

Olerup SSP® DRB1*04

Product number: 101.114-24/03 – including *Taq* pol.
Lot number: 40M
Expiry date: 2014-February-01
Number of tests: 24 tests – Product No. 101.114-24
3 tests – Product No. 101.114-03
Number of wells per test: 45
Storage - pre-aliquoted primers: dark at -20°C
- PCR Master Mix: -20°C

This Product Description is only valid for Lot No. 40M.

CHANGES COMPARED TO THE PREVIOUS *OLERUP SSP*® DRB1*04 LOT

The DRB1*04 specificity and interpretation tables have been updated for the DRB1 alleles reported since the previous *Olerup SSP*® DRB1*04 lot (Lot No. 28K) was made.

One well has been added to the DRB1*04 kit,
well **45**.

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

Well	5'-primer	3'-primer	rationale
23	Moved	Moved	One primer pair moved to well 45.
45	New	New	Primer pair from well 23.

PRODUCT DESCRIPTION

DRB1*04 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1*04:01 to DRB1*04:89 alleles.

PLATE LAYOUT

Each test consists of 45 PCR reactions in a 48 well cut PCR plate. Wells 46 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
41	42	43	44	45	empty	empty	empty

The 48 well cut PCR plate is marked with 'DRB1*04' in silver/gray ink.

Well No. 1 is marked with the Lot No. '40M'.

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*04 subtypings will be influenced by four DRB1*01, several DRB1*03, six DRB1*08, most DRB1*09, fourteen DRB1*11, many DRB1*13, several DRB1*14 and the DRB1*15:12 allele when present on the other haplotype. In addition, many DRB3 alleles will be amplified by primer mix 24 and the DRB5*01:12 allele by primer mix 29.

UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DRB1*04 alleles, i.e. **DRB1*04:01 to DRB1*04:89**, recognized by the HLA Nomenclature Committee in April 2010¹ will give rise to unique amplification patterns by the primers in the DRB1*04 subtyping kit.

The DRB1*04 subtyping kit cannot distinguish the DRB1*04:01:01-04:01:06 alleles, the DRB1*04:03:01-04:03:05 alleles, the DRB1*04:04:01-04:04:04 alleles, the DRB1*04:05:01 and 04:05:03-04:05:10 alleles, the DRB1*04:06:01-04:06:03 alleles, the DRB1*04:07:01-04:07:04 alleles, the DRB1*04:08:01-04:08:02 alleles or the DRB1*04:17:01-04:17:02 alleles.

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

RESOLUTION IN HOMO- AND HETEROZYGOTES

A total of 132 alleles generate 90 amplification patterns that can be combined in 4095 homozygous and heterozygous combinations. 681 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.

+-----+	+-----+	-----	-+-----+	-----	-----	*04:06:01, *04:67 = *04:49, *04:67
+-----+	+-----+	-----	-+-----+	-----	-----	*04:03:01, *04:67 = *04:60, *04:67
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:88 = *04:38, *04:52
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:59 = *04:35, *04:52
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:27 = *04:52, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:52 = *04:03:01, *04:16 = *04:16, *04:52
+-----+	+-----+	-----	-+-----+	-----	-----	*04:35, *04:88 = *04:38, *04:59
+-----+	+-----+	-----	-+-----+	-----	-----	*04:27, *04:38 = *04:63, *04:88
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:88 = *04:03:01, *04:38
+-----+	+-----+	-----	-+-----+	-----	-----	*04:27, *04:35 = *04:59, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:59 = *04:03:01, *04:35 = *04:35, *04:59
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:27 = *04:03:01, *04:63 = *04:27, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:28 = *04:35, *04:84
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:45 = *04:26, *04:84
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:84 = *04:05:01, *04:21
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:02, *04:21 = *04:21, *04:84
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:13 = *04:05:02, *04:13
+-----+	+-----+	-----	-+-----+	-----	-----	*04:48, *04:67 = *04:67, *04:82
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:67 = *04:05:02, *04:67
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:16 = *04:05:02, *04:16
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:38 = *04:05:02, *04:38 = *04:29, *04:38 = *04:38, *04:48
+-----+	+-----+	-----	-+-----+	-----	-----	*04:26, *04:28 = *04:35, *04:45
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:28 = *04:05:01, *04:35 = *04:05:02, *04:35 = *04:28, *04:35
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:63 = *04:05:02, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:33 = *04:05:02, *04:33
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:45 = *04:05:01, *04:26 = *04:05:02, *04:26 = *04:26, *04:45
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:72:01 = *04:05:02, *04:72:01
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:76 = *04:05:02, *04:76
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:72:02 = *04:05:02, *04:72:02
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:05:01 = *04:01:01, *04:05:02
+-----+	+-----+	-----	-+-----+	-----	-----	*04:09, *04:48 = *04:09, *04:82
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:09 = *04:05:02, *04:09
+-----+	+-----+	-----	-+-----+	-----	-----	*04:05:01, *04:62 = *04:05:02, *04:62 = *04:62, *04:83
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:68 = *04:21, *04:23
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:56 = *04:38, *04:68
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:42 = *04:35, *04:68
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:40 = *04:63, *04:68
+-----+	+-----+	-----	-+-----+	-----	-----	*04:21, *04:44 = *04:68, *04:72:02
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:68 = *04:04:01, *04:21
+-----+	+-----+	-----	-+-----+	-----	-----	*04:19, *04:35 = *04:21, *04:43
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:19 = *04:08:01, *04:21
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:56 = *04:23, *04:38
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:42 = *04:23, *04:35
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:40 = *04:23, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:16, *04:44 = *04:23, *04:72:02
+-----+	+-----+	-----	-+-----+	-----	-----	*04:01:01, *04:23 = *04:04:01, *04:16 = *04:16, *04:23
+-----+	+-----+	-----	-+-----+	-----	-----	*04:18, *04:38 = *04:38, *04:58
+-----+	+-----+	-----	-+-----+	-----	-----	*04:35, *04:56 = *04:38, *04:42
+-----+	+-----+	-----	-+-----+	-----	-----	*04:38, *04:40 = *04:56, *04:63
+-----+	+-----+	-----	-+-----+	-----	-----	*04:38, *04:44 = *04:56, *04:72:02

