

Olerup SSP™ DRB1*14

Product number: 101.117-12/03 – licensed for PCR
101.117-12u/03u – not licensed for PCR
Lot number: Y29
Expiry date: 2009-September-01
Number of tests: 12 tests – Product No. 101.117-12
3 tests – Product No. 101.117-03
Number of tubes per test: 32
Storage - pre-aliquoted primers: dark at -20°C
- PCR Master Mix: -20°C

This Product Description is only valid for Lot No. Y29.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP™ DRB1*14 LOT

The DRB1*14 specificity and interpretation tables have been updated for the DRB1 alleles reported since the previous Olerup SSP™ DRB1*14 lot (Lot No. X26) was made.

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

Tube	5'-primer	3'-primer	rationale
8	Modified	-	Increased specificity of specific primer pair.
13	-	Modified	Increased yield of specific primer pair.
14	Added	-	Primer added for the DRB1*1473 allele.
16	-	Modified	Increased specificity of specific primer pair.
20	Added	-	Primer added for the DRB1*1467 allele.
24	-	Modified	Increased specificity of specific primer pair.
25	Added	-	Primer added for the DRB1*1468 allele.
27	Added	Added	Primer pair added for the DRB1*1471 allele.
30	Added	-	Primer added for the DRB1*1470 allele.

PRODUCT DESCRIPTION

DRB1*14 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1*1401 to DRB1*1474 alleles.

The primer solutions are pre-aliquoted into 0.2 ml PCR tubes. Each tube in the set contains a dried primer solution consisting of a specific primer mix, i.e. allele- and group-specific primers as well as a **control primer pair** matching non-allelic sequences.

PCR Master Mix complete with Taq, Taq polymerase, nucleotides, buffer, glycerol and cresol red, as well as PCR lids are included in the licensed kit.

PCR Master Mix without Taq, nucleotides, buffer, glycerol and cresol red, as well as PCR lids are included in the unlicensed kit.

32 PCR reactions with a reaction volume of 10 µl are performed per sample.

Note: The pellets in the tubes may vary in form and colour. This does not affect the performance of the product.

PLATE LAYOUT

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

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

The 32 well cut PCR plate is marked with 'DRB1*14 Y29'.

Well No. 1 is marked with '1'.

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

Please note: When removing each 32 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*14 PCR-SSP subtypings will be influenced by five DRB1*01 alleles, all DRB1*03 alleles, seven DRB1*04 alleles, one DRB1*07 allele, all DRB1*08 alleles, one DRB1*09 allele, most DRB1*11 alleles, all DRB1*12 alleles and all DRB1*13 alleles four DRB1*15 allele and one DRB1*16 allele, when present on the other haplotype. In addition, the DRB3*0216 allele will be amplified by primer mix 25.

UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DRB1*14 alleles, i.e. **DRB1*1401 to DRB1*1474**, recognized by the HLA Nomenclature Committee in October 2007¹ will give rise to unique amplification patterns by the primers in the DRB1*14 subtyping kit².

The DRB1*14 subtyping kit cannot distinguish the DRB1*140101 to 140104 alleles or the DRB1*140301 and 140302 alleles or the DRB1*140501 and 140502 alleles or the DRB1*140701 and 140702 alleles, the DRB1*142301 and 142302 alleles or the DRB1*143201 and 143202 alleles.

¹**Nomenclature for factors of the HLA system, 1998.** *Tissue Antigens* 1999; **53**: 407-446.

DRB alleles listed on the IMGT/HLA web page 2007-October-05, release 2.19.0. www.ebi.ac.uk/imgt/hla.

²The DRB1*1408 and DRB1*1152 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1411 and DRB1*1204 and DRB1*1209 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DR low resolution and/or DRB1*12 SSP kits.

The DRB1*1415 and DRB1*0809 and DRB1*0821 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DRB1*08 SSP kit.

The DRB1*142301-142302 and DRB1*1117 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1437, DRB1*1348 and DRB1*1358 DR alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*13 SSP kits.

RESOLUTION IN HOMO- AND HETEROZYGOTES

The 73 phenotypically different DRB1*14 alleles give rise to 75 amplification patterns, that can be combined in 2 850 homozygous and heterozygous combinations. 757 of these genotypes do not give rise to unique amplification patterns. (The different lengths of the specific PCR products in lanes 8, 9, 11, 14, 20, 21, 24, 25, 26, 27, 29 and 32 were not considered in these calculations.)

```

++++++-+ -+++- -+---+-- - - - - - 1402,1426 = 1426,1451
++++++-- +---+-- -+---+-- - - - - - 1402,1462 = 1451,1462
++++++-- -+++- -+---+-- - - - - - 1402,1439 = 1439,1451
++++++-- -+++- -+---+-- - - - - - 1402,1435 = 1435,1451
++++++-- -+++- -+---+-- -+---+-- 1401,1402 = 1401,1451
++++++-- -+++- -+---+-- -+++- - 1438,1448 = 1447,1460
++++++-- -+++- -+---+-- -+++- - 1402,1438 = 1438,1447 = 1438,1451 =
                                         1447,1454
++++++-- -+++- -+---+-- -+++- - 1402,1460 = 1448,1454 = 1448,1460 =
                                         1451,1460
++++++-- -+++- -+---+-- - - - - - 1402,1454 = 1451,1454
++++++-- -+++- - - - - - - - - - - 1402,1470 = 1451,1470
++++++-- -+++- -+---+-- - - - - - 1402,1458 = 1451,1458
++++++-- -+++- -+---+-- +---+-- 1402,1407 = 1407,1451
+++-+- -+++- -+---+-- +---+-- 1407,1417 = 1407,1433
+++-+- -+++- -+---+-- -+++- - 1417,1426 = 1426,1433
+++-+- -+++- -+---+-- -+++- - 1417,1462 = 1433,1462
+++-+- -+++- -+---+-- -+++- - 1417,1439 = 1433,1439
+++-+- -+++- ++---+-- - - - - - 1421,1454 = 1421,1470
+++-+- -+++- -+---+-- -+---+-- 1401,1417 = 1401,1433
+++-+- -+++- -+---+-- -+++- - 1417,1438 = 1433,1438

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+++--+-- ---++--- -+---+- ----++-- 1417,1460 = 1433,1460
+++--+-- ---++--- -+---+- ----++-- 1417,1454 = 1417,1470 = 1433,1454 =
1433,1470
+++--+-- ---++--- -+---+- ----++-- 1417,1435 = 1433,1435
+++--+-- ---++--- -+---+- ----++-- 1417,1458 = 1433,1458
++-++++- -+---+- -+---+- ----++-- 1403,1439 = 1439,1467
++-++++- -+---+- -+---+- ----++-- 1403,1458 = 1458,1467
++-++++- -+---+- -+---+- ----++-- 1403,1455 = 1440,1455
++-++++- +++++-+ -+---+- +----- 1405,1449 = 1449,1456
++-++++- +++++-+ -+---+- +----- 140503,1449 = 1449,1462
++-++++- -++++-+ -+---+- +----- 1408,1449 = 1423,1449
++-++++- -++++-+ -+---+- +----- 1414,1449 = 144401,1449
++-++++- -++++-+ -+---+- +----- 1407,1449 = 144402,1449
++-++++- -++++-+ -+---+- ----++-- 1418,1432 = 1418,1474
++-++++- -++++-+ -+---+- +----- 1407,1455 = 144402,1455
++-++++- -++++-+ -+---+- +----- 1407,1426 = 1426,144402
++-++++- +++++-+ -+---+- +----- 1405,1422 = 1422,1456
++-++++- +++++-+ -+---+- +----- 140503,1422 = 1422,1462
++-++++- +++++-+ -+---+- +----- 1405,1453 = 1453,1456
++-++++- +++++-+ -+---+- +----- 1405,1425 = 1425,1456
++-++++- +++++-+ -+---+- +----- 1405,1469 = 1456,1469
++-++++- +++++-+ -+---+- +----- 1405,1407 = 1407,1456 = 144401,1462
++-++++- +++++-+ -+---+- +----- 140503,1407 = 1407,1462 = 144402,1462
++-++++- -++++-+ -+---+- +----- 1422,1439 = 1425,1439
++-++++- -++++-+ -+---+- +----- 1407,1439 = 1439,144402
++-++++- -++++-+ -+---+- +----- 1408,1453 = 1425,1472
++-++++- -++++-+ -+---+- +----- 1408,1422 = 1422,1423
++-++++- -++++-+ -+---+- +----- 1425,1435 = 1453,1454
++-++++- -++++-+ -+---+- +----- 1422,1458 = 1425,1454
++-++++- -++++-+ -+---+- ----++-- 1432,1442 = 1442,1474
++-++++- -++++-+ -+---+- ----++-- 1432,1436 = 1436,1474
++-++++- -++++-+ -+---+- +----- 1407,1434 = 1432,144401 = 144401,1474
++-++++- -++++-+ -+---+- ----++-- 1414,1432 = 1414,1474
++-++++- -++++-+ -+---+- +----- 1407,1416 = 1416,144402
++-++++- -++++-+ -+---+- +----- 1407,1432 = 1407,1474 = 1432,144402 =
144402,1474
++-++++- ---++--- -+---+- +-----+ 1407,1472 = 1435,144401
++-++++- ---++--- -+---+- +-----+ 1407,1459 = 144401,1470
++-++++- ---++--- -+---+- +----- 1407,1408 = 1407,1423 = 144401,1454
++-++++- ---++--- -+---+- +-----+ 1407,1435 = 1435,144402
++-++++- ---++--- -+---+- ++----- 1401,1407 = 1401,144402
++-++++- ---++--- -+---+- +--+----- 1407,1438 = 1438,144402
++-++++- ---++--- -+---+- +--+----- 1407,1460 = 144402,1460
++-++++- ---++--- -+---+- +--+----- 1407,1470 = 144402,1470
++-++++- ---++--- -+---+- +----- 1407,1454 = 144402,1454
++-++++- ---++--- -+---+- +----- 1404,1407 = 1407,1468
++-++++- -++++-+ -+---+- +----- 1414,1422 = 1422,144401
++-++++- -++++-+ -+---+- +----- 1407,1422 = 1422,144402
++-++++- -++++-+ -+---+- +-----+ 1414,1453 = 144401,1453
++-++++- -++++-+ -+---+- +----- 1414,1425 = 1425,144401
++-++++- -++++-+ -+---+- +----- 1414,1469 = 144401,1469
++-++++- ---++--- -+---+- +----- 1407,1414 = 1407,144401
++-++++- ---++--- -+---+- +----- 1407,1407 = 1407,144402
++-++++- +++++-+ -+---+- ----++-- 140503,1455 = 1455,1462
++-++++- -+---+- -+---+- ----++-- 1410,1455 = 1455,1457
++-++++- -+---+- -+---+- ----++-- 1411,1455 = 1434,1455
++-++++- -+---+- -+---+- ----++-- 1416,1455 = 1432,1455 = 1455,1474
++-++++- -+---+- -+---+- ----++-- 1408,1455 = 1423,1455
++-++++- +++++-+ -+---+- ----++-- 140503,1426 = 1426,1462 = 1461,1462

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++---+--+ -+---+--+ -+---+--+ ----- 1404,1439 = 1426,1439 = 1439,1461
++---+--+ -+---+--+ -+---+--+ ----- 1411,1426 = 1426,1434
++---+--+ -+---+--+ -+---+--+ ----- 1426,1431 = 1431,1454 = 1431,1458
++---+--+ -+---+--+ -+---+--+ ----- 1426,1432 = 1426,1474
++---+--+ -+---+--+ -+---+--+ ----- 1404,1432 = 1431,1432
++---+--+ -+---+--+ -+---+--+ ----- 1426,1473 = 1454,1473 = 1458,1473
++---+--+ -+---+--+ -+---+--+ ----- 1426,1428 = 1428,1454 = 1428,1458
++---+--+ -+---+--+ -+---+--+ ----- 1408,1426 = 1423,1426
++---+--+ -+---+--+ -+---+--+ ----- 1426,1468 = 1454,1468 = 1458,1468
++---+--+ -+---+--+ -+---+--+ ----- 1426,1471 = 1454,1471 = 1458,1471
++---+--+ -+---+--+ -+---+--+ ----- 1404,1438 = 1426,1450 = 1438,1450 =
1450,1454 = 1450,1458
++---+--+ -+---+--+ -+---+--+ ----- 1404,1426 = 1404,1454 = 1404,1458 =
1426,1458 = 1458,1461
++---+--+ -+---+--+ -+---+--+ ----- 1401,1426 = 1401,1461
++---+--+ -+---+--+ -+---+--+ ----- 1426,1438 = 1438,1461
++---+--+ -+---+--+ -+---+--+ ----- 1426,1460 = 1460,1461
++---+--+ -+---+--+ -+---+--+ ----- 1426,1426 = 1426,1454 = 1426,1461 =
1454,1461
++---+--+ -+---+--+ -+---+--+ ----- 140503,1439 = 1439,1462
++---+--+ -+---+--+ -+---+--+ ----- 1432,1443 = 1443,1474
++---+--+ -+---+--+ -+---+--+ ----- 1432,1456 = 1456,1474
++---+--+ -+---+--+ -+---+--+ ----- 1432,1445 = 1445,1474
++---+--+ -+---+--+ -+---+--+ ----- 1405,1432 = 1405,1474 = 1411,1462 =
1434,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1416 = 1416,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1432 = 140503,1474 = 1432,1462 =
1462,1474
++---+--+ -+---+--+ -+---+--+ ----- 1432,1465 = 1465,1474
++---+--+ -+---+--+ -+---+--+ ----- 1443,1454 = 1443,1462
++---+--+ -+---+--+ -+---+--+ ----- 1405,1435 = 1462,1472
++---+--+ -+---+--+ -+---+--+ ----- 1454,1456 = 1456,1462
++---+--+ -+---+--+ -+---+--+ ----- 1401,1405 = 1401,1445 = 1445,1454 =
1445,1462
++---+--+ -+---+--+ -+---+--+ ----- 1405,1470 = 1459,1462
++---+--+ -+---+--+ -+---+--+ ----- 1405,1454 = 1405,1462 = 1408,1462 =
1423,1462
++---+--+ -+---+--+ -+---+--+ ----- 1454,1465 = 1462,1465
++---+--+ -+---+--+ -+---+--+ ----- 1437,1454 = 1437,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1435 = 1435,1462
++---+--+ -+---+--+ -+---+--+ ----- 1401,140503 = 1401,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1438 = 1438,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1460 = 1460,1462
++---+--+ -+---+--+ -+---+--+ ----- 140503,1470 = 1462,1470
++---+--+ -+---+--+ -+---+--+ ----- 140503,1454 = 140503,1462 = 1454,1462 =
1462,1462
++---+--+ -+---+--+ -+---+--+ ----- 1411,1439 = 1434,1439
++---+--+ -+---+--+ -+---+--+ ----- 1432,1439 = 1439,1474
++---+--+ -+---+--+ -+---+--+ ----- 1408,1439 = 1423,1439
++---+--+ -+---+--+ -+---+--+ ----- 1415,1439 = 1439,1457
++---+--+ -+---+--+ -+---+--+ ----- 1410,1439 = 1410,1458 = 1439,1439 =
1439,1454 = 1439,1458
++---+--+ -+---+--+ -+---+--+ ----- 1408,1416 = 1416,1423
++---+--+ -+---+--+ -+---+--+ ----- 1432,1464 = 1464,1474
++---+--+ -+---+--+ -+---+--+ ----- 1432,1472 = 1434,1435 = 1472,1474
++---+--+ -+---+--+ -+---+--+ ----- 1401,1411 = 1401,1434
++---+--+ -+---+--+ -+---+--+ ----- 1411,1438 = 1434,1438
++---+--+ -+---+--+ -+---+--+ ----- 1411,1460 = 1434,1460
++---+--+ -+---+--+ -+---+--+ ----- 1432,1459 = 1434,1470 = 1459,1474

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++---+-- -++---+ -+---+-- ----- 1408,1432 = 1408,1474 = 1411,1454 =
                                         1423,1432 = 1423,1474 = 1434,1454
++---+-- -++---+ -+---+-- ----- 1432,1458 = 1458,1474
++---+-- -++---+ -+---+-- -----+ 1432,1435 = 1435,1474
++---+-- -++---+ -+---+-- -+----- 1401,1432 = 1401,1474
++---+-- -++---+ -+---+-- ---+----- 1432,1438 = 1438,1474
++---+-- -++---+ -+---+-- ----+---- 1432,1460 = 1460,1474
++---+-- -++---+ -+---+-- -----+-- 1432,1470 = 1470,1474
++---+-- -++---+ -+---+-- ----- 1432,1454 = 1454,1474
++---+-- -+---+-- -+---+-- ----- 1411,1432 = 1432,1434 = 1434,1474
++---+-- -+---+-- -+---+-- ----- 1432,1432 = 1432,1474
++---+-- -++---+ -+---+-- -----+ 1435,1459 = 1470,1472
++---+-- -++---+ -+---+-- -----+-- 1454,1464 = 1464,1470
++---+-- -++---+ -+---+-- -----+ 1408,1435 = 1423,1435 = 1454,1472
++---+-- -++---+ -+---+-- -+----- 1401,1408 = 1401,1423
++---+-- -++---+ -+---+-- ---+----- 1408,1438 = 1423,1438
++---+-- -++---+ -+---+-- ----+---- 1408,1460 = 1423,1460
++---+-- -++---+ -+---+-- -----+-- 1408,1470 = 1423,1470 = 1454,1459 =
                                         1459,1470
++---+-- -++---+ -+---+-- ----- 1408,1454 = 1423,1454
++---+-- -++---+ -+---+-- -+----- 1401,1401 = 1401,1454
++---+-- -++---+ -+---+-- ---+----- 1438,1438 = 1438,1454
++---+-- -++---+ -+---+-- ----+---- 1454,1460 = 1460,1460
+-++++-- +-+---+ +-+---+ -----+ 1405,1419 = 1419,1443
+-++++-- +-+---+ +-+---+ ----- 1402,1443 = 1443,1451
+-++++-- +-+---+ -+---+-- +----- 1402,1456 = 1451,1456
+-++++-- +-+---+ -+---+-- -+----- 1402,1445 = 1445,1451
+-++++-- +-+---+ -+---+-- ----- 1402,1405 = 1405,1451
+-++++-- +-+---+ -+---+-- ----- 1402,140503 = 140503,1451
+-++++-- -++---+ -+---+-- -----+ 1402,1472 = 1451,1472
+-++++-- -++---+ -+---+-- ----- 1402,1408 = 1408,1451
+-++++-- -++---+ -+---+-- -----+-- 1402,1464 = 1406,1442 = 1418,1430 =
                                         1451,1464
+-++++-- -++---+ -+---+-- -----+-- 1402,1459 = 1406,1414 = 1409,1418 =
                                         1451,1459
+-++++-- -++---+ -+---+-- ----- 1402,1423 = 1423,1451
+-++++-- -++---+ -+---+-- -----+-- 1402,1418 = 1418,1451
+-++++-- -++---+ -+---+-- ----- 1402,1442 = 1442,1451
+-++++-- -++---+ -+---+-- ----- 1402,1436 = 1436,1451
+-++++-- -++---+ -+---+-- +----- 1402,144401 = 144401,1451
+-++++-- -++---+ -+---+-- ----- 1402,1414 = 1414,1451
+-++++-- -++---+ -+---+-- +----- 1402,144402 = 144402,1451
+-++---+ -++---+ -+---+-- -----+-- 1423,1429 = 1429,1459
+-++---+ -++---+ -+---+-- -----+-- 1406,1464 = 1417,1418 = 1418,1433
+-++---+ -++---+ -+---+-- -----+-- 1406,1423 = 1406,1459
+-++---+ -++---+ -+---+-- -----+-- 1417,1436 = 1433,1436
+-++---+ -++---+ -+---+-- +----- 1417,144401 = 1433,144401
+-++---+ -++---+ -+---+-- -----+-- 1409,1464 = 1414,1417 = 1414,1433 =
                                         1430,1459
+-++---+ -++---+ -+---+-- -----+-- 1417,1442 = 1430,1464 = 1433,1442
+-++---+ -++---+ -+---+-- +-----+-- 1417,144402 = 1433,144402
+-++---+ -++---+ -+---+-- ----- 1409,1442 = 1414,1430
+-++---+ +-+---+ +-+---+ -----+ 1405,1421 = 1421,1443
+-++---+ +-+---+ +-+---+ -----+-- 1417,1443 = 1433,1443
+-++---+ +-+---+ -+---+-- +-----+-- 1417,1456 = 1433,1456
+-++---+ +-+---+ -+---+-- -+---+-- 1417,1445 = 1433,1445
+-++---+ +-+---+ -+---+-- -----+-- 1405,1417 = 1405,1433
+-++---+ +-+---+ -+---+-- -----+-- 140503,1417 = 140503,1433
+-++---+ -++---+ -+---+-- -+---+-- 1423,1452 = 1452,1459

