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 Test-Durchführung / -Performance

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 Datum / Date

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 Unterschrift / Signature

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 Bemerkungen / Comments

Probe / Sample				
1	5	9	13	17
2	6	10	14	18
3	7	11	15	19
4	8	12	16	20
Thermocycler 1	Thermocycler 2	Thermocycler 3	Thermocycler 4	Thermocycler 5

Methodenablauf und Pipettier Volumina 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 (24+4* wells) [ µl ]	Endvolumen [ µl ]
Destilled Water	6	X	=
ReadyPCR	3	X	=
Taq-Polymerase (5U/µl)	0.08	X	=
Endvolumen MM	9.08	X	=

\* 4 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 236 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 (23+3* wells) [ µl ]
Mastermix (MM)	9.08	236
DNA (25-100 ng/µl)	1	26
Endvolumen MM-DNA	10.08	262

\* 3 wells extra volume

**4.) 10 µl MM-DNA pro Well (23x) in rote PCR-Tubes verteilen / Dispense 10 µl MM-DNA per well (23x) in red PCR tubes**

**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)**





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

Ergebnis / Result

	H	G	F	E	D	C	B	A	
<b>DRB1*</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4*</b>	<b>5</b>	<b>6</b>	<b>7*</b>	<b>8</b>	
1	<b>Negative Control</b>	0101,02,04,..	0103	15..	16..	03.. / 1107	175 bp: 1401,07,... 85 bp: 0301,04,...	0302,03,27 / 1315,.../ 1402,03,06,12,13,18,...	
4		430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	
7		430 bp NC	195 bp	195 bp	210 bp	205, 220 bp	225 bp	175 bp	90 bp
10								85 bp	
	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	
2	04..	07..	08.. / 1415	09..	10..	0308 / 0415 / 11..	12..	11.. / 13.. / 1403,...	
5	430 bp IC	800 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	
8	205 bp	240 bp	220, 165 bp	195 bp	205 bp	185, 180, 170 bp	110 bp	215 bp	
11									
	<b>17*</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21*</b>	<b>22</b>	<b>23*</b>	<b>24</b>	
3	08.. / 11.. / 1202 13.. / 1415,...	03.. / 0820 / 13.. / 1402,03,05,06,..	1113,17,52 / 1401,04,05,07,...	0310 / 1402,06,09,13,...	0809,... / 1123,25,45 / 1313,... / 1403,12,15,...	<b>DRB3*</b>	<b>DRB4*</b>	<b>DRB5*</b>	
6	430 bp IC	430 bp IC	800 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	430 bp IC	
9	205, 215, 195 bp	180 bp	210, 205 bp	150, 145 bp	225 bp 150 bp	230 bp	200 bp	265 bp	
12									

<sup>1</sup> 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.allelefreqencies.net)

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

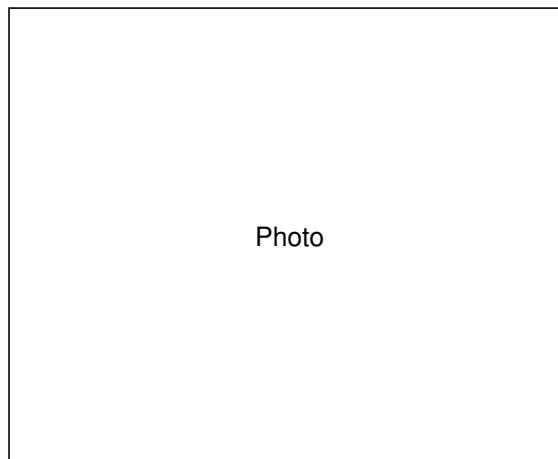
**Mix # 4:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

**Mix # 7 (multiplex):** 175 bp: DRB1\*0310,\*1343,45,\*1401,07,10,16,22,25,26,32,35,38,39; 85 bp: DRB1\*0301,04-06,08-16,18-20,22,23,25,26,28,\*1327,41

