

101.115-24/03 – including *Taq* polymerase
101.115-24u/03u – without *Taq* polymerase

Visit <https://labproducts.caredx.com> for
“Instructions for Use” (IFU)

Lot No.: **1L6**

Lot-specific information

Olerup SSP® DRB1*11

Product number:	101.115-24/03 – including <i>Taq</i> pol. 101.115-24u/03u – without <i>Taq</i> pol.
Lot number:	1L6
Expiry date:	2024-07-01
Number of tests:	24 tests – Product No. 101.115-24/24u 3 tests – Product No. 101.115-03/03u
Number of wells per test:	47+1
Storage - pre-aliquoted primers:	dark, between -15°C and -25°C
- PCR Master Mix:	between -15°C and -25°C
- Adhesive PCR seals	RT

This Product Description is only valid for Lot No. 1L6.

Complete product documentation consists of generic Instructions for Use (IFU), lot specific Product Insert, Worksheet and Certificate.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP® DRB1*11 LOT (8H4)

- The product documentation has been updated for new alleles of IMGT 3.39.0.
- The kit resolution focuses on common and well documented (CWD) alleles¹.

¹As described in section Uniquely Identified Alleles.

The DRB1*11 primer set, specificity and interpretation tables have been updated for the DRB1 alleles described since the previous *Olerup SSP®* DRB1*11 lot was made (**Lot No. 8H4**).

¹S. J. Mack, P. Cano, J. A. Hollenbach et al.
Common and well-documented HLA alleles: 2012 update to
the CWD catalogue. Tissue Antigens, 2013, 81, 194–203

Changes in Revision R01 compared to R00:

1. This lot of the DRB1*11 kit cannot distinguish the DRB1*11:02,11:04 from the DRB1*11:03, 11:18 alleles. A footnote has been added in the section “Uniquely identified alleles”.



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MA123 v02 SSP PI Template
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The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
15	Removed	-	Redundant 5'-primer removed.
30	Exchanged	-	5'-primer exchanged in order to reduce primer oligomer formation.



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Well **48** contains Negative Control primer pairs, that will amplify the majority of the Olerup SSP[®] HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.
The PCR product generated by the positive control primer pair is 200 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer¹	164	340	440	45	45	43	36
	5'-CAC3'	5'-Agg3'	5'-TTA3'	5'-Tgg3'	5'-Tgg3'	5'-Tgg3'	5'-TAC3'
							36
							5'-TAT3'
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC3'	5'-AAA3'	5'-TTg3'	5'-CTC3'	5'-ggC3'	5'-CTC3'	5'-ACA3'
							48
							5'-gCA3'
							48
							5'-gCC3'
							52
							5'-TgT3'
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

¹The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

²The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.



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Lot-specific information

PRODUCT DESCRIPTION

DRB1*11 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1*11:01 to DRB1*11:268 alleles.

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	NC

The 48 well cut PCR plate is marked with ‘DRB1*11’, in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘1L6’.

Wells 1 to 47 – DRB1*11 high resolution primers.

Well 48 – Negative Control (NC).

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays and should be disregarded. The PCR plates are heat-sealed with a PCR-compatible foil.

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

INTERPRETATION

Due to the sharing of sequence motifs between DRB1 alleles non-DRB1*11 alleles will be amplified by some primer mixes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the DRB1*11 alleles, i.e. **DRB1*11:01 to DRB1*11:268**, recognized by the HLA Nomenclature Committee in January 2020^{1,2} will be amplified by the primers in the DRB1*11 subtyping kit^{3,4}.

The DRB1*11 kit enables separation of the confirmed DRB1*11 alleles as listed in the IMGT/HLA database 3.29. An HLA allele is listed as confirmed by IMGT/HLA if it has been sequenced by more than a single laboratory or from multiple sources. Current allele confirmation status for DRB1*11 alleles is listed below.



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The DRB1*11 kit also enables identification of many null and alternatively expressed alleles.

The following DRB1*11 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix
DRB1*11:24:01-11:24:02, 11:91	16
DRB1*11:61, 11:90	12
DRB1*11:97, 11:169N	34
DRB1*11:99, 11:128, 11:175	36

¹DRB1 alleles listed on the IMGT/HLA web page 2020-January-20, release 3.39.0, www.ebi.ac.uk/imgt/hla.

²Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

³The following alleles cannot be separated by this lot of DRB1*11 primer set. These alleles can be distinguished by the DR low resolution and/or the DRB1*08 kits.

Alleles

DRB1*11:67, DRB1*08:75
DRB1*11:193:01-11:193:02, DRB1*08:41
DRB1*11:209, DRB1*08:31

⁴This lot of the DRB1*11 kit cannot distinguish the DRB1*11:02,11:04 from the DRB1*11:03, 11:18 alleles.



