Olerup SSP® DQB1 high resolution for frequent alleles

Product number:	**101.221-12u – without *Taq* polymerase**
Lot number:	**10M**
Expiry date:	**2014-January-01**
Number of tests:	**12 tests**
Number of wells per test:	**47 + 1**
Storage - pre-aliquoted primers:	**dark at -20°C**
- PCR Master Mix:	**-20°C**
- Adhesive PCR seals	**RT**
- Product Insert	**RT**

This Product Description is only valid for Lot No. 10M.

CHANGES COMPARED TO THE PREVIOUS *OLERUP* SSP® DQB1 HIGH RESOLUTION LOT (31K)

The DQB1 high resolution specificity and interpretation tables have been updated with the DQB1 alleles described since the previous *Olerup* SSP® DQB1 high resolution lot was made**(Lot No. 31K)**.

> The amplification patterns for some rare DQB1 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
4	Added	Added	Primer pair added for the DQB1*03:28 allele.
5	Added	-	Primers added for the DQB1*05:06 and DQB1*05:07 alleles.
15	-	Added	Primer added for the DQB1*03:27 allele.
17	Added	Added	Primer pair added for the DQB1*03:28 allele, primer pair from well 40.
21	Added	-	Primer added for increased yield of HLA-specific PCR product.
22	Added	-	Primer added for the DQB1*04:02:02 allele.
34	Added	-	Primer added for the DQB1*05:07 allele.
35	Added	Added	Primer pairs added for the DQB1*03:27 and DQB1*03:31 alleles.

36	Added	-	Primer added for increased yield of HLA-specific PCR product.
38	Added	Added	Primer pair added for the DQB1*05:08 allele.
39	Added	Added	Primer pairs added for the DQB1*03:29 and DQB1*03:30 alleles.
40	Moved	Moved	Primer pair moved to well 17.
41	Added	-	Primer added for the DQB1*04:06 allele.

Change in revision R01 compared to R00:

1. The DQB1*06:28 allele is weakly amplified by primer mix 18.

Change in revision R02 compared to R01:

1. The DQB1*03:05:02 and 03:05:04 alleles are not amplified by primer mix 11. This has been corrected in the Specificity and Interpretation Tables.

Change in revision R03 compared to R02:

1. The DQB1*03:05:02 and 03:05:04 alleles are amplified by primer mix 19. This has been corrected in the Interpretation Table.

Well 48 contains Negative Control primer pairs, that will amplify more than 95% of the *Olerup* SSP® HLA Class I, DRB, DQB1 and DPB1 amplicons as well as the amplicons generated by control primer pairs.

PCR product sizes range from 75 to 430 base pairs.
The PCR product generated by the control primer pair is 430 base pairs.

Length of PCR product	**105**	**200**	**105**	**80**	**75**	**80**
5'-primer[1]	**164**	**340**	**440**	**45**	**45**	**43**
	5'-CAC3'	**5'-Agg3'**	**5'-TTA3'**	**5'-Tgg3'**	**5'-Tgg3'**	**5'-Tgg3'**
3'-primer[2]	**231**	**2nd I**	**507**	**59**	**58**	**57**
	5'-TgC3'	**5'-AAA3'**	**5'-TTg3'**	**5'-CTC3'**	**5'-ggC3'**	**5'-CTC3'**
A*	**+**	**+**	**+**			
B*	**+**	**+**	**+**			
C*	**+**	**+**	**+**			
DRB1				**+**	**+**	
DRB3				**+**	**+**	
DRB5				**+**		
DQB1					**+**	
DPB1						**+**

[1]The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

[2]The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

PRODUCT DESCRIPTION

DQB1 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DQB1*02:01 to DQB1*06:40 alleles.

Please note that DQB1 amplifications usually are somewhat less pronounced than e.g. DRB and DQA1 amplifications even when using the same DNA preparation and exactly the same experimental procedures.

PLATE LAYOUT

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

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
9	**10**	**11**	**12**	**13**	**14**	**15**	**16**
17	**18**	**19**	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**	**31**	**32**
33	**34**	**35**	**36**	**37**	**38**	**39**	**40**
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**

Wells 1 to 47 – DQB1 primers.
Well 48 – Negative Control.
The 48 well cut PCR plate is marked with 'DQB1 "HIGH"' in silver/gray ink.
Well No. 1 is marked with the Lot No. '10M'.
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 48 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.

INTERPRETATION

Only DQB1 alleles will be amplified by the DQB1 high resolution for frequent alleles typing kit. Thus, the interpretation of DQB1 high resolution for frequent alleles typings is not influenced by the DQB2 or DQB3 genes or other HLA class II genes.

UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DQB1 alleles, i.e. **DQB1*02:01 to 02:05, DQB1*03:01 to 03:31, DQB1*04:01 to 04:06, DQB1*05:01 to 05:08 and DQB1*06:01 to 06:40**, recognized by the HLA Nomenclature Committee in October 2010[1] will give rise to unique amplification patterns by the primers in the DQB1 high resolution for frequent alleles typing kit.

The DQB1 typing kit cannot distinguish the DQB1*02:01:01-02:01:03 alleles, the DQB1*03:01:01:01-03:01:02 and 03:01:05 alleles, the DQB1*03:02:01-03:02:05 alleles, the DQB1*03:03:02:01-03:03:03 alleles, the DQB1*03:05:01-03:05:04 alleles, the *04:01:01-04:01:02 alleles, the DQB1*04:02:01-04:02:02 alleles, the DQB1*05:01:01:01-05:01:03 alleles, the DQB1*05:02:01 and 05:02:03 alleles, the DQB1*05:03:01:01-05:03:03 alleles, the DQB1*06:01:01-06:01:06 alleles and the DQB1*06**:**04**:**01 and 06**:**04**:**03 alleles.

The DQB1*06:33 and 06:37 alleles may be distinguished by the different sizes of the specific PCR products generated by primer mix 43.

[1]DQB1 alleles listed on the IMGT/HLA web page 2010-October-20, release 3.2.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

A total of 153 alleles generate 101 amplification patterns that can be combined in 5151 homozygous and heterozygous combinations. 661 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.

+-++-+++ +------+ +-++---- -------- ----+--- -------	*02:01:01, *03:28 = *02:02, *03:28
+-++---+ +-+----- --++---- -------- -------- -------	*02:02, *03:17 = *02:02, *03:20
+-++---+ +------- -------- --+----- ------+- ---+---	*02:02, *06:13 = *02:02, *06:29
+-+-+--+ +-+----- --++---- -------- -------- -------	*02:04, *03:17 = *02:04, *03:20
+-+-+--+ +------- ------+- -------- -+------ -------	*02:01:01, *05:07 = *02:04, *05:07
+-+-+--+ +------- -------+ -------- -------- -------	*02:01:01, *05:05 = *02:04, *05:02:01 = *02:04, *05:05
+-+-+--+ +------- -------- +------- -------- -------	*02:01:01, *05:06 = *02:04, *05:03:01:01 = *02:04, *05:06
+-+-+--+ +------- -------- --+----- ------+- ---+---	*02:04, *06:13 = *02:04, *06:29
+-+-+--+ +------- -------- -------- -------- -------	*02:01:01, *02:04 = *02:04, *02:04
+-+----+ +-+----- --++---- -------- -------- --+----	*02:05, *03:17 = *02:05, *03:20
+-+----+ +-+----- --++---- -------- -------- -------	*02:01:01, *03:17 = *02:01:01, *03:20
+-+----+ +------- -------- --++---- -------- --++---	*02:01:01, *06:33 = *02:05, *06:33
+-+----+ +------- -------- --+----- ------+- --++---	*02:05, *06:13 = *02:05, *06:29
+-+----+ +------- -------- --+----- ------+- ---+---	*02:01:01, *06:13 = *02:01:01, *06:29
+-+----+ +------- -------- ----+++- -------- --+----	*02:01:01, *06:26N = *02:05, *06:26N
+-+----+ +------- -------- -------- -------- --+----	*02:01:01, *02:05 = *02:05, *02:05
-+++-++- +------+ --++---- -------- ----+--- -------	*02:03, *03:01:01:01 = *02:03, *03:01:03
-+++---- +-+----- --++---- -------- -------- -------	*02:03, *03:05:01 = *02:03, *03:17 = *02:03, *03:20
--++-++- +-+----+ +-++---- -------- ----+--- -------	*03:05:01, *03:28 = *03:20, *03:28
--++-++- +--+---+ +-++---- -----+-- ----+--- -+-----	*03:06, *03:28 = *03:25, *03:28
--++-++- +------+ +-++---- -------- ----+--- -------	*03:03:02:01, *03:28 = *03:19, *03:28
--++-++- -------+ +-++---- -------+ ++--+--- -------	*03:28, *06:04:01 = *03:28, *06:34
--++-++- -------+ +-++---- -------- ----++-- -------	*03:01:04, *03:28 = *03:28, *05:04
--++-++- -------+ +-++---- -------- ----+--- -------	*03:01:01:01, *03:28 = *03:01:03, *03:28 = *03:28, *03:28
--+-+--- -------- ------++ -------- -+------ -------	*05:02:01, *05:07 = *05:05, *05:07
--+-+--- -------- ------+- +------- -+------ -------	*05:03:01:01, *05:07 = *05:06, *05:07
--+-+--- -------- ------+- -------- -+------ -------	*05:01:01:01, *05:07 = *05:07, *05:07
--+-+--- -------- -------+ +------- -------- -------	*05:02:01, *05:06 = *05:02:02, *05:05 = *05:02:02, *05:06 = *05:03:01:01, *05:05 = *05:05, *05:06
--+-+--- -------- -------+ -------- -------- -------	*05:02:01, *05:05 = *05:05, *05:05
--+-+--- -------- -------- +------- -----+-- -------	*05:04, *05:06 = *05:06, *05:08
--+-+--- -------- -------- +------- -------- -------	*05:03:01:01, *05:06 = *05:06, *05:06
--+--+++ +---+--+ --++---- -------- ----+--- -------	*03:07, *03:16 = *03:07, *03:19
--+--+++ +----+-+ -+++---- -------- ----+--- -------	*03:09, *03:18 = *03:11, *03:24

