Olerup SSP® KIR HLA Ligand

Product number:	**104.201-12 – including *Taq* polymerase** **104.201-12u –without *Taq* polymerase**
Lot number:	**88M**
Expiry date:	**2014-May-01**
Number of tests:	**12**
Number of wells per test:	**5**
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. 88M.

CHANGES COMPARED TO THE PREVIOUS *OLERUP* SSP® KIR HLA LIGAND LOT

The KIR HLA Ligand specificity and interpretation tables have been updated for the HLA-A, HLA-B and HLA-C alleles described since the previous *Olerup* SSP® KIR HLA Ligand lot was made **(Lot No. 10L)**.

The KIR HLA Ligand primer set is unchanged compared to the previous lot.

PRODUCT DESCRIPTION

KIR HLA Ligand SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for determining KIR HLA Ligand nucleotide sequence motifs;
HLA-C alleles encoding Asparagine or Lysine at position 80,
HLA-B^{Bw4+} alleles encoding Isoleucine or Threonine at position 80 and
HLA-A^{Bw4+} alleles.

PLATE LAYOUT

Each test consists of 5 PCR reactions in an 8 well cut PCR plate. Wells 6 to 8 are empty.

1	**2**	**3**	**4**	**5**	**empty**	**empty**	**empty**

Wells 1 and 2: HLA-C KIR ligand primers
Wells 3 and 4: HLA-B KIR ligand primers
Well 5: HLA-A KIR ligand primers.
The 8 well cut PCR plate is marked with 'LIG' in silver/gray ink.
Well No. 1 is marked with the Lot Number '88M'.
A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded.
The PCR plates are covered with a PCR-compatible foil.
Please note: When removing each 8 well PCR plate, make sure that the remaining plates stay covered. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

UNIQUELY IDENTIFIED ALLELES

The HLA-A, HLA-B and HLA-C alleles recognized by the HLA Nomenclature Committee in July 2011[1] have been considered in the Specificity and Interpretation Tables.

[1]HLA-A, HLA-B and HLA-C alleles listed on the IMGT/HLA web page 2011-July-14, release 3.5.0, www.ebi.ac.uk/imgt/hla.

PROTOCOL

DNA EXTRACTION

Extracted, highly pure DNA is needed for SSP typings. DNA samples to be used for PCR-SSP HLA typing should be re-suspended in dH_2O. The A260/A280 ratio should be 1.6 – 2.0 by UV spectrophotometry for optimal band visualization during electrophoresis.

We recommend automated DNA extraction with the QIAGEN EZ1 DSP DNA Blood System. ACD blood should be used as starting material.

Alternatively, the DNA can be extracted by any preferred method yielding pure DNA. When using alternative methods, the DNA concentration should be adjusted to 30 ng/µl. ***Do not use heparinised blood with these methods.***

Recommended DNA concentration using:
EZ1-extracted DNA, 15 ng/µl.
DNA extracted by other methods, 30 ng/µl.

Concentrations exceeding 50 ng/µl will increase the risk for nonspecific amplifications and weak extra bands, especially for HLA Class I high resolution SSP typings. If necessary, dilute the extracted DNA in dH_2O.

DNA samples should not be re-suspended in solutions containing chelating agents such as EDTA, above 0.5 mM in concentration.

DNA samples may be used immediately after extraction or stored at +4°C for up to 2 weeks with no adverse effects on results. DNA samples can be stored at -20°C or colder for 9 months. The purity and concentration of extracted DNA samples that have been stored for a prolonged period should be tested for acceptability prior to HLA typing.

DNA samples should be shipped at +4°C or colder to preserve their integrity during transport.

PCR AMPLIFICATION

104.201-12 – including *Taq* polymerase

For one KIR HLA Ligand typing, add at room temperature in a 0.5 ml tube:

7 x 2 µl = 14 µl DNA (30 ng/µl)
7 x 3 µl = 21 µl PCR Master Mix with *Taq* – mix well before taking your aliquot
7 x 5 µl = 35 µl dH_2O

Mix well, dispense 10 µl of the DNA-PCR Master Mix-H_2O mixture into each of the 5 wells of a KIR HLA Ligand typing. Cover the primer tray(s) with the provided adhesive seals. Check that all reaction wells are completely covered to prevent evaporative loss during PCR amplification.

