

101.231-24/04 – including *Taq* polymerase
101.231-24u/04u – without *Taq* polymerase

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“Instructions for Use” (IFU)

Lot No.: **2V3**

Lot-specific information
Olerup SSP® DQA1

Product number:	101.231-24/04 – including <i>Taq</i> pol. 101.231-24u/04u – without <i>Taq</i> pol.
Lot number:	2V3
Expiry date:	2029-10-01
Number of tests:	24 tests – Product No. 101.231-24/24u 4 tests – Product No. 101.231-04/04u
Number of wells per test:	34+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. 2V3.

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

**CHANGES COMPARED TO THE PREVIOUS OLERUP SSP®
DQA1 LOT (3S6)**

- The product documentation has been updated for new alleles of IMGT 3.60.0.
- The kit resolution focuses on common and well documented (CWD) alleles¹.

¹As described in section Uniquely Identified Alleles.

The DQA1 primer set, specificity and interpretation tables have been updated for the DQA1 alleles described since the previous *Olerup SSP®* DQA1 lot was made (Lot No. 3S6).

The primers of the wells detailed below have been modified compared to the previous lot.

Well	5'-primer	3'-primer	Rationale
2	-	Modified	3'-primer modified for improved HLA-specific amplification
23	Modified	-	5'-primer modified for improved HLA-specific amplification

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 **35** 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

DQA1 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DQA1*01:01 to DQA1*06:12 alleles.

PLATE LAYOUT

Each test consists of 35 PCR reactions in a 48 well cut PCR plate. Wells 36 to 48 are empty.

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	NC	empty	empty	empty	empty	empty
empty	empty	empty	empty	empty	empty	empty	empty

The 48 well cut PCR plate is marked with ‘DQA1’, in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘2V3’.

Wells 1 to 34 – DQA1 high resolution primers.

Well 35 – 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

Only DQA1 alleles will be amplified by the DQA1 typing kit. Thus, the interpretation of DQA1 typings is not influenced by the DQA2 gene. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the DQA1 alleles, i.e. **DQA1*01:01 to 01:180**, **DQA1*02:01 to DQA1*02:50**, **DQA1*03:01 to 03:84**, **DQA1*04:01 to DQA1*04:26**, **DQA1*05:01 to 05:123** and **DQA1*06:01 to 06:12**, recognized by the HLA Nomenclature Committee in April 2025^{1,2,3} will be amplified by the primers in the DQA1 typing kit.

¹DQA1 alleles listed on the IMGT/HLA web page 2025-April-09, release 3.60.0, www.ebi.ac.uk/imgt/hla.



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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 DQA1 kit enables separation of DQA1 alleles as listed in the IMGT/HLA database 3.60.0.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in DQA1 homo- and heterozygotes is available upon request.



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Lot-specific information
SPECIFICITY TABLE