--+--+++ +----+-+ --++---- -------- ----+--- -------	*03:01:01:01, *03:11 = *03:02:01, *03:09 = *03:09, *03:11
--+--+++ +------+ -+++---- -------- ----+--- -------	*03:01:01:01, *03:18 = *03:02:01, *03:24 = *03:18, *03:24
--+--+++ -------+ --++---- --+----- ----+-+- ---+---	*03:01:01:01, *06:29 = *03:29, *06:29
--+--++- ++------+ --++---- -------- ----+--- -------	*03:03:02:01, *03:04 = *03:04, *03:19
--+--++- +-+--+-+ --++---- -------- ----+--- -------	*03:05:01, *03:09 = *03:09, *03:20
--+--++- +-+---++ --++---- -------- --+-+--- -------	*03:05:01, *03:27 = *03:20, *03:27
--+--++- +-+----+ -+++---- -------- ----+--- -------	*03:05:01, *03:24 = *03:20, *03:24
--+--++- +-+----+ --++---- -------- ----++-- -------	*03:01:04, *03:05:01 = *03:01:04, *03:20
--+--++- +-+----+ --++---- -------- ----+-+- -------	*03:05:01, *03:29 = *03:20, *03:29
--+--++- +-+----+ --++---- -------- ----+--+ -------	*03:05:01, *03:21 = *03:20, *03:21
--+--++- +-+----+ --++---- -------- ----+--- +------	*03:05:01, *03:22 = *03:20, *03:22
--+--++- +-+----+ --++---- -------- ----+--- -------	*03:01:01:01, *03:05:01 = *03:01:01:01, *03:20 = *03:01:03, *03:20
--+--++- +-+----+ --++---- -------- -------- -------	*03:05:01, *03:19 = *03:19, *03:20
--+--++- +--+-+-+ --++---- -----+-- ----+--- -+-----	*03:06, *03:09 = *03:09, *03:25
--+--++- +--+--++ --++---- -----+-- --+-+--- -+-----	*03:06, *03:27 = *03:25, *03:27
--+--++- +--+---+ +-++---- -----+-- ----+--- -+-----	*03:06, *03:13 = *03:13, *03:25
--+--++- +--+---+ -+++---- -----+-- ----+--- -+-----	*03:06, *03:24 = *03:24, *03:25
--+--++- +--+---+ --++---- -----+-- ----++-- -+-----	*03:01:04, *03:06 = *03:01:04, *03:25
--+--++- +--+---+ --++---- -----+-- ----+-+- -+-----	*03:06, *03:29 = *03:25, *03:29
--+--++- +--+---+ --++---- -----+-- ----+--+ -+-----	*03:06, *03:21 = *03:21, *03:25
--+--++- +--+---+ --++---- -----+-- ----+--- ++-----	*03:06, *03:22 = *03:22, *03:25
--+--++- +--+---+ --++---- -----+-- ----+--- -+-----	*03:01:01:01, *03:06 = *03:01:01:01, *03:25 = *03:01:03, *03:06
--+--++- +---+--+ --++---- -------- ----+--- -------	*03:01:01:01, *03:15 = *03:01:03, *03:15
--+--++- +---+--+ --++---- -------- ----+--- -------	*03:15, *03:16 = *03:15, *03:19 = *03:16, *03:19
--+--++- +-----+- --++---- -------- ----+--- -------	*03:01:01:01, *03:26 = *03:01:03, *03:26 = *03:03:02:01, *03:09 = *03:09, *03:19 = *03:09, *03:26
--+--++- +------++ --++---- -------- --+-+--- -------	*03:03:02:01, *03:27 = *03:12, *03:27 = *03:19, *03:27 = *03:27, *03:31
--+--++- +------++ --++---- -------- ----+--- -------	*03:01:01:01, *03:12 = *03:01:03, *03:12 = *03:10, *03:19
--+--++- +------+ -+++---- -------- ----+--- -------	*03:03:02:01, *03:24 = *03:19, *03:24
--+--++- +------+ --++---- -----+-- ----+--- -------	*03:01:01:01, *03:23 = *03:01:03, *03:23
--+--++- +------+ --++---- -------- --+-+--- -------	*03:01:01:01, *03:31 = *03:01:03, *03:31
--+--++- +------+ --++---- -------- ----++-- -------	*03:01:04, *03:03:02:01 = *03:01:04, *03:19
--+--++- +------+ --++---- -------- ----+-+- ------+	*03:01:01:01, *03:30 = *03:01:03, *03:30 = *03:29, *03:30
--+--++- +------+ --++---- -------- ----+-+- -------	*03:03:02:01, *03:29 = *03:19, *03:29
--+--++- +------+ --++---- -------- ----+--+ -------	*03:03:02:01, *03:21 = *03:19, *03:21
--+--++- +------+ --++---- -------- ----+--- +------	*03:03:02:01, *03:22 = *03:19, *03:22
--+--++- +------+ --++---- -------- ----+--- -------	*03:01:01:01, *03:03:02:01 = *03:01:01:01, *03:19 = *03:01:03, *03:03:02:01 = *03:01:03, *03:19
--+--++- +------+ --++---- -------- -------- -------	*03:03:02:01, *03:19 = *03:19, *03:19
--+--++- -+----++ --++---- -------- ----+--- -------	*03:01:01:01, *03:14 = *03:04, *03:10
--+--++- -+----++ --+----- -------- ----+--- -------	*03:01:03, *03:14 = *03:04, *03:14
--+--++- -+-----+ --+----- -------- ----+--- -------	*03:01:03, *03:04 = *03:04, *03:04
--+--++- --+----+ --++---- -------- ----+--- -------	*03:01:01:01, *03:17 = *03:01:03, *03:17
--+--++- ----+--+ --++---- -------- ----+--- -------	*03:01:01:01, *03:16 = *03:01:03, *03:16
--+--++- -----+-+ --++---- -------- ----++-- -------	*03:01:04, *03:09 = *03:09, *05:04
--+--++- -----+-+ --++---- -------- ----+--- -------	*03:01:01:01, *03:09 = *03:01:03, *03:09 = *03:09, *03:09
--+--++- -------++ --++---- --+----- --+-+--- -------	*03:27, *06:01:01 = *03:27, *06:35
--+--++- -------++ --++---- -------- +++++--- -------	*03:27, *06:05:01 = *03:27, *06:09
--+--++- -------++ --++---- -------- --+-++-- -------	*03:01:04, *03:27 = *03:27, *05:04
--+--++- -------++ --++---- -------- --+-+--- -------	*03:01:01:01, *03:27 = *03:01:03, *03:27 = *03:10, *03:27 = *03:27, *03:27
--+--++- -------++ --++---- -------- ----+--- -------	*03:01:01:01, *03:10 = *03:01:03, *03:10
--+--++- --------+ +-++---- -------- ----+--- -------	*03:01:01:01, *03:13 = *03:01:03, *03:13
--+--++- --------+ -+++---- ----+++- ----+--+ -----+-	*03:21, *06:28 = *03:24, *06:40
--+--++- --------+ -+++---- ----+++- ----+--- -----+-	*03:01:01:01, *06:28 = *03:24, *06:28
--+--++- --------+ -+++---- -------- ----++-- -------	*03:01:04, *03:24 = *03:24, *05:04
--+--++- --------+ -+++---- -------- ----+--- -------	*03:01:01:01, *03:24 = *03:01:03, *03:24
--+--++- --------+ --++---- +------- ----++-- -------	*03:01:01:01, *05:08 = *03:01:04, *05:03:01:01 = *03:01:04, *05:08
--+--++- --------+ --++---- --++---- ----+-+- +--+---	*03:22, *06:16 = *03:29, *06:24
--+--++- --------+ --++---- --++---- ----+-+- ---+---	*03:01:01:01, *06:16 = *03:29, *06:16

--+--++- -------+ --++---- --++---- ----+--- +--+---	*03:01:01:01, *06:24 = *03:22, *06:24
--+--++- -------+ --++---- --+----- ----++-- -+-+---	*03:01:01:01, *06:10 = *03:01:04, *06:10
--+--++- -------+ --++---- --+----- ----+-+- ---+---	*03:01:01:01, *06:13 = *03:29, *06:13
--+--++- -------+ --++---- ---++-+- ----++-- ---+-+-	*03:01:01:01, *06:14:01 = *03:01:04, *06:14:01
--+--++- -------+ --++---- ---+---- ----++-- ---+-+-	*03:01:01:01, *06:14:02 = *03:01:04, *06:14:02
--+--++- -------+ --++---- ----+++- ----+--+ -----+-	*03:01:01:01, *06:40 = *03:21, *06:40
--+--++- -------+ --++---- ----++-- ----+--- +----+-	*03:01:01:01, *06:30 = *03:22, *06:30
--+--++- -------+ --++---- -------+ ++--+--- +------	*03:01:01:01, *06:38 = *03:22, *06:04:01 = *03:22, *06:38
--+--++- -------+ --++---- -------+ -+--+--- +------	*03:01:01:01, *06:17 = *03:22, *06:17
--+--++- -------+ --++---- -------- ---++-+- -------	*03:01:01:01, *06:22 = *03:29, *06:22
--+--++- -------+ --++---- -------- ----+++- -------	*03:01:04, *03:29 = *03:29, *05:04
--+--++- -------+ --++---- -------- ----++-+ -------	*03:01:04, *03:21 = *03:21, *05:04
--+--++- -------+ --++---- -------- ----++-- +------	*03:01:04, *03:22 = *03:22, *05:04
--+--++- -------+ --++---- -------- ----++-- -------	*03:01:01:01, *03:01:04 = *03:01:01:01, *05:04 = *03:01:03, *03:01:04 = *03:01:04, *03:01:04 = *03:01:04, *05:04
--+--++- -------+ --++---- -------- ----+-+- -------	*03:01:01:01, *03:29 = *03:01:03, *03:29 = *03:29, *03:29
--+--++- -------+ --++---- -------- ----+--+ -------	*03:01:01:01, *03:21 = *03:01:03, *03:21 = *03:21, *03:21
--+--++- -------+ --++---- -------- ----+--- +------	*03:01:01:01, *03:22 = *03:01:03, *03:22 = *03:22, *03:22
--+--++- -------+ --++---- -------- ----+--- -------	*03:01:01:01, *03:01:01:01 = *03:01:01:01, *03:01:03
--+--++- +------+ +-++---- -------+ ++--+--- -------	*03:13, *06:04:01 = *03:13, *06:34
--+---+- +-+---++ --++---- -------- ----+--- -------	*03:05:01, *03:10 = *03:10, *03:20
--+---+- +--+--++ --++---- -----+-- ----+--- --+-----	*03:06, *03:10 = *03:10, *03:25
--+---+- +-----++ --++---- -------- ----+--- -------	*03:03:02:01, *03:10 = *03:10, *03:12
--+----+ +-++---- --++---- -------- ----+--- -------	*03:08, *03:17 = *03:08, *03:20
--+----+ +-+-+--- --++---- -------- ----+--- -------	*03:07, *03:17 = *03:07, *03:20
--+----+ +-+--+-- --++---- -------- ----+--- -------	*03:11, *03:17 = *03:11, *03:20
--+----+ +-+----- -++---- -------- ----+--- -------	*03:17, *03:18 = *03:18, *03:20
--+----+ +-+----- --++---- -------- -------- -------	*03:02:01, *03:17 = *03:02:01, *03:20
--+----+ +--+---- --+----- -++---- ----+--- ---+---	*03:08, *06:02:01 = *03:08, *06:02:02
--+----+ +--+---- --+----- -+--++- ----+--- -----+-	*03:08, *06:03:01 = *03:08, *06:03:02
--+----+ +--+---- --+----- --+---- ----+-+- ---+---	*03:08, *06:13 = *03:08, *06:29
--+----+ +---++-- --++---- -------- ----+--- -------	*03:07, *03:26 = *03:11, *03:15
--+----+ +---+--- --++---- -------- -------- -------	*03:02:01, *03:15 = *03:03:02:01, *03:07
--+----+ +---+--- --+----- --+---- ----+-+- ---+---	*03:07, *06:13 = *03:07, *06:29
--+----+ +----+-- --++---- -------- -------- -------	*03:02:01, *03:26 = *03:03:02:01, *03:11
--+----+ +----+-- --+----- --+---- ----+-+- ---+---	*03:11, *06:13 = *03:11, *06:29
--+----+ +------- -++----- --+---- ----+-+- ---+---	*03:18, *06:13 = *03:18, *06:29
--+----+ +------- --+----- --+---- ------+- ---+---	*03:02:01, *06:13 = *03:02:01, *06:29
--+----+ -------- -------- -++---- ------+- ---+---	*06:13, *06:29 = *06:29, *06:29
--+----- +-++---- --++---- -----+-- ----+--- -+-----	*03:06, *03:17 = *03:06, *03:20 = *03:17, *03:25 = *03:20, *03:25
--+----- +-+-+--- --++---- -------- ----+--- -------	*03:15, *03:17 = *03:15, *03:20
--+----- +-+--+-- --++---- -------- ----+--- -------	*03:17, *03:26 = *03:20, *03:26
--+----- +-+---++ --++---- -------- ----+--- -------	*03:12, *03:17 = *03:12, *03:20
--+----- +-+----- --+++--- -----+-- ----+--- -------	*03:17, *04:05 = *03:20, *04:05
--+----- +-+----- --+++--- -------- ----+--- -+-----+	*03:17, *04:06 = *03:20, *04:06
--+----- +-+----- --+++--- -------- ----+--- ------+	*03:17, *04:01:01 = *03:20, *04:01:01
--+----- +-+----- --++-+-- -----+-- ----+--- -------	*03:17, *04:04 = *03:20, *04:04
--+----- +-+----- --++-+-- -------- ----+--- -+-----+	*03:17, *04:03:01 = *03:20, *04:03:01
--+----- +-+----- --++-+-- -------- ----+--- ------+	*03:17, *04:02:01 = *03:20, *04:02:01
--+----- +-+----- --++---- -----+-- ----+--- -------	*03:17, *03:23 = *03:20, *03:23
--+----- +-+----- --++---- -------- --+-+--- -------	*03:17, *03:31 = *03:20, *03:31
--+----- +-+----- --++---- -------- -------- -------	*03:03:02:01, *03:05:01 = *03:03:02:01, *03:17 = *03:03:02:01, *03:20 = *03:05:01, *03:17 = *03:05:01, *03:20
--+----- +-+----- --++---- -------- ----+-+- ------+	*03:17, *03:30 = *03:20, *03:30
--+----- +-+----- --++---- -------- ----+--- -+-----+	*03:17, *04:03:02 = *03:20, *04:03:02
--+----- +-+----- --++---- -------- ----+--- -------	*03:17, *03:20 = *03:20, *03:20
--+----- +--++--- --++---- -----+-- ----+--- -+-----	*03:06, *03:15 = *03:15, *03:25
--+----- +--+--++ --++---- -----+-- ----+--- -+-----	*03:06, *03:12 = *03:12, *03:25
--+----- +--+---- --+++--- -----+-- ----+--- -+-----+	*03:06, *04:01:01 = *03:06, *04:06
--+----- +--+---- --++-+-- -----+-- ----+--- -+-----+	*03:06, *04:02:01 = *03:06, *04:03:01
--+----- +--+---- --++---- -+++-+-- ----+--- -+-+---	*03:06, *06:02:01 = *03:06, *06:02:02

