*Olerup* SSP® HLA-B\*44

Product number: 101.563-24/03 – including *Taq* pol.

 101.563-24u/03u – without *Taq* pol.

Lot number: 8F4

Expiry date: 2020-05-01

Number of tests: 24 tests – Product No. 101.563-24/24u

 3 tests – Product No. 101.563-03/03u

Number of wells per test: 63+1

Storage - pre-aliquoted primers: dark at -20oC

 - PCR Master Mix: -20oC

 - Adhesive PCR seals RT

 - Product Insert RT

This Product Description is only valid for Lot No. 8F4.

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

**Changes compared to the previous *Olerup* SSP®**

**HLA-B\*44 Lot (7D8).**

The HLA-B\*44 kit is updated for new alleles to enable separation of:

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

The format of the Worksheet has been changed.

1As described in section Uniquely Identified Alleles.

The HLA-B\*44 specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup* SSP® HLA-B\*44 lot was made **(Lot No. 7D8)**. The kit design is based on IMGT/HLA database 3.29.0.

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

|  |  |  |  |
| --- | --- | --- | --- |
| Well | 5’-primer | 3’-primer | rationale |
| 9 | Modified,removed | - | 5’-primer modified for improved HLA-specific amplification, excess 5’-primer removed.  |
| 11 | Added | - | 5’-primer added for the B\*44:03:37 allele. |
| 26 | Added | - | 5’-primer added from well 63.  |
| 30 | Modified | - | 5’-primer modified for improved HLA-specific amplification. |
| 31 | Added | - | 5’-primer added from well 63.  |
| 33 | Added | - | 5’-primer added from well 63.  |
| 34 | Modified, added | - | 5’-primer modified for improved HLA-specific amplification, 5’-primer added for the B\*44:226 allele.  |
| 45 | Added | - | 5’-primer added from well 63.  |
| 46 | Added | - | 5’-primer added for the B\*44:267N allele. |
| 49 | Added | Added | Primer pair added for the B\*44:267N allele. |
| 51 | Added | - | 5’-primer added for the B\*44:259 allele.  |
| 52 | Added | - | 5’-primer added from well 63.  |
| 53 | Added | - | 5’-primer added for the B\*44:259 allele. |
| 54 | - | Added | 3’-primer added for the B\*44:253 allele. |
| 58 | Added | - | 5’-primer added for the B\*44:271 allele.  |
| 62 | - | Added | 3’-primer added for the B\*44:253 allele.  |
| 63 | Moved, added | Removed, added | 5’-primers moved to wells 26, 31, 33, 45 and 52, 3’-primer removed, primer pair added for the B\*44:250 allele.  |

Change in revision R01 compared to R00:

1. Primer mix 43 amplifies the B\*44:115 allele. This has been corrected in the Specificity and Interpretation Tables.

Well 64 contains Negative Control primer pairs, that will amplify more than 95% of the *Olerup* SSP® HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.

The PCR product generated by the positive control primer pair is 430 base pairs.



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

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

PRODUCT DESCRIPTION

**HLA-B\*44 SSP subtyping**

## Content

The primer set contains 5’- and 3’-primers for identifying the B\*44:02 to B\*44:271 alleles.

## Plate layout

Each test consists of 64 PCR reactions in a 64 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** |
| **49** | **50** | **51** | **52** | **53** | **54** | **55** | **56** |
| **57** | **58** | **59** | **60** | **61** | **62** | **63** | **NC** |

The 64 well cut PCR plate is marked with ‘HLA-B\*44’ in silver/gray ink.

Well No. 1 is marked with the Lot No.‘8F4’.

Wells 1 to 63 – HLA-B\*44 high resolution primers.

Well 64 – Negative Control (NC).

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

The PCR plates are covered with a PCR-compatible foil.

**Interpretation**

## Due to the sharing of sequence motifs between HLA-B alleles non-HLA-B\*44 alleles will be amplified by some primer mixes. For further details see Specificity Table.

## Uniquely identified alleles

All the HLA-B\*44 alleles, i.e. **B\*44:02 to B\*44:271**, recognized by the HLA Nomenclature Committee in August 20171,2 will be amplified by the primers in the HLA-B\*44 subtyping kit 2.

The HLA-B\*44 kit enables separation of the confirmed HLA-B\*44 alleles as listed in the IMGT/HLA database. An HLA allele is listed as confirmed by IMGT/HLA if it has been sequenced by more than a single laboratory or from multiple sources. Current allele confirmation status for HLA-B\*44 alleles is listed below.

The HLA-B\*44 kit also enables identification of polymorphisms in exons outside of the region encoding the peptide binding domain and of null and alternatively expressed alleles.

The following HLA-B\*44 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

|  |  |  |  |
| --- | --- | --- | --- |
| **Alleles** | **Primer mix** | **Alleles** | **Primer mix** |
| B\*44:58N, 44:139 | 47 | B\*44:78, 44:136 | 48 |
| B\*44:69:01, 44:85 | 26 | B\*44:79:01-44:79:02, 44:192 | 44 |
| B\*44:72, 44:93 | 47 | B\*44:94, 44:98 | 31 |
| B\*44:74, 44:169 | 18 | B\*44:160Q, 44:198N | 56 |

**1**HLA-B alleles listed on the IMGT/HLA web page 2017-August-17, release 3.29.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

