

101.551-06 – including *Taq* polymerase
101.551-06u – without *Taq* polymerase

Visit www.caredx.com for
“Instructions for Use” (IFU)

Lot No.: **1S9**

Lot-specific information

Olerup SSP[®] HLA-B*78

Product number:	101.551-06 – including <i>Taq</i> polymerase 101.551-06u – without <i>Taq</i> polymerase
Lot number:	1S9
Expiry date:	2027-06-01
Number of tests:	6
Number of wells per test:	15+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. 1S9.

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

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP[®] HLA-B*78 LOT (5N6).

- The product documentation has been updated for new alleles of IMGT 3.52.0.
- The kit resolution focuses on common and well documented (CWD) alleles¹.

¹As described in section Uniquely Identified Alleles.

The HLA-B*78 specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP[®] HLA-B*78* lot was made (**Lot No. 5N6**).

The HLA-B*78 primer set is unchanged compared to the previous *Olerup SSP[®] HLA-B*78* (**Lot No. 5N6**).

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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Well **16** 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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PRODUCT DESCRIPTION

HLA-B*78 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the B*78:01 to B*78:10 alleles.

PLATE LAYOUT

Each HLA-B*78 test consists of 16 PCR reactions in a 16 well cut PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	NC

The 16 well PCR plate is marked with ‘HLA-B*78’ in silver/grey ink.

Well No. 1 is marked with the Lot No ‘1S9’.

Wells 1 to 15 – HLA-B*78 high resolution primers.

Well 16 – 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 16 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 HLA-B alleles non-HLA-B*78 alleles will be amplified by some primer mixes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-B*78, i.e. **B*78:01 to B*78:10**, recognized by the HLA Nomenclature Committee in April 2023^{1,2} will be amplified by the primers in the HLA-B*78 SSP kit.

The HLA-B*78 kit enables separation of the confirmed HLA-B*78 alleles as listed in the IMGT/HLA database 3.30.0. 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 HLA-B*78 alleles is listed below.

The HLA-B*78 kit also enables identification of many null and alternatively expressed alleles.

¹HLA-B alleles listed on the IMGT/HLA web page 2023-April-17, release 3.52.0, 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>.



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ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹
B*78:01:01:01	Confirmed	B*78:08	Unconfirmed
B*78:01:01:02	Confirmed	B*78:09	Confirmed
B*78:01:02	Confirmed		
B*78:02:01	Unconfirmed		
B*78:02:02	Confirmed		
B*78:03	Unconfirmed		
B*78:04	Confirmed		
B*78:05	Confirmed		
B*78:06	Unconfirmed		
B*78:07	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2017-October-27, release 3.30.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in HLA-B*78 homo- and heterozygotes is available upon request.