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Lot-specific information

ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
DRB1*11:01:01:01	Confirmed	DRB1*11:04:12	Unconfirmed	DRB1*11:33	Confirmed	DRB1*11:74:02	Unconfirmed
DRB1*11:01:01:02	Unconfirmed	DRB1*11:04:13	Unconfirmed	DRB1*11:34	Confirmed	DRB1*11:75	Confirmed
DRB1*11:01:01:03	Unconfirmed	DRB1*11:04:14	Unconfirmed	DRB1*11:35	Confirmed	DRB1*11:76	Confirmed
DRB1*11:01:01:04	Unconfirmed	DRB1*11:04:15	Unconfirmed	DRB1*11:36	Confirmed	DRB1*11:77	Unconfirmed
DRB1*11:01:02	Confirmed	DRB1*11:05	Confirmed	DRB1*11:37:01	Confirmed	DRB1*11:78	Confirmed
DRB1*11:01:03	Confirmed	DRB1*11:06:01	Confirmed	DRB1*11:37:02	Confirmed	DRB1*11:79	Unconfirmed
DRB1*11:01:04	Unconfirmed	DRB1*11:06:02	Confirmed	DRB1*11:38	Unconfirmed	DRB1*11:80	Unconfirmed
DRB1*11:01:05	Confirmed	DRB1*11:06:03	Confirmed	DRB1*11:39	Confirmed	DRB1*11:81	Confirmed
DRB1*11:01:06	Unconfirmed	DRB1*11:07:01	Confirmed	DRB1*11:40	Unconfirmed	DRB1*11:82	Unconfirmed
DRB1*11:01:07	Confirmed	DRB1*11:07:02	Unconfirmed	DRB1*11:41	Confirmed	DRB1*11:83	Confirmed
DRB1*11:01:08	Unconfirmed	DRB1*11:08:01	Confirmed	DRB1*11:42:01	Confirmed	DRB1*11:84:01	Confirmed
DRB1*11:01:09	Confirmed	DRB1*11:08:02	Confirmed	DRB1*11:42:02	Confirmed	DRB1*11:84:02	Confirmed
DRB1*11:01:10	Confirmed	DRB1*11:08:03	Confirmed	DRB1*11:43	Confirmed	DRB1*11:84:03	Unconfirmed
DRB1*11:01:11	Confirmed	DRB1*11:09	Confirmed	DRB1*11:44	Unconfirmed	DRB1*11:85	Unconfirmed
DRB1*11:01:12	Confirmed	DRB1*11:10:01	Confirmed	DRB1*11:45	Confirmed	DRB1*11:86	Unconfirmed
DRB1*11:01:13	Confirmed	DRB1*11:10:02	Confirmed	DRB1*11:46:01	Confirmed	DRB1*11:87	Confirmed
DRB1*11:01:14	Unconfirmed	DRB1*11:11:01	Confirmed	DRB1*11:46:02	Unconfirmed	DRB1*11:88	Confirmed
DRB1*11:01:15	Confirmed	DRB1*11:11:03	Unconfirmed	DRB1*11:47	Confirmed	DRB1*11:89	Unconfirmed
DRB1*11:01:16	Confirmed	DRB1*11:12:01	Confirmed	DRB1*11:48	Confirmed	DRB1*11:90	Unconfirmed
DRB1*11:01:17	Unconfirmed	DRB1*11:12:02	Unconfirmed	DRB1*11:49:01	Confirmed	DRB1*11:91	Unconfirmed
DRB1*11:01:18	Confirmed	DRB1*11:12:03	Unconfirmed	DRB1*11:49:02	Unconfirmed	DRB1*11:92	Unconfirmed
DRB1*11:01:19	Unconfirmed	DRB1*11:13:01	Confirmed	DRB1*11:50	Unconfirmed	DRB1*11:93	Confirmed
DRB1*11:01:20	Unconfirmed	DRB1*11:13:02	Confirmed	DRB1*11:51	Confirmed	DRB1*11:94	Confirmed
DRB1*11:01:21	Unconfirmed	DRB1*11:14:01	Confirmed	DRB1*11:52	Confirmed	DRB1*11:95	Unconfirmed
DRB1*11:01:22	Unconfirmed	DRB1*11:14:02	Confirmed	DRB1*11:53	Unconfirmed	DRB1*11:96	Confirmed
DRB1*11:01:23	Unconfirmed	DRB1*11:15	Confirmed	DRB1*11:54:01	Unconfirmed	DRB1*11:97	Unconfirmed
DRB1*11:01:24	Unconfirmed	DRB1*11:16	Confirmed	DRB1*11:54:02	Unconfirmed	DRB1*11:98	Confirmed
DRB1*11:01:25	Unconfirmed	DRB1*11:17	Confirmed	DRB1*11:55	Unconfirmed	DRB1*11:99	Confirmed
DRB1*11:01:26	Unconfirmed	DRB1*11:18	Confirmed	DRB1*11:56	Unconfirmed	DRB1*11:100	Unconfirmed
DRB1*11:01:27	Confirmed	DRB1*11:19:01	Confirmed	DRB1*11:57	Confirmed	DRB1*11:101:01	Confirmed
DRB1*11:01:28	Unconfirmed	DRB1*11:19:02	Unconfirmed	DRB1*11:58:01	Confirmed	DRB1*11:101:02	Unconfirmed
DRB1*11:01:29	Unconfirmed	DRB1*11:19:03	Unconfirmed	DRB1*11:58:02	Confirmed	DRB1*11:102:01	Confirmed
DRB1*11:02:01	Confirmed	DRB1*11:20	Confirmed	DRB1*11:59	Unconfirmed	DRB1*11:102:02	Confirmed
DRB1*11:02:02	Confirmed	DRB1*11:21	Confirmed	DRB1*11:60	Unconfirmed	DRB1*11:103:01	Confirmed
DRB1*11:02:03	Unconfirmed	DRB1*11:22	Unconfirmed	DRB1*11:61	Unconfirmed	DRB1*11:103:02	Unconfirmed
DRB1*11:02:04	Unconfirmed	DRB1*11:23:01	Confirmed	DRB1*11:62:01	Unconfirmed	DRB1*11:104	Confirmed
DRB1*11:02:05	Unconfirmed	DRB1*11:23:02	Confirmed	DRB1*11:62:02	Unconfirmed	DRB1*11:105	Confirmed
DRB1*11:03:01	Confirmed	DRB1*11:24	Confirmed	DRB1*11:63:01	Unconfirmed	DRB1*11:106	Confirmed
DRB1*11:03:02	Unconfirmed	DRB1*11:25	Confirmed	DRB1*11:63:02	Unconfirmed	DRB1*11:107	Unconfirmed
DRB1*11:04:01	Confirmed	DRB1*11:26	Unconfirmed	DRB1*11:64	Unconfirmed	DRB1*11:108	Confirmed
DRB1*11:04:02	Confirmed	DRB1*11:27:01	Confirmed	DRB1*11:65:01	Confirmed	DRB1*11:109	Unconfirmed
DRB1*11:04:03	Unconfirmed	DRB1*11:27:02	Confirmed	DRB1*11:65:02	Unconfirmed	DRB1*11:110	Unconfirmed
DRB1*11:04:04	Unconfirmed	DRB1*11:27:03	Confirmed	DRB1*11:66	Confirmed	DRB1*11:111	Confirmed
DRB1*11:04:05	Confirmed	DRB1*11:28:01	Confirmed	DRB1*11:67	Unconfirmed	DRB1*11:112	Unconfirmed
DRB1*11:04:06	Unconfirmed	DRB1*11:28:02	Confirmed	DRB1*11:68	Unconfirmed	DRB1*11:113	Confirmed
DRB1*11:04:07	Unconfirmed	DRB1*11:29:01	Confirmed	DRB1*11:69	Confirmed	DRB1*11:114	Unconfirmed
DRB1*11:04:08	Unconfirmed	DRB1*11:29:02	Confirmed	DRB1*11:70	Unconfirmed	DRB1*11:115	Unconfirmed
DRB1*11:04:09	Unconfirmed	DRB1*11:30	Unconfirmed	DRB1*11:72	Confirmed	DRB1*11:116	Confirmed
DRB1*11:04:10	Unconfirmed	DRB1*11:31	Unconfirmed	DRB1*11:73	Unconfirmed	DRB1*11:117	Unconfirmed
DRB1*11:04:11	Confirmed	DRB1*11:32	Confirmed	DRB1*11:74:01	Confirmed	DRB1*11:118	Unconfirmed