DQA1 SSP typing

Specificities and sizes of the PCR products of the 34+1 primer mixes used for DQA1 SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DQA1 alleles ³
1⁷	145 bp	515 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:16, 01:04:01:01-01:05:02:02, 01:05:04-01:05:05, 01:07Q, 01:12, 01:18, 01:22, 01:26-01:27, 01:29, 01:34-01:35, 01:37, 01:43, 01:49, 01:53, 01:55-01:56, 01:59-01:61, 01:64:01-01:64:02, 01:66:01-01-01:67:02, 01:74, 01:77, 01:80, 01:83, 01:86, 01:88N-01:90, 01:95-01:96, 01:98-01:99, 01:107, 01:110, 01:112, 01:114, 01:117-01:118, 01:120, 01:122Q, 01:126, 01:130-01:131, 01:137, 01:148-01:149, 01:153-01:157, 01:160-01:161, 01:164-01:166, 01:169, 01:172, 01:177
2^{6,8}	170 bp	515 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:13, 01:01:15-01:02:28, 01:04:01:01-01:09, 01:11-01:13, 01:16N, 01:18-01:23, 01:25-01:29, 01:31-01:32, 01:34-01:43, 01:46, 01:48-01:49, 01:51:01:01-01:56, 01:58-01:64:02, 01:66:01:01-01:67:02, 01:69, 01:71-01:75, 01:77, 01:80-01:81, 01:83, 01:85-01:86, 01:88N-01:96, 01:98-01:100:02, 01:103-01:107, 01:109-01:112, 01:114-01:118, 01:120, 01:122Q, 01:124-01:135, 01:137, 01:140-01:145, 01:148-01:158, 01:160-01:161, 01:163-01:169, 01:171-01:172, 01:174-01:175, 01:177-01:180
3	145 bp	430 bp	*01:02:01:01-01:03:12, 01:06, 01:08-01:11, 01:13-01:17, 01:19:01:01-01:21, 01:23-01:25, 01:28, 01:30-01:33, 01:36, 01:38:01:01-01:42, 01:44-01:48, 01:50-01:52, 01:54, 01:57-01:58, 01:62-01:63:01:02, 01:65, 01:68-01:73, 01:75-01:76, 01:78-01:79, 01:81-01:82, 01:84-01:85, 01:87:01:01-01:87:01:02, 01:91-01:94, 01:97, 01:100:01-01:106, 01:108-01:109, 01:111, 01:113N, 01:115-01:116, 01:119, 01:121, 01:123-01:125, 01:127-01:129, 01:132:01-01:136N, 01:138-01:147, 01:150-01:152, 01:158-01:159, 01:162-01:163, 01:167-01:168, 01:170-01:171, 01:173-01:176, 01:178-01:180
4	170 bp	430 bp	*01:03:01:01-01:03:12, 01:10:01-01:10:02, 01:14-01:15N, 01:17, 01:24, 01:30, 01:33, 01:44-01:45, 01:47, 01:50, 01:57, 01:65, 01:68, 01:70, 01:76, 01:78-01:79, 01:82, 01:84, 01:87:01:01-01:87:01:02, 01:97, 01:102, 01:108, 01:113N, 01:119, 01:121, 01:123, 01:136N, 01:138-01:139, 01:146-01:147, 01:159, 01:162, 01:170, 01:173, 01:176
5	220 bp	430 bp	*01:03:02 [?] , 01:04:01:01-01:05:05, 01:07Q, 01:08 [?] -01:09 [?] , 01:12, 01:13 [?] , 01:15N [?] , 01:17 [?] -01:18 [?] , 01:20 [?] , 01:22, 01:26 [?] , 01:28 [?] -01:29 [?] , 01:31 [?] -01:37 [?] , 01:39, 01:40Q [?] , 01:42 [?] , 01:46-01:47, 01:50 [?] , 01:52 [?] , 01:53, 01:55 [?] -01:56 [?] , 01:59 [?] -01:62 [?] , 01:64:01-01:65, 01:67:01 [?] ,