**2**Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

**Allele Confirmation Status**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Allele** | **Status1** | **Allele** | **Status1** | **Allele** | **Status1** | **Allele** | **Status1** |
| **B\*44:02:01:01** | **Confirmed** | B\*44:02:46 | Unconfirmed | B\*44:03:40 | Unconfirmed | B\*44:44 | Unconfirmed |
| B\*44:02:01:02S | Unconfirmed | B\*44:02:47 | Unconfirmed | **B\*44:04** | **Confirmed** | B\*44:45 | Unconfirmed |
| **B\*44:02:01:03** | **Confirmed** | **B\*44:03:01:01** | **Confirmed** | **B\*44:05:01** | **Confirmed** | **B\*44:46** | **Confirmed** |
| B\*44:02:01:04 | Unconfirmed | B\*44:03:01:02 | Unconfirmed | B\*44:05:02 | Unconfirmed | B\*44:47 | Unconfirmed |
| B\*44:02:01:05 | Unconfirmed | B\*44:03:01:03 | Unconfirmed | **B\*44:05:03** | **Confirmed** | B\*44:48 | Unconfirmed |
| B\*44:02:01:06 | Unconfirmed | B\*44:03:01:04 | Unconfirmed | B\*44:05:04 | Unconfirmed | B\*44:49 | Unconfirmed |
| **B\*44:02:02** | **Confirmed** | B\*44:03:01:05 | Unconfirmed | **B\*44:06** | **Confirmed** | **B\*44:50:01** | **Confirmed** |
| B\*44:02:03 | Unconfirmed | B\*44:03:01:06 | Unconfirmed | **B\*44:07** | **Confirmed** | B\*44:50:02 | Unconfirmed |
| B\*44:02:04 | Unconfirmed | B\*44:03:01:07 | Unconfirmed | **B\*44:08** | **Confirmed** | B\*44:51 | Unconfirmed |
| **B\*44:02:05** | **Confirmed** | B\*44:03:01:08 | Unconfirmed | **B\*44:09** | **Confirmed** | B\*44:52N | Unconfirmed |
| **B\*44:02:06** | **Confirmed** | B\*44:03:01:09 | Unconfirmed | **B\*44:10** | **Confirmed** | **B\*44:53:01** | **Confirmed** |
| **B\*44:02:07** | **Confirmed** | B\*44:03:01:10 | Unconfirmed | B\*44:11 | Unconfirmed | B\*44:53:02 | Unconfirmed |
| B\*44:02:08 | Unconfirmed | **B\*44:03:02** | **Confirmed** | B\*44:12 | Unconfirmed | B\*44:54 | Unconfirmed |
| **B\*44:02:09** | **Confirmed** | B\*44:03:03 | Unconfirmed | **B\*44:13** | **Confirmed** | **B\*44:55** | **Confirmed** |
| **B\*44:02:10** | **Confirmed** | B\*44:03:04 | Unconfirmed | B\*44:14 | Unconfirmed | B\*44:56N | Unconfirmed |
| B\*44:02:11 | Unconfirmed | B\*44:03:05 | Unconfirmed | **B\*44:15** | **Confirmed** | **B\*44:57** | **Confirmed** |
| **B\*44:02:12** | **Confirmed** | **B\*44:03:06** | **Confirmed** | **B\*44:16** | **Confirmed** | B\*44:58N | Unconfirmed |
| B\*44:02:13 | Unconfirmed | B\*44:03:07 | Unconfirmed | **B\*44:17** | **Confirmed** | B\*44:59:01 | Unconfirmed |
| B\*44:02:14 | Unconfirmed | **B\*44:03:08** | **Confirmed** | **B\*44:18** | **Confirmed** | B\*44:59:02 | Unconfirmed |
| B\*44:02:15 | Unconfirmed | B\*44:03:09 | Unconfirmed | B\*44:19N | Unconfirmed | **B\*44:60** | **Confirmed** |
| B\*44:02:16 | Unconfirmed | **B\*44:03:10** | **Confirmed** | **B\*44:20** | **Confirmed** | B\*44:61N | Unconfirmed |
| B\*44:02:17 | Unconfirmed | **B\*44:03:11** | **Confirmed** | **B\*44:21** | **Confirmed** | **B\*44:62** | **Confirmed** |
| B\*44:02:18 | Unconfirmed | B\*44:03:12 | Unconfirmed | **B\*44:22** | **Confirmed** | B\*44:63 | Unconfirmed |
| B\*44:02:19 | Unconfirmed | **B\*44:03:13** | **Confirmed** | **B\*44:23N** | **Confirmed** | **B\*44:64:01** | **Confirmed** |
| B\*44:02:20 | Unconfirmed | B\*44:03:14 | Unconfirmed | **B\*44:24** | **Confirmed** | **B\*44:64:02** | **Confirmed** |
| B\*44:02:21 | Unconfirmed | B\*44:03:15 | Unconfirmed | B\*44:25 | Unconfirmed | **B\*44:65** | **Confirmed** |
| B\*44:02:22 | Unconfirmed | B\*44:03:16 | Unconfirmed | **B\*44:26** | **Confirmed** | B\*44:66 | Unconfirmed |
| B\*44:02:23 | Unconfirmed | B\*44:03:17 | Unconfirmed | **B\*44:27:01** | **Confirmed** | B\*44:67 | Unconfirmed |
| B\*44:02:24 | Unconfirmed | **B\*44:03:18** | **Confirmed** | B\*44:27:02 | Unconfirmed | **B\*44:68** | **Confirmed** |
| B\*44:02:25 | Unconfirmed | B\*44:03:19 | Unconfirmed | **B\*44:28:01** | **Confirmed** | **B\*44:69:01** | **Confirmed** |
| B\*44:02:26 | Unconfirmed | B\*44:03:20 | Unconfirmed | **B\*44:28:02** | **Confirmed** | B\*44:69:02 | Unconfirmed |
| B\*44:02:27 | Unconfirmed | B\*44:03:21 | Unconfirmed | **B\*44:29** | **Confirmed** | B\*44:70 | Unconfirmed |
| B\*44:02:28 | Unconfirmed | B\*44:03:22 | Unconfirmed | **B\*44:30** | **Confirmed** | B\*44:71 | Unconfirmed |
| B\*44:02:29 | Unconfirmed | B\*44:03:23 | Unconfirmed | B\*44:31 | Unconfirmed | B\*44:72 | Unconfirmed |
| B\*44:02:30 | Unconfirmed | B\*44:03:24 | Unconfirmed | B\*44:32 | Unconfirmed | **B\*44:73** | **Confirmed** |
| **B\*44:02:31** | **Confirmed** | B\*44:03:25 | Unconfirmed | B\*44:33 | Unconfirmed | **B\*44:74** | **Confirmed** |
| B\*44:02:32 | Unconfirmed | B\*44:03:26 | Unconfirmed | B\*44:34:01 | Unconfirmed | B\*44:75 | Unconfirmed |
| B\*44:02:33 | Unconfirmed | B\*44:03:27 | Unconfirmed | B\*44:34:02 | Unconfirmed | **B\*44:76** | **Confirmed** |
| **B\*44:02:34** | **Confirmed** | B\*44:03:28 | Unconfirmed | B\*44:35 | Unconfirmed | **B\*44:77** | **Confirmed** |
| B\*44:02:35 | Unconfirmed | B\*44:03:29 | Unconfirmed | B\*44:36 | Unconfirmed | B\*44:78 | Unconfirmed |
| B\*44:02:36 | Unconfirmed | B\*44:03:30 | Unconfirmed | **B\*44:37:01** | **Confirmed** | **B\*44:79:01** | **Confirmed** |
| B\*44:02:37 | Unconfirmed | B\*44:03:31 | Unconfirmed | B\*44:37:02 | Unconfirmed | B\*44:79:02 | Unconfirmed |
| B\*44:02:38 | Unconfirmed | **B\*44:03:32** | **Confirmed** | B\*44:38 | Unconfirmed | **B\*44:80** | **Confirmed** |
| B\*44:02:39 | Unconfirmed | B\*44:03:33 | Unconfirmed | B\*44:39 | Unconfirmed | B\*44:81 | Unconfirmed |
| **B\*44:02:40** | **Confirmed** | B\*44:03:34 | Unconfirmed | B\*44:40 | Unconfirmed | B\*44:82 | Unconfirmed |
| B\*44:02:41 | Unconfirmed | B\*44:03:35 | Unconfirmed | **B\*44:41:01** | **Confirmed** | **B\*44:83** | **Confirmed** |
| B\*44:02:42 | Unconfirmed | B\*44:03:36 | Unconfirmed | B\*44:41:02 | Unconfirmed | B\*44:84:01 | Unconfirmed |
