

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Arbeitsprotokoll / PCR Protocol

IN VITRO DIAGNOSTICUM

**LOT****G954076**

2007-11

Test-Durchführung / -Performance-----
Datum / Date-----
Unterschrift / Signature-----
Bemerkungen / Comments

| Probe / Sample | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 | 4 | 5 |
| <i>Thermocycler 1</i> | <i>Thermocycler 2</i> | <i>Thermocycler 3</i> | <i>Thermocycler 4</i> | <i>Thermocycler 5</i> |

Methodenablauf und Pipettierolumina der Einzelkomponenten für ein PCR-Reaktionsgefäß sind in allen **HLA-READY GENE** Kits gleich /
Test procedure and pipetting volumina for one well are the same in all **HLA-READY GENE** kits

| 1.) Mastermix (MM) ansetzen, gut mischen / Pipette mastermix (MM), mix well | | | | |
|---|---------------------------|---|----------------------|---|
| | Volume per well [µl] | Multipliziert mit der Anzahl an Bestimmungen / multiplied by the number of typings | Endvolumen [µl] | |
| Destilled Water | 6 | 624 | X | = |
| ReadyPCR | 3 | 312 | X | = |
| Taq-Polymerase (5U/µl) | 0.08 | 8.3 | X | = |
| Endvolumen MM | 9.08 | 944.3 | X | = |

* 8 wells extra volume

Bei Mitführen einer **Negativkontrolle** (NK) 10 µl MM in das NK-Reaktionsgefäß (Tube Nr. 1) übertragen /
When testing a **Negative Control** (NC) pipette 10 µl of MM into a NC reaction tube (tube no. 1)

| 2.) Aliquote 926 µl MM in 1,5 ml Tubes (je nach Anzahl der Bestimmungen / dependent on number of typings) |
|---|
|---|

| 3.) Proben DNA zugeben, gut mischen / Add sample DNA, mix well |
|--|
|--|

| | Volume per well [µl] | Multipliziert mit der Anzahl an Bestimmungen / multiplied by the number of typings | Endvolumen [µl] | |
|--------------------|---------------------------|---|----------------------|---|
| Mastermix (MM) | 9.08 | 926 | X | = |
| DNA (25-100 ng/µl) | 1 | 102 | X | = |
| Endvolumen MM-DNA | 10.08 | 1028 | X | = |

* 7 wells extra volume

| 4.) 10 µl MM-DNA pro Well (95x) in farblose PCR-Platte verteilen / Dispense 10 µl MM-DNA per well (95x) in colourless PCR plate |
|---|
|---|

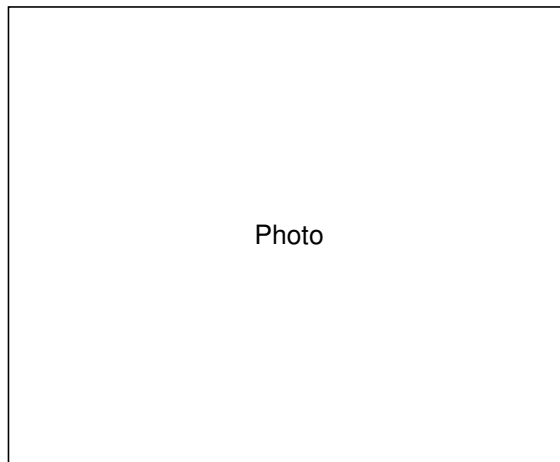
| 5.) RG mit Deckelstreifen dicht schließen und in Thermocycler übertragen / Close wells tightly with tube caps and place the block into thermocycler |
|--|
|--|

| 6.) PCR im Thermocycler starten (Programm für alle HLA-READY GENE Testkits gleich, s. Gebrauchsinformation) / Start PCR in thermocycler (same Program for all HLA-READY GENE kits, see user manual) |
|--|
|--|

LOT **G954076**

| | | |
|---|-------------------------------|---------------------------------------|
| ----- Name / Name | ----- Vorname / First name | ----- Geburtsdatum / Date of birth |
| ----- Proben-Nr. / Sample I.D. | ----- Herkunft / Origin | ----- Diagnose / Diagnosis |
| ----- Test-Durchführung / -Performance | ----- Datum / Date | ----- Unterschrift / Signature |
| ----- Test-Überprüfung / -Review | ----- Datum / Date | ----- Unterschrift / Signature |
| ----- Bemerkungen / Comments | | |

| |
|--------------------------|
| HLA-A |
| HLA-B |
| HLA-DRB |
| Ergebnis / Result |



Mix # 5: kreuzreaktiv mit / crossreactive to Cw*0414

Mix # 12 (multiplex): 225 bp: A*0234,35,56,62,*0301-07,09-11N,13,14; 170 bp: A*2501-04,*2601-03,05,07,08,10-23,*4301,*6601,04

Mix # 13 (multiplex): 200 bp: A*1111,*4301; 170 bp: A*6602,03

Mix # 17 (multiplex): 260 bp: A*3107,08; 180 bp: A*3101-07,09-12

Mix # 24 (multiplex): 155 bp: A*8001; 70/ 75 bp: A*0255,*2603,05,06,*6805,15,20

Mix # 28: gelegentlich schwache spezifische Bande und unspezifische Bande (> spez. Bande) / occasionally weak specific band and unspecific band (> specific band)

Mix # 36: kreuzreaktiv mit / crossreactive to Cw*0314,*0510,*0710,*1504,05,09

Mix # 37 (multiplex): 395 bp: B*1516,17,67; 190 bp: B*1512,14,19,*3545,*4417,43,*5807

Mix # 50 (multiplex): 310 bp: B*13...,*3546,...,*4002,...,*44...,*47..; 125 bp: B*1314,*4002,..

Mix # 70 (multiplex): 540 bp: B*4406,18,25,*5123,*5707,*5807; 245 bp: B*4010(w),*8001,02

Mix # 79 (multiplex): 175 bp: DRB1*0310,*1343,45,*1401,07,10,16,...; 85 bp: DRB1*0301,04-06,08-16,18-20,22,23,25,26,28,*1327,41

Mix # 82, 89: gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

Mix # 93 (multiplex): 225 bp: DRB1*0820,*1123,25,45,55,*1313,18,47,55,*1403,12,27,40,55; 150 bp: DRB1*0809,21,*1415,40,55