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			01:68 [?] -01:69 [?] , 01:71 [?] -01:75 [?] , 01:77 [?] -01:79 [?] , 01:80, 01:81 [?] , 01:83 [?] , 01:85 [?] , 01:86, 01:90 [?] -01:98 [?] , 01:100:01-01:100:02, 01:101 [?] , 01:103 [?] , 01:105 [?] , 01:107, 01:109 [?] -01:112 [?] , 01:114, 01:115 [?] -01:118 [?] , 01:131, 01:132:01 [?] , 01:134 [?] -01:135 [?] , 01:137, 01:139 [?] , 01:141 [?] , 01:148 [?] -01:149 [?] , 01:152 [?] -01:154 [?] , 01:155, 01:159 [?] -01:162 [?] , 01:164-01:165, 01:172, 01:173 [?] , 01:177, 01:178 [?] -01:180 [?] , 05:47, 05:112
6⁴	100 bp	430 bp	*01:04:01:01-01:04:10, 01:07Q, 01:08 [?] -01:09 [?] , 01:13 [?] , 01:15N [?] , 01:18 [?] , 01:26 [?] , 01:29, 01:34 [?] -01:36 [?] , 01:42 [?] , 01:46 [?] -01:47 [?] , 01:50 [?] , 01:52 [?] , 01:53, 01:56 [?] , 01:61 [?] -01:62 [?] , 01:64:01-01:64:02, 01:74, 01:80, 01:81 [?] , 01:83, 01:86, 01:96, 01:98, 01:104, 01:105 [?] , 01:107, 01:110, 01:116 [?] , 01:117, 01:131, 01:149, 01:154, 01:157, 01:165, 01:177
7⁵	135 bp	430 bp	*05:08:01-05:08:02
8^{4,7}	65 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:02:03, 01:02:05-01:02:14, 01:02:16-01:03:06, 01:03:08-01:03:12, 01:04:03, 01:06, 01:08 [?] -01:09 [?] , 01:10:01-01:11, 01:13 [?] , 01:14, 01:15N [?] , 01:16N, 01:17 [?] -01:18 [?] , 01:19:01:01-01:19:01:02, 01:20 [?] , 01:21, 01:23-01:25, 01:26 [?] , 01:27, 01:28 [?] -01:29 [?] , 01:30, 01:31 [?] -01:37 [?] , 01:38:01:01-01:38:01:02, 01:40Q [?] , 01:41, 01:42 [?] , 01:43-01:52, 01:54-01:63:01:02, 01:66:01:01-01:79, 01:81-01:85, 01:87:01:01-01:99, 01:101-01:106, 01:108-01:130, 01:132:01-01:136N, 01:138-01:154, 01:156-01:157, 01:159-01:163, 01:166-01:171, 01:173-01:176, 01:178-01:180, 02:01:01:01-02:01:16, 02:01:18-02:05, 02:07-02:50, 03:01:01:01, 03:01:01:03-03:01:01:07, 03:01:03-03:02:01:02, 03:02:01:04-03:03:03, 03:03:05-03:84, 04:01:01:01-04:01:06, 04:01:08-04:26, 05:01:01:01-05:01:02, 05:01:04-05:05:13:02, 05:05:15-05:12, 05:14-05:46, 05:48-05:56, 05:58-05:111, 05:113-05:123, 06:01:01:01-06:12
9	175 bp	430 bp	*02:01:01:01-02:05, 02:07-02:15, 02:17-02:50
10	185 bp	430 bp	*03:01:01:01, 03:01:01:03-03:01:01:07, 03:01:03-03:02:01:02, 03:02:01:04-03:84
11	215 bp	430 bp	*03:02:01:01-03:02:01:02, 03:02:01:04-03:02:03, 03:02:05-03:02:06, 03:07, 03:13, 03:18, 03:50Q, 03:60, 03:63, 03:75
12	225 bp	515 bp	*02:17, 03:02:01:01-03:02:01:02, 03:02:01:04-03:04, 03:07-03:09, 03:11, 03:13-03:14, 03:17, 03:19-03:21, 03:23-03:24, 03:26, 03:28, 03:31-03:35, 03:37-03:39, 03:42-03:43, 03:45-03:46, 03:48-03:51, 03:54, 03:56, 03:58N, 03:62-03:63, 03:65, 03:67-03:69, 03:71, 03:74-03:77, 03:79, 03:82
13	225 bp	515 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:12, 01:01:14-01:02:21, 01:02:23-01:04:07, 01:04:09-01:47, 01:49-01:180, 02:01:01:01-02:01:01:12, 02:01:03-02:05, 02:07-02:16, 02:18-02:50, 03:01:01:01, 03:01:01:03-03:01:01:07, 03:01:03-03:01:18, 03:05 [?] , 03:06, 03:10, 03:12, 03:15, 03:16 [?] , 03:18, 03:22, 03:25, 03:27N, 03:29-03:30, 03:36, 03:40-03:41, 03:44, 03:47,