**Mix # 17:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

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

**Mix # 23:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)

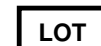


**HLA-READY GENE DR LOW**

SSP HLA-DRB low resolution

**Spezifitätstabelle / Specificity Table**

IN VITRO DIAGNOSTICUM



G955115



2007-01

Allele list based on release  
2.9.0 (Apr 2005) 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) <sup>1</sup>	3' primer(s) <sup>1</sup>
1	1H	-	430	-		
2	1G	<b>0101,02,04-12</b>	195	430	129 GAA	286 GAG
3	1F	<b>0103</b>	195	430	129 GAA	286 GAT
4 <sup>2</sup>	1E	<b>1501-09,11-16</b>	210	430	126 AGG	298 CGC
5	1D	<b>1601-08</b>	205, 220, 220	430	126 AGG	294 TCT, 303 GCG, 307 CAG
6	1C	<b>0301-10,12-16,18-23,25,26,28 / 1107</b>	225	430	125 GTC	305 GGC, 305 GGC
7	1B	<b>0301,04-06,08-16,18-20,22,23,25,26,28 / 1327,41</b> <b>0310 / 1343,45 / 1401,07,10,16,22,25,26,32,35,38,39</b>	85 175	430	125 GTC 125 GTC, 125 ACA	164 GGT 257 CAG
8	1A	<b>0302-03,27 / 1315,19,26,53,57 / 1402,03,06,12,13,18-20,24,27,29,40,41,47,48</b>	90	430	125 GTC	171 CTC
9	2H	<b>0401-53</b>	205	430	184 ATC	347 TCT
10	2G	<b>0701-09</b>	240	<b>800</b>	127 ATA	319 CAC, 317 AAT
11	2F	<b>0801-19,21-23,26-30 / 1415</b>	220, 165	430	133 GTT, 133 GTT	307 CAG, 256 GCT
12	2E	<b>0901-04</b>	195	430	164 GTA	319 CAC
13	2D	<b>1001</b>	205	430	178 GCG	344 CAC
14	2C	<b>0308 / 0415 / 1101-51,53,54 / DRB3*0218</b>	185, 180, 170	430	125 GTC/ACA, 133 GTC, 116 GCT	260 CCT
15	2B	<b>1201-12</b>	110	430	133 GTT	199 CAG
16	2A	<b>0820 / 1101-04,06,08-12,14-16,18-21,23-25,27-29,31-33,35-50,54 / 1301-08,10-16,18-43,45-66 / 1403,12,16,19,21,22,25,27,40</b>	215	430	125 GTC	295 GTC, 299 GCT
17 <sup>2</sup>	3H	<b>0801,02,04-09,11,16,17,20-22,24,26,28 / 1101-04,06,09-12,14-16,20,21,23-25,27-29,32,33,35-41,43,44,46-51,54 / 1202 / 1301,02,04,05,07,08,11,14-24,26-29,31,32,34-36,38-43,45-55,57,59,61-65 / 1415,16,22,25,27</b>	205, 215, 195	430	125 GTC, 133 GTT	286 GAA, 286 GAA, 298 CTC
18	3G	<b>0301-07,09,11,12-28 / 0820 / 1301-16,18-42,44,46-66 / 1402,03,05,06,09,12-14,17-21,23(01),24,27,29,30,33,36,37,40-45,47,48</b>	180	430	125 GTC	260 CGG, 260 CAG
19	3F	<b>1113,17,52 / 1401,04,05,07,08,11,14,18,23,26,28,31,32,34-36,38,39,42-45</b>	210, 205	<b>800</b>	125 GTC, 133 GTT	296 TCC
20	3E	<b>1310 / 1402,06,09,13,17,19-21,29,30,33,41,46-48</b>	150, 145	430	189 CAG, 189 CAG	298 CTT, 296 TCT
21	3D	<b>0820 / 1123,25,45 / 1313,18,47,55 / 1403,12,27,40</b> <b>0809,21 / 1415</b>	225 150	430	125 GTC 197 GTT	307 CAG
22	3C	<b>DRB3*0101-11 / 0201-20 / 0301-03</b>	230	430	116 GCT	305 GGC, 305 GGC
23 <sup>2</sup>	3B	<b>DRB4*0101-06</b>	200	430	170 GAT	331 GTT
24	3A	<b>DRB5*0101-13 / 0202-05</b>	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 mixes<sup>1</sup> Nukleotidposition und Codon der 3' Primerenden / nucleotide position and codon of primers 3' ends<sup>2</sup> **Mix # 4, 17, 23:** gelegentlich Primerdimerbande (< spez. Bande) / occasionally primer dimer band (< specific band)