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Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
DRB1*11:119	Unconfirmed	DRB1*11:148	Unconfirmed	DRB1*11:178	Unconfirmed	DRB1*11:207	Unconfirmed
DRB1*11:120	Confirmed	DRB1*11:149	Unconfirmed	DRB1*11:179	Unconfirmed	DRB1*11:208	Unconfirmed
DRB1*11:121	Unconfirmed	DRB1*11:150	Unconfirmed	DRB1*11:180	Unconfirmed	DRB1*11:209	Unconfirmed
DRB1*11:122	Unconfirmed	DRB1*11:151	Unconfirmed	DRB1*11:181	Unconfirmed	DRB1*11:210	Unconfirmed
DRB1*11:123	Unconfirmed	DRB1*11:152	Unconfirmed	DRB1*11:182	Unconfirmed	DRB1*11:211	Unconfirmed
DRB1*11:124	Unconfirmed	DRB1*11:153	Unconfirmed	DRB1*11:183	Unconfirmed	DRB1*11:212	Unconfirmed
DRB1*11:125	Confirmed	DRB1*11:154	Confirmed	DRB1*11:184	Unconfirmed	DRB1*11:213	Confirmed
DRB1*11:126	Unconfirmed	DRB1*11:155	Unconfirmed	DRB1*11:185	Unconfirmed	DRB1*11:214	Confirmed
DRB1*11:127	Unconfirmed	DRB1*11:156	Unconfirmed	DRB1*11:186	Unconfirmed	DRB1*11:215	Unconfirmed
DRB1*11:128	Confirmed	DRB1*11:157	Unconfirmed	DRB1*11:187	Confirmed	DRB1*11:216	Unconfirmed
DRB1*11:129	Unconfirmed	DRB1*11:158	Unconfirmed	DRB1*11:188	Unconfirmed	DRB1*11:217N	Unconfirmed
DRB1*11:130	Unconfirmed	DRB1*11:159	Unconfirmed	DRB1*11:189	Confirmed		
DRB1*11:131	Unconfirmed	DRB1*11:160	Confirmed	DRB1*11:190	Unconfirmed		
DRB1*11:132	Unconfirmed	DRB1*11:161	Unconfirmed	DRB1*11:191	Unconfirmed		
DRB1*11:133	Unconfirmed	DRB1*11:162	Unconfirmed	DRB1*11:192	Unconfirmed		
DRB1*11:134	Unconfirmed	DRB1*11:163	Unconfirmed	DRB1*11:193:01	Confirmed		
DRB1*11:135	Unconfirmed	DRB1*11:164	Unconfirmed	DRB1*11:193:02	Unconfirmed		
DRB1*11:136	Unconfirmed	DRB1*11:165	Confirmed	DRB1*11:194	Unconfirmed		
DRB1*11:137	Confirmed	DRB1*11:166	Unconfirmed	DRB1*11:195	Unconfirmed		
DRB1*11:138	Unconfirmed	DRB1*11:167	Unconfirmed	DRB1*11:196	Confirmed		
DRB1*11:139	Unconfirmed	DRB1*11:168	Unconfirmed	DRB1*11:197	Confirmed		
DRB1*11:140	Unconfirmed	DRB1*11:169N	Unconfirmed	DRB1*11:198	Confirmed		
DRB1*11:141	Unconfirmed	DRB1*11:170	Unconfirmed	DRB1*11:199	Unconfirmed		
DRB1*11:142	Confirmed	DRB1*11:171	Unconfirmed	DRB1*11:200	Unconfirmed		
DRB1*11:143	Unconfirmed	DRB1*11:172	Unconfirmed	DRB1*11:201	Unconfirmed		
DRB1*11:144	Unconfirmed	DRB1*11:173	Unconfirmed	DRB1*11:202	Unconfirmed		
DRB1*11:145	Unconfirmed	DRB1*11:174	Unconfirmed	DRB1*11:203	Unconfirmed		
DRB1*11:146	Unconfirmed	DRB1*11:175	Unconfirmed	DRB1*11:204	Unconfirmed		
DRB1*11:147:01	Unconfirmed	DRB1*11:176	Unconfirmed	DRB1*11:205	Unconfirmed		
DRB1*11:147:02	Confirmed	DRB1*11:177	Unconfirmed	DRB1*11:206	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2017-August-10, release 3.29.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in DRB1*11 homo- and heterozygotes is available upon request.



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SPECIFICITY TABLE

DRB1*11 SSP subtyping

Specificities and sizes of the PCR products of the 47+1 primer mixes used for
DRB1*11 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DRB1*11 alleles ³	Other amplified DRB alleles
1	175 bp	515 bp	*11:01:01:01-11:04:20, 11:06:01-11:11:01, 11:11:03- 11:21, 11:23:01-11:29:02, 11:31-11:66:02, 11:68-11:70, 11:72-11:103:02, 11:105- 11:192, 11:194-11:208, 11:210- 11:228, 11:230-11:260, 11:262- 11:263, 11:265-11:268	*03:08, 03:65, 03:140
2	175 bp	430 bp	*11:05, 11:67, 11:193:01- 11:193:02, 11:209, 11:229	*08:31, 08:41, 08:63, 08:75, 12:04, 12:49, 14:11, 14:148
3 ⁴	70 bp	430 bp	*11:01:01:01-11:01:39, 11:03:01-11:06:03, 11:09- 11:11:01, 11:11:03-11:12:03, 11:15, 11:22-11:25, 11:27:01- 11:30, 11:32-11:33, 11:35, 11:37:01-11:41, 11:43-11:44, 11:46:01-11:47, 11:49:01- 11:51, 11:54:01-11:56, 11:58:01-11:63:02, 11:66:01- 11:67, 11:72, 11:74:01-11:78, 11:80-11:81, 11:83-11:85, 11:87-11:88, 11:90-11:97, 11:99-11:102:02, 11:104, 11:106, 11:108-11:109, 11:111- 11:117:02, 11:120-11:123, 11:126, 11:128-11:129, 11:133- 11:135, 11:137-11:142, 11:144- 11:152, 11:154-11:155, 11:157- 11:158, 11:160-11:166, 11:168- 11:170, 11:172, 11:174-11:183, 11:186-11:190, 11:193:01- 11:201, 11:203-11:241, 11:243- 11:247, 11:249-11:250N, 11:252-11:255, 11:257-11:263, 11:265	*04:15, 04:265, 08:31, 08:41, 08:75, 12:49, 16:27, DRB5*01:13, DRB5*01:41
4 ^{5,7}	200 bp	430 bp	*11:02:01:01-11:02:05, 11:14:01-11:14:02, 11:16, 11:18-11:21, 11:31, 11:45, 11:48, 11:65:01-11:65:02, 11:70, 11:73, 11:86, 11:98, 11:118-11:119, 11:124:01- 11:124:02, 11:127, 11:132, 11:171, 11:184, 11:191, 11:242, 11:251, 11:256	*03:125, 13:01:01:01-13:01:06, 13:01:08-13:02:09, 13:02:11-13:04, 13:06, 13:08, 13:10, 13:12:01- 13:13, 13:15-13:16, 13:19, 13:22:01-13:23:02, 13:27:01- 13:28:02, 13:30-13:41, 13:45, 13:48, 13:51-13:53, 13:57-13:59, 13:61:01-13:61:02, 13:64-13:66:02, 13:68-13:70, 13:72-13:73,