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14^{4,5}	125 bp	430 bp	*04:01:01:01-04:02, 04:04-04:26, 05:01:01:01-05:01:02, 05:01:04-05:05:20, 05:05:22-05:33, 05:35:01-05:92, 05:94-05:123
15⁵	165 bp	430 bp	*05:01:01:01-05:01:02, 05:01:04-05:05:10, 05:05:12:01-05:09:02, 05:11:01:01-05:35:02, 05:37-05:50, 05:52-05:106, 05:108-05:123
16⁴	190 bp 95 bp	515 bp	*01:10:01-01:10:02, 01:42, 05:37 *05:02, 05:07
17	200 bp	430 bp	*05:01:01:01-05:01:02, 05:01:04-05:02, 05:04 [?] , 05:05:01:01-05:05:24, 05:08:01-05:20, 05:22-05:76, 05:78-05:81, 05:83-05:86, 05:88:01-05:95, 05:97-05:123
18	200 bp	430 bp	*05:03:01:01-05:03:03, 05:04 [?] , 05:06:01:01-05:07, 05:77, 05:82, 05:87, 05:96
19⁴	120 bp 205 bp	430 bp	*01:15N *05:01:01:01-05:01:02, 05:01:04-05:01:12, 05:01:14-05:03:03, 05:05:01:01-05:05:09, 05:05:11-05:09:02, 05:11:01:01-05:118:01:02, 05:120-05:123
20	135 bp	430 bp	*04:05, 05:04
21^{4,5}	100 bp	430 bp	*04:25, 05:02, 05:04 [?] , 05:05:01:01-05:05:24, 05:08:01-05:09:02, 05:10 [?] , 05:11:01:01-05:11:01:02, 05:12 [?] , 05:13-05:14, 05:15N [?] , 05:17N [?] , 05:20-05:21, 05:22 [?] , 05:24-05:25, 05:26 [?] -05:28 [?] , 05:29Q, 05:30 [?] , 05:32 [?] , 05:34 [?] -05:35:01 [?] , 05:35:02, 05:37 [?] , 05:39 [?] -05:46 [?] , 05:50 [?] , 05:51, 05:53, 05:54:02Q [?] , 05:58-05:59, 05:60 [?] -05:64 [?] , 05:65:01:01-05:65:01:03, 05:66 [?] -05:69 [?] , 05:72-05:73, 05:75, 05:76 [?] -05:77 [?] , 05:79, 05:80 [?] , 05:81, 05:86 [?] -05:88:01 [?] , 05:89-05:91, 05:92 [?] -05:95 [?] , 05:97 [?] -05:100 [?] , 05:102-05:103, 05:104 [?] , 05:106, 05:108, 05:109 [?] , 05:111-05:112, 05:114 [?] , 05:116Q-05:121, 05:123
22⁴	120 bp 225 bp	515 bp	*05:93, 06:01:01:01-06:12 *02:02N
23^{4,7}	85 bp	430 bp	*04:01:01:01-04:01:05, 04:01:07-04:26, 05:05:11, 06:01:01:01-06:12
24⁷	220 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:02:17, 01:02:19-01:112, 01:114-01:180, 02:01:01:01 ^w , 02:01:01:02-02:05, 02:07-02:50, 03:01:01:01, 03:01:01:03-03:01:01:07, 03:01:03-03:02:01:02, 03:02:01:04-03:84, 04:01:01:01-04:24, 04:26, 05:01:01:01-05:01:02, 05:01:04-05:01:21, 05:03:01:01-05:03:03, 05:04 [?] , 05:06:01:01-05:07, 05:10 [?] , 05:12, 05:15N-05:19, 05:22-05:23, 05:26-05:28, 05:30-05:35:01, 05:36N-05:50, 05:52, 05:54:01Q-05:56, 05:60-05:64, 05:66-05:71, 05:74, 05:76-05:78, 05:80, 05:82-05:88:02, 05:92-05:101, 05:104-05:105, 05:107, 05:109-05:110, 05:113-05:115, 05:122, 06:01:01:01-06:12



