27														*11:23, 11:27:01
		27														*11:24
25		27	28													*11:25, 11:84
25		27														*11:26
25		27														*11:27:02
		27														*11:28:01-11:28:02
25		27						33								*11:31
25		27	28													*11:34, 11:89
25		27	28		30											*11:36
25																*11:37, 14:25
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

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Lot-specific information

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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	110	110	180	175	110	115	145	
PCR product(s)															235		255	230	260	205	205	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*11:40			3			6		8		10		12				16									
*11:41			3			6				10		12	13	14											
*11:42					5					10	11														
*11:44, 11:58:02			3		5					10															
*11:45		2			5				9									18							
*11:46			3		5					10															
*11:48		2				6				10		12	13	14											
*11:50			3		5					10			13												
*11:51			3						9																
*11:53									9																
*11:55			3		5	6				10								18							
*11:56			3		5					10			13												
*11:57					5					10	11														
*11:58:01			3		5			8		10															
*11:59			3			6		8		10		12				16						21			
*11:64					5				9		11							18							
*11:68						6			9		11	12	14												
*11:69						6			9		11														
*11:73		2			5				9			12													
*11:76			3		6					10		12	14											23	
*11:79					5				9			12													
*11:82		2				6			9		11														
*11:83			3		5			8		10			13												
*11:85			3		6					10		12	14												
*11:86		2				6						12	14					19							
*11:88			3		5					10															
*11:93			3		5				9			12													
*11:96, 14:53			3		5				9																
*11:98		2								10															
*12:01:01-12:01:03, 12:03:02-12:06, 12:08- 12:10, 12:14, 12:17, 12:24N-12:25																									
*14:01:02, 14:32:01, 14:75					5					10			13												
*14:02, 14:51	1				5		7		9				13		15										
*14:03:01	1				5		7		9		11		13		15			18							
*14:03:02	1				5		7		9		11				15			18							
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **55K**

Lot-specific information

www.olerup-ssp.com

110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec. PCR product(s)
						205			255		260			130	120	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
	26	27	28		30											*11:40
25					30											*11:41
25		27	28													*11:42
		27	28													*11:44, 11:58:02
25		27														*11:45
25	26	27	28													*11:46
25					30											*11:48
																*11:50
25		27														*11:51
25		27														*11:53
25		27	28		30											*11:55
25																*11:56
25		27	28						34							*11:57
		27	28													*11:58:01
	26	27	28		30											*11:59
25		27														*11:64
25		27														*11:68
25		27														*11:69
25		27					32									*11:73
		27	28		30											*11:76
25		27					32									*11:79
25		27														*11:82
	26															*11:83
		27	28		30											*11:85
25		27														*11:86
25																*11:88
25		27					32									*11:93
25		27						33								*11:96, 14:53
25		27	28													*11:98
			28	29												*12:01:01-12:01:03, 12:03:02-12:06, 12:08- 12:10, 12:14, 12:17, 12:24N-12:25
25																*14:01:02, 14:32:01, 14:75
																*14:02, 14:51
																*14:03:01
																*14:03:02
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

Lot No.: **55K**

Lot-specific information

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Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	220	110	110	180	220	175	110	115	145	
PCR product(s)															235		255	230	260	205	225	205	220	175	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	23	23	24
*14:05:01-14:05:02, 14:23:01, 14:23:03, 14:43, 14:45, 14:91, 14:96, 14:100	1				5					10			13												23		
*14:05:03	1				5					10			13														
*14:06:01-14:06:02, 14:81, 14:83	1				5			8		10			13		15												
*14:07:01-14:07:02					5				9				13												23		
*14:09	1				5		7		9				13														
*14:12:01-14:12:02	1				5			8		10	11		13		15			18									
*14:13	1			4	5		7		9				13		15												
*14:14, 14:36, 14:44:01	1				5				9				13												23		
*14:16		2				6				10		12	13	14		16											
*14:17, 14:33	1				5			8		10																	
*14:18	1				5			8		10			13		15										23		
*14:19	1				5		7		9			12	13		15												
*14:20	1				5					10			13		15												
*14:21	1				5			8		10		12															
*14:22			3		5				9				13														
*14:23:02	w				5					10			13												23		
*14:24	1	2				6	7		9		11		13		15												
*14:26					5					10			13												23		
*14:27	1		3		5		7		9				13		15			18									
*14:29	1				5			8		10			13		15												
*14:30	1				5		7		9																		
*14:35, 14:72					5					10															23		
*14:37	1	2				6				10	11		13														
*14:38					5					10			13					18									
*14:40	1				5				9		11		13		15			18									
*14:41	1				5				9				13		15										23		
*14:42	1				5				9																23		
*14:44:02	1				5				9				13														
*14:47, 14:89	1				5		7		9				13		15			18									
*14:48	1				5		7		9				13		15									22		24	
*14:49					5				9				13		15												
*14:52								8																			
*14:55					5					10			13					18							23		
*14:56	1									10			13												23		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	23	23	24

