

101.125-24/06 – including *Taq* pol., IFU-01.
101.125-24u/06u – without *Taq* pol., IFU-02.

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

Lot No.: **2L7**

Lot-specific information

Olerup SSP® DRB1*15

Product number:	101.125-24/06 – including <i>Taq</i> pol. 101.125-24u/06u – without <i>Taq</i> pol.
Lot number:	2L7
Expiry date:	2024-07-01
Number of tests:	24 test – Product No. 101.125-24/24u 6 tests – Product No. 101.125-06/06u
Number of wells per test:	31+1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 2L7

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*15 Lot (7G1)

- The product documentation has been updated for new alleles of IMGT 3.40.0.
- The kit resolution focuses on common and well documented (CWD) alleles¹.

¹As described in section Uniquely Identified Alleles.

The DRB1*15 primer set, specificity and interpretation tables have been updated for the DRB1 alleles described since the previous *Olerup SSP®* DRB1*15 lot was made (**Lot No. 7G1**).

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

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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
7	-	Modified	3'-primer modified for improved yield of the DRB1*15:56 allele.
11	-	Modified	3'-primer modified for improved HLA-specific amplification.
24	-	Exchanged	3'-primer exchanged for improved HLA-specific amplification.
31	-	-	Positive control primer pair exchanged.

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101.125-24u/06u – without *Taq* pol., IFU-02.

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Well **32** 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'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
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*15 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DRB1*15:01 to DRB1*15:184 alleles.

PLATE LAYOUT

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

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

Note: This lot of DRB1*15 was manufactured using white plastic trays.

The 32 well cut PCR plate is marked with 'DRB1*15' in silver/gray ink.

Well No. 1 is marked with the Lot No. '2L7'.

Wells 1 to 31 – DRB1*15 high resolution primers.

Well 32 – 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 covered with a PCR-compatible foil.

Please note: When removing each 32 well PCR plate, make sure that the remaining plates stay covered. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

INTERPRETATION

Due to the sharing of sequence motifs between DRB1 alleles, non-DRB1*15 alleles will be amplified by other primer mixes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the DRB1*15 alleles, i.e. **DRB1*15:01 to DRB1*15:184**, recognized by the HLA Nomenclature Committee in April 2020^{1, 2} will be amplified by the primers in the DRB1*15 subtyping kit³.

The DRB1*15 kit enables separation of the confirmed DRB1*15 alleles as listed in the IMGT/HLA database 3.26.0. 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*15 alleles is listed below.

The DRB1*15 kit also enables identification of many null and alternatively expressed alleles.

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The following DRB1*15 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix
DRB1*15:06:01-15:06:04, 15:77,15:110, 15:125	9
DRB1*15:16, 15:35	28
DRB1*15:19, 15:155	9
DRB1*15:30, 15:104:01-15:104:03	19
DRB1*15:42, 15:64	27
DRB1*15:75, 15:134N	26

¹DRB1 alleles listed on the IMGT/HLA web page 2020-April-20, release 3.40.0, 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 give rise to identical amplification patterns with the DRB1*15 high resolution kit. These alleles can be distinguished by the DR low resolution and/or DRB1*16 kits.