--+----- +--+---- --++---- -+--+++- ----+--- -+---+-	*03:06, *06:03:01 = *03:06, *06:03:02
--+----- +--+---- --++---- ------++ +---+--- -+--+--	*03:06, *06:07:01 = *03:06, *06:07:02
--+----- +--+---- --++---- -----++- -+--+--- -+---+-	*03:06, *06:08:01 = *03:06, *06:08:02
--+----- +--+---- --++---- -----+-+ ++--+--- -+-----	*03:06, *06:04:01 = *03:06, *06:04:02
--+----- +--+---- --++---- -----+-- -------- -+-----	*03:03:02:01, *03:06 = *03:03:02:01, *03:25
--+----- +--+---- --++---- -----+-- ----+--- -+-----	*03:06, *03:06 = *03:06, *03:23 = *03:06, *03:25
--+----- +--+---- ----+--- -----+-- -------- -+----+	*03:25, *04:01:01 = *03:25, *04:06
--+----- +--+---- -----+-- -----+-- -------- -+----+	*03:25, *04:02:01 = *03:25, *04:03:01
--+----- +--+---- -------- -+++-+-- -------- -+-+---	*03:25, *06:02:01 = *03:25, *06:02:02
--+----- +--+---- -------- -+--+++- -------- -+---+-	*03:25, *06:03:01 = *03:25, *06:03:02
--+----- +--+---- -------- ----++-+ +------- -+--+--	*03:25, *06:07:01 = *03:25, *06:07:02
--+----- +--+---- -------- -----++- -+------ -+---+-	*03:25, *06:08:01 = *03:25, *06:08:02
--+----- +--+---- -------- -----+-+ ++------ -+-----	*03:25, *06:04:01 = *03:25, *06:04:02
--+----- +------- --++---- --++---- --+----- ---+---	*03:03:02:01, *06:20 = *03:31, *06:20
--+----- +------- --++---- --+----- --+----- -------	*03:03:02:01, *06:35 = *03:31, *06:35
--+----- +------- --++---- ----+++- --+----- -----+-	*03:03:02:01, *06:31 = *03:31, *06:31
--+----- +------- --++---- -------- ++++---- -------	*03:03:02:01, *06:05:01 = *03:31, *06:05:01 = *03:31, *06:09
--+----- +------- --++---- -------- --+----- -------	*03:03:02:01, *03:31 = *03:31, *03:31
--+----- +------- --++---- -------- ------+- ------+	*03:03:02:01, *03:30 = *03:30, *03:30
--+----- +------- ---+---- ----++-+ +---+--- ----+--	*03:23, *06:07:01 = *03:23, *06:07:02
--+----- +------- ---+---- -----++- -+--+--- -----+-	*03:23, *06:08:01 = *03:23, *06:08:02
--+----- +------- ---+---- -----+-+ ++--+--- -------	*03:23, *06:04:01 = *03:23, *06:04:02
--+----- +------- ----++-- -----+-- -------- -+----+	*04:03:01, *04:05 = *04:04, *04:06
--+----- +------- ----++-- -----+-- -------- ------+	*04:01:01, *04:04 = *04:02:01, *04:05
--+----- +------- ----++-- -------- -------- -+----+	*04:01:01, *04:03:01 = *04:02:01, *04:06 = *04:03:01, *04:06
--+----- +------- ----+--- --+----- -----+-- -+-+--+	*04:01:01, *06:10 = *04:06, *06:10
--+----- +------- ----+--- ----++-+ +------- ----+--	*04:05, *06:07:01 = *04:05, *06:07:02
--+----- +------- ----+--- -----++- -+------ -----+-	*04:05, *06:08:01 = *04:05, *06:08:02
--+----- +------- ----+--- -----+-+ ++------ -------	*04:05, *06:04:01 = *04:05, *06:04:02
--+----- +------- ----+--- -----+-- -------- -+----+	*04:03:02, *04:05 = *04:05, *04:06
--+----- +------- ----+--- -------+ +------- -+----+	*04:01:01, *06:25 = *04:06, *06:25
--+----- +------- ----+--- -------- -------- -+----+	*04:01:01, *04:03:02 = *04:01:01, *04:06 = *04:03:02, *04:06 = *04:06, *04:06
--+----- +------- -----+-- --+----- -----+-- -+-+--+	*04:02:01, *06:10 = *04:03:01, *06:10
--+----- +------- -----+-- ----++-+ +------- ----+--	*04:04, *06:07:01 = *04:04, *06:07:02
--+----- +------- -----+-- -----++- -+------ -----+-	*04:04, *06:08:01 = *04:04, *06:08:02
--+----- +------- -----+-- -----+-+ ++------ -------	*04:04, *06:04:01 = *04:04, *06:04:02
--+----- +------- -----+-- -----+-- -------- -+----+	*04:03:01, *04:04 = *04:03:02, *04:04
--+----- +------- -----+-- -------+ +------- -+----+	*04:02:01, *06:25 = *04:03:01, *06:25
--+----- +------- -----+-- -------- -------- -+----+	*04:02:01, *04:03:01 = *04:02:01, *04:03:02 = *04:03:01, *04:03:01 = *04:03:01, *04:03:02
--+----- ---+---- -------- -++++++ --+----- ---+-+-	*06:02:02, *06:31 = *06:03:02, *06:20
--+----- ---+---- -------- -++++++ -------- ---+-+-	*06:02:01, *06:03:02 = *06:02:02, *06:03:01 = *06:02:02, *06:03:02
--+----- ---+---- -------- -+++---+ ++------ ---+---	*06:02:02, *06:04:01 = *06:02:02, *06:39
--+----- ---+---- -------- -+++---- --+----- ---+---	*06:02:02, *06:20 = *06:02:02, *06:35
--+----- ---+---- -------- -+++---- ------+- ---+---	*06:02:02, *06:13 = *06:02:02, *06:16
--+----- ---+---- -------- -+++---- -------- ---+---	*06:02:01, *06:02:02 = *06:02:02, *06:02:02
--+----- ---+---- -------- -++-+++- -------- -----+-	*06:03:02, *06:11:01 = *06:03:02, *06:11:02
--+----- ---+---- -------- -+-++++- -----+-- ---+-+-	*06:03:02, *06:14:01 = *06:03:02, *06:14:02
--+----- ---+---- -------- -+--++++ ++------ -----+-	*06:03:02, *06:04:01 = *06:03:02, *06:04:02 = *06:03:02, *06:39
--+----- ---+---- -------- -+--++++ +------- ----++-	*06:03:02, *06:07:01 = *06:03:02, *06:07:02
--+----- ---+---- -------- -+--+++- +------- -----+-	*06:03:02, *06:05:02 = *06:03:02, *06:32
--+----- ---+---- -------- -+--+++- -+------ -----+-	*06:03:02, *06:08:01 = *06:03:02, *06:08:02
--+----- ---+---- -------- -+--+++- -------- -----+-	*06:03:01, *06:03:02 = *06:03:02, *06:03:02
--+----- -------- +------- -------+ ++------ -------	*06:04:01, *06:34 = *06:34, *06:34
--+----- -------- +------- -+++---- --+----- ---+---	*06:20, *06:23 = *06:23, *06:35
--+----- -------- +------- -+++---- ------+- ---+---	*06:13, *06:23 = *06:16, *06:23
--+----- -------- +------- -+----++ ++------ -----+-	*06:08:02, *06:34 = *06:21, *06:34
--+----- -------- -+------ ----++++ ++------ -----+-	*06:04:01, *06:28 = *06:04:02, *06:28
--+----- -------- -+------ -++-+++- -------- -----+-	*06:11:01, *06:28 = *06:11:02, *06:28