Lot No.: **55K**

Lot-specific information

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110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec.
						205			255		260			130	120	PCR product(s)
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
25																*14:05:01-14:05:02, 14:23:01, 14:23:03, 14:43, 14:45, 14:91, 14:96, 14:100
25																*14:05:03
																*14:06:01-14:06:02, 14:81, 14:83
25																*14:07:01-14:07:02
																*14:09
																*14:12:01-14:12:02
												37				*14:13
25																*14:14, 14:36, 14:44:01
25					30											*14:16
		27	28													*14:17, 14:33
																*14:18
							32									*14:19
25																*14:20
		27	28				32									*14:21
25	26															*14:22
25																*14:23:02
																*14:24
25											36					*14:26
																*14:27
									34							*14:29
		27														*14:30
25	27	28						33								*14:35, 14:72
25																*14:37
25																*14:38
25																*14:40
																*14:41
25		27														*14:42
25																*14:44:02
																*14:47, 14:89
																*14:48
25																*14:49
																*14:52
25																*14:55
25																*14:56
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

Length of spec.	175	200	200	170	220	215	200	190	270	260	205	215	145	150	85	150	220	110	110	180	175	110	115	145	
PCR product(s)															235		255	230	260	205	225	220	175	235	180
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*14:57														14		16									
*14:59	1				5			8		10			13											23	
*14:63	1	2		4	5		7		9				13		15			18							
*14:64	1				5			8		10														23	24
*14:65	1			4	5					10														23	
*14:67	1	2			5		7		9				13		15			18							
*14:69					5				9		11		13												
*14:74					5					10	11		13												
*14:77	1				5				9		11		13		15			18						23	
*14:78	1	2		4	5			8		10			13		15			18							
*14:80	1				5			8		10			13												
*14:84	1				5					10	11		13					18							
*14:85	1			4	5		7		9		11		13		15			18							
*14:87										10			13											23	
*14:94	1				5				9				13		15										
*14:95	1				5			8		10														23	
*14:97					5					10			13											23	
*14:98	1						7		9		11		13		15			18							
*14:99					5					10			13											23	
*15:10														14		16									
*15:37																									
<b>DRB3*01:14</b>	1								9				13					18					22	23	24
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

<sup>1</sup>The 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\*13 subtyping.

In addition, wells number 6, 13, 15, 20, 27, 30 and 37 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.

<sup>2</sup>The codon, in the 2<sup>nd</sup> exon, and in parenthesis the nucleotide, matching the specificity-determining 3'-end of the primer is given. Codon and nucleotide numbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>The codon, in the 2<sup>nd</sup> exon, and in parenthesis the nucleotide, 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

110	145	145	160	155	85	175	220	80	145	150	75	100	70	80	90	Length of spec. PCR product(s)
						205			255		170			130	120	
											260				155	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.
					30											*14:57
																*14:59
				29								37				*14:63
		27	28													*14:64
25		27	28													*14:65
				29												*14:67
25																*14:69
25																*14:74
																*14:77
				29								37				*14:78
																*14:80
25																*14:84
												37				*14:85
25																*14:87
25																*14:94
		27	28													*14:95
																*14:97
																*14:98
25									34							*14:99
			28		30											*15:10
			28										38			*15:37
																<b>DRB3*01:14</b>
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Well No.

<sup>4</sup>The DRB1\*13:92 and 13:98 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 36.

<sup>5</sup>Primer mix 15: 85 bp fragment in the DRB1\*13:15, 13:19, 13:26, 13:53, 13:57 and 13:85-13:86 and the DRB1\*03:02:02, 03:27, 03:53, 14:02-14:03:02, 14:06:01-14:06:02, 14:12:01-14:13, 14:18-14:20, 14:24, 14:27, 14:29, 14:40-14:41, 14:47-14:49, 14:51, 14:63, 14:67, 14:77-14:78, 14:81, 14:83, 14:85, 14:89, 14:94 and 14:98 alleles. 235 bp fragment in the DRB1\*13:33:01, 13:94, 13:96, 03:01:01:01-03:01:01:02, 03:01:03-03:01:09, 03:04-03:05:02, 03:06-03:11:01, 03:12-03:13:01, 03:16, 03:18-03:23, 03:25-03:26, 03:28, 03:30-03:34, 03:36-03:37, 03:39-03:41, 03:43-03:58, 11:07, 11:27:02 alleles. 85 and 235 bp fragments in DRB1\*03:02:01, 03:03 and 03:29, 03:38 alleles. Both specific PCR fragments may not be visible.