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+-----+ +-----+ -----+ ------+ -----+ ----- *04:01:01, *04:56 = *04:04:01, *04:38
+-----+ +-----+ -----+ ------+ -----+ ----- *04:38, *04:53 = *04:38, *04:56
+-----+ +-----+ -+-----+ ------+ -----+ ----- *04:35, *04:40 = *04:42, *04:63
+-----+ +-----+ -+-----+ ------+ -----+ ----- *04:35, *04:44 = *04:42, *04:72:02
+-----+ +-----+ -+-----+ ------+ -----+ ----- *04:01:01, *04:42 = *04:04:01, *04:35 = *04:35,
*04:42
+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:40, *04:72:02 = *04:44, *04:63
+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:01:01, *04:40 = *04:04:01, *04:63 = *04:40,
*04:63
+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:01:01, *04:44 = *04:04:01, *04:72:02 =
*04:44, *04:72:02
+-----+ -+-----+ -----+ -+-----+ ------+ ----- *04:01:01, *04:22 = *04:22, *04:72:01
+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:01:01, *04:43 = *04:08:01, *04:35 = *04:35,
*04:43
+-----+ -+-----+ -----+ -+-----+ ------+ ----- *04:01:01, *04:16 = *04:16, *04:16
+-----+ -+-----+ -+-----+ -+-----+ ------+ ----- *04:01:01, *04:35 = *04:35, *04:35
+-----+ -+-----+ -+-----+ -+-----+ ------+ ----- *04:01:01, *04:63 = *04:63, *04:63
+-----+ -+-----+ -+-----+ -+-----+ ------+ ----- *04:01:01, *04:33 = *04:33, *04:33
+-----+ -+-----+ -----+ +-----+ ------+ ----- *04:01:01, *04:64 = *04:26, *04:64
+-----+ -+-----+ -----+ +-----+ ------+ ----- *04:01:01, *04:26 = *04:26, *04:26
+-----+ -+-----+ -----+ -+-----+ ------+ ----- *04:01:01, *04:72:01 = *04:72:01, *04:72:01
+-----+ -+-----+ -----+ -+-----+ ------+ +----- *04:01:01, *04:76 = *04:76, *04:76
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:01, *04:37 = *04:05:02, *04:37 = *04:29,
*04:37
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:01, *04:14 = *04:05:02, *04:14 = *04:14,
*04:48
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:37, *04:53 = *04:37, *04:56
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:02, *04:46 = *04:46, *04:84
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:24, *04:85 = *04:30, *04:78
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:05:01, *04:78 = *04:06:01, *04:24 = *04:24,
*04:78
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:05:02, *04:78 = *04:78, *04:84
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:02, *04:49 = *04:49, *04:84
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:01, *04:85 = *04:06:01, *04:30 = *04:30,
*04:85
-+-----+ +-----+ -----+ -+-----+ ------+ +----- *04:06:01, *04:77 = *04:41, *04:84
-+-----+ +-----+ -----+ -+-----+ -+-----+ ----- *04:05:02, *04:65 = *04:65, *04:84
-+-----+ +-----+ -----+ -+-----+ -+-----+ ----- *04:05:02, *04:85 = *04:84, *04:85
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:02, *04:06:01 = *04:06:01, *04:84
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:02, *04:20 = *04:20, *04:84
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:06:01, *04:10 = *04:10, *04:49
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:01, *04:52 = *04:05:02, *04:52
-+-----+ +-----+ -----+ -+-----+ ------+ ----- *04:05:01, *04:88 = *04:05:02, *04:88 = *04:29,
*04:88 = *04:48, *04:88
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:24, *04:59 = *04:28, *04:39
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:28, *04:51 = *04:59, *04:81N
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:03:01, *04:28 = *04:05:01, *04:59 =
*04:05:02, *04:59 = *04:28, *04:59
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:24, *04:51 = *04:39, *04:81N
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:03:01, *04:24 = *04:05:01, *04:39 =
*04:05:02, *04:39 = *04:24, *04:39
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:05:01, *04:27 = *04:05:02, *04:27
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:05:01, *04:50 = *04:05:02, *04:50
-+-----+ +-----+ -+-----+ -+-----+ ------+ ----- *04:05:01, *04:60 = *04:05:02, *04:60
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:03:01, *04:81N = *04:05:01, *04:51 =
*04:05:02, *04:51 = *04:51, *04:81N
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:05:01, *04:71 = *04:05:02, *04:71
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:03:01, *04:05:01 = *04:03:01, *04:05:02
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ +----- *04:05:01, *04:41 = *04:05:02, *04:41 = *04:41,
*04:77
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:11, *04:48 = *04:11, *04:82
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:05:01, *04:11 = *04:05:02, *04:11
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:05:01, *04:07:01 = *04:05:02, *04:07:01
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:17:01, *04:48 = *04:17:01, *04:82
-+-----+ +-----+ -+-----+ -+-----+ -+-----+ ----- *04:05:01, *04:69 = *04:05:02, *04:69 = *04:24,
*04:69 = *04:69, *04:83

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----	----	----	----	----	----	*04:05:01, *04:17:01 = *04:05:02, *04:17:01
----	----	----	----	----	----	*04:03:01, *04:10 = *04:10, *04:60
----	----	----	----	----	----	*04:06:01, *04:79 = *04:41, *04:68
----	----	----	----	----	----	*04:03:01, *04:43 = *04:08:01, *04:59 = *04:43, *04:59
----	----	----	----	----	----	*04:23, *04:88 = *04:52, *04:56
----	----	----	----	----	----	*04:23, *04:59 = *04:42, *04:52
----	----	----	----	----	----	*04:23, *04:27 = *04:40, *04:52
----	----	----	----	----	----	*04:23, *04:50 = *04:32, *04:52
----	----	----	----	----	----	*04:23, *04:51 = *04:52, *04:70
----	----	----	----	----	----	*04:03:01, *04:23 = *04:04:01, *04:52 = *04:23, *04:52
----	----	----	----	----	----	*04:42, *04:88 = *04:56, *04:59
----	----	----	----	----	----	*04:27, *04:56 = *04:40, *04:88
----	----	----	----	----	----	*04:32, *04:88 = *04:50, *04:56
----	----	----	----	----	----	*04:51, *04:56 = *04:70, *04:88
----	----	----	----	----	----	*04:03:01, *04:56 = *04:04:01, *04:88
----	----	----	----	----	----	*04:53, *04:88 = *04:56, *04:88
----	----	----	----	----	----	*04:27, *04:42 = *04:40, *04:59
----	----	----	----	----	----	*04:32, *04:59 = *04:42, *04:50
----	----	----	----	----	----	*04:42, *04:51 = *04:59, *04:70
----	----	----	----	----	----	*04:03:01, *04:42 = *04:04:01, *04:59 = *04:42, *04:59
----	----	----	----	----	----	*04:27, *04:32 = *04:40, *04:50
----	----	----	----	----	----	*04:27, *04:70 = *04:40, *04:51
----	----	----	----	----	----	*04:03:01, *04:40 = *04:04:01, *04:27 = *04:27, *04:40
----	----	----	----	----	----	*04:32, *04:51 = *04:50, *04:70
----	----	----	----	----	----	*04:03:01, *04:32 = *04:04:01, *04:50 = *04:32, *04:50
----	----	----	----	----	----	*04:03:01, *04:70 = *04:04:01, *04:51 = *04:51, *04:70
----	----	----	----	----	----	*04:04:01, *04:41 = *04:41, *04:79
----	----	----	----	----	----	*04:06:01, *04:86 = *04:46, *04:86
----	----	----	----	----	----	*04:11, *04:20 = *04:17:01, *04:49
----	----	----	----	----	----	*04:06:01, *04:12 = *04:12, *04:46 = *04:12, *04:49
----	----	----	----	----	----	*04:06:01, *04:11 = *04:11, *04:49
----	----	----	----	----	----	*04:07:01, *04:11 = *04:17:01, *04:60
----	----	----	----	----	----	*04:03:01, *04:12 = *04:12, *04:60
----	----	----	----	----	----	*04:03:01, *04:11 = *04:11, *04:60
----	----	----	----	----	----	*04:06:01, *04:54 = *04:46, *04:54
----	----	----	----	----	----	*04:06:01, *04:31 = *04:31, *04:46
----	----	----	----	----	----	*04:06:01, *04:69 = *04:69, *04:78
----	----	----	----	----	----	*04:07:01, *04:78 = *04:20, *04:39
----	----	----	----	----	----	*04:07:01, *04:49 = *04:20, *04:60
----	----	----	----	----	----	*04:03:01, *04:20 = *04:06:01, *04:07:01
----	----	----	----	----	----	*04:06:01, *04:18 = *04:18, *04:46
----	----	----	----	----	----	*04:06:01, *04:25 = *04:25, *04:46
----	----	----	----	----	----	*04:06:01, *04:58 = *04:46, *04:58
----	----	----	----	----	----	*04:06:01, *04:55 = *04:46, *04:55
----	----	----	----	----	----	*04:06:01, *04:46 = *04:46, *04:46
----	----	----	----	----	----	*04:39, *04:49 = *04:60, *04:78
----	----	----	----	----	----	*04:03:01, *04:78 = *04:06:01, *04:39 = *04:39, *04:78
----	----	----	----	----	----	*04:03:01, *04:49 = *04:06:01, *04:60 = *04:49, *04:60
----	----	----	----	----	----	*04:06:01, *04:78 = *04:78, *04:78
----	----	----	----	----	----	*04:06:01, *04:49 = *04:49, *04:49
----	----	----	----	----	----	*04:06:01, *04:85 = *04:85, *04:85
----	----	----	----	----	----	*04:03:01, *04:69 = *04:39, *04:69
----	----	----	----	----	----	*04:03:01, *04:52 = *04:52, *04:52
----	----	----	----	----	----	*04:18, *04:88 = *04:58, *04:88
----	----	----	----	----	----	*04:03:01, *04:59 = *04:59, *04:59
----	----	----	----	----	----	*04:03:01, *04:39 = *04:39, *04:39
----	----	----	----	----	----	*04:03:01, *04:27 = *04:27, *04:27