```

+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1417 = 1408, 1433
+ - + - + - - - - + - + - + - + - - - - + - - 1417, 1472 = 1433, 1472
+ - + - + - - - - + - + - + - + - - - - + - - 1421, 1423 = 1421, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1417, 1423 = 1417, 1459 = 1423, 1433 =
1433, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1417, 1464 = 1433, 1464
+ - + - + - - - - + - + - + - + - - - - + - - 1403, 1464 = 1412, 1442
+ - + - + - - - - + - + - + - + - - - - + - - 1403, 1459 = 1412, 1414
+ - + - + - - - - + - + - + - + - - - - + - - 1418, 1436 = 1441, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1420, 1436 = 1423, 1441
+ - + - + - - - - + - + - + - + - - - - + - - 1418, 144401 = 1418, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1414, 1441 = 1436, 1441
+ - + - + - - - - + - + - + - + - - - - + - - 1412, 1423 = 1412, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1418 = 140503, 1418
+ - + - + - - - - + - + - + - + - - - - + - - 1418, 1464 = 1420, 1464
+ - + - + - - - - + - + - + - + - - - - + - - 1418, 1423 = 1418, 1459 = 1420, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1418, 1418 = 1418, 1420
+ - + - + - - - - + - + - + - + - - - - + - - 1443, 144401 = 1443, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1414, 1465 = 1437, 1442
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1442 = 140503, 1442
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1436 = 140503, 1436
+ - + - + - - - - + - + - + - + - - - - + - - 144401, 1445 = 144402, 1445
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 144401 = 1405, 144402 =
140503, 144401 = 1414, 1456 = 144401, 1456
= 144402, 1456
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1414 = 140503, 1414
+ - + - + - - - - + - + - + - + - - - - + - - 1434, 144401 = 1434, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 144401, 1472 = 144402, 1472
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 144401 = 1408, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 144401, 1464 = 144402, 1464
+ - + - + - - - - + - + - + - + - - - - + - - 1414, 1464 = 1442, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 144401, 1459 = 144402, 1459
+ - + - + - - - - + - + - + - + - - - - + - - 1423, 144401 = 1423, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1404, 144401 = 1414, 1468 = 144401, 1468
+ - + - + - - - - + - + - + - + - - - - + - - 1404, 144402 = 144402, 1468
+ - + - + - - - - + - + - + - + - - - - + - - 1411, 144401 = 1411, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1442, 144401 = 1442, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1436, 144401 = 1436, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1414, 1436 = 1436, 1436
+ - + - + - - - - + - + - + - + - - - - + - - 1414, 144401 = 1414, 144402 =
144401, 144401 = 144401, 144402
+ - + - + - - - - + - + - + - + - - - - + - - 1404, 1456 = 1405, 1468 = 1456, 1468
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1431 = 1423, 1431
+ - + - + - - - - + - + - + - + - - - - + - - 1404, 1434 = 1431, 1434
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1473 = 1423, 1473
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1428 = 1423, 1428
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1468 = 1423, 1468
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1471 = 1423, 1471
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1450 = 1423, 1450
+ - + - + - - - - + - + - + - + - - - - + - - 1404, 1408 = 1404, 1423
+ - + - + - - - - + - + - + - + - - - - + - - 1408, 1461 = 1423, 1461
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1434 = 140503, 1434
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1411 = 140503, 1411
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1472 = 140503, 1472
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1408 = 140503, 1408
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1443 = 140503, 1443 = 1423, 1443 =
1443, 1443
+ - + - + - - - - + - + - + - + - - - - + - - 1437, 1464 = 1459, 1465
+ - + - + - - - - + - + - + - + - - - - + - - 1405, 1465 = 1423, 1465