| B\*44:02:43 | Unconfirmed | B\*44:03:37 | Unconfirmed | **B\*44:42** | **Confirmed** | B\*44:84:02 | Unconfirmed |
| B\*44:02:44 | Unconfirmed | B\*44:03:38 | Unconfirmed | **B\*44:43:01** | **Confirmed** | B\*44:85 | Unconfirmed |
| B\*44:02:45 | Unconfirmed | **B\*44:03:39** | **Confirmed** | B\*44:43:02 | Unconfirmed | **B\*44:86** | **Confirmed** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Allele** | **Status1** | **Allele** | **Status1** | **Allele** | **Status1** | **Allele** | **Status1** |
| **B\*44:87** | **Confirmed** | **B\*44:135** | **Confirmed** | B\*44:185 | Unconfirmed | B\*44:233 | Unconfirmed |
| **B\*44:88** | **Confirmed** | B\*44:136 | Unconfirmed | B\*44:186 | Unconfirmed | B\*44:234 | Unconfirmed |
| B\*44:89 | Unconfirmed | **B\*44:137** | **Confirmed** | B\*44:187 | Unconfirmed | B\*44:235 | Unconfirmed |
| B\*44:90 | Unconfirmed | B\*44:138Q | Unconfirmed | **B\*44:188** | **Confirmed** | B\*44:236 | Unconfirmed |
| **B\*44:91** | **Confirmed** | **B\*44:139** | **Confirmed** | B\*44:189 | Unconfirmed | B\*44:237N | Unconfirmed |
| **B\*44:92** | **Confirmed** | B\*44:140 | Unconfirmed | B\*44:190 | Unconfirmed | B\*44:238 | Unconfirmed |
| B\*44:93 | Unconfirmed | B\*44:141 | Unconfirmed | **B\*44:191** | **Confirmed** | B\*44:239 | Unconfirmed |
| B\*44:94 | Unconfirmed | B\*44:142 | Unconfirmed | B\*44:192:01 | Unconfirmed | B\*44:240 | Unconfirmed |
| B\*44:95 | Unconfirmed | **B\*44:143** | **Confirmed** | B\*44:192:02 | Unconfirmed | B\*44:241 | Unconfirmed |
| **B\*44:96** | **Confirmed** | B\*44:144 | Unconfirmed | B\*44:193 | Unconfirmed | B\*44:242 | Unconfirmed |
| **B\*44:97** | **Confirmed** | B\*44:145 | Unconfirmed | B\*44:194 | Unconfirmed | B\*44:243 | Unconfirmed |
| **B\*44:98** | **Confirmed** | **B\*44:146** | **Confirmed** | B\*44:195N | Unconfirmed | B\*44:244 | Unconfirmed |
| B\*44:99 | Unconfirmed | B\*44:147 | Unconfirmed | B\*44:196 | Unconfirmed | B\*44:245 | Unconfirmed |
| B\*44:100 | Unconfirmed | **B\*44:148** | **Confirmed** | B\*44:197 | Unconfirmed | B\*44:247 | Unconfirmed |
| B\*44:101 | Unconfirmed | B\*44:149N | Unconfirmed | B\*44:198N | Unconfirmed | B\*44:248 | Unconfirmed |
| B\*44:102 | Unconfirmed | B\*44:150 | Unconfirmed | B\*44:199 | Unconfirmed | B\*44:249 | Unconfirmed |
| B\*44:103 | Unconfirmed | B\*44:151 | Unconfirmed | B\*44:200 | Unconfirmed | **B\*44:250** | **Confirmed** |
| **B\*44:104** | **Confirmed** | B\*44:152 | Unconfirmed | B\*44:201 | Unconfirmed | B\*44:251 | Unconfirmed |
| B\*44:105 | Unconfirmed | B\*44:153 | Unconfirmed | B\*44:202 | Unconfirmed | B\*44:252 | Unconfirmed |
| **B\*44:106** | **Confirmed** | B\*44:154 | Unconfirmed | B\*44:203 | Unconfirmed | **B\*44:253** | **Confirmed** |
| **B\*44:107** | **Confirmed** | B\*44:155 | Unconfirmed | B\*44:204 | Unconfirmed | B\*44:254 | Unconfirmed |
| B\*44:108N | Unconfirmed | B\*44:156 | Unconfirmed | B\*44:205:01 | Unconfirmed | B\*44:255 | Unconfirmed |
| B\*44:109 | Unconfirmed | B\*44:157 | Unconfirmed | B\*44:205:02 | Unconfirmed | B\*44:256 | Unconfirmed |
| **B\*44:110** | **Confirmed** | B\*44:158 | Unconfirmed | B\*44:206 | Unconfirmed | B\*44:257 | Unconfirmed |
| **B\*44:111** | **Confirmed** | **B\*44:159** | **Confirmed** | B\*44:207 | Unconfirmed | **B\*44:258** | **Confirmed** |
| B\*44:112 | Unconfirmed | B\*44:160Q | Unconfirmed | B\*44:208 | Unconfirmed | **B\*44:259** | **Confirmed** |
| B\*44:113 | Unconfirmed | B\*44:161 | Unconfirmed | B\*44:209 | Unconfirmed | B\*44:260 | Unconfirmed |
| B\*44:114 | Unconfirmed | B\*44:162 | Unconfirmed | B\*44:210 | Unconfirmed | B\*44:261 | Unconfirmed |
| **B\*44:115** | **Confirmed** | B\*44:163 | Unconfirmed | B\*44:211 | Unconfirmed | B\*44:262 | Unconfirmed |
| B\*44:116 | Unconfirmed | B\*44:164 | Unconfirmed | B\*44:212 | Unconfirmed | **B\*44:263** | **Confirmed** |
| **B\*44:117** | **Confirmed** | B\*44:165 | Unconfirmed | B\*44:213 | Unconfirmed | B\*44:264 | Unconfirmed |
| B\*44:118 | Unconfirmed | B\*44:166 | Unconfirmed | B\*44:214 | Unconfirmed | B\*44:265 | Unconfirmed |
| B\*44:119 | Unconfirmed | B\*44:167 | Unconfirmed | B\*44:215 | Unconfirmed | B\*44:266 | Unconfirmed |
| **B\*44:120** | **Confirmed** | B\*44:168 | Unconfirmed | B\*44:216 | Unconfirmed | B\*44:267N | Unconfirmed |
| B\*44:121 | Unconfirmed | B\*44:169 | Unconfirmed | B\*44:217N | Unconfirmed | B\*44:268 | Unconfirmed |
| **B\*44:122** | **Confirmed** | B\*44:170 | Unconfirmed | B\*44:218 | Unconfirmed | B\*44:269 | Unconfirmed |
| B\*44:123 | Unconfirmed | B\*44:171N | Unconfirmed | B\*44:219 | Unconfirmed | B\*44:270 | Unconfirmed |
| B\*44:124 | Unconfirmed | B\*44:172 | Unconfirmed | B\*44:220 | Unconfirmed | **B\*44:271** | **Confirmed** |
| B\*44:125 | Unconfirmed | **B\*44:173** | **Confirmed** | **B\*44:221** | **Confirmed** |
| **B\*44:126:01** | **Confirmed** | B\*44:174 | Unconfirmed | B\*44:222 | Unconfirmed |
| B\*44:126:02 | Unconfirmed | B\*44:175 | Unconfirmed | B\*44:223 | Unconfirmed |
| B\*44:127 | Unconfirmed | B\*44:176 | Unconfirmed | B\*44:224 | Unconfirmed |
| B\*44:128:01 | Unconfirmed | **B\*44:177** | **Confirmed** | B\*44:225 | Unconfirmed |
| B\*44:128:02 | Unconfirmed | B\*44:178 | Unconfirmed | **B\*44:226** | **Confirmed** |
| B\*44:129 | Unconfirmed | B\*44:179 | Unconfirmed | **B\*44:227** | **Confirmed** |
| B\*44:130 | Unconfirmed | B\*44:180 | Unconfirmed | B\*44:228 | Unconfirmed |
| B\*44:131 | Unconfirmed | B\*44:181 | Unconfirmed | B\*44:229 | Unconfirmed |
| **B\*44:132** | **Confirmed** | B\*44:182 | Unconfirmed | B\*44:230 | Unconfirmed |
| B\*44:133 | Unconfirmed | B\*44:183 | Unconfirmed | B\*44:231 | Unconfirmed |
| B\*44:134 | Unconfirmed | B\*44:184 | Unconfirmed | B\*44:232 | Unconfirmed |

1Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2017-August-10, release 3.29.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

**Resolution in homo- and heterozygotes**

Results file with resolution in HLA-B\*44 homo- and heterozygotes is available upon request.

**SPECIFICITY TABLE**

**HLA-B\*44 SSP subtyping**

**Specificities and sizes of the PCR products of the 63+1 primer mixes used for HLA-B\*44 SSP subtyping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Primer Mix** | **Size of spec. PCR product**1 | **Size of control band**2 | **Amplified HLA-B\*44 alleles**3 | **Other amplified HLA Class I alleles** |
|  **1** | 260 bp | **800 bp** | \*44:02:01:01-44:02:38, 44:02:40-44:14, 44:17, 44:19N, 44:21-44:30, 44:32-44:36, 44:38-44:40, 44:43:01-44:46, 44:48-44:53:02, 44:55-44:63, 44:66-44:90, 44:92-44:98, 44:102-44:105, 44:107-44:131, 44:133-44:134, 44:136-44:137, 44:139-44:149N, 44:151-44:157, 44:159-44:165, 44:167-44:183, 44:185-44:189, 44:191-44:192:02, 44:194, 44:196, 44:198N-44:212, 44:214-44:229, 44:231-44:233, 44:235, 44:237N-44:245, 44:247-44:267N, 44:269-44:271 | \*27:127, 35:45, 35:71, 35:169, 35:309, 51:42, 53:22, 57:07, 83:01, **C\*15:25** |
|  **2**4 | 90 bp | **800 bp** | \*44:02:01:01-44:02:09, 44:02:11-44:05:04, 44:09-44:33, 44:35-44:38, 44:41:01-44:43:02, 44:45-44:56N, 44:58N-44:59:02, 44:61N-44:80, 44:82, 44:84:01-44:110, 44:112-44:129, 44:131-44:133, 44:135-44:144, 44:146-44:155, 44:157-44:167, 44:169-44:193, 44:195N-44:199, 44:201-44:209, 44:211-44:220, 44:222-44:223, 44:226-44:244, 44:247-44:257, 44:259-44:268, 44:270-44:271 | \*15:53, 15:212, 18:107, 35:63, 35:217, 35:317, 40:01:01-40:01:10, 40:01:12-40:09, 40:11:01-40:11:02, 40:13-40:16, 40:18-40:20, 40:22N-40:40, 40:42-40:45, 40:47-40:57, 40:59-40:82, 40:84-40:92, 40:94-40:136, 40:138-40:148, 40:150-40:169, 40:171-40:176, 40:178-40:184, 40:186:01-40:208, 40:210-40:214, 40:216N-40:247, 40:249-40:264, 40:266-40:281, 40:283-40:293, 40:295-40:324, 40:326-40:350, 40:352-40:360, 41:01:01-41:11, 41:13-41:21, 41:23-41:35, 41:37-41:40, 41:42-41:52, 45:01:01-45:20, 47:01:01:01-47:10, 49:01:01:01-49:02, 49:04:01-49:14, 49:16-49:24, 49:28-49:41, 49:43-49:47, 50:01:01:01-50:02, 50:04-50:06, 50:08-50:20, 50:31-50:53, 57:51, 57:69, **C\*16:85** |
|  **3** | 225 bp | **800 bp** | \*44:02:01:01-44:02:47, 44:05:01-44:06, 44:08-44:09, 44:11-44:12, 44:14, 44:16-44:17, 44:19N, 44:21-44:25, 44:27:01-44:27:02, 44:33-44:34:02, 44:42, 44:44, 44:48-44:49, 44:51-44:53:02, 44:55, 44:58N-44:59:02, 44:62-44:63, 44:66-44:68, 44:70-44:75, 44:78, 44:80, 44:83-44:84:02, 44:86-44:91, 44:93, 44:95, 44:97, 44:101-44:102, 44:104, 44:112-44:113, 44:116-44:119, 44:121, 44:123, 44:126:01-44:127, 44:131-44:134, 44:136-44:137, 44:139-44:140, 44:142, 44:145, 44:148-44:149N, 44:151-44:152, 44:162, 44:168-44:173, 44:176-44:177, 44:179, 44:185, 44:187, 44:190-44:191, 44:195N-44:196, 44:200-44:201, 44:206, 44:208, 44:211-44:212, 44:214, 44:216-44:221, 44:225-44:226, 44:229, 44:235, 44:238, 44:240-44:244, 44:249, 44:253-44:255, 44:257, 44:260-44:265, 44:267N, 44:269-44:270 | \*08:49, 08:60, 08:76, 08:129, 08:181, 27:127, 35:38, 35:115, 35:169, 35:260, 37:01:01-37:01:07, 37:01:09, 37:01:11, 37:03N-37:06:02, 37:08, 37:10-37:38, 37:41-37:43, 37:45-37:50, 37:52-37:65, 37:67-37:68, 41:48, 42:13, 53:22, 57:09, 57:24, 83:01, **C\*15:25** |
|  **4** | 160 bp | 1070 bp | \*44:03:01:01-44:03:40, 44:07, 44:13, 44:26, 44:30, 44:32, 44:36-44:40, 44:46-44:47, 44:50:01-44:50:02, 44:54, 44:57, 44:60-44:61N, 44:64:01-44:65, 44:69:01-44:69:02, 44:79:01-44:79:02, 44:81, 44:85, 44:92, 44:94, 44:96, 44:98, 44:103, 44:105, 44:108N-44:111, 44:114-44:115, 44:120, 44:122, 44:124-44:125, 44:128:01-44:130, 44:141, 44:143, 44:147, 44:153-44:157, 44:159-44:161, 44:163-44:165, 44:167, 44:174-44:175, 44:178, 44:180-44:183, 44:186, 44:188-44:189, 44:192:01-44:194, 44:197-44:199, 44:202-44:205:02, 44:207, 44:209-44:210, 44:215, 44:222, 44:224, 44:227-44:228, 44:231-44:234, 44:237N, 44:239, 44:245, 44:247-44:248, 44:252, 44:258-44:259, 44:266, 44:268, 44:271 | \*51:42, 52:26, **A\*23:31, C\*07:231** |
|  **5**4 | 75 bp 255 bp | 1070 bp | \*44:04, 44:28:01-44:28:02, 44:56N, 44:76 \*44:70 | \*07:20, 07:140, 07:153, 35:45, **C\*05:102, C\*14:61** |