Alleles

DRB1*15:70, 15:89, 15:91, 15:157-15:158,
16:33, 16:36, 16:58

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ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
DRB1*15:01:01:01	Confirmed	DRB1*15:02:16	Unconfirmed	DRB1*15:42	Unconfirmed	DRB1*15:91	Unconfirmed
DRB1*15:01:01:02	Unconfirmed	DRB1*15:02:17	Unconfirmed	DRB1*15:43	Unconfirmed	DRB1*15:92	Unconfirmed
DRB1*15:01:01:03	Unconfirmed	DRB1*15:02:18	Unconfirmed	DRB1*15:44	Unconfirmed	DRB1*15:93	Confirmed
DRB1*15:01:01:04	Unconfirmed	DRB1*15:03:01:01	Confirmed	DRB1*15:45	Unconfirmed	DRB1*15:94	Confirmed
DRB1*15:01:02	Confirmed	DRB1*15:03:01:02	Confirmed	DRB1*15:46	Unconfirmed	DRB1*15:95	Unconfirmed
DRB1*15:01:03	Confirmed	DRB1*15:03:02	Confirmed	DRB1*15:47	Unconfirmed	DRB1*15:96	Unconfirmed
DRB1*15:01:04	Confirmed	DRB1*15:04	Confirmed	DRB1*15:48	Unconfirmed	DRB1*15:97	Unconfirmed
DRB1*15:01:05	Unconfirmed	DRB1*15:05	Confirmed	DRB1*15:49	Unconfirmed	DRB1*15:98	Unconfirmed
DRB1*15:01:06	Confirmed	DRB1*15:06:01	Confirmed	DRB1*15:50N	Unconfirmed	DRB1*15:99	Unconfirmed
DRB1*15:01:07	Confirmed	DRB1*15:06:02	Unconfirmed	DRB1*15:51	Unconfirmed	DRB1*15:100	Unconfirmed
DRB1*15:01:08	Confirmed	DRB1*15:06:03	Unconfirmed	DRB1*15:52	Unconfirmed	DRB1*15:101	Unconfirmed
DRB1*15:01:09	Unconfirmed	DRB1*15:07:01	Confirmed	DRB1*15:53	Unconfirmed	DRB1*15:102	Confirmed
DRB1*15:01:10	Unconfirmed	DRB1*15:07:02	Unconfirmed	DRB1*15:54	Unconfirmed	DRB1*15:103	Unconfirmed
DRB1*15:01:11	Confirmed	DRB1*15:07:03	Unconfirmed	DRB1*15:55	Confirmed	DRB1*15:104	Unconfirmed
DRB1*15:01:12	Confirmed	DRB1*15:08	Unconfirmed	DRB1*15:56	Confirmed	DRB1*15:105	Unconfirmed
DRB1*15:01:13	Confirmed	DRB1*15:09	Confirmed	DRB1*15:57	Confirmed	DRB1*15:106	Unconfirmed
DRB1*15:01:14	Unconfirmed	DRB1*15:10	Confirmed	DRB1*15:58	Unconfirmed	DRB1*15:107	Unconfirmed
DRB1*15:01:15	Unconfirmed	DRB1*15:11	Confirmed	DRB1*15:59	Unconfirmed	DRB1*15:108	Unconfirmed
DRB1*15:01:16	Unconfirmed	DRB1*15:12	Unconfirmed	DRB1*15:60	Unconfirmed	DRB1*15:109	Unconfirmed
DRB1*15:01:17	Unconfirmed	DRB1*15:13	Unconfirmed	DRB1*15:61	Confirmed	DRB1*15:110	Unconfirmed
DRB1*15:01:18	Unconfirmed	DRB1*15:14	Confirmed	DRB1*15:62	Unconfirmed	DRB1*15:111	Unconfirmed
DRB1*15:01:19	Unconfirmed	DRB1*15:15:01	Confirmed	DRB1*15:63	Unconfirmed	DRB1*15:112	Confirmed
DRB1*15:01:20	Unconfirmed	DRB1*15:15:02	Unconfirmed	DRB1*15:64	Confirmed	DRB1*15:113N	Confirmed
DRB1*15:01:21	Unconfirmed	DRB1*15:16	Unconfirmed	DRB1*15:65	Unconfirmed	DRB1*15:114	Unconfirmed
DRB1*15:01:22	Unconfirmed	DRB1*15:17N	Unconfirmed	DRB1*15:66:01	Unconfirmed	DRB1*15:115N	Unconfirmed