Lot No.: Y29

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+-----+ +--+---+ -+---+-- ----- 1405,1437 = 1423,1437
+-----+ +--+---+ -+---+-- -----+-- 1405,1464 = 140503,1464
+-----+ +--+---+ -+---+-- +----- 1405,1456 = 140503,1456 = 1423,1456 =
1456,1456
+-----+ +--+---+ -+---+-- -+----- 1405,1445 = 140503,1445 = 1423,1445 =
1445,1445
+-----+ +--+---+ -+---+-- -----+-- 1405,1459 = 140503,1459
+-----+ +--+---+ -+---+-- ----- 1405,1405 = 1405,140503 = 1405,1423 =
140503,1423
+-----+ -+---+-- -+---+-- ----- 1408,1410 = 1410,1423
+-----+ -+---+-- -+---+-- ----- 1408,1411 = 1408,1434 = 1423,1434
+-----+ -+---+-- -+---+-- ----- 1411,1434 = 1434,1434
+-----+ -+---+-- -+---+-- -----+ 1408,1472 = 1423,1472
+-----+ -+---+-- -+---+-- ----- 1408,1408 = 1408,1423
+-----+ -+---+-- -+---+-- -----+-- 1423,1464 = 1459,1464
+-----+ -+---+-- -+---+-- -----+-- 1423,1459 = 1459,1459
-+-----+ -+---+-- -+---+-- ----- 1403,1416 = 1416,1440 = 1440,1474
-+-----+ -+---+-- -+---+-- +----- 1403,1422 = 1422,1427
-+-----+ -+---+-- -+---+-- +-----+ 1403,1453 = 1427,1453 = 1453,1467
-+-----+ -+---+-- -+---+-- +----- 1403,1425 = 1425,1427 = 1425,1467 =
1427,1469
-+-----+ -+---+-- -+---+-- +----- 1403,1469 = 1467,1469
-+-----+ -+---+-- -+---+-- +----- 1404,1449 = 1431,1449 = 1449,1468
-+-----+ -+---+-- -+---+-- +----- 1422,1428 = 1425,1428
-+-----+ -+---+-- -+---+-- +----- 1422,1471 = 1425,1471
-+-----+ -+---+-- -+---+-- +----- 1422,1450 = 1425,1450
-+-----+ -+---+-- -+---+-- +----- 1404,1422 = 1404,1425 = 1422,1431 =
1422,1468 = 1422,1473 = 1425,1431 =
1425,1461 = 1425,1468 = 1425,1473 =
1469,1473
-+-----+ -+---+-- -+---+-- +-----+ 1404,1453 = 1431,1453 = 1453,1461 =
1453,1468 = 1453,1473
-+-----+ -+---+-- -+---+-- +----- 1404,1469 = 1431,1469 = 1461,1469 =
1468,1469
-+-----+ -+---+-- -+---+-- +----- 1422,1425 = 1422,1469
-+-----+ -+---+-- -+---+-- +-----+ 1425,1453 = 1453,1469
-+-----+ -+---+-- -+---+-- +----- 1425,1425 = 1425,1469
-+-----+ -+---+-- -+---+-- ----- 1404,1416 = 1416,1431
-+-----+ -+---+-- -+---+-- ----- 1404,1474 = 1431,1474
-+-----+ -+---+-- -+---+-- ----- 1410,1416 = 1416,1457 = 1457,1474
-+-----+ -+---+-- -+---+-- ----- 1415,1416 = 1415,1474
-+-----+ -+---+-- -+---+-- ----- 1416,1416 = 1416,1474
-+-----+ -+---+-- -+---+-- -----+-- 1403,1417 = 1412,1430
-+-----+ -+---+-- -+---+-- -----+-- 1402,1412 = 1403,1406
-+-----+ -+---+-- -+---+-- -----+ 1419,1433 = 1421,1451
-+-----+ -+---+-- -+---+-- -----+ 1402,1433 = 1417,1451 = 1433,1451
-+-----+ -+---+-- -+---+-- -----+ 1413,1421 = 1421,1424
-+-----+ -+---+-- -+---+-- -----+ 1402,1421 = 1417,1419 = 1419,1421
-+-----+ -+---+-- -+---+-- -----+-- 1402,1417 = 1406,1430
-+-----+ -+---+-- -+---+-- -----+ 1402,1463 = 1413,1463 = 1413,1467
-+-----+ -+---+-- -+---+-- -----+-- 1402,1450 = 1404,1447 = 1447,1450
-+-----+ -+---+-- -+---+-- ----- 1402,1451 = 1451,1451
-+-----+ -+---+-- -+---+-- -----+ 1413,1419 = 1419,1424
-+-----+ -+---+-- -+---+-- -----+ 1402,1419 = 1419,1419
-+-----+ -+---+-- -+---+-- -----+ 1402,1413 = 1413,1413 = 1413,1424
-+-----+ -+---+-- -+---+-- -----+ 1402,1447 = 1447,1447
-+-----+ -+---+-- -+---+-- -----+ 1402,1448 = 1448,1448
-+-----+ -+---+-- -+---+-- -----+-- 1404,1429 = 1406,1428 = 1428,1429
-+-----+ -+---+-- -+---+-- -----+-- 1406,1452 = 1420,1452

```

--+++-+--  ---+---  -+---+-  -----+--  1406,1433 = 1420,1433
--+++-+--  -----+  -----+--  -----+--  1406,1429 = 1420,1429 = 1429,1429
--+++-+--  -----  ++---+-  -----+--+  1406,1421 = 1420,1421
--+++-+--  -----  -+---+-  -----+--  1406,1417 = 1417,1420
--+++-+--  -----  -----+--  -----+--  1406,1406 = 1406,1420
--+-+--+  ---+---  -+---+-  -----+--  1417,1433 = 1433,1433
--+-+--+  -----  ++---+-  -----+--+  1417,1421 = 1421,1421
--+-+--+  -+-+---  ---+---  -+-+---  1404,1452 = 1431,1452 = 1452,1471
--+-+--+  -+-+---  ---+---  -+-+---  1404,1446 = 1446,1471
--+-+--+  -+-+---  -----  -+-+---  1446,1452 = 1452,1452
-----++  -+-+---  ---+---  -----  1403,1431 = 1431,1467
-----++  -----  ---+---  -----  1403,1473 = 1404,1427 = 1427,1473 =
1467,1473
-----++  -----+--+  ---+---  -----  1403,1428 = 1428,1467
-----++  -----  ---+++  -----+  1404,1463 = 1461,1463
-----++  -----  ---+---  +-----  1403,1468 = 1467,1468
-----++  -----  ---+---  -+-+---  1403,1471 = 1467,1471
-----++  -----  ---+---  -+-+---  1403,1450 = 1450,1467
-----++  -----  ---+---  -----  1403,1404 = 1404,1467 = 1461,1467
-----++  -+-----  ---+---  -----  1403,1457 = 1440,1457
-----++  -----+--  -----+--  -----  1403,1427 = 1427,1427
-----++  -----  -++++-  -----+  1415,1463 = 1440,1463
-----++  -----  -+++-  -----  1403,1415 = 1415,1440 = 1415,1467 =
1440,1467
-----++  -----  -+-+---  -----  1403,1440 = 1440,1440
-----++  -----  ---+++  -----+  1403,1463 = 1424,1463 = 1463,1463 =
1463,1467
-----++  -----  ---+---  -----  1403,1467 = 1467,1467
-----++  -----  -----+--  -----+--  1412,1412 = 1412,1420
-----+  -+-+---+  ---+---  -----  1404,1411 = 1411,1431
-----+  -+-+---  ---+---  -----  1404,1431 = 1431,1431 = 1431,1461
-----+  -----  ---+---  -----  1404,1473 = 1461,1473 = 1473,1473
-----+  -----+--+  ---+---  -----  1404,1428 = 1428,1428 = 1428,1461
-----+  -----  -++-  -----  1404,1415 = 1415,1461
-----+  -----  ---+---  +-----  1404,1468 = 1461,1468 = 1468,1468
-----+  -----  ---+---  -+-+---  1404,1471 = 1461,1471 = 1471,1471
-----+  -----  ---+---  -+-+---  1404,1450 = 1450,1450 = 1450,1461

```

(1405 = 140501 and 140502)

LICENSES

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101.117-12/03 and 101.117-12u/03u

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GUARANTEE

Olerup SSP AB guarantees that the primers in the DRB1*14 subtyping kit have the specificities given in the Specificity and Interpretation Tables of the product insert and in the GenoVision version of the HELMBERG-SCORETM software.

When stored at –20°C, the dried primers are stable for 22 months from the date of manufacture.

When stored at –20°C, the PCR Master Mix complete with *Taq* and the PCR Master Mix without *Taq* are stable for 24 months from the date of manufacture.

The kit is shipped at ambient temperature.

PROTOCOL

DNA EXTRACTION

Extracted, highly pure DNA is needed for SSP typings. We recommend isolation of DNA using GenoPrep B200 or GenoPrep B350 cartridges on the GenoM™-6 robotic workstation (GenoVision Europe Tel: +43 1 710 15 00 or GenoVision Inc. USA Tel: +1 610 430 88 41; <http://www.genovision.com>). Using GenoM™-6-extracted DNA ACD, EDTA and heparinised blood can be used as starting material. Because of its high purity, GenoM™-6-extracted DNA can be diluted when used in combination with Olerup SSP™ products. The recommended DNA concentration is 15 ng/μl.

Alternatively – BUT DO NOT USE HEPARINISED BLOOD WITH THESE METHODS - the DNA can be extracted using trimethylammoniumbromide salts (DTAB/CTAB) or by salting out. Dissolve the extracted DNA in dH₂O.

IMPORTANT:

Optimal DNA concentration using: GenoM™-6-extracted DNA, 15 ng/μl.

DNA extracted by other methods, 30 ng/μl.

Concentration exceeding 50 ng/μl will increase the risk for nonspecific amplifications and weak extra bands, especially for HLA Class I high resolution SSP typings.

PCR AMPLIFICATION

101.117-12/03 – licensed for PCR

For one DRB1*14 subtyping, add at room temperature in a 0.5 ml tube:

38 x 2 μl = 76 μl DNA (30 ng/μl)

38 x 3 μl = 114 μl PCR Master Mix complete with *Taq* – mix well
before taking your aliquot

38 x 5 μl = 190 μl dH₂O

Mix well, dispense 10 μl of the DNA-PCR Master Mix-H₂O mixture into each of the 32 wells of a DRB1*14 subtyping. **Well No. 1 of the 32 well PCR plate is marked with '1'**. Close the 32 well PCR plate with the provided lids.

101.117-12u/03u – not licensed for PCR

For one DRB1*14 subtyping, add at room temperature in a 0.5 ml tube:

38 x 2 μl = 76 μl DNA (30 ng/μl)

38 x 3 μl = 114 μl PCR Master Mix without *Taq* – mix well before
taking your aliquot

3.0 μl *Taq* polymerase (5 units/μl)

38 x 5 μl – 3.0 μl = 187 μl dH₂O

Mix well, dispense 10 μl of the DNA-PCR Master Mix-*Taq*-H₂O mixture into each of the 32 wells of a DRB1*14 subtyping. **Well No. 1 of the 32 well PCR plate is marked with '1'**. Close the 32 well PCR plate with the provided lids.

Use a 96 well thermal cycler with a heated lid. The temperature gradient across the heating block should be < 1°C.

PCR cycling parameters:

| | | | |
|--------------|------|---------|-------------------------|
| 1. 1 cycle | 94°C | 2 min | denaturation |
| 2. 10 cycles | 94°C | 10 sec. | denaturation |
| | 65°C | 60 sec. | annealing and extension |
| 3. 20 cycles | 94°C | 10 sec. | denaturation |
| | 61°C | 50 sec. | annealing |
| | 72°C | 30 sec. | extension |

The same PCR cycling parameters are used for all the Olerup SSP kits.

AGAROSE GEL ELECTROPHORESIS

Prepare a 2% (w/v) agarose gel in 0.5 x TBE buffer. Dissolve the agarose by boiling in a microwave oven. Let the gel solution cool to 60°C. Stain the gel prior to casting with ethidium bromide (10 mg/ml), 5 µl per 100 ml gel solution. For maximal ease of handling use our ethidium bromide dropper bottles (Product No. 103.301-10), 1 drop of ethidium bromide solution per 50-75 ml of gel. **Note: Ethidium bromide is a powerful carcinogen.**

Load the PCR products, preferably using an 8-channel pipette. Load a DNA size marker (100 base pair ladder, Product No. 103.201-100) in one well per row.

Run the gel in 0.5 x TBE buffer, without re-circulation of the buffer, for 15-20 minutes at 8-10 V/cm.

DOCUMENTATION AND INTERPRETATION

Put the gel on a UV transilluminator and document by photography.

Record the presence and absence of specific PCR products. The relative lengths of the specific PCR products are helpful in the interpretation of the results.

Record the presence and relative lengths of the internal positive control bands. The differently sized control bands will help in the correct orientation of the typing as well as in kit identification.

Lanes without either control band or specific PCR products should be repeated.

Interpret the typings with the ***lot-specific Interpretation and Specificity Tables***.

INTERPRETATION SOFTWARE

The interpretation software (Product No. 110.101) can be helpful in the interpretation of the typings.

PCR MASTER MIXES

The PCR Master Mix complete with *Taq* contains:

| | |
|-----------------------|--|
| <i>Taq</i> polymerase | 0.4 unit per 10 µl SSP reaction |
| nucleotides | final concentration of each dNTP is 200 µM |
| PCR buffer | final concentrations: 50 mM KCl, 1.5 mM MgCl ₂ ,
10 mM Tris-HCl pH 8.3, 0.001% w/v gelatin |
| glycerol | final concentration of glycerol is 5% |
| cresol red | final concentration of cresol red is 100 µg/ml |

The same PCR Master Mix complete with *Taq* is used for all the licensed *Olerup* SSP kits.