Primer mix 17: 220 bp fragment in the DRB1\*13:02:02, 13:26, 13:60 and 13:77 and in the DRB1\*11:01:03, 11:01:10-11:01:11 and 11:19:02 alleles. 255 bp fragment in the DRB1\*13:28 allele.

Primer mix 18: 110 bp fragment in the DRB1\*13:87 allele. 230 bp fragment in the DRB1\*13:13, 13:18, 13:33:02-13:33:03, 13:47, 13:55 and 13:61 and in the DRB1\* 03:01:02, 03:02:02, 03:05:03, 03:11:02, 03:13:02, 03:17, 03:24, 03:27, 03:35, 08:20, 11:23, 11:25, 11:27:01, 11:45, 11:55, 11:64, 11:84, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:27, 14:38, 14:40, 14:47, 14:55, 14:63, 14:67, 14:77-14:78, 14:84-14:85, 14:89 and 14:98 and in the DRB3\*01:14 alleles.

Primer mix 19: 110 bp fragment in the DRB1\*13:87 allele. 205 bp fragment in the DRB1\*13:74 allele. 260 bp fragment in the DRB1\*13:16 and in the DRB1\*11:86 alleles.

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Lot-specific information

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Primer mix 20: 180 bp fragment in the DRB1\*13:73 allele. 205 bp fragment in the DRB1\*13:17 and in the DRB1\*08:40 alleles. 225 bp fragment in the DRB1\*13:67 allele.

Primer mix 21: 175 bp fragment in the DRB1\*13:27, 13:41 and 13:71 and the DRB1\*11:59 alleles. 220 bp fragment in the DRB1\*13:103 allele.

Primer mix 22: 110 bp fragment in the DRB1\*13:68 and the 11:24 alleles. 175 bp fragment in the DRB1\*13:31, 13:46, 13:54, 13:77 and 13:100 and the DRB1\*03:38 and 14:48 and in the DRB3\*01:14 alleles.

Primer mix 23: 115 bp fragment in the DRB1\*13:34 and 13:64 and the DRB1\*03:43, 11:76, 14:41 and 14:77 and in the DRB3\*01:14 alleles. 235 bp fragment in the DRB1\*13:01:03 and 13:76 and the DRB1\*11:01:05, 11:01:10, 11:04:03, 11:06:02, 11:13:01-11:13:02, 11:17, 11:52, 11:54:01, 14:01:01, 14:01:03, 14:05:01-14:05:02, 14:07:01-14:08, 14:14, 14:18, 14:23:01-14:23:03, 14:26, 14:32:02, 14:34-14:36, 14:39, 14:42-14:44:01, 14:45, 14:54-14:56, 14:58-14:60, 14:62, 14:64-14:65, 14:70, 14:72, 14:82, 14:86-14:88, 14:90-14:92N, 14:95-14:97 and 14:99-14:100 alleles. 255 bp fragment in the DRB1\*13:28 allele.

Primer mix 24: 145 bp fragment in the DRB1\*13:35 allele. 180 bp fragment in the DRB1\*13:39, 13:54, 13:77-13:79 and 13:100 and the DRB1\*03:13:01-03:13:02, 03:38, 14:48 and 14:64 and in the DRB3\*01:14 alleles.

Primer mix 31: Specific PCR fragment of 175 bp in the DRB1\*13:59 allele. Specific PCR fragment of 205 bp in the DRB1\*13:72 allele.

Primer mix 34: Specific PCR fragment of 145 bp in the DRB1\*13:80 and the DRB1\*03:16 alleles. Specific PCR fragment of 255 bp in the DRB1\*13:58 and 13:81 and the DRB1\*03:20, 11:06:01-11:06:02, 11:21, 11:47, 11:57, 14:29 and 14:99 alleles.

Primer mix 36: Specific PCR fragment of 75 bp in the DRB1\*13:92 and the DRB1\*14:26 alleles. Specific PCR fragment of 170 bp in the DRB1\*13:90 allele. Specific PCR fragment of 260 bp in the DRB1\*13:98 allele.