| | H | G | F | E | D | C | B | A |
|--------|---|--|--|--|---|--|---|---|
| HLA-A* | 1 | 2 | 3 | 4 | 5* | 6 | 7 | 8 |
| | Negative Control 430 bp NC | 01.. / 0318 800 bp IC 80 bp | 02.. 800 bp IC 135 bp | 03.. / 3204 / 3602 800 bp IC 230 bp | 0112,19 / 11.. / 2419,44 / 2504 / 2608 800 bp IC 480 bp | 0217 / 2301,03-13 / 2413,18,22,24 / 2907 800 bp IC 210 bp | 2302 / 24.. 800 bp IC 210 bp | 23.. / 24.. / 3108 / 3205 800 bp IC 95 bp |
| 2 | 9 | 10 | 11 | 12* | 13* | 14 | 15 | 16 |
| | 1110 / 25.. / 26.. / 34.. / 66.. / 68.. / 69.. 800 bp IC 200 bp | 25.. 1070 bp IC 475 bp | 26.. 800 bp IC 75 bp | 0113,17 / 0234.. / 03.. / 3408 25.. / 26.. / 4301 / 6601,04-06 800 bp IC 225 bp 170 bp | 1111 / 4301 6602,03 800 bp IC 200 bp 170 bp | 0113,17 / 11.. / 2419 / 2502 / 2613,19 / 34.. / 6601,04,06 800 bp IC 95 bp | 29.. 800 bp IC 200 bp | 30.. 800 bp IC 90 bp |
| 3 | 17* | 18 | 19 | 20 | 21 | 22 | 23 | 24* |
| | 2913,14 / 31.. 800 bp IC 260 bp 180 bp | 0281,87 / 2503 / 32.. 800 bp IC 260 bp | 33.. / 6829 1070 bp IC 200 bp | 74.. 800 bp IC 155 bp | 0210,.... / 1116 / 68.. 800 bp IC 140 bp | 0255 / 2622 / 69.. 800 bp IC 375 bp | 0227 / 1104 / 36.. 800 bp IC 70 bp | 80.. 0255 / 2603,05,.... / 6805,15,20 800 bp IC 155 bp 70, 75 bp |
| HLA-B* | 25 | 26 | 27 | 28* | 29 | 30 | 31 | 32 |
| | 1070 bp | 07.. 3707 / 4015.. / 4805,08 800 bp IC 115 bp | 0729 / 08.. / 3912 800 bp IC 205 bp | 13.. / 1536,89 / 4408 800 bp IC 140 bp | 14.. 800 bp IC 260 bp | 1401,09 / 2712,16 / 3801,.... / 3901,03,.... 800 bp IC 215 bp | 1402,.... / 3526 / 3805 / 3904 800 bp IC 185 bp | 1309 / 1501-02,04-... / 3546 / 4021 / 4601,.... 800 bp IC 130 bp |
| 4 | 33 | 34 | 35 | 36* | 37* | 38 | 39 | 40 |
| | 1503,09,10,18,23,.... / 4012 800 bp IC 330 bp | 1509,10,18,21,23,37,.... 1070 bp IC 400 bp | ... / 0804,17 / 1503,.... / 3902,08,.... / 48.. 800 bp IC 105 bp | 1502,.... / 1822 / 35.. / 53,.... / 57.. / 58.. 800 bp IC 100 bp | 1516,17,67 1512,14,19 / 3545 / 4417,43 / 5807 800 bp IC 395 bp 190 bp | 1513,16,17,23,.... 800 bp IC 435 bp | 350202 / 18.. 800 bp IC 130 bp | 27... 800 bp IC 155 bp |
| 5 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| | ... / 35.. / 4406 / 51.. / 53.. / 78.. 800 bp IC 390 bp | 18... / 35... / 3711 / 3919 / 5606 / 78... 800 bp IC 130 bp | 3812 / 40.. / 41.. / 4418 / 45.. / 49.. / 50.. 1070 bp IC 315 bp | 37.. / 5303 800 bp IC 130 bp | 1548,.... / 38.. / 39.. / 4429 / 67.. 800 bp IC 210 bp | 38.. 800 bp IC 110 bp | 14.. / 38.. / 3901,03,.... 800 bp IC 400 bp | 07.. / 08.. / 14.. / 39.. / 40.. / 41.. / 42.. / 45.. / 48.. / 50.. / 67.. / 73,.... 800 bp IC 425 bp |
| 6 | 49 | 50* | 51 | 52 | 53 | 54 | 55 | 56 |
| | 4001,07,.... / 4431 / 4606 / 4801(w),03,.... / 8101-02 (w) 800 bp IC 165 bp | 13.. / 3546.. / 4002,.... / 44.. / 47.. 1314 / 4002,.... 800 bp IC 310 bp 125 bp | 08.. / 37.. / 41.. / 42.. / 44.. / 83.. 800 bp IC 180 bp | 07 / 27 / 42 / 46 / 54 / 55 / 56 / 67 / 73 / 81,.... 1070 bp IC 320 bp | 3545 / 44.. / 5707 / 83 800 bp IC 255 bp | 4415, / 45.. / 5002 / 5123 800 bp IC 250 bp | 46.. 800 bp IC 125 bp | 47.. 800 bp IC 230 bp |
| 7 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 |
| | 2724 / 4031,45 / 48.. / 81... 800 bp IC 175 bp | 4013,19 / 4418,25 / 4901 800 bp IC 140 bp | .. / 49.. / 50.. / 51.. / 52.. / 55.. / 78 800 bp IC 205 bp | 2702,30 / 51.. / 52.. / 53.. / 57.. / 58.. 800 bp IC 430 bp | .. / 40.. / 41.. / 4409,46 / 45.. / 4702.. / 50.. 1070 bp IC 130 bp | 13.. / 15.. / 40.. / 41.. / 44.. / 45.. / 47.. / 49.. / 50.. / 52.. 800 bp IC 200 bp | 150104 / 54.. 800 bp IC 215 bp | .. / 54.. / 55.. / 59.. 800 bp IC 235 bp |
| 8 | 65 | 66 | 67 | 68 | 69 | 70* | 71 | 72 |
| | ... / 45.. / 49.. / 50.. / 56.. / 82.. 800 bp IC 175 bp | 1516,17,67 / 57... 800 bp IC 95 bp | 58... 800 bp IC 110 bp | .. / 4406 / 51.. / 53.. / 59 800 bp IC 85 bp | 7301 800 bp IC 295 bp | 4406,.... 4410 w / 82.. 1070 bp IC 540 bp 245 bp | Bw4 800 bp IC 355 bp | Bw6 800 bp IC 355 bp |
| DRB1* | 73 | 74 | 75 | 76 | 77 | 78 | 79* | 80 |
| | 800 bp | 0101,02,04-14 430 bp IC 195 bp | 0103 430 bp IC 195 bp | 15.. 430 bp IC 210 bp | 16.. 430 bp IC 205, 220 bp | 03.. / 1107 430 bp IC 225 bp | 175 bp: 1401,07,.... 85 bp: 0301,04,.... 430 bp IC 175 bp 85 bp | 0302,03,.... / 1315,.... / 1402,03,06,12,13,18,.... 430 bp IC 90 bp |
| 9 | 81 | 82* | 83 | 84 | 85 | 86 | 87 | 88 |
| | 04.. 430 bp IC 205 bp | 07.. 800 bp IC 240 bp | 08.. / 1415 430 bp IC 220, 165 bp | 09.. 430 bp IC 195 bp | 10.. 430 bp IC 205 bp | 0308 / 0415 / 11.. / DRB3*0218 430 bp IC 185, 180, 170 bp | 0832 / 12.. 430 bp IC 110 bp | 0820 / 11.. / 13.. / 1403,.... 430 bp IC 215 bp |
| 10 | 89* | 90 | 91 | 92 | 93* | 94 | 95 | 96 |
| | 08.. / 11.. / 1202,13 13.. / 1415,.... 430 bp IC 205, 215, 195 bp | 03.. / 0820 / 13.. / 1402,03,05,06,.... 430 bp IC 180 bp | 1113,17,52 / 1401,04,05,07,.... 800 bp IC 210, 205 bp | 1310 / 1402,06,09,13,.... 430 bp IC 150, 145 bp | 0820 / 1123, / 1313, / 1403,.... 0809,21 / 1415,40,55 430 bp IC 225 bp 150 bp | DRB3* 430 bp IC 230 bp | DRB4* 430 bp IC 200 bp | DRB5* 430 bp IC 265 bp |

¹ einige seltenere Allele ausgenommen (vollständige Liste: Interpretation -/Specificity Table) / some rare alleles excluded (complete list: Interpretation -/Specificity Table)

Fettdruck: Allel(gruppen) mit Häufigkeiten von mind. 0,001 / **Bold letters:** parts of allele groups or alleles with min. frequency of 0,001 (Ref.: www.allelefrequencies.net)

IC: PCR Produkte der internen Kontrollprimermixe / PCR products of the internal control primer mixes

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Spezifitätstabelle / Specificity Table HLA- A

IN VITRO DIAGNOSTICUM



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2007-11

Allele list based on release
2.13.0 (Apr 2006) of the
IMGT/HLA Sequence Database

| Tube No. | | Amplified HLA-A* alleles | Size of PCR Product [bp] | Size of IC [bp] | 5' primer(s) ¹ | 3' primer(s) ¹ |
|-----------------|----|---|--------------------------|-----------------|---------------------------|-----------------------------|
| 1 | 1H | Negative Control | 430 | - | | |
| 2 | 1G | 0101-09,11N,13-18 / 0318 | 80 | 800 | 527 TGC | 570 CCG |
| 3 | 1F | 020101-020108,0110,0111,0202-41,43N-47,49,51-54,56-60,62-96 | 135 | 800 | 144 GCA | 240 GGA |
| 4 | 1E | 0301-04,07-09,11N-17,19-22 / 3204 / 3602 | 230 | 800 | 363 ATA | 555 CCA |
| 5 ² | 1D | 0112,19 / 1101-07,09-11,13-17,19-22,26 / 2419,44 / 2504 / 2608 | 480 | 800 | 341 GGA | 538 CTG |
| 6 | 1C | 0217 / 2301,03-13 / 2413,18,22,24 / 2907 | 210 | 800 | 368 GTT | 538 CAA |
| 7 | 1B | 2302 / 2402-11N,17,19-23,25-50,55,56,58-62 | 210 | 800 | 368 GTT | 538 CCA, 539 TCT |
| 8 | 1A | 2301-08N,10-14 / 2402-03,05-07,09N-18,20-23,25-27,30,32-41,43,45N-62 / 3108 / 3205 | 95 | 800 | 265 CAG | 317 GGA |
| 9 | 2H | 1110 / 2501,02,04 / 2601-06,08-15,17,18,21-28 / 3401-07 / 6601-06 / 6801-09,11N,12,15-28,31,32 / 6901 | 200 | 800 | 98 CTA | 259 GTT |
| 10 | 2G | 2501-04 | 475 | 1070 | 317 GCT | 517 CGT |
| 11 | 2F | 2601,02,04,07-18,20,22-28 | 75 | 800 | 261 AAC, 257 CGG | 299 TCG |
| 12 | 2E | 0113,17 / 0234,35,56,62 / 0301-07,09-11N,13-22 / 3408 2501-04 / 2601-03,05,07,08,10-28 / 4301 / 6601,04-06 | 225 170 | 800 | 98 CTT 423 GCT | 282 GAC 559 CCG |
| 13 | 2D | 1111 / 4301 6602,03 | 200 170 | 800 | 98 CTA 423 GCT | 257 GCA 559 CTC |
| 14 | 2C | 0113,17 / 1101-11,13-16,20-26 / 2419 / 2502 / 2613,19 / 3401-06,(07),08 / 6601,04,06 | 95 | 800 | 282 CAG | 341 CGT |
| 15 | 2B | 2901-13 | 200 | 800 | 98 CAC | 257 GCA |
| 16 | 2A | 3001-16 | 90 | 800 | 363 ATA | 411 TCA |
| 17 | 3H | 2914 / 3101-07,09-13 2913 / 3107,08,10 | 180 260 | 800 | 97 TCA | 238 CCT 317 GGA |
| 18 | 3G | 0281,87 / 2503 / 3201-06,08-11 | 260 | 800 | 98 CTT | 317 GGA |
| 19 | 3F | 3301-07 / 6829 | 200 | 1070 | 98 CAC | 259 GTT |
| 20 | 3E | 7401-09,11,12 | 155 | 800 | 180 TTT | 299 CCA, 299 CCA |
| 21 | 3D | 0210,50,52,73,93,95 / 1116 / 6801-11N,13-32 | 140 | 800 | 391 ACG, 391 ACG | 497 TGG |
| 22 | 3C | 0255 / 2622 / 6901 | 375 | 800 | 261 AAC | 355 GAC |
| 23 | 3B | 0227 / 1104 / 3601-03 | 70 | 800 | 527 TGC | 559 CGT |
| 24 ³ | 3A | 8001 0255 / 2603,05,06,21 / 6805,15,20 | 155 70, 75 | 800 | 176 GCA 261 AAC | 292 GTT 292 GTG, 299 TCT |