The PCR Master Mix without *Taq* contains:

| | |
|-------------|--|
| nucleotides | final concentration of each dNTP is 200 µM |
| PCR buffer | final concentrations: 50 mM KCl, 1.5 mM MgCl ₂ ,
10 mM Tris-HCl pH 8.3, 0.001% w/v gelatin |
| glycerol | final concentration of glycerol is 5% |
| cresol red | final concentration of cresol red is 100 µg/ml |

The same PCR Master Mix without *Taq* is used for all the unlicensed *Olerup* SSP kits.

The PCR Master Mix complete with *Taq* and the PCR Master Mix without *Taq* can be shipped at ambient temperature.

When stored at –20°C, the PCR Master Mix complete with *Taq* and the PCR Master Mix without *Taq* are stable for 24 months from the date of manufacture.

Vials with the PCR Master Mixes can be kept at +4°C for 4 weeks, but the PCR Master Mixes are then no longer stable for 24 months.

SPECIFICITY TABLE

DRB1*14 SSP subtyping

Specificities and sizes of the PCR products of the 32 primer mixes used for DRB1*14 SSP subtyping

| Primer Mix | Size of spec. PCR product ¹ | Size of contr. band ² | Amplified DRB1*14 alleles ³ | Other amplified DRB alleles ^{3,4} |
|--------------------------|--|----------------------------------|---|--|
| 1 | 210 bp | 515 bp | 140101-140103,
140501-140503,
140701-1408,
1414, 1418,
142301-142302,
1426, 143201-
143202, 1434-
1436, 1438, 1439,
1442-1445, 1454,
1455 ^{weakly} , 1456,
1458-1460, 1462,
1464, 1465, 1470,
1472 | 1113, 1117, 1152 |
| 2 | 175 bp | 430 bp | 140101-140103,
140701-140702,
1416, 1422, 1425,
1426, 143201-
143202, 1435,
1438, 1439, 1449,
1453-1455, 1458,
1460, 1462, 1469,
1470, 1474 | 0310, 1343, 1345 |
| 3^{5,6,7} | 140 bp | 430 bp | 1402, 1406, 1409,
1413, 1417, 1419,
1421, 1429, 1430,
1433, 1446-1448,
1451, 1452 | |
| 4^{6,7} | 85 bp | 430 bp | 1402-140302,
1406, 1412, 1413,
1418-1420, 1424,
1427, 1429, 1440,
1441, 1447-1449,
1451, 1463, 1467 | 030201-0303, 0327, 0329,
0338, 1315, 1319, 1326, 1353,
1357 |
| 5 | 260 bp | 430 bp | 1402-140302,
140701-140702,
1409, 1413, 1414,
1419, 1422, 1424, | 030201-030202, 030501-
030502, 0309, 0314, 0317,
0327, 0329, 0335, 0338,
110101-110107, 110801- |

| | | | | |
|--------------------------|--------------------|---------------|--|--|
| | | | 1425, 1427, 1430,
1436, 1440-1442,
144401-144402,
1447-1449, 1451,
1453, 1463, 1467,
1469 | 111202, 111401-1115, 111901-
1120, 1123, 1124, 1126-1129,
1131-1133, 1137, 1139, 1145,
1149, 1151, 1153, 1161, 1162,
1164, 1166, 130201-130302,
130501-130502, 130701-
130702, 1312-131402, 1321,
1323, 1325, 1326, 1329-1331,
1333, 1334, 1336-1339, 1341,
1345-1347, 1349, 1350, 1355,
1356, 1360, 1362, 1363, 1365,
1366, 1373, 1374 |
| 6 | 260 bp | 515 bp | 140101-140103,
140501-1406,
1408, 1412, 1416-
1418, 1420, 1421,
142301-142302,
1426, 1429,
143201-1435,
1437-1439, 1443,
1445, 1454-1456,
1458-1460, 1462,
1464, 1465, 1470,
1472, 1474 | 030101-030106, 0303, 0304,
0306-0308, 0310-0313, 0315,
0316, 0318-0326, 0328, 0330-
0334, 0336, 0337, 0339, 0820,
110201-110404, 110601-1107,
1113, 1116-1118, 1121, 1125,
1134-1136, 1138, 1140-1144,
1146-1148, 1150, 1152,
115401-1160, 1163, 116501-
116502, 130101-130103, 1304,
1306, 1308-1311, 1315, 1318-
1320, 1322, 1324, 1327, 1328,
1332, 1335, 1340, 1342-1344,
1348, 1351-1354, 1357-1359,
1361, 1364, 1368-1372, 1375-
1381 |
| 7 | 225 bp | 430 bp | 140301-140302,
1412, 1427, 1440,
1455, 1463, 1467 | 0820, 1123, 1125, 1145, 1155,
1164, 1313, 1318, 1347, 1355 |
| 8^{6,9} | 135, 170 bp | 430 bp | 1404, 1426, 1428,
1431, 1450, 1461,
1468, 1471, 1473 | 0706, 0808, 0811 ^{weakly} |
| 9^{6,10} | 130, 250 bp | 430 bp | 140501-140503,
1437, 1443, 1445,
1456, 1462, 1465 | 0312, 0410-0412, 0467, 0806,
0810, 0812, 0822, 1304, 1332,
1348, 1358, 1372, 1375, 1381,
1512 |
| 10⁵ | 175 bp | 430 bp | 1410, 1439, 1457 | 0462, 0469 |
| 11^{6,11} | 85, 170, 215
bp | 430 bp | 1411, 1416, 1422,
1425, 1431,
143201-143202,
1434, 1449, 1452,
1453, 1469, 1474 | 0114, 0462, 0805, 0818, 0824,
0825, 0831, 120101-120202,
120302-1216, 1317, 1343, 1345 |
| 12⁷ | 225 bp | 515 bp | 140101-140103,
140501-140503,
140701-1408, | 0311, 0317, 0324, 0327, 0335,
1117, 1152-115402, 1376 |

| | | | | |
|------------------------------|------------|---------------|---|---|
| | | | 1414, 1418,
142301-142302,
1426, 1433, 1435,
1436, 1438, 1439,
1442-1445, 1451,
1454, 1456, 1458-
1460, 1462, 1464,
1470, 1472 | |
| 13^{5,6} | 115 bp | 430 bp | 140101-140103,
1404, 140701-
1408, 1410, 1416,
1422, 1426, 1428,
1431-143202,
1434, 1435, 1438,
1439, 1449, 1450,
1454, 1455, 1460-
1462, 1468, 1470-
1474 | 0310, 1152, 1343 |
| 14^{6,12} | 60, 130 bp | 515 bp | 1422, 1425, 1427,
1453, 1473 | 0808, 0903, 1109, 1128, 1140,
1158, 1159, 130501-130502,
1318, 1326, 1342, 1350, 1363,
1608 |
| 15 | 185 bp | 430 bp | 1428, 1429 | 0320, 1205, 1214, 1215 |
| 16⁶ | 105 bp | 430 bp | 140501-140502,
1408, 1411, 1414,
1418, 142301-
142302, 1434,
1436, 1442-
144401, 1445,
1456, 1459, 1464,
1472 | 010201-010204, 110105,
110403, 110602, 1113, 1117,
1152, 115401, 1204, 1209,
130103, 1376 |
| 17 | 220 bp | 430 bp | 1419, 1421, 1443 | 130301-130302, 1310, 1333,
1337, 1366, 1381 |
| 18⁶ | 85 bp | 430 bp | 140101-140103,
140501-140503,
140701-1409,
1414, 1416, 1417,
1421-142302,
1425, 1426, 1430,
143201-1439,
1442-1445, 1453-
1456, 1458-1460,
1462, 1464, 1465,
1469, 1472, 1474 | 030101-030106, 0304-0326,
0328, 0330-0337, 0339, 0820,
110101-110404, 110601-1121,
1123-1129, 1131-1166, 130101-
131402, 1316, 1318, 1320-1325,
1327-1352, 1354-1356, 1358-
1366, 1368-1381 |
| 19⁶ | 145 bp | 430 bp | 1415, 1416, 1440,
1455, 1457 | 0809, 0821, 1308, 1319, 1357,
1364, 1372, 1376 |
| 20^{5,6,8,13} | 60, 110, | 430 bp | 1404, 1415, 1425, | 0114, 0412, 0418, 080101- |

| | | | | |
|--------------------------|------------------|---------------|---|---|
| | 170, 215 bp | | 1428, 1431, 1439, 1450, 1453, 1458, 1463, 1467-1469, 1471, 1473 | 080203, 080302-080404, 0806-0817, 0819-0823, 0826-0828, 0830, 0832-0834, 1123, 1125, 1145, 1155, 1164, 1313, 1345, 1347, 1355, 1521 |
| 21¹⁴ | 170, 215 bp | 515 bp | 1413, 1424, 1437, 1463, 1465 | 0312, 130301-1304, 1309, 1312, 1313, 1321, 1330, 1332, 1333, 1338, 1348, 1349, 1355, 1358, 1365, 1366, 1375, 1381 |
| 22⁶ | 145 bp | 430 bp | 140101-140302, 140501-1409, 1412-1414, 1416, 1418-1420, 1422-1427, 1429, 143201-143202, 1434, 1436-1441, 1443-1445, 1447-1449, 1451, 1454-1456, 1458-1460, 1462, 1463, 1467, 1469, 1470, 1474 | 030201-0303, 0306, 0317, 0326, 0327, 0331, 0335, 0338, 0820, 1117, 1137, 1141, 1148, 1150, 1152, 1156, 130301-130302, 130701-1308, 1312, 1313, 1319, 1326, 1332, 1333, 1336-1338, 1340, 1347-1349, 1353, 1355, 1358, 1360, 1365, 1370, 1372, 1376, 1381 |
| 23⁶ | 145 bp | 430 bp | 1417, 1421, 1430, 1433, 1435, 1442, 1453, 1464, 1465, 1472 | 030101-030106, 0304-030502, 0307-0315, 0318-0325, 0328-0330, 0332-0334, 0336, 0337, 0339, 110101-110106, 110201-110404, 110601-1116, 1118-1121, 1123-1129, 1131-1136, 1138-1140, 1142-1147, 1149, 1151, 1153-1155, 1157-1166, 130101-130203, 1304-1306, 1309-1311, 131401-1316, 1318, 1320-1325, 1327-1331, 1334, 1339, 1341-1346, 1350-1352, 1354, 1356, 1357, 1359, 1361-1364, 1366, 1368, 1369, 1371, 1373-1375, 1377-1379 |
| 24^{6,15} | 115, 135 bp | 430 bp | 1436, 1441 | 0318, 1334, 1364 |
| 25¹⁶ | 120, 210, 250 bp | 430 bp | 140701-140702, 1422, 1425, 144401-144402, 1449, 1453, 1456, 1468, 1469 | 0114, 0335, 0462, 0469, 0808, 0815, 1345, DRB3*0216 |
| 26^{5,17} | 190, 250 bp | 515 bp | 140101-140103, 1445 | |
| 27^{5,18} | 220, 250 bp | 515 bp | 1446, 1452, 1471 | |
| 28 | 230 bp | 430 bp | 1438, 1447, 1450 | 030102, 030202, 0317, 0324, 0327, 0335, 112701, 1361 |

| | | | | |
|----------------------------|-------------|---------------|---|---|
| 29^{6,19} | 135, 175 bp | 515 bp | 1448, 1460 | 0338, 1331, 1346, 1354, 1377 |
| 30 | 200 bp | 430 bp | 1406, 1412, 1417,
1418, 1421, 1429,
1433, 1452, 1459,
1464, 1470 | 030101-030106, 0303, 0306-
0308, 0310-0313, 0315, 0316,
0318-0320, 0322-0324, 0326,
0328, 0332-0334, 0336, 0337,
0339, 1116, 1140, 1158, 1159,
130101-130103, 1306, 1309,
1310, 1315, 1318, 1320, 1327,
1328, 1332, 1335, 1340, 1342,
1343, 1351, 1353, 1359, 1361,
1369, 1371, 1377-1380, 1503,
1523 |
| 31⁶ | 80 bp | 515 bp | 1435, 1453, 1472 | 0310, 1131, 1343, 1345 |
| 32^{6,8,20} | 100, 145 bp | 430 bp | 1413, 1419, 1421,
1463 | 1310, 1332, 1365 |

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*14 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 bp or more. Size differences shorter than 20 bp are not given. For high resolution SSP kits the length 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, e.g. primer mixes 3, 10, 13 and 20.

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

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 tubes, or a band of 515 base pairs, for some tubes.

Tube 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*14 subtyping.