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SPECIFICITY TABLE

HLA-B*78 SSP subtyping

Specificities and sizes of the PCR products of the 15+1 primer mixes used for HLA-B*78 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-B*78 alleles ³	Other amplified HLA-B alleles
1	265 bp	800 bp	*78:01:01:02-78:03, 78:05-78:10	*13:15, 13:62, 14:37, 27:153, 44:459, 49:09, 50:58, 51:01:01:01-51:01:102, 51:03, 51:07:01-51:09:03, 51:11N-51:14, 51:16-51:22, 51:24:01-51:24:05, 51:26-51:33, 51:35, 51:37-51:39, 51:41N, 51:43-51:44N, 51:48-51:53, 51:55, 51:57-51:58, 51:60-51:61:02, 51:63:01-51:63:02, 51:65-51:80, 51:82-51:92:02, 51:94-51:107, 51:109-51:134, 51:136-51:138, 51:140-51:142, 51:145, 51:147, 51:149N-51:156, 51:158:01-51:174:02, 51:176-51:179, 51:181-51:193:02, 51:195-51:196, 51:198, 51:200-51:212, 51:214-51:219, 51:221-51:226, 51:228-51:280, 51:282-51:292, 51:294, 51:296-51:299, 51:301-51:309, 51:311-51:318N, 51:320-51:340, 51:342-51:344N, 51:346Q-51:351, 51:354-51:358, 51:360-51:375, 51:377N, 51:379-51:381, 52:01:01:01-52:02:02, 52:04-52:10:03, 52:12-52:66, 52:68-52:87, 52:89N-52:113, 56:05:01-56:06, 56:21, 56:34, 58:08:01-58:08:02, 73:01:01:01-73:03
2	190 bp	1070 bp	*78:01:01:02-78:01:02, 78:03, 78:07-78:08	*07:65, 07:206, 08:26:03, 08:56:03, 39:63, 46:40:01 ^w , 51:20 ^w , 51:208 ^w , 56:05:01, 56:06, A*23:01:14^w
3⁶	225 bp	1070 bp	*78:02:01-78:02:02, 78:04-78:06, 78:09-78:10	*08:23, 08:54:01-08:54:02, 08:110, 08:133, 08:295, 13:09, 13:39, 13:67, 14:18, 14:73, 15:01:01:01-15:01:04, 15:01:06-15:01:29, 15:01:31-15:01:54, 15:01:56-15:01:64, 15:01:66-15:01:71, 15:01:73-15:12:03, 15:14-15:15:01:02, 15:18:01:01-15:21:01:02, 15:25:01:01-15:35:02, 15:37-15:40:02, 15:42, 15:44-15:56, 15:58, 15:60, 15:62-15:66, 15:69, 15:72-15:75, 15:77-15:88, 15:90-15:93, 15:96-15:99, 15:102-15:114, 15:116-15:125:01, 15:126-15:129, 15:131-15:147, 15:149N-15:156, 15:158-15:161, 15:163, 15:165-15:167, 15:169-15:174, 15:176, 15:178-15:179:02, 15:181N-15:188, 15:190N-15:195, 15:197:01-15:207, 15:209N-15:215, 15:217-15:221, 15:223-15:229, 15:231-15:235, 15:237-15:253, 15:257-15:266, 15:269-15:272N, 15:274-15:290, 15:292-15:293, 15:295-15:329, 15:331-15:338, 15:340-15:355, 15:357-15:360, 15:363:01-15:380N, 15:382-15:395, 15:398-15:402, 15:404-15:407, 15:409-15:410, 15:412-15:417, 15:419-15:422, 15:425-15:441, 15:443-15:445, 15:448-15:457, 15:459-15:461, 15:463N-15:499, 15:501-15:504:02, 15:506-15:515, 15:517-15:522, 15:524-15:531, 15:533:01-15:545, 15:547-15:549N, 15:551-15:552,



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4	170 bp	1070 bp	*78:03	*51:22
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6 ⁴	95 bp	1070 bp	*78:05-78:06	*07:400, 13:58, 15:202, 15:239, 15:376, 18:12:01-18:12:02, 18:195, 35:10, 35:13, 35:16, 35:28:01:01-35:28:01:03, 35:69, 35:80, 35:226, 35:270, 35:318, 35:477, 35:534, 35:541, 37:01:01:01-37:01:05, 37:01:07-37:05, 37:07, 37:09-37:27, 37:29-37:59, 37:62-37:66, 37:68-37:81, 37:83-37:107, 40:185, 40:209, 40:308, 40:350, 40:365, 44:83, 44:134, 44:445, 49:03, 51:310, 52:01:01:01-52:01:53, 52:03-52:15, 52:17, 52:19-52:31:02, 52:33-52:72, 52:74-52:113, 53:17:01-53:17:02, 53:28, 53:38
7	210 bp	1070 bp	*78:01:01:02-78:01:02, 78:02:02-78:03, 78:07-78:10	*07:65, 07:206, 08:26:03, 08:56:03, 15:01:76, 15:32:02, 18:04:01, 18:98:02, 18:125, 35:03:27, 35:08:05, 35:42:02, 35:185, 39:63, 40:01:11, 40:58, 46:40:01, 56:05:01, 56:06
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9	325 bp	1070 bp		*07:02:01:01-07:02:05, 07:02:07-07:02:97, 07:04:01-07:07:03, 07:09:01-07:15, 07:17-07:26, 07:28-07:31:02, 07:33:01-07:36, 07:39-07:46, 07:48-07:49N, 07:51-07:68:03, 07:70-07:84, 07:86-07:179, 07:181N-07:206, 07:208-07:218, 07:220-07:227, 07:229:01-07:231N, 07:233-07:305, 07:307-07:399, 07:401-07:452, 07:454-07:478, 08:123, 08:132, 14:21, 14:57, 15:76, 15:101, 15:255, 15:509, 15:594, 27:01-27:11,