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---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:03:01, *04:50 = *04:50, *04:50
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:03:01, *04:60 = *04:60, *04:60
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:03:01, *04:51 = *04:51, *04:51
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:03:01, *04:71 = *04:71, *04:71
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:18, *04:84 = *04:68, *04:86
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:48, *04:68 = *04:53, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:36, *04:84 = *04:57, *04:68
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:28, *04:68 = *04:42, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:68, *04:81N = *04:70, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:68, *04:77 = *04:79, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:84 = *04:05:01, *04:68
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:02, *04:68 = *04:68, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:19, *04:57 = *04:47, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:19, *04:28 = *04:43, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:19, *04:89 = *04:75, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:19 = *04:08:01, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:02, *04:19 = *04:19, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:48, *04:84 = *04:82, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:02, *04:84 = *04:84, *04:84
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:22 = *04:05:02, *04:22
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:23 = *04:05:02, *04:23
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:18, *04:57 = *04:25, *04:48
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:18, *04:28 = *04:42, *04:86
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:18, *04:29 = *04:48, *04:58
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:18, *04:77 = *04:79, *04:86
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:86 = *04:05:01, *04:18 = *04:05:02, *04:18 = *04:18, *04:48 = *04:48, *04:55
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:25, *04:29 = *04:57, *04:58
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:25 = *04:05:02, *04:25 = *04:25, *04:57 = *04:55, *04:57
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:58 = *04:05:02, *04:58 = *04:29, *04:55 = *04:29, *04:58
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:55 = *04:05:02, *04:55
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:36, *04:48 = *04:53, *04:57
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:28, *04:53 = *04:42, *04:48
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:73 = *04:05:02, *04:73 = *04:29, *04:73 = *04:48, *04:73 = *04:56, *04:89 = *04:73, *04:89
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:56 = *04:05:02, *04:56 = *04:29, *04:53 = *04:29, *04:56 = *04:48, *04:56
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:48, *04:79 = *04:53, *04:77
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:48 = *04:05:01, *04:53 = *04:05:02, *04:53 = *04:48, *04:53
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:28, *04:36 = *04:42, *04:57
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:36, *04:77 = *04:57, *04:79
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:57 = *04:05:01, *04:36 = *04:05:02, *04:36 = *04:36, *04:57
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:28, *04:70 = *04:42, *04:81N
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:28, *04:79 = *04:42, *04:77
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:28 = *04:05:01, *04:42 = *04:05:02, *04:42 = *04:28, *04:42
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:40 = *04:05:02, *04:40
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:32 = *04:05:02, *04:32
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:70, *04:77 = *04:79, *04:81N
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:81N = *04:05:01, *04:70 = *04:05:02, *04:70 = *04:70, *04:81N
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:77 = *04:05:01, *04:79 = *04:05:02, *04:79 = *04:77, *04:79
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:44 = *04:05:02, *04:44
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:04:01, *04:05:01 = *04:04:01, *04:05:02
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:15 = *04:05:02, *04:15 = *04:15, *04:57
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:05:01, *04:12 = *04:05:02, *04:12 = *04:10, *04:86 = *04:12, *04:48
---+---+ +---+--- +---+--- +---+--- +---+--- +---+---	*04:10, *04:48 = *04:10, *04:82

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-----+-----+-----+-----+-----+----- *04:05:01, *04:10 = *04:05:02, *04:10
-----+-----+-----+-----+-----+----- *04:08:01, *04:86 = *04:31, *04:48
-----+-----+-----+-----+-----+----- *04:05:01, *04:54 = *04:05:02, *04:54 = *04:31,
*04:57 = *04:54, *04:57
-----+-----+-----+-----+-----+----- *04:05:01, *04:31 = *04:05:02, *04:31
-----+-----+-----+-----+-----+----- *04:28, *04:47 = *04:43, *04:57
-----+-----+-----+-----+-----+----- *04:47, *04:89 = *04:57, *04:75
-----+-----+-----+-----+-----+----- *04:05:01, *04:47 = *04:05:02, *04:47 =
*04:08:01, *04:57 = *04:47, *04:57
-----+-----+-----+-----+-----+----- *04:28, *04:75 = *04:43, *04:89
-----+-----+-----+-----+-----+----- *04:05:01, *04:43 = *04:05:02, *04:43 =
*04:08:01, *04:28 = *04:28, *04:43
-----+-----+-----+-----+-----+----- *04:05:01, *04:74 = *04:05:02, *04:74
-----+-----+-----+-----+-----+----- *04:05:01, *04:75 = *04:05:02, *04:75 =
*04:08:01, *04:89 = *04:75, *04:89
-----+-----+-----+-----+-----+----- *04:05:01, *04:08:01 = *04:05:02, *04:08:01
-----+-----+-----+-----+-----+----- *04:05:01, *04:61 = *04:05:02, *04:61
-----+-----+-----+-----+-----+----- *04:05:01, *04:86 = *04:05:02, *04:86 = *04:48,
*04:86
-----+-----+-----+-----+-----+----- *04:48, *04:57 = *04:57, *04:82
-----+-----+-----+-----+-----+----- *04:28, *04:48 = *04:28, *04:82
-----+-----+-----+-----+-----+----- *04:24, *04:48 = *04:24, *04:82
-----+-----+-----+-----+-----+----- *04:29, *04:48 = *04:29, *04:82
-----+-----+-----+-----+-----+----- *04:45, *04:48 = *04:45, *04:82
-----+-----+-----+-----+-----+----- *04:48, *04:89 = *04:82, *04:89
-----+-----+-----+-----+-----+----- *04:48, *04:83 = *04:82, *04:83
-----+-----+-----+-----+-----+----- *04:30, *04:48 = *04:30, *04:82
-----+-----+-----+-----+-----+----- *04:48, *04:77 = *04:77, *04:82
-----+-----+-----+-----+-----+----- *04:48, *04:87 = *04:82, *04:87
-----+-----+-----+-----+-----+----- *04:05:01, *04:48 = *04:05:01, *04:82 =
*04:05:02, *04:48 = *04:05:02, *04:82 = *04:48,
*04:48 = *04:48, *04:82
-----+-----+-----+-----+-----+----- *04:05:01, *04:57 = *04:05:02, *04:57 = *04:57,
*04:57
-----+-----+-----+-----+-----+----- *04:05:01, *04:28 = *04:05:02, *04:28 = *04:28,
*04:28
-----+-----+-----+-----+-----+----- *04:05:01, *04:24 = *04:05:02, *04:24 = *04:24,
*04:24
-----+-----+-----+-----+-----+----- *04:05:01, *04:29 = *04:05:02, *04:29 = *04:29,
*04:29
-----+-----+-----+-----+-----+----- *04:05:01, *04:64 = *04:45, *04:64
-----+-----+-----+-----+-----+----- *04:05:01, *04:45 = *04:05:02, *04:45 = *04:45,
*04:45
-----+-----+-----+-----+-----+----- *04:05:01, *04:81N = *04:05:02, *04:81N
-----+-----+-----+-----+-----+----- *04:05:01, *04:89 = *04:05:02, *04:89 = *04:89,
*04:89
-----+-----+-----+-----+-----+----- *04:05:01, *04:83 = *04:05:02, *04:83 = *04:83,
*04:83
-----+-----+-----+-----+-----+----- *04:05:01, *04:30 = *04:05:02, *04:30 = *04:30,
*04:30
-----+-----+-----+-----+-----+----- *04:05:01, *04:77 = *04:05:02, *04:77 = *04:77,
*04:77
-----+-----+-----+-----+-----+----- *04:05:01, *04:80 = *04:05:02, *04:80
-----+-----+-----+-----+-----+----- *04:05:01, *04:87 = *04:05:02, *04:87 = *04:87,
*04:87
-----+-----+-----+-----+-----+----- *04:05:01, *04:05:01 = *04:05:01, *04:05:02
-----+-----+-----+-----+-----+----- *04:04:01, *04:12 = *04:10, *04:18
-----+-----+-----+-----+-----+----- *04:19, *04:25 = *04:54, *04:68
-----+-----+-----+-----+-----+----- *04:19, *04:55 = *04:31, *04:68
-----+-----+-----+-----+-----+----- *04:19, *04:53 = *04:68, *04:82
-----+-----+-----+-----+-----+----- *04:19, *04:36 = *04:47, *04:68
-----+-----+-----+-----+-----+----- *04:19, *04:42 = *04:43, *04:68
-----+-----+-----+-----+-----+----- *04:04:01, *04:19 = *04:08:01, *04:68
-----+-----+-----+-----+-----+----- *04:15, *04:31 = *04:25, *04:61
-----+-----+-----+-----+-----+----- *04:08:01, *04:15 = *04:36, *04:61
-----+-----+-----+-----+-----+----- *04:08:01, *04:22 = *04:22, *04:61

