

## Olerup SSP™ HLA-A\*24

**Product number:** 101.422-24/03 – licensed for PCR  
101.422-24u/03u – not licensed for PCR  
**Lot number:** X96  
**Expiry date:** 2009-June-01  
**Number of tests:** 24 tests – Product No. 101.422-24  
3 tests – Product No. 101.422-03  
**Number of tubes per test:** 48  
**Storage - pre-aliquoted primers:** dark at -20°C  
- PCR Master Mix: -20°C

**This Product Description is only valid for Lot No. X96.**

### CHANGES COMPARED TO THE PREVIOUS OLERUP SSP™ HLA-A\*24 LOT

The HLA-A\*24 specificity and interpretation tables have been updated for the HLA-A alleles described since the previous Olerup SSP™ HLA-A\*24 lot was made (Lot No. V54).

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

| Tube | 5'-primer | 3'-primer | rationale                                       |
|------|-----------|-----------|---|
| 1    | Exchanged | Exchanged | Primer pair exchanged for the A*2476 allele.    |
| 20   | -         | Modified  | Decreased tendency of primer dimer formation.   |
| 21   | New       | New       | Primer pair added for the A*2472 allele.        |
| 22   | New       | New       | Primer pair added for the A*2463 allele.        |
| 23   | New       | New       | Primer pair added for the A*2472 allele.        |
| 24   | New       | New       | Primer pair added for the A*2473 allele.        |
| 26   | -         | New       | Primer added for the A*2478 allele.             |
| 28   | New       | New       | Primers added for the A*2473 and *2477 alleles. |
| 30   | -         | New       | Primer added for the A*2470 allele.             |
| 31   | -         | New       | Primers added for the A*2458 and *2477 alleles. |
| 32   | New       | New       | Primer pair added for the A*2479 allele.        |
| 33   | -         | New       | Primer added for the A*2470 allele.             |

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|    |     |     |   |
|----|-----|-----|---|
| 34 | New | New | Primer pair added for the A*2475 allele.        |
| 35 | New | New | Primer pair added for the A*2440N allele.       |
| 36 | New | -   | Primer added for the A*2474 allele.             |
| 37 | -   | New | Primer added for the A*2468 allele.             |
| 38 | New | New | Primer pair added for the A*2475 allele.        |
| 39 | New | New | Primer pair added for the A*2468 allele.        |
| 40 | -   | New | Primers added for the A*2463 and *2469 alleles. |
| 43 | New | New | Primer pair added for the A*2469 allele.        |
| 44 | New | -   | Primer added for the A*2466 allele.             |
| 45 | New | New | Primer pair added for the A*2479 allele.        |
| 46 | New | New | Primers added for the A*2464 and *2474 alleles. |
| 47 | -   | New | Primer added for the A*2478 allele.             |

## PRODUCT DESCRIPTION

### HLA-A\*24 SSP subtyping

#### CONTENT

The primer set contains 5'- and 3'-primers for identifying the HLA-A\*24020101 to A\*2479 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.

48 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 48 PCR reactions in a 48 well cut PCR plate.

|    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |

The 48 well cut PCR plate is marked with 'HLA-A\*24 X96'.

Well No. 1 is marked with '1'.

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

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

#### INTERPRETATION

The interpretation of HLA-A\*24 SSP subtypings will be influenced by all A\*01, several A\*02, four A\*03, four A\*11, all A\*23, eight A\*26, two A\*29, several A\*30, two A\*31, two A\*32, the A\*3310, several A\*68, the A\*7406 and the A\*8001 alleles when present on the other haplotype. In addition, the B\*1512 and B\*1519 alleles will be weakly amplified by primer mixes 32 and 45.

### UNIQUELY IDENTIFIED ALLELES

All the HLA-A\*24 alleles, i.e. **A\*24020102L1 to A\*2479**, recognized by the HLA Nomenclature Committee in July 2007<sup>1</sup> will give rise to unique amplification patterns by the primers in the HLA-A\*24 subtyping kit.

The HLA-A\*24 subtyping kit cannot distinguish the A\*24020101, A\*240202 to A\*240209, A\*240211, A\*240212 and A\*240214 alleles and the A\*240301 and A\*240302 alleles.

<sup>1</sup>*Nomenclature for factors of the HLA system, 1998. Tissue Antigens 1999; 53: 407-446.*  
HLA-A alleles listed on the IMGT/HLA web page 2007-July-09, release 2.18.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

### RESOLUTION IN HOMO- AND HETEROZYGOTES

The 76 A\*24 alleles give rise to 78 different amplification patterns that can be combined in 3 081 homozygous and heterozygous combinations. 1 059 of these genotypes do not give rise to unique amplification patterns. (The different lengths of the specific PCR products in lanes 11, 16, 21 to 24, 26 to 31, 34 to 40, 42 to 44, 46 and 47 were not considered in these calculations)

|          |          |          |          |       |           |                           |
|----------|----------|----------|----------|-------|-----------|---------------------------|
| ++++++-+ | ++-+---- | --+----- | +-----   | ----- | --+-----  | 2403,2424 = 2424,2433     |
| ++++++-+ | -++-+--- | +-----   | +-----   | ----- | -----     | 2410,2413 = 2418,2446     |
| ++++++-+ | -++-+--- | --+----- | +-----   | ----- | -----     | 2418,2444 = 2418,2460N    |
| ++++++-+ | -++-+--- | --+----- | +-----   | ----- | -----     | 2422,2444 = 2422,2460N    |
| ++++++-+ | -++-+--- | --+----- | ++-----  | ----- | -----     | 2418,2434 = 2422,2456     |
| ++++++-+ | -++-+--- | --+----- | +-----   | ----- | -----     | 2402,2418 = 240210,2418 = |
|          |          |          |          |       |           | 2403,2413 = 2413,2433 =   |
|          |          |          |          |       |           | 2418,2456 = 2418,2476     |
| ++++++-+ | -++-+--- | --+----- | -+-----  | ----- | -----+--  | 2422,2455 = 2422,2478     |
| ++++++-+ | -++-+--- | --+----- | -+-----  | ----- | -----     | 2402,2422 = 240210,2422 = |
|          |          |          |          |       |           | 2422,2434 = 2422,2476     |
| ++++++-+ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2406 = 2406,2433     |
| ++++++-+ | -+-----  | --+----- | +-----   | ----- | -----     | 2403,2418 = 2418,2433     |
| ++++++-+ | -+-----  | --+----- | -+-----  | ----- | -----     | 2403,2422 = 2422,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2405 = 2405,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2404 = 2404,2433     |
| ++++-+++ | ++-+---  | --+----- | -----    | ----- | -----     | 2403,2419 = 2419,2433     |
| ++++-+++ | ++-+---  | --+----- | -----    | ----- | -----     | 2403,2407 = 2407,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2442 = 2433,2442     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2408 = 2408,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2461 = 2433,2461     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2425 = 2425,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2409N = 2409N,2433   |
| ++++-+++ | -++-+--- | --+----- | --+----- | ----- | -----+--- | 2403,2414 = 2414,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----+--- | 2403,2451 = 2433,2451     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----+--- | 2403,2415 = 2415,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----+--- | 2403,2457 = 2433,2457     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2453 = 2433,2453     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----+--- | 2403,2441 = 2433,2441     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----+--- | 2403,2423 = 2423,2433     |
| ++++-+++ | -++-+--- | --+----- | -----    | ----- | -----     | 2403,2417 = 2417,2433     |
| ++++-+++ | -++-+--- | ++-+---  | -----    | ----- | -----     | 2410,2444 = 2410,2460N    |
| ++++-+++ | -++-+--- | ++-+---  | +-----   | ----- | -----     | 2410,2456 = 2410,2465     |
| ++++-+++ | -++-+--- | ++-+---  | -----    | ----- | -----     | 2410,2448N = 2410,2454    |

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|         |           |           |         |       |       |                           |
|---------|-----------|-----------|---------|-------|-------|---------------------------|
| +++++-- | -+---+--- | +--+----- | -----   | ----- | ----- | 2402,2410 = 240210,2410 = |
|         |           |           |         |       |       | 2403,2446 = 2410,2446 =   |
|         |           |           |         |       |       | 2410,2476 = 2433,2446     |
| +++++-- | -+---+--- | +--+----- | -----   | ----- | ----- | 24020102N,2403 =          |
|         |           |           |         |       |       | 24020102N,2433            |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2411N = 2411N,2433   |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2472 = 2433,2472     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2431 = 2431,2433     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2463 = 2433,2463     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2427 = 2427,2433     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2428 = 2428,2433     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2430 = 2430,2433     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2473 = 2433,2473     |
| +++++-- | -+---+--- | --+--+--  | -----   | ----- | ----- | 2403,2444 = 2403,2460N =  |
|         |           |           |         |       |       | 2433,2444 = 2433,2460N    |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2456 = 2403,2465 =   |
|         |           |           |         |       |       | 2433,2456 = 2433,2465     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2478 = 2433,2478     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2434 = 2433,2434     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2432 = 2432,2433     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2477 = 2433,2477     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2435 = 2433,2435     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2440N = 2433,2440N   |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2429 = 2429,2433     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2470 = 2433,2470     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2459 = 2433,2459     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2458 = 2433,2458     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2437 = 2433,2437     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2479 = 2433,2479     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2438 = 2433,2438     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2439 = 2433,2439     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2436N = 2433,2436N   |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2445N = 2433,2445N   |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2474 = 2433,2474     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2447 = 2433,2447     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2468 = 2433,2468     |
| +++++-- | -+---+--- | --+-----  | +-----  | ----- | ----- | 2403,2448N = 2403,2454 =  |
|         |           |           |         |       |       | 2433,2448N = 2433,2454    |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2449 = 2433,2449     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2450 = 2433,2450     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2469 = 2433,2469     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2420 = 2420,2433     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2426 = 2426,2433     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2462 = 2433,2462     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2467 = 2433,2467     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2443 = 2433,2443     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2466 = 2433,2466     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2452 = 2433,2452     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2464 = 2433,2464     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2455 = 2433,2455     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2471 = 2433,2471     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2402,2403 = 2402,2433 =   |
|         |           |           |         |       |       | 240210,2403 = 2403,2476   |
| +++++-- | -+---+--- | +--+----- | -----   | ----- | ----- | 2403,2410 = 2410,2410 =   |
|         |           |           |         |       |       | 2410,2433                 |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2421 = 2421,2433     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2475 = 2433,2475     |
| +++++-- | -+---+--- | --+-----  | -----   | ----- | ----- | 2403,2403 = 2403,2433     |
| +++++-- | -+---+--- | --+-----  | ++----- | ----- | ----- | 2413,2422 = 2422,2465     |

