

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **4E1**

Lot-specific information
Olerup SSP® HLA-A*68

Product number:	101.418-12/04 – including <i>Taq</i> pol. 101.418-12u/04u – without <i>Taq</i> pol.
Lot number:	4E1
Expiry date:	2019-05-01
Number of tests:	12 tests – Product No. 101.418-12/12u 4 tests – Product No. 101.418-04/04u
Number of wells per test:	47+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. 4E1.

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-A*68 LOT (97Y)**

The HLA-A*68 kit is updated for new alleles to enable separation of:

- Confirmed¹ alleles as listed in the IMGT/HLA database
- Polymorphisms in exons outside of the region encoding the peptide binding domain
- Null and Alternatively expressed alleles

¹As described in section Uniquely Identified Alleles.

The HLA-A*68 specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP®* HLA-A*68 lot was made (**Lot No. 97Y**). The kit design is based on IMGT/HLA database 3.25.0.

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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
9	Removed	-	5'-primer removed exchange of positive control primer pair for improved HLA-specific amplification and for decreased tendency of primer oligomer formation.
10	-	Added	3'-primer added for the A*68:148Q allele.
17	Modified	-	5-primer modified for decreased tendency of primer oligomer formation.
24	-	Added	3'-primers added for the A*68:112:01-68:112:02 alleles.
41	Added	Added	Primer pair added for the A*68:144 allele.
46	Added	-	5'-primer added for the A*68:142N allele.

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Well **48** contains Negative Control primer pairs, that will amplify more than 95% 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 430 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

HLA-A*68 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the A*68:01 to A*68:148Q alleles.

PLATE LAYOUT

Each test consists of 48 PCR reactions in a 48 well cut PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	NC

The 48 well cut PCR plate is marked with ‘HLA-A*68’ in silver gray ink.

Well No. 1 is marked with the Lot No ‘4E1’.

Wells 1 to 47 – HLA-A*68 high resolution primers.

Well 48 – Negative Control (NC).

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded.

The PCR plates are heat-sealed with a PCR-compatible foil.

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

INTERPRETATION

Due to the sharing of sequence motifs between HLA-A alleles non-HLA-A*68 alleles will be amplified by primer mixes 1, 2, 4 to 7, 9 to 11, 13 to 27, 29 to 32, 34 to 38 and 40 to 46. In addition, a few HLA-B and HLA-C alleles will be amplified by primer mixes 1, 10, 12, 15, 17, 21, 23, 24, 28, 29, 35 and 45.

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A*68 alleles, i.e. **A*68:01 to A*68:148Q** alleles, recognized by the HLA Nomenclature Committee in July 2016^{1,2} will be amplified by the primers in the HLA-A*68 subtyping kit.

The HLA-A*68 kit enables separation of the confirmed HLA-A*68 alleles as listed in the IMGT/HLA database. 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-A*68 alleles is listed below.

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The HLA-A*68 kit also enables identification of polymorphisms in exons outside of the region encoding the peptide binding domain and of null and alternatively expressed alleles.

The following HLA-A*68 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix
A:68:52, 68:142N	46
A*68:68, 68:106	39
A*68:99, 68:101	42

The HLA-A*68 subtyping kit cannot distinguish the following silent mutations: the A*68:01:01:01-68:01:01:02, 68:01:03-68:01:05, 68:01:07-68:01:12 68:01:14, 68:01:18-68:01:20, 68:01:28 and 68:01:32, the A*68:01:02:01-68:01:02:03, 68:01:06, 68:01:13, 68:01:15-68:01:16, 68:01:21-68:01:27 and 68:01:30-68:01:31, the 68:01:17 and 68:103:02, the A*68:02:01:01-68:02:10 and 68:02:12, the A*68:03:01-68:03:02, the A*68:27:01-68:27:02, the A*68:43:01-68:43:02 or the A*68:112:01-68:112:02 alleles.