104.201-12u – without *Taq* polymerase

For one KIR HLA Ligand typing, add at room temperature in a 0.5 ml tube:

7 x 2 μl = 14 μl DNA (30 ng/μl)
7 x 3 μl = 21 μl PCR Master Mix without *Taq* – mix well before taking your aliquot
0.6 μl *Taq* polymerase (5 units/μl)
7 x 5 μl – 0.6 μl = 34.4 μl dH_2O

Mix well, dispense 10 μl of the DNA-PCR Master Mix-*Taq*-H_2O mixture into each of the 5 wells of a KIR HLA Ligand typing. Cover the primer tray(s) with the provided adhesive seals. Check that all reaction wells are completely covered to prevent evaporative loss during PCR amplification.

Use a 96 well thermal cycler with a heated lid. The temperature gradient across the heating block should be < 1°C.

PCR cycling parameters:

1. 1 cycle	94°C	2 min	denaturation
2. 10 cycles	94°C	10 sec.	denaturation
	65°C	60 sec.	annealing and extension
3. 20 cycles	94°C	10 sec.	denaturation
	61°C	50 sec.	annealing
	72°C	30 sec.	extension
4. End - hold	RT		if less than 8 hours
	4°C		if longer than 8 hours

Total reaction volume in each well, 10 μl.

The same PCR cycling parameters are used for all the *Olerup* SSP® kits.

AGAROSE GEL ELECTROPHORESIS

Prepare a 2% (w/v) agarose gel in 0.5 x TBE buffer. Dissolve the agarose by boiling in a microwave oven. Let the gel solution cool to 60°C. Stain the gel prior to casting with ethidium bromide (10 mg/ml), 5 μl per 100 ml gel solution. For maximal ease of handling use our ethidium bromide dropper bottle (Product No. 103.301-10), 1 drop of ethidium bromide solution per 50-75 ml of gel, or our GelRed™ dropper bottle (Product No. 103.302-05) 4 drops per 100-120 ml of gel solution. **Note: Ethidium bromide is a powerful carcinogen.**

Load the PCR products, preferably using an 8-channel pipette. Load a DNA size marker (100 base pair ladder, Product No. 103.202-100 or DNA Size Marker for short gel runs 103.203-100) in one well per row.

Run the gel in 0.5 x TBE buffer, without re-circulation of the buffer, for 15-20 minutes at 8-10 V/cm.

DOCUMENTATION AND INTERPRETATION

Put the gel on a UV transilluminator and document by photography.
Record the presence and absence of specific PCR products. The relative lengths of the specific PCR products are helpful in the interpretation of the results.
Record the presence and relative lengths of the internal positive control bands. The differently sized control bands will help in the correct orientation of the typing as well as in kit identification.
Lanes without either control band or specific PCR products should be repeated.

Interpret the typings with the ***lot-specific Interpretation and Specificity Tables***.

INTERPRETATION SOFTWARE

The interpretation software (Product No. 110.101) can be helpful in the interpretation of the typings.

PCR MASTER MIXES

The PCR Master Mix complete with *Taq* polymerase contains:

Taq polymerase	0.4 unit per 10 µl SSP reaction
nucleotides	final concentration of each dNTP is 200 µM
PCR buffer	final concentrations: 50 mM KCl, 1.5 mM $MgCl_2$, 10 mM Tris-HCl pH 8.3, 0.001% w/v gelatin
glycerol	final concentration of glycerol is 5%
cresol red	final concentration of cresol red is 100 µg/ml

The same PCR Master Mix complete with Taq is used for all *Olerup* SSP® kits.

The PCR Master Mix without *Taq* polymerase contains:

nucleotides	final concentration of each dNTP is 200 µM
PCR buffer	final concentrations: 50 mM KCl, 1.5 mM $MgCl_2$, 10 mM Tris-HCl pH 8.3, 0.001% w/v gelatin
glycerol	final concentration of glycerol is 5%
cresol red	final concentration of cresol red is 100 µg/ml

The same PCR Master Mix without *Taq* is used for all *Olerup* SSP® kits.

SPECIFICITY TABLE

KIR HLA Ligand SSP typing

Specificities and sizes of the PCR products of the 5 primer mixes used for KIR HLA Ligand SSP.