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10	240 bp	1070 bp	*78:01:01:02-78:06, 78:09-78:10	*13:03-13:04, 13:48, 13:62, 13:120, 13:164, 15:04:01:01-15:04:04, 15:137, 15:155, 15:303, 15:310, 15:499, 15:531, 15:552, 27:153, 35:37, 35:235, 35:265, 35:273, 39:33, 44:20, 44:47, 44:339, 44:459, 46:11, 46:32:01-46:32:02, 49:54, 51:01:01:01-51:01:31, 51:01:33-51:01:38, 51:01:40-51:01:58, 51:01:60-51:03, 51:05:01:01-51:05:01:02, 51:07:01-51:09:03, 51:11N-51:15, 51:17-51:20, 51:22-51:24:05, 51:26-51:30, 51:32-51:33, 51:35, 51:37-51:41N, 51:43-51:44N, 51:48-51:55, 51:57-51:58, 51:60-51:61:02, 51:63:01-51:63:02, 51:65-51:80, 51:83-51:92:02, 51:94-51:100, 51:102-51:134, 51:136-51:138, 51:140-51:142, 51:145-51:147, 51:149N-51:151, 51:154-51:156, 51:158:01-51:193:02, 51:195-51:196, 51:198-51:219, 51:221-51:226, 51:228-51:279, 51:282-51:292, 51:294, 51:296-51:299, 51:301-51:309, 51:311-51:318N, 51:320-51:339, 51:342-51:351, 51:354-51:358, 51:360-51:371, 51:373-51:375, 51:377N, 51:379-51:381, 52:01:01:01-52:01:20, 52:01:22-52:07:02, 52:09:01-52:36, 52:38-52:66, 52:68-52:70, 52:72-52:83, 52:85-52:87, 52:89N-52:113, 54:03, 54:33, 54:40, 56:01:01:01-56:01:12, 56:01:14-56:01:18, 56:05:01-56:08, 56:13-56:17, 56:20:01-56:22, 56:24-56:30, 56:33-56:50, 56:52-56:53, 56:55:01:02, 56:58-56:59, 56:61-56:62, 56:64-56:65, 56:67-56:87, 56:89-56:93, 58:08:01-58:08:02, 58:122, 59:04, 59:12, C*03:464
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101.551-06 – including *Taq* polymerase
101.551-06u – without *Taq* polymerase