Fettdruck: Allel(gruppen) mit Häufigkeiten von mind. 0,001 / **Bold letters:** parts of allele groups or alleles with min. frequency of 0,001 (Ref.: www.allelefreqencies.net)

IC: PCR Produkte der internen Kontrollprimermixe / PCR products of the internal control primer mixes

¹ Nukleotidposition und Codon der 3' Primerenden / nucleotide position and codon of primers 3' ends

² **Mix # 5:** kreuzreaktiv mit Cw*0414 / crossreactive to Cw*0414

³ **Mix # 24:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Interpretation Table HLA- A

IN VITRO DIAGNOSTICUM

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Allele list based on release 2.13.0 (Apr 2006) of the IMGT/HLA Sequence Database

| Tube No. | Size of PCR Product [bp] | | | | | | | | | | | | | | | | | | | | | | | | Ser. Type |
|--|--------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------------------------------|
| | 1H | 1G | 1F | 1E | 1D | 1C | 1B | 1A | 2H | 2G | 2F | 2E | 2D | 2C | 2B | 2A | 3H | 3G | 3F | 3E | 3D | 3C | 3B | 3A | |
| A Allele Specificity | | | | | | | | | | | | | | | | | | | | | | | | | |
| Negative Control | 1 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0101-09,11N,14-16N,18N | 2 | | | | | | | | | | | | | | | | | | | | | | | | A1, -, (Null) |
| A*0110 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0112,19 / 1117,19 | | | | | | | | | | | | | | | | | | | | | | | | | - / - |
| A*0113,17 | 2 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0201-09,11-16,18-26,28-33,36-41,43-47,49,51,53N,54,57-60,63-72,74-80,82-86,88-92,94,96 | 3 | | | | | | | | | | | | | | | | | | | | | | | | A2, -, A203, (Null) |
| A*020109,42,48,61 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0210,52,73,93,95 | 3 | | | | | | | | | | | | | | | | | | | | | | | | A210, - |
| A*0217 | 3 | | | | | | | | | | | | | | | | | | | | | | | | A2 |
| A*0227 | 3 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0234,35,56,62 | 3 | | | | | | | | | | | | | | | | | | | | | | | | A2, - |
| A*0250 / 6810,13,14,30 | | | | | | | | | | | | | | | | | | | | | | | | | A2 / - |
| A*0255 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0281,87 | 3 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0301-04,07,09,11N,13-17,19-22 | 4 | | | | | | | | | | | | | | | | | | | | | | | | A3, -, (Null) |
| A*0305,06,10 / 023502 | | | | | | | | | | | | | | | | | | | | | | | | | A3, - |
| A*0308,12 | 4 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*0318 | 2 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*1101-03,05-07,09,13-15,20-22,26 | 5 | | | | | | | | | | | | | | | | | | | | | | | | A11, -, (Null) |
| A*1104 | 5 | | | | | | | | | | | | | | | | | | | | | | | | A11 |
| A*1108,23,25 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*1110 | 5 | | | | | | | | | | | | | | | | | | | | | | | | A11 |
| A*1111 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*1112,18 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*1116 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2301,03-08N,10-13 / 2413,18 | 6 | | | | | | | | | | | | | | | | | | | | | | | | A23(9), -, (Null), - |
| A*2309 / 2424 | 6 | | | | | | | | | | | | | | | | | | | | | | | | - / - |
| A*2314 / 2414,15,51-54,57 | 6 | | | | | | | | | | | | | | | | | | | | | | | | - / A24(9), - |
| A*2402,03,05-07,09-11N,17,20-23,25-27,30,32-41,43,45N-50,55,56,58-62 / 2302 | 7 | | | | | | | | | | | | | | | | | | | | | | | | A24(9), A9, A2403, (Null), - |
| A*2404,08,28,29,31,42 | 7 | | | | | | | | | | | | | | | | | | | | | | | | A24(9), - |
| A*2419 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2444 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2501 | | | | | | | | | | | | | | | | | | | | | | | | | A25(10) |
| A*2502 | | | | | | | | | | | | | | | | | | | | | | | | | A10 |
| A*2503 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2504 | 5 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2601,02,10-12,14,15,17,18,23-28 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A26(10), A10, (Null), - |
| A*2603,05,21 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A26(10) |
| A*2604,09 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A26(10), - |
| A*2606 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A26(10) |
| A*2607,16,20 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A26(10), - |
| A*2608 | 5 | | | | | | | | | | | | | | | | | | | | | | | | A26(10), - |
| A*2613 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2619 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2622 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2901-06,08N,09-12 | | | | | | | | | | | | | | | | | | | | | | | | | A29(19), (Null), - |
| A*2907 | 6 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*2913 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3001-16 | | | | | | | | | | | | | | | | | | | | | | | | | A30(19), - |
| A*3101-06,09,11-13 / 2914 | | | | | | | | | | | | | | | | | | | | | | | | | A31(19), - / - |
| A*3107,10 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3108 | 8 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3201-03,06,08-11 | 4 | | | | | | | | | | | | | | | | | | | | | | | | A32(19), - |
| A*3204 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3205 | 8 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3207 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3301-07 | | | | | | | | | | | | | | | | | | | | | | | | | A33(19), - |
| A*3308 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3401-06 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A34(10), - |
| A*3407 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3408 | 12L | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3601,03 | 4 | | | | | | | | | | | | | | | | | | | | | | | | A36, - |
| A*3602 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*3604 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*4301 | | | | | | | | | | | | | | | | | | | | | | | | | A43 |
| A*6601,04,06 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A66(10), - |
| A*6602,03 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A66(10), A10 |
| A*6605 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*6801-04,06-09,11N,16-19,21-28,31,32 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A68(28), A28, Null, - |
| A*6805,15,20 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A68(28), - |
| A*6812 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A28 |
| A*6829 | 9 | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*6901 | 9 | | | | | | | | | | | | | | | | | | | | | | | | A69(28) |
| A*7401-09,11,12N | | | | | | | | | | | | | | | | | | | | | | | | | A74(19), -, (Null) |
| A*7410 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| A*8001 | | | | | | | | | | | | | | | | | | | | | | | | | A80 |

gelegentlich schwache Bande / occasionally weak band

Multiplex Mix !
Multiplex Mix !
Multiplex Mix !
Multiplex Mix !