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	KIR HLA Ligand nucleotide sequence motif	Amplified HLA alleles
1	340 bp	**800 bp**	HLA-C^{Asparagine80}	C*01:02:01-01:13, 01:15-01:46, 01:48-01:57, 02:12^{w}, 02:27:01-02:27:02, 03:02:01-03:03:14, 03:03:15^{w}, 03:03:16-03:04:16, 03:04:18-03:06, 03:08-03:09, 03:10^{w}, 03:11:01-03:14, 03:16-03:28, 03:29^{w}, 03:30-03:44, 03:46-03:114, 03:116-03:128, 04:11, 04:29, 04:36, 04:55, 06:11, 07:01:01-07:06, 07:08, 07:10-07:33N, 07:35-07:48, 07:50-07:75, 07:77-07:114, 07:116-07:207, 08:01:01-08:09, 08:11-08:53, 12:02:01-12:03:17, 12:06-12:08, 12:10:01-12:20, 12:22-12:26, 12:28-12:32, 12:34-12:40, 12:42Q-12:53, 12:55-12:59, 12:61-12:64, 14:02:01-14:03, 14:05-14:11, 14:13-14:31, 15:07, 15:21^{w}, 15:25, 15:43, 16:01:01-16:01:06, 16:04:01, 16:06-16:08, 16:10-16:11, 16:13-16:18, 16:20-16:24, 16:26-16:36, 16:37^{w}, 16:38-16:40
2	340 bp	**800 bp**	HLA-C^{Lysine80}	C*01:14, 02:02:01-02:02:03, 02:02:05-02:02:11, 02:02:13-02:11, 02:13-02:26:03, 02:28-02:40, 02:42-02:52N, 03:07, 03:15, 03:45, 04:01:01:01-04:01:28, 04:01:30-04:01:33, 04:03-04:10, 04:12-04:20, 04:23-04:28, 04:30-04:35, 04:37-04:54, 04:56-04:100, 05:01:01:01-05:01:17, 05:03-05:63, 06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:02:13-06:10, 06:12-06:51, 06:53-06:68, 07:07, 07:09, 07:49, 07:76, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 12:54, 14:04, 14:12, 15:02:01-15:06:03, 15:08-15:13, 15:15-15:20, 15:22-15:24, 15:26-15:42, 15:44-15:55, 16:02:01-16:02:08, 16:09, 16:12, 16:19, 16:25, 17:01:01:01-17:10, 18:01-18:05

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3[3]	350 bp	**800 bp**	HLA-B$^{Bw4+Threonine80}$	B*08:02, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:38, 13:40-13:50, 15:36, 15:89, 15:115, 18:09, 27:01, 37:10, 38:02:01-38:04, 38:08, 38:15, 38:18, 38:23, 38:29, 38:35, 40:47, 40:96, 40:110, 40:157, 44:02:01:01-44:02:18, 44:02:20-44:05:02, 44:07-44:08, 44:10, 44:12-44:17, 44:19N-44:24, 44:26-44:45, 44:47-44:49, 44:51-44:74, 44:76-44:89, 44:91-44:94, 44:96-44:128, 44:130, 44:132-44:134, 47:04, 49:02, 51:54, 51:78, 52:20, 53:09, 53:11-53:13, 56:07
4[3]	350 bp	1070 bp	HLA-B$^{Bw4+Isoleucine80}$	B*07:36, 07:38, 07:81, 08:03, 08:52, 15:13:01-15:13:02, 15:16:01-15:17:02, 15:23-15:24, 15:67, 15:87, 15:95, 15:157, 15:162, 15:168, 15:177, 15:196, 15:208, 15:216, 15:222, 15:230, 27:02:01-27:02:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 27:75, 27:77, 38:01:01-38:01:05, 38:05-38:07, 38:09-38:14, 38:16, 38:19-38:22, 38:24-38:28, 38:30-38:34N, 40:13, 40:19, 40:109, 40:117, 44:06, 44:18, 44:25, 44:50, 44:95, 48:18, 49:01:01-49:01:03, 49:03-49:20, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:122, 52:01:01:01-52:19, 52:21-52:26, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:26, 54:12, 56:21, 57:01:01-57:11, 57:13-57:52, 58:01:01-58:02, 58:04-58:16, 58:18-58:34, 59:01:01:01-59:05
5	370 bp	1070 bp	HLA-A^{Bw4+}	A*01:95, 02:81, 02:87, 02:112, 02:124, 02:129, 02:136, 23:01:01-23:46, 24:02:01:01-24:03:02, 24:05-24:11N, 24:13:01-24:15, 24:17-24:18, 24:20-24:27, 24:29-24:43, 24:45N-24:64, 24:66-24:88, 24:90N-24:99, 24:101-24:108, 24:110-24:128, 24:130-24:182, 25:01:01-25:16, 29:13, 31:07-31:08, 31:10, 32:01:01-32:36, 68:36

