

101.231-24/04 – including *Taq* pol., IFU-01  
101.231-24u/04u – without *Taq* pol., IFU-02

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

Lot No.: **7L8**

Lot-specific information  
**Olerup SSP<sup>®</sup> DQA1**

**Product number:** 101.231-24/04 – including *Taq* pol.  
101.231-24u/04u – without *Taq* pol.

**Lot number:** 7L8

**Expiry date:** 2025-01-01

**Number of tests:** 24 tests – Product No. 101.231-24/24u  
4 tests – Product No. 101.231-04/04u

**Number of wells per test:** 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. 7L8.**

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

**CHANGES COMPARED TO THE PREVIOUS OLERUP SSP<sup>®</sup>  
DQA1 Lot (9K2)**

- The product documentation has been updated for new alleles of IMGT 3.42.0.
- The kit resolution focuses on common and well documented (CWD) alleles<sup>1</sup>.

<sup>1</sup>As 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<sup>®</sup> DQA1* lot was made (**Lot No. 9K2**).

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot (**Lot No. 9K2**).

Well	5'-primer	3'-primer	rationale
29	Added	Added	Primer pair added for improving the resolution of the DQA1*05:02 allele.

<sup>1</sup>S. 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 **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
<b>5'-primer<sup>1</sup></b>	<b>164</b>	<b>340</b>	<b>440</b>	<b>45</b>	<b>45</b>	<b>43</b>	<b>36</b>
	5'-CAC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-TTA <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-TAC <sup>3'</sup>
							<b>36</b>
							5'-TAT <sup>3'</sup>
<b>3'-primer<sup>2</sup></b>	<b>231</b>	<b>2<sup>nd</sup> I</b>	<b>507</b>	<b>59</b>	<b>58</b>	<b>57</b>	<b>47</b>
	5'-TgC <sup>3'</sup>	5'-AAA <sup>3'</sup>	5'-TTg <sup>3'</sup>	5'-CTC <sup>3'</sup>	5'-ggC <sup>3'</sup>	5'-CTC <sup>3'</sup>	5'-ACA <sup>3'</sup>
							<b>48</b>
							5'-gCA <sup>3'</sup>
							<b>48</b>
							5'-gCC <sup>3'</sup>
							<b>52</b>
							5'-TgT <sup>3'</sup>
<b>A*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>B*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>C*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>DRB1</b>				<b>+</b>	<b>+</b>		
<b>DRB3</b>				<b>+</b>	<b>+</b>		
<b>DRB5</b>				<b>+</b>			
<b>DQB1</b>					<b>+</b>		
<b>DPB1</b>						<b>+</b>	
<b>DQA1</b>							<b>+</b>

<sup>1</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>2</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> exon or the 2<sup>nd</sup> 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](http://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

### DQA1 SSP typing

#### CONTENT

The primer set contains 5'- and 3'-primers for identifying the DQA1\*01:01 to DQA1\*06:02 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

The 32 well cut PCR plate is marked with ‘DQA1’, in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘7L8’.

Wells 1 to 31 – DQA1 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 heat-sealed with a PCR-compatible foil.

**Please note:** When removing each 32 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 01:52, DQA1\*02:01 to DQA1\*02:14, DQA1\*03:01 to 03:16, DQA1\*04:01 to DQA1\*04:08, DQA1\*05:01 to 05:29Q and DQA1\*06:01 to 06:02**, recognized by the HLA Nomenclature Committee in October 2020<sup>1,2,3</sup> will be amplified by the primers in the DQA1 typing kit.

<sup>1</sup>DQA1 alleles listed on the IMGT/HLA web page 2020-October-15, release 3.42.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

<sup>2</sup>Alleles 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>.

<sup>3</sup>The DQA1 kit enables separation of DQA1 alleles as listed in the IMGT/HLA database 3.34.0.

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### RESOLUTION IN HOMO- AND HETEROZYGOTES

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

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**SPECIFICITY TABLE**

**DQA1 SSP typing**

Specificities and sizes of the PCR products of the 31+1 primer mixes used for DQA1 SSP typing