¹HLA-A alleles listed on the IMGT/HLA web page 2016-July-14, release 3.25.0, 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	Allele	Status ¹	Allele	Status ¹
A*68:01:01:01	Confirmed	A*68:03:02	Unconfirmed	A*68:46	Confirmed	A*68:93	Confirmed
A*68:01:01:02	Confirmed	A*68:03:03	Confirmed	A*68:47	Unconfirmed	A*68:94N	Unconfirmed
A*68:01:02:01	Confirmed	A*68:04:01	Unconfirmed	A*68:48	Unconfirmed	A*68:95	Unconfirmed
A*68:01:02:02	Confirmed	A*68:04:02	Unconfirmed	A*68:49N	Unconfirmed	A*68:96	Confirmed
A*68:01:02:03	Confirmed	A*68:05	Confirmed	A*68:50	Unconfirmed	A*68:97	Unconfirmed
A*68:01:03	Unconfirmed	A*68:06	Confirmed	A*68:51	Unconfirmed	A*68:98	Unconfirmed
A*68:01:04	Unconfirmed	A*68:07	Confirmed	A*68:52	Unconfirmed	A*68:99	Confirmed
A*68:01:05	Unconfirmed	A*68:08:01	Unconfirmed	A*68:53	Confirmed	A*68:100	Unconfirmed
A*68:01:06	Confirmed	A*68:08:02	Confirmed	A*68:54	Confirmed	A*68:101	Confirmed
A*68:01:07	Unconfirmed	A*68:09	Unconfirmed	A*68:55:01	Confirmed	A*68:102	Unconfirmed
A*68:01:08	Confirmed	A*68:10	Confirmed	A*68:55:02	Unconfirmed	A*68:103:01	Unconfirmed
A*68:01:09	Unconfirmed	A*68:11N	Confirmed	A*68:56	Unconfirmed	A*68:103:02	Unconfirmed
A*68:01:10	Unconfirmed	A*68:12	Confirmed	A*68:57	Unconfirmed	A*68:104:01	Confirmed
A*68:01:11	Unconfirmed	A*68:13:01	Confirmed	A*68:58	Unconfirmed	A*68:104:02	Unconfirmed
A*68:01:12	Unconfirmed	A*68:13:02	Unconfirmed	A*68:59N	Confirmed	A*68:105	Unconfirmed
A*68:01:13	Unconfirmed	A*68:14	Unconfirmed	A*68:60	Confirmed	A*68:106	Confirmed
A*68:01:14	Unconfirmed	A*68:15	Confirmed	A*68:61	Unconfirmed	A*68:107	Unconfirmed
A*68:01:15	Unconfirmed	A*68:16	Confirmed	A*68:62	Unconfirmed	A*68:108	Unconfirmed
A*68:01:16	Unconfirmed	A*68:17	Confirmed	A*68:63	Unconfirmed	A*68:109	Unconfirmed
A*68:01:17	Unconfirmed	A*68:18N	Confirmed	A*68:64	Unconfirmed	A*68:110	Confirmed
A*68:01:18	Unconfirmed	A*68:19	Confirmed	A*68:65	Confirmed	A*68:111	Unconfirmed
A*68:01:19	Unconfirmed	A*68:20	Unconfirmed	A*68:66	Unconfirmed	A*68:112:01	Unconfirmed
A*68:01:20	Confirmed	A*68:21:01	Unconfirmed	A*68:67	Confirmed	A*68:112:02	Confirmed
A*68:01:21	Unconfirmed	A*68:21:02	Unconfirmed	A*68:68	Confirmed	A*68:113	Unconfirmed
A*68:01:22	Confirmed	A*68:22	Unconfirmed	A*68:69	Unconfirmed	A*68:114	Unconfirmed
A*68:01:23	Unconfirmed	A*68:23	Unconfirmed	A*68:70	Unconfirmed	A*68:115	Unconfirmed
A*68:01:24	Confirmed	A*68:24	Confirmed	A*68:71	Unconfirmed	A*68:116	Unconfirmed
A*68:01:25	Confirmed	A*68:25	Confirmed	A*68:72	Confirmed	A*68:117	Confirmed
A*68:01:26	Confirmed	A*68:26	Unconfirmed	A*68:73	Unconfirmed	A*68:118	Unconfirmed
A*68:01:27	Unconfirmed	A*68:27:01	Confirmed	A*68:74	Unconfirmed	A*68:119:01	Unconfirmed
A*68:01:28	Unconfirmed	A*68:27:02	Unconfirmed	A*68:75:01	Unconfirmed	A*68:119:02	Unconfirmed
A*68:01:29	Unconfirmed	A*68:28	Unconfirmed	A*68:75:02	Unconfirmed	A*68:120N	Unconfirmed
A*68:01:30	Unconfirmed	A*68:29	Unconfirmed	A*68:76:01	Unconfirmed	A*68:121	Unconfirmed
A*68:01:31	Confirmed	A*68:30	Unconfirmed	A*68:76:02	Unconfirmed	A*68:122	Unconfirmed
A*68:01:32	Unconfirmed	A*68:31	Confirmed	A*68:77	Unconfirmed	A*68:123	Confirmed
A*68:02:01:01	Confirmed	A*68:32	Unconfirmed	A*68:78	Unconfirmed	A*68:124	Unconfirmed
A*68:02:01:02	Unconfirmed	A*68:33	Confirmed	A*68:79	Unconfirmed	A*68:125	Unconfirmed
A*68:02:01:03	Confirmed	A*68:34	Unconfirmed	A*68:80	Confirmed	A*68:126	Unconfirmed
A*68:02:02	Confirmed	A*68:35	Confirmed	A*68:81	Unconfirmed	A*68:127	Unconfirmed
A*68:02:03	Confirmed	A*68:36	Confirmed	A*68:82	Unconfirmed	A*68:128	Unconfirmed
A*68:02:04	Confirmed	A*68:37	Confirmed	A*68:83	Unconfirmed	A*68:129	Unconfirmed
A*68:02:05	Unconfirmed	A*68:38	Unconfirmed	A*68:84	Unconfirmed	A*68:130	Unconfirmed
A*68:02:06	Unconfirmed	A*68:39	Unconfirmed	A*68:85	Unconfirmed	A*68:131	Unconfirmed
A*68:02:07	Unconfirmed	A*68:40	Confirmed	A*68:86	Confirmed	A*68:132	Unconfirmed
A*68:02:08	Unconfirmed	A*68:41	Unconfirmed	A*68:87	Unconfirmed	A*68:133	Unconfirmed
A*68:02:09	Unconfirmed	A*68:42	Unconfirmed	A*68:88	Unconfirmed	A*68:134	Unconfirmed
A*68:02:10	Unconfirmed	A*68:43:01	Unconfirmed	A*68:89	Unconfirmed	A*68:135	Unconfirmed
A*68:02:11	Unconfirmed	A*68:43:02	Unconfirmed	A*68:90	Unconfirmed	A*68:136	Unconfirmed
A*68:02:12	Unconfirmed	A*68:44	Confirmed	A*68:91	Confirmed	A*68:137	Unconfirmed
A*68:03:01	Confirmed	A*68:45	Unconfirmed	A*68:92	Unconfirmed	A*68:138	Unconfirmed

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Allele	Status ¹
A*68:139	Unconfirmed
A*68:140	Unconfirmed
A*68:141	Unconfirmed
A*68:142N	Unconfirmed
A*68:143	Unconfirmed
A*68:144	Unconfirmed
A*68:145	Unconfirmed
A*68:146	Unconfirmed
A*68:147	Unconfirmed
A*68:148Q	Unconfirmed

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2016-July-14, release 3.25.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in HLA-A*68 homo- and heterozygotes is available upon request.