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25⁴	80 bp 175 bp	430 bp	*05:09:01:01-05:09:02 *01:07Q, 01:13, 01:24, 01:43, 05:49
26	160 bp 250 bp	430 bp	*01:08, 04:02, 04:15, 06:02 *01:12
27^{4,6}	90 bp 135 bp	430 bp	*04:03N *01:11
28⁴	105 bp 200 bp	430 bp	*04:04 *01:14
29⁴	90 bp 120 bp	515 bp	*05:02 *03:04
30⁴	115 bp 215 bp	430 bp	*05:11:01:01-05:11:01:02 *05:06:01:01-05:06:02, 05:82
31^{4,6}	100 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:06, 01:01:08-01:01:16, 01:03:06, 01:05:01:01-01:05:05, 01:08 [?] -01:09 [?] , 01:12, 01:13 [?] , 01:15N [?] , 01:18 [?] , 01:22, 01:26 [?] , 01:27, 01:34 [?] -01:36 [?] , 01:37, 01:42 [?] , 01:43, 01:46 [?] -01:47 [?] , 01:49, 01:50 [?] , 01:52 [?] , 01:55, 01:56 [?] , 01:59-01:60, 01:61 [?] -01:62 [?] , 01:63:01:01-01:63:01:02, 01:66:01:01-01:67:02, 01:77, 01:81 [?] , 01:88N-01:90, 01:95, 01:99, 01:105 [?] , 01:112, 01:114, 01:116 [?] , 01:118, 01:120, 01:122Q, 01:126, 01:130, 01:137, 01:148, 01:153, 01:155-01:156, 01:160-01:161, 01:164, 01:166, 01:169, 03:63, 05:56, 05:65:01:01-05:65:01:03
32⁴	95 bp	430 bp	*01:06
33	210 bp	430 bp	*01:09
34⁴	105 bp 170 bp	430 bp	*01:16N *05:10
35⁹	-	-	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 DQA1 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, e.g. the primers in wells 11, 12, 17, 18, 21, 23 and 27. 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 DQA1 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



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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 mixes 7, 14, 15 and 21 may have a tendency to giving rise to primer oligomer formation.

⁶Primer mixes 2, 27 and 31 may have a tendency of unspecific amplification.

⁷Primer mixes 1, 8, 23 and 24 may give rise to a lower yield of HLA-specific PCR product than the other DQA1 primer mixes.

⁸In primer mix 2 the positive control band may be weaker than for other DQA1 primer mixes.

⁹Primer mix 35 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.

?: nucleotide sequence information not available for the primer matching sequence.



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Lot-specific information

PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	145	170	145	170	220	100	135	65	175	185	215	225
Length of int. pos. control ¹	515	515	430	430	430	430	430	430	430	430	430	515
5'-primer(s) ²	34(169) 5'-Agg 3'	25(143) 5'-gTA 3'	34(169) 5'-AgC 3'	25(143) 5'-gTT 3'	-8(49) 5'-CCA 3'	199(664) 5'-gCA 3'	107(389) 5'-CAT 3'	-8(49) 5'-CCg 3'	7(90) 5'-CAC 3'	7(90) 5'-CAT 3'	-6(53) 5'-gAC 3'	99(366) 5'-CCC 3'
3'-primer(s) ³	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	1 st I 5'-TTT 3'	218(722) 5'-CTT 3'	139(485) 5'-AgA 3'	2(74) 5'-TgT 3'	52(224) 5'-TgT 3'	55(232) 5'-TCT 3'	1 st I 5'-TTT 3'	160(548) 5'-CAT 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	225	125	165	95	200	200	120	135	100	120	85	220
Length of int. pos. control ¹	515	430	430	515	430	430	430	430	430	515	430	430
5'-primer(s) ²	99(366) 5'-CCC 3'	25(143) 5'-gTA 3'	34(169) 5'-AgC 3'	59(245) 5'-CCg 3'	107(389) 5'-CAT 3'	107(389) 5'-CAT 3'	21(131) 5'-TCC 3'	21(131) 5'-TCT 3'	-14(31) 5'-ggA 3'	25(143) 5'-gTT 3'	32(165) 5'-gAC 3'	up ⁴ 5'-ACT 3'
				189(634) 5'-CTA 3'				26(146) 5'-CAT 3'				
3'-primer(s) ³	160(548) 5'-CAg 3'	53(226) 5'-TTg 3'	75(293) 5'-gAC 3'	75(293) 5'-gAC 3'	160(547) 5'-AgC 3'	160(547) 5'-AgA 3'	48(212) 5'-gCT 3'	52(223) 5'-TCT 3'	1 st I 5'-TgC 3'	52(223) 5'-TCT 3'	47(208) 5'-ACA 3'	-14(31) 5'-ggC 3'
	160(548) 5'-CAg 3'		84(319) 5'-AgT 3'	208(691) 5'-gCA 3'			75(293) 5'-gAC 3'			86(327) 5'-TTg 3'		
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

