Olerup SSP® HLA-C*12

Product number:	**101.624-12u – without *Taq* polymerase**
Lot number:	**11L**
Expiry date:	**2013-August-01**
Number of tests:	**12**
Number of wells per test:	**32**
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. 11L.

CHANGES COMPARED TO THE PREVIOUS *OLERUP* SSP® HLA-C*12 LOT

The HLA-C*12 specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup* SSP® HLA-C*12 lot was made **(Lot No. 75G)**.

Eight wells have been added to the HLA-C*12 kit, wells **25 to 32**.
The amplification patterns for some rare HLA-C*12 alleles only differ by the length of the specific PCR products.

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
1	Modified	-	Modified 5'-primer for increased yield of specific PCR product.
6	Added	-	Primer added for the C*12:48 allele.
8	-	Added	Primer added for the C*12:40 allele.
13	Added	Added	Primer pair added for the C*12:31 allele.
18	-	Added	Primer added for the C*12:35 allele.
20	-	Added	Primer added for the C*12:46N allele.
22	-	-	Exchanged positive control primer pair.
24	Added	Added	Primer pair added for the C*12:43 allele.
25	New	New	New primer pairs for the C*12:02:06 and C*12:39N alleles.

26	New	New	New primer pair for the C*12:44 allele.
27	New	New	New primer pairs for the C*12:30 and C*12:36 alleles.
28	New	New	New primer pairs for the C*12:45 and C*12:50 alleles.
29	New	New	New primer pairs for the C*12:29, C*12:38 and C*12:42Q alleles.
30	New	New	New primer pairs for the C*12:32 and C*12:34 alleles.
31	New	New	New primer pairs for the C*12:42Q and C*12:47 alleles.
32	New	New	New primer pair for the C*12:37 allele.

PRODUCT DESCRIPTION

HLA-C*12 SSP typing

INTENDED USE

The primer set contains 5'- and 3'-primers for identifying the C*12:02 to C*12:50 alleles.

PLATE LAYOUT

Each HLA-C*12 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**	**32**

The 32 well PCR plate is marked with 'HLA-C*12' in silver/gray ink.
Well No. 1 is marked with the Lot No. '11L'.
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.
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

The interpretation of HLA-C*12 SSP subtypings will be influenced by other HLA-C alleles, as primer mixes 1 to 14, 16, 18, 21, 24, 26, 28 and 30 amplify non-HLA-C*12 alleles. In addition, primer mix 1 amplifies the B*07:13, B*07:15 and B*67:02 alleles, primer mix 9 amplifies the B*07:13 and B*67:02 alleles, primer mix 11 amplifies the B*14:03 allele, primer mix 12 amplifies the B*35:08:02 and B*67:02 alleles, primer mix 14 amplifies the B*67:02 allele, primer mix 15 amplifies the B*35:08:02 allele, primer mix 19 amplifies the B*40:29 allele, primer mix 21 amplifies the B*58:02 allele and primer mix 32 amplifies the A*02:211 allele.

UNIQUELY IDENTIFIED ALLELES

All the HLA-C*12 alleles, i.e. **C*12:02 to C*12:50**, recognized by the HLA Nomenclature Committee in October 2010[1] will be amplified by the primers in the HLA-C*12 SSP kit[2].

The HLA-C*12 subtyping kit cannot distinguish the C*12:02:01-12:02:05 alleles, the C*12:03:01:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:12 and 12:03:14 alleles, the *12:03:02 and 12:03:08 alleles, the *12:03:04 and 12:03:09 alleles or the *12:10:01-12:10:02 alleles.

The C*12:06 and 12:48 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 6.

The C*12:29 and 12:38 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 29.

The C*12:30 and 12:36 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 27.

The C*12:32 and 12:34 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 30.

The C*12:45 and 12:50 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 28.

[1]HLA-C alleles listed on the IMGT/HLA web page 2010-October-15, release 3.2.0, www.ebi.ac.uk/imgt/hla.

[2]The HLA-C*12 primer set cannot separate the C*12:09 and C*05:16 alleles, the C*12:16 and C*01:21 alleles or the C*12:33 and the C*02:05 and C*02:17 alleles. These alleles can be distinguished by the HLA-C low resolution kit and the HLA-C*01, HLA-C*02 or HLA-C*05 kit, respectively.

RESOLUTION IN HOMO- AND HETEROZYGOTES

A total of 73 alleles generate 49 amplification patterns that can be combined in 1225 homozygous and heterozygous combinations. 484 of these genotypes do not give rise to unique amplification patterns. The different lengths of the specific PCR products were not considered in these calculations.

+++++-+-	++-+----	--------	--------	*12:02:01, *12:05 = *12:04:02, *12:49
++++-++-	++-+----	--------	--------	*12:04:02, *12:08 = *12:06, *12:41
+++++++	++-+----	--------	--------	*12:04:02, *12:40 = *12:07, *12:41
+++++-+-	++-++---	--------	--------	*12:04:02, *12:10:01 = *12:31, *12:41
+++++-+-	++-+-+--	--------	--------	*12:04:02, *12:16 = *12:11, *12:41
+++++-+-	++-+----	-+------	--------	*12:04:02, *12:17 = *12:35, *12:41
+++++-+-	++-+----	---+----	--------	*12:04:02, *12:22 = *12:41, *12:46N
+++++-+-	++-+----	-------+	--------	*12:28, *12:41 = *12:41, *12:43
+++++-+-	++-+----	--------	--------	*12:02:01, *12:04:02 = *12:03:01:01, *12:41
+++++++	++-+----	--------	--------	*12:06, *12:40 = *12:07, *12:08
+++++-+-	++-++---	--------	--------	*12:06, *12:10:01 = *12:08, *12:31
+++++-+-	++-+-+--	--------	--------	*12:06, *12:16 = *12:08, *12:11
+++++-+-	++-+----	-+------	--------	*12:06, *12:17 = *12:06, *12:27 = *12:08, *12:35
+++++-+-	++-+----	---+----	--------	*12:06, *12:22 = *12:08, *12:46N
+++++-+-	++-+----	-------+	--------	*12:08, *12:28 = *12:08, *12:43
+++++-+-	++-+----	--------	--------	*12:02:01, *12:06 = *12:03:01:01, *12:08 = *12:06, *12:08
+++++++	++-++---	--------	--------	*12:07, *12:10:01 = *12:31, *12:40
+++++++	++-+-+--	--------	--------	*12:07, *12:16 = *12:11, *12:40
+++++++	++-+-+-	-+------	--------	*12:15, *12:17 = *12:15, *12:27
+++++++	++-+-+-	--------	--------	*12:02:01, *12:15 = *12:12, *12:40 = *12:15, *12:40
+++++++	++-+----	-+------	--------	*12:07, *12:17 = *12:07, *12:27 = *12:35, *12:40
+++++++	++-+----	---+----	--------	*12:07, *12:22 = *12:40, *12:46N
+++++++	++-+----	-------+	--------	*12:28, *12:40 = *12:40, *12:43
+++++++	++-+----	--------	--------	*12:02:01, *12:07 = *12:03:01:01, *12:40 = *12:07, *12:40
++++++-	++-+++--	--------	--------	*12:10:01, *12:11 = *12:16, *12:31
++++++-	++-++---	-+------	--------	*12:10:01, *12:35 = *12:17, *12:31 = *12:27, *12:31
++++++-	++-++---	---+----	--------	*12:10:01, *12:46N = *12:22, *12:31
++++++-	++-++---	-------+	--------	*12:10:01, *12:28 = *12:10:01, *12:43
++++++-	++-++---	--------	--------	*12:02:01, *12:31 = *12:03:01:01, *12:10:01 = *12:10:01, *12:31
++++++-	++-+-+--	-+------	--------	*12:11, *12:17 = *12:11, *12:27 = *12:16, *12:35
++++++-	++-+-+--	---+----	--------	*12:11, *12:22 = *12:16, *12:46N
++++++-	++-+-+--	-------+	--------	*12:16, *12:28 = *12:16, *12:43
++++++-	++-+-+--	--------	--------	*12:02:01, *12:11 = *12:03:01:01, *12:16 = *12:11, *12:16
++++++-	++-+-+-	-+------	--------	*12:12, *12:17 = *12:12, *12:27
++++++-	++-+---+	-+------	--------	*12:13, *12:17 = *12:13, *12:27
++++++-	++-+---+	--+-+--+	--------	*12:14:02, *12:28 = *12:14:02, *12:43
++++++-	++-+---+	--+-+---	--------	*12:03:01:01, *12:14:02 = *12:13, *12:14:02 = *12:13, *12:18 = *12:14:02, *12:25
++++++-	++-+----	-++-----	--------	*12:17, *12:25 = *12:25, *12:27
++++++-	++-+----	-+-+----	--------	*12:17, *12:46N = *12:22, *12:35 = *12:27, *12:46N
++++++-	++-+----	-+---+--	--------	*12:17, *12:23 = *12:23, *12:27
++++++-	++-+----	-+-----+	--------	*12:17, *12:28 = *12:17, *12:43 = *12:27, *12:28 = *12:27, *12:43
++++++-	++-+----	-+------	+-------	*12:17, *12:39N = *12:27, *12:39N
++++++-	++-+----	-+------	---+----	*12:17, *12:45 = *12:27, *12:45
++++++-	++-+----	-+------	----+-+-	*12:17, *12:42Q = *12:27, *12:42Q
++++++-	++-+----	-+------	----+---	*12:17, *12:29 = *12:27, *12:29
++++++-	++-+----	-+------	-----+--	*12:17, *12:32 = *12:27, *12:32
++++++-	++-+----	-+------	------+-	*12:17, *12:47 = *12:27, *12:47
++++++-	++-+----	-+------	-------+	*12:17, *12:37 = *12:27, *12:37
++++++-	++-+----	-+------	--------	*12:02:01, *12:35 = *12:03:01:01, *12:17 = *12:03:01:01, *12:27 = *12:17, *12:35 = *12:27, *12:35
++++++-	++-+----	--+-+--+	--------	*12:18, *12:28 = *12:18, *12:43
++++++-	++-+----	--+-+---	--------	*12:03:01:01, *12:18 = *12:18, *12:25
++++++-	++-+----	---+---+	--------	*12:22, *12:28 = *12:22, *12:43
++++++-	++-+----	---+----	--------	*12:02:01, *12:46N = *12:03:01:01, *12:22 = *12:22, *12:46N
++++++-	++-+----	-------+	-+------	*12:28, *12:44 = *12:43, *12:44
++++++-	++-+----	-------+	--+-----	*12:28, *12:30 = *12:30, *12:43