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	Amplified DQA1 alleles <sup>3</sup>
<b>1<sup>7</sup></b>	145 bp	<b>515 bp</b>	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:08, 01:04:01:01-01:05:02, 01:07Q, 01:12, 01:18, 01:22, 01:26-01:27, 01:29, 01:34-01:35, 01:37, 01:43, 01:49
<b>2</b>	170 bp	<b>515 bp</b>	*01:01:01:01-01:01:01:03, 01:01:01:05-01:02:09, 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, 01:51-01:52
<b>3</b>	145 bp	430 bp	*01:02:01:01-01:03:04, 01:06, 01:08-01:11, 01:13-01:17, 01:19-01:21, 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
<b>4</b>	170 bp	430 bp	*01:03:01:01-01:03:04, 01:10, 01:14-01:15N, 01:17, 01:24, 01:30, 01:33, 01:44-01:45, 01:47, 01:50
<b>5</b>	220 bp	430 bp	*01:03:02 <sup>?</sup> , 01:04:01:01-01:05:03, 01:06 <sup>?</sup> , 01:07Q, 01:08 <sup>2</sup> -01:09 <sup>?</sup> , 01:12, 01:13 <sup>?</sup> , 01:15N <sup>?</sup> , 01:17 <sup>2</sup> -01:18 <sup>?</sup> , 01:20 <sup>?</sup> , 01:22, 01:26 <sup>?</sup> , 01:28 <sup>2</sup> -01:29 <sup>?</sup> , 01:31 <sup>2</sup> -01:37 <sup>?</sup> , 01:39, 01:40Q <sup>?</sup> , 01:42 <sup>?</sup> , 01:46-01:47, 01:50 <sup>?</sup> , 01:52 <sup>?</sup>
<b>6<sup>4</sup></b>	100 bp	430 bp	*01:04:01:01-01:04:03, 01:06 <sup>?</sup> , 01:07Q, 01:08 <sup>2</sup> -01:09 <sup>?</sup> , 01:13 <sup>?</sup> , 01:15N <sup>?</sup> , 01:18 <sup>?</sup> , 01:26 <sup>?</sup> , 01:29, 01:34 <sup>2</sup> -01:36 <sup>?</sup> , 01:42 <sup>?</sup> , 01:46 <sup>2</sup> -01:47 <sup>?</sup> , 01:50 <sup>?</sup> , 01:52 <sup>?</sup>
<b>7<sup>4,5</sup></b>	95 bp 135 bp	430 bp	*01:06 *05:08
<b>8<sup>4</sup></b>	65 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:02:03, 01:02:05-01:03:04, 01:04:03, 01:06 <sup>?</sup> , 01:08 <sup>2</sup> -01:09 <sup>?</sup> , 01:10-01:11, 01:13 <sup>?</sup> , 01:14, 01:15N <sup>?</sup> , 01:16N, 01:17 <sup>2</sup> -01:18 <sup>?</sup> , 01:19, 01:20 <sup>?</sup> , 01:21, 01:23-01:25, 01:26 <sup>?</sup> , 01:27, 01:28 <sup>2</sup> -01:29 <sup>?</sup> , 01:30, 01:31 <sup>2</sup> -01:37 <sup>?</sup> , 01:38:01:01-01:38:01:02, 01:40Q <sup>?</sup> , 01:41, 01:42 <sup>?</sup> , 01:43-01:52, 02:01:01:01-02:05, 02:07-02:14, 03:01:01:01, 03:01:03-03:16, 04:01:01:01-04:08, 05:01:01:01-05:01:02, 05:01:04-05:12, 05:14-05:29Q, 06:01:01:01-06:02
<b>9</b>	175 bp	430 bp	*02:01:01:01-02:05, 02:07-02:14
<b>10</b>	185 bp	430 bp	*03:01:01:01, 03:01:03-03:16
<b>11</b>	215 bp	430 bp	*03:02:01:01-03:02:02, 03:07, 03:13
<b>12</b>	225 bp	<b>515 bp</b>	*03:02:01:01-03:04, 03:07-03:09, 03:11, 03:13-03:14
<b>13</b>	225 bp	<b>515 bp</b>	*01:01:01:01-01:01:01:03, 01:01:01:05-01:47, 01:49-01:52, 02:01:01:01-02:01:01:02, 02:01:03-02:05, 02:07-02:14, 03:01:01:01, 03:01:03-03:01:06, 03:05 <sup>?</sup> , 03:06, 03:10, 03:12, 03:15, 03:16 <sup>?</sup> , 04:01:01:01-04:01:01:09, 04:01:03-04:08, 05:01:01:01-05:01:02, 05:01:05-05:29Q, 06:01:01:01-06:02
<b>14<sup>4,5</sup></b>	125 bp	430 bp	*04:01:01:01-04:02, 04:04-04:08, 05:01:01:01-05:01:02, 05:01:04-05:29Q
<b>15<sup>5</sup></b>	165 bp 190 bp	430 bp	*05:01:01:01-05:01:02, 05:01:04-05:09, 05:11-05:29Q *01:10, 01:42