Well No.	25	26	27	28	29	30	31	32	33	34
Length of spec. PCR product	80	160	90	105	90	115	100	95	210	105
Length of int. pos. control ¹	430	430	430	430	515	430	430	430	430	430
5'-primer(s) ²	-14(31) 5'-ggA 3'	99(366) 5'-CCC 3'	53(226) 5'-gAT 3'	15(114) 5'-TTC 3'	59(245) 5'-CCg 3'	102(373) 5'-CAg 3'	199(664) 5'-gCg 3'	25(143) 5'-gTA 3'	103(377) 5'-ggA 3'	34(169) 5'-AgC 3'
	34(169) 5'-Agg 3'		186(626) 5'-TCT 3'	153(526) 5'-gTC 3'	99(366) 5'-CCC 3'	194(650) 5'-Agg 3'				
	34(169) 5'-AgC 3'									
3'-primer(s) ³	1(70) 5'-TTT 3'	134(470) 5'-CAg 3'	69(274) 5'-TgT 3'	69(274) 5'-TgC 3'	75(293) 5'-gAC 3'	160(547) 5'-AgA 3'	218(722) 5'-CTT 3'	44(199) 5'-AgC 3'	160(548) 5'-CAg 3'	55(234) 5'-CT 3'
	79(304) 5'-gCA 3'	138(482) 5'-TgA 3'	218(722) 5'-CTT 3'	174(591) 5'-TCg 3'	126(447) 5'-TTT 3'	218(722) 5'-CTC 3'				77(298) 5'-AAC 3'
		139(484) 5'-gCg 3'								
		169(574) 5'-CTg 3'								
Well No.	25	26	27	28	29	30	31	32	33	34



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Lot-specific information

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.

⁴Primer located upstream of the 1st exon.