DRB1*15:01:23	Unconfirmed	DRB1*15:18	Confirmed	DRB1*15:66:02	Unconfirmed	DRB1*15:116	Unconfirmed
DRB1*15:01:24	Unconfirmed	DRB1*15:19	Unconfirmed	DRB1*15:67	Confirmed	DRB1*15:117	Unconfirmed
DRB1*15:01:25	Confirmed	DRB1*15:20	Confirmed	DRB1*15:68	Confirmed	DRB1*15:118	Confirmed
DRB1*15:01:26	Unconfirmed	DRB1*15:21	Unconfirmed	DRB1*15:69	Unconfirmed	DRB1*15:119	Unconfirmed
DRB1*15:01:27	Unconfirmed	DRB1*15:22	Confirmed	DRB1*15:70	Unconfirmed	DRB1*15:120	Unconfirmed
DRB1*15:01:28	Unconfirmed	DRB1*15:23	Confirmed	DRB1*15:71	Unconfirmed	DRB1*15:121	Unconfirmed
DRB1*15:01:29	Unconfirmed	DRB1*15:24	Confirmed	DRB1*15:72	Unconfirmed	DRB1*15:122	Unconfirmed
DRB1*15:01:30	Unconfirmed	DRB1*15:25	Unconfirmed	DRB1*15:73	Unconfirmed	DRB1*15:123	Confirmed
DRB1*15:01:31	Unconfirmed	DRB1*15:26	Unconfirmed	DRB1*15:74	Confirmed	DRB1*15:124	Unconfirmed
DRB1*15:02:01:01	Confirmed	DRB1*15:27	Confirmed	DRB1*15:75	Confirmed	DRB1*15:125	Unconfirmed
DRB1*15:02:01:02	Unconfirmed	DRB1*15:28	Unconfirmed	DRB1*15:76	Unconfirmed	DRB1*15:126	Unconfirmed
DRB1*15:02:02	Confirmed	DRB1*15:29	Unconfirmed	DRB1*15:77	Unconfirmed	DRB1*15:127	Unconfirmed
DRB1*15:02:03	Unconfirmed	DRB1*15:30	Unconfirmed	DRB1*15:78	Confirmed	DRB1*15:128	Unconfirmed
DRB1*15:02:04	Confirmed	DRB1*15:31	Unconfirmed	DRB1*15:79	Unconfirmed	DRB1*15:129N	Unconfirmed
DRB1*15:02:05	Unconfirmed	DRB1*15:32	Unconfirmed	DRB1*15:80N	Unconfirmed	DRB1*15:130	Unconfirmed
DRB1*15:02:06	Unconfirmed	DRB1*15:33	Confirmed	DRB1*15:81	Unconfirmed	DRB1*15:131	Unconfirmed
DRB1*15:02:07	Unconfirmed	DRB1*15:34	Unconfirmed	DRB1*15:82	Unconfirmed	DRB1*15:132	Unconfirmed
DRB1*15:02:08	Unconfirmed	DRB1*15:35	Confirmed	DRB1*15:83	Unconfirmed	DRB1*15:133	Unconfirmed
DRB1*15:02:09	Unconfirmed	DRB1*15:36	Confirmed	DRB1*15:84	Unconfirmed	DRB1*15:134N	Unconfirmed
DRB1*15:02:10	Unconfirmed	DRB1*15:37:01	Confirmed	DRB1*15:85	Unconfirmed	DRB1*15:135	Unconfirmed
DRB1*15:02:11	Unconfirmed	DRB1*15:37:02	Confirmed	DRB1*15:86	Unconfirmed	DRB1*15:136	Confirmed
DRB1*15:02:12	Unconfirmed	DRB1*15:38	Confirmed	DRB1*15:87	Unconfirmed	DRB1*15:137N	Unconfirmed
DRB1*15:02:13	Unconfirmed	DRB1*15:39	Unconfirmed	DRB1*15:88	Unconfirmed	DRB1*15:138N	Unconfirmed
DRB1*15:02:14	Unconfirmed	DRB1*15:40	Confirmed	DRB1*15:89	Unconfirmed	DRB1*15:139	Unconfirmed
DRB1*15:02:15	Confirmed	DRB1*15:41	Unconfirmed	DRB1*15:90	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2016-October-14, release 3.26.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in DRB1*15 homo- and heterozygotes is available upon request.