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Lot No.	Allele 1	Allele 2	Allele 3
16 <sup>4</sup>	95 bp	<b>515 bp</b>	*05:02, 05:07
17	200 bp	430 bp	*05:01:01:01-05:01:02, 05:01:04-05:01:06, 05:02 <sup>?</sup> , 05:04 <sup>?</sup> , 05:05:01:01-05:05:05, 05:08-05:20, 05:22-05:29Q
18	200 bp	430 bp	*05:02 <sup>?</sup> , 05:03:01:01-05:03:02, 05:04 <sup>?</sup> , 05:06:01:01-05:07
19 <sup>4</sup>	120 bp 205 bp	430 bp	*01:15N *05:01:01:01-05:01:02, 05:01:04-05:03:02, 05:05:01:01-05:09, 05:11-05:29Q
20	135 bp	430 bp	*04:05, 05:04
21 <sup>4,5</sup>	100 bp	430 bp	*05:02 <sup>?</sup> , 05:04 <sup>?</sup> , 05:05:01:01-05:05:05, 05:08-05:09, 05:10 <sup>?</sup> , 05:11, 05:12 <sup>?</sup> , 05:13-05:14, 05:15N <sup>2</sup> -05:17N <sup>2</sup> , 05:20, 05:21 <sup>?</sup> -05:22 <sup>?</sup> , 05:24, 05:25 <sup>?</sup> -05:28 <sup>?</sup> , 05:29Q
22 <sup>4</sup>	210 bp 120 bp 215 bp	<b>515 bp</b>	*01:09 *06:01:01:01-06:02 *02:02N
23 <sup>4</sup>	85 bp	430 bp	*04:01:01:01-04:08, 06:01:01:01-06:02
24 <sup>7</sup>	220 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:52, 02:01:01:01 <sup>w</sup> , 02:01:01:02-02:05, 02:07-02:14, 03:01:01:01, 03:01:03-03:16, 04:01:01:01-04:08, 05:01:01:01-05:01:02, 05:01:04-05:01:06, 05:02 <sup>?</sup> , 05:03:01:01-05:03:02, 05:04 <sup>?</sup> , 05:06:01:01-05:07, 05:10 <sup>?</sup> , 05:12, 05:15N-05:19, 05:21-05:23, 05:25-05:28, 06:01:01:01-06:02
25 <sup>4</sup>	80 bp 175 bp	430 bp	*05:09 *01:07Q, 01:13, 01:24, 01:43
26 <sup>4</sup>	105 bp 160 bp 250 bp	430 bp	*01:16N *01:08, 04:02, 05:10, 06:02 *01:12
27 <sup>4,6</sup>	90 bp 135 bp	430 bp	*04:03N *01:11
28 <sup>4</sup>	105 bp 200 bp	430 bp	*04:04 *01:14
29 <sup>4</sup>	90 bp 120 bp	<b>515 bp</b>	*05:02 *03:04
30 <sup>4</sup>	115 bp 215 bp	430 bp	*05:11 *05:06:01:01-05:06:01:03
31 <sup>4</sup>	100 bp	430 bp	*01:01:01:01-01:01:01:03, 01:01:01:05-01:01:06, 01:01:08, 01:05:01:01-01:05:03, 01:06 <sup>?</sup> , 01:08 <sup>?</sup> -01:09 <sup>?</sup> , 01:12, 01:13 <sup>?</sup> , 01:15N <sup>?</sup> , 01:18 <sup>?</sup> , 01:22, 01:26 <sup>?</sup> , 01:27, 01:34 <sup>?</sup> -01:36 <sup>?</sup> , 01:37, 01:42 <sup>?</sup> , 01:43, 01:46 <sup>?</sup> -01:47 <sup>?</sup> , 01:49, 01:50 <sup>?</sup> , 01:52 <sup>?</sup>
32 <sup>5,8</sup>	-	-	<b>Negative Control</b>

<sup>1</sup>Alleles 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.

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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.

<sup>2</sup>The 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.

<sup>3</sup>For several DQA1 alleles 1<sup>st</sup> and/or 3<sup>rd</sup> 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.

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

<sup>5</sup>Primer mixes 7, 14, 15, 21 and 32 may have a tendency to giving rise to primer oligomer formation.

<sup>6</sup>Primer mix 27 may have a tendency of unspecific amplification.