In addition, tubes number 6, 12, 14, 21, 26, 27, 29 and 31 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

PLEASE NOTE: All the SSP kits, except the B*37, B*41, B*42, B*46, B*47, B*48, B*49, B*50, B*53, B*67, B*78, B*81 and B*82 kits and the Cw*01, Cw*02, Cw*08, Cw*12, Cw*14, Cw*15, Cw*16, Cw*17 and Cw*18 kits, from *Olerup* SSP AB can be uniquely identified by the number of tubes and the kit-specific pattern of the two differently sized control bands.

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

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

⁴Due to the sharing of sequence motifs within the DR52 group of DRB1 alleles, all DRB1*03 alleles, all DRB1*12 alleles, all DRB1*13 alleles as well as most DRB1*11 alleles are amplified by some of the DRB1*14 primer mixes. In addition, five DRB1*01 alleles, seven DRB1*04 alleles, one DRB1*07 allele, all DRB1*08 alleles, one DRB1*09 allele, four DRB1*15 allele and one DRB1*16 allele are amplified by some of the DRB1*14 primer mixes. Finally, the DRB3*0216 allele will be amplified by primer mix 25.

²The DRB1*1408 and DRB1*1152 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1411 and DRB1*1204 and DRB1*1209 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DR low resolution and/or DRB1*12 SSP kits.

The DRB1*1415 and DRB1*0809 and DRB1*0821 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DRB1*08 SSP kit.

The DRB1*142301-142302 and DRB1*1117 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1437, DRB1*1348 and DRB1*1358 DR alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*13 SSP kits.

⁵Primer mixes 3, 10, 13, 20, 26 and 27 have a tendency of giving rise to nonspecific amplifications.

⁶Short specific PCR fragments are less intense and not as sharp as longer specific bands.

⁷Primer mixes 3, 4 and 12 may yield less specific PCR product than the other DRB1*14 primer mixes.

⁸Primer mixes 20 and 32 have a tendency of giving rise to primer oligomer formation, most pronounced for primer mix 20.

⁹Primer mix 8: Specific PCR fragment of 135 bp in the DRB1*1426 and DRB1*0706 alleles. Specific PCR fragment of 170 bp in the DRB1*1404, 1428, 1431, 1450, 1461, 1468, 1471, 1473 and DRB1*0808 and 0811 alleles.

¹⁰Primer mix 9: Specific PCR fragment of 130 bp in the DRB1*1462 allele. Specific PCR fragment of 250 bp in the DRB1*140501-140503, 1437, 1443, 1445, 1456, 1462, 1465 and DRB1*0312, 0410-0412, 0467, 0806, 0810, 0812, 0822, 1304, 1332, 1348, 1358, 1372, 1375, 1381 and 1512 alleles.

¹¹Primer mix 11: Specific PCR fragment of 85 bp in the DRB1*1416, 1422, 1425, 143201-143202, 1434, 1449, 1453, 1469, 1474 and DRB1*0114 and 0462 alleles. Specific PCR fragment of 170 bp in the DRB1*1411 allele. Specific PCR fragment of 215 bp in the DRB1*1452 and DRB1*0805, 0818, 0824, 0825, 120101 to 120202, 120302, 1205 to 1216 and 1317 alleles. Specific PCR fragment of 85 and 215 bp in the DRB1*1431, DRB1*1343 and 1345 alleles. Specific PCR fragment of 170 and 215 bp in the DRB1*0831 and 1204 alleles.

¹²Primer mix 14: Specific PCR fragment of 60 bp in the DRB1*1422, 1425, 1453, 1473 and DRB1*0808 alleles. Specific PCR fragment of 130 bp in the DRB1*1427 and DRB1*0903, 1109, 1128, 1140, 1158, 1159, 130501-130502, 1318, 1326, 1342, 1350, 1363 and 1608 alleles.

¹³Primer mix 20: Specific PCR fragment of 60 bp in the DRB1*1463, 1467 and DRB1*0412, 0418 and 1521 alleles. Specific PCR fragment of 110 bp in the DRB1*1425, 1453, 1458, 1469 and DRB1*0114, 1123, 1125, 1145, 1155, 1164, 1313, 1345, 1347 and 1355 alleles. Specific PCR fragment of 170 bp in the DRB1*1404, 1428, 1431, 1439, 1450, 1468, 1471 and 1473 alleles. Specific PCR fragment of 215 bp in the DRB1*1415 and DRB1*080101 to 080203, 080302 to 080404, 0806 to 0817, 0819 to 0823, 0826 to 0828, 0830 and 0832 to 0834 alleles.

¹⁴Primer mix 21: Specific PCR fragment of 170 bp in DRB1*1413, 1463, 1465 and DRB1*0312, 130301-1304, 1312, 1313, 1321, 1330, 1332, 1333, 1338, 1348, 1349, 1355, 1358, 1365, 1366, 1375 and 1381 alleles. Specific PCR fragment of 215 bp in the DRB1*1424, 1437 and DRB1*1309 alleles.

¹⁵Primer mix 24: Specific PCR fragment of 115 bp in the DRB1*1441 and DRB1*1334 and 1364 alleles. Specific PCR fragment of 135 bp in the DRB1*1436 and DRB1*0318 alleles.

¹⁶Primer mix 25: Specific PCR fragment of 120 bp in the DRB1*140701-140702, 1422, 1425, 1449, 1453, 1469 and DRB1*0114, 0335, 0462, 0469, 0808, 0815, 1345 and the DRB3*0216 allele. Specific PCR fragment of 210 bp in DRB1*1456 allele. Specific PCR fragment of 250 bp in the DRB1*144401-144402 allele.

¹⁷Primer mix 26: Specific PCR fragment of 190 bp in the DRB1*1445 allele. Specific PCR fragment of 250 bp in the DRB1*140101 to 140103 alleles.

¹⁸Primer mix 27: Specific PCR fragment of 220 bp in the DRB1*1446 allele. Specific PCR fragment of 250 bp in the DRB1*1452 and 1471 alleles.

¹⁹Primer mix 29: Specific PCR fragment of 135 bp in the DRB1*1460 allele. Specific PCR fragment of 175 bp in the DRB1*1460 and DRB1*0338, 1331, 1346, 1354 and 1377 alleles.

²⁰Primer mix 32: Specific PCR fragment of 100 bp in the DRB1*1413, 1463 and DRB1*1332 and 1365 alleles. Specific PCR fragment of 145 bp in the DRB1*1419, 1421 and DRB1*1310 alleles.