12 s L 2 spezifische Banden / 2 specific bands: s(mall) 170 bp, L(arge) 225 bp
13 s L 2 spezifische Banden / 2 specific bands: s(mall) 170 bp, L(arge) 200 bp
17 s L 2 spezifische Banden / 2 specific bands: s(mall) 180 bp, L(arge) 260 bp
24 s L 2 spezifische Banden / 2 specific bands: s(mall) 70/ 75 bp, L(arge) 155 bp

SSP HLA-A, B, DRB low resolution

Frequency Table HLA- A



Frequent alleles:

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| A*010101 | c* | A1 |
| A*0102 | ai | A1 |
| A*0106 | ie | - |
| A*02010101 | c* | A2 |
| A*0202 | c* | A2 |
| A*0203 | o,ie | A203 |
| A*0204 | c* | A2 |
| A*0205 | c* | A2 |
| A*0206 | c* | A2 |
| A*0207 | c* | A2 |
| A*0208 | a | A2 |
| A*0210 | o | A210 |
| A*0211 | c* | A2 |
| A*0214 | a | A2 |
| A*021701 | c* | A2 |
| A*0219 | ai | - |
| A*0222 | c* | A2 |
| A*0224 | c* | A2 |
| A*0226 | c* | - |
| A*0236 | ie | - |
| A*03010101 | c* | A3 |
| A*030102 | ie | A3 |
| A*0302 | c* | A3 |
| A*110101 | c* | A11 |
| A*1102 | c* | A11 |
| A*1104 | ai | A11 |
| A*2301 | c* | A23(9) |
| A*24020101 | c* | A24(9) |
| A*24020102L | c* | Low A24 |
| A*240301 | c* | A2403 |
| A*2404 | h | A24(9) |
| A*2405 | ie | A24(9) |
| A*2406 | ie | A24(9) |
| A*2407 | o,ie | A24(9) |
| A*2408 | o,ie | A24(9) |
| A*2409N | c* | Null |
| A*2410 | o | A9 |
| A*2423 | x | A24(9) |
| A*2424 | ie | - |

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| A*250101 | c* | A25(10) |
| A*2502 | c* | A10 |
| A*2601 | c* | A26(10) |
| A*2602 | c* | A26(10) |
| A*2605 | c* | A26(10) |
| A*260701 | c* | A26(10) |
| A*2608 | c* | A26(10) |
| A*2611N | ie | Null |
| A*2614 | ie | - |
| A*29010101 | c* | A29(19) |
| A*290201 | c* | A29(19) |
| A*3001 | c* | A30(19) |
| A*3002 | c* | A30(19) |
| A*3004 | c* | A30(19) |
| A*310102 | c* | A31(19) |
| A*3108 | ie | - |
| A*3201 | c* | A32(19) |
| A*3202 | c* | A32(19) |
| A*3204 | ie | - |
| A*3301 | c* | A33(19) |
| A*330301 | c* | A33(19) |
| A*3305 | c* | A33(19) |
| A*3401 | c* | A34(10) |
| A*3402 | c* | A34(10) |
| A*3601 | c* | A36 |
| A*4301 | b | A43 |
| A*6601 | c* | A66(10) |
| A*6602 | c* | A66(10) |
| A*680101 | c* | A68(28) |
| A*680102 | c* | A68(28) |
| A*6802 | c* | A68(28) |
| A*680301 | c* | A28 |
| A*6805 | m | A68(28) |
| A*6901 | c* | A69(28) |
| A*7401 | o | A74(19) |
| A*7403 | ai | A74(19) |
| A*8001 | c* | A80 |

¹ allele frequency min. 0,001 (Ref.: www.allelefrequencies.net): a arab, ai amerindian, b black, c* caucasoid (and other) s hispanic, ie indo-european, m mixed (Mexico Mestizos), o oriental, x Yupik Natives

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Spezifitätstabelle / Specificity Table HLA- B

IN VITRO DIAGNOSTICUM



G954076

2007-11

Allele list based on release
2.13.0 (Apr 2006)
of the IMGT/HLA Sequence
Database

| Tube No. | Amplified HLA-B* alleles | Size of PCR Product [bp] | Size of IC [bp] | 5' primer(s) ¹ | 3' primer(s) ¹ |
|-----------------|---|--------------------------|-----------------|---------------------------|-----------------------------|
| 25 | 4H - | - | 1070 | | |
| 26 | 4G 0702-18,20-24,26-32,34-39,41-47 / 3707 / 4015,16,23,32 / 4805,08,15 | 115 | 800 | 527 TGA | 605 GCT |
| 27 | 4F 0729 / 0801-09,11-16,18-25,27-29 / 3912 | 205 | 800 | 97 TCG | 259 GTT |
| 28 ² | 4E 1301-08,10-15 / 1536,89 / 4408 | 140 | 800 | 209 GGC | 309 GTG |
| 29 | 4D 1401-04,07N | 260 | 800 | 361 AGT | 583 GTG |
| 30 | 4C 1401,07N / 2712,16 / 3801,02,04,08-13 / 3901,03,05-07,09,11,14,15,18,19,22,24-30,32-38,40,41 | 215 | 800 | 103 CCT | 272 TGC |
| 31 | 4B 1402-06 / 3526 / 3805 / 3904 | 185 | 800 | 103 CCG | 246 TAT |
| 32 | 4A 1309 / 1501-02,04-08,11,12,14,15,19-21,25-28,30-35,38-42,44,45,48,50,55,56,58,60,63,65,66,70,71,73,75-79,81-88,92,94,96,97, 9501,02,04,05,07,09-13 / 3546 / 4021 / 4601-03,05-08 | 130 | 800 | 209 GGC | 302 GGC |
| 33 | 5H 1503,09,10,18,23,29,37,46,47,49,51-54,61,62,64,68,69,72,74,80,90,91,93,98,99, 9503,06,08,14 / 4012 | 330 | 800 | 45 GGA | 206 CCT |
| 34 | 5G 1509,10,18,21,23,37,44,51,52,66,72,80,90,93,99, 9508,14 | 400 | 1070 | 45 GGA | 272 TGC |
| 35 | 5F 0727 / 0804,17 / 1503,47,49,54,61,62,64,68,69,74,91, 9503 / 2718,29 / 3803 / 3902,08,13,23,39 / 4012,46 / 4440,44 / 4801-05,07-15 / 5518 | 105 | 800 | 206 AGA | 272 TGG |
| 36 ³ | 5E 1502,13,20,21,25,36,44,62,80,85,88,89, 9506,12 / 1822 / 3501,03,06-08,10,11,13-17,19-21,23-30,33,35,36,38,40N-42,45-50,52-57,59,61-65 / 4059 / 4417,43 / 4802 / 5301-06,(07),08-11 / 5514 / 5609,11 / 570101,0103,06,08,10 / 5801,04,05,09-11 | 100 | 800 | 355 TCA | 419 CCG, 419 CGA |
| 37 | 5D 1516,17,67,95 1512,14,19,91 / 3545 / 4417,43 / 5807 | 395 190 | 800 | 45 GGA 419 GTC | 271 CAT 570 CCG, 572 GCG |
| 38 | 5C 1513,16,17,23,24,36,43,67,87,89,95 | 435 | 800 | 45 GGA | 317 GGA |
| 39 | 5B 1801-22 / 350202 | 130 | 800 | 234 CAA | 324 TAG |
| 40 | 5A 2701-11,13-15,17,19-21,24,25,27,28,30,32-35 | 155 | 800 | 167 GCT | 280 CTT |
| 41 | 6H 1807 / 2723 / 3501-19,21-25,27,29-61,64-67 / 4008,13 / 4406 / 5101-06,08-21,23-41 / 5206 / 5301-08,10,11 / 7801,02,04 | 390 | 800 | 49 CAG | 272 TGA |
| 42 | 6G 1801-08,10-22 / 3501-0801,09-18,20-24,28-45,48,50-55,57-61,64-67 / 3711 / 3919 / 5606 / 7801-05 | 130 | 800 | 206 GAC | 302 GGC |
| 43 | 6F 3812 / 4001,07,(09-11,14),16,(18,19,22N),23,(24-38,40-45,47-50),51,(52-58),60,61-65) / 4101-08 / 4418 / 4501-07 / 4901,02,04,05 / 5001-04 | 315 | 1070 | 44 GGC | 193 CGT |
| 44 | 6E 3701-04,07-09 / 5303 | 130 | 800 | 206 GAC | 301 GTC |
| 45 | 6D 1548,69, 9508 / 3801-09,11-13 / 3901-05,07,08,10-27,31,32,35,38-41 / 4429 / 6701,02 | 210 | 800 | 369 TAC | 544 GGT |
| 46 | 6C 3801-03,05,08-13 | 110 | 800 | 246 GAA | 317 GGA |
| 47 | 6B 1401-07 / 3801-02,04,05,08-13 / 3901,03-07,09,11,12,14,15,18,19,22,24-38,40,41 | 400 | 800 | 44 GGC | 272 TGC |
| 48 | 6A 0702-10,12-26,28-35,37,39-47 / 0801,04,05,07,16,18-29 / 1401-07 / 3901-19,22-41 / 4001,07,(09-11,14,15),16,(18,21,22),23,(24-36,38,40-46,48-50),51,(52-58),59,(60-65) / 4101-07 / 4201-08 / (4446) / 4501-08 / 4801-15 / 5001-04 / 6701,02 / 7301 / 8102 | 425 | 800 | 44 GGC | 302 GGC |
| 49 | 7H 400101-0103,0105,07,10,12,21-23,25,31(w),33,36,38,42,43,46-49,51,52,54,55,61-63 / 4431 / 4606 / 4801(w),03,04(w),06(w),07(w),09(w),11,15 / 8101-02(w) | 165 | 800 | 369 TAC | 499 GGA |
| 50 | 7G 1301-15 / 3546,47,63 / 4002-06,08,13,20,39,(4009-11,14,15,18,19,22,24-38,40-45,47-50,52-58,61-65) / 4402-05,09,13,19N,23N,27,31,(4410-12,14-17,20-22,24-26,28-30,32-39,41-43,45-47) / 4701-05 1314 / 4002-06,08,09,11,13,18-20,24,26-29,35,37,39,40,44,50,56,57,64 | 310 125 | 800 | 49 CAG 106 CCG | 193 CGT 193 CGT |
| 51 | 7F 0704,19,25 / 0801-05,07,12,14-19N,21-24,26-29 / 1551,83 / 3701,03N,06,08-11 / 4101-03,05-08 / 4201-08 / 4402,05,06,08,09,11,12,14,16,17,19N-25,27,33,34,41,42,44 / 5108,20,36 / 5520 / 5613 / 5709 / 8301 | 180 | 800 | 391 ACG | 538 GTC |
| 52 | 7E 0702,04-07,09-15,17-26,28-31,33-36,39-47 / 1576,9501 / 2701-11,13-15,17,19-21,24-28,30-35 / 4201-06,08 / 4506 / 4601-08 / 5401-08 / 5501-17,19,20 / 5601-16 / 6701,02 / 7301 / 8101,02 / 8201,02 / 8301 | 320 | 1070 | 11 CAG | 282 GCC |
| 53 | 7D 3545 / 4402-14,17,19N,21-30,32-36,38-40,43-46 / 5707 / 8301 | 255 | 800 | 355 TCA | 572 GCG |
| 54 | 7C 4415,18,20,47 / 4501-03,05-07 / 5002 / 5123 | 250 | 800 | 357 TGG | 572 GCG |
| 55 | 7B 4601-03,05-08 | 125 | 800 | 209 GGC | 299 TCA |
| 56 | 7A 4701-03 | 230 | 800 | 368 GTT | 559 CTC |
| 57 | 8H 2724 / 4031,45 / 4801,04,06,07,09,11,12,15 / 8101,02 | 175 | 800 | 363 ACG | 499 GGA |
| 58 | 8G 4013,19 / 4418,25 / 4901,04,05 | 140 | 800 | 206 GAA | 309 ATC |
| 59 | 8F 1504w,16,42,67,95 / 4901-05 / 5001-04 / 5101-03,07,11N-14,16-18,21-30,32-39,41 / 5201,02,04-09 / 5501,03,05,09,11,15,17 / 5605,06 / 5808 / 7801-03,05 | 205 | 800 | 357 TGG | 527 CCT |
| 60 | 8E 2702,30 / 4013,(19) / 4406,25 / 5101-41 / 5201-09 / 5301,02,04,08,10 / 5701-07,(08),09,10 / 5801-11 | 430 | 800 | 49 CAG | 309 ATC |
| 61 | 8D 1546,53, 9506 / 3519,47,63 / 4001-11,14-18,20,22N-36,38-45,48-65 / 4101-08 / 4409,46 / 4501-08 / 4702,03 / 5001-04 | 130 | 1070 | 206 GAA | 302 GGC |
| 62 | 8C 1301-06,08-13,15 / 1501,03-07,12,14,19,20,24,28,30,32-36,38,43,45-50,53,54,56-63,65,66,69,70,73-75,77-79N,81-87,91,92,94,96-98, 9501-07,09-11,13 / 3510,13,16,28 / 4001,07,10,12,14-16,21-23,30-34,36,38,42,43,45-49,51-55,58-63,65 / 4101-08 // 4402-05,07-11,13-47 / 4501-07 / 4701-05 / 4901-05 / 5001-04 / 5201-09 / 5518 / 7805 | 200 | 800 | 103 CCG, 103 CCG | 259 CTC |
| 63 | 8B 150104 / 5401-08 | 215 | 800 | 11 CAG | 175 CCG |
| 64 | 8A 0809 / 1542,83 / 3560 / 3906,34 / 4204 / 5121,36 / 5401,02,04,05,07,08 / 5501-03,05,07,10,12,13,15-20 / 5901 | 235 | 800 | 362 GAC | 560 ACG |
| 65 | 9H 1303 / 1573 / 4410,15,18 / 4501,04-07 / 4901-03 / 5001-04 / 5115 / 5403 / 5601,02,04,07,08,13,14,16 / 8201,02 | 175 | 800 | 420 TTA | 559 CAG |
| 66 | 9G 1516,17,67,95 / 5701-10 | 95 | 800 | 209 GGC | 259 CTC |
| 67 | 9F 5801-11 | 110 | 800 | 209 GGA | 280 GGA |
| 68 | 9E 0738 / 0802,03 / 2723 / 3806,07 / 4406 / 5101-06,08-11,13-21,23-41 / 5301-08,10,11 / 5901 | 85 | 800 | 272 CTT | 317 GGA |
| 69 | 9D 7301 | 295 | 800 | 341 GGA | 354 CAA |
| 70 | 9C 4406,18,25 / 5123 / 5707 / 5807 4410 (w) / 8201,02 | 540 245 | 1070 | 311 GAT 368 GTT | 572 GCG |
| 71 | 9B Bw4 | 355 | 800 | 11 CAG | 317 GGA |
| 72 | 9A Bw6 | 355 | 800 | 11 CAG | 311 GGT |