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SPECIFICITY TABLE

HLA-A*68 SSP subtyping

Specificities and sizes of the PCR products of the 47+1 primer mixes used for HLA-A*68 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-A*68 alleles ³	Other amplified HLA-A alleles ⁴
1 ⁶	200 bp	800 bp	*68:01:01:01-68:02:12, 68:06-68:14, 68:16-68:19, 68:21:01-68:30, 68:32-68:35, 68:37-68:45, 68:46 ^w , 68:47-68:56, 68:58-68:83, 68:85-68:89, 68:91, 68:93-68:108, 68:110-68:135, 68:137-68:148Q	*01:13, 01:176, 01:194, 02:34-02:35:03, 02:56:01-02:56:02, 02:62, 02:78, 02:103, 02:580, 03:01:01:01-03:01:08, 03:01:10-03:01:22, 03:01:24-03:07, 03:09-03:31, 03:33-03:35, 03:37-03:40, 03:42-03:56, 03:58-03:88, 03:90-03:106, 03:109-03:110, 03:112-03:141, 03:143-03:151, 03:153-03:160, 03:162N-03:171, 03:174-03:175, 03:177, 03:179-03:193, 03:195-03:197N, 03:200Q-03:202, 03:204-03:205, 03:207-03:210, 03:212-03:218, 03:220-03:249, 11:01:01:01-11:01:50, 11:01:52-11:01:72, 11:03-11:13, 11:15:01-11:15:02, 11:20-11:27, 11:29-11:37, 11:39, 11:41-11:44, 11:46-11:50Q, 11:52Q, 11:54-11:56, 11:58-11:70:02, 11:72-11:76, 11:79-11:97, 11:99N-11:100, 11:102-11:105, 11:107-11:109N, 11:112, 11:114-11:120, 11:122-11:139, 11:141-11:146, 11:148-11:160, 11:162-11:167, 11:169-11:175, 11:177, 11:179-11:189, 11:191-11:200, 11:202-11:222, 11:224-11:234, 11:236-11:245, 24:19, 24:290, 30:18, 30:55, 31:89, 34:01:01-34:13, 34:15, 66:01:01-66:02, 66:04, 66:06-66:10, 66:12-66:14, 66:16-66:26Q, 69:01-69:03, 74:13, C*03:82, C*03:184:01
2	435 bp	1070 bp	*68:01:01:01-68:01:32, 68:03:01-68:05, 68:08:01-68:09, 68:11N-68:12, 68:16-68:17, 68:19-68:26, 68:29, 68:32-68:33, 68:35-68:39, 68:41-68:43:02, 68:45-68:47, 68:50, 68:52, 68:55:01-68:59N, 68:63, 68:65, 68:68-68:73, 68:76:01-68:76:02, 68:79, 68:83-68:85, 68:87, 68:89-68:91, 68:93-68:96, 68:98-68:103:02, 68:105-68:109, 68:111-68:123,	*01:51, 03:24, 11:10, 33:18:01-33:18:02, 34:02:01-34:04, 34:07-34:09, 34:13, 34:15

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3	195 bp	1070 bp	68:126-68:127, 68:129, 68:131-68:137, 68:139, 68:141-68:146, 68:148Q *68:02:01:01-68:02:12, 68:15, 68:18N, 68:28, 68:31, 68:34, 68:39-68:40, 68:44, 68:48- 68:49N, 68:51, 68:53-68:54, 68:60-68:62, 68:64, 68:67, 68:74, 68:77-68:78, 68:80- 68:82, 68:86, 68:92, 68:97, 68:110, 68:124-68:125, 68:128, 68:138, 68:140, 68:147	
4	180 bp 225 bp	1070 bp	*68:30 *68:03:01-68:03:02, 68:05, 68:20	*02:06:05 *02:06:05
5	140 bp 235 bp	800 bp	*68:25 *68:04:01-68:04:02	*02:339, 02:407, 02:449, 02:594 *11:98, 33:51, 66:15
6	230 bp	1070 bp	*68:05, 68:15, 68:20	*02:06:05, 02:122, 02:143
7	145 bp	1070 bp	*68:06, 68:32	*02:52
8	160 bp 240 bp	800 bp	*68:07 *68:46	
9	195 bp 250 bp	800 bp	*68:47 *68:08:01-68:08:02, 68:63	*25:19:01-25:19:02, 25:30, 26:43:01- 26:43:02, 26:112, 34:03 [?] -34:04 [?] , 34:06 [?] -34:10N [?] , 34:13 [?] , 66:06
10	165 bp	800 bp	*68:09, 68:26, 68:129, 68:134	*01:12, 01:19, 01:127, 01:136, 03:10, 03:167, 11:01:01:01-11:01:34, 11:01:36-11:01:56, 11:01:58-11:07, 11:10-11:21N, 11:26-11:27, 11:29- 11:30, 11:32:01-11:34, 11:36-11:43, 11:45-11:49, 11:51-11:52Q, 11:54- 11:58, 11:60-11:93, 11:95-11:111, 11:114-11:115N, 11:117-11:129, 11:131-11:139, 11:141-11:157, 11:159-11:161, 11:163-11:175, 11:177-11:182Q, 11:184-11:190, 11:192-11:203, 11:205-11:210N, 11:212-11:215N, 11:217-11:225, 11:227-11:228, 11:230-11:245, 24:17, 24:41, 24:208, 24:296, 29:05, 29:33, 29:77, 29:87, C*16:67
11⁹	190 bp 160 bp 200 bp	800 bp	*68:148Q *68:17 *68:10, 68:14, 68:120N	*02:358
12	200 bp 405 bp	1070 bp	*68:38, 68:110, 68:120N *68:11N	C*06:139
13	210 bp	800 bp	*68:12, 68:50, 68:117, 68:129, 68:131 *68:51	*26:122 *26:18
14	240 bp 260 bp 400 bp	1070 bp	*68:113, 68:115 *68:13:01-68:13:02	*02:217:02, 02:419, 24:309
15	145 bp	1070 bp	*68:19	*02:237, 03:17:01, 03:171, 24:18, 24:204, 24:213
	200 bp		*68:14, 68:80-68:81	*02:121, 02:425, 02:517, 23:47,