++++++	++-+----	-------+	--------	*12:02:01, *12:28 = *12:02:01, *12:43
++++++	+--+----	-+----+-	--------	*12:17, *12:26 = *12:26, *12:27
++++++	+--+----	-+------	--------	*12:03:02, *12:17 = *12:03:02, *12:27
++-+--+-	+--+----	---+----	--------	*12:19, *12:41 = *12:22, *12:41
++--+---	+--+----	-+------	--------	*12:17, *12:49 = *12:27, *12:49
++--+---	+--+----	---+----	--------	*12:19, *12:49 = *12:22, *12:49
++---+--	+--+----	-+------	--------	*12:08, *12:17 = *12:08, *12:27
++---+--	+--+----	---+----	--------	*12:08, *12:19 = *12:08, *12:22
++---+--	+--+----	--------	--------	*12:02:01, *12:08 = *12:08, *12:08
++-----+	+--+----	-+------	--------	*12:17, *12:40 = *12:27, *12:40
++-----+	+--+----	---+----	--------	*12:19, *12:40 = *12:22, *12:40
++-----+	+--+----	--------	--------	*12:02:01, *12:40 = *12:40, *12:40
++------	+++----	-+------	--------	*12:17, *12:24 = *12:24, *12:27
++------	++-+----	-+--+---	--------	*12:17, *12:20 = *12:20, *12:27
++------	+--++---	-+------	--------	*12:10:01, *12:17 = *12:10:01, *12:27
++------	+--++---	---+----	--------	*12:10:01, *12:19 = *12:10:01, *12:22
++------	+--++---	--------	--------	*12:02:01, *12:10:01 = *12:10:01, *12:10:01
++------	+--+-+--	-+------	--------	*12:16, *12:17 = *12:16, *12:27
++------	+--+-+--	---+----	--------	*12:16, *12:19 = *12:16, *12:22
++------	+--+---+	-++-+---	--------	*12:14:02, *12:17 = *12:14:02, *12:27
++------	+--+---+	-+--+---	--------	*12:14:01, *12:17 = *12:14:01, *12:27
++------	+--+---+	--+++---	--------	*12:14:02, *12:19 = *12:14:02, *12:22
++------	+--+---+	--+-+---	--------	*12:02:01, *12:14:02 = *12:14:01, *12:14:02 = *12:14:01, *12:18 = *12:14:02, *12:14:02 = *12:14:02, *12:18
++------	+--+----	-++-+---	--------	*12:17, *12:18 = *12:18, *12:27
++------	+--+----	-+-+----	--------	*12:17, *12:19 = *12:17, *12:22 = *12:19, *12:27 = *12:22, *12:27
++------	+--+----	-+------	+-------	*12:02:06, *12:17 = *12:02:06, *12:27
++------	+--+----	-+------	-+------	*12:17, *12:44 = *12:27, *12:44
++------	+--+----	-+------	--+-----	*12:17, *12:30 = *12:27, *12:30
++------	+--+----	-+------	--------	*12:02:01, *12:17 = *12:02:01, *12:27 = *12:17, *12:17 = *12:17, *12:27
++------	+--+----	--+++---	--------	*12:18, *12:19 = *12:18, *12:22
++------	+--+----	--+-+---	--------	*12:02:01, *12:18 = *12:18, *12:18
++------	+--+----	---+----	-+------	*12:19, *12:44 = *12:22, *12:44
++------	+--+----	---+----	--+-----	*12:19, *12:30 = *12:22, *12:30
++------	+--+----	---+----	--------	*12:02:01, *12:19 = *12:02:01, *12:22 = *12:19, *12:22 = *12:22, *12:22
++------	+--+----	--------	-+------	*12:02:01, *12:44 = *12:44, *12:44
++------	+--+----	--------	--+-----	*12:02:01, *12:30 = *12:30, *12:30
+-++++--	++-+----	--------	--------	*12:05, *12:06 = *12:06, *12:33
+-+++-++	++-+--+-	--------	--------	*12:05, *12:15 = *12:15, *12:33
+-+++-++	++-+----	--------	--------	*12:05, *12:07 = *12:07, *12:33
+-+++-+-	+++----	--------	--------	*12:03:01:01, *12:09 = *12:05, *12:24 = *12:24, *12:33
+-+++-+-	++-++---	--------	--------	*12:05, *12:31 = *12:31, *12:33
+-+++-+-	++-+-+--	--------	--------	*12:05, *12:11 = *12:11, *12:33
+-+++-+-	++-+--+-	--------	--------	*12:05, *12:12 = *12:12, *12:33
+-+++-+-	++-+---+	--------	--------	*12:05, *12:13 = *12:13, *12:33
+-+++-+-	++-+----	-+------	--------	*12:05, *12:35 = *12:33, *12:35
+-+++-+-	++-+----	--+-----	--------	*12:05, *12:25 = *12:25, *12:33
+-+++-+-	++-+----	---+----	--------	*12:05, *12:19 = *12:05, *12:46N = *12:33, *12:46N
+-+++-+-	++-+----	----+---	--------	*12:05, *12:20 = *12:20, *12:33
+-+++-+-	++-+----	-----+--	--------	*12:03:01:01, *12:21 = *12:05, *12:23 = *12:21, *12:23 = *12:23, *12:33
+-+++-+-	++-+----	-------+	--------	*12:05, *12:43 = *12:33, *12:43
+-+++-+-	++-+----	--------	+-------	*12:02:06, *12:05 = *12:05, *12:39N = *12:33, *12:39N
+-+++-+-	++-+----	--------	---+----	*12:05, *12:45 = *12:33, *12:45
+-+++-+-	++-+----	--------	----+-+-	*12:05, *12:42Q = *12:33, *12:42Q
+-+++-+-	++-+----	--------	----+---	*12:05, *12:29 = *12:29, *12:33
+-+++-+-	++-+----	--------	-----+--	*12:05, *12:32 = *12:32, *12:33
+-+++-+-	++-+----	--------	------+-	*12:05, *12:47 = *12:33, *12:47
+-+++-+-	++-+----	--------	-------+	*12:05, *12:37 = *12:33, *12:37
+-+++-+-	++-+----	--------	--------	*12:03:01:01, *12:05 = *12:03:01:01, *12:33 = *12:03:02, *12:05
+-+++-+-	++------	+-------	--------	*12:03:04, *12:05 = *12:03:04, *12:33