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|                                |               |  |
|--------------------------------|---------------|--|
| +++++ -+--+ --+----- +-----    | -----         | 2406,2418 = 2413,2418 =<br>2418,2465   |
| +++++ +-+--+ --+-----+ +-----  | ----- +-----+ | 2424,2444 = 2424,2460N   |
| +++++ +-+--+ --+-----+ +-----  | ----- +-----+ | 2421,2424 = 2424,2459  |
| +++++ +-+--+ --+-----+ +-----  | ----- +-----+ | 2424,2437 = 2424,2458  |
| +++++ +-+--+ --+-----+ +-----  | ----- +-----+ | 2402,2424 = 240210,2424 =<br>2424,2456 = 2424,2467 =<br>2424,2471 = 2424,2476                |
| +----- -+--+ --+-----+ +-----  | -----         | 2413,2444 = 2413,2460N   |
| +----- -+--+ --+-----+ +-----  | -----         | 2406,2444 = 2406,2460N   |
| +----- -+--+ --+-----+ +-----  | -----         | 2413,2421 = 2413,2459  |
| +----- -+--+ --+-----+ +-----  | -----         | 2402,2413 = 240210,2413 =<br>2406,2456 = 2413,2456 =<br>2413,2476                            |
| +----- -+--+ --+-----+ +-----  | -----         | 2406,2421 = 2406,2459  |
| +----- -+--+ --+-----+ +-----  | -----         | 2402,2406 = 240210,2406 =<br>2406,2476   |
| +----- -+--+ --+-----+ +-----  | -----         | 2405,2444 = 2405,2460N   |
| +----- -+--+ --+-----+ +-----  | -----         | 2405,2456 = 2405,2465  |
| +----- -+--+ --+-----+ +-----  | -----         | 2405,2421 = 2405,2459  |
| +----- -+--+ --+-----+ +-----  | -----         | 2405,2448N = 2405,2454   |
| +----- -+--+ --+-----+ +-----  | -----         | 2402,2405 = 240210,2405 =<br>2405,2476   |
| +----- -+--+ --+-----+ +-----  | -----         | 2404,2456 = 2404,2465  |
| +----- -+--+ --+-----+ +-----  | -----         | 2404,2421 = 2404,2459  |
| +----- -+--+ --+-----+ +-----  | -----         | 2404,2448N = 2404,2454   |
| +----- -+--+ --+-----+ +-----  | -----         | 2402,2404 = 240210,2404 =<br>2404,2476   |
| +----- +-+--+ --+-----+ +----- | -----         | 2407,2428 = 2419,2430  |
| +----- +-+--+ --+-----+ +----- | -----         | 2419,2456 = 2419,2465  |
| +----- +-+--+ --+-----+ +----- | -----         | 2407,2473 = 2419,2435 =<br>2419,2473   |
| +----- +-+--+ --+-----+ +----- | -----         | 2419,2421 = 2419,2459  |
| +----- +-+--+ --+-----+ +----- | -----         | 2419,2448N = 2419,2454   |
| +----- +-+--+ --+-----+ +----- | -----         | 2402,2419 = 240210,2419 =<br>2407,2444 = 2407,2460N =<br>2419,2460N = 2419,2476              |
| +----- +-+--+ --+-----+ +----- | -----         | 2407,2456 = 2407,2465  |
| +----- +-+--+ --+-----+ +----- | -----         | 2407,2421 = 2407,2459  |
| +----- +-+--+ --+-----+ +----- | -----         | 2407,2448N = 2407,2454   |
| +----- +-+--+ --+-----+ +----- | -----         | 2402,2407 = 240210,2407 =<br>2407,2476   |
| +----- -+--+ --+--+ -+-----    | -----         | 2431,2442 = 2442,2472  |
| +----- -+--+ --+--+ -+-----    | -----         | 2408,2427 = 2408,2463  |
| +----- -+--+ --+--+ -+-----    | -----         | 2428,2442 = 2442,2444 =<br>2442,2460N  |
| +----- -+--+ --+--+ -+-----    | -----         | 2442,2456 = 2442,2465  |
| +----- -+--+ --+--+ -+-----    | -----         | 2421,2442 = 2442,2459  |
| +----- -+--+ --+--+ -+-----    | -----         | 2440N,2442 = 2442,2445N  |
| +----- -+--+ --+--+ -+-----    | -----         | 2442,2448N = 2442,2454   |
| +----- -+--+ --+--+ -+-----    | -----         | 2408,2430 = 2408,2442 =<br>2420,2442   |
| +----- -+--+ --+--+ -+-----    | -----         | 2402,2442 = 240210,2442 =<br>2429,2442 = 2430,2442 =<br>2442,2442 = 2442,2461 =<br>2442,2476 |
| +----- -+--+ --+--+ -+-----    | -----         | 2408,2444 = 2408,2460N   |
| +----- -+--+ --+--+ -+-----    | -----         | 2444,2461 = 2460N,2461   |
| +----- -+--+ --+--+ -+-----    | -----         | 2408,2456 = 2408,2465  |

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|       |       |       |       |       |       |  |
|-------|-------|-------|-------|-------|-------|--|
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2456,2461 = 2461,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2408,2421 = 2408,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2408,2440N = 2408,2445N  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2408,2448N = 2408,2454   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2408,2443 = 2408,2469  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2408 = 240210,2408 =<br>2408,2408 = 2408,2420 =<br>2408,2429 = 2408,2461 =<br>2408,2476 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2461 = 2459,2461  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2448N,2461 = 2454,2461   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2461 = 240210,2461 =<br>2461,2461 = 2461,2476   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2425,2444 = 2425,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2425,2456 = 2425,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2425 = 2425,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2425,2448N = 2425,2454   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2425 = 240210,2425 =<br>2425,2425 = 2425,2476   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2409N,2444 = 2409N,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2409N,2456 = 2409N,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2409N,2421 = 2409N,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2409N,2448N = 2409N,2454   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2409N = 240210,2409N<br>= 2409N,2409N = 2409N,2476                                      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2451 = 2441,2451 =<br>2441,2457   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2415,2417 = 2415,2441 =<br>2441,2453   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2414,2421 = 2414,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2414,2438 = 2414,2479  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2414 = 240210,2414 =<br>2414,2432 = 2414,2476   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2451 = 2451,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2415,2421 = 2415,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2457 = 2457,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2453 = 2453,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2447,2451 = 2451,2474  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2415,2447 = 2415,2474  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2451 = 240210,2451 =<br>2415,2466 = 2438,2451 =<br>2451,2466 = 2451,2476                |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2415 = 240210,2415 =<br>2415,2438 = 2415,2476   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2457 = 240210,2457 =<br>2453,2466 = 2457,2466 =<br>2457,2476                            |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2453 = 240210,2453 =<br>2453,2476   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2441,2444 = 2441,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2423,2444 = 2423,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2444 = 2417,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2441,2456 = 2441,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2423,2456 = 2423,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2456 = 2417,2465  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2478 = 2423,2434 =<br>2423,2478   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2441 = 2441,2459  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2423 = 2423,2459  |

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|       |       |       |       |       |       |                            |
|-------|-------|-------|-------|-------|-------|----------------------------|
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2421 = 2417,2459      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2441,2447 = 2441,2474      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2441,2448N = 2441,2454     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2441,2452 = 2441,2479      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2423,2441 = 2441,2455      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2441 = 240210,2441 =  |
|       |       |       |       |       |       | 2417,2441 = 2438,2441 =    |
|       |       |       |       |       |       | 2441,2441 = 2441,2464 =    |
|       |       |       |       |       |       | 2441,2476                  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2423,2448N = 2423,2454     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2448N = 2417,2454     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2417,2426 = 2423,2426 =    |
|       |       |       |       |       |       | 2423,2462                  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2423 = 240210,2423 =  |
|       |       |       |       |       |       | 2417,2423 = 2417,2455 =    |
|       |       |       |       |       |       | 2423,2423 = 2423,2455 =    |
|       |       |       |       |       |       | 2423,2476                  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2417 = 240210,2417 =  |
|       |       |       |       |       |       | 2417,2417 = 2417,2476      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2444,2446 = 2446,2460N     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2446,2456 = 2446,2465      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2446 = 2446,2459      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2446,2448N = 2446,2454     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2446 = 240210,2446 =  |
|       |       |       |       |       |       | 2446,2446 = 2446,2476      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 24020102N,2444 =           |
|       |       |       |       |       |       | 24020102N,2460N            |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 24020102N,2456 =           |
|       |       |       |       |       |       | 24020102N,2465             |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 24020102N,2421 =           |
|       |       |       |       |       |       | 24020102N,2459             |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 24020102N,2448N =          |
|       |       |       |       |       |       | 24020102N,2454             |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,24020102N =           |
|       |       |       |       |       |       | 24020102N,24020102N =      |
|       |       |       |       |       |       | 24020102N,240210 =         |
|       |       |       |       |       |       | 24020102N,2476             |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2411N,2444 = 2411N,2460N   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2411N,2456 = 2411N,2465    |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2411N,2421 = 2411N,2459    |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2411N,2448N = 2411N,2454   |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2411N = 240210,2411N  |
|       |       |       |       |       |       | = 2411N,2411N = 2411N,2476 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2428,2431 = 2428,2472 =    |
|       |       |       |       |       |       | 2444,2472 = 2460N,2472     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2456,2472 = 2465,2472      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2472 = 2459,2472      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2448N,2472 = 2454,2472     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2472 = 240210,2472 =  |
|       |       |       |       |       |       | 2430,2431 = 2430,2472 =    |
|       |       |       |       |       |       | 2431,2472 = 2472,2472 =    |
|       |       |       |       |       |       | 2472,2476                  |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2431,2444 = 2431,2460N     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2431,2456 = 2431,2465      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2421,2431 = 2431,2459      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2431,2448N = 2431,2454     |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2402,2431 = 240210,2431 =  |
|       |       |       |       |       |       | 2431,2431 = 2431,2476      |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2444,2463 = 2460N,2463     |



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|                    |        |       |       |   |
|--------------------|--------|-------|-------|---|
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2427,2444 = 2427,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2456,2463 = 2463,2465   |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2427,2456 = 2427,2465   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2421,2463 = 2459,2463   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2421,2427 = 2427,2459   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2448N,2463 = 2454,2463  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2427,2448N = 2427,2454  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2427,2469 = 2443,2463 =<br>2463,2469  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2402,2463 = 240210,2463 =<br>2420,2427 = 2420,2463 =<br>2427,2463 = 2463,2463 =<br>2463,2476                              |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2402,2427 = 240210,2427 =<br>2427,2427 = 2427,2476  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2428,2456 = 2428,2465   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2428,2435 = 2428,2473 =<br>2430,2473  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2421,2428 = 2428,2459   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2428,2448N = 2428,2454  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2402,2428 = 240210,2428 =<br>2428,2430 = 2428,2460N =<br>2428,2476 = 2430,2444 =<br>2430,2460N                            |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2430,2456 = 2430,2465   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2421,2430 = 2430,2459   |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2430,2448N = 2430,2454  |
| +++++ -+--- --+--+ | -----  | ----- | ----- | 2402,2430 = 240210,2430 =<br>2430,2430 = 2430,2476  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2456,2473 = 2465,2473   |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2456 = 2444,2465 =<br>2456,2460N = 2460N,2465  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2478 = 2460N,2478  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2434,2444 = 2434,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2432,2444 = 2432,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2421,2473 = 2459,2473   |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2437,2473 = 2444,2477 =<br>2460N,2477 = 2473,2477   |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2448N,2473 = 2454,2473  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2402,2473 = 240210,2473 =<br>2435,2444 = 2435,2460N =<br>2435,2473 = 2444,2473 =<br>2460N,2473 = 2473,2473 =<br>2473,2476 |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2440N,2444 = 2440N,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2429,2444 = 2429,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2470 = 2460N,2470  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2421,2444 = 2421,2460N =<br>2444,2459 = 2459,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2458 = 2458,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2437,2444 = 2437,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2479 = 2460N,2479  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2438,2444 = 2438,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2439,2444 = 2439,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2475 = 2460N,2475  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2436N,2444 = 2436N,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2445N = 2445N,2460N  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2474 = 2460N,2474  |
| +++++ -+--- --+--+ | +----- | ----- | ----- | 2444,2447 = 2447,2460N  |