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10^{4,6}	85 bp	430 bp	*11:07:01-11:07:02, 11:23:01-11:23:02, 11:25, 11:45, 11:55, 11:64, 11:67, 11:103:01-11:103:02, 11:105, 11:107, 11:119, 11:125, 11:173	*03:08, 03:65, 03:140, 08:63, 08:75, DRB3*01:42
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11	155 bp 200 bp	515 bp	*11:75 *11:08:01-11:08:03, 11:36, 11:42:01-11:42:02, 11:57, 11:64, 11:68, 11:130	*13:20, 13:25, 13:29, 13:43, 13:56, 13:60, 13:71, 13:78, 13:88, 13:119, 13:134, 13:149, 13:180, 13:224, 13:231, 13:235, 14:03:01-14:03:02, 14:12:01-14:12:02, 14:40, 14:69, 14:74, 14:77, 14:84-14:85, 14:98, 14:102, 14:115-14:116, 14:135, 14:144, 14:156, 14:173-14:174, 14:181, 14:218
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16⁴	110 bp	430 bp	*11:15, 11:24:01-11:24:02, 11:44, 11:49:01-11:50, 11:76, 11:85, 11:114, 11:127, 11:183, 11:196, 11:249	*03:26, 03:33, 03:43-03:44, 03:71:01-03:71:02, 13:34, 13:62, 13:64, 13:68, 13:106, 13:136, 13:151, 13:174, 13:204, 13:216, 13:221, 13:250, 13:266, 14:41, 14:77, 14:97, 14:110, 14:218, DRB3*01:14
	255 bp		*11:91	
17^{4,9}	90 bp	430 bp	*11:17, 11:23:01-11:23:02, 11:25, 11:45, 11:52-11:55, 11:64, 11:67, 11:89, 11:119, 11:150, 11:159, 11:202, 11:267	*04:154, 04:170, 04:291, 08:63, 08:75, 14:11
18⁴	95 bp	430 bp	*11:07:01-11:07:02, 11:27:01-11:27:03, 11:84:01-11:84:03, 11:103:01-11:103:02, 11:107, 11:124:01-11:125, 11:136, 11:138, 11:173	*03:08, 03:65, 03:140, DRB3*01:42, DRB3*02:18
19⁸	180 bp	430 bp	*11:31, 11:52, 11:96, 11:148	*03:10, 13:43, 13:45, 13:159, 13:179, 13:191, 13:217, 14:01:01-14:01:05, 14:07:01-14:08, 14:16,



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	260 bp		*11:86
	115 bp		*13:16
20 ⁴		515 bp	*11:10:01-11:10:02, 11:12:01-11:13:02, 11:17, 11:29:01-11:29:02, 11:44, 11:47, 11:49:01-11:50, 11:52, 11:63:01-11:63:02, 11:85, 11:127, 11:149, 11:165:01-11:165:02, 11:170, 11:179, 11:189-11:191, 11:200, 11:202, 11:218, 11:249, 11:264
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	175 bp		*11:22	*04:15, 04:61, 04:138, 04:145, 04:154, 04:170, 04:265, 04:291
22⁴	115 bp	430 bp	*11:15	*03:71:02, 13:62, 13:151
	180 bp		*11:33, 11:35, 11:65:01- 11:65:02, 11:130	
	215 bp		*11:69, 11:82	*13:09, 13:129, 13:192, 14:24, 14:37
	245 bp		*11:81	*03:136 ^w
23⁴	120 bp	430 bp	*11:38	
	190 bp		*11:217N	
24	155 bp	430 bp	*11:39, 11:43, 11:50, 11:115, 11:145, 11:151, 11:168, 11:171, 11:174	*03:17, 03:37, 03:80, 03:140, 13:118, 13:131, 13:135, 13:150, 13:262, 14:59, 14:86, 14:96, 14:153-14:154
	250 bp		*11:06:01-11:06:03, 11:21, 11:47, 11:57, 11:81, 11:129, 11:174	*03:20, 03:136 ^w , 03:145, 13:58, 13:81, 13:163, 13:242:01- 13:242:02, 13:284, 14:29, 14:99
25⁴	110 bp	430 bp	*11:01:12, 11:02:05, 11:04:04, 11:09-11:10:02, 11:12:02, 11:13:01-11:13:02, 11:16- 11:17, 11:20, 11:22, 11:28:01- 11:28:03, 11:29:02, 11:40, 11:46:01, 11:52, 11:58:01- 11:59, 11:62:02, 11:63:02, 11:83, 11:87, 11:113, 11:115, 11:118, 11:122, 11:149, 11:165:02, 11:182, 11:189- 11:190, 11:202, 11:218	*03:08, 03:65, 03:140, 12:04, 12:49, 14:11, 14:148, 15:99, 15:109, 16:16, 16:27, DRB3*01:42, DRB3*02:18
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	160 bp		*11:78, 11:152	
27⁴	85 bp	430 bp	*11:11:01, 11:11:03, 11:14:01- 11:14:02, 11:20, 11:68, 11:73, 11:93, 11:122, 11:168, 11:184, 11:237	*01:03:01-01:03:04, 01:39N, 01:89, 01:99, 01:102, 04:14, 04:106, 04:132, 08:40, 08:92, 13:02:01:01- 13:02:03, 13:02:05-13:02:09, 13:02:11-13:03:06, 13:23:01- 13:23:02, 13:29, 13:31, 13:33:01- 13:34, 13:36-13:39, 13:41, 13:45, 13:63, 13:65-13:67, 13:73-13:74, 13:85, 13:88, 13:90, 13:95- 13:97:02, 13:99, 13:101, 13:103- 13:104, 13:107, 13:115, 13:120, 13:122-13:124, 13:126, 13:128, 13:135, 13:139, 13:143, 13:145, 13:147, 13:151-13:152, 13:155, 13:159, 13:165, 13:167-13:168,