+-++++-	++------	--------	--------	*12:04:01, *12:05 = *12:04:02, *12:05 = *12:04:02, *12:33
+-++++-	-+-+----	-------+	--------	*12:05, *12:28 = *12:28, *12:33
+-+++-+	++-+----	---+----	--------	*12:04:02, *12:19 = *12:04:02, *12:46N
+-+++-+	++-+----	-------+	--------	*12:04:02, *12:28 = *12:04:02, *12:43
+-+++-+	++-+----	--------	+-------	*12:02:06, *12:04:02 = *12:04:02, *12:39N
+-+++-+	++-+----	--------	--------	*12:03:01:01, *12:04:02 = *12:03:02, *12:04:02
+-+++-+	++------	--------	--------	*12:04:01, *12:04:02 = *12:04:02, *12:04:02
+-++----	++-+----	-------+	--------	*12:04:01, *12:28 = *12:04:01, *12:43
+-+--+--	++-+----	---+----	--------	*12:06, *12:19 = *12:06, *12:46N
+-+--+--	++-+----	-------+	--------	*12:06, *12:28 = *12:06, *12:43
+-+--+--	++-+----	--------	+-------	*12:02:06, *12:06 = *12:06, *12:39N
+-+--+--	++-+----	--------	--------	*12:03:01:01, *12:06 = *12:03:02, *12:06 = *12:06, *12:06
+-+----+	++-+--+-	---+----	--------	*12:15, *12:19 = *12:15, *12:46N
+-+----+	++-+--+-	-------+	--------	*12:15, *12:28 = *12:15, *12:43
+-+----+	++-+--+-	--------	+-------	*12:02:06, *12:15 = *12:15, *12:39N
+-+----+	++-+--+-	--------	--------	*12:03:01:01, *12:15 = *12:03:02, *12:15 = *12:07, *12:12 = *12:07, *12:15 = *12:12, *12:15 = *12:15, *12:15
+-+----+	++-+----	---+----	--------	*12:07, *12:19 = *12:07, *12:46N
+-+----+	++-+----	-------+	--------	*12:07, *12:28 = *12:07, *12:43
+-+----+	++-+----	--------	+-------	*12:02:06, *12:07 = *12:07, *12:39N
+-+----+	++-+----	--------	--------	*12:03:01:01, *12:07 = *12:03:02, *12:07 = *12:07, *12:07
+-+-----	+++----	-------+	--------	*12:24, *12:28 = *12:24, *12:43
+-+-----	+++----	--------	--------	*12:03:01:01, *12:24 = *12:03:02, *12:24
+-+-----	++-+---	---+----	--------	*12:19, *12:31 = *12:31, *12:46N
+-+-----	++-+---	-------+	--------	*12:28, *12:31 = *12:31, *12:43
+-+-----	++-+---	--------	+-------	*12:02:06, *12:31 = *12:31, *12:39N
+-+-----	++-+---	--------	--------	*12:03:01:01, *12:31 = *12:03:02, *12:31 = *12:31, *12:31
+-+-----	++-+-+-	---+----	--------	*12:11, *12:19 = *12:11, *12:46N
+-+-----	++-+-+-	-------+	--------	*12:11, *12:28 = *12:11, *12:43
+-+-----	++-+-+-	--------	+-------	*12:02:06, *12:11 = *12:11, *12:39N
+-+-----	++-+-+-	--------	--------	*12:03:01:01, *12:11 = *12:03:02, *12:11 = *12:11, *12:11
+-+-----	++-+--+	---+----	--------	*12:12, *12:19 = *12:12, *12:46N
+-+-----	++-+--+	-------+	--------	*12:12, *12:28 = *12:12, *12:43
+-+-----	++-+--+	--------	+-------	*12:02:06, *12:12 = *12:12, *12:39N
+-+-----	++-+--+	--------	--------	*12:03:01:01, *12:12 = *12:03:02, *12:12 = *12:12, *12:12
+-+-----	++-+---+	---+----	--------	*12:13, *12:19 = *12:13, *12:46N
+-+-----	++-+---+	----+--+	--------	*12:14:01, *12:28 = *12:14:01, *12:43
+-+-----	++-+---+	----+---	--------	*12:03:01:01, *12:14:01 = *12:13, *12:14:01 = *12:13, *12:20
+-+-----	++-+---+	-------+	--------	*12:13, *12:28 = *12:13, *12:43
+-+-----	++-+---+	--------	+-------	*12:02:06, *12:13 = *12:13, *12:39N
+-+-----	++-+---+	--------	--------	*12:03:01:01, *12:13 = *12:03:02, *12:13 = *12:13, *12:13
+-+-----	++-+----	+--+----	--------	*12:03:04, *12:19 = *12:03:04, *12:46N
+-+-----	++-+----	+------+	--------	*12:03:04, *12:28 = *12:03:04, *12:43
+-+-----	++-+----	+-------	+-------	*12:02:06, *12:03:04 = *12:03:04, *12:39N
+-+-----	++-+----	+-------	--------	*12:03:01:01, *12:03:04 = *12:03:02, *12:03:04
+-+-----	++-+----	-+-+----	--------	*12:19, *12:35 = *12:35, *12:46N
+-+-----	++-+----	-+----+	--------	*12:28, *12:35 = *12:35, *12:43
+-+-----	++-+----	-+------	+-------	*12:02:06, *12:35 = *12:35, *12:39N
+-+-----	++-+----	-+------	--------	*12:03:01:01, *12:35 = *12:03:02, *12:35 = *12:35, *12:35
+-+-----	++-+----	--++----	--------	*12:19, *12:25 = *12:25, *12:46N
+-+-----	++-+----	--+----+	--------	*12:25, *12:28 = *12:25, *12:43
+-+-----	++-+----	--+-----	+-------	*12:02:06, *12:25 = *12:25, *12:39N
+-+-----	++-+----	--+-----	--------	*12:03:01:01, *12:25 = *12:03:02, *12:25 = *12:25, *12:25
+-+-----	++-+----	---+-+--	--------	*12:19, *12:23 = *12:23, *12:46N
+-+-----	++-+----	---+---+	--------	*12:19, *12:28 = *12:19, *12:43 = *12:28, *12:46N = *12:43, *12:46N
+-+-----	++-+----	---+----	+-------	*12:02:06, *12:46N = *12:19, *12:39N = *12:39N, *12:46N
+-+-----	++-+----	---+----	---+----	*12:19, *12:45 = *12:45, *12:46N
+-+-----	++-+----	---+----	----+-+-	*12:19, *12:42Q = *12:42Q, *12:46N
+-+-----	++-+----	---+----	----+---	*12:19, *12:29 = *12:29, *12:46N
+-+-----	++-+----	---+----	-----+--	*12:19, *12:32 = *12:32, *12:46N
+-+-----	++-+----	---+----	------+-	*12:19, *12:47 = *12:46N, *12:47
+-+-----	++-+----	---+----	-------+	*12:19, *12:37 = *12:37, *12:46N
+-+-----	++-+----	---+----	--------	*12:03:01:01, *12:19 = *12:03:01:01, *12:46N = *12:03:02,

				*12:46N = *12:19, *12:46N = *12:46N, *12:46N
+-+-----	++-+----	----+--+	--------	*12:20, *12:28 = *12:20, *12:43
+-+-----	++-+----	----+---	--------	*12:03:01:01, *12:20 = *12:03:02, *12:20
+-+-----	++-+----	-----+-+	--------	*12:23, *12:28 = *12:23, *12:43
+-+-----	++-+----	-----+--	+-------	*12:02:06, *12:23 = *12:23, *12:39N
+-+-----	++-+----	-----+--	--------	*12:03:01:01, *12:23 = *12:03:02, *12:23 = *12:23, *12:23
+-+-----	++-+----	------++	--------	*12:26, *12:28 = *12:26, *12:43
+-+-----	++-+----	-------+	+-------	*12:02:06, *12:28 = *12:02:06, *12:43 = *12:28, *12:39N = *12:39N, *12:43
+-+-----	++-+----	-------+	---+----	*12:28, *12:45 = *12:43, *12:45
+-+-----	++-+----	-------+	----+-+-	*12:28, *12:42Q = *12:42Q, *12:43
+-+-----	++-+----	-------+	----+---	*12:28, *12:29 = *12:29, *12:43
+-+-----	++-+----	-------+	-----+--	*12:28, *12:32 = *12:32, *12:43
+-+-----	++-+----	-------+	------+-	*12:28, *12:47 = *12:43, *12:47
+-+-----	++-+----	-------+	-------+	*12:28, *12:37 = *12:37, *12:43
+-+-----	++-+----	-------+	--------	*12:03:01:01, *12:28 = *12:03:01:01, *12:43 = *12:03:02, *12:28 = *12:03:02, *12:43 = *12:28, *12:43 = *12:43, *12:43
+-+-----	++-+----	--------	+--+----	*12:02:06, *12:45 = *12:39N, *12:45
+-+-----	++-+----	--------	+---+-+-	*12:02:06, *12:42Q = *12:39N, *12:42Q
+-+-----	++-+----	--------	+---+---	*12:02:06, *12:29 = *12:29, *12:39N
+-+-----	++-+----	--------	+----+--	*12:02:06, *12:32 = *12:32, *12:39N
+-+-----	++-+----	--------	+-----+-	*12:02:06, *12:47 = *12:39N, *12:47
+-+-----	++-+----	--------	+------+	*12:02:06, *12:37 = *12:37, *12:39N
+-+-----	++-+----	--------	+-------	*12:02:06, *12:03:01:01 = *12:02:06, *12:39N = *12:03:01:01, *12:39N = *12:03:02, *12:39N = *12:39N, *12:39N
+-+-----	++-+----	--------	---+----	*12:03:01:01, *12:45 = *12:03:02, *12:45 = *12:45, *12:45
+-+-----	++-+----	--------	----+-+-	*12:03:01:01, *12:42Q = *12:03:02, *12:42Q = *12:29, *12:42Q = *12:29, *12:47 = *12:42Q, *12:42Q = *12:42Q, *12:47
+-+-----	++-+----	--------	----+---	*12:03:01:01, *12:29 = *12:03:02, *12:29 = *12:29, *12:29
+-+-----	++-+----	--------	-----+--	*12:03:01:01, *12:32 = *12:03:02, *12:32 = *12:32, *12:32
+-+-----	++-+----	--------	------+-	*12:03:01:01, *12:47 = *12:03:02, *12:47 = *12:47, *12:47
+-+-----	++-+----	--------	-------+	*12:03:01:01, *12:37 = *12:03:02, *12:37 = *12:37, *12:37
+-+-----	++-+----	--------	--------	*12:03:01:01, *12:03:01:01 = *12:03:01:01, *12:03:02
+-+-----	+--+----	------+-	--------	*12:03:02, *12:26 = *12:26, *12:26
--++--+-	-+------	--------	--------	*12:05, *12:05 = *12:05, *12:33