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Lot-specific information
SPECIFICITY TABLE

DRB1*15 SSP subtyping

**Specificities and sizes of the PCR products of the 31+1 primer mixes used for
DRB1*15 SSP subtyping**

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DRB1*15 alleles ³	Other amplified DRB1 alleles
1	140 bp	515 bp	*15:01:01:01-15:02:09, 15:02:11-15:06:04, 15:08-15:10, 15:12-15:27, 15:29-15:33, 15:35-15:47, 15:49-15:58, 15:60-15:68, 15:70-15:87, 15:89-15:95, 15:97-15:114, 15:116-15:129N, 15:131-15:142, 15:144-15:184	*16:09:01-16:10:02, 16:33, 16:36-16:37, 16:58
2	200 bp	515 bp	*15:01:01:01-15:03:05, 15:06:01-15:09, 15:11:01-15:14, 15:16, 15:18 ^w , 15:19-15:20, 15:22, 15:24, 15:26, 15:29-15:30, 15:32-15:33, 15:35-15:48, 15:51-15:53, 15:55-15:62, 15:64-15:65, 15:67-15:68, 15:71-15:72, 15:74-15:79, 15:81-15:83, 15:85-15:87, 15:90, 15:92-15:99, 15:101-15:102, 15:104:01-15:114, 15:116, 15:118-15:119, 15:121, 15:123-15:128, 15:130-15:141, 15:143-15:146, 15:148N-15:156, 15:159N-15:184	
3	150 bp	430 bp	*15:01:01:01-15:02:19, 15:06:01-15:09, 15:11:01-15:14, 15:16, 15:18 ^w , 15:19-15:20, 15:22, 15:24, 15:26, 15:28-15:30, 15:32-15:33, 15:35-15:48, 15:51-15:53, 15:55-15:56, 15:59-15:62, 15:64-15:65, 15:67-15:69, 15:71-15:72, 15:74-15:77, 15:79, 15:81-15:83, 15:85-15:87, 15:90, 15:92-15:93, 15:95-15:99, 15:101-15:102, 15:104:01-15:114, 15:116, 15:118-15:119, 15:121, 15:123-15:128, 15:131-15:136, 15:138N-15:141, 15:143-15:146, 15:148N-15:156, 15:159N-15:162, 15:164Q, 15:166-15:177, 15:179-15:180N, 15:182-15:184	*04:73:01-04:73:02, 04:105:01-04:105:02, 04:284, 04:293, 11:82, 13:09, 13:129, 14:37
4	260 bp	430 bp	*15:01:01:01-15:01:41, 15:03:01:01-15:07:03, 15:09-15:10, 15:12-15:13, 15:16-15:18, 15:20-15:25, 15:32-15:33, 15:35-15:37:02, 15:40-15:43, 15:45-15:46, 15:48-15:57, 15:59, 15:61-15:62, 15:64-15:67, 15:70-15:73, 15:75-15:77, 15:79, 15:81-15:84, 15:86-15:98, 15:100, 15:102, 15:106-15:114, 15:116-15:117, 15:120-15:121, 15:123-15:125, 15:127-15:130, 15:132-15:139, 15:141-15:148N, 15:150-15:151, 15:153, 15:157-15:158, 15:160, 15:162-15:166, 15:168-15:178, 15:180N-15:184	*16:15, 16:23, 16:33-16:34, 16:36, 16:38:01-16:38:02, 16:58
5	260 bp	430 bp	*15:02:01:01-15:02:19, 15:08, 15:11:01-15:11:02, 15:14-15:15:03, 15:19, 15:26-15:27, 15:29-15:31:02, 15:34, 15:38-15:39,	*16:01:01-16:01:06, 16:01:08-16:05:02, 16:07-16:11,

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			15:44, 15:47, 15:58, 15:60, 15:63, 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	16:13N-16:14, 16:16-16:22, 16:24- 16:32, 16:35, 16:37, 16:39-16:52, 16:54- 16:57, 16:59Q- 16:63N
6	150 bp	430 bp	*15:03:01:01-15:03:05, 15:57, 15:78, 15:94, 15:130, 15:137N, 15:163N, 15:165, 15:178	
	180 bp		*15:14	
7	135 bp	430 bp	*15:07:01-15:07:03, 15:11:01-15:11:02, 15:34, 15:56, 15:88, 15:96, 15:115N	*16:01:01-16:05:02, 16:07-16:08, 16:11, 16:13N-16:32, 16:34-16:35, 16:38:01-16:43, 16:45-16:55N, 16:57, 16:59Q- 16:63N
8	200 bp	430 bp	*15:05, 15:23, 15:25, 15:27, 15:31:01- 15:31:02, 15:34, 15:54, 15:63, 15:66:01- 15:66:02, 15:73, 15:100, 15:120	
	245 bp		*15:36	
9⁴	90 bp	430 bp	*15:06:01-15:06:03, 15:77, 15:94, 15:125, 15:155	
	165 bp		*15:138N	
	215 bp		*15:19, 15:69, 15:110, 15:113N	
10	170 bp	430 bp	*15:12	
	200 bp		*15:04, 15:15:01-15:15:03, 15:88, 15:142, 15:147	
11	155 bp	430 bp	*15:47, 15:65	*16:48
	200 bp		*15:49	
12⁴	95 bp	430 bp	*15:09, 15:48	*04:162, 11:88, 13:177, 16:44
	220 bp		*15:123	
13⁴	110 bp	430 bp	*15:32	
	215 bp		*15:10, 15:84, 15:103, 15:117, 15:120	
14	200 bp	430 bp	*15:13, 15:17N	
15	150 bp	515 bp	*15:68, 15:136	
	205 bp		*15:10, 15:21, 15:27, 15:34, 15:54, 15:66:01-15:66:02, 15:122	*16:05:01-16:05:02, 16:07
16⁴	110 bp	430 bp	*15:102	
	210 bp		*15:08, 15:129N	
	260 bp		*15:74	
17	160 bp	430 bp	*15:18	
	220 bp		*15:123	
18	160 bp	515 bp	*15:115N	
	205 bp		*15:20	*04:226:01, 13:28:02
19	175 bp	430 bp	*15:30	
	225 bp		*15:21, 15:25, 15:37:01-15:37:02, 15:57, 15:100, 15:104:01-15:104:03	*16:04:01-16:04:02, 16:18, 16:46
20	165 bp	430 bp	*15:22	
	200 bp		*15:25, 15:27, 15:34, 15:54, 15:66:01- 15:66:02, 15:100, 15:112, 15:120	