|  **6** | 170 bp195 bp | 1070 bp | \*44:39\*44:05:01-44:05:04, 44:10, 44:15, 44:17-44:18, 44:25, 44:31, 44:43:01-44:43:02, 44:58N, 44:62, 44:70, 44:75, 44:77-44:78, 44:82, 44:107, 44:117, 44:123, 44:134, 44:136, 44:139-44:140, 44:144, 44:158, 44:184, 44:213, 44:226, 44:230, 44:236, 44:250-44:251, 44:256, 44:263-44:264 | \*07:20, 07:140, 07:153, 15:14, 15:91, 15:131, 15:161, 18:56, 35:45, 35:71, 35:169, 35:309, 40:132, 40:178, 45:01:01-45:02, 45:05-45:07, 45:09, 45:11-45:20, 46:17, 49:20, 50:02, 51:23, 51:108, 52:15, 53:22, 57:07, 58:07, 82:01-82:03, **C\*02:82, C\*05:102, C\*06:165, C\*08:93, C\*14:61, C\*15:25** |
|  **7** | 155 bp | 1070 bp | \*44:06, 44:29, 44:89 | \*18:67, 18:136, 37:34, 38:06-38:07, 49:03, 51:01:01:01-51:01:39, 51:01:41-51:24:05, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:103, 51:105-51:111, 51:113-51:146, 51:148-51:226, 52:01:01:01-52:01:28, 52:03-52:15, 52:17-52:19, 52:21-52:31:02, 52:33-52:71, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:29, 53:32-53:35, 53:37, 53:40-53:48N, 58:01:01:01-58:02:02, 58:04-58:16:02, 58:18-58:29, 58:31N-58:35, 58:37-58:43, 58:45:01-58:63, 58:65-58:91 |
|  **8**4 | 90 bp | 1070 bp | \*44:07-44:08, 44:57, 44:194 | \*13:58, 13:98, 15:183, 15:345, 18:80, 18:102, 27:52, 27:67, 35:84, 35:90, 35:150:01-35:150:02, 35:184, 35:201, 40:83, 40:170, 40:185, 40:209, 41:41, 46:10, 49:42, 50:07, 51:103, 51:119 |
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|  **9**4 | 120 bp 195 bp | 1070 bp | \*44:23N\*44:10, 44:15, 44:18, 44:140  | \*45:01:01-45:01:02, 45:05-45:07, 45:11-45:20, 49:20, 50:02, 82:01-82:03 |
| **10**4 | 125 bp 150 bp175 bp | **800 bp** | \*44:24, 44:181\*44:92\*44:237N |  |
| **11** | 150 bp | **800 bp** | \*44:02:01:01-44:05:04, 44:07, 44:10-44:39, 44:41:01-44:43:02, 44:45, 44:47-44:56N, 44:58N-44:59:02, 44:61N-44:74, 44:76-44:82, 44:84:01-44:89, 44:91-44:126:02, 44:128:01-44:128:02, 44:132-44:133, 44:135-44:155, 44:157-44:200, 44:202-44:209, 44:211-44:245, 44:247-44:253, 44:255-44:271 | \*37:06:01-37:06:02, 40:13, 40:19, 40:47, 40:96, 40:109-40:110, 40:117, 40:157, 40:188, 40:201, 40:292, 40:340, 41:46, 47:01:01:01-47:01:03, 47:03-47:10, 49:01:01:01-49:02, 49:04:01-49:14, 49:16-49:20, 49:22-49:25, 49:27-49:48, 51:112, 53:30, 53:39, 57:45, 57:51, 57:69, **C\*16:85** |
| **12** | 145 bp | 1070 bp | \*44:09, 44:46, 44:75, 44:90, 44:129, 44:131, 44:254 | \*07:133, 08:155, 15:46, 15:53, 15:106, 15:143, 15:212, 18:48, 18:107, 35:19, 35:47, 35:63, 35:154, 35:217, 35:274, 35:317, 39:69, 40:01:01-40:11:02, 40:14:01-40:16, 40:18, 40:20, 40:22N-40:40, 40:42-40:45, 40:48-40:75, 40:77-40:92, 40:94-40:95, 40:97-40:108, 40:111-40:116, 40:118N-40:136, 40:138-40:156, 40:158-40:184, 40:186:01-40:187, 40:189-40:200, 40:202-40:207, 40:210-40:264, 40:266-40:291N, 40:293-40:307, 40:309-40:339, 40:341-40:349, 40:351-40:360, 41:01:01-41:04, 41:06-41:25, 41:27-41:45N, 41:47-41:52, 45:01:01-45:15, 45:17-45:20, 47:02, 47:03w, 48:41, 50:01:01:01-50:02, 50:04-50:05, 50:07-50:20, 50:31-50:53 |
| **13**4 | 90 bp | 1070 bp | \*44:13, 44:67 |  |
| **14**4 | 95 bp | **800 bp** | \*44:12, 44:232, 44:263 | \*07:133w, 08:155, 15:143, 18:48, 18:107, 35:19, 35:47, 35:154, 35:217, 35:274, 39:69, 40:08, 40:25, 40:68, 40:106, 40:166w, 40:232, 40:313, 50:15, 51:112, 53:30, 53:39 |
| **15** | 170 bp | 1070 bp | \*44:14, 44:17, 44:51, 44:62, 44:123, 44:166, 44:213, 44:230 | \*07:04, 07:19, 07:25, 07:146, 08:01:01:01-08:01:22, 08:01:24-08:05, 08:07-08:12:03, 08:15-08:19N, 08:21-08:24, 08:26:01-08:27, 08:29-08:39, 08:41-08:48, 08:50-08:54:02, 08:56:01-08:69, 08:71-08:73, 08:75-08:78, 08:80-08:86N, 08:88-08:110, 08:112-08:142, 08:144-08:155, 08:157-08:170, 08:172-08:184, 15:51, 15:83, 15:179:01-15:179:02, 15:199, 15:218Q, 18:56, 18:113, 35:38, 35:87, 35:115, 35:169, 35:260, 37:09, 37:12, 37:35, 37:56, 38:30, 40:136, 40:231, 40:279, 41:01:01-41:09, 41:11-41:51, 42:01:01-42:02:01:02, 42:04-42:18, 42:21-42:24, 45:09, 45:14, 51:08:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 53:22, 55:20, 55:56, 56:13, 57:09, 57:24, 82:01-82:03 |