*12:02:01 = *12:02:01-12:02:05
*12:03:01:01 = *12:03:01:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:12, 12:03:14
*12:03:02 = *12:03:02, 12:03:08
*12:03:04 = *12:03:04, 12:03:09
*12:10:01 = *12:10:01-12:10:02
*12:06 = *12:06 and 12:48
*12:29 = *12:29 and 12:38
*12:30 = *12:30 and 12:36
*12:32 = *12:32 and 12:34
*12:45 = *12:45 and 12:50

SPECIFICITY TABLE

HLA-C*12 SSP subtyping

Specificities and sizes of the PCR products of the 32 primer mixes used for HLA-C*12 SSP subtyping

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	Amplified HLA-C*12 alleles[3]	Other amplified HLA Class I alleles[4]
1[6]	235 bp	**800 bp**	*12:02:01-12:03:12, 12:03:13[W], 12:03:14-12:04:02, 12:06-12:08, 12:10:01-12:15, 12:17-12:20, 12:22-12:32, 12:34-12:48, 12:50	*02:12, 03:15, 03:27, 03:38:01-03:38:02, 03:53, 03:69, 04:03, 04:06, 04:16, 04:80, 05:42, 05:46, 06:03, 07:26, 07:92, 07:96, 08:05, 08:21, 08:25, 15:03, 15:16, 15:25, 16:15:01-16:15:02, 16:25, 17:01:01:01-17:08, 07:15, **B*07:13, B*67:02**
2[5,7]	100 bp	1070 bp	*12:02:01-12:02:05, 12:08, 12:10:01-12:10:02, 12:14:02, 12:16-12:18, 12:22, 12:27, 12:30, 12:36, 12:40-12:41, 12:44, 12:49	*01:04, 01:21
3	220 bp	**800 bp**	*12:03:01:01-12:07, 12:11-12:13, 12:15, 12:23, 12:25-12:26, 12:28-12:29, 12:31-12:35, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50	*01:04, 01:09, 02:05, 02:17, 06:02:01:01-06:02:01:02, 06:02:03-06:03, 06:07-06:13, 06:15-06:34, 06:36-06:39, 06:41-06:55, 14:16, 16:04:01, 16:29
4	340 bp	1070 bp	*12:04:01-12:05, 12:09, 12:21, 12:33, 12:41	*01:14, 02:02:01-02:02:03, 02:02:05-02:02:11, 02:02:13-02:11, 02:13-02:26:02, 02:28-02:40, 02:42-02:46, 03:07, 03:15, 03:45, 04:01:01:01-04:01:26, 04:03-04:10, 04:12-04:20, 04:23-04:28, 04:30-04:35, 04:37-04:54, 04:56-04:81, 05:01:01:01-05:01:15, 05:03-05:51Q, 06:02:01:01-06:02:01:02, 06:02:03-06:10, 06:12-06:51, 06:53-06:55, 07:07, 07:09, 07:49, 07:76,

				08:10, 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, 15:44-15:45, 16:02:01-16:02:05, 16:09, 16:12, 16:19, 16:25, 17:01:01:01-17:08, 18:01-18:04
5[5]	130 bp	1070 bp	*12:05, 12:09, 12:21, 12:33, 12:49	*02:02:01-02:02:03, 02:02:05-02:02:07, 02:02:09-02:02:12, 02:02:14-02:11, 02:13-02:40, 02:42-02:46, 04:10-04:11, 04:36, 04:55, 05:01:01:01-05:01:11, 05:01:13-05:01:15, 05:03-05:41, 05:43-05:45, 05:47-05:51Q, 06:05, 08:01:01-08:02:02, 08:02:04-08:04, 08:06-08:20, 08:22-08:24, 08:26N-08:44, 14:02:03, 14:03, 14:08, 14:10, 14:22, 15:02:01-15:02:07, 15:04-15:13, 15:15, 15:17-15:24, 15:26-15:42, 15:44, 15:45[W], 16:01:01, 16:01:03-16:02:05, 16:04:01, 16:06-16:14, 16:16Q-16:24, 16:26-16:32
6[5,11]	75 bp, 150 bp, 415 bp	1070 bp	*12:06, 12:08, 12:48	*03:08, 03:29, 03:31, 05:36, 06:44
7[5]	140 bp	**800 bp**	*12:04:02-12:05, 12:09, 12:21, 12:33, 12:41	*02:02:01-02:02:03, 02:02:05-02:02:07, 02:02:09-02:02:11, 02:02:14-02:11, 02:13-02:26:02, 02:28-02:40, 02:42-02:46, 04:01:01:01-04:01:09, 04:01:11-04:01:22, 04:01:24-04:01:26, 04:03-04:10, 04:12-04:20, 04:23-04:28, 04:30-04:35, 04:37-04:54, 04:56-04:81, 05:01:01:01-05:01:11, 05:01:13-05:01:15, 05:03-05:51Q, 06:05, 08:10, 15:02:01-15:06:03, 15:08-15:13, 15:15-15:20, 15:22-15:24, 15:26-15:42, 15:44-15:45, 16:02:01-16:02:05,

				16:09, 16:12, 16:19, 16:25, 17:01:04
8[5,12]	95 bp, 155 bp, 245 bp	1070 bp	*12:07, 12:15, 12:40	*16:14
9[5]	95 bp	1070 bp	*12:02:01-12:04:02, 12:06-12:08, 12:10:01-12:20, 12:22-12:27, 12:29-12:32, 12:34-12:48, 12:50	*01:17, 01:21, 02:12, 03:27, 03:38:01-03:38:02, 04:33, 05:46, 06:30, 07:07, 07:16, 07:51, 08:05, 08:21, 08:25, 14:04, 15:03, 15:16, 16:15:01-16:15:02, 16:25, 17:01:01:01-17:08, **B*07:13, B*67:02**
10	155 bp	1070 bp	*12:03:01:01-12:03:01:02, 12:03:03-12:03:07, 12:03:09-12:03:14, 12:04:02-12:07, 12:11-12:13, 12:15, 12:20, 12:23-12:25, 12:28-12:29, 12:31-12:32, 12:34-12:35, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50	*16:15:02
11	220 bp	1070 bp	*12:09, 12:24	*01:02:01-01:03, 01:06-01:08, 01:10-01:20, 01:23-01:34, 01:37N-01:45, 03:58, 03:86, 03:94, 03:99, 04:37, 05:16, 06:05-06:06, 08:12, 14:02:01-14:05, 14:07N, 14:10-14:14, 14:17-14:25, **B*14:03**
12[5]	140 bp	1070 bp	*12:02:01-12:03:03, 12:03:05-12:03:08, 12:03:10-12:03:14, 12:06-12:08, 12:10:01-12:20, 12:22-12:26, 12:28-12:32, 12:34-12:40, 12:42Q-12:50	*01:21, 02:12[W], 02:27:01-02:27:02, 04:11, 04:29, 04:36, 04:55, 07:02:09, 08:01:01-08:09, 08:11-08:44, 14:02:03, 14:03, 14:08, 14:10, 14:22, 15:07, 15:21[W], 15:25, 16:01:01, 16:01:03-16:01:05, 16:04:01, 16:06-16:08, 16:10-16:11, 16:13-16:18, 16:20-16:24, 16:26-16:32, **B*35:08:02, B*67:02**
13[5,13]	105 bp, 150 bp	1070 bp	*12:10:01-12:10:02, 12:31	*04:01:05

14[5,14]	100 bp, 145 bp	1070 bp	*12:11, 12:16	*01:21, 02:42, 06:05[W], 07:02:09, 08:14, **B*67:02**
15[5,8,15]	95 bp, 140 bp	**800 bp**	*12:12, 12:15	**B*35:08:02**
16[16]	185 bp, 225 bp	1070 bp	*12:13-12:14:02	*04:58, 05:23, 08:07, 14:17, 17:01:01:01-17:08
17	565 bp	1070 bp	*12:03:04, 12:03:09	
18[5,17]	140 bp, 165 bp, 245 bp, 270 bp,	1070 bp	*12:17, 12:27, 12:35	*03:53, 04:12
19[5]	100 bp	1070 bp	*12:14:02, 12:18, 12:25	**B*40:29**
20[5,18]	105 bp, 170 bp, 220 bp	1070 bp	*12:19, 12:22, 12:46N	
21	250 bp	1070 bp	*12:14:01-12:14:02, 12:18, 12:20	*01:22, 01:35, 05:11, 05:17, 05:27, 06:04, 08:01:01-08:01:03, 08:03:01-08:04, 08:06, 08:08-08:11, 08:13-08:14, 08:16, 08:20-08:22, 08:24, 08:26N, 08:36N, 08:38-08:42, 08:44, 14:06, 14:15, 15:02:01-15:07, 15:09-15:13, 15:15-15:24, 15:26-15:45, 17:01:01:01-17:08, **B*58:02**
22[5,9,19]	110 bp, 580 bp	1070 bp	*12:21, 12:23	
23	150 bp	1070 bp	*12:26	
24[20]	185 bp, 425 bp	1070 bp	*12:28, 12:43	*04:01:05
25[5,21]	80 bp, 145 bp	1070 bp	*12:02:06, 12:39N	
26	355 bp	**800 bp**	*12:44	*03:38:01-03:38:02, 03:69, 04:80, 06:14, 07:10, 07:43, 15:03, 15:16, 15:25
27[5,22]	100 bp, 205 bp	1070 bp	*12:30, 12:36	
28[10,23]	275 bp, 350 bp	1070 bp	*12:45, 12:50	*01:32, 03:102, 06:20, 07:24, 07:81, 16:13
29[5,24]	125 bp, 185 bp, 210 bp	1070 bp	*12:29, 12:38, 12:42Q	