[1]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 KIR HLA Ligand SSP typings.
When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.
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 inherit 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.
[2]The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.
Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the KIR HLA Ligand subtyping. .
In addition, wells number 2 and 3 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.
In the presence of a specific amplification the intensity of the control band often decreases.
[3]Primer mixes 3 and 4 may give rise to unspecific amplifications.
'w', may be weakly amplified.

INTERPRETATION TABLE

KIR HLA Ligand

	Well				
	1	**2**	**3**	**4**	**5**
Length of spec.	**340**	**340**	**350**	**350**	**370**
PCR product					
Length of int.	**800**	**800**	**800**	**1070**	**1070**
pos. control[1]					
5'-primer(s)[2]	**1st I**	**1st I**	**1st I**	**1st I**	**1st I**
	5'-CgA 3'	5'-CgA 3'	5'-CAg 3'	5'-CAg 3'	5'-gCA 3'
3'-primer[3]	**302**	**302**	**309**	**309**	**317**
	5'-ggC 3'	5'-ggT 3'	5'-gTg 3'	5'-ATC 3'	5'-ggA 3'
Well No.	**1**	**2**	**3**	**4**	**5**
HLA allele					
C*01:02:01-01:13, 01:15-01:46, 01:48-01:57, 02:27:01-02:27:02, 03:02:01-03:03:14, 03:03:16-03:04:16, 03:04:18-03:06, 03:08-03:09, 03:11:01-03:14, 03:16-03:28, 03:30-03:44, 03:46-03:114, 03:116-03:128, 04:11, 04:29, 04:36, 04:55, 06:11, 07:01:01-07:06, 07:08, 07:10-07:33N, 07:35-07:48, 07:50-07:75, 07:77-07:114, 07:116-07:207, 08:01:01-08:09, 08:11-08:53, 12:02:01-12:03:17, 12:06-12:08, 12:10:01-12:20, 12:22-12:26, 12:28-12:32, 12:34-12:40, 12:42Q-12:53, 12:55-12:59, 12:61-12:64, 14:02:01-14:03, 14:05-14:11, 14:13-14:31, 15:07, 15:25, 15:43, 16:01:01-16:01:06, 16:04:01, 16:06-16:08, 16:10-16:11, 16:13-16:18, 16:20-16:24, 16:26-16:36, 16:38-16:40	**1**				
C*01:14, 02:02:01-02:02:03, 02:02:05-02:02:11, 02:02:13-02:11, 02:13-02:26:03, 02:28-02:40, 02:42-02:52N, 03:07, 03:15, 03:45, 04:01:01:01-04:01:28, 04:01:30-04:01:33, 04:03-04:10, 04:12-04:20, 04:23-04:28, 04:30-04:35, 04:37-04:54, 04:56-04:100, 05:01:01:01-05:01:17, 05:03-05:63, 06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:02:13-06:10, 06:12-06:51, 06:53-06:68, 07:07, 07:09, 07:49, 07:76, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 12:54, 14:04, 14:12, 15:02:01-15:06:03, 15:08-15:13, 15:15-15:20, 15:22-15:24, 15:26-15:42, 15:44-15:55, 16:02:01-16:02:08, 16:09, 16:12, 16:19, 16:25, 17:01:01:01-17:10, 18:01-18:05		**2**			
C*02:12, 03:03:15, 03:10, 03:29, 15:21, 16:37	**w**				
Well No.	**1**	**2**	**3**	**4**	**5**