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|       |     |     |   |       |       |  |
|-------|-----|-----|---|-------|-------|--|
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2468 = 2460N,2468   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2448N = 2444,2454 =<br>2448N,2460N = 2454,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2449 = 2449,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2450 = 2450,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2469 = 2460N,2469   |
| +++++ | +++ | +++ | + | ----- | ----- | 2420,2444 = 2420,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2426,2444 = 2426,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2462 = 2460N,2462   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2467 = 2460N,2467   |
| +++++ | +++ | +++ | + | ----- | ----- | 2443,2444 = 2443,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2466 = 2460N,2466   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2452 = 2452,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2464 = 2460N,2464   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2455 = 2455,2460N   |
| +++++ | +++ | +++ | + | ----- | ----- | 2444,2471 = 2460N,2471   |
| +++++ | +++ | +++ | + | ----- | ----- | 2402,2444 = 2402,2460N =<br>240210,2444 = 240210,2460N<br>= 2444,2460N = 2444,2476 =<br>2460N,2460N = 2460N,2476 |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2478 = 2465,2478  |
| +++++ | +++ | +++ | + | ----- | ----- | 2434,2456 = 2434,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2432,2456 = 2432,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2477 = 2465,2477  |
| +++++ | +++ | +++ | + | ----- | ----- | 2435,2456 = 2435,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2440N,2456 = 2440N,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2429,2456 = 2429,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2470 = 2465,2470  |
| +++++ | +++ | +++ | + | ----- | ----- | 2421,2456 = 2421,2465 =<br>2456,2459 = 2459,2465   |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2458 = 2458,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2437,2456 = 2437,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2479 = 2465,2479  |
| +++++ | +++ | +++ | + | ----- | ----- | 2438,2456 = 2438,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2439,2456 = 2439,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2475 = 2465,2475  |
| +++++ | +++ | +++ | + | ----- | ----- | 2436N,2456 = 2436N,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2445N,2456 = 2445N,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2474 = 2465,2474  |
| +++++ | +++ | +++ | + | ----- | ----- | 2447,2456 = 2447,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2468 = 2465,2468  |
| +++++ | +++ | +++ | + | ----- | ----- | 2448N,2456 = 2448N,2465 =<br>2454,2456   |
| +++++ | +++ | +++ | + | ----- | ----- | 2449,2456 = 2449,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2450,2456 = 2450,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2469 = 2465,2469  |
| +++++ | +++ | +++ | + | ----- | ----- | 2420,2456 = 2420,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2426,2456 = 2426,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2462 = 2462,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2467 = 2465,2467  |
| +++++ | +++ | +++ | + | ----- | ----- | 2443,2456 = 2443,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2466 = 2465,2466  |
| +++++ | +++ | +++ | + | ----- | ----- | 2455,2456 = 2455,2465  |
| +++++ | +++ | +++ | + | ----- | ----- | 2456,2471 = 2465,2471  |
| +++++ | +++ | +++ | + | ----- | ----- | 2402,2456 = 2402,2465 =<br>240210,2456 = 240210,2465<br>= 2456,2456 = 2456,2465 =<br>2456,2476 = 2465,2476       |
| +++++ | +++ | +++ | + | ----- | ----- | 2421,2478 = 2459,2478  |

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|       |       |      |       |       |       |   |
|-------|-------|------|-------|-------|-------|---|
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2434 = 2434,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2448N,2478 = 2454,2478  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2434,2448N = 2434,2454  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2426,2434 = 2426,2478 =<br>2462,2478  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2478 = 240210,2478 =<br>2434,2455 = 2434,2478 =<br>2455,2478 = 2476,2478 =<br>2478,2478                            |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2434 = 240210,2434 =<br>2434,2434 = 2434,2476  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2432 = 2432,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2432,2448N = 2432,2454  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2432 = 240210,2432 =<br>2432,2432 = 2432,2476  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2477 = 2459,2477   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2435 = 2435,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2448N,2477 = 2454,2477  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2435,2458 = 2458,2477 =<br>2467,2477  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2477 = 240210,2477 =<br>2435,2437 = 2435,2477 =<br>2437,2477 = 2476,2477 =<br>2477,2477                            |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2435,2448N = 2435,2454  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2435 = 240210,2435 =<br>2435,2435 = 2435,2476  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2440N = 2440N,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2429 = 2429,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2440N,2448N = 2440N,2454  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2440N = 240210,2440N<br>= 2429,2440N = 2429,2445N<br>= 2440N,2440N =<br>2440N,2445N = 2440N,2476                   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2429,2448N = 2429,2454  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2429 = 240210,2429 =<br>2429,2429 = 2429,2476  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2458 = 2458,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2437 = 2437,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2479 = 2459,2479   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2438 = 2438,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2448N,2470 = 2454,2470  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2402,2470 = 240210,2470 =<br>2421,2439 = 2421,2470 =<br>2439,2459 = 2439,2470 =<br>2459,2470 = 2470,2470 =<br>2470,2476 |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2436N = 2436N,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2445N = 2445N,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2474 = 2459,2474   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2447 = 2447,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2468 = 2459,2468   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2448N = 2421,2454 =<br>2448N,2459 = 2454,2459  |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2449 = 2449,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2450 = 2450,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2469 = 2459,2469   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2420,2421 = 2420,2459   |
| +++++ | ++--- | ---+ | ----- | ----- | ----- | 2421,2426 = 2426,2459   |



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|-------|-----|-----|-------|-------|-------|----------------------------|
| +++++ | +++ | --- | ----- | ----- | ----- | 2448N,2467 = 2454,2467     |
| +++++ | +++ | --- | ----- | ----- | ----- | 2443,2448N = 2443,2454     |
| +++++ | +++ | --- | ----- | ----- | ----- | 2448N,2466 = 2454,2466     |
| +++++ | +++ | --- | ----- | ----- | ----- | 2448N,2455 = 2454,2455     |
| +++++ | +++ | --- | ----- | ----- | ----- | 2448N,2471 = 2454,2471     |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2448N = 2402,2454 =   |
|       |     |     |       |       |       | 240210,2448N = 240210,2454 |
|       |     |     |       |       |       | = 2448N,2448N = 2448N,2454 |
|       |     |     |       |       |       | = 2448N,2476 = 2454,2476   |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2449 = 240210,2449 =  |
|       |     |     |       |       |       | 2449,2449 = 2449,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2450 = 240210,2450 =  |
|       |     |     |       |       |       | 2450,2450 = 2450,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2469 = 240210,2469 =  |
|       |     |     |       |       |       | 2420,2443 = 2420,2469 =    |
|       |     |     |       |       |       | 2443,2469 = 2469,2469 =    |
|       |     |     |       |       |       | 2469,2476                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2420 = 240210,2420 =  |
|       |     |     |       |       |       | 2420,2420 = 2420,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2426 = 240210,2426 =  |
|       |     |     |       |       |       | 2426,2426 = 2426,2455 =    |
|       |     |     |       |       |       | 2426,2462 = 2426,2476 =    |
|       |     |     |       |       |       | 2455,2462                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2462 = 240210,2462 =  |
|       |     |     |       |       |       | 2462,2462 = 2462,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2467 = 240210,2467 =  |
|       |     |     |       |       |       | 2467,2467 = 2467,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2443 = 240210,2443 =  |
|       |     |     |       |       |       | 2443,2443 = 2443,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2466 = 240210,2466 =  |
|       |     |     |       |       |       | 2466,2466 = 2466,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2452 = 240210,2452 =  |
|       |     |     |       |       |       | 2452,2476                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2464 = 240210,2464 =  |
|       |     |     |       |       |       | 2464,2476                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2455 = 240210,2455 =  |
|       |     |     |       |       |       | 2455,2455 = 2455,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2471 = 240210,2471 =  |
|       |     |     |       |       |       | 2471,2471 = 2471,2476      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2402,2402 = 2402,240210 =  |
|       |     |     |       |       |       | 2402,2476 = 240210,2476    |
| +++++ | +++ | --- | ----- | ----- | ----- | 2428,2428 = 2428,2444      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2406,2424 = 2413,2424 =    |
|       |     |     |       |       |       | 2424,2465                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2406,2413 = 2406,2465 =    |
|       |     |     |       |       |       | 2413,2413 = 2413,2465      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2414,2414 = 2414,2453      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2415,2451 = 2415,2457 =    |
|       |     |     |       |       |       | 2451,2451 = 2451,2453 =    |
|       |     |     |       |       |       | 2451,2457                  |
| +++++ | +++ | --- | ----- | ----- | ----- | 2415,2415 = 2415,2453      |
| +++++ | +++ | --- | ----- | ----- | ----- | 2453,2457 = 2457,2457      |

(2402 = 24020101 + 240202 to 240209 + 240211 + 240212 + 240214  
 2403 = 240301 + 240302)



## LICENSES

### 101.422-24/03 – licensed for PCR.

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### 101.422-24/03 and 101.422-24u/03u

These products use ARMS™ technology and is sold under license from Zeneca Limited. ARMS is the subject of European Patent No. 0332435, US Patent No. 5595890 and corresponding world-wide patents. ARMS is a trademark of Zeneca Limited.

## GUARANTEE

Olerup SSP AB guarantees that the primers in the HLA-A\*24 subtyping kit have the specificities given in the Specificity and Interpretation Tables of the product insert and in the GenoVision version of the HELMBERG-SCORE™ 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 dH<sub>2</sub>O.

### 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.

and weak extra bands, especially for HLA Class I high resolution SSP typings.

### PCR AMPLIFICATION

#### **101.422-24/03 – licensed for PCR**

For one HLA-A\*24 subtyping, add at room temperature in a 0.5 ml tube:

53 x 2 μl = 106 μl DNA (30 ng/μl)

53 x 3 μl = 159 μl PCR Master Mix complete with *Taq* – mix well before taking your aliquot

53 x 5 μl = 265 μl dH<sub>2</sub>O

Mix well, dispense 10 μl of the DNA-PCR Master Mix-H<sub>2</sub>O mixture into each of the 48 wells of an HLA-A\*24 subtyping. **Well No. 1 of the 48 well PCR plate is marked with '1'**. Close the 48 well PCR plate with the provided lids.

#### **101.422-24u/03u – not licensed for PCR**

For one HLA-A\*24 subtyping, add at room temperature in a 0.5 ml tube:

53 x 2 μl = 106 μl DNA (30 ng/μl)

53 x 3 μl = 159 μl PCR Master Mix without *Taq* – mix well before taking your aliquot

4.2 μl *Taq* polymerase (5 units/μl)

53 x 5 μl – 4,2 μl = 260.8 μl dH<sub>2</sub>O

Mix well, dispense 10 μl of the DNA-PCR Master Mix-*Taq*-H<sub>2</sub>O mixture into each of the 48 wells of an HLA-A\*24 subtyping. **Well No. 1 of the 48 well PCR plate is marked with '1'**. Close the 48 well PCR plate with the provided lids.

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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 $\mu$ l SSP reaction   |
| nucleotides           | final concentration of each dNTP is 200 $\mu$ M  |
| PCR buffer            | final concentrations: 50 mM KCl, 1.5 mM MgCl <sub>2</sub> ,<br>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 $\mu$ g/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 $\mu$ M  |
| PCR buffer  | final concentrations: 50 mM KCl, 1.5 mM MgCl <sub>2</sub> ,<br>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 $\mu$ g/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  $-20^{\circ}\text{C}$ , 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  $+4^{\circ}\text{C}$  for 4 weeks, but the PCR Master Mixes are then no longer stable for 24 months.

## SPECIFICITY TABLE

### HLA-A\*24 SSP subtyping

Specificities and sizes of the PCR products of the 48 primer mixes used for HLA-A\*24 SSP subtyping

| Primer Mix           | Approx. size of spec. PCR product <sup>1</sup> | Size of control band <sup>2</sup> | Amplified HLA-A*24 alleles   | Other amplified HLA Class I alleles <sup>3</sup>       |
|----------------------|--|-----------------------------------|--|--|
| <b>1</b>             | 210 bp   | <b>800 bp</b>                     | 24020101-240212, 240213 <sup>weakly</sup> , 240214, 240301-2411N, 2413-2415, 2417-2432, 2434-2475, 2477-2479 | 2301-2316, 8001 <sup>weakly</sup>                      |
| <b>2</b>             | 245 bp   | 1070 bp                           | 240301-240302, 2410, 2418, 2422, 2433  | 021701-021702, 9208, 9210, 2304, 2907                  |
| <b>3</b>             | 210 bp   | <b>800 bp</b>                     | 24020101-2405, 2407-2411N, 2417, 2419-2421, 2423, 2425-2450, 2455, 2456, 2458-2463, 2466-2479                |  |
| <b>4<sup>5</sup></b> | 220 bp   | 1070 bp                           | 2406, 2413, 2418, 2422, 2424   | 021701-021702, 9208, 9210, 2301-2313, 2315, 2316, 2907 |
| <b>5</b>             | 175 bp   | 1070 bp                           | 24020101-2404, 2406-2411N, 2413, 2417-2423, 2425-2450, 2454-2456, 2458-2463, 2465-2479                       | 021701-021702 <sup>weakly</sup> , 2314                 |
| <b>6<sup>5</sup></b> | 175 bp   | 1070 bp                           | 2405, 2424   | 2301-2313, 2315, 2316, 2907                            |
| <b>7</b>             | 330 bp   | 1070 bp                           | 24020101-240302, 2405-2411N, 2413, 2417, 2418, 2420-2427, 2429-2443, 2445N-2450, 2452, 2454-2456, 2458-2479  | 2301-2316  |
| <b>8<sup>4</sup></b> | 75 bp  | 1070 bp                           | 2404   |  |