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Lot-specific information

CELL LINE VALIDATION SHEET																				
DQA1 SSP typing kit ²																				
				Well																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				Prod. No.:	202562701	202562702	202562703	202562704	202562705	202562706	202562707	202562708	202562709	202562710	202562711	202562712	202562713	202562714	202562715	202562716
IHC cell line ¹			DQA1*																	
1	9001	SA	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-
2	9280	LK707	*01:03	*03:03	-	-	+	+	-	-	-	+	-	+	-	+	+	-	-	-
3	9011	E4181324	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
4	9275	GU373	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-
5	9009	KAS011	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
6	9353	SM	*01:03	*03:01	-	-	+	+	-	-	-	+	-	+	-	-	+	-	-	-
7	9020	QBL	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
8	9025	DEU	*03:03		-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-
9	9026	YAR	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
10	9107	LKT3	*03:03		-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-
11	9051	PITOUT	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
12	9052	DBB	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
13	9004	JESTHOM	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-
14	9071	OLGA	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-
15	9075	DKB	*03:02		-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-
16	9037	SWEIG007	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
17	9282	CTM3953540	*01:03	*05:01	-	-	+	+	-	-	-	+	-	-	-	-	+	+	+	-
18	9257	32367	*01:02	*03:03	-	+	+	-	-	-	-	+	-	+	-	+	+	-	-	-
19	9038	BM16	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
20	9059	SLE005	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
21	9064	AMALA	*05:03		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
22	9056	KOSE	*01:02	*01:04	+	+	+	-	+	+	-	+	-	-	-	-	+	-	-	-
23	9124	IHL	*01:03	*01:04	+	+	+	+	+	+	-	+	-	-	-	-	+	-	-	-
24	9035	JBUSH	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
25	9049	IBW9	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
26	9285	WT49	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
27	9191	CH1007	*03:03	*01:05	+	+	-	-	+	-	-	+	-	+	-	+	+	-	-	-
28	9320	BEL5GB	*02:01	*03:03	-	-	-	-	-	-	-	+	+	+	-	+	+	-	-	-
29	9050	MOU	*02:01		-	-	-	-	-	-	-	+	+	-	-	-	+	+	-	-
30	9021	RSH	*04:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-
31	9019	DUCAF	*05:01		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
32	9297	HAG	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
33	9098	MT14B	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
34	9104	DHIF	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
35	9302	SSTO	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
36	9024	KT17	*03:01		-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-
37	9065	HHKB	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
38	9099	LZL	*05:03		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
39	9315	CML	*03:03	*05:01	-	-	-	-	-	-	-	+	-	+	-	+	+	+	+	-
40	9134	WHONP199	*02:01	*03:02	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-
41	9055	H0301	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
42	9066	TAB089	*01:03		-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
43	9076	T7526	*03:02		-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-
44	9057	TEM	*01:04		+	+	-	-	+	+	-	-	-	-	-	-	+	-	-	-
45	9239	SHJO	*02:01	*03:03	-	-	-	-	-	-	-	+	+	-	-	+	+	-	-	-
46	9013	SCHU	*01:02		-	+	+	-	-	-	-	+	-	-	-	-	+	-	-	-
47	9045	TUBO	*05:05		-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-
48	9303	TER-ND	*01:01		+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-



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Lot-specific information

CELL LINE VALIDATION SHEET																			
DQA1 SSP typing kit ²																			
			Well																
			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
			Prod. No.:	202562717	202562718	202562719	202562720	202562721	202562722	202562723	202562724	202562725	202562726	202562727	202562728	202562729	202562730	202562731	202562732
	IHWC cell line ¹	DQA1*																	
1	9001 SA	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-
2	9280 LK707	*01:03	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
4	9275 GU373	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
5	9009 KAS011	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
6	9353 SM	*01:03	*03:01	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
7	9020 QBL	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
8	9025 DEU	*03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
9	9026 YAR	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
10	9107 LKT3	*03:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
11	9051 PITOUT	*02:01		-	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-
12	9052 DBB	*02:01		-	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-
14	9071 OLGA	*04:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
15	9075 DKB	*03:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM8953540	*01:03	*05:01	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
18	9257 32367	*01:02	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
19	9038 BM16	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
21	9064 AMALA	*05:03		-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-
22	9056 KOSE	*01:02	*01:04	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
23	9124 IHL	*01:03	*01:04	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
24	9035 JBUSH	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*02:01		-	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-
26	9285 WT49	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
27	9191 CH1007	*03:03	*01:05	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-
28	9320 BEL5GB	*02:01	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
29	9050 MOU	*02:01		-	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-
30	9021 RSH	*04:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
31	9019 DUCAF	*05:01		+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
32	9297 HAG	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
34	9104 DHIF	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
36	9024 KT17	*03:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
37	9065 HHKB	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
38	9099 LZL	*05:03		-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-
39	9315 CML	*03:03	*05:01	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
40	9134 WHONP199	*02:01	*03:02	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
41	9055 H0301	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
42	9066 TAB089	*01:03		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
43	9076 T7526	*03:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
44	9057 TEM	*01:04		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
45	9239 SHJO	*02:01	*03:03	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
46	9013 SCHU	*01:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
47	9045 TUBO	*05:05		+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*01:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-