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----	----	----	----	----	----	*04:18, *04:47 = *04:25, *04:82 = *04:53, *04:54
----	----	----	----	----	----	*04:08:01, *04:18 = *04:31, *04:53 = *04:55, *04:82
----	----	----	----	----	----	*04:25, *04:43 = *04:42, *04:54
----	----	----	----	----	----	*04:04:01, *04:54 = *04:08:01, *04:25 = *04:31, *04:36 = *04:47, *04:55
----	----	----	----	----	----	*04:25, *04:47 = *04:36, *04:54
----	----	----	----	----	----	*04:31, *04:42 = *04:43, *04:55
----	----	----	----	----	----	*04:04:01, *04:31 = *04:08:01, *04:55
----	----	----	----	----	----	*04:36, *04:82 = *04:47, *04:53
----	----	----	----	----	----	*04:42, *04:82 = *04:43, *04:53
----	----	----	----	----	----	*04:08:01, *04:73 = *04:56, *04:75
----	----	----	----	----	----	*04:04:01, *04:82 = *04:08:01, *04:53
----	----	----	----	----	----	*04:36, *04:43 = *04:42, *04:47
----	----	----	----	----	----	*04:04:01, *04:47 = *04:08:01, *04:36
----	----	----	----	----	----	*04:04:01, *04:43 = *04:08:01, *04:42 = *04:42, *04:43
----	----	----	----	----	----	*04:04:01, *04:74 = *04:44, *04:74
----	----	----	----	----	----	*04:08:01, *04:54 = *04:31, *04:47
----	----	----	----	----	----	*04:08:01, *04:43 = *04:43, *04:43
----	----	----	----	----	----	*04:15, *04:22 = *04:22, *04:36
----	----	----	----	----	----	*04:04:01, *04:23 = *04:23, *04:23
----	----	----	----	----	----	*04:18, *04:36 = *04:25, *04:53
----	----	----	----	----	----	*04:18, *04:73 = *04:58, *04:73
----	----	----	----	----	----	*04:18, *04:56 = *04:53, *04:58 = *04:56, *04:58
----	----	----	----	----	----	*04:04:01, *04:18 = *04:53, *04:55
----	----	----	----	----	----	*04:04:01, *04:25 = *04:36, *04:55
----	----	----	----	----	----	*04:53, *04:73 = *04:56, *04:73
----	----	----	----	----	----	*04:53, *04:56 = *04:56, *04:56
----	----	----	----	----	----	*04:04:01, *04:42 = *04:42, *04:42
----	----	----	----	----	----	*04:04:01, *04:40 = *04:40, *04:40
----	----	----	----	----	----	*04:04:01, *04:32 = *04:32, *04:32
----	----	----	----	----	----	*04:04:01, *04:70 = *04:70, *04:70
----	----	----	----	----	----	*04:04:01, *04:79 = *04:79, *04:79
----	----	----	----	----	----	*04:04:01, *04:44 = *04:44, *04:44
----	----	----	----	----	----	*04:25, *04:31 = *04:54, *04:55

*04:01:01 = *04:01:01-04:01:06
*04:03:01 = *04:03:01-04:03:05
*04:04:01 = *04:04:01-04:04:05
*04:05:01 = *04:05:01, 04:05:03-04:05:10
*04:06:01 = *04:06:01-04:06:03
*04:07:01 = *04:07:01-04:07:04
*04:08:01 = *04:08:01-04:08:02
*04:17:01 = *04:17:01-04:17:02

SPECIFICITY TABLE

DRB1*04 SSP subtyping

Specificities and sizes of the PCR products of the 45 primer mixes used for DRB1*04 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DRB1*04 alleles ³	Other amplified DRB alleles ⁴
1	215 bp	515 bp	*04:01:01-04:01:06, 04:09, 04:13, 04:16, 04:21, 04:26, 04:33, 04:35, 04:38, 04:62-04:63, 04:67, 04:72:01-04:72:02, 04:76	
2	215 bp	430 bp	*04:02, 04:14, 04:37	*14:57
3	225 bp	430 bp	*04:03:01-04:03:05, 04:06:01-04:07:04, 04:11, 04:17:01-04:17:02, 04:20, 04:27, 04:39, 04:41, 04:46, 04:49-04:52, 04:59-04:60, 04:65, 04:69, 04:71, 04:78, 04:85, 04:88	*14:10
4	225 bp	515 bp	*04:01:01-04:02, 04:04:01-04:05:10, 04:08:01-04:10, 04:13-04:16, 04:19, 04:21, 04:23-04:24, 04:26, 04:28-04:30, 04:32-04:33, 04:35-04:38, 04:40, 04:42-04:43, 04:44 ^w , 04:45, 04:47-04:48, 04:53, 04:56-04:57, 04:61-04:63, 04:67-04:68, 04:70, 04:72:01, 04:73, 04:75-04:77, 04:79-04:84, 04:87, 04:89	*11:22, 14:57
5	170 bp	430 bp	*04:05:01-04:05:10, 04:09-04:12, 04:17:01-04:17:02, 04:24, 04:28-04:30, 04:45, 04:48, 04:57, 04:67, 04:77, 04:80-04:81N, 04:83-04:84, 04:86-04:87, 04:89	
6⁵	115 bp	430 bp	*04:06:01-04:06:03, 04:19-04:21, 04:46, 04:49, 04:65, 04:68, 04:78, 04:84-04:85	
7	260 bp	430 bp	*04:01:01-04:01:06, 04:05:01-04:05:10, 04:07:01-04:09, 04:14, 04:16-04:17:02, 04:19-04:21, 04:24, 04:26, 04:28-04:31, 04:33, 04:35, 04:38, 04:43, 04:45, 04:47-04:48,	*11:22

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			04:54, 04:57, 04:61-04:63, 04:69, 04:72:01-04:72:02, 04:74-04:77, 04:80-04:84, 04:86-04:87, 04:89	
8	260 bp	430 bp	*04:02-04:04:05, 04:06:01- 04:06:03, 04:10-04:13, 04:15, 04:18, 04:22-04:23, 04:25, 04:27, 04:32, 04:36-04:37, 04:39-04:42, 04:44, 04:46, 04:49-04:53, 04:55-04:56, 04:58-04:60, 04:65, 04:67- 04:68, 04:70-04:71, 04:73, 04:78-04:79, 04:85, 04:88	*14:10, 14:57
9	215 bp	430 bp	*04:03:01-04:04:04, 04:04:05 ^w , 04:05:01-04:05:07, 04:05:08 ^w , 04:05:09-04:08:02, 04:10- 04:11, 04:12 ^w , 04:15, 04:17:01-04:17:02, 04:18 ^w , 04:19-04:20, 04:23-04:24, 04:25 ^w , 04:27-04:30, 04:31 ^w , 04:32, 04:36, 04:39-04:46, 04:47 ^w , 04:48-04:52, 04:53 ^w - 04:55 ^w , 04:56-04:57, 04:58 ^w , 04:59-04:61, 04:68-04:71, 04:74, 04:77-04:81N, 04:82 ^w , 04:83-04:85, 04:86 ^w , 04:87- 04:89	*11:22, 14:10
10	170 bp	515 bp	*04:01:01-04:04:05, 04:06:01- 04:08:02, 04:13-04:14, 04:16, 04:18-04:23, 04:25, 04:26 ^w , 04:27, 04:31-04:33, 04:35- 04:44, 04:46-04:47, 04:49- 04:56, 04:58-04:60, 04:63, 04:65, 04:68, 04:70-04:76, 04:78-04:79, 04:85, 04:88	
11⁹	175 bp, 220 bp	430 bp	*04:15, 04:22, 04:61	*11:22
12¹⁰	180 bp, 265 bp	515 bp	*04:16, 04:23, 04:52	
13¹¹	170 bp, 225 bp	430 bp	*04:12, 04:18, 04:25, 04:31, 04:46, 04:54-04:55, 04:58, 04:86	
14⁷	210 bp	430 bp	*04:02, 04:12, 04:14, 04:18, 04:38, 04:48, 04:53, 04:56, 04:73 ^w , 04:82, 04:86, 04:88	*14:57
15	215 bp	430 bp	*04:34	