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|                           |             |               |  |  |
|---------------------------|-------------|---------------|--|--|
| <b>9</b>                  | 225 bp      | <b>800 bp</b> | 2407, 2419, 2424   | 2313, 300101-300102, 3011, 3014L-3021  |
| <b>10</b>                 | 365 bp      | 1070 bp       | 24020101-2406, 2408-2411N, 2413, 2417, 2418, 2420-2423, 2425-2450, 2452, 2454-2456, 2458-2479    | 0210, 021701-021702, 0239, 9208, 9210, 2301-2312, 2314-2316  |
| <b>11<sup>5,8</sup></b>   | 200, 245 bp | 1070 bp       | 2408, 2442, 2461   | 0276, 3022   |
| <b>12</b>                 | 235 bp      | <b>800 bp</b> | 2425   | 2305   |
| <b>13</b>                 | 160 bp      | 1070 bp       | 24020101-240214, 2404-2409N, 2411N, 2413-2415, 2417, 2419, 2420, 2423-2432, 2434-2474, 2476-2479 | 0219, 0236, 0237, 0254, 2301, 2302, 2305-2316 6826   |
| <b>14<sup>4</sup></b>     | 105 bp      | 1070 bp       | 2409N  |  |
| <b>15</b>                 | 385 bp      | <b>800 bp</b> | 2414, 2415, 2451, 2453, 2457   | 0246, 0248, 0270, 0330, 3007, 3108, 3205   |
| <b>16<sup>4,6,9</sup></b> | 85, 245 bp  | 1070 bp       | 2417, 2423, 2441   | 2907   |
| <b>17</b>                 | 230 bp      | 1070 bp       | 2410, 2446   | 2310   |
| <b>18</b>                 | 270 bp      | 1070 bp       | 24020102L  |  |
| <b>19<sup>7</sup></b>     | 195 bp      | 1070 bp       | 24020101-240209, 240211-2411N, 2413-2415, 2417-2432, 2434-2479                                   | 2301-2316  |
| <b>20<sup>6,7</sup></b>   | 470 bp      | 1070 bp       | 2411N  | 0104N, 0321N, 1121N, 2307N   |
| <b>21<sup>4,10</sup></b>  | 125, 155 bp | <b>800 bp</b> | 2431, 2472   | 9206   |
| <b>22<sup>4,11</sup></b>  | 125, 270 bp | <b>800 bp</b> | 2427, 2463   |  |
| <b>23<sup>4,12</sup></b>  | 125, 190 bp | <b>800 bp</b> | 2428, 2430, 2442, 2472   | 020109, 0250, 9206, 9222, 0309, 1106, 1118, 2312, 2603, 2606, 2621, 2630, 2633, 3208, 6805, 6815, 6820, 7406 |
| <b>24<sup>4,13</sup></b>  | 135, 240 bp | <b>800 bp</b> | 2419, 2428, 2444, 2460N, 2473  | 0276, 300101-300102, 3011, 3013-3021   |
| <b>25</b>                 | 220 bp      | 1070 bp       | 2413, 2418, 2424, 2456, 2465   | 021701-021702, 9208, 9210, 2301, 2303-2316, 2907   |
| <b>26<sup>14</sup></b>    | 235, 285 bp | <b>800 bp</b> | 2422, 2434, 2478   |  |

|                               |                  |               |                              |   |
|-------------------------------|------------------|---------------|------------------------------|---|
| <b>27</b> <sup>4,7,15</sup>   | 80, 370 bp       | <b>800 bp</b> | 2414, 2432                   | 0246, 0248, 0270, 3205  |
| <b>28</b> <sup>4,16</sup>     | 145, 200 bp      | <b>800 bp</b> | 2435, 2473, 2477             |   |
| <b>29</b> <sup>17</sup>       | 210, 240 bp      | <b>800 bp</b> | 2408, 2429, 2440N, 2442      | 3022  |
| <b>30</b> <sup>4,18</sup>     | 115, 200 bp      | <b>800 bp</b> | 2421, 2459, 2470             | 2303, 2907  |
| <b>31</b> <sup>19</sup>       | 160, 200 bp      | <b>800 bp</b> | 2437, 2458, 2477             |   |
| <b>32</b>                     | 220 bp           | 1070 bp       | 2415, 2438, 2441, 2451, 2479 | 01010101-0104N, 0106-0127N, 1127, 2629, 3213, <b>B*1512</b> <sup>weakly</sup> , <b>B*1519</b> <sup>weakly</sup> |
| <b>33</b> <sup>4</sup>        | 100 bp           | 1070 bp       | 2439, 2470                   |   |
| <b>34</b> <sup>4,20</sup>     | 80, 195 bp       | <b>800 bp</b> | 2436N, 2475                  |   |
| <b>35</b> <sup>21</sup>       | 200, 240 bp      | <b>800 bp</b> | 2440N, 2445N                 |   |
| <b>36</b> <sup>4,7,22</sup>   | 115, 170 bp      | 1070 bp       | 2447, 2474                   |   |
| <b>37</b> <sup>23</sup>       | 210, 255 bp      | 1070 bp       | 2448N, 2454, 2468            |   |
| <b>38</b> <sup>4,24</sup>     | 80, 145 bp       | <b>800 bp</b> | 2449, 2475                   |   |
| <b>39</b> <sup>25</sup>       | 210, 255 bp      | <b>800 bp</b> | 2450, 2468                   |   |
| <b>40</b> <sup>26</sup>       | 225, 270 bp      | 1070 bp       | 2408, 2420, 2463, 2469       |   |
| <b>41</b>                     | 205 bp           | 1070 bp       | 2426, 2462                   | 2629, 3105, 3213, 3310  |
| <b>42</b> <sup>27</sup>       | 165, 200 bp      | 1070 bp       | 2424, 2458, 2467             | 2616  |
| <b>43</b> <sup>28</sup>       | 160, 275 bp      | <b>800 bp</b> | 2443, 2469                   |   |
| <b>44</b> <sup>29</sup>       | 195, 250 bp      | <b>800 bp</b> | 2451, 2457, 2466             | 01010101-0104N, 0106-0119, 0121-0127N, 0318, 1127, 2629, 2903, 3105, 3213, 3310, 6826, 8001                     |
| <b>45</b> <sup>7</sup>        | 240 bp           | 1070 bp       | 2414, 2452, 2479             | 0120, 0219, 0236, 0237, 0254, 2629, <b>B*1512</b> <sup>weakly</sup> , <b>B*1519</b> <sup>weakly</sup>           |
| <b>46</b> <sup>4,5,7,30</sup> | 120, 170 bp      | 1070 bp       | 2415, 2441, 2451, 2464, 2474 | 0250, 0273, 0293, 9222, 2610, 68020101-68020103, 6815, 6818N, 6825, 6827, 6828, 6831, 6834, 6840                |
| <b>47</b> <sup>31</sup>       | 240, 285, 410 bp | <b>800 bp</b> | 2423, 2426, 2455, 2478       | 0330, 3007, 3108, 3205  |
| <b>48</b>                     | 195 bp           | 1070 bp       | 2424, 2471 <sup>weakly</sup> | 2301, 2302 <sup>weakly</sup> , 2303-2313,   |

<sup>1</sup>Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-A\*24 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. 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.

<sup>2</sup>The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most tubes, or a band of 800 base pairs, for some tubes.

Tube number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A\*24 subtyping.

In addition, tubes number 3, 9, 12, 15, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 35, 38, 39, 43, 44 and 45 contain the primer pair giving rise to the shorter, 800 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.

<sup>3</sup>Due to the sharing of sequence motifs between HLA-A alleles some non-HLA-A\*24 alleles will be amplified by primer mixes 1, 2, 4 to 7, 9 to 13, 15 to 17, 19 to 21, 23 to 25, 27, 29, 30, 32, 41, 42, 44 to 48. In addition, the B\*1512 and B\*1519 alleles will be weakly amplified by primer mixes 32 and 45.

We assume that unknown 4<sup>th</sup> exon A\*23 and A\*24 nucleotide sequences are conserved within the A\*23/A\*24 allele group.

<sup>4</sup>Short specific PCR fragments are less intense and not as sharp as longer specific bands.

<sup>5</sup>Primer mixes 4, 6 and 46 may yield specific PCR products than the other A\*24 primer mixes.

<sup>6</sup>Primer mix 20 may give rise to a primer oligomer artefact.

<sup>7</sup>Primer mixes 20, 27, 36, 45 and 46 may give rise to nonspecific amplifications.

<sup>8</sup>Primer mix 11: Specific PCR fragment of 200 bp in the A\*2408, 2442 and the A\*0276 and 3002 alleles. Specific PCR fragment of 245 bp in the A\*2461 allele.

<sup>9</sup>Primer mix 16: Specific PCR fragment of 85 bp in the A\*2417, 2441 and the A\*2907 alleles. Specific PCR fragment of 245 bp in the A\*2423 allele.

<sup>10</sup>Primer mix 21: Specific PCR fragment of 125 bp in the A\*2472 and A\*9206 alleles. Specific PCR fragment of 155 bp in the A\*2431 allele.

<sup>11</sup>Primer mix 22: Specific PCR fragment of 125 bp in the A\*2427 allele. Specific PCR fragment of 270 bp in the A\*2463 allele.

<sup>12</sup>Primer mix 23: Specific PCR fragment of 125 bp in the A\*2472 and A\*9206 allele. Specific PCR fragment of 190 bp in the A\*2428, 2430, 2442 and the A\*020109, 0250, 9222, 0309, 1106, 1118, 2312, 2603, 2606, 2621, 2630, 2633, 3208, 6805, 6815, 6820, 7406 alleles.

<sup>13</sup>Primer mix 24: Specific PCR fragment of 135 bp in the A\*2473 allele. Specific PCR fragment of 240 bp in the A\*2419, 2428, 2444, 2460N and the A\*0276, 300101-300102, 3011, 3013 to 3021 alleles.

<sup>14</sup>Primer mix 26: Specific PCR fragment of 235 bp in the A\*2422 and 2434 alleles. Specific PCR fragment of 285 bp in the A\*2478 allele.

<sup>15</sup>Primer mix 27: Specific PCR fragment of 80 bp in the A\*2432 and A\*3205 alleles. Specific PCR fragment of 370 bp in the A\*2414, A\*0246, A\*0248 and A\*0270 alleles.

<sup>16</sup>Primer mix 28: Specific PCR fragment of 145 bp in the A\*2435 allele. Specific PCR fragment of 200 bp in the A\*2473 and 2477 alleles.

<sup>17</sup>Primer mix 29: Specific PCR fragment of 210 bp in the A\*2408, 2429, 2442 and the A\*3022 alleles. Specific PCR fragment of 240 bp in the A\*2440N allele.

<sup>18</sup>Primer mix 30: Specific PCR fragment of 115 bp in the A\*2421, 2470 and the A\*2303 and 2907 alleles. Specific PCR fragment of 200 bp in the A\*2459 allele.

<sup>19</sup>Primer 31: Specific PCR fragment of 160 bp in the A\*2437 allele. Specific PCR fragment of 200 bp in the A\*2458 and 2477 alleles.

<sup>20</sup>Primer mix 34: Specific PCR fragment of 80 bp in the A\*2475 allele. Specific PCR fragment of 195 bp in the A\*2436 N allele.

<sup>21</sup>Primer mix 35: Specific PCR fragment of 200 bp in the A\*2445N allele. Specific PCR fragment of 240 bp in the A\*2440N allele.

<sup>22</sup>Primer mix 36: Specific PCR fragment of 115 bp in the A\*2447 allele. Specific PCR fragment of 170 bp in the A\*2474 allele.

<sup>23</sup>Primer mix 37: Specific PCR fragment of 210 bp in the A\*2448N and 2454 alleles. Specific PCR fragment of 255 bp in the A\*2468 allele.

<sup>24</sup>Primer mix 38: Specific PCR fragment of 80 bp in the A\*2475 allele. Specific PCR fragment of 145 bp in the A\*2449 allele.