| INTERPRETATION TABLE | | | | | | | | | | | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| DRB1*14 SSP subtyping | | | | | | | | | | | | | | | | |
| Amplification patterns of the DRB1*1401 to DRB1*1474 alleles | | | | | | | | | | | | | | | | |
| | Tube ⁴ | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Length of spec. | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
| PCR product | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Length of int. | 515 | 430 | 430 | 430 | 430 | 515 | 430 | 430 | 430 | 430 | 430 | 515 | 430 | 515 | 430 | 430 |
| pos. control ¹ | | | | | | | | | | | | | | | | |
| 5'-primer(s) ² | 13 | 13 | 37 | 13 | 13 | 13 | 13 | 13 | 16 | 11 | 16 | 13 | 34 | 37 | 37 | 57 |
| | 5'-g TC ^{3'} | 5'-g TC ^{3'} | 5'-Ag A ^{3'} | 5'-g TC ^{3'} | 5'-g TC ^{3'} | 5'-g TC ^{3'} | 5'-g TC ^{3'} | 5'-g gg ^{3'} | 5'-CAA ^{3'} | 5'-AC C ^{3'} | 5'-gT T ^{3'} | 5'-g TC ^{3'} | 5'-CAg ^{3'} | 5'-Ag A ^{3'} | 5'-Ag A ^{3'} | 5'-gAT ^{3'} |
| | | | | | | | | 16 | 57 | 13 | 60 | | | 60 | 37 | |
| | | | | | | | | 5'-gT T ^{3'} | 5'-C TA ^{3'} | 5'-A CA ^{3'} | 5'-Ag C ^{3'} | | | 5'-Ag C ^{3'} | 5'-g TT ^{3'} | |
| | | | | | | | | 25 | | | | | | | | |
| | | | | | | | | 5'-g CA ^{3'} | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 3'-primer(s) ³ | 70 | 57 | 70 | 28 | 86 | 86 | 74 | 57 | 86 | 57 | 58 | 74 | 60 | 67 | 85 | 78 |
| | 5'-T CC ^{3'} | 5'-C Ag ^{3'} | 5'-CTg ^{3'} | 5'-CT C ^{3'} | 5'-C AC ^{3'} | 5'-C CA ^{3'} | 5'-CAg ^{3'} | 5'-C Ag ^{3'} | 5'-C CA ^{3'} | 5'-C Ag ^{3'} | 5'-C CT ^{3'} | 5'-C CT ^{3'} | 5'-gTg ^{3'} | 5'-gAA ^{3'} | 5'-C Ag ^{3'} | 5'-CA A ^{3'} |
| | | | 71 | | | | | | | | 74 | | | | | |
| | | | 5'-CTT ^{3'} | | | | | | | | 5'-CgC ^{3'} | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| DRB1 allele ⁵ | | | | | | | | | | | | | | | | |
| *140101-140103 | + | + | | | | + | | | | | | + | + | | | |
| *1402 | | | + | + | + | | | | | | | | | | | |
| *140301-142302 | | | | + | + | | + | | | | | | | | | |
| *1404 | | | | | | | | + | | | | | + | | | |
| *140501-140502 | + | | | | | + | | | + | | | + | | | | + |
| *140503 | + | | | | | + | | | + | | | + | | | | |
| *1406 | | | + | + | | + | | | | | | | | | | |
| *140701 | + | + | | | + | | | | | | | + | + | | | |
| *140702 | + | + | | | + | | | | | | | + | + | | | |
| *1408, 1152 | + | | | | | + | | | | | | + | + | | | + |
| *1409 | | | + | | + | | | | | | | | | | | |
| *1410 | | | | | | | | | | + | | | + | | | |
| *1411, 1204, 1209 | | | | | | | | | | | + | | | | | + |
| *1412 | | | | + | | + | + | | | | | | | | | |
| *1413 | | | + | + | + | | | | | | | | | | | |
| *1414 | + | | | | + | | | | | | | + | | | | + |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| INTERPRETATION TABLE | | | | | | | | | | | | | | | | |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|
| DRB1*14 SSP subtyping | | | | | | | | | | | | | | | | |
| Amplification patterns of the DRB1*1401 to DRB1*1474 alleles | | | | | | | | | | | | | | | | |
| Tube ⁴ | | | | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | |
| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec. |
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | PCR product |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 430 | 430 | 430 | 430 | 515 | 430 | 430 | 430 | 430 | 515 | 515 | 430 | 515 | 430 | 515 | 430 | Length of int. |
| | | | | | | | | | | | | | | | | pos. control ¹ |
| 13 | 13 | 37 | 11 | 13 | 13 | 13 | 13 | 16 | 16 | 10 | 13 | 13 | 30 | 37 | 37 | 5'-primer(s) ² |
| 5'-g TC ³ | 5'-g TC ³ | 5'-g TT ³ | 5'-AC C ³ | 5'-g TC ³ | 5'-g TC ³ | 5'-g TC ³ | 5'-g TC ³ | 5'-CAA ³ | 5'-CAA ³ | 5'-g CT ³ | 5'-g TC ³ | 5'-g TC ³ | 5'-gA C ³ | 5'-g TT ³ | 5'-Ag A ³ | |
| | | | 16 | | | | | 60 | 112 | 16 | 16 | | 37 | | | |
| | | | 5'-gt T ³ | | | | | 5'-Ag C ³ | 5'-AC T ³ | 5'-gt T ³ | 5'-gt T ³ | | 5'-Ag A ³ | | | |
| | | | 34 | | | | | | | | | | | | | |
| | | | 5'-CAA ³ | | | | | | | | | | | | | |
| | | | 67 | | | | | | | | | | | | | |
| | | | 5'-AC A ³ | | | | | | | | | | | | | |
| 71 | 28 | 71 | 57 | 57 | 47 | 47 | 38 | 73 | 67 | 70 | 77 | 45 | 86 | 60 | 57 | 3'-primer(s) ³ |
| 5'-CTT ³ | 5'-CT g ³ | 5'-CTC ³ | 5'-C Ag ³ | 5'-gCT ³ | 5'-g gT ³ | 5'-g gA ³ | 5'-CAg ³ | 5'-ggA ³ | 5'-gAT ³ | 5'-CTg ³ | 5'-TA A ³ | 5'-CCT ³ | 5'-C CA ³ | 5'-gTg ³ | 5'-gCT ³ | |
| 77 | 28 | 74 | 74 | 71 | | | 45 | 86 | 181 | 86 | | 57 | | | 71 | |
| 5'-ggC ³ | 5'-CT g ³ | 5'-CAg ³ | 5'-CAg ³ | 5'-CgC ³ | | | 5'-CCg ³ | 5'-C AC ³ | 5'-gt T ³ | 5'-CAT ³ | | 5'-C gA ³ | | | 5'-CTT ³ | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | | | | | | | | | | | | | | | | DRB1 allele ⁵ |
| | + | | | | + | | | | + | | | | | | | *140101-140103 |
| | | | | | + | | | | | | | | | | | *1402 |
| | | | | | + | | | | | | | | | | | *140301-142302 |
| | | | + | | | | | | | | | | | | | *1404 |
| | + | | | | + | | | | | | | | | | | *140501-140502 |
| | + | | | | + | | | | | | | | | | | *140503 |
| | | | | | + | | | | | | | | + | | | *1406 |
| | + | | | | + | | | + | | | | | | | | *140701 |
| | + | | | | + | | | + | | | | | | | | *140702 |
| | + | | | | + | | | | | | | | | | | *1408, 1152 |
| | + | | | | + | | | | | | | | | | | *1409 |
| | | | | | | | | | | | | | | | | *1410 |
| | | | | | | | | | | | | | | | | *1411, 1204, 1209 |
| | | | | | + | | | | | | | | + | | | *1412 |
| | | | | + | + | | | | | | | | | | + | *1413 |
| | + | | | | + | | | | | | | | | | | *1414 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec.
PCR product | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|--------------------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *1415, 0809, 0821 | | | | | | | | | | | | | | | | |
| *1416 | | + | | | | + | | | | | + | | + | | | |
| *1417 | | | + | | | + | | | | | | | | | | |
| *1418 | + | | | + | | + | | | | | | + | | | | + |
| *1419 | | | + | + | + | | | | | | | | | | | |
| *1420 | | | | + | | + | | | | | | | | | | |
| *1421 | | | + | | | + | | | | | | | | | | |
| *1422 | | + | | | + | | | | | | + | | + | + | | |
| *142301-142302,
1117 | + | | | | | + | | | | | | + | | | | + |
| *1424 | | | | + | + | | | | | | | | | | | |
| *1425 | | + | | | + | | | | | | + | | | + | | |
| *1426 | + | + | | | | + | | + | | | | + | + | | | |
| *1427 | | | | + | + | | + | | | | | | | + | | |
| *1428 | | | | | | | | + | | | | | + | | + | |
| *1429 | | | + | + | | + | | | | | | | | | + | |
| *1430 | | | + | | + | | | | | | | | | | | |
| *1431 | | | | | | | | + | | | + | | + | | | |
| *143201-143202 | + | + | | | | + | | | | | + | | + | | | |
| *1433 | | | + | | | + | | | | | | + | | | | |
| *1434 | + | | | | | + | | | | | + | | + | | | + |
| *1435 | + | + | | | | + | | | | | | + | + | | | |
| *1436 | + | | | | + | | | | | | | + | | | | + |
| *1437, 1348, 1358 | | | | | | + | | | + | | | | | | | |
| *1438 | + | + | | | | + | | | | | | + | + | | | |
| *1439 | + | + | | | | + | | | | + | | + | + | | | |
| *1440 | | | | + | + | | + | | | | | | | | | |
| *1441 | | | | + | + | | | | | | | | | | | |
| *1442 | + | | | | + | | | | | | | + | | | | + |
| *1443 | + | | | | | + | | | + | | | + | | | | + |
| *144401 | + | | | | + | | | | | | | + | | | | + |
| *144402 | + | | | | + | | | | | | | + | | | | |
| *1445 | + | | | | | + | | | + | | | + | | | | + |
| *1446 | | | + | | | | | | | | | | | | | |
| *1447 | | | + | + | + | | | | | | | | | | | |
| *1448 | | | + | + | + | | | | | | | | | | | |
| *1449 | | + | | + | + | | | | | | + | | + | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| | | | | | | | | | | | | | | | | |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|--------------------------------|
| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec.
PCR product |
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | | + | + | | | | | | | | | | | | | *1415, 0809, 0821 |
| | + | + | | | + | | | | | | | | | | | *1416 |
| | + | | | | | + | | | | | | | + | | | *1417 |
| | | | | | + | | | | | | | | + | | | *1418 |
| + | | | | | + | | | | | | | | | | + | *1419 |
| | | | | | + | | | | | | | | | | | *1420 |
| + | + | | | | | + | | | | | | | + | | + | *1421 |
| | + | | | | + | | | + | | | | | | | | *1422 |
| | + | | | | + | | | | | | | | | | | *142301-142302,
1117 |
| | | | | + | + | | | | | | | | | | | *1424 |
| | + | | + | | + | | | + | | | | | | | | *1425 |
| | + | | | | + | | | | | | | | | | | *1426 |
| | | | | | + | | | | | | | | | | | *1427 |
| | | | + | | | | | | | | | | | | | *1428 |
| | | | | | + | | | | | | | | + | | | *1429 |
| | + | | | | | + | | | | | | | | | | *1430 |
| | | | + | | | | | | | | | | | | | *1431 |
| | + | | | | + | | | | | | | | | | | *143201-143202 |
| | + | | | | | + | | | | | | | + | | | *1433 |
| | + | | | | + | | | | | | | | | | | *1434 |
| | + | | | | | + | | | | | | | | + | | *1435 |
| | + | | | | + | | + | | | | | | | | | *1436 |
| | + | | | + | + | | | | | | | | | | | *1437, 1348, 1358 |
| | + | | | | + | | | | | | + | | | | | *1438 |
| | + | | + | | + | | | | | | | | | | | *1439 |
| | | + | | | + | | | | | | | | | | | *1440 |
| | | | | | + | | + | | | | | | | | | *1441 |
| | + | | | | | + | | | | | | | | | | *1442 |
| + | + | | | | + | | | | | | | | | | | *1443 |
| | + | | | | + | | | + | | | | | | | | *144401 |
| | + | | | | + | | | + | | | | | | | | *144402 |
| | + | | | | + | | | | + | | | | | | | *1445 |
| | | | | | | | | | | + | | | | | | *1446 |
| | | | | | + | | | | | | + | | | | | *1447 |
| | | | | | + | | | | | | | + | | | | *1448 |
| | | | | | + | | | + | | | | | | | | *1449 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec. | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|--|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *1450 | | | | | | | | + | | | | | + | | | |
| *1451 | | | + | + | + | | | | | | | + | | | | |
| *1452 | | | + | | | | | | | | + | | | | | |
| *1453 | | + | | | + | | | | | | + | | | + | | |
| *1454 | + | + | | | | + | | | | | | + | + | | | |
| *1455 | W | + | | | | + | + | | | | | | + | | | |
| *1456 | + | | | | | + | | | + | | | + | | | | + |
| *1457 | | | | | | | | | | + | | | | | | |
| *1458 | + | + | | | | + | | | | | | + | | | | |
| *1459 | + | | | | | + | | | | | | + | | | | + |
| *1460 | + | + | | | | + | | | | | | + | + | | | |
| *1461 | | | | | | | | + | | | | | + | | | |
| *1462 | + | + | | | | + | | | + | | | + | + | | | |
| *1463 | | | | + | + | | + | | | | | | | | | |
| *1464 | + | | | | | + | | | | | | + | | | | + |
| *1465 | + | | | | | + | | | + | | | | | | | |
| *1467 | | | | + | + | | + | | | | | | | | | |
| *1468 | | | | | | | | + | | | | | + | | | |
| *1469 | | + | | | + | | | | | | + | | | | | |
| *1470 | + | + | | | | + | | | | | | + | + | | | |
| *1471 | | | | | | | | + | | | | | + | | | |
| *1472 | + | | | | | + | | | | | | + | + | | | + |
| *1473 | | | | | | | | + | | | | | + | + | | |
| *1474 | | + | | | | + | | | | | + | | + | | | |
| *010201-010204 | | | | | | | | | | | | | | | | + |
| *0114 | | | | | | | | | | | + | | | | | |
| *030101, 030103-
030106, 0307,
0308, 0313, 0315,
0319, 0322, 0323,
0328, 0332-0334,
0336, 0337, 0339,
1116, 130101-
130102, 1306,
1320, 1327, 1328,
1351, 1359, 1369,
1371, 1378, 1379 | | | | | | + | | | | | | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec.
PCR product |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|--|
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | | | + | | | | | | | | + | | | | | *1450 |
| | | | | | + | | | | | | | | | | | *1451 |
| | | | | | | | | | | + | | | + | | | *1452 |
| | + | | + | | | + | | + | | | | | | + | | *1453 |
| | + | | | | + | | | | | | | | | | | *1454 |
| | + | + | | | + | | | | | | | | | | | *1455 |
| | + | | | | + | | | + | | | | | | | | *1456 |
| | | + | | | | | | | | | | | | | | *1457 |
| | + | | + | | + | | | | | | | | | | | *1458 |
| | + | | | | + | | | | | | | | + | | | *1459 |
| | + | | | | + | | | | | | | + | | | | *1460 |
| | | | | | | | | | | | | | | | | *1461 |
| | + | | | | + | | | | | | | | | | | *1462 |
| | | | + | + | + | | | | | | | | | | + | *1463 |
| | + | | | | | + | | | | | | | + | | | *1464 |
| | + | | | + | | + | | | | | | | | | | *1465 |
| | | | + | | + | | | | | | | | | | | *1467 |
| | | | + | | | | | + | | | | | | | | *1468 |
| | + | | + | | + | | | + | | | | | | | | *1469 |
| | | | | | + | | | | | | | | + | | | *1470 |
| | | | + | | | | | | | + | | | | | | *1471 |
| | + | | | | | + | | | | | | | | + | | *1472 |
| | | | + | | | | | | | | | | | | | *1473 |
| | + | | | | + | | | | | | | | | | | *1474 |
| | | | | | | | | | | | | | | | | *010201-010204 |
| | | | + | | | | | + | | | | | | | | *0114 |
| | + | | | | | + | | | | | | | + | | | *030101, 030103-
030106, 0307,
0308, 0313, 0315,
0319, 0322, 0323,
0328, 0332-0334,
0336, 0337, 0339,
1116, 130101-
130102, 1306,
1320, 1327, 1328,
1351, 1359, 1369,
1371, 1378, 1379 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec. | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|---|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| | | | | | | | | | | | | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *030102, 1361 | | | | | | + | | | | | | | | | | |
| *030201 | | | | + | + | | | | | | | | | | | |
| *030202 | | | | + | + | | | | | | | | | | | |
| *0303, 1353 | | | | + | | + | | | | | | | | | | |
| *0304, 0321, 0325,
0330, 110201-
110402, 110404,
110601, 1107,
1118, 1121, 1134-
1136, 1138, 1142-
1144, 1146, 1147,
1157, 1160, 1163,
116501-116502,
1311, 1322, 1324,
1344, 1352, 1368 | | | | | | + | | | | | | | | | | |
| *030501-030502,
0309, 0314, 110101-
110104, 110106,
110801-110802,
1110-111202,
111401-1115,
111901-1120, 1124,
1126, 112702,
1129, 1132, 1133,
1139, 1149, 1151,
1161, 1162, 1166,
130201-130203,
131401-131402,
1323, 1325, 1329,
1339, 1341, 1356,
1362, 1373, 1374 | | | | | + | | | | | | | | | | | |
| *0306, 0326, 1340 | | | | | | + | | | | | | | | | | |
| *0310 | | + | | | | + | | | | | | | + | | | |
| *0311 | | | | | | + | | | | | | + | | | | |
| *0312 | | | | | | + | | | + | | | | | | | |
| *0316, 1335, 1380 | | | | | | + | | | | | | | | | | |
| *0317 | | | | | + | | | | | | | + | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| | | | | | | | | | | | | | | | | |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|---|
| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec.
PCR product |
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | + | | | | | + | | | | | + | | + | | | *030102, 1361 |
| | | | | | + | | | | | | | | | | | *030201 |
| | | | | | + | | | | | | + | | | | | *030202 |
| | | | | | + | | | | | | | | + | | | *0303, 1353 |
| | + | | | | | + | | | | | | | | | | *0304, 0321, 0325,
0330, 110201-
110402, 110404,
110601, 1107,
1118, 1121, 1134-
1136, 1138, 1142-
1144, 1146, 1147,
1157, 1160, 1163,
116501-116502,
1311, 1322, 1324,
1344, 1352, 1368 |
| | + | | | | | + | | | | | | | | | | *030501-030502,
0309, 0314, 110101-
110104, 110106,
110801-110802,
1110-111202,
111401-1115,
111901-1120, 1124,
1126, 112702,
1129, 1132, 1133,
1139, 1149, 1151,
1161, 1162, 1166,
130201-130203,
131401-131402,
1323, 1325, 1329,
1339, 1341, 1356,
1362, 1373, 1374 |
| | + | | | | + | | | | | | | | + | | | *0306, 0326, 1340 |
| | + | | | | | + | | | | | | | + | + | | *0310 |
| | + | | | | | + | | | | | | | + | | | *0311 |
| | + | | | + | | + | | | | | | | + | | | *0312 |
| | + | | | | | | | | | | | | + | | | *0316, 1335, 1380 |
| | + | | | | + | | | | | | + | | | | | *0317 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec. | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|---|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *0318 | | | | | | + | | | | | | | | | | |
| *0320 | | | | | | + | | | | | | | | | + | |
| *0324 | | | | | | + | | | | | | + | | | | |
| *0327 | | | | + | + | | | | | | | + | | | | |
| *0329 | | | | + | + | | | | | | | | | | | |
| *0331, 1141, 1148,
1150, 1156, 1370 | | | | | | + | | | | | | | | | | |
| *0335 | | | | | + | | | | | | | + | | | | |
| *0338 | | | | + | + | | | | | | | | | | | |
| *0410, 0411, 0467 | | | | | | | | | + | | | | | | | |
| *0412, 0806, 0810,
0812, 0822 | | | | | | | | | + | | | | | | | |
| *0418, 080101-
080203, 080302-
080404, 0807,
0813, 0814, 0816,
0817, 0819, 0823,
0826-0828, 0830,
0832-0834, 1521 | | | | | | | | | | | | | | | | |
| *0462 | | | | | | | | | | + | + | | | | | |
| *0469 | | | | | | | | | | + | | | | | | |
| *0706 | | | | | | | | + | | | | | | | | |
| *0805, 0818, 0824,
0825, 0831, 120101-
120202, 120302,
1206-1208, 1210-
1213, 1216, 1317 | | | | | | | | | | | + | | | | | |
| *0808 | | | | | | | | + | | | | | | + | | |
| *0811 | | | | | | | | W | | | | | | | | |
| *0815 | | | | | | | | | | | | | | | | |
| *0820 | | | | | | + | + | | | | | | | | | |
| *0903, 1608 | | | | | | | | | | | | | | + | | |
| *110105 | | | | | + | | | | | | | | | | | + |
| *110107 | | | | | + | | | | | | | | | | | |
| *110403, 110602 | | | | | | + | | | | | | | | | | + |
| *1109, 1128,
130501-130502, | | | | | + | | | | | | | | | + | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec.
PCR product |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|---|
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | + | | | | | + | + | | | | | | + | | | *0318 |
| | + | | | | | + | | | | | | | + | | | *0320 |
| | + | | | | | + | | | | | + | | + | | | *0324 |
| | | | | | + | | | | | | + | | | | | *0327 |
| | | | | | | + | | | | | | | | | | *0329 |
| | + | | | | + | | | | | | | | | | | *0331, 1141, 1148,
1150, 1156, 1370 |
| | + | | | | + | | | + | | | + | | | | | *0335 |
| | | | | | + | | | | | | | + | | | | *0338 |
| | | | | | | | | | | | | | | | | *0410, 0411, 0467 |
| | | | + | | | | | | | | | | | | | *0412, 0806, 0810,
0812, 0822 |
| | | | | | | | | | | | | | | | | *0418, 080101-
080203, 080302-
080404, 0807,
0813, 0814, 0816,
0817, 0819, 0823,
0826-0828, 0830,
0832-0834, 1521 |
| | | | | | | | | + | | | | | | | | *0462 |
| | | | | | | | | + | | | | | | | | *0469 |
| | | | | | | | | | | | | | | | | *0706 |
| | | | | | | | | | | | | | | | | *0805, 0818, 0824,
0825, 0831, 120101-
120202, 120302,
1206-1208, 1210-
1213, 1216, 1317 |
| | | | + | | | | | + | | | | | | | | *0808 |
| | | | + | | | | | | | | | | | | | *0811 |
| | | | + | | | | | + | | | | | | | | *0815 |
| | + | | + | | + | | | | | | | | | | | *0820 |
| | | | | | | | | | | | | | | | | *0903, 1608 |
| | + | | | | | + | | | | | | | | | | *110105 |
| | + | | | | | | | | | | | | | | | *110107 |
| | + | | | | | + | | | | | | | | | | *110403, 110602 |
| | + | | | | | + | | | | | | | | | | *1109, 1128,
130501-130502, |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec.
PCR product | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|--------------------------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *1113 | + | | | | | + | | | | | | | | | | + |
| *1123, 1145, 1164 | | | | | + | | + | | | | | | | | | |
| *1125, 1155 | | | | | | + | + | | | | | | | | | |
| *112701 | | | | | + | | | | | | | | | | | |
| *1131 | | | | | + | | | | | | | | | | | |
| *1137, 130701-
130702, 1336, 1360 | | | | | + | | | | | | | | | | | |
| *1140, 1342 | | | | | | + | | | | | | | | + | | |
| *1153 | | | | | + | | | | | | | + | | | | |
| *115401 | | | | | | + | | | | | | + | | | | + |
| *115402 | | | | | | + | | | | | | + | | | | |
| *1158, 1159 | | | | | | + | | | | | | | | + | | |
| *1205, 1214, 1215 | | | | | | | | | | | + | | | | + | |
| *130103 | | | | | | + | | | | | | | | | | + |
| *130301-130302,
1333 | | | | | + | | | | | | | | | | | |
| *1304 | | | | | | + | | | + | | | | | | | |
| *1308 | | | | | | + | | | | | | | | | | |
| *1309 | | | | | | + | | | | | | | | | | |
| *1310 | | | | | | + | | | | | | | | | | |
| *1312, 1338, 1349 | | | | | + | | | | | | | | | | | |
| *1313, 1355 | | | | | + | | + | | | | | | | | | |
| *1315 | | | | + | | + | | | | | | | | | | |
| *1316 | | | | | | | | | | | | | | | | |
| *1318 | | | | | | + | + | | | | | | | + | | |
| *1319 | | | | + | | + | | | | | | | | | | |
| *1321, 1330 | | | | | + | | | | | | | | | | | |
| *1326 | | | | + | + | | | | | | | | | + | | |
| *1331, 1346 | | | | | + | | | | | | | | | | | |
| *1332 | | | | | | + | | | + | | | | | | | |
| *1334 | | | | | + | | | | | | | | | | | |
| *1337 | | | | | + | | | | | | | | | | | |
| *1343 | | + | | | | + | | | | | + | | + | | | |
| *1345 | | + | | | + | | | | | | + | | | | | |
| *1347 | | | | | + | | + | | | | | | | | | |
| *1354 | | | | | | + | | | | | | | | | | |
| *1357 | | | | + | | + | | | | | | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| | | | | | | | | | | | | | | | | |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|--------------------------------------|
| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec.
PCR product |
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | + | | | | | + | | | | | | | | | | *1113 |
| | + | | + | | | + | | | | | | | | | | *1123, 1145, 1164 |
| | + | | + | | | + | | | | | | | | | | *1125, 1155 |
| | + | | | | | + | | | | | + | | | | | *112701 |
| | + | | | | | + | | | | | | | | + | | *1131 |
| | + | | | | + | | | | | | | | | | | *1137, 130701-
130702, 1336, 1360 |
| | + | | | | | + | | | | | | | + | | | *1140, 1342 |
| | + | | | | | + | | | | | | | | | | *1153 |
| | + | | | | | + | | | | | | | | | | *115401 |
| | + | | | | | + | | | | | | | | | | *115402 |
| | + | | | | | + | | | | | | | + | | | *1158, 1159 |
| | | | | | | | | | | | | | | | | *1205, 1214, 1215 |
| | + | | | | | + | | | | | | | + | | | *130103 |
| + | + | | | + | + | | | | | | | | | | | *130301-130302,
1333 |
| | + | | | + | | + | | | | | | | | | | *1304 |
| | + | + | | | + | | | | | | | | | | | *1308 |
| | + | | | + | | + | | | | | | | + | | | *1309 |
| + | + | | | | | + | | | | | | | + | | + | *1310 |
| | + | | | + | + | | | | | | | | | | | *1312, 1338, 1349 |
| | + | | + | + | + | | | | | | | | | | | *1313, 1355 |
| | | | | | | + | | | | | | | + | | | *1315 |
| | + | | | | | + | | | | | | | | | | *1316 |
| | + | | | | | + | | | | | | | + | | | *1318 |
| | | + | | | + | | | | | | | | | | | *1319 |
| | + | | | + | | + | | | | | | | | | | *1321, 1330 |
| | | | | | + | | | | | | | | | | | *1326 |
| | + | | | | | + | | | | | | + | | | | *1331, 1346 |
| | + | | | + | + | | | | | | | | + | | + | *1332 |
| | + | | | | | + | + | | | | | | | | | *1334 |
| + | + | | | | + | | | | | | | | | | | *1337 |
| | + | | | | | + | | | | | | | + | + | | *1343 |
| | + | | + | | | + | | + | | | | | | + | | *1345 |
| | + | | + | | + | | | | | | | | | | | *1347 |
| | + | | | | | + | | | | | | + | | | | *1354 |
| | | + | | | | + | | | | | | | | | | *1357 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