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				24:234, 24:339, 24:141, C*12:37^w
16	215 bp	1070 bp	*68:15, 68:31, 68:40	*02:122, 02:143
17⁶	175 bp	1070 bp	*68:02:01:01-68:02:10, 68:02:12, 68:15, 68:18N, 68:20, 68:27:01-68:28, 68:31, 68:34, 68:40, 68:44, 68:48- 68:49N, 68:51, 68:53-68:54, 68:60-68:62, 68:64, 68:67, 68:74, 68:77-68:78, 68:80- 68:82, 68:86, 68:92, 68:97, 68:104:01-68:104:02, 68:110, 68:124-68:125, 68:128, 68:138, 68:140, 68:147	*02:02:01:01 ^w , 02:02:01:02-02:02:02, 02:03:01-02:03:08, 02:05:01 ^w - 02:05:06 ^w , 02:08 ^w , 02:22:01- 02:22:02, 02:47 ^w , 02:49-02:50, 02:63 ^w , 02:102 ^w , 02:104, 02:115 ^w , 02:117, 02:122, 02:135-02:136, 02:148, 02:154 ^w -02:155 ^w , 02:172 ^w , 02:179 ^w , 02:186 ^w , 02:191, 02:209 ^w , 02:230, 02:232 ^w , 02:253, 02:258, 02:264, 02:267, 02:281, 02:286 ^w , 02:315, 02:320 ^w , 02:323, 02:324 ^w , 02:337 ^w , 02:344 ^w , 02:345, 02:355, 02:359 ^w , 02:370, 02:373N ^w , 02:376 ^w , 02:382, 02:402, 02:412, 02:413 ^w , 02:421 ^w , 02:427, 02:431, 02:433 ^w , 02:447, 02:463, 02:466, 02:480, 02:484 ^w , 02:489 ^w , 02:492 ^w , 02:495 ^w - 02:496 ^w , 02:505, 02:507 ^w , 02:517 ^w , 02:529, 02:531 ^w -02:532 ^w , 02:544, 02:546 ^w , 02:557, 02:568, 02:572, 02:577 ^w , 02:591 ^w , 02:593 ^w , 02:595, 02:601 ^w , 02:612 ^w , 02:626, 02:631, 02:633-02:634, 23:02, 23:66, 24:06, 24:87, 24:138, 24:167, 24:285, 24:289, 24:339, 25:01:01-25:03, 25:05-25:11, 25:13-25:18, 25:20- 25:29, 25:31-25:35, 26:01:01:01- 26:01:04, 26:01:07-26:07:02, 26:09- 26:26, 26:28-26:39, 26:41-26:42, 26:45-26:47, 26:49-26:66, 26:68- 26:72, 26:74-26:80, 26:82-26:85, 26:87-26:90, 26:92, 26:94-26:111, 26:113-26:123, 31:30, 31:97, 32:10, 33:94, 34:01:01-34:01:02, 34:05, 34:11-34:12, 34:14, 43:01, 66:01:01- 66:05, 66:07-66:25, B*07:197, B*15:342, B*27:25, B*27:45, B*27:108, B*27:115, C*02:07
18	200 bp	800 bp	*68:26, 68:65, 68:115, 68:131	*01:01:01:01-01:01:65, 01:01:67- 01:04N, 01:06-01:29, 01:31N-01:33, 01:35-01:71, 01:73-01:78, 01:80- 01:101, 01:103-01:144, 01:146- 01:166, 01:168-01:199, 01:201- 01:208Q, 03:18, 03:97, 03:122, 03:135, 03:167, 11:27, 11:38-11:39, 11:94, 11:209, 23:53, 23:70, 24:17, 24:41, 24:208, 24:296, 29:03, 29:33, 80:01:01:01-80:03
	225 bp		*68:21:01-68:21:02	*01:86, 03:04:01-03:04:03, 11:153:01-11:153:02
19	325 bp	1070 bp	*68:22	*29:86, 33:63