<sup>25</sup>Primer mix 39: Specific PCR fragment of 210 bp in the A\*2450 allele. Specific PCR fragment of 255 bp in the A\*2468 allele.

<sup>26</sup>Primer mix 40: Specific PCR fragment of 225 bp in the A\*2408 and 2420 alleles. Specific PCR fragment of 270 bp in the A\*2463 and 2469 alleles.

<sup>27</sup>Primer mix 42: Specific PCR fragment of 165 bp in the A\*2458 allele. Specific PCR fragment of 200 bp in the A\*2424, 2467 and the A\*2616 alleles.

<sup>28</sup>Primer mix 43: Specific PCR fragment of 160 bp in the A\*2443 allele. Specific PCR fragment of 275 bp in the A\*2469 allele.

<sup>29</sup>Primer mix 44: Specific PCR fragment of 195 bp in the A\*2466 allele. Specific PCR fragment of 250 bp in the A\*2451, 2457 and the A\*01010101-0104N, 0106-0119, 0121-0127N, 0318, 1127, 2629, 2903, 3105, 3213, 3310, 6826 and 8001 alleles.

<sup>30</sup>Primer mix 46: Specific PCR fragment of 120 bp in the A\*2415, 2441, 2451, 2464 and the A\*0250, 0273, 0293, 9222, 2610, 68020101-68020103, 6815, 6818N, 6825, 6827, 6828, 6831, 6834 and 6840 alleles. Specific PCR fragment of 170 bp in the A\*2474 allele.

<sup>31</sup>Primer mix 47: Specific PCR fragment of 240 bp in the A\*2423 and 2455 alleles. Specific PCR fragment of 285 bp in the A\*2478 allele. Specific PCR fragment of 410 bp in the A\*2426 and the A\*0330, 3007, 3108 and 3205 alleles.

HLA-A\*24  
101.422-24/03 – licensed for PCR  
101.422-24u/03u – not licensed for PCR  
Lot No.: **X96**

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| <b>INTERPRETATION TABLE</b>                                       |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|---|-------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b>HLA-A*24 SSP subtyping</b>                                     |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| <b>Amplification patterns of the A*24020101 to A*2479 alleles</b> |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|   | <b>Tube<sup>5</sup></b> |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|   | 1                       | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   | 10                  | 11                  | 12                  | 13                  | 14                  | 15                  | 16                  | 17                  | 18                  | 19                  | 20                  | 21                  | 22                  | 23                  | 24                  |
| <b>Length of spec.</b>  | 210                     | 245                 | 210                 | 220                 | 175                 | 175                 | 330                 | 75                  | 225                 | 365                 | 200                 | 235                 | 160                 | 105                 | 385                 | 85                  | 230                 | 270                 | 195                 | 470                 | 125                 | 125                 | 125                 | 135                 |
| <b>PCR product</b>  |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     | 245                 |                     |                     |                     |                     | 245                 |                     |                     |                     |                     | 155                 | 270                 | 190                 | 240                 |
| <b>Length of int. pos. control<sup>1</sup></b>                    | 800                     | 1070                | 800                 | 1070                | 1070                | 1070                | 1070                | 1070                | 800                 | 1070                | 1070                | 800                 | 1070                | 1070                | 800                 | 1070                | 1070                | 1070                | 1070                | 1070                | 800                 | 800                 | 800                 | 800                 |
| <b>5'-primer(s)<sup>2</sup></b>                                   | 650                     | 368                 | 368                 | 368                 | 368                 | 368                 | 317                 | 265                 | 98                  | 282                 | 98                  | 28                  | 453                 | 678                 | 265                 | 368                 | 368                 | 2 <sup>d</sup>      | 678                 | 3 <sup>d</sup>      | 144                 | 28                  | 144                 | 98                  |
|   | 5'-CCC <sup>3</sup>     | 5'-gTT <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-gCT <sup>3</sup> | 5'-CAG <sup>3</sup> | 5'-CTC <sup>3</sup> | 5'-CAC <sup>3</sup> | 5'-CTC <sup>3</sup> | 5'-TCg <sup>3</sup> | 5'-AAA <sup>3</sup> | 5'-AgA <sup>3</sup> | 5'-CAG <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-gTT <sup>3</sup> | 5'-CgA <sup>3</sup> | 5'-AgA <sup>3</sup> | 5'-ATA <sup>3</sup> | 5'-gCC <sup>3</sup> | 5'-TCg <sup>3</sup> | 5'-gCC <sup>3</sup> | 5'-CTC <sup>3</sup> |
|   |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | 530                 | 485                 | 530                 | 409                 |
|   |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | 5'-ggT <sup>3</sup> | 5'-CAG <sup>3</sup> | 5'-ggT <sup>3</sup> | 5'-ggC <sup>3</sup> |
|   |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| <b>3'-primer(s)<sup>3</sup></b>                                   | 819                     | 570                 | 539                 | 538                 | 502                 | 502                 | 368                 | 299                 | 282                 | 368                 | 256                 | 92                  | 570                 | 742                 | 368                 | 413                 | 559                 | 570                 | 831                 | 621                 | 259                 | 127                 | 292                 | 295                 |
|   | 5'-ggT <sup>3</sup>     | 5'-CAC <sup>3</sup> | 5'-TCT <sup>3</sup> | 5'-CAA <sup>3</sup> | 5'-CTT <sup>3</sup> | 5'-CTg <sup>3</sup> | 5'-CAA <sup>3</sup> | 5'-TCg <sup>3</sup> | 5'-gAC <sup>3</sup> | 5'-CAA <sup>3</sup> | 5'-CCC <sup>3</sup> | 5'-AAC <sup>3</sup> | 5'-CCg <sup>3</sup> | 5'-CTA <sup>3</sup> | 5'-CAT <sup>3</sup> | 5'-gCC <sup>3</sup> | 5'-CCg <sup>3</sup> | 5'-CCg <sup>3</sup> | 5'-TCC <sup>3</sup> | 5'-CCC <sup>3</sup> | 5'-CTg <sup>3</sup> | 5'-CTT <sup>3</sup> | 5'-gTg <sup>3</sup> | 5'-TCA <sup>3</sup> |
|   |                         |                     |                     | 538                 |                     |                     |                     |                     |                     |                     | 303                 |                     | 570                 |                     |                     | 570                 |                     |                     |                     |                     | 616                 | 570                 | 616                 | 299                 |
|   |                         |                     |                     | 5'-CCA <sup>3</sup> |                     |                     |                     |                     |                     |                     | 5'-AgT <sup>3</sup> |                     | 5'-CAG <sup>3</sup> |                     |                     | 5'-CAG <sup>3</sup> | 5'-CCg <sup>3</sup> |                     |                     |                     | 5'-CgT <sup>3</sup> | 5'-CCg <sup>3</sup> | 5'-CgT <sup>3</sup> | 5'-CCA <sup>3</sup> |
|   |                         |                     |                     | 555                 |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | 502                 |
|   |                         |                     |                     | 5'-CCA <sup>3</sup> |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | 5'-CTT <sup>3</sup> |
|   |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| <b>Tube No.</b>   | 1                       | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   | 10                  | 11                  | 12                  | 13                  | 14                  | 15                  | 16                  | 17                  | 18                  | 19                  | 20                  | 21                  | 22                  | 23                  | 24                  |
| <b>HLA-A allele<sup>4</sup></b>                                   |                         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| *24020101, 240203-240209, 240211, 2402012, 240214                 | +                       |                     | +                   |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |                     |
| *24020102L  | +                       |                     | +                   |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     | +                   | +                   |                     |                     |                     |                     |                     |
| *240210   | +                       |                     | +                   |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| *240213   | W                       |                     | +                   |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |
| *240301-240302  | +                       | +                   | +                   |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |
| *2404   | +                       |                     | +                   |                     | +                   |                     |                     | +                   |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |
| *2405   | +                       |                     | +                   |                     |                     | +                   | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |
| *2406   | +                       |                     |                     | +                   | +                   |                     | +                   |                     |                     | +                   |                     |                     | +                   |                     |                     |                     |                     |                     |                     | +                   |                     |                     |                     |                     |
| <b>Tube No.</b>   | 1                       | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   | 10                  | 11                  | 12                  | 13                  | 14                  | 15                  | 16                  | 17                  | 18                  | 19                  | 20                  | 21                  | 22                  | 23                  | 24                  |