Primer mix 39: Specific PCR fragment of 80 bp in the DRB1\*13:102 allele. Specific PCR fragment of 130 bp in the DRB1\*13:95 allele.

Primer mix 40: Specific PCR fragment of 90 bp in the DRB1\*13:101 allele. Specific PCR fragment of 120 bp in the DRB1\*13:91 allele. Specific PCR fragment of 155 bp in the DRB1\*13:99 allele.

'w', may be weakly amplified.



CELL LINE VALIDATION SHEET																					
DRB1*13 SSP subtyping kit																					
				Prod. No.:	Well																
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	IHWC cell line	DRB1			201077601	201077602	201077603	201077604	201077605	201077606	201077607	201077608	201077609	201077610	201077611	201077612	201077613	201077614	201077615	201077616	
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 PTOU	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*01:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*08:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*09:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*11:01			-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*13:01		+	+	-	-	-	+	-	+	-	+	-	+	-	-	+	+	+
18	9257 32367	*09:01	*11:01		-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
19	9038 BM16	*12:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*13:02			+	+	-	-	-	+	+	-	+	-	-	+	-	-	-	-	+
21	9064 AMALA	*14:02			+	-	-	-	+	-	+	-	+	-	-	-	+	-	+	-	+
22	9056 KOSE	*13:02	*14:54		+	+	-	-	+	+	+	-	+	+	-	+	+	-	-	+	+
23	9124 IHL	*08:03	*14:14		+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-
24	9035 JBUSH	*11:01			-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
25	9049 IBW9	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*03:01			+	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	-
27	9191 CH1007	*04:05	*10:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*04:16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*03:02			+	-	-	-	-	-	+	-	+	-	-	-	+	-	+	-	-
31	9019 DUCAF	*03:01			+	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	-
32	9297 HAG	*13:03			+	+	-	+	+	-	-	-	+	-	-	+	+	-	-	-	-
33	9098 MT14B	*04:04			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*11:01			-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
35	9302 SSTO	*04:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*04:03	*04:06		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*13:01			+	+	-	-	-	+	-	+	-	+	-	+	-	-	-	-	+
38	9099 LZL	*14:02			+	-	-	-	+	-	+	-	+	-	-	-	+	-	+	-	-
39	9315 CML	*03:01	*04:01		+	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	-
40	9134 WHONP199	*07:01	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301	*13:02			+	+	-	-	-	+	+	-	+	-	-	+	-	-	-	-	+
42	9066 TAB089	*08:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*09:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*14:01			-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-
45	9239 SHJO	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*15:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*11:04	*12:01		-	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
48	9303 TER-ND	*01:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET																				
DRB1*13 SSP subtyping kit																				
				Well																
				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
				Prod. No.:	201077617	201077618	201077619	201077620	201077621	201077622	201077623	201077624	201077625	201077626	201077627	201077628	201077629	201077630	201077631	201077632
	IHWC 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	*14:54	-	-	-	-	-	+	-	-	+	-	+	-	-	-	-	-
23	9124 IHL		*08:03	*14:14	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-
24	9035 JBUSH		*11:01		-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
25	9049 IBW9		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49		*03:01		-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
27	9191 CH1007		*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB		*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH		*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF		*03:01		-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
32	9297 HAG		*13:03		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+
33	9098 MT14B		*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF		*11:01		-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
35	9302 SSTO		*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17		*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB		*13:01		-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-
38	9099 LZL		*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML		*03:01	*04:01	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
40	9134 WHONP199		*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301		*13:02		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
42	9066 TAB089		*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526		*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM		*14:01		-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-
45	9239 SHJO		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU		*15:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
47	9045 TUBO		*11:04	*12:01	-	-	-	-	-	-	-	-	+	-	+	+	+	-	-	-
48	9303 TER-ND		*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET												
DRB1*13 SSP subtyping kit												
				Well								
				33	34	35	36	37	38	39	40	
				Prod. No.:	201077633	201077634	201077635	201077636	201077637	201077638	201077639	201077640
	IHWC 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	*14:54	-	-	-	-	-	-	-	-
23	9124 IHL		*08:03	*14:14	-	-	-	-	-	-	-	-
24	9035 JBUSH		*11:01		-	-	-	-	-	-	-	-
25	9049 IBW9		*07:01		-	-	-	-	-	-	-	-
26	9285 WT49		*03:01		-	-	-	-	-	-	-	-
27	9191 CH1007		*04:05	*10:01	-	-	-	-	-	-	-	-
28	9320 BEL5GB		*04:16	*07:01	-	-	-	-	-	-	-	-
29	9050 MOU		*07:01		-	-	-	-	-	-	-	-
30	9021 RSH		*03:02		-	-	-	-	-	-	-	-
31	9019 DUCAF		*03:01		-	-	-	-	-	-	-	-
32	9297 HAG		*13:03		-	-	-	-	-	-	-	-
33	9098 MT14B		*04:04		-	-	-	-	-	-	-	-
34	9104 DHIF		*11:01		-	-	-	-	-	-	-	-
35	9302 SSTO		*04:03		-	-	-	-	-	-	-	-
36	9024 KT17		*04:03	*04:06	-	-	-	-	-	-	-	-
37	9065 HHKB		*13:01		-	-	-	-	-	-	-	-
38	9099 LZL		*14:02		-	-	-	-	-	-	-	-
39	9315 CML		*03:01	*04:01	-	-	-	-	-	-	-	-
40	9134 WHONP199		*07:01	*09:01	-	-	-	-	-	-	-	-
41	9055 H0301		*13:02		-	-	-	-	-	-	-	-
42	9066 TAB089		*08:03		-	-	-	-	-	-	-	-
43	9076 T7526		*09:01		-	-	-	-	-	-	-	-
44	9057 TEM		*14:01		-	-	-	-	-	-	-	-
45	9239 SHJO		*07:01		-	-	-	-	-	-	-	-
46	9013 SCHU		*15:01		-	-	-	-	-	-	-	-
47	9045 TUBO		*11:04	*12:01	-	-	-	-	-	-	-	-
48	9303 TER-ND		*01:03		-	-	-	-	-	-	-	-