--+----- -------- -+------- -+-++++- -----+-- ---+-+-	*06:14:01, *06:28 = *06:14:02, *06:28
--+----- -------- -+------- -+--+++- -+------- -----+-	*06:08:01, *06:28 = *06:08:02, *06:28
--+----- -------- -------+ +------- -----+-- -------	*05:02:01, *05:08 = *05:02:02, *05:04 = *05:02:02, *05:08
--+----- -------- -------+ +------- -------- -------	*05:02:01, *05:02:02 = *05:02:01, *05:03:01:01 = *05:02:02, *05:02:02 = *05:02:02, *05:03:01:01
--+----- -------- -------- +-+----- -----+-- -+-+---	*05:03:01:01, *06:10 = *05:08, *06:10
--+----- -------- -------- +--++-+- -----+-- ---+-+-	*05:03:01:01, *06:14:01 = *05:08, *06:14:01
--+----- -------- -------- +--+---- -----+-- ---+-+-	*05:03:01:01, *06:14:02 = *05:08, *06:14:02
--+----- -------- -------- +------- -----+-- -------	*05:03:01:01, *05:04 = *05:03:01:01, *05:08 = *05:04, *05:08 = *05:08, *05:08
--+----- -------- -------- -++++++- --+----- ---+-+-	*06:02:01, *06:31 = *06:03:01, *06:20
--+----- -------- -------- -+++---+ ++------- +--+---	*06:02:01, *06:38 = *06:24, *06:39
--+----- -------- -------- -+++---+ ++------- ---+---	*06:02:01, *06:04:01 = *06:02:01, *06:39
--+----- -------- -------- -+++---- --+----- ---+---	*06:02:01, *06:20 = *06:02:01, *06:35
--+----- -------- -------- -+++---- ------+- ---+---	*06:02:01, *06:13 = *06:02:01, *06:16
--+----- -------- -------- -++-+++- -------- -----+-	*06:03:01, *06:11:01 = *06:03:01, *06:11:02
--+----- -------- -------- -+-++++- -----+-- ---+-+-	*06:03:01, *06:14:01 = *06:03:01, *06:14:02
--+----- -------- -------- -+--++++ ++------- -----+-	*06:03:01, *06:04:01 = *06:03:01, *06:04:02 = *06:03:01, *06:39
--+----- -------- -------- -+--++++ +------- ----++-	*06:03:01, *06:07:01 = *06:03:01, *06:07:02
--+----- -------- -------- -+--+++- +------- -----+-	*06:03:01, *06:05:02 = *06:03:01, *06:32
--+----- -------- -------- -+--+++- -+------ -----+-	*06:03:01, *06:08:01 = *06:03:01, *06:08:02
--+----- -------- -------- -+-----++ ++------- -----+-	*06:08:02, *06:39 = *06:21, *06:39
--+----- -------- -------- -+------+ ++------- +------	*06:17, *06:39 = *06:38, *06:39
--+----- -------- -------- -+------+ ++------- -------	*06:04:01, *06:39 = *06:39, *06:39
--+----- -------- -------- --+-++++ ++------- -------	*06:04:01, *06:11:02 = *06:04:02, *06:11:02
--+----- -------- -------- --+--+-+ ++------- -------	*06:04:01, *06:11:01 = *06:04:02, *06:11:01 = *06:04:02, *06:18
--+----- -------- -------- ----++++ +++------ -----+-	*06:04:01, *06:31 = *06:04:02, *06:31
--+----- -------- -------- ----++++ ++------+ -----+-	*06:04:01, *06:40 = *06:04:02, *06:40
--+----- -------- -------- ----++++ ++------- --+----	*06:04:01, *06:26N = *06:04:02, *06:26N
--+----- -------- -------- ----++-+ ++------- +----+-	*06:04:01, *06:30 = *06:04:02, *06:30
--+----- -------- -------- ----++-+ ++------- ----+--	*06:04:01, *06:07:01 = *06:04:02, *06:07:01 = *06:04:02, *06:07:02
--+----- -------- -------- ----++-+ ++------- -----+-	*06:04:01, *06:32 = *06:04:02, *06:32
--+----- -------- -------- ----+-++ ++------- ----++-	*06:07:02, *06:08:02 = *06:07:02, *06:21
--+----- -------- -------- ----+--+ ++------- +---+--	*06:07:02, *06:17 = *06:07:02, *06:38
--+----- -------- -------- ----+--+ ++------- ----+--	*06:04:01, *06:07:02 = *06:07:02, *06:36
--+----- -------- -------- -----+++ ++------- -----+-	*06:04:01, *06:08:01 = *06:04:02, *06:08:01 = *06:04:02, *06:08:02 = *06:04:02, *06:21
--+----- -------- -------- -----+-+ ++------- +------	*06:04:02, *06:17 = *06:04:02, *06:38
--+----- -------- -------- -----+-+ ++------- -------	*06:04:01, *06:04:02 = *06:04:02, *06:04:02 = *06:04:02, *06:05:02
--+----- -------- -------- ------++ ++------- -----+-	*06:04:01, *06:08:02 = *06:04:01, *06:21
--+----- -------- -------- -------+ ++-+---- +------	*06:09, *06:17 = *06:09, *06:38
--+----- -------- -------- -------+ ++------- +------	*06:04:01, *06:17 = *06:04:01, *06:38
--+----- -------- -------- -------+ ++------- ----+--	*06:04:01, *06:36 = *06:36, *06:36
--+----- -------- -------- -------+ ++------- -------	*06:04:01, *06:04:01 = *06:04:01, *06:05:02
--+----- -------- -------- -++++++- -----+-- ---+-+-	*06:11:01, *06:14:01 = *06:11:02, *06:14:01 = *06:11:02, *06:14:02
--+----- -------- -------- -++++++- -------- --++---	*06:11:02, *06:33 = *06:26N, *06:33
--+----- -------- -------- -++++-+- --+--+-- ---+-+-	*06:14:01, *06:20 = *06:14:01, *06:35
--+----- -------- -------- -++++-+- -----++- ---+-+-	*06:13, *06:14:01 = *06:14:01, *06:16
--+----- -------- -------- -+++---- --++---- ---++--	*06:15, *06:20 = *06:15, *06:35
--+----- -------- -------- -+++---- --+--+-- ---+-+-	*06:14:02, *06:20 = *06:14:02, *06:35
--+----- -------- -------- -+++---- --+---+- ---+---	*06:13, *06:20 = *06:16, *06:20 = *06:16, *06:35
--+----- -------- -------- -+++---- --+----- +--+---	*06:20, *06:24 = *06:24, *06:35
--+----- -------- -------- -+++---- --+----- --++---	*06:20, *06:33 = *06:33, *06:35
--+----- -------- -------- -+++---- --+----- ---+---	*06:20, *06:20 = *06:20, *06:35
--+----- -------- -------- -+++---- ---+--+- ---++--	*06:13, *06:15 = *06:15, *06:16
--+----- -------- -------- -+++---- -----++- ---+-+-	*06:13, *06:14:02 = *06:14:02, *06:16
--+----- -------- -------- -+++---- ------+- +--+---	*06:13, *06:24 = *06:16, *06:24
--+----- -------- -------- -+++---- ------+- --++---	*06:13, *06:33 = *06:16, *06:33
--+----- -------- -------- -+++---- ------+- ---+--+	*06:13, *06:19 = *06:16, *06:19

--+----- -------- -------- -+++---- ------+- ---+---	*06:13, *06:16 = *06:16, *06:16
--+----- -------- -------- -++-+++- -+------ -----+-	*06:08:01, *06:11:02 = *06:08:02, *06:11:02
--+----- -------- -------- -++-+++- --+----- -----+-	*06:11:01, *06:31 = *06:11:02, *06:31 = *06:31, *06:35
--+----- -------- -------- -++-+++- -------+ -----+-	*06:11:01, *06:40 = *06:11:02, *06:40
--+----- -------- -------- -++-+++- -------- --+----	*06:11:01, *06:26N = *06:11:02, *06:26N
--+----- -------- -------- -++-+++- -------- -------	*06:11:01, *06:11:02 = *06:11:02, *06:11:02
--+----- -------- -------- -++--++- -+------ -----+-	*06:08:01, *06:11:01 = *06:08:02, *06:11:01
--+----- -------- -------- -+++---+ ++------ +------	*06:17, *06:18 = *06:18, *06:38
--+----- -------- -------- -+++---- ++++---- -------	*06:05:01, *06:18 = *06:05:01, *06:35
--+----- -------- -------- -+-++++- --+--+-- ---+-+-	*06:14:01, *06:31 = *06:14:02, *06:31
--+----- -------- -------- -+-++++- -----+-+ ---+-+-	*06:14:01, *06:40 = *06:14:02, *06:40
--+----- -------- -------- -+-++++- -----+-- --++-+-	*06:14:01, *06:26N = *06:14:02, *06:26N
--+----- -------- -------- -+-++-+- -----+-- ---+-+-	*06:14:01, *06:14:01 = *06:14:01, *06:14:02
--+----- -------- -------- -+--++++ ++------ ----++-	*06:07:01, *06:08:01 = *06:07:01, *06:08:02 = *06:07:01, *06:21
--+----- -------- -------- -+--+++- ++------ -----+-	*06:08:01, *06:32 = *06:08:02, *06:32
--+----- -------- -------- -+--+++- -++----- -----+-	*06:08:01, *06:31 = *06:08:02, *06:31
--+----- -------- -------- -+--+++- -+-----+ -----+-	*06:08:01, *06:40 = *06:08:02, *06:40
--+----- -------- -------- -+--+++- -+------ +----+-	*06:08:01, *06:30 = *06:08:02, *06:30
--+----- -------- -------- -+--+++- -+------ --+--+-	*06:08:01, *06:26N = *06:08:02, *06:26N
--+----- -------- -------- -+--++-+ ++------ +---+--	*06:07:01, *06:17 = *06:07:01, *06:38
--+----- -------- -------- -+--++-+ ++------ +----+-	*06:17, *06:32 = *06:30, *06:38 = *06:32, *06:38
--+----- -------- -------- -+--++-+ ++------ ----++-	*06:07:01, *06:27 = *06:32, *06:36
--+----- -------- -------- -+--++-+ +------- ----+--	*06:07:01, *06:07:01 = *06:07:01, *06:07:02
--+----- -------- -------- -+---++- -+------ -----+-	*06:08:01, *06:08:01 = *06:08:01, *06:08:02
--+----- -------- -------- -+----++ ++------ +----+-	*06:08:02, *06:38 = *06:21, *06:38
--+----- -------- -------- -+----++ ++------ -+---+-	*06:08:02, *06:25 = *06:21, *06:25
--+----- -------- -------- -+----++ ++------ ----++-	*06:08:02, *06:36 = *06:21, *06:36
--+----- -------- -------- -+----++ -+------ +----+-	*06:08:02, *06:17 = *06:17, *06:21
--+----- -------- -------- -+----++ -+------ -----+-	*06:08:02, *06:21 = *06:21, *06:21
--+----- -------- -------- -+-----+ +++---- +------	*06:05:01, *06:17 = *06:05:01, *06:38
--+----- -------- -------- -+-----+ ++------ ++-----	*06:17, *06:25 = *06:25, *06:38
--+----- -------- -------- -+-----+ ++------ +----+-	*06:17, *06:27 = *06:27, *06:38
--+----- -------- -------- -+------ +++---- -------	*06:05:01, *06:05:01 = *06:05:01, *06:05:02 = *06:05:01, *06:09
--+----- -------- -------- -++----+ +++++-- +------	*06:06, *06:17 = *06:06, *06:38
--+----- -------- -------- -++----+ +++---- +------	*06:05:02, *06:17 = *06:05:02, *06:38
--+----- -------- -------- -++----- +++++-- -------	*06:05:02, *06:06 = *06:06, *06:06

*02:01:01 = *02:01:01-02:01:03
*03:01:01:01 = *03:01:01:01-03:01:02 and 03:01:05
*03:02:01 = *03:02:01-03:02:05
*03:03:02:01 = *03:03:02:01-03:03:03
*03:05:01 = *03:05:01-03:05:04
*04:01:01 = *04:01:01-04:01:02
*04:02:01 = *04:02:01-04:02:02
*05:01:01:01 = *05:01:01:01-05:01:03
*05:02:01 = *05:02:01 and 05:02:03
*05:03:01:01 = *05:03:01:01-05:03:03
*06:01:01 = *06:01:01-06:01:06
*06:04:01 = *06:04:01 and 06:04:03
*06:33 = *06:33 and 06:37