| INTERPRETATION TABLE                                       |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| HLA-A*24 SSP subtyping                                     |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Amplification patterns of the A*24020101 to A*2479 alleles |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tube <sup>5</sup>  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25   | 26                   | 27                   | 28                   | 29                   | 30                   | 31                   | 32                   | 33                   | 34                   | 35                   | 36                   | 37                   | 38                   | 39                   | 40                   | 41                   | 42                   | 43                   | 44                   | 45                   | 46                   | 47                    | 48                    |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 220                  | 235                  | 80                   | 145                  | 210                  | 115                  | 160                  | 220                  | 100                  | 80                   | 200                  | 115                  | 210                  | 80                   | 210                  | 225                  | 205                  | 165                  | 160                  | 195                  | 240                  | 120                   | 240                   | 195                  | Length of spec. PCR product              |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      | 285                  | 370                  | 200                  | 240                  | 200                  | 200                  |                      |                      | 195                  | 240                  | 170                  | 255                  | 145                  | 255                  | 270                  |                      | 200                  | 275                  | 250                  |                      | 170                   | 285                   | 410                  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1070                 | 800                  | 800                  | 800                  | 800                  | 800                  | 800                  | 1070                 | 1070                 | 800                  | 800                  | 1070                 | 1070                 | 800                  | 800                  | 1070                 | 1070                 | 1070                 | 800                  | 800                  | 1070                 | 1070                  | 800                   | 1070                 | Length of int. pos. control <sup>1</sup> |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 368                  | 98                   | 265                  | 98                   | 98                   | 368                  | 98                   | 90                   | 368                  | 98                   | 105                  | 186                  | 368                  | 160                  | 98                   | 28                   | 404                  | 98                   | 28                   | 355                  | 362                  | 186                   | 28                    | 368                  | 5'-primer(s) <sup>2</sup>                |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5'-gTT <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-CAG <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-gTT <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-AgC <sup>3'</sup> | 5'-gTT <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-Tgg <sup>3'</sup> | 5'-AgA <sup>3'</sup> | 5'-gTT <sup>3'</sup> | 5'-ACT <sup>3'</sup> | 5'-CTA <sup>3'</sup> | 5'-TCg <sup>3'</sup> | 5'-CCA <sup>3'</sup> | 5'-CTC <sup>3'</sup> | 5'-TCg <sup>3'</sup> | 5'-CCA <sup>3'</sup> | 5'-gAg <sup>3'</sup> | 5'-AgAg <sup>3'</sup> | 5'-TCC <sup>3'</sup>  | 5'-gTT <sup>3'</sup> |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      | 368                  |                      | 409                  | 630                  |                      |                      | 385                  |                      | 575                  | 630                  | 242                  |                      | 575                  | 368                  |                      | 414                  |                      | 368                  | 363                  | 678                  | 361                   | 368                   |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      | 5'-gTT <sup>3'</sup> |                      | 5'-ggC <sup>3'</sup> | 5'-AAg <sup>3'</sup> |                      |                      | 5'-ggC <sup>3'</sup> |                      | 5'-gCg <sup>3'</sup> | 5'-AAg <sup>3'</sup> | 5'-gCT <sup>3'</sup> |                      | 5'-gCg <sup>3'</sup> | 5'-gTT <sup>3'</sup> |                      | 5'-CAG <sup>3'</sup> |                      | 5'-gTT <sup>3'</sup> | 5'-ATA <sup>3'</sup> | 5'-AgA <sup>3'</sup> | 5'-AgT <sup>3'</sup>  | 5'-gTTT <sup>3'</sup> |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      | 678                  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      | 414                  |                      | 385                   |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      | 5'-AgA <sup>3'</sup> |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      | 5'-gAA <sup>3'</sup> |                      | 5'-ggC <sup>3'</sup>  |                       |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 527                  | 290                  | 302                  | 214                  | 265                  | 434                  | 212                  | 265                  | 427                  | 250                  | 265                  | 317                  | 532                  | 265                  | 265                  | 81                   | 570                  | 221                  | 131                  | 570                  | 570                  | 317                   | 265                   | 524                  | 3'-primer(s) <sup>3</sup>                |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5'-CCT <sup>3'</sup> | 5'-CAA <sup>3'</sup> | 5'-ggC <sup>3'</sup> | 5'-CCA <sup>3'</sup> | 5'-CCg <sup>3'</sup> | 5'-CCC <sup>3'</sup> | 5'-gCA <sup>3'</sup> | 5'-CCC <sup>3'</sup> | 5'-gTA <sup>3'</sup> | 5'-CA <sup>3'</sup>  | 5'-CCC <sup>3'</sup> | 5'-ggA <sup>3'</sup> | 5'-CTA <sup>3'</sup> | 5'-CCC <sup>3'</sup> | 5'-CCC <sup>3'</sup> | 5'-gAT <sup>3'</sup> | 5'-CCg <sup>3'</sup> | 5'-ACA <sup>3'</sup> | 5'-ggA <sup>3'</sup> | 5'-CCg <sup>3'</sup> | 5'-CCg <sup>3'</sup> | 5'-ggA <sup>3'</sup>  | 5'-CCC <sup>3'</sup>  | 5'-CAC <sup>3'</sup> |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 539                  | 545                  | 355                  | 256                  | 831                  | 453                  | 221                  | 570                  | 434                  | 616                  | 831                  |                      | 544                  | 616                  | 582                  | 127                  |                      | 259                  | 488                  |                      | 866                  | 453                   | 559                   |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5'-TCA <sup>3'</sup> | 5'-AgA <sup>3'</sup> | 5'-gAC <sup>3'</sup> | 5'-CTg <sup>3'</sup> | 5'-TCC <sup>3'</sup> | 5'-TCg <sup>3'</sup> | 5'-ACA <sup>3'</sup> | 5'-CCg <sup>3'</sup> | 5'-CCC <sup>3'</sup> | 5'-CgT <sup>3'</sup> | 5'-TCC <sup>3'</sup> |                      | 5'-ggg <sup>3'</sup> | 5'-CgT <sup>3'</sup> | 5'-TAG <sup>3'</sup> | 5'-CTT <sup>3'</sup> |                      | 5'-gTT <sup>3'</sup> | 5'-CCT <sup>3'</sup> |                      | 5'-gAT <sup>3'</sup> | 5'-TCT <sup>3'</sup>  | 5'-CTC <sup>3'</sup>  |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 555                  | 614                  |                      | 502                  |                      | 527                  | 256                  | 866                  |                      |                      |                      |                      | 582                  |                      |                      | 131                  |                      |                      |                      |                      |                      |                       | 570                   |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5'-CCA <sup>3'</sup> | 5'-TgT <sup>3'</sup> |                      | 5'-CTT <sup>3'</sup> |                      | 5'-CCg <sup>3'</sup> | 5'-CTg <sup>3'</sup> | 5'-gAT <sup>3'</sup> |                      |                      |                      |                      | 5'-TAG <sup>3'</sup> |                      |                      | 5'-ggA <sup>3'</sup> |                      |                      |                      |                      |                      |                       | 5'-CAG <sup>3'</sup>  |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       | 614                   |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       | 5'-TgT <sup>3'</sup>  |                      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25   | 26                   | 27                   | 28                   | 29                   | 30                   | 31                   | 32                   | 33                   | 34                   | 35                   | 36                   | 37                   | 38                   | 39                   | 40                   | 41                   | 42                   | 43                   | 44                   | 45                   | 46                   | 47                    | 48                    | Tube No.             |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      | HLA-A allele <sup>4</sup>                |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *24020101, 240203-240209, 240211, 2402012, 240214 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *24020102L  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *240210   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *240213   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *240301-240302                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *2404   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *2405   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                      |  | *2406   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25   | 26                   | 27                   | 28                   | 29                   | 30                   | 31                   | 32                   | 33                   | 34                   | 35                   | 36                   | 37                   | 38                   | 39                   | 40                   | 41                   | 42                   | 43                   | 44                   | 45                   | 46                   | 47                    | 48                    | Tube No.             |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| Length of spec. | 210 | 245 | 210 | 220 | 175 | 175 | 330 | 75 | 225 | 365 | 200 | 235 | 160 | 105 | 385 | 85  | 230 | 270 | 195 | 470 | 125 | 125 | 125 | 135 |     |
|-----------------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product     |     |     |     |     |     |     |     |    |     |     | 245 |     |     |     |     | 245 |     |     |     |     |     | 155 | 270 | 190 | 240 |
| Tube 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  |     |
| *2407           | +   |     | +   |     | +   |     | +   |    | +   |     |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2408           | +   |     | +   |     | +   |     | +   |    |     | +   | +   |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2409N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   | +   |     |     |     |     |     | +   |     |     |     |     |     |
| *2410           | +   | +   | +   |     | +   |     | +   |    |     | +   |     |     |     |     |     |     | +   |     |     | +   |     |     |     |     |     |
| *2411N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   | +   |     |     |     |     |
| *2413           | +   |     |     | +   | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2414           | +   |     |     |     |     |     |     |    |     |     |     |     | +   |     | +   |     |     |     |     | +   |     |     |     |     |     |
| *2415           | +   |     |     |     |     |     |     |    |     |     |     |     | +   |     | +   |     |     |     |     | +   |     |     |     |     |     |
| *2417           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     | +   |     |     |     | +   |     |     |     |     |     |
| *2418           | +   | +   |     | +   | +   |     | +   |    |     | +   |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2419           | +   |     | +   |     | +   |     |     |    | +   |     |     |     | +   |     |     |     |     |     |     | +   |     |     |     | +   |     |
| *2420           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2421           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2422           | +   | +   |     | +   | +   |     | +   |    |     | +   |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2423           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     | +   |     |     |     | +   |     |     |     |     |     |
| *2424           | +   |     |     | +   |     | +   | +   |    | +   |     |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2425           | +   |     | +   |     | +   |     | +   |    |     | +   |     | +   | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2426           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2427           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     | +   |     |     |     |
| *2428           | +   |     | +   |     | +   |     |     |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     | +   | +   |     |
| *2429           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2430           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     | +   |     |     |
| *2431           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     | +   |     |     |     |
| *2432           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2433           |     | +   | +   |     | +   |     | +   |    |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *2434           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2435           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2436N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2437           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2438           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2439           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2440N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2441           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     | +   |     |     |     | +   |     |     |     |     |     |
| *2442           | +   |     | +   |     | +   |     | +   |    |     | +   | +   |     | +   |     |     |     |     |     |     | +   |     |     | +   |     |     |
| *2443           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2444           | +   |     | +   |     | +   |     |     |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     | +   |     |
| *2445N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2446           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     | +   |     |     | +   |     |     |     |     |     |
| *2447           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2448N          | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2449           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2450           | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2451           | +   |     |     |     |     |     |     |    |     |     |     |     | +   |     | +   |     |     |     |     | +   |     |     |     |     |     |
| Tube 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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| 220 | 235 | 80  | 145 | 210 | 115 | 160 | 220 | 100 | 80  | 200 | 115 | 210 | 80  | 210 | 225 | 205 | 165 | 160 | 195 | 240 | 120 | 240 | 195 | Length of spec.<br>PCR product |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|
|     | 285 | 370 | 200 | 240 | 200 | 200 |     |     | 195 | 240 | 170 | 255 | 145 | 255 | 270 |     | 200 | 275 | 250 |     | 170 | 285 | 410 |                                |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.                       |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2407                          |
|     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     | *2408                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2409N                         |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2410                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2411N                         |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2413                          |
|     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     | *2414                          |
|     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     | *2415                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2417                          |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2418                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2419                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     | *2420                          |
|     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2421                          |
|     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2422                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   | *2423                          |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     | +   | *2424                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2425                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     | +   | *2426                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2427                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2428                          |
|     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2429                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2430                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2431                          |
|     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2432                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2433                          |
|     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2434                          |
|     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2435                          |
|     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     | *2436N                         |
|     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2437                          |
|     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2438                          |
|     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2439                          |
|     |     |     |     | +   |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     | *2440N                         |
|     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     | *2441                          |
|     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2442                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     | *2443                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2444                          |
|     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     | *2445N                         |
|     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     | *2446                          |
|     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     | *2447                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     | *2448N                         |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     | *2449                          |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     | *2450                          |
|     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     | +   |     |     | +   |     | *2451                          |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.                       |

| Length of spec.   | 210 | 245 | 210 | 220 | 175 | 175 | 330 | 75 | 225 | 365 | 200 | 235 | 160 | 105 | 385 | 85  | 230 | 270 | 195 | 470 | 125 | 125 | 125 | 135 |     |
|---|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product   |     |     |     |     |     |     |     |    |     |     | 245 |     |     |     |     | 245 |     |     |     |     |     | 155 | 270 | 190 | 240 |
| Tube 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  |     |
| *2452   | +   |     |     |     |     |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2453   | +   |     |     |     |     |     |     |    |     |     |     |     | +   |     | +   |     |     |     |     | +   |     |     |     |     |     |
| *2454   | +   |     |     |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2455   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2456   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2457   | +   |     |     |     |     |     |     |    |     |     |     |     | +   |     | +   |     |     |     |     | +   |     |     |     |     |     |
| *2458   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2459   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2460N  | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     | +   |     |
| *2461   | +   |     | +   |     | +   |     | +   |    |     | +   | +   |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2462   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2463   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     | +   |     |     |     |
| *2464   | +   |     |     |     |     |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2465   | +   |     |     |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2466   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2467   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2468   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2469   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2470   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2471   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2472   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     | +   |     | +   |     |
| *2473   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     | +   |     |
| *2474   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2475   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2476   |     |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2477   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2478   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *2479   | +   |     | +   |     | +   |     | +   |    |     | +   |     |     | +   |     |     |     |     |     |     | +   |     |     |     |     |     |
| *01010101-0103, 0106-0119, 0121-0127N, 1127                                     |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0104N  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |
| *0120   |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *020109, 0309, 1106, 1118, 2603, 2606, 2621, 2630, 2633, 3208, 6805, 6820, 7406 |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |
| *0210, 0239   |     |     |     |     |     |     |     |    |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *021701-021702  |     | +   |     | +   | W   |     |     |    |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0219, 0236, 0237, 0254   |     |     |     |     |     |     |     |    |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |
| *0246, 0248, 0270   |     |     |     |     |     |     |     |    |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |
| *0250, 9222, 6815   |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |
| Tube 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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| 220 | 235 | 80  | 145 | 210 | 115 | 160 | 220 | 100 | 80  | 200 | 115 | 210 | 80  | 210 | 225 | 205 | 165 | 160 | 195 | 240 | 120 | 240 | 195 | Length of spec.<br>PCR product  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
|     | 285 | 370 | 200 | 240 | 200 | 200 |     |     | 195 | 240 | 170 | 255 | 145 | 255 | 270 |     | 200 | 275 | 250 |     | 170 | 285 | 410 |   |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     | *2452   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2453   |
|     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     | *2454   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   | *2455   |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2456   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     | *2457   |
|     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2458   |
|     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2459   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2460N  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2461   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     | *2462   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     | *2463   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   | *2464   |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2465   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   | *2466   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2467   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2468   |
|     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     | +   |     |     |     |     |     |     |     |     | *2469   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2470   |
|     |     |     |     |     | +   |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     | W   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2471   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2472   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2473   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2474   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2475   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2476   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2477   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2478   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *2479   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *01010101-0103, 0106-0119, 0121-0127N, 1127                                     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0104N  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0120   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *020109, 0309, 1106, 1118, 2603, 2606, 2621, 2630, 2633, 3208, 6805, 6820, 7406 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0210, 0239   |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *021701-021702  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0219, 0236, 0237, 0254   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0246, 0248, 0270   |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | *0250, 9222, 6815   |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.  |

| Length of spec.  | 210 | 245 | 210 | 220 | 175 | 175 | 330 | 75 | 225 | 365 | 200 | 235 | 160 | 105 | 385 | 85  | 230 | 270 | 195 | 470 | 125 | 125 | 125 | 135 |     |
|--|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PCR product  |     |     |     |     |     |     |     |    |     |     | 245 |     |     |     |     | 245 |     |     |     |     |     | 155 | 270 | 190 | 240 |
| Tube 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  |     |
| *0273, 0293, 2610,<br>68020101-68020103,<br>6818N, 6825, 6827,<br>6828, 6831, 6834, 6840 |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0276  |     |     |     |     |     |     |     |    |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |
| *9206  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     | +   |     |
| *9208, 9210  |     | +   |     | +   |     |     |     |    |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0318, 2903  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0321N, 1121N  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *0330, 3007, 3108  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *2301, 2306, 2308N,<br>2309, 2311N, 2315,<br>2316  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2302  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2303  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2304  | +   | +   |     | +   |     | +   | +   |    |     |     | +   |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2305  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2307N   | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   | +   |     |     |     |
| *2310  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   | +   |     |     |     |
| *2312  | +   |     |     | +   |     | +   | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   |     |     | +   |     |
| *2313  | +   |     |     | +   |     | +   | +   |    | +   |     |     |     | +   |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2314  | +   |     |     |     | +   |     | +   |    |     |     | +   |     | +   |     |     |     |     |     |     |     | +   |     |     |     |     |
| *2616  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *2629  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *2907  |     | +   |     | +   |     | +   |     |    |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |     |     |     |
| *300101-300102, 3011,<br>3014L-3021  |     |     |     |     |     |     |     |    | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |
| *3013  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |
| *3022  |     |     |     |     |     |     |     |    |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *3105, 3310  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *3205  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *3213  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| *6826  |     |     |     |     |     |     |     |    |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |
| *8001  | W   |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| HLA-A allele <sup>4</sup>  |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Tube 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  |     |
| B*1512, B*1519   |     |     |     |     |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Tube No.   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8  | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |     |