| **16** | 145 bp | **800 bp** | \*44:18, 44:25, 44:50:01-44:50:02, 44:95 | \*40:13, 40:19, 40:109, 40:117, 40:292, 40:340, 41:46, 49:01:01:01-49:01:10, 49:04:01-49:14, 49:16-49:25, 49:27-49:48, 51:112, 53:30, 53:39, 57:45, 57:51, 57:69 |
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| **17** | 195 bp | 1070 bp | \*44:02:01:01-44:04, 44:06-44:09, 44:11-44:13, 44:19N-44:24, 44:26-44:30, 44:32-44:36, 44:38-44:41:02, 44:44, 44:46-44:50:02, 44:52N-44:57, 44:59:01-44:61N, 44:63, 44:65-44:69:02, 44:71-44:74, 44:76, 44:79:01-44:81, 44:83-44:87, 44:89-44:90, 44:92-44:100, 44:102-44:106, 44:108N-44:116, 44:118-44:122, 44:124-44:131, 44:137-44:138Q, 44:141-44:143, 44:145-44:149N, 44:151-44:157, 44:159-44:165, 44:167-44:183, 44:185-44:189, 44:191-44:194, 44:196-44:212, 44:214-44:216, 44:218-44:222, 44:224-44:225, 44:227-44:229, 44:231-44:233, 44:235, 44:237N-44:245, 44:247-44:249, 44:252-44:255, 44:257-44:262, 44:265-44:267N, 44:269-44:271 | \*27:127, 51:42, 83:01 |
| **18**4 | 115 bp 155 bp 260 bp | 1070 bp | \*44:31, 44:169, 44:182, 40:132, 40:178\*44:74\*44:19N, 44:82, 44:96, 44:153  | \*57:07 |
| **19** | 150 bp 190 bp | 1070 bp | \*44:11\*44:30 |  |
| **20** | 130 bp | 1070 bp | \*44:22, 44:105 | \*40:342, 49:24 |
| **21**4 | 100 bp 180 bp | **800 bp** | \*44:32\*44:16, 44:21, 44:64:01-44:64:02, 44:124, 44:150  | \*27:148\*07:28, **C\*02:97** |
| **22** | 205 bp290 bp | **800 bp** | \*44:177, 44:228\*44:26  | \*13:81, 35:183, 51:209\*35:138, 47:07 |
| **23**9 | 145 bp | **800 bp** | \*44:02:01:01-44:09, 44:10?-44:11?, 44:12-44:13, 44:14?, 44:16-44:17, 44:19N, 44:20?, 44:21, 44:22?, 44:23N, 44:24?-44:25?, 44:26, 44:28:01?-44:28:02?, 44:29, 44:30?, 44:32?-44:38?, 44:39, 44:40?-44:45?, 44:46, 44:47?-44:48?, 44:49, 44:50:01?, 44:50:02-44:53:01, 44:53:02?-44:55?, 44:56N-44:57, 44:58N?, 44:59:01, 44:59:02?-44:60?, 44:61N, 44:62?-44:64:01?, 44:64:02-44:66, 44:67?-44:76?, 44:77, 44:78?-44:80?, 44:81, 44:82?, 44:83, 44:84:01?-44:100?, 44:101, 44:102?-44:108N?, 44:109-44:110, 44:111?-44:112?, 44:113, 44:114?, 44:115, 44:116?, 44:117-44:118, 44:119?-44:126:01?, 44:126:02, 44:127?-44:128:01?, 44:128:02-44:130, 44:131?-44:136?, 44:137, 44:139?-44:149N?, 44:150-44:152, 44:153?-44:172?, 44:173, 44:174?-44:176?, 44:177, 44:178?-44:183?, 44:184, 44:185?-44:186?, 44:187, 44:188?-44:202?, 44:203, 44:204?-44:210?, 44:211, 44:212?-44:217N?, 44:218, 44:219?, 44:220, 44:221?-44:223?, 44:224-44:225, 44:226?-44:228?, 44:229-44:230, 44:231?-44:236?, 44:237N, 44:238?-44:239?, 44:240, 44:241?-44:242?, 44:243, 44:244?-44:245?, 44:247?-44:258?, 44:259, 44:260?-44:262?, 44:267N?, 44:269?-44:271? | \*15:247, 27:47, 51:42 |
| **24** | 225 bp | 1070 bp | \*44:02:01:02S |  |
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| **25**6**,**9 | 145 bp | 1070 bp | \*44:10?-44:12?, 44:14?, 44:15, 44:18?, 44:20?, 44:22?, 44:24?-44:25?, 44:27:01-44:27:02, 44:28:01?-44:30?, 44:31, 44:32?-44:34:01?, 44:35?-44:38?, 44:40?-44:45?, 44:47?-44:48?, 44:50:01?, 44:54?-44:55?, 44:58N?, 44:60?, 44:62?-44:64:01?, 44:67?-44:69:01?, 44:70?-44:76?, 44:78?-44:80?, 44:82?, 44:84:01?-44:100?, 44:102?-44:108N?, 44:111?-44:112?, 44:114?, 44:116?, 44:119?-44:126:01?, 44:127?-44:128:01?, 44:131?-44:136?, 44:138Q, 44:139?-44:149N?, 44:153?-44:172?, 44:174?-44:176?, 44:178?-44:183?, 44:185?-44:186?, 44:188?-44:192:01?, 44:193?-44:202?, 44:204?-44:210?, 44:212?-44:217N?, 44:219?, 44:221?-44:223?, 44:226?-44:228?, 44:231?-44:236?, 44:238?-44:239?, 44:241?-44:242?, 44:244?-44:245?, 44:247?-44:254?, 44:256?-44:259? | \*07:02:01:01-07:57, 07:59-07:298, 08:01:01:01-08:05, 08:07-08:184, 13:01:01:01-13:04, 13:06-13:23, 13:25-13:106, 14:01:01:01w-14:57w, 15:01:01:01-15:01:04, 15:01:06-15:19, 15:20w, 15:21, 15:23-15:40:02, 15:42-15:58, 15:60-15:99, 15:101, 15:103-15:129, 15:131-15:200, 15:202-15:227, 15:229-15:246N, 15:248-15:270, 15:272N-15:283, 15:285-15:304N, 15:306-15:429, 18:01:01:01-18:15, 18:17N-18:142, 27:01-27:05:30, 27:05:32-27:21, 27:23-27:46, 27:48-27:67, 27:69-27:164, 35:01:01:01w-35:01:01:03w, 35:01:02w-35:01:45w, 35:02:01:01w, 35:02:02w-35:03:01:01w, 35:03:02w-35:05:01:01w, 35:05:02w-35:08:01:01w, 35:08:02w-35:08:08w, 35:09:01w-35:12:03w, 35:13w-35:30w, 35:31, 35:32:01w-35:42:02w, 35:43:01, 35:44w-35:45w, 35:46, 35:47w-35:56w, 35:57, 35:58w-35:59:02w, 35:60, 35:61:01w-35:72w, 35:74w-35:78w, 