30[5,25]	90 bp, 230 bp	1070 bp	*12:32, 12:34	*06:41
31[5,26]	120 bp, 185 bp	1070 bp	*12:42Q, 12:47	
32[5]	115 bp	1070 bp	*12:37	**A*02:211**

[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 HLA-C*12 high resolution 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 length of the specific PCR product(s) of the alleles amplified by these primer mixes is 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 HLA-C*12 SSP subtyping.
In addition, wells number 3, 7, 15 and 26 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]The C*12:06 and 12:48 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 6.
The C*12:29 and 12:38 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 29.
The C*12:30 and 12:36 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 27.
The C*12:32 and 12:34 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 30.
The C*12:45 and 12:50 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 28.
The HLA-C*12 primer set cannot separate the C*12:09 and C*05:16 alleles, the C*12:16 and C*01:21 alleles or the C*12:33 and the C*02:05 and C*02:17 alleles. These alleles can be distinguished by the HLA-C low resolution kit and the HLA-C*01, HLA-C*02 or HLA-C*05 kit, respectively.
[4]Due to the sharing of sequence motifs between HLA Class I alleles non-HLA-C*12 alleles will be amplified by primer mixes 1 to 14, 16, 18, 21, 24, 26, 28 and 30. In addition, primer mix 1 amplifies the B*07:13, B*07:15 and B*67:02 alleles, primer mix 9 amplifies the B*07:13 and B*67:02 alleles, primer mix 11 amplifies the B*14:03 allele, primer mix 12 amplifies the B*35:08:02 and B*67:02 alleles, primer mix 14 amplifies the B*67:02 allele, primer mix 15 amplifies the B*35:08:02 allele, primer mix 19 amplifies the B*4029 allele, primer mix 21 amplifies the B*58:02 allele and primer mix 32 amplifies the A*02:211 allele.
[5]Specific PCR fragments shorter than 150 base pairs have a lower intensity and are less sharp than longer PCR bands.
[6]Primer mix 1 may give a lower yield of specific PCR product than the other C*12 primer mixes.

[7]Primer mixes 2 has a tendency of giving rise to nonspecific amplifications.
[8]Primer mix 15 may give rise to a long unspecific amplification product. This band should be disregarded when interpreting the typing results.
[9]Primer mix 22 may give rise to a weaker positive control band than for other C*12 primer mixes.
[10]Primer mix 28 has tendencies of giving rise to primer dimer artefacts.
[11]Primer mix 6: Specific PCR fragment of 75 bp in the C*12:48 allele. Specific PCR fragment of 150 bp in the C*12:06 allele. Specific PCR fragment of 415 bp in the C*12:08 and in the C*03:08, 03:29, 03:31, 05:36 and 06:44 alleles.
[12]Primer mix 8: Specific PCR fragment of 95 bp in the C*12:15 allele. Specific PCR fragment of 155 bp in the C*12:40 and in the C*16:14 alleles. Specific PCR fragment of 245 bp in the C*12:07 allele.
[13]Primer mix 13: Specific PCR fragment of 105 bp in the C*12:31 allele. Specific PCR fragment of 150 bp in the C*12:10:01-12:10:02 alleles. PCR fragment of 105 and 150 bp in the C*04:01:05 allele.
[14]Primer mix 14: Specific PCR fragment of 100 bp in the C*12:16 and the C*01:21, 02:42, 06:05[w], 07:02:09, 08:14 and in the B*67:02 alleles. Specific PCR fragment of 145 bp in the C*12:11 allele.
[15]Primer mix 15: Specific PCR fragment of 95 bp in the C*12:15 allele. Specific PCR fragment of 140 bp in the C*12:12 and B*35:08:02 alleles.
[16]Primer mix 16: Specific PCR fragment of 185 bp in the C*12:13 allele. Specific PCR fragment of 225 bp in C*12:14:01-12:14:02 and in the C*04:58, 05:23, 08:07, 14:17, 17:01:01:01-17:08 alleles.
[17]Primer mix 18: Specific PCR fragment of 140 bp in the C*04:12 allele. Specific PCR fragment of 245 bp in C*03:53 allele. Specific PCR fragments of 140 bp and 245 bp in the C*12:17 and C*12:27 alleles. Specific PCR fragment of 165 and 270 bp in C*12:35 allele. All specific bands may not always be visible.
[18]Primer mix 20: Specific PCR fragment of 105 bp in the C*12:46N allele. Specific PCR fragment of 170 bp in the C*12:22 allele. Specific PCR fragment of 220 bp in C*12:19 allele.
[19]Primer mix 22: Specific PCR fragment of 110 bp in the C*12:23 allele. Specific PCR fragments of 110 bp and 580 bp in C*12:21 allele.
[20]Primer mix 24: Specific PCR fragment of 185 bp in the C*12:43 allele. Specific PCR fragment of 425 bp in C*12:28 and the C*04:01:05 alleles.
[21]Primer mix 25: Specific PCR fragment of 80 bp in the C*12:39N allele. Specific PCR fragment of 145 bp in C*12:02:06 allele.
[22]Primer mix 27: Specific PCR fragment of 100 bp in the C*12:30 allele. Specific PCR fragment of 205 bp in C*12:36 allele.
[23]Primer mix 28: Specific PCR fragment of 275 bp in the C*12:50 and in the C*01:32, 03:102, 06:20 and 07:81 alleles. Specific PCR fragment of 350 bp in C*12:45 and in the C*07:24 and 16:13 alleles.
[24]Primer mix 29: Specific PCR fragment of 125 bp in the C*12:38 allele. Specific PCR fragment of 185 bp in the C*12:42Q allele. Specific PCR fragments of 210 bp in C*12:29 allele.
[25]Primer mix 30: Specific PCR fragment of 90 bp in the C*12:32 and in the C*06:41 alleles. Specific PCR fragment of 230 bp in C*12:34 allele.
[26]Primer mix 31: Specific PCR fragment of 120 bp in the C*12:47 allele. Specific PCR fragment of 185 bp in C*12:42Q allele.
'w', might be weakly amplified.

INTERPRETATION TABLE

HLA-C*12 SSP subtyping

Amplification patterns of the C*12:02 to 12:50 alleles

Well[11]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Length of spec.	235	100	220	340	130	75	140	95	95	155	220	140	105	100	95	185
PCR product(s)						150		155					150	145	140	225
						415		245								
Length of int.	800	1070	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	1070	800	1070
pos. control[1]																
5'-primer(s)[2]	98	419	361	1st	201	28	201	98	289	361	361	201	368	142	201	2nd
	5'-CTA	5'-gTC	5'-AgT	5'-CgA	5'-CCA	5'-TCA	5'-CCA	5'-CTA	5'-Agg	5'-AgT	5'-AgT	5'-CCA	5'-gTT	5'-TCT	5'-CCA	5'-CCA
						431		420					412	368	420	
						5'-CgT		5'-TTA					5'-ATA	5'-gTC	5'-TTA	
						504										
						5'-CAT										
3'-primer(s)[3]	289	477	538	302	289	270	302	214	341	474	538	302	474	201	299	473
	5'-AgC	5'-gCA	5'-CCA	5'-ggT	5'-AgT	5'-TAg	5'-ggT	5'-CCA	5'-Cgg	5'-gCA	5'-CCg	5'-ggC	5'-gCA	5'-CTT	5'-TCT	5'-CAA
	289				289	538		301					477	474	474	512
	5'-AgC				5'-AgT	5'-CCA		5'-gCC					5'-gCA	5'-gCA	5'-gCA	5'-CCA
	295							474								
	5'-TCC							5'-gCA								
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HLA-C allele[4]																
***12:02:01-12:02:05**	1	2							9			12				
***12:02:06**	1								9			12				
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

INTERPRETATION TABLE

HLA-C*12 SSP subtyping

Amplification patterns of the C*12:02 to 12:50 alleles

Well[11]																
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
1070	1070	1070	1070	1070	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	Length of int.
																pos. control[1]
201	98	257	201	2nd |	176	368	98	252	289	127	385	419	347	98	379	5'-primer(s)[2]
5'-CCg'	5'-CTA'	5'-CCC'	5'-CCA'	5'-CCA'	5'-gCA'	5'-gTA'	5'-CTA'	5'-TgA'	5'-Agg'	5'-gAC'	5'-ggT'	5'-gTC'	5'-gTg'	5'-CTA'	5'-ACC'	
	201	477	361		3rd |		341	369		228	463		490	419		
	5'-CCA'	5'-gCT'	5'-AgT'		5'-TgT'		5'-ggA'	5'-TAC'		5'-ATg'	5'-TgA'		5'-CgT'	5'-gTC'		
474	295	311	332	539	474	476	241	289	353	289	3'-' |	505	538	175	453	3'-primer(s)[3]
5'-gCA'	5'-TCC'	5'-ggT'	5'-TCC'	5'-TCA'	5'-gCA'	5'-CgA'	5'-CgT'	5'-AgC'	5'-TgA'	5'-AgC'	5'-CTC'	5'-gCC'	5'-CCA'	5'-CCA'	5'-TCT'	
	308	538	426		658		474	474				564		564		
	5'-TCg'	5'-CAg'	5'-TCC'		5'-gTg'		5'-gCA'	5'-gCA'				5'-ACC'		5'-ACC'		
	326		538									587				
	5'-TgC'		5'-gCA'									5'-CCC'				
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																HLA-C allele[4]
																*12:02:01-12:02:05
								25								*12:02:06
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