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20 ^{5,7}	90 bp	1070 bp	*68:23, 68:105	*01:20, 01:66, 01:73, 01:130, 02:114, 02:246, 02:279, 02:527, 02:582, 03:95, 03:177, 29:22, 29:89
21	165 bp	1070 bp	*68:28	*02:49, 24:87, 24:285, 24:289, 24:299, 31:97, 66:19, 66:26Q, B*07:197, B*27:45, B*27:108
22	215 bp 170 bp	800 bp	*68:24, 68:123 *68:01:01:01-68:01:32, 68:03:01-68:05, 68:07, 68:10-68:14, 68:16-68:17, 68:19-68:25, 68:29-68:30, 68:32-68:33, 68:35-68:39, 68:41-68:43:02, 68:45-68:47, 68:50, 68:52, 68:55:01-68:59N, 68:65-68:66, 68:68-68:73, 68:75:01-68:76:02, 68:79, 68:83-68:85, 68:87-68:91, 68:93-68:96, 68:98-68:103:02, 68:105-68:107, 68:109, 68:111-68:112:02, 68:114, 68:116-68:123, 68:126-68:127, 68:130-68:133, 68:135-68:137, 68:139, 68:141-68:146, 68:148Q	*01:01:01:01 ^w -01:01:01:02N ^w , 01:01:02 ^w -01:04N ^w , 01:07 ^w -01:11N ^w , 01:13 ^w -01:18N ^w , 01:20 ^w -01:24 ^w , 01:26 ^w -01:29 ^w , 01:31N ^w -01:33 ^w , 01:35 ^w -01:78 ^w , 01:80 ^w -01:97 ^w , 01:98, 01:99 ^w -01:126 ^w , 01:128 ^w -01:135 ^w , 01:137 ^w -01:144 ^w , 01:146 ^w -01:199 ^w , 01:201 ^w -01:208Q ^w , 02:229, 02:527, 02:582, 03:18 ^w , 03:50, 03:66, 03:225, 11:08, 11:44, 11:183, 11:191, 29:01:03, 29:28, 29:79, 36:01 ^w , 36:02, 36:03 ^w -36:05 ^w
23	185 bp	1070 bp	*68:01:01:01-68:01:32, 68:03:01-68:05, 68:07-68:14, 68:16-68:17, 68:19-68:25, 68:26 ^w , 68:29-68:30, 68:32-68:33, 68:35-68:39, 68:41-68:43:02, 68:45-68:47, 68:50, 68:52, 68:55:01-68:59N, 68:63, 68:66, 68:68-68:73, 68:75:01-68:76:02, 68:79, 68:83-68:85, 68:87-68:91, 68:93-68:96, 68:98-68:103:02, 68:105-68:109, 68:111-68:114, 68:116-68:123, 68:129-68:130, 68:132-68:133, 68:135-68:137, 68:139, 68:141-68:146	*01:200, 02:114, 02:229, 02:246, 02:279, 02:527, 02:582, 03:01:01:01-03:01:29, 03:01:31-03:01:49, 03:01:51-03:17:02, 03:20-03:39, 03:41-03:42, 03:44:01-03:52, 03:54-03:81, 03:83-03:96, 03:99-03:102, 03:104, 03:106-03:121, 03:123:01-03:134, 03:136-03:166, 03:168N-03:169, 03:171-03:185, 03:187-03:190, 03:192N-03:193, 03:195-03:196, 03:198-03:207, 03:209-03:225, 03:227-03:235, 03:237-03:249, 11:04, 11:35, 11:130, 29:01:01:01-29:02:01:03, 29:02:03-29:02:17, 29:04-29:31, 29:34-29:66, 29:68-29:69, 29:71-29:81, 29:83-29:90, 30:26, 31:03-31:04, 31:06, 32:04, 32:30, 32:32, 33:18:01-33:18:02, 34:02:01-34:04, 34:07-34:10N, 34:13, 34:15, 36:01-36:03, 36:05, C*16:67
24 ⁵	85 bp 375 bp	1070 bp	*68:112:01-68:112:02 *68:105, 02:55, 26:22, 33:22, 66:09, 69:01-69:03	*34:15, B*08:131, B*08:136, B*08:139
25	240 bp	1070 bp	*68:29	*02:243:01-02:243:02, 24:82
26 ⁵	100 bp 190 bp	1070 bp	*68:49N *68:33, 68:80	*24:141, 33:03:17
27 ⁵	105 bp 185 bp 235 bp	1070 bp	*68:18N *68:34 *68:43:01-68:43:02	*02:385, 02:529 *11:219