35:79, 35:80w-35:86w, 35:87, 35:88w-35:131:01w, 35:132w-35:167w, 35:169w-35:184w, 35:185, 35:186w-35:229w, 35:231w-35:278w, 35:279, 35:280w-35:329w, 37:01:01:01-37:68, 38:01:01w-38:17w, 38:19w-38:68Qw, 39:01:01:01w-39:01:01:07w, 39:01:03:01w-39:20w, 39:22w-39:128w, 39:129-39:130, 40:01:01-40:16, 40:18-40:40, 40:42-40:361N, 41:01:01-41:52, 42:01:01-42:02:01:02, 42:04-42:24, 45:01:01-45:06, 45:07w, 45:08-45:21, 46:01:01-46:72, 47:01:01:01-47:10, 48:01:01:01-48:01:06, 48:02:01w-48:02:03w, 48:03:01-48:42, 49:01:01:01-49:14, 49:16-49:48, 50:01:01:01-50:02, 50:04-50:20, 50:31-50:36, 50:38-50:54, 51:01:01:01w-51:01:01:02w, 51:01:02w-51:01:54w, 51:01:56w-51:02:01:01w, 51:02:02w-51:06:02w, 51:07:01w-51:24:05w, 51:26w-51:41Nw, 51:43w-51:46w, 51:48w-51:50w, 51:52w-51:156w, 51:157, 51:158:01w-51:213w, 51:220, 52:01:01:01w-52:01:01:03w, 52:01:02:01w, 52:01:03w-52:01:28w, 52:02:01w-52:06:03w, 52:07, 52:08w-52:21:01w, 52:22w-52:63w, 53:01:01w-53:01:11w, 53:02w-53:05:01w, 53:06w-53:45w, 54:01:01-54:38, 55:01:01-55:01:02, 55:01:04-55:05, 55:07-55:86, 56:01:01:01-56:04, 56:05:01w-56:05:02w, 56:06-56:20:02, 56:21w, 56:22-56:54, 57:01:01:01-57:91, 58:01:01:01w-58:01:01:02w, 58:01:02w-58:01:20w, 58:01:22, 58:02:01w-58:02:02w, 58:04w-58:10Nw, 58:11, 58:12w-58:19w, 58:20, 58:21w-58:29w, 58:31Nw-58:83w, 59:01:01:01-59:10N, 67:01:01w-67:07w, 78:01:01:01w, 78:01:02w-78:09w, 81:01-81:02, 81:03w, 81:04N-81:08, 82:01-82:02:02, 82:03?, 83:01 |
| **26**4 | 100 bp 145 bp 225 bp | **800 bp** | \*44:69:01-44:69:02 \*44:33, 44:81\*44:85  | **\***38:51, **A\*24:370N**\*51:226, **A\*24:137,** **A\*32:96** |
| **27** | 160 bp 255 bp | **800 bp** | \*44:02:10, 44:34:01 \*44:15, 44:18, 44:20, 44:47, 44:100, 44:197  | \*15:32:02, 40:01:11, 40:58, 49:03, 52:01:02:01-52:01:02:03, 52:01:04, 52:01:09, 52:02:01, 52:03, 52:06:01-52:06:02, 52:09, 52:10:03, 52:21, 52:31:02\*45:01:01-45:03, 45:05-45:07, 45:09, 45:11-45:20, 49:20, 50:02, 51:23, 51:108, 52:15 |
| **28** | 130 bp 165 bp | 1070 bp | \*44:68\*44:35 |  |
| **29**4**,**6 | 90 bp 255 bp | **800 bp** | \*44:117, 44:251 \*44:15, 44:55, 44:103, 44:188, 44:212  | **\***14:10, 35:59:01, 35:242, 37:19:01, 38:20, 39:42, 39:106, **C\*15:05:08, C\*15:140, C\*17:01:10**\*13:23, 13:55, 18:09, 27:01, 27:142, 37:10, 40:47, 40:96, 40:157, 40:201, 49:02 |
| **30** | 195 bp | **800 bp** | \*44:10, 44:15, 44:18, 44:140 | \*45:01:01-45:01:02, 45:05-45:07, 45:11-45:20, 49:20, 50:02, 82:01-82:03 |
| **31**4 | 110 bp 195 bp 230 bp 260 bp | 1070 bp | \*44:94\*44:17, 44:43:01-44:43:02, 44:144, 44:230, 44:256 \*44:98\*44:99  | **\***15:14, 15:91, 15:131, 15:161, 18:56, 35:45, 35:71, 45:09, 46:17, 53:22, 58:07, **C\*02:82, C\*06:165, C\*14:61****A\*02:432, A\*30:29, A\*31:61** |
| **32** | 155 bp | 1070 bp | \*44:02:01:01-44:02:47, 44:05:01-44:06, 44:08-44:09, 44:11-44:12, 44:14-44:25, 44:27:01-44:27:02, 44:33-44:34:02, 44:41:01-44:42, 44:44, 44:48-44:49, 44:51-44:53:02, 44:55, 44:58N-44:59:02, 44:62-44:63, 44:66-44:68, 44:70-44:75, 44:78, 44:80, 44:83-44:84:02, 44:86-44:91, 44:93, 44:95, 44:97, 44:99-44:102, 44:104, 44:106, 44:112-44:113, 44:116-44:119, 44:121, 44:123, 44:126:01-44:127, 44:131-44:134, 44:136-44:140, 44:142, 44:145, 44:148-44:149N, 44:151-44:152, 44:158, 44:162, 44:166, 44:168-44:173, 44:176-44:177, 44:179, 44:185, 44:187, 44:190-44:191, 44:195N-44:196, 44:200-44:201, 44:206, 44:208, 44:211-44:214, 44:216-44:221, 44:225-44:226, 44:229-44:230, 44:235-44:236, 44:238, 44:240-44:244, 44:249, 44:253-44:255, 44:257, 44:260-44:265, 44:267N, 44:269-44:270 | \*07:04, 07:19, 07:25, 07:146, 08:01:01:01-08:05, 08:07-08:12:03, 08:14-08:19N, 08:21-08:24, 08:26:01-08:39, 08:41-08:42, 08:44-08:54:02, 08:56:01-08:69, 08:71-08:78, 08:80-08:142, 08:144-08:155, 08:157-08:170, 08:172-08:184, 13:46, 15:51, 15:83, 15:179:01-15:179:02, 15:199, 15:218Q, 18:56, 18:113, 27:47, 27:127, 35:38, 35:87, 35:115, 35:169, 35:260, 37:01:01-37:01:11, 37:03N-37:06:02, 37:08-37:38, 37:41-37:65, 37:67-37:68, 38:30, 40:136, 40:231, 40:279, 41:01:01-41:52, 42:01:01-42:02:01:02, 42:04-42:18, 42:20-42:24, 45:01:01-45:20, 51:08:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 53:22, 55:20, 55:56, 56:13, 57:09, 57:24, 82:01-82:03, 83:01 |
|  |  |  |  |  |