CE

Length of spec.	235	100	220	340	130	75	140	95	95	155	220	140	105	100	95	185
PCR product(s)						150		155					150	145	140	225
						415		245								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
*12:03:01:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:12, 12:03:14	1		3						9	10		12				
*12:03:02, 12:03:08	1		3						9			12				
*12:03:04, 12:03:09	1		3						9	10						
*12:03:13	w		3						9	10		12				
*12:04:01	1		3	4					9							
*12:04:02	1		3	4			7		9	10						
*12:05			3	4	5		7			10						
*12:06, 12:48[6]	1		3			6			9	10		12				
*12:07	1		3					8	9	10		12				
*12:08	1	2				6			9			12				
*12:09, 05:16[5]				4	5		7				11					
*12:10:01-12:10:02	1	2							9			12	13			
*12:11	1		3						9	10		12		14		
*12:12	1		3						9	10		12			15	
*12:13	1		3						9	10		12				16
*12:14:01	1								9			12				16
*12:14:02	1	2							9			12				16
*12:15	1		3					8	9	10		12			15	
*12:16, 01:21[5]		2							9			12		14		
*12:17	1	2							9			12				
*12:18	1	2							9			12				
*12:19	1								9			12				
*12:20	1								9	10		12				
*12:21				4	5		7									
*12:22	1	2							9			12				
*12:23	1		3						9	10		12				
*12:24	1								9	10	11	12				
*12:25	1		3						9	10		12				
*12:26	1		3						9			12				
*12:27	1	2							9							
*12:28	1		3							10		12				
*12:29, 12:38[7]	1		3						9	10		12				
*12:30, 12:36[8]	1	2							9			12				
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*12:03:01:01-12:03:01:02, 12:03:03, 12:03:05-12:03:07, 12:03:10-12:03:12, 12:03:14
																*12:03:02, 12:03:08
17																*12:03:04, 12:03:09
																*12:03:13
																*12:04:01
																*12:04:02
																*12:05
																*12:06, 12:48[6]
																*12:07
																*12:08
																*12:09, 05:16[5]
																*12:10:01-12:10:02
																*12:11
																*12:12
																*12:13
				21												*12:14:01
		19		21												*12:14:02
																*12:15
																*12:16, 01:21[5]
	18															*12:17
		19		21												*12:18
			20													*12:19
				21												*12:20
					22											*12:21
			20													*12:22
					22											*12:23
																*12:24
		19														*12:25
						23										*12:26
	18															*12:27
							24									*12:28
												29				*12:29, 12:38[7]
										27						*12:30, 12:36[8]
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	**235**	**100**	**220**	**340**	**130**	**75**	**140**	**95**	**95**	**155**	**220**	**140**	**105**	**100**	**95**	**185**
PCR product(s)						**150**		**155**					**150**	**145**	**140**	**225**
						415		**245**								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
***12:31**	**1**		**3**						**9**	**10**		**12**	**13**			
***12:32, 12:34**[9]	**1**		**3**						**9**	**10**		**12**				
***12:33, 02:05, 02:17**[5]			**3**	**4**	**5**		**7**									
***12:35**	**1**		**3**						**9**	**10**		**12**				
***12:37**	**1**		**3**						**9**	**10**		**12**				
***12:39N**	**1**		**3**						**9**	**10**		**12**				
***12:40**	**1**	**2**						**8**	**9**			**12**				
***12:41**	**1**	**2**		**4**			**7**		**9**							
***12:42Q**	**1**		**3**						**9**	**10**		**12**				
***12:43**	**1**		**3**						**9**	**10**		**12**				
***12:44**	**1**	**2**							**9**			**12**				
***12:45, 12:50**[10]	**1**		**3**						**9**	**10**		**12**				
***12:46N**	**1**		**3**						**9**	**10**		**12**				
***12:47**	**1**		**3**						**9**	**10**		**12**				
***12:49**		**2**			**5**							**12**				
01:02:01-01:03, 01:06-01:08, 01:10-01:13, 01:15-01:16, 01:18-01:20, 01:23-01:31, 01:33-01:34, 01:37N-01:45, 03:58, 03:86, 03:94, 03:99, 14:02:01-14:02:02, 14:02:04-14:02:06, 14:05, 14:07N, 14:11, 14:13-14:14, 14:18-14:21N, 14:23-14:25, *B*14:03											**11**					
***01:04**		**2**	**3**													
***01:09, 06:11, 06:52, 14:16**			**3**													
***01:14, 06:06, 14:12**				**4**							**11**					
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*12:31
													30			*12:32, 12:34[9]
																*12:33, 02:05, 02:17[5]
	18															*12:35
															32	*12:37
								25								*12:39N
																*12:40
																*12:41
												29		31		*12:42Q
							24									*12:43
									26							*12:44
											28					*12:45, 12:50[10]
			20													*12:46N
														31		*12:47
																*12:49
																*01:02:01-01:03, 01:06-01:08, 01:10-01:13, 01:15-01:16, 01:18-01:20, 01:23-01:31, 01:33-01:34, 01:37N-01:45, 03:58, 03:86, 03:94, 03:99, 14:02:01-14:02:02, 14:02:04-14:02:06, 14:05, 14:07N, 14:11, 14:13-14:14, 14:18-14:21N, 14:23-14:25, *B*14:03*
																*01:04
																*01:09, 06:11, 06:52, 14:16
																*01:14, 06:06, 14:12
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	**235**	**100**	**220**	**340**	**130**	**75**	**140**	**95**	**95**	**155**	**220**	**140**	**105**	**100**	**95**	**185**
PCR product(s)						**150**		**155**					**150**	**145**	**140**	**225**
						415		**245**								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
***01:17**									**9**		**11**					
01:22, 01:35, 14:06, 14:15, 15:43, *B*58:02																
***01:32**											**11**					
***02:02:01-02:02:03, 02:02:05-02:02:07, 02:02:09-02:02:11, 02:02:14-02:04, 02:06-02:11, 02:13-02:16:02, 02:18-02:26:02, 02:28-02:40, 02:43-02:46, 04:10, 05:01:01:01-05:01:11, 05:01:13-05:01:15, 05:03-05:10, 05:12-05:15, 05:18-05:22, 05:24-05:26, 05:28-05:35, 05:37-05:41, 05:43-05:45, 05:47-05:51Q, 15:08, 16:02:01-16:02:05, 16:09, 16:12, 16:19**				**4**	**5**		**7**									
***02:02:08, 02:02:13, 03:07, 03:45, 04:01:10, 04:01:23, 05:01:12, 06:35, 06:40, 07:09, 07:49, 07:76, 18:01-18:04**				**4**												
***02:02:12**					**5**											
***02:12**	**1**								**9**			**w**				
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*01:17
				21												*01:22, 01:35, 14:06, 14:15, 15:43, *B*58:02*
											28					*01:32
																*02:02:01-02:02:03, 02:02:05-02:02:07, 02:02:09-02:02:11, 02:02:14-02:04, 02:06-02:11, 02:13-02:16:02, 02:18-02:26:02, 02:28-02:40, 02:43-02:46, 04:10, 05:01:01:01-05:01:11, 05:01:13-05:01:15, 05:03-05:10, 05:12-05:15, 05:18-05:22, 05:24-05:26, 05:28-05:35, 05:37-05:41, 05:43-05:45, 05:47-05:51Q, 15:08, 16:02:01-16:02:05, 16:09, 16:12, 16:19
																*02:02:08, 02:02:13, 03:07, 03:45, 04:01:10, 04:01:23, 05:01:12, 06:35, 06:40, 07:09, 07:49, 07:76, 18:01-18:04
																*02:02:12
																*02:12
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	235	100	220	340	130	75	140	95	95	155	220	140	105	100	95	185
PCR product(s)						150		155					150	145	140	225
						415		245								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
*02:27:01-02:27:02, 04:11, 04:36, 04:55, 08:02:01-08:02:02, 08:02:04-08:02:05, 08:15, 08:17-08:19, 08:23, 08:27-08:35, 08:37, 08:43, 14:08, 16:01:01, 16:01:03-16:01:05, 16:06-16:08, 16:10-16:11, 16:16Q-16:18, 16:20-16:24, 16:26-16:28, 16:30N-16:32					5							12				
*02:42				4	5		7							14		
*03:08, 03:29, 03:31						6										
*03:15	1			4												
*03:27, *B*07:13*	1								9							
*03:38:01-03:38:02	1								9							
*03:53	1															
*03:69	1															
*03:102, 07:24, 07:81																
*04:01:01:01-04:01:04, 04:01:06-04:01:09, 04:01:11-04:01:22, 04:01:24-04:01:26, 04:04:01-04:04:05, 04:07-04:09N, 04:13-04:15:02, 04:17-04:20, 04:23-04:28, 04:30-04:32, 04:34-04:35, 04:38-04:54, 04:56-04:57, 04:59Q-04:79, 04:81				4			7									
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*02:27:01-02:27:02, 04:11, 04:36, 04:55, 08:02:01-08:02:02, 08:02:04-08:02:05, 08:15, 08:17-08:19, 08:23, 08:27-08:35, 08:37, 08:43, 14:08, 16:01:01, 16:01:03-16:01:05, 16:06-16:08, 16:10-16:11, 16:16Q-16:18, 16:20-16:24, 16:26-16:28, 16:30N-16:32
																*02:42
																*03:08, 03:29, 03:31
																*03:15
																*03:27, *B*07:13*
									26							*03:38:01-03:38:02
	18															*03:53
									26							*03:69
											28					*03:102, 07:24, 07:81
																*04:01:01:01-04:01:04, 04:01:06-04:01:09, 04:01:11-04:01:22, 04:01:24-04:01:26, 04:04:01-04:05, 04:07-04:09N, 04:13-04:15:02, 04:17-04:20, 04:23-04:28, 04:30-04:32, 04:34-04:35, 04:38-04:54, 04:56-04:57, 04:59Q-04:79, 04:81
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	235	100	220	340	130	75	140	95	95	155	220	140	105	100	95	185
PCR product(s)						150		155					150	145	140	225
						415		245								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
*04:01:05				4			7						13			
*04:03, 04:06, 04:16, 05:42	1			4			7									
*04:12				4			7									
*04:29, 08:02:03												12				
*04:33				4			7		9							
*04:37				4			7				11					
*04:58				4			7									16
*04:80	1			4			7									
*05:11, 05:17, 05:27, 08:10, 15:02:01-15:02:07, 15:04-15:06:03, 15:09-15:13, 15:15, 15:17-15:20, 15:22-15:24, 15:26-15:42, 15:44				4	5		7									
*05:23				4	5		7									16
*05:36				4	5	6	7									
*05:46, 16:25	1			4			7		9							
*06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:07-06:10, 06:12-06:13, 06:15-06:19, 06:21-06:29, 06:31-06:34, 06:36-06:39, 06:42-06:43, 06:45-06:51, 06:53-06:55			3	4												
*06:03	1		3	4												
*06:04				4												
*06:05				4	5		7				11			w		
*06:14				4												
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
							24									*04:01:05
																*04:03, 04:06, 04:16, 05:42
	18															*04:12
																*04:29, 08:02:03
																*04:33
																*04:37
																*04:58
									26							*04:80
				21												*05:11, 05:17, 05:27, 08:10, 15:02:01-15:02:07, 15:04-15:06:03, 15:09-15:13, 15:15, 15:17-15:20, 15:22-15:24, 15:26-15:42, 15:44
																*05:23
																*05:36
																*05:46, 16:25
																*06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:07-06:10, 06:12-06:13, 06:15-06:19, 06:21-06:29, 06:31-06:34, 06:36-06:39, 06:42-06:43, 06:45-06:51, 06:53-06:55
																*06:03
				21												*06:04
																*06:05
									26							*06:14
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	**235**	**100**	**220**	**340**	**130**	**75**	**140**	**95**	**95**	**155**	**220**	**140**	**105**	**100**	**95**	**185**
PCR product(s)						**150**		**155**					**150**	**145**	**140**	**225**
						415		**245**								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
***04:01:05**				**4**			**7**						**13**			
***04:03, 04:06, 04:16, 05:42**	**1**			**4**			**7**									
***04:12**				**4**			**7**									
***04:29, 08:02:03**												**12**				
***04:33**				**4**			**7**		**9**							
***04:37**				**4**			**7**				**11**					
***04:58**				**4**			**7**									**16**
***04:80**	**1**			**4**			**7**									
***05:11, 05:17, 05:27, 08:10, 15:02:01-15:02:07, 15:04-15:06:03, 15:09-15:13, 15:15, 15:17-15:20, 15:22-15:24, 15:26-15:42, 15:44**				**4**	**5**		**7**									
***05:23**				**4**	**5**		**7**									**16**
***05:36**				**4**	**5**	**6**	**7**									
***05:46, 16:25**	**1**			**4**			**7**		**9**							
***06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:07-06:10, 06:12-06:13, 06:15-06:19, 06:21-06:29, 06:31-06:34, 06:36-06:39, 06:42-06:43, 06:45-06:51, 06:53-06:55**			**3**	**4**												
***06:03**	**1**		**3**	**4**												
***06:04**				**4**												
***06:05**				**4**	**5**		**7**				**11**			**w**		
***06:14**				**4**												
***06:20**			**3**	**4**												
***06:30**			**3**	**4**					**9**							
***06:41**			**3**	**4**												
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
							24									*04:01:05
																*04:03, 04:06, 04:16, 05:42
	18															*04:12
																*04:29, 08:02:03
																*04:33
																*04:37
																*04:58
									26							*04:80
				21												*05:11, 05:17, 05:27, 08:10, 15:02:01-15:02:07, 15:04-15:06:03, 15:09-15:13, 15:15, 15:17-15:20, 15:22-15:24, 15:26-15:42, 15:44
																*05:23
																*05:36
																*05:46, 16:25
																*06:02:01:01-06:02:01:02, 06:02:03-06:02:11, 06:07-06:10, 06:12-06:13, 06:15-06:19, 06:21-06:29, 06:31-06:34, 06:36-06:39, 06:42-06:43, 06:45-06:51, 06:53-06:55
																*06:03
				21												*06:04
																*06:05
									26							*06:14
											28					*06:20
																*06:30
													30			*06:41
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