Fettdruck: Allel(gruppen) mit Häufigkeiten von mind. 0,001 / **Bold letters:** parts of allele groups or alleles with min. frequency of 0,001 (Ref.: www.allelefreqencies.net)

IC: PCR Produkte der internen Kontrollprimermixe / PCR products of the internal control primer mixes

¹ Nukleotidposition und Codon der 3' Primerenden / Nucleotide position and codon of primers 3' ends

Klamern: entsprechende Allelsequenz nicht veröffentlicht / **Brackets:** corresponding allele sequence not published

w: schwache Bande / weak band

² **Mix # 28:** gelegentlich schwache spezifische Bande und unspezifische Bande (> spez. Bande) / occasionally weak specific band and unspecific band (> specific band)

³ **Mix # 36:** kreuzreaktiv mit / crossreactive to Cw*0314,*0510,*0710,*1504,05,09

HLA-READY GENE ABDR Low

IN VITRO DIAGNOSTICUM

LOT G954076

Allele list based on release 2.13.0 (Apr 2006) of the IMGT/HLA Sequence Database

SSP HLA-A, B, DRB low resolution



2007-11

Interpretation Table 1-1 HLA- B

Main interpretation table with columns for HLA-B alleles (48-99), Tube No., B Allele Specificity, Ser. Type, and detection results (71-99).

gelegentlich schwache Bande / occasionally weak band

Multiplex Mix ! 37 s L 2 spezifische Banden / 2 specific bands: s(mall) 190 bp, L(arge) 395 bp

Multiplex Mix ! 50 s L 2 spezifische Banden / 2 specific bands: s(mall) 125 bp, L(arge) 310 bp

SSP HLA-A, B, DRB low resolution

Frequency Table HLA- B



Frequent alleles:

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| B*070201 | c* | B7 |
| B*0705 | c* | B7 |
| B*0707 | ie | B7 |
| B*0720 | c* | - |
| B*0801 | c* | B8 |
| B*0804 | c* | - |
| B*0805 | c* | - |
| B*1301 | ie,o | B13 |
| B*1302 | c* | B13 |
| B*1401 | c* | B64(14) |
| B*1402 | c* | B65(14) |
| B*1405 | ie | - |
| B*15010101 | c* | B62(15) |
| B*1502 | ie,o,x | B75(15) |
| B*1503 | c* | B72(70) |
| B*1504 | ai | B62(15) |
| B*1506 | o | B62(15) |
| B*1507 | c* | B62(15) |
| B*1508 | c* | B75(15) |
| B*1509 | c* | B70 |
| B*1510 | c* | B71(70) |
| B*151101 | o | B75(15) |
| B*1512 | o | B76(15) |
| B*1513 | a,o | B77(15) |
| B*1515 | c* | B62(15) |
| B*1516 | a,b | B63(15) |
| B*15170101 | c* | B63(15) |
| B*1518 | c* | B71(70) |
| B*1520 | ai | B62(15) |
| B*1521 | o | B75(15) |
| B*1524 | c* | B62(15) |
| B*1525 | o | B62(15) |
| B*1527 | o | B62(15) |
| B*1532 | o | B62(15) |
| B*1535 | o | B62(15) |
| B*1536 | ie | - |
| B*1539 | h,m | B62(15) |
| B*1558 | o | B15 |
| B*1563 | ai | - |
| B*180101 | c* | B18 |
| B*1802 | o | B18 |
| B*1803 | c* | B18 |
| B*1807 | ie | - |
| B*2702 | c* | B27 |
| B*2703 | x | B27 |
| B*2704 | c* | B27 |
| B*270502 | c* | B27 |
| B*2706 | o | B27 |
| B*2707 | c* | B27 |
| B*2708 | ie | B2708 |
| B*2709 | c* | B27 |