Interpretation Table 1

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	
	1H	1G	1F	1E	1D	1C	1B	1A	2H	2G	2F	2E	2D	2C	2B	2A	3H	3G	3F	3E	3D	3C	3B	3A	
Size of PCR Product [bp]	430	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	
<b>DRB Allele Specificity</b>																								<b>Ser. Type</b>	
Negative Control	1																								-
DRB1*0101,02,04-12		2																							DR1
DRB1*0103			3																						DR103
DRB1*1501-09,11-16				4																					DR15(2)
DRB1*1510																									-
DRB1*1601-08					5																				DR16(2)
DRB1*0301(c),04-06,09,12-16, 18-20,22,23,25,26,28						6	7s											18							DR17(3)
DRB1*0302,03						6		8										18							DR18(3)
DRB1*0307,21						6												18							DR3
DRB1*0308						6	7s							14											-
DRB1*0310						6	7sl																		DR17(3)
DRB1*0311							7s											18							DR17(3)
DRB1*0317,24 / 1309,44 / 1437																		18							-
DRB1*0327 / 1424								8										18							-
DRB1*0401-14,16-53									9																DR4
DRB1*0415									9					14											DR4
DRB1*0701-09										10															DR7
DRB1*0801,02,04-08,11,16,17,22,26-28											11							17							DR8
DRB1*0803,10,12-15,18,19,23,30											11														DR8
DRB1*0809,21 / 1415											11							17			21s				DR8
DRB1*0825																									-
DRB1*0901-04												12													DR9
DRB1*1001													13												DR10
DRB1*1101-04,06,09-12,14-16,20,21,24,27- 29,32,33,35-41,43,44,46-50,54															14		16	17							DR11(5)
DRB1*1105,22,26,30,34,53															14										DR11(5)
DRB1*1107						6									14										DR11(5)
DRB1*1108,18,19,31,42															14		16								DR11(5)
DRB1*1113,17															14				19						DR11(5)
DRB1*1123,25															14		16	17				21L			DR11(5)
DRB1*1145															14		16					21L			-
DRB1*1151															14		17								-
DRB1*1201,03-12																15									DR12(5)
DRB1*1202																15		17							DR12(5)
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																	16	17	18						DR13(6)
DRB1*1303,06,12,25,30,33,37,56,58,60,66																	16		18						DR13(6)
DRB1*1310 / 1421																	16		18		20				DR13(6)
DRB1*1313																	16		18			21L			DR13(6)
DRB1*1315,19,26,53,57								8									16	17	18						DR13(6)
DRB1*1317 / 0824																		17							DR13(6) / -
DRB1*1318,47,55 / 0820																	16	17	18			21L			DR13(6) / -
DRB1*1327,41							7s										16	17	18						DR13(6)
DRB1*1343,45 / 1416,22,25							7L										16	17							- / DR14(6)
DRB1*1401,07,26,32,35,38,39							7L													19					DR14(6)
DRB1*1402,06,13,20,29,41,47,48								8										18			20				DR14(6)
DRB1*1403,12,40								8									16		18			21L			DR1403, DR14(6)
DRB1*1404,08,11,23(02),28,31,34 / 1152																			19						DR1404, DR14(6)
DRB1*1405,14,23(01),36,42-45																		18	19						DR14(6)
DRB1*1409,17,30,33																		18			20				DR6
DRB1*1410							7L																		DR14(6)
DRB1*1418								8										18	19						DR6
DRB1*1419								8									16		18		20				DR14(6)
DRB1*1427								8									16	17	18			21L			DR14(6)
DRB1*1446																					20				-
DRB3*0101-11 / 0201-17,19,20 / 0301-03																							22		DR52
DRB3*0218																	14					22			-
DRB4*0101-06																							23		DR53
DRB4*0107,0201N,0301N																									-
DRB5*0101-13 / 0202-05																								24	DR51
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	
	1H	1G	1F	1E	1D	1C	1B	1A	2H	2G	2F	2E	2D	2C	2B	2A	3H	3G	3F	3E	3D	3C	3B	3A	

Multiplex Mix !  
Multiplex Mix !

(w)  
7 s L  
21 s L

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

SSP HLA-DRB low resolution

## Frequency Table



## Frequent alleles:

Allele Specificity	Freq <sup>1</sup>	Ser. Type
<b>DRB1*010101</b>	c*	DR1
DRB1*010201	c*	DR1
DRB1*0103	c*	DR103
DRB1*0106	c*	-
<b>DRB1*030101</b>	c*	DR17(3)
DRB1*030201	c*	DR18(3)
DRB1*0303	b	DR18(3)
DRB1*0304	c*	DR17(3)
DRB1*030501	c*	DR17(3)
<b>DRB1*040101</b>	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	-
<b>DRB1*070101</b>	c*	DR7
<b>DRB1*080101</b>	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
<b>DRB1*090102</b>	c*	DR9
<b>DRB1*100101</b>	c*	DR10

Allele Specificity	Freq <sup>1</sup>	Ser. Type
<b>DRB1*110101</b>	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*	-
<b>DRB1*120101</b>	c*	DR12(5)
DRB1*120201	c*	DR12(5)
DRB1*120302	o,ie	DR12(5)
<b>DRB1*130101</b>	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)
<b>DRB1*140101</b>	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	-
<b>DRB1*150101</b>	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 <sup>1</sup>	Ser. Type
<b>DRB1*160101</b>	c*	DR16(2)
DRB1*160201	c*	DR16(2)
DRB1*1603	c*	DR2
DRB1*1604	ai	DR16(2)
DRB1*160501	c*	DR2
<b>DRB3*010101</b>	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*	-
<b>DRB4*010101</b>	c*	DR53
DRB4*0102	c*	DR53
DRB4*01030101	c*	DR53
DRB4*010302	c*	DR53
DRB4*0105	c*	DR53
DRB4*0201N	c*	Null
<b>DRB5*010101</b>	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*	-

<sup>1</sup> allele frequency min. 0,001 (Ref.: [www.allelefrequencies.net](http://www.allelefrequencies.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