Length of spec.	235	100	220	340	130	75	140	95	95	155	220	140	105	100	95	185
PCR product(s)						150		155					150	145	140	225
						415		245								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
*06:44			3	4		6										
*07:02:09												12		14		
*07:07				4					9							
*07:10, 07:43																
*07:16, 07:51									9							
*07:26, 07:92, 07:96, *B*07:15*	1															
*08:01:01-08:01:03, 08:03:01-08:04, 08:06, 08:08-08:09, 08:11, 08:13, 08:16, 08:20, 08:22, 08:24, 08:26N, 08:36N, 08:38-08:42, 08:44, 15:07					5							12				
*08:05, 08:25, 16:15:01	1								9			12				
*08:07					5							12				16
*08:12, 14:02:03, 14:03, 14:10, 14:22					5						11	12				
*08:14					5							12		14		
*08:21	1								9			12				
*14:04				4					9		11					
*14:17											11					16
*15:03, 15:16	1			4			7		9							
*15:21					5							w				
*15:25	1											12				
*15:45				4	w		7									
*16:04:01, 16:29			3		5							12				
*16:13					5							12				
*16:14					5			8				12				
*16:15:02	1								9	10		12				
*17:01:01:01-17:01:03, 17:01:05-17:08	1			4					9							16
*17:01:04	1			4			7		9							16
*A*02:211*																
*B*35:08:02*												12			15	
*B*40:29*																
*B*67:02*	1								9			12		14		
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**

565	140	100	105	250	110	150	185	80	355	100	275	125	90	120	115	Length of spec.
	165		170		580		425	145		205	350	185	230	185		PCR product(s)
	245		220									210				
	270															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.
																*06:44
																*07:02:09
																*07:07
									26							*07:10, 07:43
																*07:16, 07:51
																*07:26, 07:92, 07:96, *B*07:15*
				21												*08:01:01-08:01:03, 08:03:01-08:04, 08:06, 08:08-08:09, 08:11, 08:13, 08:16, 08:20, 08:22, 08:24, 08:26N, 08:36N, 08:38-08:42, 08:44, 15:07
																*08:05, 08:25, 16:15:01
																*08:07
																*08:12, 14:02:03, 14:03, 14:10, 14:22
				21												*08:14
				21												*08:21
																*14:04
																*14:17
				21					26							*15:03, 15:16
				21												*15:21
									26							*15:25
				21												*15:45
																*16:04:01, 16:29
											28					*16:13
																*16:14
																*16:15:02
				21												*17:01:01:01-17:01:03, 17:01:05-17:08
				21												*17:01:04
															32	*A*02:211*
																*B*35:08:02*
		19														*B*40:29*
																*B*67:02*
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Well No.