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28	200 bp 230 bp	1070 bp	*68:35, 68:38, 68:110 *68:44	C*06:139
29^{5,6}	80 bp	800 bp	*68:42, 68:54, 68:61, 68:63	*02:03:01-02:03:08, 02:26, 02:99, 02:117, 02:148, 02:171:02, 02:253, 02:258, 02:264, 02:281, 02:315, 02:323, 02:345, 02:355, 02:370, 02:393, 02:402, 02:412, 02:427, 02:431, 02:447, 02:463, 02:466, 02:480, 02:489, 02:505, 02:529, 02:541, 02:544, 02:557, 02:568, 02:589, 02:592, 02:595, 02:612, 02:633-02:634, 03:01:38, 03:123:02, 11:25:01, 11:191, 26:01:17
30	250 bp 145 bp	1070 bp	*68:36-68:37	B*44:03:19-44:03:20 *02:117, 02:135, 25:01:01-25:01:08, 25:02-25:07, 25:10-25:19:01, 25:20- 25:27:02, 25:29-25:30, 26:01:01:01, 26:01:02-26:01:14, 26:01:16- 26:01:25, 26:01:27-26:01:37, 26:02:01, 26:03:01-26:10, 26:12- 26:13, 26:15-26:17, 26:19-26:27, 26:29-26:39, 26:41-26:43:02, 26:45- 26:46, 26:48-26:72, 26:74-26:109, 26:111, 26:113, 34:01:01-34:01:02, 34:05, 34:11-34:12, 43:01, 66:01:01- 66:01:02, 66:02-66:15, 66:17, 66:19- 66:21
31⁶	245 bp 220 bp	1070 bp	*68:37 *68:48, 68:50, 68:129, 68:137	*25:01:01-25:04, 25:06-25:07, 25:09- 25:21, 25:23-25:25, 25:27:01-25:35, 26:01:01:01-26:01:25, 26:01:27- 26:02:01, 26:03:01-26:10, 26:12- 26:43:02, 26:45-26:46, 26:48-26:53, 26:55-26:124, 34:01:01-34:01:02, 34:03 [?] -34:11 [?] , 34:12, 34:13 [?] -34:14 [?] , 43:01, 66:01:01-66:01:02, 66:02- 66:15, 66:17, 66:19-66:26Q
32^{5,8}	120 bp	800 bp	*68:21:01, 68:53	*02:74:02, 02:159
33	150 bp	1070 bp	*68:16	
34⁵	105 bp 165 bp	1070 bp	*68:18N *68:55:01-68:55:02, 68:124	*03:163, 03:244
35⁷	140 bp 295 bp	1070 bp	*68:59N *68:93, 68:97	*32:73, B*44:129
36	195 bp	1070 bp	*68:01:01:01-68:01:01:02, 68:01:03-68:01:05, 68:01:07- 68:01:12, 68:01:14, 68:01:18- 68:01:20, 68:01:28, 68:01:32, 68:03:03-68:04:01, 68:08:01, 68:21:02-68:22, 68:25- 68:27:02, 68:35, 68:42- 68:43:02, 68:50, 68:55:01, 68:56, 68:58-68:59N, 68:63, 68:68, 68:72, 68:75:02, 68:76:02, 68:79, 68:87-68:88, 68:94N, 68:103:01, 68:104:02,	*11:10, 25:01:01-25:01:03, 25:01:05- 25:02, 25:04-25:14, 25:16, 25:18- 25:29, 25:31-25:35, 26:01:01:01- 26:01:29, 26:01:31-26:06, 26:08- 26:15, 26:17-26:18, 26:21-26:34, 26:36-26:43:02, 26:45-26:63, 26:65- 26:71N, 26:73-26:82, 26:84-26:88, 26:90-26:91, 26:93-26:124, 33:51, 34:01:01-34:07, 34:09-34:15, 66:01:01-66:22, 66:24-66:26Q, 69:01-69:03

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			68:106, 68:113, 68:119:01, 68:122, 68:126-68:127, 68:129, 68:133, 68:135, 68:139, 68:143
37	145 bp 170 bp 285 bp	1070 bp	*68:67 *68:123 *68:26, 68:65, 68:115, 68:131
			*34:12 *26:29, 26:49, 66:10
38⁷	165 bp	1070 bp	*68:91, 68:140
			*25:01:01-25:19:02, 25:21-25:22, 25:24-25:35, 26:01:01:01-26:09, 26:11N-26:43:02, 26:45-26:60N, 26:62-26:99, 26:101-26:106, 26:108- 26:124, 34:01:01-34:01:02, 34:03 ² - 34:11 ² , 34:12, 34:13 ² -34:14 ² , 43:01, 66:01:01-66:26Q
39⁵	95 bp 180 bp	1070 bp	*68:106 *68:68
40	215 bp	1070 bp	*68:01:01:01-68:01:16, 68:01:18-68:01:32, 68:03:01- 68:07, 68:10-68:14, 68:16- 68:17, 68:19-68:22, 68:24- 68:25, 68:29-68:30, 68:32- 68:33, 68:35-68:39, 68:41- 68:43:02, 68:45-68:47, 68:50, 68:52, 68:55:01-68:59N, 68:65-68:66, 68:68-68:72, 68:75:01-68:76:02, 68:79, 68:84-68:85, 68:87-68:91, 68:93-68:96, 68:98-68:102, 68:104:01-68:104:02, 68:106- 68:109, 68:111-68:114, 68:116-68:123, 68:126- 68:127, 68:130-68:133, 68:135-68:137, 68:139, 68:141-68:144, 68:146, 68:148Q
			*23:02 ^w , 23:66 ^w , 24:06 ^w , 24:22 ^w , 24:138 ^w , 24:167 ^w , 24:339 ^w , 26:70, 29:28, 31:30, 32:10, 33:94
41	135 bp 200 bp	1070 bp	*68:144 *68:45, 68:117
			*32:68 *24:24, 24:67, 24:290, 26:16
42	130 bp 245 bp	1070 bp	*68:60, 68:99 *68:101
			*11:164 *03:180
43	365 bp	1070 bp	*68:94N
			*26:71N
44	190 bp	1070 bp	*68:75:01-68:75:02, 68:96, 68:130
			*11:11, 43:01
45	150 bp 220 bp 255 bp	1070 bp	*68:41 *68:72 *68:86
			*01:126 *26:57, B*39:104
46⁵	110 bp 495 bp	1070 bp	*68:52 *68:142N
			*02:396
47⁷	220 bp	1070 bp	*68:01:02:01-68:01:02:03, 68:01:06, 68:01:13, 68:01:15- 68:01:17, 68:01:21-68:01:27, 68:01:30-68:01:31, 68:06- 68:07, 68:08:02-68:09, 68:11N-68:12, 68:13:02, 68:16-68:17, 68:19, 68:21:01, 68:23-68:24, 68:30,

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48¹⁰	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-A*68 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.