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				58:45:01-58:63, 58:65-58:110, 58:112-58:127, 58:129-58:143
12	145 bp	1070 bp	*78:01:01:02-78:10	*07:65, 07:134, 07:400, 08:32, 08:133, 08:180, 08:239, 15:202, 15:239, 15:308, 15:376, 18:01:01:01-18:03:01:03, 18:04:01-18:08, 18:10-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:53, 18:55-18:65, 18:68-18:106Q, 18:108-18:124, 18:126-18:135:01:02, 18:137-18:177, 18:180-18:193, 18:196-18:231Q, 35:01:01:01-35:01:38, 35:01:40-35:02:08, 35:02:10-35:08:01:13, 35:08:03-35:08:04, 35:08:06-35:18, 35:20:01-35:24:02, 35:27-35:43:01, 35:43:03-35:45, 35:48, 35:50-35:62, 35:64:01-35:72, 35:74-35:153, 35:155-35:197, 35:199-35:206, 35:208:01-35:209, 35:211-35:216N, 35:218-35:221, 35:223-35:247:02, 35:249-35:253, 35:255-35:270, 35:272-35:273, 35:275-35:292, 35:294-35:310, 35:312-35:316, 35:318-35:328, 35:330-35:360, 35:362-35:423, 35:425-35:449, 35:451-35:470, 35:472-35:521, 35:523-35:524, 35:526-35:569, 35:571-35:578, 37:05, 37:11, 37:14 ^w , 37:37, 37:67, 39:19:01-39:19:02, 39:186, 40:185, 40:209, 40:308, 40:350, 40:365, 45:22, 46:40:01-46:40:02, 55:130, 56:06, 56:45, 58:64, C*07:1011
13	135 bp	1070 bp	*78:06, 78:09-78:10	*18:49, 18:79, 18:108, 18:132, 18:142, 35:27, 35:56, 35:185, 35:203, 35:355, 35:550, 37:05
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15	245 bp	800 bp	*78:07	*08:09, 08:84, 08:254, 13:46, 13:53, 13:131, 14:37, 15:42, 15:83:01:01-15:83:01:02, 15:485, 35:60, 35:276, 39:06:01:01-39:06:08, 39:34, 39:57, 39:62, 39:64, 39:83:01-39:83:03, 39:90, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 39:178, 39:186-39:187, 41:01:01:01-41:01:08, 41:05-41:07, 41:09, 41:12, 41:14, 41:16, 41:20-41:22, 41:25-41:26,



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16⁷	-	-	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 HLA-B*78 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 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 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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 HLA Class I alleles 1st and/or 4th 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.

⁵Primer mix 14 may have a tendency of unspecific amplification.

⁶Primer mix 3 may give rise to a lower yield of HLA-specific PCR product than the other B*78 primer mixes.

⁷Primer mix 16 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: might 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	265	190	225	170	135	95	210	210	325	240	150	145
Length of int. pos. control ¹	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	357 5'-Tgg 3'	141 5'-ATT 3'	106 5'-CCA 3'	141 5'-ATT 3'	435 5'-AAA 3'	206 5'-gAC 3'	141 5'-ATT 3'	141 5'-ATT 3'	1 st I 5'-CAg 3'	362 5'-gAC 3'	206 5'-gAC 3'	206 5'-gAC 3'
			106 5'-CCg 3'									
3'-primer(s) ³	583 5'-gTg 3'	292 5'-gTC 3'	292 5'-gTA 3'	272 5'-TgC 3'	527 5'-CCA 3'	259 5'-CTC 3'	311 5'-ggT 3'	309 5'-ATC 3'	282 5'-gCC 3'	559 5'-CAg 3'	317 5'-ggA 3'	311 5'-ggT 3'
					527 5'-CCA 3'							
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

Well No.	13	14	15
Length of spec. PCR product	135	380	245
Length of int. pos. control ¹	1070	1070	800
5'-primer(s) ²	206 5'-gAC 3'	317 5'-gCT 3'	357 5'-Tgg 3'
3'-primer(s) ³	302 5'-ggT 3'	412 5'-gTT 3'	559 5'-CgT 3'
Well No.	13	14	15

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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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Lot No.: 1S9

Lot-specific information

[illegible]

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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 4 and 5 were available. The specificities of the primers in primer solutions 4 and 5 were tested by separately adding one 3'-primer, and one or two 5'-primers accordingly.



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“Instructions for Use” (IFU)

Lot No.: 1S9

Lot-specific information

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E-mail: orders-se@caredx.com

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For information on CareDx distributors worldwide, contact **CareDx AB**.



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