[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 HLA-C*12 SSP subtyping.
In addition, wells number 3, 7, 15 and 26 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band.
[2]The nucleotide position, in the 2nd or 3rd exon or the 1st, 2nd or 3rd 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 2nd, 3rd or 4th exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nuclotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.
[4]The HLA-Cw*1201 nucleotide sequence has been shown to be identical to C*12:02:02.
[5]The HLA-C*12 primer set cannot separate the C*12:09 and C*05:16 alleles, the C*12:16 and C*01:21 alleles or the C*12:33 and the C*02:05 and C*02:17 alleles. These alleles can be distinguished by the HLA-C low resolution kit and the HLA-C*01, HLA-C*02 or HLA-C*05 kit, respectively.
[6]The C*12:06 and 12:48 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 6.
[7]The C*12:29 and 12:38 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 29.
[8]The C*12:30 and 12:36 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 27.
[9]The C*12:32 and 12:34 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 30.
[10]The C*12:45 and 12:50 alleles can be distinguished by the different sizes of the specific PCR products generated by primer mix 28.
[11]Primer mix 6: Specific PCR fragment of 75 bp in the C*12:48 allele. Specific PCR fragment of 150 bp in the C*12:06 allele. Specific PCR fragment of 415 bp in the C*12:08 and in the C*03:08, 03:29, 03:31, 05:36 and 06:44 alleles.
Primer mix 8: Specific PCR fragment of 95 bp in the C*12:15 allele. Specific PCR fragment of 155 bp in the C*12:40 and in the C*16:14 alleles. Specific PCR fragment of 245 bp in the C*12:07 allele.
Primer mix 13: Specific PCR fragment of 105 bp in the C*12:31 allele. Specific PCR fragment of 150 bp in the C*12:10:01-12:10:02 alleles. PCR fragment of 105 and 150 bp in the C*04:01:05 allele.
Primer mix 14: Specific PCR fragment of 100 bp in the C*12:16 and the C*01:21, 02:42, 06:05[W], 07:02:09, 08:14 and in the B*67:02 alleles. Specific PCR fragment of 145 bp in the C*12:11 allele.
Primer mix 15: Specific PCR fragment of 95 bp in the C*12:15 allele. Specific PCR fragment of 140 bp in the C*12:12 and B*35:08:02 alleles.
Primer mix 16: Specific PCR fragment of 185 bp in the C*12:13 allele. Specific PCR fragment of 225 bp in C*12:14:01-12:14:02 and in the C*04:58, 05:23, 08:07, 14:17, 17:01:01:01-17:08 alleles.
Primer mix 18: Specific PCR fragment of 140 bp in the C*04:12 allele. Specific PCR fragment of 245 bp in C*03:53 allele. Specific PCR fragments of 140 bp and 245 bp in the C*12:17 and C*12:27 alleles. Specific PCR fragment of 165 and 270 bp in C*12:35 allele. All specific bands may not always be visible.
Primer mix 20: Specific PCR fragment of 105 bp in the C*12:46N allele. Specific PCR fragment of 170 bp in the C*12:22 allele. Specific PCR fragment of 220 bp in C*12:19 allele.
Primer mix 22: Specific PCR fragment of 110 bp in the C*12:23 allele. Specific PCR fragments of 110 bp and 580 bp in C*12:21 allele.
Primer mix 24: Specific PCR fragment of 185 bp in the C*12:43 allele. Specific PCR fragment of 425 bp in C*12:28 and the C*04:01:05 alleles.
Primer mix 25: Specific PCR fragment of 80 bp in the C*12:39N allele. Specific PCR fragment of 145 bp in C*12:02:06 allele.
Primer mix 27: Specific PCR fragment of 100 bp in the C*12:30 allele. Specific PCR fragment of 205 bp in C*12:36 allele.

Primer mix 28: Specific PCR fragment of 275 bp in the C*12:50 and in the C*01:32, 03:102, 06:20 and 07:81 alleles. Specific PCR fragment of 350 bp in C*12:45 and in the C*07:24 and 16:13 alleles.
Primer mix 29: Specific PCR fragment of 125 bp in the C*12:38 allele. Specific PCR fragment of 185 bp in the C*12:42Q allele. Specific PCR fragments of 210 bp in C*12:29 allele.
Primer mix 30: Specific PCR fragment of 90 bp in the C*12:32 and in the C*06:41 alleles. Specific PCR fragment of 230 bp in C*12:34 allele.
Primer mix 31: Specific PCR fragment of 120 bp in the C*12:47 allele. Specific PCR fragment of 185 bp in C*12:42Q allele.
'w', might be weakly amplified.

CELL LINE VALIDATION SHEET

HLA-C*12 SSP primer set

					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:	201182801	200968402	200968403	200968404	200968405	201182806	200968407	201182808	200968409	200968410	200968411	200968412	201182813	200968414	201182815	201182816
	IHWC cell line		C*																	
1	9001	SA	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*12:02		+	+	-	-	-	-	-	-	+	-	-	+	-	-	-	-
4	9275	GU373	*03:04	*04:01	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*06:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*05:01		-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
9	9026	YAR	*12:03		+	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-
10	9107	LKT3	*01:02		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
11	9051	PITOUT	*16:01		-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-
12	9052	DBB	*06:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:02		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
15	9075	DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02		-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03		+	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-
23	9124	IHL	*01:02	*15:02	-	-	-	+	+	-	+	-	-	-	+	-	-	-	-	-
24	9035	JBUSH	*12:03		+	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-
25	9049	IBW9	*08:02		-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-
26	9285	WT49	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*05:01	*16:01	-	-	-	+	+	-	+	-	-	-	-	+	-	-	-	-
29	9050	MOU	*16:01		-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-
30	9021	RSH	*17:01		+	-	-	+	-	-	-	-	+	-	-	-	-	-	-	+
31	9019	DUCAF	*05:01		-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
32	9297	HAG	*17:01	*17:03	+	-	-	+	-	-	-	-	+	-	-	-	-	-	-	+
33	9098	MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03		+	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-
35	9302	SSTO	*05:01		-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:03	*04:01	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*01:02	*06:02	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-
41	9055	H0301	*08:02		-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-
42	9066	TAB089	*01:02		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
43	9076	T7526	*01:02	*08:01	-	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-
44	9057	TEM	*12:03		+	-	+	-	-	-	-	-	+	+	-	+	-	-	-	
45	9239	SHJO	*06:02	*17:01	+	-	+	+	-	-	-	-	+	-	-	-	-	-	-	+
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*04:01	*16:01	-	-	-	+	+	-	+	-	-	-	-	+	-	-	-	-

CELL LINE VALIDATION SHEET

HLA-C*12 SSP primer set

					Well															
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
				Prod. No.:	200968417	201182818	200968419	201182820	200968421	201182822	200968423	201182824	201182825	201182826	201182827	201182828	201182829	201182830	201182831	201182832
	IHWC cell line		C*																	
1	9001	SA	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*12:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*01:02	*15:02	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*17:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*17:01	*17:03	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*01:02	*06:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*01:02	*08:01	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*06:02	*17:01	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CERTIFICATE OF ANALYSIS

Olerup SSP® HLA-C*12 SSP

Product number: **101.624-12u – without *Taq* polymerase**
Lot number: **11L**
Expiry date: **2013-August-01**
Number of tests: **12**
Number of wells per test: **32**

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2011-828-01	13	2011-828-13	25	2011-828-25
2	2009-684-02	14	2009-684-14	26	2011-828-26
3	2009-684-03	15	2011-828-15	27	2011-828-27
4	2009-684-04	16	2011-828-16	28	2011-828-28
5	2009-684-05			29	2011-828-29
6	2011-828-06	17	2009-684-17	30	2011-828-30
7	2009-684-07	18	2011-828-18	31	2011-828-31
8	2011-828-08	19	2009-684-19	32	2011-828-32
		20	2011-828-20		
9	2011-828-09	21	2009-684-21		
10	2011-828-10	22	2011-828-22		
11	2009-684-11	23	2009-684-23		
12	2009-684-12	24	2011-828-24		

The specificity of each primer solution of the HLA-C*12 primer set has been tested against 48 well characterized IHWC cell line DNAs.

No DNAs carrying the alleles to be amplified by primer solutions 6, 8, 13 to 15, 17 to 20 and 22 to 32 were available. The specificities of the primers in primer solutions 6, 8, 13 to 15, 17, 19, 22, 24 to 26, 28 and 32 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer.
In primer solutions 18, 20, 23, 29 and 31 it was only possible to test the 5'-primer, the 3'-primer was not possible to test.
In primer solutions 27 and 30 it was only possible to test the 3'-primer, the 5'-primer was not possible to test.
In primer solutions 6, 14, 19, 25 and 28 one or two 5'-primers were not possible to test, and in primer solutions 1, 8, 16, 22 and 24 one or two 3'-primers were not possible to test.

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

Date of approval: 2011-March-14

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: *Olerup* SSP® HLA-C*12
Product number: 101.624-12u
Lot number: 11L

Intended use: HLA-C*12 high resolution histocompatibility testing

Manufacturer: *Olerup* SSP AB
Hasselstigen 1
SE-133 33 Saltsjöbaden, Sweden
Phone: +46-8-717 88 27
Fax: +46-8-717 88 18

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, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.

The Authorized Representative located within the Community is: *Olerup* SSP AB.

Saltsjöbaden, Sweden
2011-March-14

Olle Olerup
Managing Director

ADDRESSES:

Manufacturer:
***Olerup* SSP AB**, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.
Tel: +46-8-717 88 27
Fax: +46-8-717 88 18
E-mail: info-ssp@olerup.com
Web page: http://www.olerup-ssp.com

Distributed by:
Olerup GmbH, Löwengasse 47 / 6, AT-1030 Vienna, Austria.
Tel: +43-1-710 15 00
Fax: +43-1-710 15 00 10
E-mail: support-at@olerup.com
Web page: http://www.olerup.com

Olerup Inc., 901 S. Bolmar St., Suite R, West Chester, PA 19382
Tel: 1-877-OLERUP1
Fax: 610-344-7989
E-mail: info.us@olerup.com
Web page: http://www.olerup.com

For information on *Olerup* SSP distributors worldwide, contact **Olerup GmbH**.