⁴Due to the sharing of sequence motifs between HLA-A alleles non-HLA-A*68 alleles will be amplified by primer mixes 1, 2, 4 to 7, 9 to 11, 13 to 27, 29 to 32, 34 to 38 and 40 to 46. In addition, a few HLA-B and HLA-C alleles will be amplified by primer mixes 1, 10, 12, 15, 17, 21, 23, 24, 28, 29, 35 and 45.

⁵HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁶Primer mixes 1, 17, 29 and 31 may give rise to a lower yield of HLA-specific PCR product than the other HLA-A*68 primer mixes.

⁷Primer mixes 20, 35, 38 and 47 may have tendencies of unspecific amplifications.

⁸Primer mix 32 has a tendency to giving rise to primer oligomer formation.

⁹Primer mix 11 may faintly amplify the A*02:06:05, 02:06:09, 02:122, 11:70, 11:121 and 26:07:01-26:07:02 alleles.

¹⁰Primer mix 48 contains a negative control, which will amplify more than 95% 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 430 base pairs.

'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	200	435	195	180	140	230	145	160	195	165	160	200
				225	235			240	250	190	200	405
Length of int. pos. control ¹	800	1070	1070	1070	800	1070	1070	800	800	800	800	1070
5'-primer(s) ²	127 5'-ggg 3'	261 5'-AAC 3'	106 5'-CCA 3'	102 5'-ACT 3'	98 5'-CTA 3'	102 5'-ACT 3'	145 5'-CCA 3'	98 5'-CTA 3'	2 nd 5'-CCT 3'	413 5'-CCg 3'	98 5'-CTA 3'	47 5'-g.T 3'
					397 5'-gCC 3'	106 5'-CCA 3'	414 5'-gAA 3'	418 5'-AgC 3'			386 5'-gTA 3'	376 5'-gCA 3'
											419 5'-ggT 3'	386 5'-gTA 3'
3'-primer(s) ³	282 5'-gAC 3'	413 5'-gCC 3'	259 5'-gTT 3'	240 5'-ggA 3'	290 5'-CAA 3'	292 5'-gTg 3'	259 5'-gTT 3'	299 5'-TCA 3'	479 5'-CCA 3'	538 5'-CTg 3'	256 5'-CTC 3'	282 5'-gAC 3'
	282 5'-gAC 3'			282 5'-gAg 3'	497 5'-Tgg 3'		506 5'-TgT 3'	539 5'-TCC 3'	538 5'-CAg 3'	562 5'-gCT 3'	538 5'-CCA 3'	538 5'-CCA 3'
	295 5'-TCT 3'			292 5'-gTg 3'					538 5'-CAA 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	210	400	145	215	175	200	325	90	165	170	185	85
	240		200			225			215			375
Length of int. pos. control ¹	800	1070	1070	1070	1070	800	1070	1070	1070	800	1070	1070
5'-primer(s) ²	2 nd 5'-CCT 3'	28 5'-TCg 3'	453 5'-AAA 3'	106 5'-CCA 3'	395 5'-gCA 3'	413 5'-CCg 3'	317 5'-gCA 3'	362 5'-gAg 3'	102 5'-ACT 3'	413 5'-CCg 3'	413 5'-CCg 3'	261 5'-AAC 3'
					413 5'-CCA 3'			362 5'-gAg 3'	413 5'-CCA 3'			
3'-primer(s) ³	497 5'-TgA 3'	255 5'-Cgg 3'	555 5'-CCA 3'	278 5'-ggC 3'	539 5'-TCC 3'	570 5'-CCg 3'	362 5'-TCA 3'	413 5'-gCC 3'	275 5'-CCC 3'	539 5'-TCC 3'	559 5'-CgT 3'	307 5'-CCg 3'
	497 5'-TgA 3'		605 5'-gCC 3'	282 5'-gAg 3'		595 5'-CCg 3'			538 5'-CCg 3'	546 5'-TAA 3'		307 5'-CCT 3'
	524 5'-CAC 3'		616 5'-CgC 3'	282 5'-gAg 3'		595 5'-CCT 3'						355 5'-gAC 3'
	545 5'-AgA 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	32	33	34	35	36
Length of spec.	240	100	105	200	80	145	220	120	150	105	140	195
PCR product		190	185	230	250	245				165	295	
			235									
Length of int. pos. control ¹	1070	1070	1070	1070	800	1070	1070	800	1070	1070	1070	1070
5'-primer(s) ²	28 5'-TCg 3'	453 5'-AAA 3'	87 5'-ATT 3'	121 5'-gCT 3'	102 5'-ACT 3'	102 5'-ACT 3'	2 nd I 5'-CCT 3'	506 5'-gCA 3'	413 5'-CCg 3'	160 5'-ACT 3'	341 5'-ggg 3'	106 5'-CCg 3'
		666 5'-gAA 3'	87 5'-ATA 3'	349 5'-CTg 3'	489 5'-gCA 3'	414 5'-Cag 3'				217 5'-ggg 3'	413 5'-CCg 3'	
			217 5'-ggg 3'	376 5'-gCA 3'								
			413 5'-CCA 3'									
3'-primer(s) ³	97 5'-ggT 3'	512 5'-ACT 3'	282 5'-gAC 3'	282 5'-gAC 3'	308 5'-TCT 3'	308 5'-TCT 3'	506 5'-TgC 3'	578 5'-Tgg 3'	524 5'-CAA 3'	282 5'-gAC 3'	355 5'-gAT 3'	259 5'-gTT 3'
		605 5'-gCC 3'	559 5'-CAT 3'	538 5'-CCA 3'	317 5'-ggA 3'	517 5'-CgT 3'		595 5'-CCg 3'			512 5'-CCT 3'	
		808 5'-AgA 3'			527 5'-CCT 3'							
					527 5'-CCT 3'							
Well No.	25	26	27	28	29	30	31	32	33	34	35	36