SPECIFICITY TABLE

DQB1 high resolution for frequent alleles SSP typing

Specificities and sizes of the PCR products of the 48 primer mixes used for DQB1 high resolution for frequent alleles SSP typing

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	Amplified DQB1 alleles[3]
1[4]	120 bp	**515 bp**	*02:01:01-02:02, 02:04-02:05
2[4]	85 bp	430 bp	*02:03
3	145 bp	**515 bp**	*02:01:01-02:01:03, 02:04-02:05, 03:01:01:01-03:23, 03:25-03:31, 04:01:01-04:06, 05:01:01:01-05:08, 06:01:01-06:37, 06:39-06:40
4[9]	140 bp, 195 bp	430 bp	*02:02-02:03, 03:28
5[10]	145 bp, 185 bp	430 bp	*02:04, 05:05-05:07
6[5]	165 bp	**515 bp**	*03:01:01:01-03:01:05, 03:04, 03:09, 03:13, 03:16, 03:19, 03:21-03:22, 03:24, 03:27-03:29
7	220 bp	**515 bp**	*03:01:01:01-03:01:05, 03:04, 03:09-03:10, 03:13-03:14, 03:16, 03:19, 03:21-03:22, 03:24, 03:27-03:29
8	135 bp	**515 bp**	*02:01:01-02:02, 02:04-02:05, 03:02:01-03:02:05, 03:07-03:08, 03:11, 03:18, 06:29
9[11]	175 bp, 220 bp	**515 bp**	*02:01:01-02:05, 03:02:01-03:03:03, 03:05:01-03:08, 03:11-03:12, 03:13[?]-03:14[?], 03:15, 03:16[?]-03:17[?], 03:18-03:20, 03:23, 03:25-03:26, 03:30-03:31, 04:01:01-04:06
10[7]	135 bp	430 bp	*03:04, 03:14
11[4,12]	95 bp, 130 bp	430 bp	*03:05:01, 03:05:03, 03:17, 03:20
12[4]	125 bp	430 bp	*03:06, 03:08, 03:25, 06:02:02, 06:03:02
13[4,13]	110 bp, 140 bp	430 bp	*03:07, 03:15-03:16
14[14]	135 bp, 260 bp	430 bp	*03:09, 03:11, 03:26
15[15]	135 bp, 250 bp	430 bp	*03:10, 03:12, 03:14, 03:27, 06:01:01-06:01:06

16	260 bp	**515 bp**	*03:01:01:01-03:01:05, 03:04, 03:09-03:10, 03:12-03:14, 03:16, 03:19, 03:21-03:22, 03:24, 03:27-03:29
17[4,8,16]	110 bp, 165 bp, 195 bp, 300 bp	430 bp	*03:13, 03:28, 06:23, 06:34
18[5,7, 17]	130 bp, 190 bp, 220 bp	430 bp	*03:18, 03:24, 06:28[w]
19	135 bp	**515 bp**	*03:01:01:01-03:15, 03:17-03:22, 03:24, 03:26-03:31
20[7]	130 bp	430 bp	*02:03, 03:01:01:01-03:01:02, 03:01:04-03:01:05, 03:03:02:01-03:03:03, 03:06, 03:09-03:10, 03:12-03:13, 03:15-03:17, 03:19-03:24, 03:26-03:31
21[7]	205 bp	**515 bp**	*04:01:01-04:01:02, 04:05-04:06
22	205 bp	430 bp	*04:02:01-04:03:01, 04:04
23	135 bp	430 bp	*05:01:01:01-05:01:03, 05:07
24[4]	120 bp	430 bp	*05:02:01-05:02:03, 05:05
25[4]	95 bp	**515 bp**	*05:02:02, 05:03:01:01-05:03:03, 05:06, 05:08
26[4,5]	115 bp	430 bp	*06:02:01-06:03:02, 06:05:01[?]-06:07:01[?], 06:08:01[?]-06:08:02[?], 06:10[?]-06:11:02[?], 06:13[?]-06:33[?], 06:35[?], 06:37[?], 06:39, 06:40[?]
27[6]	210 bp	430 bp	*06:01:01-06:02:02, 06:05:02[?]-06:06[?], 06:10-06:11:02, 06:13, 06:16, 06:18-06:20, 06:24, 06:29, 06:33, 06:35, 06:37
28	185 bp	430 bp	*06:02:01-06:02:02, 06:14:01-06:16, 06:19-06:20, 06:23-06:24, 06:33, 06:37
29	130 bp	430 bp	*06:03:01-06:03:02, 06:07:01-06:07:02, 06:11:02, 06:14:01, 06:26N, 06:28, 06:30-06:32, 06:40
30[5,18]	160 bp, 245 bp	430 bp	*03:06, 03:23, 03:25, 04:04-04:05, 06:03:01-06:03:02, 06:04:02, 06:07:01, 06:08:01, 06:11:01-06:11:02, 06:26N, 06:28, 06:30-06:32, 06:40
31	170 bp	**515 bp**	*06:03:01-06:03:02, 06:08:01-06:08:02, 06:11:02-06:12, 06:14:01, 06:21, 06:26N, 06:28, 06:31, 06:40

32	210 bp	**515 bp**	*06:04:01-06:04:03, 06:07:01-06:07:02, 06:17, 06:21, 06:25, 06:34, 06:36, 06:38-06:39
33[7]	170 bp	430 bp	*06:04:01-06:05:02, 06:06[w], 06:07:01-06:07:02, 06:09, 06:18, 06:25, 06:27, 06:32, 06:34, 06:36, 06:38-06:39
34[4,19]	95 bp, 130 bp	430 bp	*05:07, 06:04:01-06:05:01, 06:06, 06:08:01-06:09, 06:12, 06:17-06:18, 06:21, 06:27, 06:34, 06:36, 06:38-06:39
35[6,20]	160 bp, 250 bp	**515 bp**	*03:27, 03:31, 06:05:01, 06:05:02[?]-06:06[?], 06:20, 06:31, 06:35
36	210 bp	430 bp	*06:05:01, 06:05:02[?]-06:06[?], 06:09, 06:12, 06:15, 06:22
37[5]	180 bp	430 bp	*03:01:01:01-03:01:05, 03:04, 03:06[?]-03:08[?], 03:09-03:10, 03:11[?]-03:18[?], 03:20[?], 03:21-03:22, 03:23[?], 03:24, 03:26[?], 03:27-03:29, 06:06
38[4,21]	100 bp, 130 bp, 185 bp	430 bp	*03:01:04, 05:04, 05:08, 06:10, 06:14:01-06:14:02
39	180 bp	430 bp	*03:29-03:30, 06:13, 06:16, 06:22, 06:29
40[4,22]	95 bp, 150 bp	430 bp	*03:21, 06:40
41[6,23]	185 bp, 205 bp	430 bp	*03:22, 06:17, 06:24, 06:30, 06:38
42[4,24]	110 bp, 135 bp, 195 bp	**515 bp**	*03:06, 03:25, 04:03:01-04:03:02, 04:06, 06:10, 06:25
43[4,6,25]	110 bp, 155 bp, 185 bp, 215 bp, 250 bp	**515 bp**	*02:05, 06:26N, 06:33, 06:37
44	160 bp	430 bp	*06:02:01-06:02:02, 06:10, 06:13-06:16, 06:20, 06:23-06:24, 06:29, 06:33, 06:37
45	130 bp	**515 bp**	*06:07:01-06:07:02, 06:15, 06:36
46[26]	160 bp, 210 bp	**515 bp**	*06:03:01-06:03:02, 06:08:01-06:08:02, 06:14:01-06:14:02, 06:21, 06:27-06:28, 06:30-06:32, 06:40
47[5]	155 bp	430 bp	*03:30, 04:01:01-04:03:02, 04:06, 06:19
48[27]	**Neg. Control**	-	-

[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 DQB1 high resolution 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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.
Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DQB1 high resolution for frequent alleles typing.
In addition, wells number 3, 6 to 9, 16, 19, 21, 25, 31, 32, 35, 42, 43, 45 and 46 contain the primer pair giving rise to the longer, 515 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 DQB1*06:33 and 06:37 alleles may be distinguished by the different sizes of the specific PCR products generated by primer mix 43.
[4]Specific PCR fragments shorter than 125 base pairs are less intense and not as sharp as longer specific bands.
[5]Primer mixes 6, 18, 26, 30, 37 and 47 may yield less specific PCR products than the other DQB1 primer mixes, most pronounced in primer mixes 26 and 37.
[6]Primer mixes 27, 35, 41 and 43 may give to rise to primer oligomer formation.
[7]Primer mixes 10, 18, 20, 21 and 33 may have a weak tendency of nonspecific amplifications.
[8]Primer mix 17 has a tendency of giving rise to a weaker positive control band than the other DQB1 high resolution primer mixes.
[9]Primer mix 4: Specific PCR fragment of 140 bp in the DQB1*02:02-02:03 alleles. Specific PCR fragment of 185 bp in the DQB1 *03:28 allele.
[10]Primer mix 5: Specific PCR fragment of 145 bp in the DQB1*02:04 allele. Specific PCR fragment of 185 bp in the DQB1*05:05-05:07 alleles.
[11]Primer mix 9: Specific PCR fragment of 175 bp in DQB1*03:05:01-03:05:04, 03:13[?]-03:14[?], 03:16[?]- 03:17[?], 03:19, 04:01:01-04:02 and 04:04-04:06 alleles. Specific PCR fragment of 220 bp in the DQB1*02:01:01-02:05 alleles. Specific PCR fragments of 175 and 220 bp in the DQB1*03:02:01-03:03:03, 03:06-03:08, 03:11-03:12, 03:15, 03:18, 03:20, 03:23, 03:25-03:26, 03:30-03:31 and 04:03:01-04:03:02 alleles (both specific PCR fragments may not be obtained).
[11]Primer mix 11: Specific PCR fragment of 95 bp in the DQB1*03:20 allele. Specific PCR fragment of 130 bp in the DQB1*03:05:01, 03:05:03 and 03:17 alleles.
[13]Primer mix 13: Specific PCR fragment of 110 bp in the DQB1*03:15 allele. Specific PCR fragment of 140 bp in the DQB1*03:07 and 03:16 alleles.
[14]Primer mix 14: Specific PCR fragment of 135 bp in the DQB1*03:09 allele. Specific PCR fragment of 260 bp in the DQB1*03:11 and 03:26 alleles.
[15]Primer mix 15: Specific PCR fragment of 135 bp in the DQB1*03:10, 03:12, 03:14 and 06:01:01-06:01:06 alleles. Specific PCR fragment of 250 bp in the DQB1*03:27 alleles.
[16]Primer mix 17: Specific PCR fragment of 110 bp in the DQB1*06:23 allele. Specific PCR fragment of 165 bp in the DQB1*03:13 allele. Specific PCR fragment of 195 bp in the DQB1*03:28 allele.
Specific PCR fragment of 300 bp in the DQB1*06:34 allele.