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| B*350101 | c* | B35 |
| B*3502 | c* | B35 |
| B*3503 | c* | B35 |
| B*3504 | c* | B35 |
| B*3505 | c* | B35 |
| B*3506 | ie | B35 |
| B*3508 | c* | B35 |
| B*350901 | ai | B35 |
| B*3510 | ie,x | B35 |
| B*3511 | h | B35 |
| B*3512 | h,ie,m,x | B35 |
| B*351401 | h | B35 |
| B*3515 | ie | B35 |
| B*3516 | ie,m | B35 |
| B*3517 | h,ie,m | B35 |
| B*3518 | ai | B35 |
| B*3519 | ai | B35 |
| B*3520 | ai,ie | B35 |
| B*3525 | ie | - |
| B*3701 | c* | B37 |
| B*3801 | c* | B38(16) |
| B*380201 | o,ie | B38(16) |
| B*390101 | c* | B3901 |
| B*390201 | c* | B3902 |
| B*3903 | c* | B39(16) |
| B*3904 | ai | B39(16) |
| B*3905 | c* | B16 |
| B*390601 | c* | B39(16) |
| B*3908 | m | B39(16) |
| B*3909 | ai,o | B39(16) |
| B*3910 | a,b | B39(16) |
| B*3915 | o | - |
| B*3924 | a | B39(16) |
| B*400101 | c* | B60(40) |
| B*4002 | c* | B61(40) |
| B*4003 | c* | B61(40) |
| B*4004 | ai | B61(40) |
| B*4005 | c* | B4005 |
| B*40060101 | a,ie,o | B61(40) |
| B*4008 | h | - |
| B*4010 | o | B60(40) |
| B*4011 | ie | B40 |
| B*4012 | ie | - |
| B*4027 | h | B61(40) |
| B*4101 | c* | B41 |
| B*4102 | c* | B41 |
| B*4201 | c* | B42 |

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| B*44020101 | c* | B44(12) |
| B*440301 | c* | B44(12) |
| B*4404 | c* | B44(12) |
| B*4405 | c* | B44(12) |
| B*4406 | c* | B44(12) |
| B*4407 | c* | B44(12) |
| B*4408 | ie | B44(12) |
| B*4409 | ie | B12 |
| B*4415 | a | B12 |
| B*4501 | c* | B45(12) |
| B*4601 | c* | B46 |
| B*47010101 | c* | B47 |
| B*4801 | c* | B48 |
| B*4802 | ai,ie | B48 |
| B*4803 | ai,o | B48 |
| B*4901 | c* | B49(21) |
| B*5001 | c* | B50(21) |
| B*5002 | c* | B45(12) |
| B*510101 | c* | B51(5) |
| B*510102 | ie | B51(5) |
| B*510201 | o | B5102 |
| B*5103 | b,ie | B5103 |
| B*5106 | ie | B51(5) |
| B*5107 | ie,m,o | B51(5) |
| B*5108 | c* | B51(5) |
| B*5109 | c* | B51(5) |
| B*5110 | ie | - |
| B*5115 | ie | - |
| B*520101 | c* | B52(5) |
| B*5301 | c* | B53 |
| B*5302 | c* | - |
| B*5303 | ie | - |
| B*5401 | ie,o | B54(22) |
| B*5501 | c* | B55(22) |
| B*5502 | o | B55(22) |
| B*5504 | ie,o | B55(22) |
| B*5507 | o | B54(22) |
| B*5601 | c* | B56(22) |
| B*5602 | o | B56(22) |
| B*5603 | o | B22 |
| B*5604 | ie,o | B56(22) |
| B*560501 | ie | B56(22) |
| B*570101 | c* | B57(17) |
| B*5702 | c* | B57(17) |
| B*570301 | c* | B57(17) |
| B*5801 | c* | B58(17) |
| B*5802 | c* | B58(17) |
| B*5901 | c* | B59 |
| B*670101 | c* | B67 |
| B*7301 | c* | B73 |
| B*7801 | m | B78 |
| B*7803 | ie | - |
| B*8101 | c* | B81 |
| B*8201 | b | - |

¹ allele frequency min. 0,001 (Ref.: www.allelefrequencies.net): a arab, ai amerindian, b black, c* caucasoid (and other)

h hispanic, ie indo-european, m mixed (Cuban Mulatto, Mexico Mestizos), o oriental, x Yupik Natives

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Interpretation Table HLA- DRB