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16⁷	150 bp	515 bp	*04:03:01-04:03:05, 04:07:01-04:07:04, 04:11, 04:17:01-04:17:02, 04:27, 04:39, 04:50 ^W , 04:51-04:52, 04:59-04:60, 04:69, 04:71, 04:88	*08:29 ^W , 11:53 ^W -11:54:02 ^W , 11:89 ^W , 14:42 ^W , 14:58 ^W
17	190 bp	430 bp	*04:15, 04:25, 04:36, 04:47, 04:54, 04:57	*11:22
18	145 bp	430 bp	*04:28, 04:35, 04:42-04:43, 04:59	*11:22
19^{6,12}	140 bp, 210 bp	515 bp	*04:24, 04:39, 04:69, 04:78	*14:10
20^{5,13}	100 bp, 175 bp, 255 bp	430 bp	*04:27, 04:40, 04:63	
21¹⁴	155 bp, 205 bp	430 bp	*04:29, 04:37-04:38, 04:56, 04:58, 04:73, 04:88	
22	230 bp	430 bp	*04:32, 04:50	
23⁵	120 bp	430 bp	*04:33	
24^{5,8}	85 bp	430 bp	*04:01:01-04:01:06, 04:09, 04:16, 04:21, 04:26, 04:33-04:35, 04:38 ^W , 04:62-04:64, 04:66, 04:72:01-04:72:02, 04:76	*01:10, 01:16, 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, 11:53 ^W , 11:79, 14:19, DRB3*01:01:02:01-01:14, DRB3*02:02:01:01-02:03, DRB3*02:05-02:10, DRB3*02:11^W, DRB3*02:12-02:13, DRB3*02:15-02:16, 02:17^W, DRB3*02:18-02:23, DRB3*02:25, DRB3*03:03
25^{5,15}	125 bp, 230 bp, 260 bp	430 bp	*04:26, 04:45, 04:64	
26	200 bp	515 bp	*04:01:01-04:01:06, 04:03:01-04:11, 04:13, 04:16-04:17:02, 04:19-04:24, 04:26-04:33, 04:35, 04:39-04:46, 04:48-04:52, 04:55, 04:57, 04:59-04:63, 04:65, 04:67-04:72:02, 04:74-04:79, 04:83-04:85, 04:87, 04:89	*14:10
27^{5,16}	120 bp, 265 bp	515 bp	*04:10-04:12, 04:49, 04:60, 04:67	*03:12, 08:06, 08:10, 08:12, 08:22, 13:04,

				13:32, 13:48, 13:58, 13:75, 13:81, 13:89, 13:93-13:94, 14:65, 14:78, 15:12
28⁵	90 bp	430 bp	*04:11, 04:17:01-04:17:02	*08:29
29^{5,17}	75 bp, 260 bp	430 bp	*04:07:01-04:07:04, 04:17:01- 04:17:02, 04:20, 04:64, 04:69, 04:74	*01:17, 09:01:02- 09:01:05, 09:02:01- 09:02:02, 09:04-09:05, 09:07-09:08, 14:07:01- 14:07:02, 14:14, 14:36, 14:42, 14:44:01- 14:44:02, 14:51, 14:68, 14:93, DRB5*01:12
30⁵	80 bp	430 bp	*04:09, 04:67	*08:40, 13:03:01- 13:04, 13:32-13:33:03, 13:38, 13:48, 13:65- 13:66:02, 13:75, 13:81, 13:88-13:89, 13:93- 13:95
31^{5,7,18}	85 bp, 260 bp	430 bp	*04:14, 04:64	*01:03, 08:40, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:20, 11:68, 11:73, 11:93, 13:02:01- 13:03:05, 13:23:01, 13:29, 13:31, 13:33:01-13:34, 13:36- 13:39, 13:41, 13:45, 13:63, 13:65-13:67, 13:73-13:74, 13:85, 13:88, 13:90, 13:95- 13:97
32^{5,8}	115 bp	430 bp	*04:01:01-04:05:01, 04:05:03- 04:05:10, 04:07:01-04:18, 04:22-04:33, 04:35-04:45, 04:47-04:48, 04:50-04:63, 04:67, 04:69-04:77, 04:79- 04:83, 04:86-04:89	*11:22
33	215 bp	430 bp	*04:65	
34	260 bp	515 bp	*04:66	
35¹⁹	210 bp, 245 bp	430 bp	*04:51, 04:70, 04:81N	
36	240 bp	515 bp	*04:71	
37	235 bp	430 bp	*04:22, 04:72:01	
38^{7,20}	140 bp, 215 bp	515 bp	*04:73, 04:75, 04:89	

39 ^{5,21}	100 bp, 175 bp	430 bp	*04:62, 04:69, 04:83	*14:10, 14:57
40	145 bp	430 bp	*04:30, 04:85	
41	160 bp	430 bp	*04:76	
42 ^{5,22}	110 bp, 140 bp	430 bp	*04:41, 04:77, 04:79	
43	130 bp	515 bp	*04:80	*11:53
44	245 bp	430 bp	*04:87	
45 ⁷	235 bp	515 bp	*04:44, 04:72:02, 04:74	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DRB1*04 SSP subtypings.

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

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

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

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

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DRB1*04 subtyping.

In addition, wells number 4, 10, 12, 16, 19, 26, 27, 34, 36, 38, 43 and 45 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

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

³For several DRB alleles only partial second exon nucleotide sequences are available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. We assume that unknown sequences in the first hyperpolymorphic region of the second exon of DRB alleles are conserved within allelic groups and that unknown sequences of codons 87 to 92 are identical with the DRB1*01:01 consensus sequence.

⁴The DRB1*11:22, DRB1*14:10 and DRB1*14:57 alleles carry the DRB1*04 sequence motif in the 1st hyperpolymorphic region of the 2nd exon and will, thus, be amplified by several of the DRB1*04 primer mixes. In addition, four DRB1*01, several DRB1*03, six DRB1*08, most DRB1*09, fourteen DRB1*11, many DRB1*13, several DRB1*14 and the DRB1*15:12 allele will be amplified by DRB1*04 primer mixes. In addition, many DRB3 alleles will be amplified by primer mix 24 and the DRB5*01:12 allele by primer mix 29. However, the purpose of primer mix 24 is to be able to distinguish the DRB1*04:01,04:04 and DRB1*04:08,04:13 genotypes. Non-DRB1*04 alleles will be amplified by primer mixes 2 to 4, 7 to 9, 11, 14, 16 to 19, 24, 26 to 32, 39 and 43, but the purpose of these primer mixes is to increase the resolution in DRB1*04 homozygotes.

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

⁶Primer mix 19 may give rise to nonspecific amplifications.

⁷Primer mixes 14, 16, 31, 38 and 45 have a tendency of giving rise to primer oligomer formation, most pronounced in primer mixes 16 and 45.

⁸Primer mixes 24 and 32 may yield somewhat less specific PCR fragment than the other DRB1*04 primer mixes.

⁹Primer mix 11: Specific PCR fragment of 175 bp in the DRB1*04:15 and 04:61 and the DRB1*11:22 alleles. Specific PCR fragment of 220 bp in the DRB1*04:22 allele.

¹⁰Primer mix 12: Specific PCR fragment of 180 bp in the DRB1*04:16 allele. Specific PCR fragment of 265 bp in the DRB1*04:23 and 04:52 alleles.

¹¹Primer mix 13: Specific PCR fragment of 170 bp in the DRB1*04:46 allele. Specific PCR fragments of 225 bp in the DRB1* 04:12, 04:18, 04:25, 04:31, 04:54-04:55, 04:58 and 04:86 alleles.

¹²Primer mix 19: Specific PCR fragment of 140 bp in the DRB1*04:39 allele. Specific PCR fragment of 210 bp in the DRB1*04:24, 04:69, 04:78 and the DRB1*14:10 alleles.

¹³Primer mix 20: Specific PCR fragment of 100 bp in the DRB1*04:63 allele. Specific PCR fragment of 175 bp in the DRB1*04:40 allele. Specific PCR fragment of 255 bp in the DRB1*04:27 allele.

¹⁴Primer mix 21: Specific PCR fragment of 155 bp in the DRB1*04:29 allele. Specific PCR fragment of 205 bp in the DRB1*04:37-04:38, 04:56, 04:58, 04:73 and 04:88 alleles.

¹⁵Primer mix 25: Specific PCR fragment of 125 bp in the DRB1*04:26 allele. Specific PCR fragment of 230 bp in the DRB1*04:45 allele. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

¹⁶Primer mix 27: Specific PCR fragment of 120 bp in the DRB1*04:10-04:12, 04:60 and 04:67 and the DRB1*03:12, 08:06, 08:10, 08:12, 08:22, 13:04, 13:32, 13:48, 13:58,13:75, 13:81, 13:89, 13:93-13:94, 14:65,14:78 and 15:12 alleles. Specific PCR fragment of 265 bp in the DRB1*04:49 allele.