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Length of spec.	**340**	**340**	**350**	**350**	**370**
PCR product					
Well No.	**1**	**2**	**3**	**4**	**5**
B*07:36, 07:38, 07:81, 08:03, 08:52, 15:13:01-15:13:02, 15:16:01-15:17:02, 15:23-15:24, 15:67, 15:87, 15:95, 15:157, 15:162, 15:168, 15:177, 15:196, 15:208, 15:216, 15:222, 15:230, 27:02:01-27:02:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 27:75, 27:77, 38:01:01-38:01:05, 38:05-38:07, 38:09-38:14, 38:16, 38:19-38:22, 38:24-38:28, 38:30-38:34N, 40:13, 40:19, 40:109, 40:117, 44:06, 44:18, 44:25, 44:50, 44:95, 48:18, 49:01:01-49:01:03, 49:03-49:20, 51:01:01-51:24:04, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:122, 52:01:01:01-52:19, 52:21-52:26, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:26, 54:12, 56:21, 57:01:01-57:11, 57:13-57:52, 58:01:01-58:02, 58:04-58:16, 58:18-58:34, 59:01:01:01-59:05				**4**	
B*08:02, 13:01:01-13:04, 13:06-13:08Q, 13:10-13:23, 13:25-13:38, 13:40-13:50, 15:36, 15:89, 15:115, 18:09, 27:01, 37:10, 38:02:01-38:04, 38:08, 38:15, 38:18, 38:23, 38:29, 38:35, 40:47, 40:96, 40:110, 40:157, 44:02:01:01-44:02:18, 44:02:20-44:05:02, 44:07-44:08, 44:10, 44:12-44:17, 44:19N-44:24, 44:26-44:45, 44:47-44:49, 44:51-44:74, 44:76-44:89, 44:91-44:94, 44:96-44:128, 44:130, 44:132-44:134, 47:04, 49:02, 51:54, 51:78, 52:20, 53:09, 53:11-53:13, 56:07			**3**		
A*01:95, 02:81, 02:87, 02:112, 02:124, 02:129, 02:136, 23:01:01-23:46, 24:02:01:01-24:03:02, 24:05-24:11N, 24:13:01-24:15, 24:17-24:18, 24:20-24:27, 24:29-24:43, 24:45N-24:64, 24:66-24:88, 24:90N-24:99, 24:101-24:108, 24:110-24:128, 24:130-24:182, 25:01:01-25:16, 29:13, 31:07-31:08, 31:10, 32:01:01-32:36, 68:36					**5**
HLA allele					
Well No.	**1**	**2**	**3**	**4**	**5**

[1]The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.
Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the KIR HLA Ligand subtyping. .
In addition, wells number 2 and 3 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.
[2]The nucleotide position, in the 1st exon or the 1st intron, 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.
[3]The nucleotide position, in the 3rd exon, 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.
'w', may be weakly amplified.

CELL LINE VAL. SHEET

KIR HLA Ligand primer set

			Well				
			1	2	3	4	5
			201182701	201182702	201182703	201182704	201182705
	IHWC cell line						
1	9001	SA	+	-	-	-	+
2	9280	LK707	+	+	-	+	-
3	9011	E4181324	+	-	-	+	-
4	9275	GU373	+	+	-	+	-
5	9009	KAS011	-	+	-	-	-
6	9353	SM	+	-	-	+	-
7	9020	QBL	-	+	-	-	-
8	9025	DEU	-	+	-	-	-
9	9026	YAR	+	-	-	+	-
10	9107	LKT3	+	-	-	-	+
11	9051	PITOUT	+	-	+	-	-
12	9052	DBB	-	+	-	+	-
13	9004	JESTHOM	+	-	-	-	-
14	9071	OLGA	+	-	-	-	-
15	9075	DKB	+	-	-	-	+
16	9037	SWEIG007	-	+	-	-	-
17	9282	CTM3953540	+	-	-	-	-
18	9257	32367	+	-	-	-	-
19	9038	BM16	+	-	-	-	-
20	9059	SLE005	+	-	-	-	-
21	9064	AMALA	+	-	-	-	-
22	9056	KOSE	+	-	-	-	-
23	9124	IHL	+	+	-	-	-
24	9035	JBUSH	+	-	-	+	+
25	9049	IBW9	+	-	-	-	-
26	9285	WT49	+	-	-	+	-
27	9191	CH1007	+	+	-	+	+
28	9320	BEL5GB	+	+	+	-	-
29	9050	MOU	+	-	+	-	-
30	9021	RSH	-	+	-	-	-
31	9019	DUCAF	-	+	-	-	-
32	9297	HAG	-	+	-	-	-
33	9098	MT14B	+	-	-	-	-
34	9104	DHIF	+	-	-	+	-
35	9302	SSTO	-	+	+	-	+
36	9024	KT17	+	+	-	-	-
37	9065	HHKB	+	-	-	-	-
38	9099	LZL	+	-	-	-	-
39	9315	CML	+	+	-	-	-
40	9134	WHONP199	+	+	+	-	-
41	9055	H0301	+	-	-	-	-
42	9066	TAB089	+	-	-	-	-
43	9076	T7526	+	-	-	-	-
44	9057	TEM	+	-	-	+	-
45	9239	SHJO	-	+	-	-	+
46	9013	SCHU	+	-	-	-	-
47	9045	TUBO	+	+	-	+	-
48	9303	TER-ND	+	+	+	-	-