IN VITRO DIAGNOSTICUM

LOT

G954076



2007-11

Allele list based on release 2.13.0 (Apr 2006) of the IMGT/HLA Sequence Database

| Tube No. | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | |
|--|-------|-----|-----|-----|------------|-----|-----------|-----|-----|-----|------------|-----|-----|-------------------|-----|-----|-------------------|-----|------------|------------|------------|------|-----|-----|------------------|
| | 10H | 10G | 10F | 10E | 10D | 10C | 10B | 10A | 11H | 11G | 11F | 11E | 11D | 11C | 11B | 11A | 12H | 12G | 12F | 12E | 12D | 12C | 12B | 12A | |
| Size of PCR Product [bp] | (800) | 195 | 195 | 210 | 205 220 | 225 | 85 175 | 90 | 205 | 240 | 220 165 | 195 | 205 | 185 180 170 | 110 | 215 | 205 215 195 | 180 | 210 205 | 150 145 | 225 150 | 230 | 200 | 265 | |
| DRB Allele Specificity | | | | | | | | | | | | | | | | | | | | | | | | | Ser. Type |
| - (IC-800) | 73 | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*0101,02,04-14 | | 74 | | | | | | | | | | | | | | | | | | | | | | | DR1 |
| DRB1*0103 | | | 75 | | | | | | | | | | | | | | | | | | | | | | DR103 |
| DRB1*1501-09,11-19 | | | | 76 | | | | | | | | | | | | | | | | | | | | | DR15(2) |
| DRB1*1510 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*1601-10 | | | | | 77 | | | | | | | | | | | | | | | | | | | | DR16(2) |
| DRB1*0301,04-06,09,12-16,18-20,22,23,25,26,28 | | | | | | 78 | 79s | | | | | | | | | | | 90 | | | | | | | DR17(3) |
| DRB1*0302,03,29 | | | | | | 78 | | 80 | | | | | | | | | | 90 | | | | | | | DR18(3) |
| DRB1*0307,21 | | | | | | 78 | | | | | | | | | | | | 90 | | | | | | | DR3 |
| DRB1*0308 | | | | | | 78 | 79s | | | | | | | 86 | | | | | | | | | | | - |
| DRB1*0310 | | | | | | 78 | 79s | | | | | | | | | | | | | | | | | | DR17(3) |
| DRB1*0311 | | | | | | | 79s | | | | | | | | | | | 90 | | | | | | | DR17(3) |
| DRB1*0317,24 / 1309,44 / 1437 | | | | | | | | | | | | | | | | | | 90 | | | | | | | - |
| DRB1*0327 / 1424 | | | | | | | | 80 | | | | | | | | | | 90 | | | | | | | - |
| DRB1*0401-14,16-57 | | | | | | | | | 81 | | | | | | | | | | | | | | | | DR4 |
| DRB1*0415 | | | | | | | | | 81 | | | | | 86 | | | | | | | | | | | DR4 |
| DRB1*0701-10 | | | | | | | | | | 82 | | | | | | | | | | | | | | | DR7 |
| DRB1*0801,02,04-08,11,16,17,22,26-28 | | | | | | | | | | | 83 | | | | | | | 89 | | | | | | | DR8 |
| DRB1*0803,10,12-15,18,19,23,30 | | | | | | | | | | | 83 | | | | | | | | | | | | | | DR8 |
| DRB1*0809,21 / 1415 | | | | | | | | | | | 83 | | | | | | | 89 | | | | 93s | | | DR8 |
| DRB1*0825 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*0832 | | | | | | | | | | | 83 | | | 87 | | | | | | | | | | | - |
| DRB1*0901-04 | | | | | | | | | | | | 84 | | | | | | | | | | | | | DR9 |
| DRB1*0905 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*1001 | | | | | | | | | | | | | 85 | | | | | | | | | | | | DR10 |
| DRB1*1101-04,06,09-12,14-16,20,21,24,27-29,32,33,35-41,43,44,46-50,54 | | | | | | | | | | | | | | 86 | | 88 | 89 | | | | | | | | DR11(5) |
| DRB1*1105,22,26,30,34,53 | | | | | | | | | | | | | | 86 | | | | | | | | | | | DR11(5) |
| DRB1*1107 | | | | | | 78 | | | | | | | | 86 | | | | | | | | | | | DR11(5) |
| DRB1*1108,18,19,31,42 | | | | | | | | | | | | | | 86 | | 88 | | | | | | | | | DR11(5) |
| DRB1*1113,17,52 | | | | | | | | | | | | | | 86 | | | | 91 | | | | | | | DR11(5) |
| DRB1*1123,25,55 | | | | | | | | | | | | | | 86 | | 88 | 89 | | | | | 93L | | | DR11(5) |
| DRB1*1145 | | | | | | | | | | | | | | 86 | | 88 | | | | | | | 93L | | - |
| DRB1*1151 | | | | | | | | | | | | | | 86 | | | 89 | | | | | | | | - |
| DRB1*1201,03-12 | | | | | | | | | | | | | | | | 87 | | | | | | | | | DR12(5) |
| DRB1*1202,13 | | | | | | | | | | | | | | | | 87 | | 89 | | | | | | | DR12(5) |
| DRB1*1214 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*1301(c),02,04,05,07,08,11,14,16,20-24,28,29,31,32,34-36,38-40,42,46,48-52,54,59,61-65,68-71 | | | | | | | | | | | | | | | | | 88 | 89 | 90 | | | | | | DR13(6) |
| DRB1*130202 | | | | | | | | | | | | | | | | | | 89 | 90 | | | | | | - |
| DRB1*1303,06,12,25,30,33,37,56,58,60,66 | | | | | | | | | | | | | | | | | 88 | | 90 | | | | | | DR13(6) |
| DRB1*1310 / 1421 | | | | | | | | | | | | | | | | | 88 | | 90 | | 92 | | | | DR13(6) |
| DRB1*1313 | | | | | | | | | | | | | | | | | 88 | | 90 | | | 93L | | | DR13(6) |
| DRB1*1315,19,26,53,57 | | | | | | | | 80 | | | | | | | | | 88 | 89 | 90 | | | | | | DR13(6) |
| DRB1*1317 / 0824,31 | | | | | | | | | | | | | | | | | | 89 | | | | | | | DR13(6) / - |
| DRB1*1318,47,55 / 0820 | | | | | | | | | | | | | | | | | 88 | 89 | 90 | | | 93L | | | DR13(6) / - |
| DRB1*1327,41 | | | | | | | | 79s | | | | | | | | | 88 | 89 | 90 | | | | | | DR13(6) |
| DRB1*1343,45 / 1416,22,25,53 | | | | | | | | 79L | | | | | | | | | 88 | 89 | | | | | | | - / DR14(6) |
| DRB1*1367 | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB1*1401,07,26,32,35,38,39,54,58 | | | | | | | | 79L | | | | | | | | | | | 91 | | | | | | DR14(6) |
| DRB1*1402,06,13,20,29,41,47,48,51 | | | | | | | | 80 | | | | | | | | | | 90 | | 92 | | | | | DR14(6) |
| DRB1*1403,12 | | | | | | | | 80 | | | | | | | | 88 | | 90 | | | 93L | | | | DR1403, DR14(6) |
| DRB1*1404,08,11,23(02),28,31,34,50 | | | | | | | | | | | | | | | | | | | 91 | | | | | | DR1404, DR14(6) |
| DRB1*1405,14,23(01),36,42-45,56 | | | | | | | | | | | | | | | | | | 90 | 91 | | | | | | DR14(6) |
| DRB1*1409,17,30,33 | | | | | | | | | | | | | | | | | | 90 | | 92 | | | | | DR6 |
| DRB1*1410,57 | | | | | | | | 79L | | | | | | | | | | | | | | | | | DR14(6) |
| DRB1*1418 | | | | | | | | | 80 | | | | | | | | | 90 | 91 | | | | | | DR6 |
| DRB1*1419 | | | | | | | | | 80 | | | | | | | | 88 | | 90 | | 92 | | | | DR14(6) |
| DRB1*1427 | | | | | | | | | 80 | | | | | | | | 88 | 89 | 90 | | | 93L | | | DR14(6) |
| DRB1*1440 | | | | | | | | | 80 | | | | | | | | 88 | | 90 | | | 93sL | | | - |
| DRB1*1446,52 | | | | | | | | | | | | | | | | | | | | | 92 | | | | - |
| DRB1*1449 | | | | | | | | | 79L | 80 | | | | | | | | | | | 92 | | | | - |
| DRB1*1455 | | | | | | | | | 79L | | | | | | | | | | | 91 | | 93sL | | | - |
| DRB3*0101-11 / 0201-17,19-21 / 0301-03 | | | | | | | | | | | | | | | | | | | | | | | 94 | | DR52 |
| DRB3*0218 | | | | | | | | | | | | | | | | | 86 | | | | | | 94 | | - |
| DRB4*0101-06 | | | | | | | | | | | | | | | | | | | | | | | | 95 | DR53 |
| DRB4*0107,0201N,0301N | | | | | | | | | | | | | | | | | | | | | | | | | - |
| DRB5*0101-13 / 0202-05 | | | | | | | | | | | | | | | | | | | | | | | | | DR51 |
| Tube No. | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | |
| | 10H | 10G | 10F | 10E | 10D | 10C | 10B | 10A | 11H | 11G | 11F | 11E | 11D | 11C | 11B | 11A | 12H | 12G | 12F | 12E | 12D | 12C | 12B | 12A | |

Multiplex Mix !
Multiplex Mix !



(w) gelegentlich schwache Bande / occasionally weak band
 2 spezifische Banden / 2 specific bands: s(mall) 85 bp, L(ar)ge 175 bp
 2 spezifische Banden / 2 specific bands: s(mall) 150 bp, L(ar)ge 225 bp

HLA-READY GENE ABDR Low

SSP HLA-A, B, DRB low resolution

Spezifitätstabelle / Specificity Table HLA- DRB

IN VITRO DIAGNOSTICUM

**LOT****G954076**

2007-11

Allele list based on release
2.13.0 (Apr 2006) of the
IMGT/HLA Sequence Database

| Tube No. | | Amplified DRB1* (DRB3*, DRB4*, DRB5*) alleles | Size of PCR Product [bp] | Size of IC [bp] | 5' primer(s) ¹ | 3' primer(s) ¹ |
|-----------------|-----|---|--------------------------|-----------------|-------------------------------|---------------------------|
| 73 | 10H | - | - | 800 | | |
| 74 | 10G | 0101,02,04-14 | 195 | 430 | 129 GAA | 286 GAG |
| 75 | 10F | 0103 | 195 | 430 | 129 GAA | 286 GAT |
| 76 | 10E | 1501-09,11-19 | 210 | 430 | 126 AGG | 298 CGC |
| 77 | 10D | 1601-10 | 205, 220, 220 | 430 | 126 AGG | 294 TCT, 303 GCG, 307 CAG |
| 78 | 10C | 0301-10,12-16,18-23,25,26,28,29 / 1107 | 225 | 430 | 125 GTC | 305 GGC, 305 GGC |
| 79 | 10B | 0301,04-06,08-16,18-20,22,23,25,26,28 / 1327,41 / 1343,45 / 1401,07,10,16,22,25,26,32,35,38,39,49,53-55,57,58 | 85 175 | 430 | 125 GTC 125 GTC, 125 ACA | 164 GGT 257 CAG |
| 80 | 10A | 0302,03,27,29 / 1315,19,26,53,57 / 1402,03,06,12,13,18-20,24,27,29,40,41,47-49,51 | 90 | 430 | 125 GTC | 171 CTC |
| 81 | 11H | 0401-57 | 205 | 430 | 184 ATC | 347 TCT |
| 82 ² | 11G | 0701-10 | 240 | 800 | 127 ATA | 319 CAC, 317 AAT |
| 83 | 11F | 0801-19,21-23,26-30,32 / 1415 | 220, 165 | 430 | 133 GTT, 133 GTT | 307 CAG, 256 GCT |
| 84 | 11E | 0901-04 | 195 | 430 | 164 GTA | 319 CAC |
| 85 | 11D | 1001 | 205 | 430 | 178 GCG | 344 CAC |
| 86 | 11C | 0308 / 0415 / 1101-55 / DRB3*0218 | 185, 180, 170 | 430 | 125 GTC/ACA, 133 GTC, 116 GCT | 260 CCT |
| 87 | 11B | 0832 / 1201-13 | 110 | 430 | 133 GTT | 199 CAG |
| 88 | 11A | 0820 / 1101-04,06,08-12,14-16,18-21,23-25,27-29,31-33,35-50,54,55 / 1301-0201,03-08,10-16,18-43,45-66,68-71 / 1403,12,16,19,21,22,25,27,40,53 | 215 | 430 | 125 GTC | 295 GTC, 299 GCT |
| 89 ² | 12H | 0801,02,04-09,11,16,17,20-22,24,26,28,31 / 1101-04,06,09-12,14-16,20,21,23-25,27-29,32,33,35-41,43,44,46-51,54,55 / 1202,13 / 1301,02,04,05,07,08,11,14-24,26-29,31,32,34-36,38-43,45-55,57,59,61-65,68-71 / 1415,16,22,25,27,53 | 205, 215, 195 | 430 | 125 GTC, 133 GTT | 286 GAA, 286 GAA, 298 CTC |
| 90 | 12G | 0301-07,09,11,12-29 / 0820 / 1301-16,18-42,44,46-66,68-71 / 1402,03,05,06,09,12-14,17-21,23(01),24,27,29,30,33,36,37,40-45,47,48,51,56 | 180 | 430 | 125 GTC | 260 CGG, 260 CAG |
| 91 | 12F | 1113,17,52 / 1401,04,05,07,08,11,14,18,23,26,28,31,32,34-36,38,39,42-45,50,54-56,58 | 210, 205 | 800 | 125 GTC, 133 GTT | 296 TCC |
| 92 | 12E | 1310 / 1402,06,09,13,17,19-21,29,30,33,41,46-49,51,52 | 150, 145 | 430 | 189 CAG, 189 CAG | 298 CTT, 296 TCT |
| 93 | 12D | 0820 / 1123,25,45,55 / 1313,18,47,55 / 1403,12,27,40,55 0809,21 / 1415,40,55 | 225 150 | 430 | 125 GTC 197 GTT | 307 CAG |
| 94 | 12C | DRB3*0101-11 / 0201-21 / 0301-03 | 230 | 430 | 116 GCT | 305 GGC, 305 GGC |
| 95 | 12B | DRB4*0101-06 | 200 | 430 | 170 GAT | 331 GTT |
| 96 | 12A | DRB5*0101-13 / 0202-05 | 265 | 430 | 125 GTA | 347 TCT |