¹⁷Primer mix 29: Specific PCR fragment of 75 bp in the DRB1*04:07:01-04:07:04, 04:17:01-04:17:02, 04:20, 04:64, 04:69 and 04:74 and the DRB1*01:17, 09:01:02-09:01:05, 09:02:01-09:02:02, 09:04-09:05, 09:07-09:08, 14:07:01-14:07:02, 14:14, 14:36, 14:42, 14:44:01-14:44:02, 14:51, 14:68 and 14:93 and the DRB5*01:12 alleles. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

¹⁸Primer mix 31: Specific PCR fragment of 85 bp in the DRB1*04:14 and the DRB1*01:03, 08:40, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:20, 11:68, 11:73, 11:93, 13:02:01-13:03:05, 13:23, 13:29, 13:31, 13:33:01-13:34, 13:36-13:39, 13:41, 13:45, 13:63, 13:65-13:67, 13:73-13:74, 13:85, 13:88, 13:90 and 13:95-13:97 alleles. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

¹⁹Primer mix 35: Specific PCR fragment of 210 bp in the DRB1*04:81N allele. Specific PCR fragment of 245 bp in the DRB1*04:51 and 04:70 alleles.

²⁰Primer mix 38: Specific PCR fragment of 140 bp in the DRB1*04:89 allele. Specific PCR fragment of 215 bp in the DRB1*04:73 and 04:75 alleles.

²¹Primer mix 39: Specific PCR fragment of 100 bp in the DRB1*04:83 allele. Specific PCR fragment of 175 bp in the DRB1*04:62 and 04:69 and the DRB1*14:10 and 14:57 alleles.

²²Primer mix 42: Specific PCR fragment of 110 bp in the DRB1*04:41 and 04:77 alleles. Specific PCR fragment of 140 bp in the DRB1*04:79 allele.

'w', might be weakly amplified.

INTERPRETATION TABLE

DRB1*04 SSP subtyping

Allele-specific amplification patterns of the DRB1*04:01 to *04:89 alleles

	Well ⁴																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Length of spec. PCR product(s)	215	215	225	225	170	115	260	260	215	170	175	180	170	210	215	150	190	145	140	100	155	230	120	85	
Length of int. pos. control ¹	515	430	430	515	430	430	430	430	430	515	430	515	430	430	430	515	430	430	515	430	430	430	430	430	
5'-primer(s) ²	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACC ^{3'} 13(125)	5'-gTA ^{3'} 37(197)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-ACA ^{3'} 13(125)	5'-gAA ^{3'} 71(299)
3'-primer(s) ³	5'-CTT ^{3'} 71(298)	5'-CTC ^{3'} 71(298)	5'-CCT ^{3'} 74(308)	5'-CCg ^{3'} 74(308)	5'-gCT ^{3'} 57(256)	5'-Cgg ^{3'} 37(197)	5'-CAC ^{3'} 86(344)	5'-CCA ^{3'} 86(344)	5'-TCT ^{3'} 71(298)	5'-ATC ^{3'} 57(256)	5'-CCT ^{3'} 58(260)	5'-CTg ^{3'} 59(262)	5'-AgC ^{3'} 56(253)	5'-gAT ^{3'} 67(286)	5'-CTT ^{3'} 71(298)	5'-CCT ^{3'} 74(308)	5'-gTT ^{3'} 60(265)	5'-ggA ^{3'} 47(227)	5'-TAg ^{3'} 46(225)	5'-gTT ^{3'} 33(184)	5'-CCA ^{3'} 51(239)	5'-CCT ^{3'} 72(302)	5'-AgT ^{3'} 39(203)	5'-CAC ^{3'} 86(344)	
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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Length of spec. PCR product(s)	215	215	225	225	170	115	260	260	215	170	175	180	170	210	215	150	190	145	140	100	155	230	120	85
											220	265	225						210	175	205			
																255								
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
*04:01:01-04:01:06	1			4			7		10														24	
*04:02		2		4				8	10				14											
*04:03:01-04:03:05			3					8	9	10					16									
*04:04:01-04:04:04				4				8	9	10														
*04:04:05				4				8	w	10														
*04:05:01, 04:05:03- 04:05:07, 04:05:09- 04:05:10				4	5		7		9															
*04:05:02				4	5		7		9															
*04:05:08				4	5		7		w															
*04:06:01-04:06:03			3			6		8	9	10														
*04:07:01-04:07:04			3				7		9	10					16									
*04:08:01-04:08:02				4			7		9	10														
*04:09	1			4	5		7																24	
*04:10				4	5			8	9															
*04:11			3		5			8	9							16								
*04:12					5			8	w			13	14											
*04:13	1			4				8		10														
*04:14		2		4			7			10			14											
*04:15				4				8	9		11						17							
*04:16	1			4			7			10		12											24	
*04:17:01-04:17:02			3		5		7		9						16									
*04:18								8	w	10			13	14										
*04:19				4		6	7		9	10														
*04:20			3			6	7		9	10														
*04:21	1			4		6	7			10													24	
*04:22								8		10	11													
*04:23				4				8	9	10		12												
*04:24				4	5		7		9										19					
*04:25								8	w	10			13				17							
*04:26	1			4			7			w													24	
*04:27			3					8	9	10					16				20					
*04:28				4	5		7		9								18							
*04:29				4	5		7		9												21			
*04:30				4	5		7		9															
*04:31							7		w	10			13											
*04:32				4				8	9	10												22		
*04:33	1			4			7			10													23 24	
*04:34														15									24	
*04:35	1			4			7			10								18					24	
*04:36				4				8	9	10							17							
*04:37		2		4				8		10												21		
*04:38	1			4			7			10			14									21	w	
*04:39			3					8	9	10					16				19					
*04:40				4				8	9	10										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

Lot No.: **40M**

Lot-specific information

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125	200	120	90	75	80	85	115	215	260	210	240	235	140	100	145	160	110	130	245	235	Length of spec. PCR product(s)	
230		265		260		260				245			215	175			140					
260																						
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	
	26						32															*04:01:01-04:01:06
							32															*04:02
	26						32															*04:03:01-04:03:05
	26						32															*04:04:01-04:04:04
	26						32															*04:04:05
	26						32															*04:05:01, 04:05:03-04:05:07, 04:05:09-04:05:10
	26																					*04:05:02
	26						32															*04:05:08
	26																					*04:06:01-04:06:03
	26			29			32															*04:07:01-04:07:04
	26						32															*04:08:01-04:08:02
	26				30		32															*04:09
	26	27					32															*04:10
	26	27	28				32															*04:11
		27					32															*04:12
	26						32															*04:13
						31	32															*04:14
							32															*04:15
	26						32															*04:16
	26		28	29			32															*04:17:01-04:17:02
							32															*04:18
	26																					*04:19
	26			29																		*04:20
	26																					*04:21
	26						32					37										*04:22
	26						32															*04:23
	26						32															*04:24
							32															*04:25
25	26						32															*04:26
	26						32															*04:27
	26						32															*04:28
	26						32															*04:29
	26						32							40								*04:30
	26						32															*04:31
	26						32															*04:32
	26						32															*04:33
																						*04:34
	26						32															*04:35
							32															*04:36
							32															*04:37
							32															*04:38
	26						32															*04:39
	26						32															*04:40
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	

Lot No.: **40M**

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Length of spec. PCR product(s)	215	215	225	225	170	115	260	260	215	170	175	180	170	210	215	150	190	145	140	100	155	230	120	85
											220	265	225						210	175	205			
																			255					
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
*04:41			3					8	9	10														
*04:42				4				8	9	10							18							
*04:43				4			7		9	10							18							
*04:44				w				8	9	10														
*04:45				4	5		7		9															
*04:46			3			6		8	9	10			13											
*04:47				4			7		w	10							17							
*04:48				4	5		7		9				14											
*04:49			3			6		8	9	10														
*04:50			3					8	9	10						w						22		
*04:51			3					8	9	10						16								
*04:52			3					8	9	10		12				16								
*04:53				4				8	w	10				14										
*04:54							7		w	10			13				17							
*04:55								8	w	10			13											
*04:56				4				8	9	10				14								21		
*04:57				4	5		7		9								17							
*04:58								8	w	10			13									21		
*04:59			3					8	9	10						16		18						
*04:60			3					8	9	10						16								
*04:61				4			7		9		11													
*04:62	1			4			7																24	
*04:63	1			4			7			10										20				24
*04:64																								24
*04:65			3			6		8		10														
*04:66																								24
*04:67	1			4	5			8																
*04:68				4		6		8	9	10														
*04:69			3				7		9							16		19						
*04:70				4				8	9	10														
*04:71			3					8	9	10						16								
*04:72:01	1			4			7			10														24
*04:72:02	1						7			10														24
*04:73				4				8		10				w								21		
*04:74							7		9	10														
*04:75				4			7			10														
*04:76	1			4			7			10														24
*04:77				4	5		7		9															
*04:78			3			6		8	9	10										19				
*04:79				4				8	9	10														
*04:80				4	5		7		9															
*04:81N				4	5		7		9															
*04:82				4			7		w				14											
*04:83				4	5		7		9															
*04:84				4	5	6	7		9															
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.: **40M**