<sup>1</sup>The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most tubes, or a band of 800 base pairs, for some tubes. Tube number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-A\*24 subtyping. In addition, tubes number 3, 9, 12, 15, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 35, 38, 39, 43, 44 and 45 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

| 220 | 235 | 80  | 145 | 210 | 115 | 160 | 220 | 100 | 80  | 200 | 115 | 210 | 80  | 210 | 225 | 205 | 165 | 160 | 195 | 240 | 120 | 240 | 195 | Length of spec.<br>PCR product |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|--|
|     | 285 | 370 | 200 | 240 | 200 | 200 |     |     | 195 | 240 | 170 | 255 | 145 | 255 | 270 |     | 200 | 275 | 250 |     | 170 | 285 | 410 |                                |  |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.                       |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |                                | *0273, 0293, 2610,<br>68020101-68020103,<br>6818N, 6825, 6827,<br>6828, 6831, 6834, 6840 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *0276  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *9206  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *9208, 9210  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |                                | *0318, 2903  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *0321N, 1121N  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |                                | *0330, 3007, 3108  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2301, 2306, 2308N,<br>2309, 2316  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | W                              | *2302  |
| +   |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2303  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2304  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2305  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2307N   |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2310  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2312  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *2313  |
| +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | W                              | *2314  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +   |     |     |     |     |     |                                | *2616  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *2629  |
| +   |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     | +   |     |     | +   | +   |     |     | +                              | *2907  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *300101-300102, 3011,<br>3014L-3021  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *3013  |
|     |     |     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *3022  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *3105, 3310  |
|     |     |     | +   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | +                              | *3205  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *3213  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *6826  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | *8001  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                | HLA-A allele <sup>4</sup>  |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.                       |  |
|     |     |     |     |     |     |     | W   |     |     |     |     |     |     |     |     |     |     |     |     |     | W   |     |     |                                | B*1512, B*1519   |
| 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | Tube No.                       |  |

<sup>2</sup>The nucleotide position, in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> or 4<sup>th</sup> exons or the 2<sup>nd</sup> or 3<sup>rd</sup> intron, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as in *Tissue Antigens* 1998, 51:II, 417-466. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>The nucleotide position, in the 2<sup>nd</sup>, 3<sup>rd</sup> or 4<sup>th</sup> exons, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as in *Tissue Antigens* 1998, 51:II, 417-466. The sequence of the 3 terminal nucleotides of the primer is given.

101.422-24/03 – licensed for PCR

101.422-24u/03u – not licensed for PCRLot No.: **X96**

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<sup>4</sup>The sequence of the A\*2401 has been shown to be in error.

The sequence of the A\*2412 allele has been shown to be identical to A\*2408.

The A\*2416 allele has been renamed to A\*3108.

<sup>5</sup>Primer mix 11: Specific PCR fragment of 200 bp in the A\*2408, 2442 and the A\*0276 and 3002 alleles. Specific PCR fragment of 245 bp in the A\*2461 allele.

Primer mix 16: Specific PCR fragment of 85 bp in the A\*2417, 2441 and the A\*2907 alleles. Specific PCR fragment of 245 bp in the A\*2423 allele.

Primer mix 21: Specific PCR fragment of 125 bp in the A\*2472 and A\*9206 alleles. Specific PCR fragment of 155 bp in the A\*2431 allele.

Primer mix 22: Specific PCR fragment of 125 bp in the A\*2427 allele. Specific PCR fragment of 270 bp in the A\*2463 allele.

Primer mix 23: Specific PCR fragment of 125 bp in the A\*2472 and A\*9206 allele. Specific PCR fragment of 190 bp in the A\*2428, 2430, 2442 and the A\*020109, 0250, 9222, 0309, 1106, 1118, 2312, 2603, 2606, 2621, 2630, 2633, 3208, 6805, 6815, 6820, 7406 alleles.

Primer mix 24: Specific PCR fragment of 135 bp in the A\*2473 allele. Specific PCR fragment of 240 bp in the A\*2419, 2428, 2444, 2460N and the A\*0276, 300101-300102, 3011, 3013 to 3021 alleles.

Primer mix 26: Specific PCR fragment of 235 bp in the A\*2422 and 2434 alleles. Specific PCR fragment of 285 bp in the A\*2478 allele.

Primer mix 27: Specific PCR fragment of 80 bp in the A\*2432 and A\*3205 alleles. Specific PCR fragment of 370 bp in the A\*2414, A\*0246, A\*0248 and A\*0270 alleles.

Primer mix 28: Specific PCR fragment of 145 bp in the A\*2435 allele. Specific PCR fragment of 200 bp in the A\*2473 and 2477 alleles.

Primer mix 29: Specific PCR fragment of 210 bp in the A\*2408, 2429, 2442 and the A\*3022 alleles. Specific PCR fragment of 240 bp in the A\*2440N allele.

Primer mix 30: Specific PCR fragment of 115 bp in the A\*2421, 2470 and the A\*2303 and 2907 alleles. Specific PCR fragment of 200 bp in the A\*2459 allele.

Primer 31: Specific PCR fragment of 160 bp in the A\*2437 allele. Specific PCR fragment of 200 bp in the A\*2458 and 2477 alleles.

Primer mix 34: Specific PCR fragment of 80 bp in the A\*2475 allele. Specific PCR fragment of 195 bp in the A\*2436 N allele.

Primermix 35: Specific PCR fragment of 200 bp in the A\*2445N allele. Specific PCR fragment of 240 bp in the A\*2440N allele.

Primer mix 36: Specific PCR fragment of 115 bp in the A\*2447 allele. Specific PCR fragment of 170 bp in the A\*2474 allele.

Primer mix 37: Specific PCR fragment of 210 bp in the A\*2448N and 2454 alleles. Specific PCR fragment of 255 bp in the A\*2468 allele.

Primer mix 38: Specific PCR fragment of 80 bp in the A\*2475 allele. Specific PCR fragment of 145 bp in the A\*2449 allele.

Primer mix 39: Specific PCR fragment of 210 bp in the A\*2450 allele. Specific PCR fragment of 255 bp in the A\*2468 allele.

Primer mix 40: Specific PCR fragment of 225 bp in the A\*2408 and 2420 alleles. Specific PCR fragment of 270 bp in the A\*2463 and 2469 alleles.

Primer mix 42: Specific PCR fragment of 165 bp in the A\*2458 allele. Specific PCR fragment of 200 bp in the A\*2424, 2467 and the A\*2616 alleles.

Primer mix 43: Specific PCR fragment of 160 bp in the A\*2443 allele. Specific PCR fragment of 275 bp in the A\*2469 allele.

Primer mix 44: Specific PCR fragment of 195 bp in the A\*2466 allele. Specific PCR fragment of 250 bp in the A\*2451, 2457 and the A\*01010101-0104N, 0106-0119, 0121-0127N, 0318, 1127, 2629, 2903, 3105, 3213, 3310, 6826 and 8001 alleles.

Primer mix 46: Specific PCR fragment of 120 bp in the A\*2415, 2441, 2451, 2464 and the A\*0250, 0273, 0293, 9222, 2610, 68020101-68020103, 6815, 6818N, 6825, 6827, 6828, 6831, 6834 and 6840 alleles. Specific PCR fragment of 170 bp in the A\*2474 allele.

Primer mix 47: Specific PCR fragment of 240 bp in the A\*2423 and 2455 alleles. Specific PCR fragment of 285 bp in the A\*2478 allele. Specific PCR fragment of 410 bp in the A\*2426 and the A\*0330, 3007, 3108 and 3205 alleles.

'w', might be weakly amplified.



| CELL LINE VALIDATION SHEET |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |        |           |           |           |
|----------------------------|---------------|-------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-----------|-----------|-----------|
| HLA-A*24 SSP subtyping kit |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |        |           |           |           |
|                            |               |       |       | Lot No.: | Tube      |           |           |           |           |           |           |           |           |           |           |           |        |           |           |           |
|                            |               |       |       |          | 1         | 2         | 3         | 4         | 5         | 6         | 7         | 8         | 9         | 10        | 11        | 12        | 13     | 14        | 15        | 16        |
|                            |               |       |       |          | 200735301 | 200507402 | 200507403 | 200621904 | 200507405 | 200507406 | 200507407 | 200507408 | 200621909 | 200507410 | 200621911 | 200507412 | 621913 | 200507414 | 200507415 | 200507416 |
|                            | cell line     | A*    | A*    |          |           |           |           |           |           |           |           |           |           |           |           |           |        |           |           |           |
| 1                          | 9001 SA       | *2402 |       |          | +         | -         | +         | -         | +         | -         | +         | -         | -         | +         | -         | -         | +      | -         | -         | -         |
| 2                          | 9280 LK707    | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 3                          | 9011 E4181324 | *0101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 4                          | 9275 GU373    | *3001 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -      | -         | -         | -         |
| 5                          | 9009 KAS011   | *0101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 6                          | 9353 SM       | *0201 | *2603 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 7                          | 9020 QBL      | *2601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 8                          | 9007 DEM      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 9                          | 9026 YAR      | *2601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 10                         | 9107 LKT3     | *2402 |       |          | +         | -         | +         | -         | +         | -         | +         | -         | -         | +         | -         | -         | +      | -         | -         | -         |
| 11                         | 9051 PITOUT   | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 12                         | 9052 DBB      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 13                         | 9067 BTB      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 14                         | 9071 OLGA     | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 15                         | 9075 DKB      | *2402 |       |          | +         | -         | +         | -         | +         | -         | +         | -         | -         | +         | -         | -         | +      | -         | -         | -         |
| 16                         | 9037 SWEIG007 | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 17                         | 9008 WILJON   | *2501 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 18                         | 9257 32367    | *3303 | *7401 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 19                         | 9038 BM16     | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 20                         | 9059 SLE005   | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 21                         | 9064 AMALA    | *0217 |       |          | -         | +         | -         | +         | W         | -         | -         | -         | -         | +         | -         | -         | -      | -         | -         | -         |
| 22                         | 9056 KOSE     | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 23                         | 9124 IHL      | *0201 | *3401 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 24                         | 9035 JBUSH    | *3201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 25                         | 9049 IBW9     | *3301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 26                         | 9285 WT49     | *0205 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 27                         | 9191 CH1007   | *2410 | *2901 |          | +         | +         | +         | -         | +         | -         | +         | -         | -         | +         | -         | -         | -      | -         | -         | -         |
| 28                         | 9320 BEL5GB   | *0201 | *2902 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 29                         | 9050 MOU      | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 30                         | 9021 RSH      | *3001 | *6802 |          | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -      | -         | -         | -         |
| 31                         | 9019 DUCAF    | *3002 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 32                         | 9297 HAG      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 33                         | 9098 MT14B    | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 34                         | 9104 DHIF     | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 35                         | 9302 SSTO     | *3201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 36                         | 9024 KT17     | *0206 | *1101 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 37                         | 9065 HHKB     | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 38                         | 9099 LZL      | *0217 |       |          | -         | +         | -         | +         | W         | -         | -         | -         | -         | +         | -         | -         | -      | -         | -         | -         |
| 39                         | 9315 CML      | *0101 | *0301 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 40                         | 9134 WHONP199 | *0207 | *3001 |          | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -      | -         | -         | -         |
| 41                         | 9055 H0301    | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 42                         | 9066 TAB089   | *0207 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 43                         | 9076 T7526    | *0207 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 44                         | 9057 TEM      | *6601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 45                         | 9239 SHJO     | *2301 | *2402 |          | +         | -         | +         | +         | +         | +         | +         | -         | -         | +         | -         | -         | +      | -         | -         | -         |
| 46                         | 9013 SCHU     | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 47                         | 9045 TUBO     | *0216 | *0301 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |
| 48                         | 9303 TER-ND   | *0201 | *1101 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -      | -         | -         | -         |