[17]Primer mix 18: Specific PCR fragment of 130 bp in the DQB1*03:24 allele Specific PCR fragment of 190 bp in the DQB1*06:28[w] allele. Specific PCR fragment of 220 bp in the DQB1*03:18 allele.
[18]Primer mix 30: Specific PCR fragment of 160 bp in DQB1*03:23, 06:03:01-06:03:02, 06:04:02, 06:07:01, 06:08:01, 06:11:01-06:11:02, 06:26N, 06:28, 06:30-06:32 and 06:40 alleles. Specific PCR fragment of 245 bp in the DQB1*03:06, 03:25 and 04:04-04:05 alleles.
[19]Primer mix 34: Specific PCR fragment of 95 bp in DQB1*05:07 allele. Specific PCR fragment of 130 bp in the DQB1*06:04:01-06:05:01, 06:06, 06:08:01-06:09, 06:12, 06:17-06:18, 06:21, 06:27, 06:34, 06:36 and 06:38-06:39 alleles.
[20]Primer mix 35: Specific PCR fragment of 160 bp in DQB1*03:27 and 06:35 allele. Specific PCR fragment of 250 bp in the DQB1*03:31, 06:05:01, 06:05:02[?]-06:06[?], 06:20 and 06:31 alleles.
[21]Primer mix 38: Specific PCR fragment of 100 bp in DQB1*06:14:01 and 06:14:02 alleles. Specific PCR fragment of 130 bp in the DQB1*03:01:04, 05:04 and 05:08 alleles. Specific PCR fragment of 185 bp in the DQB1*06:10 allele.
[22]Primer mix 40: Specific PCR fragment of 95 bp in the DQB1*06:40 allele. Specific PCR fragment of 150 bp in the DQB1*03:21 allele.
[23]Primer mix 41: Specific PCR fragment of 185 bp in the DQB1*06:17, 06:24 and 06:30 alleles. Specific PCR fragment of 205 bp in the DQB1*03:22 allele. Specific PCR fragment of 185 and 205 bp in the DQB1*06:38 allele.
[24]Primer mix 42: Specific PCR fragment of 110 bp in the DQB1*04:06 allele. Specific PCR fragment of 135 bp in the DQB1*06:10 and 06:25 alleles. Specific PCR fragment of 195 bp in the DQB1*03:06, 03:25 and 04:03:01- 04:03:02 alleles.
[25]Primer mix 43: PCR fragment of 110 bp in the DQB1*06:37 allele. Specific PCR fragment of 155 bp in the DQB1*02:05 allele. Specific PCR fragments of 185 and 215 bp in the DQB1*06:26N allele. Specific PCR fragment of 250 bp in the DQB1*06:33 allele.
[26]Primer mix 46: Specific PCR fragment of 160 bp in the DQB1*06:21 allele. Specific PCR fragment of 210 bp in the DQB1*06:27, 06:30 and 06:32 alleles. Specific PCR fragment of 160 and 210 bp in the *06:03:01-06:03:02, 06:08:01-06:08:02, 06:14:01-06:14:02, 06:28, 06:31 and 06:40 alleles (both specific PCR fragments may not be obtained).
[27]Primer mix 48 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.
'?', nucleotide sequence information not available for the primer matching sequence.
'w', might be weakly amplified.

INTERPRETATION TABLE

DQB1 high resolution SSP typing

Amplification patterns of the DQB1*02:01 to DQB1*06:40 alleles

	Well[5,6]																							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Length of spec.	120	85	145	140	145	165	220	135	175	135	95	125	110	135	135	260	110	130	135	130	205	205	135	120
PCR product(s)				195	185				220		130		140	260	250		165	190						
																	195	220						
																	300							
Length of int.	515	430	515	430	430	515	515	515	515	430	430	430	430	430	430	515	430	430	515	430	515	430	430	430
pos. control[1]																								
5'-primer(s)[2]	30(185)	57(266)	135(500)	26(173)	38(209)	45(230)	26(173)	26(173)	26(173)	26(173)	26(173)	38(210)	49(242)	14(136)	13(134)	13(134)	26(173)	27(175)	55(260)	57(266)	23(164)	23(164)	26(173)	30(184)
	5'-AAg 3'	5'-TgA 3'	5'-TgA 3'	5'-TTA 3'	5'-CgC 3'	5'-ggA 3'	5'-TTA 3'	5'-TCT 3'	5'-TCT 3'	5'-TTA 3'	5'-ggg 3'	5'-gCA 3'	5'-ggT 3'	5'-gCC 3'	5'-ggC 3'	5'-ggC 3'	5'-TTA 3'	5'-TTC 3'	5'-gCC 3'	5'-TgA 3'	5'-gCT 3'	5'-gCg 3'	5'-ggg 3'	5'-gAC 3'
				102(400)	39(212)				140(514)		38(208)		55(260)	135(500)			26(173)	38(209)				23(164)		
				5'-TCT 3'	5'-gCA 3'				5'-CAA 3'		5'-ACA 3'		5'-gCA 3'	5'-TgA 3'			5'-ggg 3'	5'-CgT 3'				5'-gCg 3'		
					40(216)								63(285)				102(400)	140(514)						
					5'-TTg 3'								5'-Agg 3'				5'-TCT 3'	5'-CAA 3'						
					136(502)																			
					5'-ACg 3'																			
3'-primer(s)[3]	57(266)	71(309)	170(604)	77(325)	86(353)	86(353)	86(353)	57(266)	86(353)	57(266)	55(260)	62(282)	86(353)	86(353)	45(230)	86(353)	48(240)	86(353)	86(353)	86(353)	77(327)	77(327)	57(266)	57(265)
	5'-Cgg 3'	5'-CgT 3'	5'-gAC 3'	5'-CgC 3'	5'-ACg 3'	5'-gCT 3'	5'-gCT 3'	5'-Cgg 3'	5'-gCT 3'	5'-Cgg 3'	5'-gCg 3'	5'-CTA 3'	5'-gCT 3'	5'-gCT 3'	5'-CCC 3'	5'-gCT 3'	5'-gCg 3'	5'-gCT 3'	5'-gCT 3'	5'-gCT 3'	5'-ACg 3'	5'-ACg 3'	5'-CAA 3'	5'-gCT 3'
				135(500)	170(604)				185(650)			70(304)		167(596)	83(343)		67(296)	87(356)						
				5'-ggC 3'	5'-gAC 3'				5'-CgA 3'			5'-CCC 3'		5'-CAT 3'	5'-gTg 3'		5'-ggT 3'	5'-ggA 3'						
																	77(325)	170(604)						
																	5'-CgC 3'	5'-gAT 3'						
																	189(661)							
																	5'-CCA 3'							
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**

INTERPRETATION TABLE

DQB1 high resolution SSP typing

Amplification patterns of the DQB1*02:01 to DQB1*06:40 alleles

Well[5,6]																								
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
95	115	210	185	130	160	170	210	170	95	160	210	180	100	180	95	185	110	110	160	130	160	155		Length of spec.
					245				130	250			130		150	205	135	155			210			PCR product(s)
													185				195	185						
																		215						
																		250						
515	430	430	430	430	430	515	515	430	430	515	430	430	430	430	430	430	515	515	430	515	515	430		Length of int.
																								pos. control[1]
30(184)	130(485)	30(184)	9(122)	27(177)	9(122)	27(177)	30(184)	27(177)	27(177)	14(136)	30(184)	27(177)	9(122)	9(122)	31(187)	26(173)	26(173)	11(129)	9(122)	57(266)	30(184)	9(122)		5'-primer(s)[2]
5'-gAC 3'	5'-CCg 3'	5'-gAT 3'	5'-gTT 3'	5'-gTA 3'	5'-gTA 3'	5'-gTA 3'	5'-gAC 3'	5'-gTA 3'	5'-gTA 3'	5'-gCC 3'	5'-gAT 3'	5'-gTA 3'	5'-gTT 3'	5'-gTT 3'	5'-ACg 3'	5'-TCT 3'	5'-TCT 3'	5'-TTA 3'	5'-gTT 3'	5'-TgA 3'	5'-gAC 3'	5'-gTT 3'		
		30(184)							39(212)	45(230)		140(514)	30(184)	140(514)	133(493)	130(485)	55(259)	29(181)		154(558)				
		5'-gAT 3'							5'-gCA 3'	5'-ggA 3'		5'-CAA 3'	5'-gAT 3'	5'-CAA 3'	5'-TTT 3'	5'-CCA 3'	5'-ggT 3'	5'-CCT 3'		5'-ACT 3'				
													135(500)			133(494)		38(210)						
										5'-TgA 3'	116(442)		5'-TgA 3'			5'-TCA 3'		5'-gTg 3'						
																		62(282)						
																		5'-AAg 3'						
47(237)	154(558)	86(353)	57(266)	57(266)	48(240)	70(304)	86(353)	70(304)	57(266)	83(343)	86(353)	74(317)	27(177)	55(260)	48(240)	71(307)	57(265)	77(326)	48(240)	86(353)	70(304)	47(237)		3'-primer(s)[3]
5'-CgA 3'	5'-AAA 3'	5'-ACg 3'	5'-CAT 3'	5'-CAT 3'	5'-gCg 3'	5'-CCC 3'	5'-ACC 3'	5'-CCT 3'	5'-CAA 3'	5'-gTg 3'	5'-ACC 3'	5'-CCg 3'	5'-gTT 3'	5'-gCg 3'	5'-gCg 3'	5'-ggC 3'	5'-gCT 3'	5'-CCg 3'	5'-gCg 3'	5'-ACC 3'	5'-CCC 3'	5'-CgA 3'		
					77(327)					86(353)		185(650)	30(184)	55(260)	170(604)	185(650)	77(327)	86(353)		186(653)	86(353)			
					5'-ACg 3'					5'-ACC 3'		5'-Cgg 3'	5'-gTg 3'	5'-gCg 3'	5'-gAC 3'	5'-Cgg 3'	5'-ACg 3'	5'-ACg 3'		5'-CCg 3'	5'-ACg 3'			
										87(356)			57(265)	57(266)										
										5'-ggA 3'			5'-gCT 3'	5'-CAA 3'										
										185(650)			167(596)	60(274)										
										5'-CgA 3'			5'-CAT 3'	5'-gTT 3'										
														182(641)										
														5'-ggC 3'										
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Neg. Control