Lot-specific information

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125	200	120	90	75	80	85	115	215	260	210	240	235	140	100	145	160	110	130	245	235	Length of spec. PCR product(s)	
230		265		260		260				245			215	175			140					
260																						
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	
	26						32										42					*04:41
	26						32															*04:42
	26						32															*04:43
	26						32														45	*04:44
25	26						32															*04:45
	26																					*04:46
							32															*04:47
	26						32															*04:48
	26	27																				*04:49
	26						32															*04:50
	26						32			35												*04:51
	26						32															*04:52
							32															*04:53
							32															*04:54
	26						32															*04:55
							32															*04:56
	26						32															*04:57
							32															*04:58
	26						32															*04:59
	26	27					32															*04:60
	26						32															*04:61
	26						32							39								*04:62
	26						32															*04:63
25				29		31																*04:64
	26							33														*04:65
									34													*04:66
	26	27			30		32															*04:67
	26																					*04:68
	26			29			32							39								*04:69
	26						32			35												*04:70
	26						32				36											*04:71
	26						32					37										*04:72:01
	26						32													45		*04:72:02
							32						38									*04:73
	26			29			32													45		*04:74
	26						32						38									*04:75
	26						32									41						*04:76
	26						32										42					*04:77
	26																					*04:78
	26						32										42					*04:79
							32											43				*04:80
							32			35												*04:81N
							32															*04:82
	26						32							39								*04:83
	26																					*04:84
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	

Lot No.: **40M**

Lot-specific information

www.olerup-ssp.com

Length of spec.	215	215	225	225	170	115	260	260	215	170	175	180	170	210	215	150	190	145	140	100	155	230	120	85
PCR product(s)											220	265	225						210	175	205			
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
*04:85			3			6		8	9	10														
*04:86					5		7		w				13	14										
*04:87				4	5		7		9															
*04:88			3					8	9	10				14		16					21			
*04:89				4	5		7		9															
*01:03, 11:11:01- 11:11:02, 11:14:01- 11:14:02, 11:20, 11:68, 11:73, 11:93, 13:02:01-13:02:03, 13:23:01, 13:29, 13:31, 13:34, 13:36- 13:37, 13:39, 13:41, 13:45, 13:63, 13:67, 13:73-13:74, 13:85, 13:90, 13:96-13:97																								
*01:10, 01:16, 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, 11:79, 14:19, <i>DRB3*01:01:02:01- 01:14,</i> <i>DRB3*02:02:01:01- 02:03, DRB3*02:05- 02:10, DRB3*02:12- 02:13, DRB3*02:15- 02:16, DRB3*02:18- 02:23, DRB3*02:25,</i> <i>DRB3*03:03</i>																								24
*01:17, 09:01:02- 09:01:05, 09:02:01- 09:02:02, 09:04-09:05, 09:07-09:08, 14:07:01- 14:07:02, 14:14, 14:36, 14:44:01- 14:44:02, 14:51, 14:68, 14:93, <i>DRB5*01:12</i>																								
*03:12, 08:06, 08:10, 08:12, 08:22, 13:58, 14:65, 14:78, 15:12																								
*08:29																w								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Lot No.: **40M**

Lot-specific information

www.olerup-ssp.com

125	200	120	90	75	80	85	115	215	260	210	240	235	140	100	145	160	110	130	245	235	Length of spec. PCR product(s)	
230	265			260		260				245			215	175			140					
260																						
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	
	26														40							*04:85
							32															*04:86
	26						32												44			*04:87
							32															*04:88
	26						32						38									*04:89
						31																*01:03, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:20, 11:68, 11:73, 11:93, 13:02:01-13:02:03, 13:23:01, 13:29, 13:31, 13:34, 13:36-13:37, 13:39, 13:41, 13:45, 13:63, 13:67, 13:73-13:74, 13:85, 13:90, 13:96-13:97
																						*01:10, 01:16, 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, 11:79, 14:19, DRB3*01:01:02:01-01:14, DRB3*02:02:01:01-02:03, DRB3*02:05-02:10, DRB3*02:12-02:13, DRB3*02:15-02:16, DRB3*02:18-02:23, DRB3*02:25, DRB3*03:03
				29																		*01:17, 09:01:02-09:01:05, 09:02:01-09:02:02, 09:04-09:05, 09:07-09:08, 14:07:01-14:07:02, 14:14, 14:36, 14:44:01-14:44:02, 14:51, 14:68, 14:93, DRB5*01:12
	27																					*03:12, 08:06, 08:10, 08:12, 08:22, 13:58, 14:65, 14:78, 15:12
			28																			*08:29
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	

Length of spec.	215	215	225	225	170	115	260	260	215	170	175	180	170	210	215	150	190	145	140	100	155	230	120	85
PCR product(s)											220	265	225						210	175	205			
																				255				
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
*08:40, 13:03:01- 13:03:05, 13:33:01- 13:33:03, 13:38, 13:65- 13:66:02, 13:88, 13:95																								
*11:22				4			7		9		11						17	18						
*11:53																w								w
*11:54:01-11:54:02, 11:59, 14:58																w								
*13:04, 13:32, 13:48, 13:75, 13:81, 13:89, 13:93-13:94																								
*14:10			3					8	9										19					
*14:42																w								
*14:57		2		4				8						14										
DRB3*02:11, DRB3*02:17																								w
DRB1 allele																								
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

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DRB1*04 subtyping.

In addition, wells number 4, 10, 12, 16, 19, 26, 27, 34, 36, 38, 43 and 45 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

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

³The codon, and in parenthesis the nucleotide, in the 2nd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. The sequence of the 3 terminal nucleotides of the primer is given. Codon and nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site.

⁴Primer mix 11: Specific PCR fragment of 175 bp in the DRB1*04:15 and 04:61 and the DRB1*11:22 alleles. Specific PCR fragment of 220 bp in the DRB1*04:22 allele.

Primer mix 12: Specific PCR fragment of 180 bp in the DRB1*04:16 allele. Specific PCR fragment of 265 bp in the DRB1*04:23 and 04:52 alleles.

Primer mix 13: Specific PCR fragment of 170 bp in the DRB1*04:46 allele. Specific PCR fragments of 225 bp in the DRB1* 04:12, 04:18, 04:25, 04:31, 04:54-04:55, 04:58 and 04:86 alleles.

Primer mix 19: Specific PCR fragment of 140 bp in the DRB1*04:39 allele. Specific PCR fragment of 210 bp in the DRB1*04:24, 04:69, 04:78 and the DRB1*14:10 alleles.

Primer mix 20: Specific PCR fragment of 100 bp in the DRB1*04:63 allele. Specific PCR fragment of 175 bp in the DRB1*04:40 allele. Specific PCR fragment of 255 bp in the DRB1*04:27 allele.

Primer mix 21: Specific PCR fragment of 155 bp in the DRB1*04:29 allele. Specific PCR fragment of 205 bp in the DRB1*04:37-04:38, 04:56, 04:58, 04:73 and 04:88 alleles.

Lot No.: **40M**

Lot-specific information

www.olerup-ssp.com

125	200	120	90	75	80	85	115	215	260	210	240	235	140	100	145	160	110	130	245	235	Length of spec. PCR product(s)	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	
					30	31															*08:40, 13:03:01-13:03:05, 13:33:01-13:33:03, 13:38, 13:65-13:66:02, 13:88, 13:95	
							32															*11:22
																		43				*11:53
																						*11:54:01-11:54:02, 11:89, 14:58
		27			30																	*13:04, 13:32, 13:48, 13:75, 13:81, 13:89, 13:93-13:94
	26													39								*14:10
				29																		*14:42
														39								*14:57
																						<i>DRB3*02:11, DRB3*02:17</i>
																						DRB1 allele
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Well No.	