| CELL LINE VALIDATION SHEET |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |   |
|----------------------------|---------------|-------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---|
| HLA-A*24 SSP subtyping kit |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |   |
|                            |               |       |       | Lot No.: | Tube      |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |   |
|                            |               |       |       |          | 17        | 18        | 19        | 20        | 21        | 22        | 23        | 24        | 25        | 26        | 27        | 28        | 29        | 30        | 31        | 32        |   |
|                            |               |       |       |          | 200507417 | 200507418 | 200507419 | 200735320 | 200735321 | 200735322 | 200735323 | 200735324 | 200621925 | 200735326 | 200507527 | 200735328 | 200507429 | 200735330 | 200735331 | 200735332 |   |
|                            | cell line     | A*    | A*    |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |   |
| 1                          | 9001 SA       | *2402 |       |          | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 2                          | 9280 LK707    | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 3                          | 9011 E4181324 | *0101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | + |
| 4                          | 9275 GU373    | *3001 |       |          | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 5                          | 9009 KAS011   | *0101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | + |
| 6                          | 9353 SM       | *0201 | *2603 |          | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 7                          | 9020 QBL      | *2601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 8                          | 9007 DEM      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 9                          | 9026 YAR      | *2601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 10                         | 9107 LKT3     | *2402 |       |          | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 11                         | 9051 PITOUT   | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 12                         | 9052 DBB      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 13                         | 9067 BTB      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 14                         | 9071 OLGA     | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 15                         | 9075 DKB      | *2402 |       |          | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 16                         | 9037 SWEIG007 | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 17                         | 9008 WILJON   | *2501 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 18                         | 9257 32367    | *3303 | *7401 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 19                         | 9038 BM16     | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 20                         | 9059 SLE005   | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 21                         | 9064 AMALA    | *0217 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | - |
| 22                         | 9056 KOSE     | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 23                         | 9124 IHL      | *0201 | *3401 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 24                         | 9035 JBUSH    | *3201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 25                         | 9049 IBW9     | *3301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 26                         | 9285 WT49     | *0205 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 27                         | 9191 CH1007   | *2410 | *2901 |          | +         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 28                         | 9320 BEL5GB   | *0201 | *2902 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 29                         | 9050 MOU      | *2902 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 30                         | 9021 RSH      | *3001 | *6802 |          | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 31                         | 9019 DUCAF    | *3002 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 32                         | 9297 HAG      | *0201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 33                         | 9098 MT14B    | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 34                         | 9104 DHIF     | *3101 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 35                         | 9302 SSTO     | *3201 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 36                         | 9024 KT17     | *0206 | *1101 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 37                         | 9065 HHKB     | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 38                         | 9099 LZL      | *0217 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | - |
| 39                         | 9315 CML      | *0101 | *0301 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | + |
| 40                         | 9134 WHONP199 | *0207 | *3001 |          | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 41                         | 9055 H0301    | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 42                         | 9066 TAB089   | *0207 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 43                         | 9076 T7526    | *0207 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 44                         | 9057 TEM      | *6601 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 45                         | 9239 SHJO     | *2301 | *2402 |          | -         | -         | +         | -         | -         | -         | -         | -         | +         | -         | -         | -         | -         | -         | -         | -         | - |
| 46                         | 9013 SCHU     | *0301 |       |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 47                         | 9045 TUBO     | *0216 | *0301 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |
| 48                         | 9303 TER-ND   | *0201 | *1101 |          | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | - |

| CELL LINE VALIDATION SHEET |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
|----------------------------|---------------|-------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| HLA-A*24 SSP subtyping kit |               |       |       |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
|                            |               |       |       | Tube     |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
|                            |               |       |       | 33       | 34        | 35        | 36        | 37        | 38        | 39        | 40        | 41        | 42        | 43        | 44        | 45        | 46        | 47        | 48        |           |
|                            |               |       |       | Lot No.: | 200735333 | 200735334 | 200735335 | 200735336 | 200735337 | 200735338 | 200735339 | 200735340 | 200621941 | 200621942 | 200735343 | 200735344 | 200735345 | 200735346 | 200735347 | 200507448 |
|                            | cell line     | A*    | A*    |          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 1                          | 9001 SA       | *2402 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 2                          | 9280 LK707    | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 3                          | 9011 E4181324 | *0101 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         |           |
| 4                          | 9275 GU373    | *3001 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 5                          | 9009 KAS011   | *0101 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         |           |
| 6                          | 9353 SM       | *0201 | *2603 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 7                          | 9020 QBL      | *2601 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 8                          | 9007 DEM      | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 9                          | 9026 YAR      | *2601 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 10                         | 9107 LKT3     | *2402 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 11                         | 9051 PITOUT   | *2902 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 12                         | 9052 DBB      | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 13                         | 9067 BTB      | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 14                         | 9071 OLGA     | *3101 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 15                         | 9075 DKB      | *2402 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 16                         | 9037 SWEIG007 | *2902 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 17                         | 9008 WILJON   | *2501 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 18                         | 9257 32367    | *3303 | *7401 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 19                         | 9038 BM16     | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 20                         | 9059 SLE005   | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 21                         | 9064 AMALA    | *0217 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 22                         | 9056 KOSE     | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 23                         | 9124 IHL      | *0201 | *3401 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 24                         | 9035 JBUSH    | *3201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 25                         | 9049 IBW9     | *3301 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 26                         | 9285 WT49     | *0205 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 27                         | 9191 CH1007   | *2410 | *2901 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 28                         | 9320 BEL5GB   | *0201 | *2902 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 29                         | 9050 MOU      | *2902 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 30                         | 9021 RSH      | *3001 | *6802 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         |           |
| 31                         | 9019 DUCAF    | *3002 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 32                         | 9297 HAG      | *0201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 33                         | 9098 MT14B    | *3101 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 34                         | 9104 DHIF     | *3101 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 35                         | 9302 SSTO     | *3201 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 36                         | 9024 KT17     | *0206 | *1101 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 37                         | 9065 HHKB     | *0301 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 38                         | 9099 LZL      | *0217 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 39                         | 9315 CML      | *0101 | *0301 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | +         | -         | -         | -         |           |
| 40                         | 9134 WHONP199 | *0207 | *3001 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 41                         | 9055 H0301    | *0301 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 42                         | 9066 TAB089   | *0207 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 43                         | 9076 T7526    | *0207 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 44                         | 9057 TEM      | *6601 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 45                         | 9239 SHJO     | *2301 | *2402 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | +         |           |
| 46                         | 9013 SCHU     | *0301 |       | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 47                         | 9045 TUBO     | *0216 | *0301 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |
| 48                         | 9303 TER-ND   | *0201 | *1101 | -        | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |           |

## CERTIFICATE OF ANALYSIS

### Olerup SSP™ HLA-A\*24 SSP

Product number: 101.422-24/03 – licensed for PCR  
101.422-24u/03u – not licensed for PCR

Lot number: X96

Expiry date: 2009-June-01

Number of tests: 24 tests – Product No. 101.422-24  
3 tests – Product No. 101.422-03

Number of tubes per test: 48

#### Tube specifications:

| Tube No. | Production No. | Tube No. | Production No. | Tube No. | Production No. |
|----------|----------------|----------|----------------|----------|----------------|
| 1        | 2007-353-01    | 17       | 2005-074-17    | 33       | 2007-353-33    |
| 2        | 2005-074-02    | 18       | 2005-074-18    | 34       | 2007-353-34    |
| 3        | 2005-074-03    | 19       | 2005-074-19    | 35       | 2007-353-35    |
| 4        | 2006-219-04    | 20       | 2007-353-20    | 36       | 2007-353-36    |
| 5        | 2005-074-05    | 21       | 2007-353-21    | 37       | 2007-353-37    |
| 6        | 2005-074-06    | 22       | 2007-353-22    | 38       | 2007-353-38    |
| 7        | 2005-074-07    | 23       | 2007-353-23    | 39       | 2007-353-39    |
| 8        | 2005-074-08    | 24       | 2007-353-24    | 40       | 2007-353-40    |
|          |                |          |                |          |                |
| 9        | 2006-219-09    | 25       | 2006-219-25    | 41       | 2006-219-41    |
| 10       | 2005-074-10    | 26       | 2007-353-26    | 42       | 2006-219-42    |
| 11       | 2006-219-11    | 27       | 2005-074-27    | 42       | 2007-353-43    |
| 12       | 2005-074-12    | 28       | 2007-353-28    | 43       | 2007-353-44    |
| 13       | 2006-219-13    | 29       | 2007-353-29    | 45       | 2007-353-45    |
| 14       | 2005-074-14    | 30       | 2007-353-30    | 46       | 2007-353-46    |
| 15       | 2005-074-15    | 31       | 2007-353-31    | 47       | 2007-353-47    |
| 16       | 2005-074-16    | 32       | 2007-353-32    | 48       | 2005-074-48    |

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

No DNAs carrying the alleles to be amplified by primer solutions 8, 11, 14, 15, 16, 21, 22, 26 to 31, 33 to 43, 45 and 47 were available. The specificities of the primers in primer solutions 8, 11, 15, 16, 26, 27, 29, 30, 38, 39, 42, 45 and 47 were tested by separately adding one or two additional 5'-primer(s), respectively one or two additional 3'-primer(s). One of the 3'-primers in primer solutions 15, 16 and 26 was not possible to test. In primer solutions 14, 21, 28, 31, 33, 34, 37, 40 and 43 and 31 it was only possible to test the 5'-primers, the 3'-primers was not possible to test. In primer solutions 22, 35, 36 and 41 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. Additional 3'-primers in primer solutions 4, 25 and 32 were tested by separately adding additional 5'-primers. One of the 3'-primers in primer solutions 26 was not possible to test.

HLA-A\*24  
101.422-24/03 – licensed for PCR  
101.422-24u/03u – not licensed for PCR  
Lot No.: **X96**

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

**Date of approval:** 2007-August-30

**Approved by:**

**Quality Control, Supervisor**

## Declaration of Conformity

**Product name:** Olerup SSP™ HLA-A\*24  
**Product number:** 101.422-24/03, 101.422-24u/03u  
**Lot number:** X96

**Intended use:** HLA-A\*24 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, 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-August-30

Olle Olerup

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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.

All claims under this warranty must be directed to *Olerup* SSP AB in writing and must be accompanied by a copy of the purchaser's invoice. This warranty is in lieu of all other warranties, expressed or implied, including the warranties of merchantability and fitness for a particular purpose. In no case shall *Olerup* SSP AB be liable for incidental or consequential damages.

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Handle all samples as if capable of transmitting disease. All work should be performed wearing gloves and appropriate protection.

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PCR™ is a trademark of F. Hoffmann-La Roche Ltd.  
ARMS™ is a trademark of Zeneca Ltd.

HLA-A\*24  
101.422-24/03 – licensed for PCR  
101.422-24u/03u – not licensed for PCR  
Lot No.: **X96**

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