Length of spec.	120	85	145	140	145	165	220	135	175	135	95	125	110	135	135	260	110	130	135	130	205	205	135	120
PCR product(s)				195	185				220		130		140	260	250		165	190						
																	195	220						
																	300							
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
DQB1 allele[4]																								
***02:01:01-02:01:03**	**1**		**3**					**8**	**9**															
***02:02**	**1**			**4**				**8**	**9**															
***02:03**		**2**		**4**					**9**											**20**				
***02:04**	**1**		**3**		**5**			**8**	**9**															
***02:05**	**1**		**3**					**8**	**9**															
***03:01:01:01-03:01:02, 03:01:05**			**3**			**6**	**7**									**16**			**19**	**20**				
***03:01:03**			**3**			**6**	**7**									**16**			**19**					
***03:01:04**			**3**			**6**	**7**									**16**			**19**	**20**				
***03:02:01-03:02:05**			**3**					**8**	**9**										**19**					
***03:03:02:01-03:03:03**			**3**						**9**										**19**	**20**				
***03:04**			**3**			**6**	**7**			**10**						**16**			**19**					
***03:05:01, 03:05:03**			**3**						**9**		**11**								**19**					
***03:05:02, 03:05:04**			**3**						**9**										**19**					
***03:06**			**3**						**9**			**12**							**19**	**20**				
***03:07**			**3**					**8**	**9**				**13**						**19**					
***03:08**			**3**					**8**	**9**			**12**							**19**					
***03:09**			**3**			**6**	**7**							**14**		**16**			**19**	**20**				
***03:10**			**3**				**7**								**15**	**16**			**19**	**20**				
***03:11**			**3**					**8**	**9**					**14**					**19**					
***03:12**			**3**						**9**						**15**	**16**			**19**	**20**				
***03:13**			**3**			**6**	**7**		**?**							**16**	**17**		**19**	**20**				
***03:14**			**3**				**7**		**?**	**10**					**15**	**16**			**19**					
***03:15**			**3**						**9**				**13**						**19**	**20**				
***03:16**			**3**			**6**	**7**		**?**				**13**			**16**				**20**				
***03:17**			**3**						**?**		**11**								**19**	**20**				
***03:18**			**3**					**8**	**9**									**18**	**19**					
***03:19**			**3**			**6**	**7**		**9**							**16**			**19**	**20**				
***03:20**			**3**						**9**		**11**								**19**	**20**				
***03:21**			**3**			**6**	**7**									**16**			**19**	**20**				
***03:22**			**3**			**6**	**7**									**16**			**19**	**20**				
***03:23**			**3**						**9**											**20**				
***03:24**						**6**	**7**									**16**		**18**	**19**	**20**				
***03:25**			**3**						**9**			**12**												
***03:26**			**3**						**9**					**14**					**19**	**20**				
***03:27**			**3**			**6**	**7**								**15**	**16**			**19**	**20**				
***03:28**			**3**	**4**		**6**	**7**									**16**	**17**		**19**	**20**				
***03:29**			**3**			**6**	**7**									**16**			**19**	**20**				
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**

95	115	210	185	130	160	170	210	170	95	160	210	180	100	180	95	185	110	110	160	130	160	155	Neg. Control	Length of spec. PCR product(s)
					245				130	250			130		150	205	135	155			210			
													185				195	185						
																		215						
																		250						
25	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**Well No.**
																								DQB1 allele[4]
																								***02:01:01-02:01:03**
																								***02:02**
																								***02:03**
																								***02:04**
																		43						***02:05**
												37												***03:01:01:01-03:01:02, 03:01:05**
												37												***03:01:03**
												37	38											***03:01:04**
																								***03:02:01-03:02:05**
																								***03:03:02:01-03:03:03**
												37												***03:04**
																								***03:05:01, 03:05:03**
																								***03:05:02, 03:05:04**
					30							?					42							***03:06**
												?												***03:07**
												?												***03:08**
												37												***03:09**
												37												***03:10**
												?												***03:11**
												?												***03:12**
												?												***03:13**
												?												***03:14**
												?												***03:15**
												?												***03:16**
												?												***03:17**
												?												***03:18**
																								***03:19**
												?												***03:20**
												37			40									***03:21**
												37				41								***03:22**
					30							?												***03:23**
												37												***03:24**
					30												42							***03:25**
												?												***03:26**
										35		37												***03:27**
												37												***03:28**
												37		39										***03:29**
25	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**Well No.**

Negative Control

Length of spec.	120	85	145	140	145	165	220	135	175	135	95	125	110	135	135	260	110	130	135	130	205	205	135	120
PCR product(s)				195	185				220		130		140	260	250		165	190						
																	195	220						
																	300							
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
***03:30**			**3**						**9**										**19**	**20**				
***03:31**			**3**						**9**										**19**	**20**				
***04:01:01-04:01:02**			**3**						**9**												**21**			
***04:02:01-04:02:02**			**3**						**9**													**22**		
***04:03:01**			**3**						**9**													**22**		
***04:03:02**			**3**						**9**															
***04:04**			**3**						**9**													**22**		
***04:05**			**3**						**9**												**21**			
***04:06**			**3**						**9**												**21**			
***05:01:01:01-05:01:03**			**3**																				**23**	
***05:02:01, 05:02:03**			**3**																					**24**
***05:02:02**			**3**																					**24**
***05:03:01:01-05:03:03**			**3**																					
***05:04**			**3**																					
***05:05**			**3**		**5**																			**24**
***05:06**			**3**		**5**																			
***05:07**			**3**		**5**																		**23**	
***05:08**			**3**																					
***06:01:01-06:01:06**			**3**												**15**									
***06:02:01**			**3**																					
***06:02:02**			**3**									**12**												
***06:03:01**			**3**																					
***06:03:02**			**3**									**12**												
***06:04:01, 06:04:03**			**3**																					
***06:04:02**			**3**																					
***06:05:01**			**3**																					
***06:05:02**			**3**																					
***06:06**			**3**																					
***06:07:01**			**3**																					
***06:07:02**			**3**																					
***06:08:01**			**3**																					
***06:08:02**			**3**																					
***06:09**			**3**																					
***06:10**			**3**																					
***06:11:01**			**3**																					
***06:11:02**			**3**																					
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**

95	115	210	185	130	160	170	210	170	95	160	210	180	100	180	95	185	110	110	160	130	160	155	Neg. Control	Length of spec. PCR product(s)
					245				130	250			130		150	205	135	155			210			
													185				195	185						
																		215						
																		250						
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.
														39								47	Neg ative Control	*03:30
										35														*03:31
																						47		*04:01:01-04:01:02
																						47		*04:02:01-04:02:02
																	42					47		*04:03:01
																	42					47		*04:03:02
					30																			*04:04
					30																			*04:05
																	42					47		*04:06
																								*05:01:01:01-05:01:03
																								*05:02:01, 05:02:03
25																								*05:02:02
25																								*05:03:01:01-05:03:03
													38											*05:04
																								*05:05
25																								*05:06
									34															*05:07
25													38											*05:08
		27																						*06:01:01-06:01:06
	26	27	28																44					*06:02:01
	26	27	28																44					*06:02:02
	26			29	30	31															46			*06:03:01
	26			29	30	31															46			*06:03:02
							32	33	34															*06:04:01, 06:04:03
					30		32	33	34															*06:04:02
	?							33	34	35	36													*06:05:01
	?	?						33		?	?													*06:05:02
	?	?						w	34	?	?	37												*06:06
	?			29	30		32	33												45				*06:07:01
				29			32	33												45				*06:07:02
	?				30	31			34												46			*06:08:01
	?					31			34												46			*06:08:02
								33	34		36													*06:09
	?	27											38				42		44					*06:10
	?	27			30																			*06:11:01
	?	27		29	30	31																		*06:11:02
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Length of spec.	120	85	145	140	145	165	220	135	175	135	95	125	110	135	135	260	110	130	135	130	205	205	135	120
PCR product(s)				195	185				220		130		140	260	250		165	190						
																	195	220						
																	300							
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
***06:12**			3																					
***06:13**			3																					
***06:14:01**			3																					
***06:14:02**			3																					
***06:15**			3																					
***06:16**			3																					
***06:17**			3																					
***06:18**			3																					
***06:19**			3																					
***06:20**			3																					
***06:21**			3																					
***06:22**			3																					
***06:23**			3														17							
***06:24**			3																					
***06:25**			3																					
***06:26N**			3																					
***06:27**			3																					
***06:28**			3															w						
***06:29**			3					8																
***06:30**			3																					
***06:31**			3																					
***06:32**			3																					
***06:33, 06:37**[7]			3																					
***06:34**			3														17							
***06:35**			3																					
***06:36**			3																					
***06:38**																								
***06:39**			3																					
***06:40**			3																					
DQB1 allele[4]																								
Well No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**

95	115	210	185	130	160	170	210	170	95	160	210	180	100	180	95	185	110	110	160	130	160	155	Neg. Control	Length of spec.
					245				130	250			130		150	205	135	155			210			PCR product(s)
													185				195	185						
																		215						
																		250						
25	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**Well No.**
						31			34		36													*06:12
	?	27												39					44					*06:13
	?		28	29		31							38						44		46			*06:14:01
	?		28										38						44		46			*06:14:02
	?		28								36								44	45				*06:15
	?	27	28											39					44					*06:16
	?						32		34							41								*06:17
	?	27						33	34															*06:18
	?	27	28																			47		*06:19
	?	27	28							35									44					*06:20
	?					31	32		34												46			*06:21
	?										36			39										*06:22
	?		28																44					*06:23
	?	27	28													41			44					*06:24
	?						32	33									42							*06:25
	?			29	30	31												43						*06:26N
	?							33	34												46			*06:27
	?			29	30	31															46			*06:28
	?	27												39					44					*06:29
	?			29	30											41					46			*06:30
	?			29	30	31				35											46			*06:31
	?			29	30			33													46			*06:32
	?	27	28															43	44					*06:33, 06:37[7]
							32	33	34															*06:34
	?	27								35														*06:35
							32	33	34											45				*06:36
							32	33	34							41								*06:38
	26						32	33	34															*06:39
	?			29	30	31									40						46			*06:40
																								DQB1 allele[4]
25	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.
Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DQB1 high resolution for frequent alleles typing.
In addition, wells number 3, 6 to 9, 16, 19, 21, 25, 31, 32, 35, 42, 43, 45 and 46 contain the primer pair giving rise to the longer, 515 bp, internal positive control band in order to allow kit identification.
[2]The codon, and in parenthesis the nucleotide, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Codon and 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 codon, and in parenthesis the nucleotide, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Codon and 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.
[4]The sequence of the DQB1*03031 allele has been shown to be identical to DQB1*03:03:02.
[5]Primer mix 4: Specific PCR fragment of 140 bp in the DQB1*02:02-02:03 alleles. Specific PCR fragment of 185 bp in the DQB1 *03:28 allele.
Primer mix 5: Specific PCR fragment of 145 bp in the DQB1*02:04 allele. Specific PCR fragment of 185 bp in the DQB1*05:05-05:07 alleles.
Primer mix 9: Specific PCR fragment of 175 bp in DQB1*03:05:01-03:05:04, 03:13?-03:14?, 03:16?- 03:17?, 03:19, 04:01:01-04:02 and 04:04-04:06 alleles. Specific PCR fragment of 220 bp in the DQB1*02:01:01-02:05 alleles. Specific PCR fragments of 175 and 220 bp in the DQB1*03:02:01-03:03:03, 03:06-03:08, 03:11-03:12, 03:15, 03:18, 03:20, 03:23, 03:25-03:26, 03:30-03:31 and 04:03:01-04:03:02 alleles (both specific PCR fragments may not be obtained).
Primer mix 11: Specific PCR fragment of 95 bp in the DQB1*03:20 allele. Specific PCR fragment of 130 bp in the DQB1*03:05:01, 03:05:03 and 03:17 alleles.
Primer mix 13: Specific PCR fragment of 110 bp in the DQB1*03:15 allele. Specific PCR fragment of 140 bp in the DQB1*03:07 and 03:16 alleles.
Primer mix 14: Specific PCR fragment of 135 bp in the DQB1*03:09 allele. Specific PCR fragment of 260 bp in the DQB1*03:11 and 03:26 alleles.
Primer mix 15: Specific PCR fragment of 135 bp in the DQB1*03:10, 03:12, 03:14 and 06:01:01-06:01:06 alleles. Specific PCR fragment of 250 bp in the DQB1*03:27 alleles.
Primer mix 17: Specific PCR fragment of 110 bp in the DQB1*06:23 allele. Specific PCR fragment of 165 bp in the DQB1*03:13 allele. Specific PCR fragment of 195 bp in the DQB1*03:28 allele. Specific PCR fragment of 300 bp in the DQB1*06:34 allele.
Primer mix 18: Specific PCR fragment of 130 bp in the DQB1*03:24 allele Specific PCR fragment of 190 bp in the DQB1*06:28w allele. Specific PCR fragment of 220 bp in the DQB1*03:18 allele.
Primer mix 30: Specific PCR fragment of 160 bp in DQB1*03:23, 06:03:01-06:03:02, 06:04:02, 06:07:01, 06:08:01, 06:11:01-06:11:02, 06:26N, 06:28, 06:30-06:32 and 06:40 alleles. Specific PCR fragment of 245 bp in the DQB1*03:06, 03:25 and 04:04-04:05 alleles.
Primer mix 34: Specific PCR fragment of 95 bp in DQB1*05:07 allele. Specific PCR fragment of 130 bp in the DQB1*06:04:01-06:05:01, 06:06, 06:08:01-06:09, 06:12, 06:17-06:18, 06:21, 06:27, 06:34, 06:36 and 06:38-06:39 alleles.
Primer mix 35: Specific PCR fragment of 160 bp in DQB1*03:27 and 06:35 allele. Specific PCR fragment of 250 bp in the DQB1*03:31, 06:05:01, 06:05:02?-06:06?, 06:20 and 06:31 alleles.
Primer mix 38: Specific PCR fragment of 100 bp in DQB1*06:14:01 and 06:14:02 alleles. Specific PCR fragment of 130 bp in the DQB1*03:01:04, 05:04 and 05:08 alleles. Specific PCR fragment of 185 bp in the DQB1*06:10 allele.
Primer mix 40: Specific PCR fragment of 95 bp in the DQB1*06:40 allele. Specific PCR fragment of 150 bp in the DQB1*03:21 allele.
Primer mix 41: Specific PCR fragment of 185 bp in the DQB1*06:17, 06:24 and 06:30 alleles. Specific PCR fragment of 205 bp in the DQB1*03:22 allele. Specific PCR fragment of 185 and 205 bp in the DQB1*06:38 allele.