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28⁴	85 bp	430 bp	*11:02:01:01-11:03:04, 11:16, 11:21, 11:36, 11:40-11:41, 11:48, 11:55, 11:59, 11:63:01-11:63:02, 11:65:01-11:65:02, 11:70, 11:76, 11:85, 11:118, 11:124:01-11:124:02, 11:127, 11:132, 11:138-11:139, 11:151, 11:161, 11:171, 11:176, 11:213, 11:229, 11:231, 11:233, 11:241-11:242, 11:251, 11:256, 11:260	*01:42, 01:61, 03:125, 04:02:01-04:02:06, 04:37, 04:124, 04:133-04:134, 04:138, 04:143, 04:161, 04:204, 04:210, 04:237-04:238, 04:259, 04:287, 04:299N, 12:73, 13:01:01:01-13:01:06, 13:01:08-13:01:28, 13:04, 13:08, 13:10, 13:15, 13:17, 13:19-13:20, 13:22:01-13:22:02, 13:24, 13:27:01-13:28:02, 13:32, 13:35, 13:40, 13:43, 13:48, 13:51-13:54, 13:57, 13:59, 13:61:01-13:61:02, 13:64, 13:68-13:72, 13:75-13:76, 13:78-13:81, 13:83-13:84, 13:87, 13:89:01, 13:91-13:94:01, 13:98, 13:102, 13:105-13:106, 13:110-13:114, 13:116-13:117, 13:121, 13:125, 13:127, 13:130-13:131, 13:138, 13:141, 13:146, 13:148-13:149, 13:153, 13:160, 13:162, 13:166, 13:173, 13:175-13:177, 13:183, 13:185N-13:187, 13:190-13:191, 13:200N-13:201, 13:204-13:205, 13:213-13:215, 13:217-13:218, 13:221-13:222, 13:226, 13:233-13:234, 13:238, 13:242:01-13:242:02, 13:245, 13:248-13:249N, 13:251-13:252N, 13:254, 13:256, 13:258-13:263, 13:266-13:267, 13:270-13:274, 13:276, 13:278Q, 13:281, 13:283, 13:287, 13:291, 13:294, 13:299, 14:16, 14:57, 15:10
29⁴	100 bp	515 bp	*11:14:01-11:14:02, 11:19:01-11:20, 11:31, 11:45, 11:73, 11:82, 11:184, 11:191	*01:03:01-01:03:04, 01:15, 01:24:01-01:24:02, 01:39N, 01:89, 01:102, 04:14, 04:38, 04:82, 04:86, 04:105:01-04:107, 04:125, 04:185, 04:205, 07:01:01:01-07:01:23, 07:03-07:04, 07:06-07:19, 07:21-07:23, 07:25-07:30, 07:32-07:42, 07:44-07:54, 07:56-07:64, 07:66-07:67, 07:69-07:112, 08:03:02:01-08:03:11, 08:14-08:15, 08:18-08:19, 08:23, 08:25, 08:27, 08:29-



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			08:30:03, 08:32-08:38, 08:40, 08:45:01-08:47, 08:49, 08:51, 08:53, 08:56, 08:58, 08:60N-08:63, 08:66, 08:68:01-08:69, 08:71, 08:74, 08:91-08:92, 08:95, 08:97, 10:10, 12:22, 12:39, 13:02:01:01- 13:02:03, 13:02:05-13:03:09, 13:12:01-13:13, 13:23:01-13:23:02, 13:30-13:31, 13:33:01-13:34, 13:36-13:39, 13:41, 13:45, 13:65- 13:67, 13:73-13:74, 13:82, 13:85, 13:90, 13:95-13:97:02, 13:99, 13:101, 13:103-13:104, 13:107, 13:115, 13:118, 13:120, 13:122- 13:124, 13:126, 13:128, 13:133, 13:135, 13:139-13:140, 13:143, 13:145, 13:147, 13:151-13:152, 13:154-13:155, 13:157, 13:159, 13:161, 13:165, 13:167-13:168, 13:170-13:172, 13:174, 13:179, 13:182, 13:188, 13:194-13:196, 13:198, 13:202, 13:207-13:212, 13:216, 13:219-13:220, 13:225, 13:227-13:228, 13:236-13:237, 13:239-13:241, 13:243-13:244, 13:250, 13:253, 13:255N, 13:257, 13:264-13:265, 13:268N-13:269, 13:275, 13:280, 13:282, 13:285, 13:288-13:289N, 13:292-13:293, 13:295N-13:298N, 14:24, 14:63, 14:67, 15:02:01:01-15:02:19, 15:11:01-15:11:02, 15:14, 15:19, 15:26, 15:29-15:30, 15:38-15:39, 15:44, 15:47, 15:58, 15:60, 15:68, 15:78, 15:80N, 15:99, 15:101, 15:103-15:105:02, 15:115N, 15:118-15:119, 15:122, 15:126, 15:131, 15:140, 15:149, 15:152, 15:154N-15:156, 15:159N, 15:161, 15:167, 15:179, 16:05:01-16:05:02, 16:07, DRB3*01:31, DRB3*02:11, DRB3*02:131, DRB5*01:07, DRB5*01:11, DRB5*01:46, DRB5*01:69, DRB5*02:03	
	215 bp		*11:154	
30 ⁴	200 bp	515 bp	*11:01:01:01-11:01:27, 11:01:28 ^w , 11:01:29-11:01:39, 11:03:01-11:04:20, 11:06:01- 11:06:03, 11:09-11:11:01, 11:11:03-11:12:03, 11:15, 11:23:01-11:25, 11:27:01- 11:29:02, 11:32-11:33, 11:35, 11:37:01-11:41, 11:43-11:44, 11:46:01-11:47, 11:49:01- 11:51, 11:54:01-11:56,	*08:20, 13:05:01-13:05:03, 13:07:01-13:07:02, 13:11:01- 13:11:02, 13:14:01-13:14:03, 13:18, 13:21:01-13:21:02, 13:24, 13:26:01-13:26:02, 13:42:01- 13:42:02, 13:46-13:47, 13:49- 13:50:03, 13:54-13:55, 13:62- 13:63, 13:75, 13:100, 13:108, 13:111, 13:132, 13:136, 13:144, 13:150, 13:158, 13:164, 13:169,