<sup>7</sup>Primer mixes 1 and 24 may give rise to a lower yield of HLA-specific PCR product than the other DQA1 primer mixes.

<sup>8</sup>Primer 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.

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

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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	145	170	145	170	220	100	95	65	175	185	215	225
Length of int. pos. control <sup>1</sup>	515	515	430	430	430	430	430	430	430	430	430	515
5'-primer(s) <sup>2</sup>	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'	25(143) 5'-gTA 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'
							107(389) 5'-CAT 3'					
3'-primer(s) <sup>3</sup>	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	69(274) 5'-TgC 3'	1 <sup>st</sup> I 5'-TTT 3'	218(722) 5'-CTT 3'	44(199) 5'-AgC 3'	2(74) 5'-TgT 3'	52(224) 5'-TgT 3'	55(232) 5'-TCT 3'	1 <sup>st</sup> I 5'-TTT 3'	160(548) 5'-CAT 3'
							139(485) 5'-AgA 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 <sup>1</sup>	515	430	430	515	430	430	430	430	430	515	430	430
5'-primer(s) <sup>2</sup>	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 <sup>4</sup> 5'-ACT 3'
				189(634) 5'-CTA 3'				26(146) 5'-CAT 3'	103(377) 5'-ggA 3'			
3'-primer(s) <sup>3</sup>	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 <sup>st</sup> 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'		160(548) 5'-CAg 3'	86(327) 5'-TTg 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.	80	105	90	105	90	115	100
PCR product	175	160	135	200	120	215	
		250					
Length of int.	430	430	430	430	515	430	430
pos. control <sup>1</sup>							
5'-primer(s) <sup>2</sup>	-14(31) 5'-ggA 3'	34(169) 5'-AgC 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'
	34(169) 5'-Agg 3'	99(366) 5'-CCC 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'	101(372) 5'-ACg 3'					
3'-primer(s) <sup>3</sup>	1(70) 5'-TTT 3'	55(234) 5'-CT 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'
	79(304) 5'-gCA 3'	77(298) 5'-AAC 3'	218(722) 5'-CTT 3'	174(591) 5'-TCg 3'	126(447) 5'-TTT 3'	218(722) 5'-CTC 3'	
		134(470) 5'-CAg 3'					
		138(482) 5'-TgA 3'					
		139(484) 5'-gCg 3'					
		169(574) 5'-CTg 3'					
Well No.	25	26	27	28	29	30	31

<sup>1</sup>The 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.

<sup>2</sup>The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>The 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>4</sup>Primer located upstream of the 1<sup>st</sup> exon.

101.231-24/04 – including *Taq* pol., IFU-01  
 101.231-24u/04u – without *Taq* pol., IFU-02

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Lot No.: **7L8**

Lot-specific information

CELL LINE VALIDATION SHEET																			
DQA1 SSP typing kit <sup>2</sup>																			
				Well															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:															
				202016901	201905202	201905203	201905204	201905205	201905206	201905207	201905208	201905209	201905210	201905211	201905212	201905213	201905214	201905215	201905216
	IHWC cell line <sup>1</sup>	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* pol., IFU-01  
101.231-24u/04u – without *Taq* pol., IFU-02

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Lot No.: **7L8**

Lot-specific information

CELL LINE VALIDATION SHEET				Well															
DQA1 SSP typing kit <sup>2</sup>				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
			Prod. No.:	201905217	201905218	201905219	201905220	201905221	201905222	201905223	201905224	201905225	201905226	201905227	201905228	202026729	201905230	201905231	
	IHWC cell line <sup>1</sup>	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 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		-	-	-	-	-	-	-	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* pol., IFU-01  
101.231-24u/04u – without *Taq* pol., IFU-02

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**Lot No.: 7L8****Lot-specific information**

<sup>1</sup>The 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.

<sup>2</sup>The 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 and 26 to 29 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 solution 26 the 5'-primers were tested by adding three additional 3'-primers, while the 3'-primers were not possible to be tested. In primer solutions 20, 27 and 28 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, 21, 29 and 30, one 5'-primer was not possible to be tested, and in primer solutions 7, 16, 19, 22, 25 and 29 one 3'-primer was not possible to be tested.

In addition, one or more primers in primer solutions 7, 21, 25 and 30 were tested by separately adding one 5'-primer or one 3'-primer.

101.231-24/04 – including *Taq* pol., IFU-01  
 101.231-24u/04u – without *Taq* pol., IFU-02

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Lot No.: **7L8**

Lot-specific information

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