Fettdruck: Allel(gruppen) mit Häufigkeiten von mind. 0,001 / **Bold letters:** parts of allele groups or alleles with min. frequency of 0,001 (Ref.: www.allelefrequencies.net)**IC:** PCR Produkte der internen Kontrollprimermixe / PCR products of the internal control primer mixes¹ Nukleotidposition und Codon der 3' Primerenden / nucleotide position and codon of primers 3' ends² **Mix # 82, 89:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

SSP HLA-A, B, DRB low resolution

Frequency Table HLA- DRB



Frequent alleles:

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| DRB1*010101 | c* | DR1 |
| DRB1*010201 | c* | DR1 |
| DRB1*0103 | c* | DR103 |
| DRB1*0106 | c* | - |
| DRB1*030101 | c* | DR17(3) |
| DRB1*030201 | c* | DR18(3) |
| DRB1*0303 | b | DR18(3) |
| DRB1*0304 | c* | DR17(3) |
| DRB1*030501 | c* | DR17(3) |
| DRB1*040101 | c* | DR4 |
| DRB1*0402 | c* | DR4 |
| DRB1*040301 | c* | DR4 |
| DRB1*0404 | c* | DR4 |
| DRB1*040501 | c* | DR4 |
| DRB1*0406 | c* | DR4 |
| DRB1*040701 | c* | DR4 |
| DRB1*0408 | c* | DR4 |
| DRB1*0409 | c* | DR4 |
| DRB1*0410 | c* | DR4 |
| DRB1*0411 | c* | DR4 |
| DRB1*0413 | c* | DR4 |
| DRB1*0414 | c* | DR4 |
| DRB1*0416 | c* | DR4 |
| DRB1*0417 | ai,b | DR4 |
| DRB1*0436 | o | - |
| DRB1*070101 | c* | DR7 |
| DRB1*080101 | c* | DR8 |
| DRB1*080201 | c* | DR8 |
| DRB1*080302 | c* | DR8 |
| DRB1*080401 | c* | DR8 |
| DRB1*0805 | c* | DR8 |
| DRB1*0806 | c* | DR8 |
| DRB1*0807 | c* | DR8 |
| DRB1*0808 | c* | - |
| DRB1*0810 | c* | DR8 |
| DRB1*0811 | x | DR8 |
| DRB1*090102 | c* | DR9 |
| DRB1*100101 | c* | DR10 |

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| DRB1*110101 | c* | DR11(5) |
| DRB1*1102 | c* | DR11(5) |
| DRB1*1103 | c* | DR11(5) |
| DRB1*110401 | c* | DR11(5) |
| DRB1*110601 | c* | DR11(5) |
| DRB1*110801 | c* | DR11(5) |
| DRB1*1109 | c* | DR11(5) |
| DRB1*1111 | ai | DR11(5) |
| DRB1*1115 | c* | - |
| DRB1*120101 | c* | DR12(5) |
| DRB1*120201 | c* | DR12(5) |
| DRB1*120302 | o,ie | DR12(5) |
| DRB1*130101 | c* | DR13(6) |
| DRB1*130201 | c* | DR13(6) |
| DRB1*130301 | c* | DR13(6) |
| DRB1*130302 | c* | DR13(6) |
| DRB1*1304 | c* | DR13(6) |
| DRB1*1305 | c* | DR13(6) |
| DRB1*130701 | c* | DR13(6) |
| DRB1*1308 | o,ie | DR13(6) |
| DRB1*1312 | o | DR6 |
| DRB1*131401 | c* | DR13(6) |
| DRB1*1315 | c* | - |
| DRB1*1327 | c* | DR13(6) |
| DRB1*140101 | c* | DR14(6) |
| DRB1*1402 | c* | DR14(6) |
| DRB1*1403 | o,ie | DR1403 |
| DRB1*1404 | c* | DR1404 |
| DRB1*140501 | c* | DR14(6) |
| DRB1*1406 | c* | DR14(6) |
| DRB1*140701 | c* | DR14(6) |
| DRB1*1408 | c* | DR14(6) |
| DRB1*1410 | o | DR14(6) |
| DRB1*1411 | o | DR14(6) |
| DRB1*1412 | o | DR14(6) |
| DRB1*1413 | ai | DR14(6) |
| DRB1*1414 | c* | DR14(6) |
| DRB1*1415 | c* | DR8 |
| DRB1*1418 | o | DR6 |
| DRB1*1427 | o | DR14(6) |
| DRB1*1443 | o | - |
| DRB1*150101 | c* | DR15(2) |
| DRB1*150201 | c* | DR15(2) |
| DRB1*150202 | c* | DR15(2) |
| DRB1*1503 | c* | DR15(2) |
| DRB1*1504 | ie,o | DR15(2) |

| Allele Specificity | Freq ¹ | Ser. Type |
|--------------------|-------------------|-----------|
| DRB1*160101 | c* | DR16(2) |
| DRB1*160201 | c* | DR16(2) |
| DRB1*1603 | c* | DR2 |
| DRB1*1604 | ai | DR16(2) |
| DRB1*160501 | c* | DR2 |
| DRB3*010101 | c* | DR52 |
| DRB3*01010201 | c* | DR52 |
| DRB3*01010202 | c* | DR52 |
| DRB3*010103 | c* | DR52 |
| DRB3*010104 | c* | DR52 |
| DRB3*0102 | c* | DR52 |
| DRB3*0103 | c* | - |
| DRB3*0104 | c* | - |
| DRB3*0105 | c* | - |
| DRB3*0106 | c* | DR52 |
| DRB3*0107 | c* | DR52 |
| DRB3*0201 | c* | DR52 |
| DRB3*020201 | c* | DR52 |
| DRB3*020203 | c* | DR52 |
| DRB3*0203 | c* | DR52 |
| DRB3*0205 | c* | - |
| DRB3*0206 | c* | - |
| DRB3*0207 | c* | DR52 |
| DRB3*0210 | c* | DR52 |
| DRB3*0211 | c* | DR52 |
| DRB3*0213 | c* | - |
| DRB3*030101 | c* | DR52 |
| DRB3*0302 | c* | DR52 |
| DRB3*0303 | c* | - |
| DRB4*010101 | c* | DR53 |
| DRB4*0102 | c* | DR53 |
| DRB4*01030101 | c* | DR53 |
| DRB4*010302 | c* | DR53 |
| DRB4*0105 | c* | DR53 |
| DRB4*0201N | c* | Null |
| DRB5*010101 | c* | DR51 |
| DRB5*010102 | c* | DR51 |
| DRB5*0102 | c* | DR51 |
| DRB5*0103 | c* | - |
| DRB5*0105 | c* | - |
| DRB5*0107 | c* | DR51 |
| DRB5*0108N | c* | Null |
| DRB5*0109 | c* | - |
| DRB5*0110N | c* | Null |
| DRB5*0202 | c* | DR51 |
| DRB5*0203 | c* | - |
| DRB5*0204 | c* | - |

¹ allele frequency min. 0,001 (Ref.: www.allelefreqencies.net): a arab, ai amerindian, b black, c* caucasoid (and other)
h hispanic, ie indo-european, m mixed (Mexico Mestizos), o oriental, x Yupik Natives