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			11:58:01-11:63:02, 11:66:01-11:66:02, 11:72, 11:74:01-11:78, 11:80-11:81, 11:83-11:85, 11:87-11:88, 11:90-11:97, 11:99-11:102:02, 11:106, 11:108-11:117:02, 11:120-11:123, 11:126, 11:128-11:129, 11:133-11:135, 11:137-11:142, 11:144-11:152, 11:154-11:158, 11:160-11:170, 11:172, 11:174-11:183, 11:185-11:190, 11:192, 11:194-11:201, 11:203-11:208, 11:210-11:228, 11:230-11:241, 11:243-11:247, 11:249-11:250N, 11:252-11:255, 11:257-11:260, 11:262-11:265	13:189, 13:197, 13:199, 13:203, 13:229-13:230, 13:232, 13:246-13:247, 13:277, 13:284, 13:286, 14:22, 14:25:01-14:25:02, 14:27:01-14:27:02, 14:53, 14:105, 14:128
31 ⁴	85 bp	515 bp	*11:04:01-11:04:20, 11:06:01-11:06:03, 11:18, 11:25, 11:35, 11:38, 11:42:01-11:44, 11:46:01-11:47, 11:50, 11:54:01-11:54:02, 11:56-11:58:02, 11:60, 11:67, 11:77-11:78, 11:83-11:84:03, 11:88, 11:92, 11:102:01-11:102:02, 11:104, 11:113, 11:115-11:116, 11:119, 11:123, 11:129-11:130, 11:135, 11:137, 11:146, 11:148, 11:156, 11:160, 11:163, 11:165:01-11:165:02, 11:174, 11:179-11:182, 11:187, 11:189-11:190, 11:194, 11:196, 11:198, 11:200-11:201, 11:203, 11:206-11:207, 11:209-11:211, 11:214, 11:216-11:218, 11:220-11:221, 11:223-11:224, 11:227, 11:230, 11:244, 11:246N, 11:249, 11:253, 11:255, 11:258, 11:261, 11:264	*01:23, 01:111, 04:12, 04:15, 04:18, 04:25, 04:36, 04:53:01-04:53:02, 04:58, 04:99, 04:136, 08:04:01, 08:04:04-08:04:07, 08:06, 08:10, 08:12, 08:20, 08:22, 08:28, 08:31, 08:54, 08:59, 08:67, 08:70, 08:75, 08:80, 08:83, 08:94, 08:98-08:99, 12:01:01:01-12:15, 12:17-12:21, 12:23-12:38, 12:40-12:65, 12:67-12:72N, 12:74N-12:82, 13:06, 13:11:01-13:11:02, 13:18, 13:42:01-13:42:02, 13:58, 13:77, 13:108, 13:144, 13:150, 13:156, 13:163-13:164, 13:169, 13:181, 13:231, 13:246, 13:284, 14:12:01-14:12:02, 14:15, 14:73-14:74, 14:78, 14:84, 14:105, 14:128, 14:156, 14:173, 15:21, 16:15, 16:23, 16:33-16:34, 16:36, 16:38:01, 16:58, DRB5*01:31, DRB5*01:44, DRB5*02:08, DRB5*02:12, DRB5*02:26N
32 ^{4,8}	75 bp	430 bp	*11:13:01-11:13:02, 11:17, 11:51-11:52, 11:89, 11:159, 11:202, 11:266	*14:11
33	155 bp	430 bp	*11:88, 11:94	*13:177
34 ⁴	80 bp	515 bp	*11:31, 11:96, 11:148	*03:10, 13:43, 13:45, 13:179, 13:217, 14:35, 14:53, 14:72, 14:128, 14:132, 14:138, 14:186, 14:208
	135 bp		*11:169N	
	290 bp		*11:97	
35 ⁴	85 bp	430 bp	*11:98	
	190 bp		*11:217N	
36 ⁴	90 bp	430 bp	*11:102:01-11:102:02, 11:175	*03:49, 14:161
	115 bp		*11:99	
	165 bp		*11:110	
	245 bp		*11:128	



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37	150 bp	430 bp	*11:101:01-11:101:02	
38	150 bp	430 bp	*11:78, 11:106, 11:152	
39⁴	110 bp	430 bp	*11:108, 11:160-11:161, 11:197	
40	180 bp	430 bp	*11:116, 11:120	*03:13:01-03:13:02, 03:38, 03:79, 03:88, 03:167, 13:39, 13:54, 13:77-13:79, 13:100, 13:162-13:163, 13:181, 14:48, 14:64, 14:109, 14:115, 14:177, DRB3*01:14
41⁴	65 bp	515 bp	*11:07:01-11:07:02, 11:13:01-11:13:02, 11:17, 11:26, 11:34, 11:52, 11:79, 11:103:01-11:103:02, 11:105, 11:107, 11:131, 11:136, 11:159, 11:202, 11:267	*01:75, 03:08, 03:140, 04:61, 04:145, 04:154, 04:170, 04:291, 10:23, 14:11, DRB3*02:18
42	135 bp 180 bp	430 bp	*11:72, 11:92, 11:180 *11:104	*01:75, 10:23
43⁴	105 bp 235 bp	430 bp	*11:147:01-11:147:02 *11:112, 11:137	*03:78
44^{4,8}	105 bp 200 bp 270 bp	430 bp	*11:147:01-11:147:02 *11:111 *11:187	
45⁴	100 bp	430 bp	*11:23:01-11:23:02, 11:25, 11:32, 11:45, 11:55, 11:64, 11:67, 11:70, 11:119, 11:197	*08:63, 08:75
46^{4,7}	70 bp 110 bp	430 bp	*11:60, 11:109 *11:198, 11:245	
47⁴	110 bp 210 bp	430 bp	*11:198, 11:245 *11:193:01-11:193:02, 11:209, 11:229	*08:05, 08:18, 08:24:01-08:24:02, 08:29, 08:31, 08:40-08:41, 08:92, 12:01:02, 12:02:04, 12:16:01, 12:49, 12:66, 12:73, 13:17, 13:116, 13:175, 13:214, 14:04:01:01-14:04:07, 14:11, 14:28, 14:31, 14:52, 14:68:01-14:68:02, 14:71, 14:73, 14:120, 14:126:01-14:126:02, 14:138, 14:145, 14:148, 14:152N, 14:175, 14:180, 14:196, 14:201, 14:205-14:206, 14:210Q
48¹¹	-	-	Negative Control	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DRB1*11 SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

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

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

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

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR



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reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

³For several DRB1 alleles 1st and/or 3rd exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances, it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁴HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

In order to have as little co-amplification as possible of non-DRB1*11 alleles by the primer pairs of the DRB1*11 subtyping kit, the DRB1*11 characteristic sequence motif in codon 58, 'Ag', has been used in either the 5'-primer or the 3'-primer in many of the DRB1*11 primer mixes and consequently many of the specific PCR products are shorter than 100 base pairs.