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21	165 bp	430 bp	*15:03:01:01-15:03:05, 15:23, 15:78, 15:94, 15:130, 15:137N, 15:142, 15:163N, 15:165, 15:178
22⁵	170 bp 200 bp	430 bp	*15:24, 15:93, 15:138N *15:28, 15:40
23⁴	125 bp 170 bp 220 bp	430 bp	*15:55 *15:29 *15:25
24	130 bp 185 bp	430 bp	*15:61 *15:26, 15:40, 15:43
25⁴	70 bp 135 bp 195 bp	430 bp	*15:39 *15:61, 15:67 *15:33, 15:113N
26^{4,6}	75 bp 125 bp 195 bp	430 bp	*15:38, 15:63 *15:75 *15:134N
27⁴	110 bp 135 bp 175 bp	430 bp	*15:64 *15:67 *15:14, 15:42, 15:93
28⁶	135 bp 255 bp	430 bp	*15:16, 15:118, 15:156 *15:35, 15:96 *16:34, 16:38:01- 16:38:02
29⁴	100 bp 200 bp	430 bp	*15:137N *15:41, 15:50N, 15:80N, 15:112
30	165 bp 215 bp	430 bp	*15:45 *15:44, 15:129N
31⁴	85 bp	430 bp	*15:46
32⁷	-	-	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*15 SSP subtypings.

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 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

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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.

⁵Primer mix 22 may have a tendency for unspecific amplification.

⁶Primer mixes 26 and 28 have a tendency to giving rise to primer oligomer formation.

⁷Primer mix 32 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	140	200	150	260	260	150	135	200	90	170	155	95
						180		245	165	200	200	220
									215			
Length of int. pos. control ¹	515	515	430	430	430	430	430	430	430	430	430	430
5'-primer(s) ²	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	28(171) 5'-gAT 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	20(146) 5'-TgC 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	6(103) 5'-CAG 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	30(175) 5'-gAT 3'
	13(126) 5'-AgA 3'	13(126) 5'-AgA 3'	29(174) 5'-Agg 3'	13(126) 5'-AgA 3'		30(175) 5'-gAC 3'			10(115) 5'-ggT 3'			
			30(175) 5'-gAT 3'						12(121) 5'-CTg 3'			
									25(160) 5'-TgC 3'			
									50(236) 5'-ggg 3'			
									50(236) 5'-ggC 3'			
3'-primer(s) ³	47(227) 5'-ggA 3'	67(286) 5'-gAT 3'	67(286) 5'-gAT 3'	86(344) 5'-CCA 3'	86(344) 5'-CAC 3'	67(286) 5'-gAT 3'	44(218) 5'-CCC 3'	67(286) 5'-gAg 3'	67(286) 5'-gAT 3'	57(256) 5'-gCT 3'	51(239) 5'-CCC 3'	48(230) 5'-CCT 3'
							47(227) 5'-ggT 3'	67(286) 5'-gAg 3'		67(286) 5'-gAA 3'	67(287) 5'-ggg 3'	90(356) 5'-CTA 3'
								81(329) 5'-TgC 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	110	200	150	110	160	160	175	165	165	170	125	130
	215		205	210	220	205	225	200		200	170	185
				260							220	
Length of int. pos. control ¹	430	430	515	430	430	515	430	430	430	430	430	430
5'-primer(s) ²	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	30(175) 5'-gAT 3'	30(175) 5'-gAT 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	30(175) 5'-gAC 3'	13(125) 5'-gAA 3'	13(126) 5'-Agg 3'	15(131) 5'-gTA 3'
										15(131) 5'-gTA 3'		19(143) 5'-CAg 3'
										23(154) 5'-AgT 3'		21(148) 5'-ggT 3'
										25(160) 5'-TgC 3'		38(199) 5'-CCA 3'
										25(161) 5'-gCA 3'		
3'-primer(s) ³	37(196) 5'-ggT 3'	64(277) 5'-Tg 3'	49(233) 5'-CCT 3'	37(196) 5'-gAg 3'	70(295) 5'-CTC 3'	69(293) 5'-CT 3'	57(258) 5'-gCC 3'	55(251) 5'-gCA 3'	71(298) 5'-CgC 3'	67(286) 5'-gAT 3'	41(208) 5'-gTg 3'	67(286) 5'-gAT 3'
	71(299) 5'-gCT 3'	69(294) 5'-TgT 3'	67(286) 5'-gAT 3'	66(283) 5'-gTT 3'	90(356) 5'-CTA 3'	84(337) 5'-CCT 3'	74(307) 5'-CAG 3'	65(282) 5'-TCA 3'			57(257) 5'-CgA 3'	
			67(286) 5'-gAT 3'	72(301) 5'-Cg 3'			77(317) 5'-AgT 3'	67(286) 5'-gAg 3'			73(305) 5'-ggC 3'	
			70(296) 5'-TCT 3'	87(347) 5'-TCC 3'			77(317) 5'-AAT 3'					
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