Primer mix 25: Specific PCR fragment of 125 bp in the DRB1*04:26 allele. Specific PCR fragment of 230 bp in the DRB1*04:45 allele. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

Primer mix 27: Specific PCR fragment of 120 bp in the DRB1*04:10-04:12, 04:60 and 04:67 and the DRB1*03:12, 08:06, 08:10, 08:12, 08:22, 13:04, 13:32, 13:48, 13:58, 13:75, 13:81, 13:89, 13:93-13:94, 14:65, 14:78 and 15:12 alleles. Specific PCR fragment of 265 bp in the DRB1*04:49 allele.

Primer mix 29: Specific PCR fragment of 75 bp in the DRB1*04:07:01-04:07:04, 04:17:01-04:17:02, 04:20, 04:64, 04:69 and 04:74 and the DRB1*01:17, 09:01:02-09:01:05, 09:02:01-09:02:02, 09:04-09:05, 09:07-09:08, 14:07:01-14:07:02, 14:14, 14:36, 14:42, 14:44:01-14:44:02, 14:51, 14:68 and 14:93 and the DRB5*01:12 alleles. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

Primer mix 31: Specific PCR fragment of 85 bp in the DRB1*04:14 and the DRB1*01:03, 08:40, 11:11:01-11:11:02, 11:14:01-11:14:02, 11:20, 11:68, 11:73, 11:93, 13:02:01-13:03:05, 13:23, 13:29, 13:31, 13:33:01-13:34, 13:36-13:39, 13:41, 13:45, 13:63, 13:65-13:67, 13:73-13:74, 13:85, 13:88, 13:90 and 13:95-13:97 alleles. Specific PCR fragment of 260 bp in the DRB1*04:64 allele.

Primer mix 35: Specific PCR fragment of 210 bp in the DRB1*04:81N allele. Specific PCR fragment of 245 bp in the DRB1*04:51 and 04:70 alleles.

Primer mix 38: Specific PCR fragment of 140 bp in the DRB1*04:89 allele. Specific PCR fragment of 215 bp in the DRB1*04:73 and 04:75 alleles.

Primer mix 39: Specific PCR fragment of 100 bp in the DRB1*04:83 allele. Specific PCR fragment of 175 bp in the DRB1*04:62 and 04:69 and the DRB1*14:10 and 14:57 alleles.

Primer mix 42: Specific PCR fragment of 110 bp in the DRB1*04:41 and 04:77 alleles. Specific PCR fragment of 140 bp in the DRB1*04:79 allele.

‘w’, might be weakly amplified.

CELL LINE VALIDATION SHEET																				
DRB1*04 SSP subtyping kit																				
				Well																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				Prod. No.	201188101	201188102	201188103	201188104	201188105	201188106	201188107	201188108	201188109	201188110	201188111	201188112	201188113	201188114	201188115	201188116
	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	*14:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL		*08:03	*14:14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH		*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49		*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007		*04:05	*10:01	-	-	-	+	+	-	+	-	+	-	-	-	-	-	-	-
28	9320 BEL5GB		*04:16	*07:01	+	-	-	+	-	-	+	-	-	+	-	+	-	-	-	-
29	9050 MOU		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH		*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF		*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG		*13:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B		*04:04		-	-	-	+	-	-	-	+	+	+	-	-	-	-	-	-
34	9104 DHIF		*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO		*04:03		-	-	+	-	-	-	-	+	+	+	-	-	-	-	-	+
36	9024 KT17		*04:03	*04:06	-	-	+	-	-	+	-	+	+	+	-	-	-	-	-	+
37	9065 HHKB		*13:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL		*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML		*03:01	*04:01	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-
40	9134 WHONP199		*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301		*13:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089		*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526		*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM		*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU		*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO		*11:04	*12:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND		*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET																				
DRB1*04 SSP subtyping kit																				
				Well																
				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
				Prod. No.	201188117	201188118	201188119	201188120	201188121	201188122	201188123	201188124	201188125	201188126	201188127	201188128	201188129	201188130	201188131	201188132
	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	*14:01	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+
23	9124 IHL		*08:03	*14:14	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
24	9035 JBUSH		*11:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
25	9049 IBW9		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49		*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
27	9191 CH1007		*04:05	*10:01	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
28	9320 BEL5GB		*04:16	*07:01	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+
29	9050 MOU		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH		*03:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
31	9019 DUCAF		*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
32	9297 HAG		*13:03		-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	-
33	9098 MT14B		*04:04		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
34	9104 DHIF		*11:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
35	9302 SSTO		*04:03		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
36	9024 KT17		*04:03	*04:06	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
37	9065 HHKB		*13:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
38	9099 LZL		*14:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
39	9315 CML		*03:01	*04:01	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+
40	9134 WHONP199		*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
41	9055 H0301		*13:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
42	9066 TAB089		*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526		*09:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
44	9057 TEM		*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO		*07:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
46	9013 SCHU		*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO		*11:04	*12:01	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
48	9303 TER-ND		*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+

CELL LINE VALIDATION SHEET																	
DRB1*04 SSP subtyping kit																	
				Prod. No.	Well												
					33	34	35	36	37	38	39	40	41	42	43	44	45
					201188133	201188134	201188135	201188136	201188137	201188138	201188139	201188140	201188141	201188142	201188143	201188144	201188145
	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	*14:01	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL		*08:03	*14:14	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH		*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49		*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007		*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB		*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH		*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF		*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG		*13:03		-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B		*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF		*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO		*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17		*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB		*13:01		-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL		*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML		*03:01	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199		*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301		*13:02		-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089		*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526		*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM		*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU		*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO		*11:04	*12:01	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND		*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-

CERTIFICATE OF ANALYSIS

Olerup SSP® DRB1*04 SSP

Product number: 101.114-24/03 – including *Taq* pol.
Lot number: 40M
Expiry date: 2014-February-01
Number of tests: 24 tests – Product No. 101.114-24
3 tests – Product No. 101.114-03
Number of wells per test: 45

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2011-881-01	17	2011-881-17	33	2011-881-33
2	2011-881-02	18	2011-881-18	34	2011-881-34
3	2011-881-03	19	2011-881-19	35	2011-881-35
4	2011-881-04	20	2011-881-20	36	2011-881-36
5	2011-881-05	21	2011-881-21	37	2011-881-37
6	2011-881-06	22	2011-881-22	38	2011-881-38
7	2011-881-07	23	2011-881-23	39	2011-881-39
8	2011-881-08	24	2011-881-24	40	2011-881-40
9	2011-881-09	25	2011-881-25	41	2011-881-41
10	2011-881-10	26	2011-881-26	42	2011-881-42
11	2011-881-11	27	2011-881-27	43	2011-881-43
12	2011-881-12	28	2011-881-28	44	2011-881-44
13	2011-881-13	29	2011-881-29	45	2011-881-45
14	2011-881-14	30	2011-881-30		
15	2011-881-15	31	2011-881-31		
16	2011-881-16	32	2011-881-32		

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 11, 13, 15, 17 to 20, 22, 23, 25 and 33 to 45 were available. The specificities of the primers in primer solutions 11, 13, 17 to 20, 35, 37 to 39, 42 and 45 were tested by separately adding one additional 5'-primer, respectively, one additional 3'-primer.

In primer solutions 15, 25, 34 and 36 it was only possible to test the 3'-primers, the 5'-primers were not possible to test.

In primer solutions 22, 23, 33, 40, 41, 43 and 44 it was only possible to test the 5'-primers, the 3'-primers were not possible to test.

One or two of the 3'-primers in primer solutions 10, 12 to 14, 17, 19, 20, 21, 26, 32, 35, 38, 39 and 42 was not possible to test, and in primer solution 27, 29 and 31 one or two 5'-primers was not possible to test.

One additional 3'-primer in primer solution 21 was tested by separately adding one additional 5'-primer.

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

Date of approval: 2011-August-18

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: *Olerup* SSP® DRB1*04
Product number: 101.114-24/03
Lot number: 40M

Intended use: DRB1*04 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.

The Authorized Representative located within the Community is: *Olerup* SSP AB.

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
2010-August-20

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

Lot No.: **40M**

Lot-specific information

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