⁵Primer mix 4 may faintly amplify the DRB1*13:29 allele.

⁶Primer mix 10 may faintly amplify the DRB1*11:53 allele.

⁷Primer mixes 4, 12 and 46 have tendencies of giving rise to primer oligomer formation.

⁸Primer mixes 6, 13, 19, 32 and 44 may have tendencies of unspecific amplifications.

⁹Primer mix 17 may give rise to a lower yield of HLA-specific PCR product than the other DRB1*11 primer mixes.

¹⁰Primer mix 12 may amplify the DRB1*11:60 and 11:109 and the DRB1*15:68 alleles.

¹¹Primer mix 48 contains a negative control, which will amplify the majority of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 200 base pairs.

Abbreviations

w: may be weakly amplified.



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PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	175	175	70	200	85	80	125	125	85	85	155	95
									115	120	200	145
											255	185
Length of int. pos. control ¹	515	430	430	430	515	430	430	430	430	430	515	430
5'-primer(s) ²	12(123) 5'-ACA 3'	13(125) 5'-ggg 3'	58(261) 5'-gAg 3'	13(125) 5'-gTC 3'	58(260) 5'-TgA 3'	58(261) 5'-gAg 3'	58(261) 5'-gAg 3'	58(261) 5'-gAg 3'	58(261) 5'-gAg 3'	58(261) 5'-gAg 3'	13(125) 5'-gTC 3'	10(116) 5'-gCT 3'
	13(125) 5'-gTC 3'		58(261) 5'-gAA 3'					58(261) 5'-gAA 3'				24(157) 5'-ggA 3'
												41(208) 5'-TCA 3'
3'-primer(s) ³	58(260) 5'-CCT 3'	58(260) 5'-CCT 3'	67(286) 5'-gAA 3'	67(286) 5'-gAT 3'	71(298) 5'-CCT 3'	71(298) 5'-CTC 3'	86(344) 5'-CAC 3'	86(344) 5'-CCA 3'	73(305) 5'-ggC 3'	73(305) 5'-ggC 3'	51(238) 5'-CgC 3'	58(260) 5'-CCT 3'
	58(260) 5'-CCT 3'		67(286) 5'-gAA 3'	67(286) 5'-gAT 3'	72(303) 5'-gCg 3'	71(298) 5'-CTC 3'			73(305) 5'-ggC 3'	73(305) 5'-ggC 3'	67(286) 5'-gAg 3'	
	58(260) 5'-CCT 3'		67(286) 5'-gAA 3'		72(303) 5'-gCA 3'				83(334) 5'-gTg 3'	74(307) 5'-CAg 3'	85(341) 5'-CAg 3'	
	58(261) 5'-TCT 3'		67(288) 5'-AgA 3'		74(307) 5'-CAg 3'					84(338) 5'-CCT 3'		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec. PCR product	105	145	60	110	90	95	180	115	135	115	120	155
			105	255			225		175	180	190	250
							260			215		
										245		
Length of int. pos. control ¹	515	430	430	430	430	430	430	515	430	430	430	430
5'-primer(s) ²	37(196) 5'-AgA 3'	13(125) 5'-gTC 3'	37(197) 5'-gTT 3'	13(125) 5'-gTC 3'	58(260) 5'-TgA 3'	58(261) 5'-gAg 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	13(125) 5'-ACA 3'	13(125) 5'-gTC 3'	36(193) 5'-AgT 3'	13(125) 5'-gTC 3'
	37(196) 5'-AgA 3'		37(197) 5'-gTT 3'						26(164) 5'-gTA 3'		59(263) 5'-ggg 3'	
			51(239) 5'-gAT 3'									
3'-primer(s) ³	58(261) 5'-TCC 3'	47(227) 5'-ggT 3'	58(260) 5'-CCT 3'	37(196) 5'-gTC 3'	74(307) 5'-CAg 3'	77(317) 5'-AAT 3'	60(265) 5'-gTg 3'	37(197) 5'-Cgg 3'	58(260) 5'-CCT 3'	38(199) 5'-CAA 3'	86(344) 5'-CCA 3'	51(239) 5'-CCC 3'
				38(199) 5'-CAg 3'	74(308) 5'-CCT 3'	77(317) 5'-AgT 3'	74(308) 5'-CCA 3'	37(197) 5'-CgA 3'		59(264) 5'-TAg 3'		81(330) 5'-TTT 3'
				38(199) 5'-CAA 3'			86(344) 5'-CAT 3'	38(200) 5'-gCg 3'		71(299) 5'-gCg 3'		85(341) 5'-CAg 3'
				38(200) 5'-gCg 3'						81(330) 5'-TTT 3'		
				85(340) 5'-AAT 3'								
Well No.	13	14	15	16	17	18	19	20	21	22	23	24



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Length of spec. PCR product	110	120	85	85	100	200	85	75	155	80	85	90
		160			215					135	190	115
										290		165
												245
Length of int. pos. control ¹	430	430	430	430	515	515	515	430	430	515	430	430
5'-primer(s) ²	34(189) 5'-CAg 3'	19(143) 5'-CAg 3'	71(299) 5'-CgA 3'	71(299) 5'-CgA 3'	29(172) 5'-ACg 3'	13(125) 5'-gTC 3'	71(299) 5'-CAg 3'	58(261) 5'-gAg 3'	13(125) 5'-gTC 3'	47(227) 5'-gTT 3'	36(193) 5'-AgT 3'	16(133) 5'-gTC 3'
	37(196) 5'-AgA 3'	32(181) 5'-TCC 3'			67(286) 5'-ACA 3'					98(381) 5'-AAT 3'	71(299) 5'-Cgg 3'	
3'-primer(s) ³	58(260) 5'-CCT 3'	58(260) 5'-CCT 3'	86(344) 5'-CAC 3'	86(344) 5'-CCA 3'	86(344) 5'-CAC 3'	67(286) 5'-gAA 3'	86(344) 5'-CCA 3'	70(296) 5'-TCC 3'	48(230) 5'-CCT 3'	60(265) 5'-gTg 3'	86(344) 5'-CCA 3'	33(184) 5'-gTg 3'
						67(286) 5'-gAA 3'		72(302) 5'-CCT 3'	55(251) 5'-gCT 3'	79(323) 5'-TgC 3'		40(206) 5'-Cgg 3'
						67(286) 5'-gAA 3'				181(630) 5'-CTT 3'		57(256) 5'-ATT 3'
						67(288) 5'-AgA 3'						84(339) 5'-AgC 3'
Well No.	25	26	27	28	29	30	31	32	33	34	35	36