| Length of spec. | 210 | 175 | 140 | 85 | 260 | 260 | 225 | 135 | 130 | 175 | 85 | 225 | 115 | 60 | 185 | 105 |
|--------------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product | | | | | | | | 170 | 250 | | 170 | | | 130 | | |
| | | | | | | | | | | | 215 | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| *1364 | | | | | | + | | | | | | | | | | |
| *1365 | | | | | + | | | | | | | | | | | |
| *1366 | | | | | + | | | | | | | | | | | |
| *1372 | | | | | | + | | | + | | | | | | | |
| *1375 | | | | | | + | | | + | | | | | | | |
| *1376 | | | | | | + | | | | | | + | | | | + |
| *1377 | | | | | | + | | | | | | | | | | |
| *1381 | | | | | | + | | | + | | | | | | | |
| *1503, 1523 | | | | | | | | | | | | | | | | |
| *1512 | | | | | | | | | + | | | | | | | |
| DRB1 allele ⁵ | | | | | | | | | | | | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| DRB3*0216 | | | | | | | | | | | | | | | | |
| Tube No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most tubes, or a band of 515 base pairs, for some tubes. Tube 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*14 subtyping. In addition, tubes number 6, 12, 14, 21, 26, 27, 29 and 31 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.

PLEASE NOTE: All the SSP kits, except the B*37, B*41, B*42, B*46, B*47, B*48, B*49, B*50, B*53, B*67, B*78, B*81 and B*82 kits and the Cw*01, Cw*02, Cw*08, Cw*12, Cw*14, Cw*15, Cw*16, Cw*17 and Cw*18 kits, from Olerup SSP AB can be uniquely identified by the number of tubes and the kit-specific pattern of the two differently sized control bands.

²The codon, in the 2nd exon or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Codon numbering as in *Tissue Antigens* 1998, **51:II**, 467-507. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

³The codon, in the 2nd exon or 3rd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Codon numbering as in *Tissue Antigens* 1998, **51:II**, 467-507. The sequence of the 3 terminal nucleotides of the primer is given. Empty spaces indicate codon boundaries.

| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|--------------------------|
| 220 | 85 | 145 | 60 | 170 | 145 | 145 | 115 | 120 | 190 | 220 | 230 | 135 | 200 | 80 | 100 | Length of spec. |
| | | | 110 | 215 | | | 135 | 210 | 250 | 250 | | 175 | | | 145 | PCR product |
| | | | 170 | | | | | 250 | | | | | | | | |
| | | | 215 | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | + | + | | | | + | + | | | | | | | | | *1364 |
| | + | | | + | + | | | | | | | | | | + | *1365 |
| + | + | | | + | | + | | | | | | | | | | *1366 |
| | + | + | | | + | | | | | | | | | | | *1372 |
| | + | | | + | | + | | | | | | | | | | *1375 |
| | + | + | | | + | | | | | | | | | | | *1376 |
| | + | | | | | + | | | | | | + | + | | | *1377 |
| + | + | | | + | + | | | | | | | | | | | *1381 |
| | | | | | | | | | | | | | + | | | *1503, 1523 |
| | | | | | | | | | | | | | | | | *1512 |
| | | | | | | | | | | | | | | | | DRB1 allele ⁵ |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |
| | | | | | | | | + | | | | | | | | DRB3*0216 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Tube No. |

⁴Primer mix 8: Specific PCR fragment of 135 bp in the DRB1*1426 and DRB1*0706 alleles. Specific PCR fragment of 170 bp in the DRB1*1404, 1428, 1431, 1450, 1461, 1468, 1471, 1473 and DRB1*0808 and 0811 alleles.