CERTIFICATE OF ANALYSIS

Olerup SSP® KIR HLA Ligand SSP

Product number: **104.201-12 – including *Taq* polymerase**
104.201-12u –without *Taq* polymerase
Lot number: **88M**
Expiry date: **2014-May-01**
Number of tests: **12**
Number of wells per test: **5**

Well specifications:

Well No.	Production No.
1	2011-827-01
2	2011-827-02
3	2011-827-03
4	2011-827-04
5	2011-827-05

The specificity of each primer solution of the kit has been tested against 48 IHWS cell line DNAs.

Results: No false positive or false negative amplifications were obtained.

Date of approval: 2011-December-02

Approved by:

Production Quality Control

Declaration of Conformity

Product name: *Olerup* SSP® KIR HLA Ligand
Product number: 104.201-12/12u
Lot number: 88M

Intended use: Determination of HLA-C, HLA-B^{Bw4+} and HLA-A^{Bw4+} KIR ligand sequence motifs.

Manufacturer: *Olerup* SSP AB
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We, *Olerup* SSP AB, hereby declare that this product, to which this Declaration of Conformity relates is in conformity with the following Standard(s) and other normative document(s) ISO 9001:2008 and ISO 13485:2003, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex III, as transposed into the national laws of the Member States of the European Union.

The Technical Documentation File is maintained at *Olerup* SSP AB, Franzengatan 5, SE-112 51 Stockholm, Sweden.

Stockholm, Sweden
2011-December-02

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

TRADEMARKS USED IN THIS DOCUMENT/PRODUCT

Olerup SSP® is a registered trademark of *Olerup* SSP AB.
Qiagen™ is a trademark of QIAGEN.
Helmberg-SCORE™ is a trademark of W.M.C. Helmberg
ARMS™ is a trademark of AstraZeneca UK Ltd.

PATENTS USED IN THIS DOCUMENT/PRODUCT

These products use ARMS™ technology and is sold under license from AstraZeneca UK Ltd. ARMS is the subject of European Patent No. 0 332 435 B1, US Patent No. 5 595 890, Canadian Patent No. 1 323 591 and corresponding worldwide patents. ARMS is a trademark of AstraZeneca UK Ltd.

WARRANTY

Olerup SSP AB warrants its products to the original purchaser against defects in materials and workmanship under normal use and application. *Olerup* SSP AB's sole obligation under this warranty shall be to replace, at no charge, any product that does not meet the performance standards stated on the product specification sheet.
This warranty applies only to products that have been handled and stored in accordance with *Olerup* SSP AB's recommendations, and does not apply to products that have been the subject of alternation, misuse, or abuse.
All claims under this warranty must be directed to *Olerup* SSP AB in writing and must be accompanied by a copy of the purchaser's invoice. This warranty is in lieu of all other warranties, expressed or implied, including the warranties of merchantability and fitness for a particular purpose. In no case shall *Olerup* SSP AB be liable for incidental or consequential damages.
This product may not be reformulated, repacked or resold in any form without the written consent of *Olerup* SSP AB, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.
Handle all samples as if capable of transmitting disease. All work should be performed wearing gloves and appropriate protection.

GUARANTEE

Olerup SSP AB guarantees that the primers in the *Olerup* SSP® typing trays have the specificities given in the lot-specific Specificity and Interpretation Tables of the product insert and in the Helmberg-SCORE™ software.
When stored at –20°C, the dried primers are stable for 24 months from the date of manufacture.
When stored at –20°C, the PCR Master Mix including *Taq* polymerase and the PCR Master Mix without *Taq* polymerase are stable for 27 months from the date of manufacture.

EUROPEAN AUTHORIZED REPRESENTATIVE

The Authorized Representative located within the European Community is: *Olerup* SSP AB, Hasselstigen 1, SE-133 33, Sweden.

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