Primer mix 42: Specific PCR fragment of 110 bp in the DQB1*04:06 allele. Specific PCR fragment of 135 bp in the DQB1*06:10 and 06:25 alleles. Specific PCR fragment of 195 bp in the DQB1*03:06, 03:25 and 04:03:01- 04:03:02 alleles.
Primer mix 43: PCR fragment of 110 bp in the DQB1*06:37 allele. Specific PCR fragment of 155 bp in the DQB1*02:05 allele. Specific PCR fragments of 185 and 215 bp in the DQB1*06:26N allele. Specific PCR fragment of 250 bp in the DQB1*06:33 allele.
Primer mix 46: Specific PCR fragment of 160 bp in the DQB1*06:21 allele. Specific PCR fragment of 210 bp in the DQB1*06:27, 06:30 and 06:32 alleles. Specific PCR fragment of 160 and 210 bp in the *06:03:01-06:03:02, 06:08:01-06:08:02, 06:14:01-06:14:02, 06:28, 06:31 and 06:40 alleles (both specific PCR fragments may not be obtained).
[6]Primer mix 48 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.
[7]The DQB1*06:33 and 06:37 alleles may be distinguished by the different sizes of the specific PCR products generated by primer mix 43.
'w', might be weakly amplified.
'?', nucleotide sequence information not available for the primer matching sequence.

CELL LINE VALIDATION SHEET

DQB1 high resolution primer set

					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Production No.	201185001	201185002	201185003	201185004	201185005	201185006	201185007	201185008	201185009	201185010	201185011	201185012	201185013	201185014	201185015	201185016
	IHWC cell line		DQB1																	
1	9001	SA	*05:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*06:01	*02:02	+	-	+	+	-	-	-	+	+	-	-	-	-	-	+	-
3	9011	E4181324	*06:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
4	9275	GU373	*02:01		+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
5	9009	KAS011	*05:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:02	*06:01	-	-	+	-	-	-	-	+	+	-	-	-	-	-	+	-
7	9020	QBL	*02:01		+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
8	9025	DEU	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
9	9026	YAR	*03:02		-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
10	9107	LKT3	*04:01		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
11	9051	PITOUT	*02:02		+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-
12	9052	DBB	*03:03		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
13	9004	JESTHOM	*05:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*04:02		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
15	9075	DKB	*03:03		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
16	9037	SWEIG007	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
17	9282	CTM3953540	*02:01	*0603	+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
18	9257	32367	*06:02	*02:02	+	-	+	+	-	-	-	+	+	-	-	-	-	-	-	-
19	9038	BM16	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
20	9059	SLE005	*06:04		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
22	9056	KOSE	*05:03	*06:04	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*05:03	*06:01	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
24	9035	JBUSH	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
25	9049	IBW9	*02:02		+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-
26	9285	WT49	*02:01		+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
27	9191	CH1007	*04:01	*05:01	-	-	+	-	-	-		-	+	-	-	-	-	-	-	-
28	9320	BEL5GB	*02:02	*03:01	+	-	+	+	-	+	+	+	+	-	-	-	-	-	-	+
29	9050	MOU	*02:02		+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-
30	9021	RSH	*04:02		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
31	9019	DUCAF	*02:01		+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
32	9297	HAG	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
33	9098	MT14B	*03:02		-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
34	9104	DHIF	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
35	9302	SSTO	*03:05		-	-	+	-	-	-	-	-	+	-	+	-	-	-	-	-
36	9024	KT17	*03:02		-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-
37	9065	HHKB	*06:03		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
39	9315	CML	*02:01	*03:01	+	-	+	-	-	+	+	+	+	-	-	-	-	-	-	+
40	9134	WHONP199	*02:02	*03:03	+	-	+	+	-	-	-	+	+	-	-	-	-	-	-	-
41	9055	H0301	*06:09		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*06:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
43	9076	T7526	*03:03		-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
44	9057	TEM	*05:03		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*02:02		+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-
46	9013	SCHU	*06:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*03:01		-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
48	9303	TER-ND	*05:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET

DQB1 high resolution primer set

					Well													
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
				Production No.	201185017	201185018	201185019	201185020	201185021	201185022	201185023	201185024	201185025	201185026	201185027	201185028	201185029	201185030	201185031	201185032
	IHWC cell line		DQB1																	
1	9001	SA	*05:01		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
2	9280	LK707	*06:01	*02:02	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
3	9011	E4181324	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
4	9275	GU373	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*05:02		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
6	9353	SM	*03:02	*06:01	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
7	9020	QBL	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*03:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*03:03		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*05:01		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*04:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:03		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*02:01	*0603	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	-
18	9257	32367	*06:02	*02:02	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-
19	9038	BM16	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*06:04		-	-	-	-	-	-	-	-	-	-	-	-		-	-	+
21	9064	AMALA	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*05:03	*06:04	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+
23	9124	IHL	*05:03	*06:01	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
24	9035	JBUSH	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:01	*05:01	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*02:02	*03:01	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*04:02		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*03:05		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:02		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*06:03		-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	-
38	9099	LZL	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:01	*03:01	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*02:02	*03:03	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*06:09		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
43	9076	T7526	*03:03		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*05:03		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
45	9239	SHJO	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*06:02		-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-
47	9045	TUBO	*03:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*05:01		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET

DQB1 high resolution primer set

					Well														
					33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
				Production No.	201185033	201185034	201185035	201185036	201185037	201185038	201185039	201185040	201185041	201185042	201185043	201185044	201185045	201185046	201185047
	IHWC cell line		DQB1																
1	9001	SA	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*06:01	*02:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*06:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*05:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:02	*06:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
11	9051	PITOUT	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
15	9075	DKB	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*02:01	*0603	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
18	9257	32367	*06:02	*02:02	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
19	9038	BM16	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*06:04		+	+	-	-		-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*05:03	*06:04	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*05:03	*06:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*04:01	*05:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
28	9320	BEL5GB	*02:02	*03:01	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
31	9019	DUCAF	*02:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*03:05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*06:03		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
38	9099	LZL	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:01	*03:01	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*02:02	*03:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*06:09		+	+	-	+	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*06:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*05:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*06:02		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
47	9045	TUBO	*03:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CERTIFICATE OF ANALYSIS

Olerup SSP® DQB1 high resolution for frequent alleles SSP

Product number: **101.221-12u – without *Taq* polymerase**
Lot number: **10M**
Expiry date: **2014-January-01**
Number of tests: **12 tests**
Number of wells per test: **47 + 1**

Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2011-850-01	17	2011-850-17	33	2011-850-33
2	2011-850-02	18	2011-850-18	34	2011-850-34
3	2011-850-03	19	2011-850-19	35	2011-850-35
4	2011-850-04	20	2011-850-20	36	2011-850-36
5	2011-850-05	21	2011-850-21	37	2011-850-37
6	2011-850-06	22	2011-850-22	38	2011-850-38
7	2011-850-07	23	2011-850-23	39	2011-850-39
8	2011-850-08	24	2011-850-24	40	2011-850-40
9	2011-850-09	25	2011-850-25	41	2011-850-41
10	2011-850-10	26	2011-850-26	42	2011-850-42
11	2011-850-11	27	2011-850-27	42	2011-850-43
12	2011-850-12	28	2011-850-28	43	2011-850-44
13	2011-850-13	29	2011-850-29	45	2011-850-45
14	2011-850-14	30	2011-850-30	46	2011-850-46
15	2011-850-15	31	2011-850-31	47	2011-850-47
16	2011-850-16	32	2011-850-32		

The specificity of each primer solution of the kit has been tested against 48 well characterized IHWC cell line DNAs.
No DNAs carrying the alleles to be amplified by primer solutions 2, 5, 12-14, 17, 18, 35, 38-43 and 45 were available.
The specificities of the primers in primer solutions 2, 5, 12, 14, 17, 18, 35, 38, 39, 41, 42 and 45 were tested by separately adding additional 5'-primers, respectively additional 3'-primers. In primer solution 13, 40 and 43 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 5, 18, 22, 34, 41 and 42 one, two or three 5'-primers were not possible to test. In primer solutions 4, 14, 15, 17, 18, 35, 38, 39, 41 and 45 one or three 3'-primer was not possible to test. Additional primers in primer solutions 4, 30, 37 and 46 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer.
The negative control primer pairs, **Production No. 2010-760-01**, can detect contamination with PCR products diluted 10^{-7}.

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

Date of approval: 2011-October-06

Approved by:

Quality Control, Supervisor

Declaration of Conformity

Product name: *Olerup* SSP® DQB1High
Product number: 101.221-12u
Lot number: 10M

Intended use: DQB1 high resolution histocompatibility testing

Manufacturer: *Olerup* SSP AB
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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, Franzengatan 5, SE-112 51 Stockholm, Sweden.

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

Notified Body: Lloyd's Register Quality Assurance Limited, Hiramford, Middlemarch Office Village, Siskin Drive, Coventry CV3 4FJ, United Kingdom. (Notified Body number: 0088.)

Stockholm, Sweden
2011-October-06

Ann-Cathrin Jareman
Head of QA and Regulatory Affairs

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E-mail: info.us@olerup.com
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For information on *Olerup* SSP distributors worldwide, contact **Olerup GmbH**.