Primer mix 9: Specific PCR fragment of 130 bp in the DRB1*1462 allele. Specific PCR fragment of 250 bp in the DRB1*140501-140503, 1437, 1443, 1445, 1456, 1462, 1465 and DRB1*0312, 0410-0412, 0467, 0806, 0810, 0812, 0822, 1304, 1332, 1348, 1358, 1372, 1375, 1381 and 1512 alleles.

Primer mix 11: Specific PCR fragment of 85 bp in the DRB1*1416, 1422, 1425, 143201-143202, 1434, 1449, 1453, 1469, 1474 and DRB1*0114 and 0462 alleles. Specific PCR fragment of 170 bp in the DRB1*1411 allele. Specific PCR fragment of 215 bp in the DRB1*1452 and DRB1*0805, 0818, 0824, 0825, 120101 to 120202, 120302, 1205 to 1216 and 1317 alleles. Specific PCR fragment of 85 and 215 bp in the DRB1*1431, DRB1*1343 and 1345 alleles. Specific PCR fragment of 170 and 215 bp in the DRB1*0831 and 1204 alleles.

Primer mix 14: Specific PCR fragment of 60 bp in the DRB1*1422, 1425, 1453, 1473 and DRB1*0808 alleles. Specific PCR fragment of 130 bp in the DRB1*1427 and DRB1*0903, 1109, 1128, 1140, 1158, 1159, 130501-130502, 1318, 1326, 1342, 1350, 1363 and 1608 alleles.

Primer mix 20: Specific PCR fragment of 60 bp in the DRB1*1463, 1467 and DRB1*0412, 0418 and 1521 alleles. Specific PCR fragment of 110 bp in the DRB1*1425, 1453, 1458, 1469 and DRB1*0114, 1123, 1125, 1145, 1155, 1164, 1313, 1345, 1347 and 1355 alleles. Specific PCR fragment of 170 bp in the DRB1*1404, 1428, 1431, 1439, 1450, 1468, 1471 and 1473 alleles. Specific PCR fragment of 215 bp in the DRB1*1415 and DRB1*080101 to 080203, 080302 to 080404, 0806 to 0817, 0819 to 0823, 0826 to 0828, 0830 and 0832 to 0834 alleles.

Primer mix 21: Specific PCR fragment of 170 bp in DRB1*1413, 1463, 1465 and DRB1*0312, 130301-1304, 1312, 1313, 1321, 1330, 1332, 1333, 1338, 1348, 1349, 1355, 1358, 1365, 1366, 1375 and 1381 alleles. Specific PCR fragment of 215 bp in the DRB1*1424, 1437 and DRB1*1309 alleles.

Primer mix 24: Specific PCR fragment of 115 bp in the DRB1*1441 and DRB1*1334 and 1364 alleles. Specific PCR fragment of 135 bp in the DRB1*1436 and DRB1*0318 alleles.

Primer mix 25: Specific PCR fragment of 120 bp in the DRB1*140701-140702, 1422, 1425, 1449, 1453, 1469 and DRB1*0114, 0335, 0462, 0469, 0808, 0815, 1345 and the DRB3*0216 allele. Specific PCR fragment of 210 bp in DRB1*1456 allele. Specific PCR fragment of 250 bp in the DRB1*144401-144402 allele.

Primer mix 26: Specific PCR fragment of 190 bp in the DRB1*1445 allele. Specific PCR fragment of 250 bp in the DRB1*140101 to 140103 alleles.

Primer mix 27: Specific PCR fragment of 220 bp in the DRB1*1446 allele. Specific PCR fragment of 250 bp in the DRB1*1452 and 1471 alleles.

Primer mix 29: Specific PCR fragment of 135 bp in the DRB1*1460 allele. Specific PCR fragment of 175 bp in the DRB1*1460 and DRB1*0338, 1331, 1346, 1354 and 1377 alleles.

Primer mix 32: Specific PCR fragment of 100 bp in the DRB1*1413, 1463 and DRB1*1332 and 1365 alleles. Specific PCR fragment of 145 bp in the DRB1*1419, 1421 and DRB1*1310 alleles.

Specific PCR fragment of 135 bp in the DRB1*1426 and DRB1*0706 alleles. Specific PCR fragment of 170 bp in the DRB1*1404, 1428, 1431, 1450, 1461 and DRB1*0808 and 0811 alleles.

⁵The DRB1*1466 allele has been renamed to DRB1*142302.

The DRB1*1408 and DRB1*1152 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1411 and DRB1*1204 and DRB1*1209 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DR low resolution and/or DRB1*12 SSP kits.

The DRB1*1415 and DRB1*0809 and DRB1*0821 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These alleles can be separated by the DRB1*08 SSP kit.

The DRB1*142301-142302 and DRB1*1117 alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*11 SSP kits.

The DRB1*1437, DRB1*1348 and DRB1*1358 DR alleles give rise to identical amplification patterns with the DRB1*14 SSP kit. These two alleles can be separated by the DR low resolution and/or DRB1*13 SSP kits.

'w', might be weakly amplified.

101.117-12u/03u – not licensed for PCR

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| CELL LINE VALIDATION SHEET | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---------------|--|-------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| DRB1*14 SSP subtyping kit | | | | | | | | | | | | | | | | | | | | |
| | | | | | Tube | | | | | | | | | | | | | | | |
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | | Prod. No.: | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 | 200737301 |
| | cell line | | DRB1 | | | | | | | | | | | | | | | | | |
| 1 | 9001 SA | | *0101 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 2 | 9280 LK707 | | *1502 | *0405 | - | - | - | - | - | - | - | - | | | | | | | | |
| 3 | 9011 E4181324 | | *1502 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 4 | 9275 GU373 | | *0301 | | - | - | - | - | - | + | - | - | | | | | | | | |
| 5 | 9009 KAS011 | | *1601 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 6 | 9353 SM | | *0407 | *0803 | - | - | - | - | - | - | - | - | | | | | | | | |
| 7 | 9020 QBL | | *0301 | | - | - | - | - | - | + | - | - | | | | | | | | |
| 8 | 9007 DEM | | *0401 | *1602 | - | - | - | - | - | - | - | - | | | | | | | | |
| 9 | 9026 YAR | | *0402 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 10 | 9107 LKT3 | | *0405 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 11 | 9051 PITOUT | | *0701 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 12 | 9052 DBB | | *0701 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 13 | 9067 BTB | | *0801 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 14 | 9071 OLGA | | *0802 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 15 | 9075 DKB | | *0901 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 16 | 9037 SWEIG007 | | *1101 | | - | - | - | - | + | - | - | - | | | | | | | | |
| 17 | 9008 WILJON | | *1501 | | - | - | - | - | - | - | - | - | | | | | | | | |
| 18 | 9257 32367 | | *0901 | *1101 | - | - | - | - | + | - | - | - | | | | | | | | |
| 19 | 9038 BM16 | | *1201 | | - | - | - | - | - | - | - | - | | | + | - | - | | | |
| 20 | 9059 SLE005 | | *1302 | | - | - | - | - | + | - | - | - | | | - | - | - | | | |
| 21 | 9064 AMALA | | *1402 | | - | - | + | + | + | - | - | - | | | - | - | - | | | |
| 22 | 9056 KOSE | | *1302 | *1401 | + | + | - | - | + | + | - | - | | | - | - | + | + | - | |
| 23 | 9124 IHL | | *0803 | *1414 | + | - | - | - | + | - | - | - | | | - | - | + | - | | + |
| 24 | 9035 JBUSH | | *1101 | | - | - | - | - | + | - | - | - | | | - | - | - | | | |
| 25 | 9049 IBW9 | | *0701 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 26 | 9285 WT49 | | *0301 | | - | - | - | - | - | + | - | - | | | - | - | - | | | |
| 27 | 9191 CH1007 | | *0405 | *1001 | - | - | - | - | - | - | - | - | | | - | - | - | | | + |
| 28 | 9320 BEL5GB | | *0416 | *0701 | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 29 | 9050 MOU | | *0701 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 30 | 9021 RSH | | *0302 | | - | - | - | + | + | - | - | - | | | - | - | - | | | |
| 31 | 9019 DUCAF | | *0301 | | - | - | - | - | - | + | - | - | | | - | - | - | | | |
| 32 | 9297 HAG | | *1303 | | - | - | - | - | + | - | - | - | | | - | - | - | | | |
| 33 | 9098 MT14B | | *0404 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 34 | 9104 DHIF | | *1101 | | - | - | - | - | + | - | - | - | | | - | - | - | | | |
| 35 | 9302 SSTO | | *0403 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 36 | 9024 KT17 | | *0403 | *0406 | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 37 | 9065 HHKB | | *1301 | | - | - | - | - | - | + | - | - | | | - | - | - | | | |
| 38 | 9099 LZL | | *1402 | | - | - | + | + | + | - | - | - | | | - | - | - | | | |
| 39 | 9315 CML | | *0301 | *0401 | - | - | - | - | - | + | - | - | | | - | - | - | | | |
| 40 | 9134 WHONP199 | | *0701 | *0901 | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 41 | 9055 H0301 | | *1302 | | - | - | - | - | + | - | - | - | | | - | - | - | | | |
| 42 | 9066 TAB089 | | *0803 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 43 | 9076 T7526 | | *0901 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 44 | 9057 TEM | | *1401 | | + | + | - | - | - | + | - | - | | | - | - | + | + | - | |
| 45 | 9239 SHJO | | *0701 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 46 | 9013 SCHU | | *1501 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |
| 47 | 9045 TUBO | | *1104 | *1201 | - | - | - | - | - | + | - | - | | | - | + | - | - | | |
| 48 | 9303 TER-ND | | *0103 | | - | - | - | - | - | - | - | - | | | - | - | - | | | |

November 2007
Rev. No.: 00



CERTIFICATE OF ANALYSIS

Olerup SSP™ DRB1*14 SSP

Product number: 101.117-12/03 – licensed for PCR
101.117-12u/03u – not licensed for PCR
Lot number: Y29
Expiry date: 2009-September-01
Number of tests: 12 tests – Product No. 101.117-12
3 tests – Product No. 101.117-03
Number of tubes per test: 32

Tube specifications:

| Tube No. | Production No. | Tube No. | Production No. | Tube No. | Production No. |
|----------|----------------|----------|----------------|----------|----------------|
| 1 | 2007-373-01 | 13 | 2007-373-13 | 25 | 2007-373-25 |
| 2 | 2007-373-02 | 14 | 2007-373-14 | 26 | 2007-373-26 |
| 3 | 2007-373-03 | 15 | 2007-373-15 | 27 | 2007-373-27 |
| 4 | 2007-373-04 | 16 | 2007-373-16 | 28 | 2007-373-28 |
| 5 | 2007-373-05 | 17 | 2007-373-17 | 29 | 2007-373-29 |
| 6 | 2007-373-06 | 18 | 2007-373-18 | 30 | 2007-373-30 |
| 7 | 2007-373-07 | 19 | 2007-373-19 | 31 | 2007-373-31 |
| 8 | 2007-373-08 | 20 | 2007-373-20 | 32 | 2007-373-32 |
| 9 | 2007-373-09 | 21 | 2007-373-21 | | |
| 10 | 2007-373-10 | 22 | 2007-373-21 | | |
| 11 | 2007-373-11 | 23 | 2007-373-23 | | |
| 12 | 2007-373-12 | 24 | 2007-373-24 | | |

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

No DNAs carrying the alleles to be amplified by primer solutions 7, 8, 10, 14, 15, 19, 24, 25, 27 to 29, 31 and 32 were available. The specificities of the primers in primer solutions 7, 8, 10, 14, 15, 19, 25, 27, 28, 29, 31 and 32 were tested by separately adding one additional 5'-primer, respectively, one or several additional 3'-primer(s). In primer solution 24 it was only possible to test the 5'-primer and one of the 3'-primers, one of the 3'-primers was not possible to test. Additional 3'-primers in primer solutions 11, 20 and 21 were tested by separately adding one 5'-primer.

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

Date of approval: 2007-November-09

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: Olerup SSP™ DRB1*14
Product number: 101.117-12/03, 101.117-12u/03u
Lot number: Y29

Intended use: DRB1*14 high resolution histocompatibility testing

Manufacturer: Olerup SSP AB
Hasselstigen 1
SE-133 33 Saltsjöbaden, 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 9001:2000 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, Hasselstigen 1, SE-133 33 Saltsjöbaden, 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.)

Saltsjöbaden, Sweden
2007-November-09

Olle Olerup
Managing Director

WARRANTY

Olerup SSP AB warrants its products to the original purchaser against defects in materials and workmanship under normal use and application. *Olerup* SSP AB's sole obligation under this warranty shall be to replace, at no charge, any product that does not meet the performance standards stated on the product specification sheet.

This warranty applies only to products that have been handled and stored in accordance with *Olerup* SSP AB's recommendations, and does not apply to products that have been the subject of alternation, misuse, or abuse.

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