**CERTIFICATE OF ANALYSIS****Olerup SSP® DRB1\*13 SSP**

**Product number:** 101.116-24u/03u – without *Taq* pol.  
**Lot number:** 55K  
**Expiry date:** 2013-June-01  
**Number of tests:** 24 tests – Product No. 101.116-24u  
 3 tests – Product No. 101.116-03u  
**Number of wells per test:** 40

**Well specifications:**

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2010-776-01	17	2010-776-17	33	2010-776-33
2	2010-776-02	18	2010-776-18	34	2010-776-34
3	2010-776-03	19	2010-776-19	35	2010-776-35
4	2010-776-04	20	2010-776-20	36	2010-776-36
5	2010-776-05	21	2010-776-21	37	2010-776-37
6	2010-776-06	22	2010-776-22	38	2010-776-38
7	2010-776-07	23	2010-776-23	39	2010-776-39
8	2010-776-08	24	2010-776-24	40	2010-776-40
9	2010-776-09	25	2010-776-25		
10	2010-776-10	26	2010-776-26		
11	2010-776-11	27	2010-776-27		
12	2010-776-12	28	2010-776-28		
13	2010-776-13	29	2010-776-29		
14	2010-776-14	30	2010-776-30		
15	2010-776-15	31	2010-776-31		
16	2010-776-16	32	2010-776-32		

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

No DNAs carrying the alleles to be amplified by primer solutions 17, 19 to 21, 24, 31, 33 to 36 and 38 to 40 were available. The specificities of the primers in primer solution 17, 20, 21, 24, 31, 33, 34 and 38 were tested by separately adding one additional 5'-primer or one additional 3'-primer, respectively. In primer solutions 19, 35, 36, 39 and 40 it was only possible to test the 5'-primer, the 3'-primers were not possible to test. In primer solution 20, 21, 26 and 31 one of the 5'-primers was not possible to test. One of the 3'-primers in primer solutions 7, 9, 17, 18, 22 to 24, 27 and 34 was not possible to test.

Additional primers in primer solutions 2, 5, 6, 11, 12, 14, 18, 23 and 32 were tested by separately adding one 5'-primer and/or one 3'-primer.

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

**Date of approval:** 2011-October-24

**Approved by:**

**Quality Control, Supervisor**

Lot No.: **55K**

Lot-specific information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

## Declaration of Conformity

**Product name:** *Olerup* SSP® DRB1\*13**Product number:** 101.116-24u/03u**Lot number:** 55K**Intended use:** DRB1\*13 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-24

Ann-Cathrin Jareman  
Head of QA and Regulatory Affairs





Lot No.: **55K**

Lot-specific information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

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**Fax:** +46-8-717 88 18

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

**Distributed by:**

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**Tel:** +43-1-710 15 00

**Fax:** +43-1-710 15 00 10

**E-mail:** [support-at@olerup.com](mailto: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](mailto:info.us@olerup.com)

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

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