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Well No.	25	26	27	28	29	30	31
Length of spec.	70	75	110	135	100	165	85
PCR product	135	125	135	255	200	215	
	195	195	175				
Length of int. pos. control ¹	430	430	430	430	430	430	430
5'-primer(s) ²	10(115) 5'-ggT 3'	19(144) 5'-..T 3'	20(146) 5'-TgC 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	13(126) 5'-Agg 3'	72(301) 5'-Cgg 3'
	15(130) 5'-AgA 3'	43(216) 5'-gAg 3'	23(154) 5'-AgT 3'				
	36(194) 5'-ggg 3'	60(266) 5'-gTC 3'	23(155) 5'-gCA 3'				
	38(199) 5'-CCA 3'		36(194) 5'-ggg 3'				
	58(259) 5'-ACA 3'		44(217) 5'-ACA 3'				
3'-primer(s) ³	67(286) 5'-gAT 3'	71(298) 5'-CgC 3'	67(286) 5'-gAT 3'	45(220) 5'-CCT 3'	34(187) 5'-CTA 3'	55(250) 5'-CCA 3'	86(344) 5'-CCA 3'
				47(226) 5'-gAg 3'	62(273) 5'-CTC 3'	72(301) 5'-..Cg 3'	
				85(341) 5'-CAg 3'	65(282) 5'-TCA 3'	73(305) 5'-CgA 3'	
					70(295) 5'-..Tg 3'		
Well No.	25	26	27	28	29	30	31

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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CELL LINE VALIDATION SHEET																
DRB1*15 SSP subtyping kit ²																
					Well											
					1	2	3	4	5	6	7	8	9	10	11	12
				Prod. No.:	202020901	202020902	202020903	202020904	202020905	202020906	202020907	202020908	202020909	202020910	202020911	202020912
	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 SСТО	*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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[illegible]

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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 8, 9, 11 to 20 and 22 to 31 were available. The specificities of the primers in primer solutions 8, 11 to 13, 15, 16, 19, 20, 22, 23 and 28 were tested by separately adding one 5'-primer or one 3'-primer accordingly. In primer solutions 14, 17, 18, 29 and 30 it was only possible to test the 5'-primers, the 3'-primers were not possible to be tested. In primer solutions 9, 24 to 27 and 31 it was only possible to test the 3'-primers, the 5'-primers were not possible to be tested. In primer solutions 3, 6 and 22 one or more of the 5'-primers were not possible to be tested, and in primer solutions 2, 3, 7, 8, 11 to 13, 15, 16, 19, 20, 23 and 28 one, two or three of the 3'-primers were not possible to be tested. In addition, one 3'-primer in primer solution 10 was tested by separately adding one 5'-primer.

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