101.231-24/04 – including *Taq* polymerase
101.231-24u/04u – without *Taq* polymerase

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Lot No.: **2V3**

Lot-specific information

CELL LINE VALIDATION SHEET					
DQA1 SSP typing kit²					
				Well	
				33	34
				Prod. No.:	202562733
					202562734
	IHWC cell line¹		DQA1*		
1	9001	SA	*01:01		- -
2	9280	LK707	*01:03	*03:03	- -
3	9011	E4181324	*01:03		- -
4	9275	GU373	*05:01		- -
5	9009	KAS011	*01:02		- -
6	9353	SM	*01:03	*03:01	- -
7	9020	QBL	*05:01		- -
8	9025	DEU	*03		- -
9	9026	YAR	*03:01		- -
10	9107	LKT3	*03:03		- -
11	9051	PITOUT	*02:01		- -
12	9052	DBB	*02:01		- -
13	9004	JESTHOM	*01:01		- -
14	9071	OLGA	*04:01		- -
15	9075	DKB	*03:02		- -
16	9037	SWEIG007	*05:05		- -
17	9282	CTM3953540	*01:03	*05:01	- -
18	9257	32367	*01:02	*03:03	- -
19	9038	BM16	*05:05		- -
20	9059	SLE005	*01:02		- -
21	9064	AMALA	*05:03		- -
22	9056	KOSE	*01:02	*01:04	- -
23	9124	IHL	*01:03	*01:04	- -
24	9035	JBUSH	*05:05		- -
25	9049	IBW9	*02:01		- -
26	9285	WT49	*05:01		- -
27	9191	CH1007	*03:03	*01:05	- -
28	9320	BEL5GB	*02:01	*03:03	- -
29	9050	MOU	*02:01		- -
30	9021	RSH	*04:01		- -
31	9019	DUCAF	*05:01		- -
32	9297	HAG	*05:05		- -
33	9098	MT14B	*03:01		- -
34	9104	DHIF	*05:05		- -
35	9302	SSTO	*03:01		- -
36	9024	KT17	*03:01		- -
37	9065	HHKB	*01:03		- -
38	9099	LZL	*05:03		- -
39	9315	CML	*03:03	*05:01	- -
40	9134	WHONP199	*02:01	*03:02	- -
41	9055	H0301	*01:02		- -
42	9066	TAB089	*01:03		- -
43	9076	T7526	*03:02		- -
44	9057	TEM	*01:04		- -
45	9239	SHJO	*02:01	*03:03	- -
46	9013	SCHU	*01:02		- -
47	9045	TUBO	*05:05		- -
48	9303	TER-ND	*01:01		- -



101.231-24/04 – including *Taq* polymerase
101.231-24u/04u – without *Taq* polymerase

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Lot No.: 2V3

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 16, 20, 26 to 29 and 32 to 34 were available. The specificities of the primers in primer solutions 16 and 29 were tested by separately adding one 5'-primer, and one 3'-primer accordingly.

In primer solutions 26, 32 and 34 the 5'-primers were tested by adding one or three additional 3'-primers, while the 3'-primers were not possible to be tested.

In primer solutions 20, 27, 28 and 33 the 3'-primers were tested by adding one or two additional 5'-primers, while the 5'-primers were not possible to be tested.

In primer solutions 16, 29, 30 and 33 one 5'-primer was not possible to be tested, and in primer solutions 16, 19, 22, 25, 29 and 32 one 3'-primer was not possible to be tested.

In addition, one or more primers in primer solutions 25 and 30 were tested by separately adding one 5'-primer or one 3'-primer.



101.231-24/04 – including *Taq* polymerase
101.231-24u/04u – without *Taq* polymerase

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Lot No.: **2V3**

Lot-specific information

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