Well No.	37	38	39	40	41	42	43	44	45	46	47
Length of spec. PCR product	150	150	110	180	65	135	105	105	100	70	110
						180	235	200		110	210
								270			
Length of int. pos. control ¹	430	430	430	430	515	430	430	430	430	430	430
5'-primer(s) ²	47(227) 5'-gTT 3'	19(143) 5'-CAg 3'	58(261) 5'-gAg 3'	13(125) 5'-gTC 3'	58(261) 5'-gAg 3'	11(119) 5'-CTT 3'	13(125) 5'-gTC 3'	13(125) 5'-gTC 3'	58(261) 5'-gAg 3'	49(233) 5'-ggA 3'	16(133) 5'-gTT 3'
		23(155) 5'-gCA 3'				26(165) 5'-TTg 3'				117(438) 5'-TgT 3'	117(438) 5'-TgT 3'
3'-primer(s) ³	84(337) 5'-CCg 3'	58(260) 5'-CCT 3'	81(328) 5'-gTA 3'	60(266) 5'-Agg 3'	67(286) 5'-gAg 3'	58(260) 5'-CCT 3'	35(191) 5'-CCC 3'	35(191) 5'-CCC 3'	74(308) 5'-CCA 3'	58(260) 5'-CCT 3'	72(303) 5'-gCC 3'
	84(337) 5'-CCT 3'		81(329) 5'-TgC 3'				77(317) 5'-AgC 3'	66(283) 5'-gTT 3'	81(329) 5'-TgC 3'	140(505) 5'-AgC 3'	140(505) 5'-AgC 3'
			82(332) 5'-AgC 3'					90(356) 5'-CTC 3'			
Well No.	37	38	39	40	41	42	43	44	45	46	47

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.



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For In Vitro Diagnostic Use
MA123 v02 SSP PI Template
Date: July 2022, Rev. No: 01

101.115-24/03 – including *Taq* polymerase
 101.115-24u/03u – without *Taq* polymerase

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Lot No.: **1L6**

Lot-specific information

CELL LINE VALIDATION SHEET																				
DRB1*11 SSP subtyping kit ²																				
					Well															
				Prod. No.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					202019501	202019502	202019503	202019504	202019505	202019506	202019507	202019508	202019509	202019510	202019511	202019512	202019513	202019514	202019515	202019516
	IHWC cell line ¹		DRB1																	
1	9001	SA	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02	*04:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07	*08:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:01	*13:01	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*09:01	*11:01	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
19	9038	BM16	*12:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*13:02		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
22	9056	KOSE	*13:02	*14:01	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
23	9124	IHL	*08:03	*14:14	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
24	9035	JBUSH	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05	*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*04:16	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
31	9019	DUCAF	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03		-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
33	9098	MT14B	*04:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01		+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*04:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03	*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
39	9315	CML	*03:01	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01	*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*13:02		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*08:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*09:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*14:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
45	9239	SHJO	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*15:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04	*12:01	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-
48	9303	TER-ND	*01:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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For *In Vitro* Diagnostic Use
 MA123 v02 SSP PI Template
 Date: July 2022, Rev. No: 01

101.115-24/03 – including *Taq* polymerase
101.115-24u/03u – without *Taq* polymerase

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Lot No.: 1L6

Lot-specific information

[illegible]

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For *In Vitro* Diagnostic Use
MA123 v02 SSP PI Template
Date: July 2022, Rev. No: 01

101.115-24/03 – including *Taq* polymerase
 101.115-24u/03u – without *Taq* polymerase

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Lot No.: **1L6**

Lot-specific information

CELL LINE VALIDATION SHEET																				
DRB1*11 SSP subtyping kit ²																				
					Prod. No.:	Well														
						33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
						202019533	202019534	202019535	202019536	202019537	202019538	202019539	202019540	202019541	202019542	202019543	202019544	202019545	202019546	202019547
	IHCW cell line ¹		DRB1																	
1	9001	SA	*01:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*15:02		*04:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*15:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*16:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*04:07		*08:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*04:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:05			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*08:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*09:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*11:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:01		*13:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*09:01		*11:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*12:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*13:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*14:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*13:02		*14:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*08:03		*14:14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*11:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:05		*10:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*04:16		*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*03:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*13:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*04:04			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*11:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*04:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*04:03		*04:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*13:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*14:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*03:01		*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*07:01		*09:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*13:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*08:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*09:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*14:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*07:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*15:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*11:04		*12:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*01:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.115-24/03 – including *Taq* polymerase
101.115-24u/03u – without *Taq* polymerase

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Lot No.: 1L6

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

No DNAs carrying the alleles to be amplified by primer solutions 12, 16, 21 to 23, 33 to 40 and 42 to 46 were available. The specificities of the primers in primer solutions 12, 16, 21, 22, 33, 34, 40, 42, 45 and 46 were tested by separately adding one or more additional 5'-primers, and one or more additional 3'-primers respectively.

In primer solutions 23, 35 and 38 it was only possible to test the 3'-primers, the 5'-primers were not possible to be tested.

In primer solutions 37, 39, 43 and 44 it was only possible to test the 5'-primers, the 3'-primers were not possible to be tested.

In primer solutions 1, 3, 6, 9 to 11, 16, 19, 22, 24, 30, 32 to 34, 36 and 45 one, two or three of the 3'-primers were not possible to be tested, and in primer solutions 1, 3, 8, 12, 15, 26, 29, 34, 42 and 46 one, two or three of the 5'-primers were not possible to be tested.

In addition, one or more primers in primer solutions 5, 10, 17 to 20, 24 and 47 were tested by separately adding one or more 5'-primers and/or one 3'-primer.



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"Instructions for Use" (IFU)

Lot No.: **1L6**

Lot-specific information

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