Well No.	37	38	39	40	41	42	43	44	45	46	47
Length of spec.	145	165	95	215	135	130	365	44	150	110	220
PCR product	170		180		200	245			220	495	
									255		
Length of int. pos. control ¹	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	2 nd I 5'-CCT 3'	2 nd I 5'-CCT 3'	397 5'-gCg 3'	363 5'-ATg 3'	98 5'-CTC 3'	77 5'-CTT 3'	28 5'-TCg 3'	98 5'-CTA 3'	98 5'-CTA 3'	241 5'-g.C 3'	102 5'-ACT 3'
			486 5'-ATA 3'		736 5'-ggA 3'	194 5'-CgA 3'		666 5'-gAA 3'	413 5'-CCg 3'	383 5'-ggA 3'	
						524 5'-CCC 3'					
3'-primer(s) ³	430 5'-gCg 3'	453 5'-TCg 3'	538 5'-CCA 3'	538 5'-CCA 3'	259 5'-gTT 3'	282 5'-gAC 3'	224 5'-TCT 3'	256 5'-CCC 3'	277 5'-ggT 3'	453 5'-TCT 3'	282 5'-gAC 3'
	457 5'-gTA 3'				831 5'-TCC 3'	616 5'-CgT 3'		257 5'-gCA 3'	311 5'-ggA 3'		
	570 5'-CCg 3'							809 5'-CAT 3'	521 5'-ggA 3'		
Well No.	37	38	39	40	41	42	43	44	45	46	47

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 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.

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

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Lot No.: **4E1**

Lot-specific information

CELL LINE VALIDATION SHEET																			
HLA-A*68 SSP subtyping kit²																			
			Prod. No.:	Well															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				201672501	201672502	201672503	201672504	201672505	201672506	201672507	201672508	201672509	201672510	201672511	201672512	201672513	201672514	201672515	201672516
	IHWC cell line¹	A*																	
1	9001 SA	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020 QBL	*26:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*26:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*30:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
37	9065 HHKB	*03:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199	*02:07	*30:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301	*03:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*02:07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

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Lot No.: **4E1**

Lot-specific information

CELL LINE VALIDATION SHEET																					
HLA-A*68 SSP subtyping kit²																					
				Prod. No.:	Well																
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
					201672517	201672518	201672519	201672520	201672521	201672522	201672523	201672524	201672525	201672526	201672527	201672528	201672529	201672530	201672531	201672532	
	IHWC cell line¹	A*																			
1	9001 SA	*24:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01			-	+	-	-	-	W	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*30:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*01:01			-	+	-	-	-	W	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03		+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
7	9020 QBL	*26:01			+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
8	9025 DEU	*31:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*26:01			+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
10	9107 LKT3	*24:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*24:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01		-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*33:03	*74:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01		+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
24	9035 JBUSH	*32:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*33:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:05			W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*29:02			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*30:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*03:01			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*02:17			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01		-	+	-	-	-	W	+	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199	*02:07	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301	*03:01			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*02:07			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01			+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
45	9239 SHJO	*23:01	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

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Lot No.: **4E1**

Lot-specific information

CELL LINE VALIDATION SHEET																		
HLA-A*68 SSP subtyping kit²																		
			Prod. No.:	Well														
				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
				201672533	201672534	201672535	201672536	201672537	201672538	201672539	201672540	201672541	201672542	201672543	201672544	201672545	201672546	201672547
	IHWC cell line¹	A*																
1	9001 SA	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*01:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
7	9020 QBL	*26:01		-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*26:01		-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*24:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*30:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*02:17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199	*02:07	*30:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*02:07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*66:01		-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

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Lot No.: 4E1

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 5, 7 to 9, 11 to 16, 19 to 21, 25, 26, 28, 32, 33, 35, 37, 39, 41 to 43, 45 and 46 were available. The specificities of the primers in primer solutions 5, 7 to 9, 11, 13, 15, 16, 20, 21, 25, 26, 35, 37 and 41 were tested by separately adding additional 5'-primers, respectively additional 3'-primers.

In primer solutions 12, 19, 28, 39, 42 and 46 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 14, 32, 33, 43 and 45 it was only possible to test the 5'-primers, the 3'-primers were not possible to test.

In primer solution 5, 7, 8, 11, 17, 27, 34, 35 and 41 one or two of the 5'-primers were not possible to test. In primer solutions 1, 8, 9 to 11, 13, 15, 16, 18, 21, 22, 24, 26, 27, 35, 37 and 44 one or two of the 3'-primers were not possible to test. Additional primers in primer solutions 4, 6, 27, 29 and 44 were tested tested by separately adding either one or two additional 5'-primers, or one additional 3'-primer.

101.418-12/04 – including *Taq* pol., IFU-01
101.418-12u/04 – without *Taq* pol., IFU-02

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Lot No.: **4E1**

Lot-specific information

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