| **33** | 165 bp195 bp | **800 bp** | \*44:81\*44:16, 44:37:01-44:37:02, 44:64:01-44:64:02, 44:80, 44:91, 44:132, 44:150, 44:190, 44:268 | \*07:28, 08:87, 15:77, 15:233, 52:26, 57:04:01-57:04:02, **A\*23:31, A\*24:106, C\*01:115, C\*02:97, C\*07:231, C\*14:79, C\*16:10** |
| **34** | 160 bp | **800 bp** | \*44:15, 44:18, 44:140, 44:226 | \*45:01:01-45:01:02, 45:04-45:08, 45:10-45:20, 55:56, 56:13, 82:01-82:03 |
| **35**4 | 85 bp 185 bp | **800 bp** | \*44:63\*44:04, 44:56N, 44:132, 44:137, 44:163, 44:190, 44:268 | \*08:87, **C\*01:115, C\*07:231, C\*14:79, C\*16:10** |
| **36**5 | 145 bp 235 bp | **800 bp** | \*44:40, 44:44, 44:130, 44:156, 44:210\*44:142  | \*07:149, 08:02, 08:117, 13:97, 15:115, 27:01, 27:142, 38:02:01-38:02:06, 38:03-38:04, 38:08, 38:15, 38:18, 38:23, 38:29, 38:35, 38:43-38:50, 38:62, 38:64, 56:07, 59:08 |
| **37**6 | 205 bp | 1070 bp | \*44:10, 44:14, 44:17, 44:31, 44:43:01-44:43:02, 44:45, 44:51, 44:62, 44:77, 44:82, 44:107, 44:123, 44:135, 44:184, 44:213, 44:230 | \*07:20, 07:140, 07:153, 15:14, 15:91, 15:131, 15:161, 18:56, 35:45, 35:71, 35:169, 35:309, 40:132, 40:178, 45:09, 45:14, 46:17, 51:23, 51:108, 52:15, 53:22, 57:07, 58:07, 82:01-82:03 |
| **38** | 225 bp | **800 bp** | \*44:41:01-44:41:02, 44:106, 44:158, 44:166, 44:213, 44:230, 44:236 | \*07:04, 07:19, 07:25, 07:146, 08:01:01:01-08:05, 08:07-08:08N, 08:10-08:12:03, 08:14-08:19N, 08:21-08:24, 08:26:01-08:26:03, 08:28-08:39, 08:41-08:48, 08:50-08:54:02, 08:56:01-08:59:02, 08:61-08:69, 08:71-08:75, 08:77-08:78, 08:80-08:83, 08:85-08:103, 08:105-08:128, 08:130-08:142, 08:144-08:155, 08:157-08:170, 08:172-08:180, 08:182-08:184, 15:51, 15:179:01-15:179:02, 15:199, 15:218Q, 18:56, 18:113, 27:47, 35:87, 37:09, 37:44, 37:51, 38:30, 40:136, 40:231, 40:279, 41:02:01-41:04, 41:08, 41:10-41:11, 41:13, 41:15, 41:18-41:19, 41:23-41:24, 41:27, 41:31, 41:36, 41:38-41:43, 41:45N-41:47, 41:49, 41:51-41:52, 42:01:01-42:02:01:02, 42:05:01-42:12, 42:14-42:18, 42:20-42:24, 82:01-82:03, **C\*05:62, C\*05:146, C\*07:68, C\*07:140, C\*07:151, C\*07:199:01-07:199:02, C\*07:364, C\*08:142** |
| **39**4**,**7 | 75 bp | **800 bp** | \*44:16, 44:42, 44:91, 44:132, 44:166, 44:190 | \*07:04, 07:19, 07:25, 07:146, 08:01:01:01-08:01:26, 08:01:28-08:05, 08:07-08:12:03, 08:14-08:19N, 08:21-08:24, 08:26:01-08:39, 08:41-08:42, 08:44-08:54:02, 08:56:01-08:69, 08:71-08:78, 08:80-08:85, 08:87-08:134, 08:136-08:142, 08:144-08:151, 08:153-08:155, 08:157-08:170, 08:172-08:184, 13:46, 15:51, 15:83, 15:179:01-15:179:02, 15:199, 15:218Q, 18:113, 35:38, 35:87, 35:115, 35:260, 37:01:01-37:01:11, 37:03N-37:06:02, 37:08-37:31, 37:33N-37:38, 37:41-37:52, 37:54-37:65, 37:67-37:68, 38:30, 40:136, 40:231, 40:279, 41:01:01-41:52, 42:01:01-42:02:01:02, 42:04-42:18, 42:20-42:24, 45:04, 45:08, 45:10, 51:08:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 55:20, 55:56, 56:13, 57:09, 57:24, **C\*05:62, C\*05:146, C\*07:04:01:01-C\*07:04:11, C\*07:11-07:12, C\*07:45, C\*07:63, C\*07:68, C\*07:101, C\*07:139-C\*07:140, C\*07:142, C\*07:151, C\*07:181, C\*07:199:01-07:199:02, C\*07:272, C\*07:302, C\*07:323-07:324, C\*07:328-07:329N, C\*07:336, C\*07:338, C\*07:354-07:355, C\*07:357, C\*07:361, C\*07:364-07:365, C\*07:378, C\*07:394-07:395, C\*07:403, C\*07:406, C\*07:420, C\*07:426, C\*07:428, C\*07:459, C\*07:466-07:467, C\*07:480, C\*07:487, C\*07:501, C\*07:534-07:535, C\*07:562-07:563, C\*07:569, C\*07:585-07:586, C\*08:142** |
| **40** | 235 bp 260 bp | 1070 bp | \*44:10, 44:15, 44:18, 44:48, 44:256\*44:31, 44:41:01-44:41:02, 44:54, 44:65, 44:106, 44:135, 44:158, 44:184, 44:213, 44:230, 44:236  | \*35:45, 35:71, 35:169, 35:309, 45:01:01-45:03, 45:05-45:07, 45:09, 45:11-45:20, 49:20, 50:02, 53:22, 58:07, 82:01-82:03, **C\*02:82, C\*05:102, C\*06:165, C\*08:93, C\*14:61, C\*15:25****\***07:20, 07:140, 07:153, 15:14, 15:91, 15:131, 15:161, 18:56, 27:47, 27:50:01-27:50:02, 40:132, 40:178, 46:17, 58:07, 82:01-82:03, **C\*02:82, C\*05:102, C\*06:165, C\*08:93, C\*14:61** |
|  |  |  |  |  |
| **41** | 255 bp | 1070 bp | \*44:49, 44:156 | \*08:02, 08:117, 13:93 |
| **42**8 | 130 bp 165 bp | **800 bp** | \*44:90, 44:97 \*44:14, 44:62, 44:166, 44:213  | \*40:166, 45:06, **C\*07:69, C\*08:68**\*08:01:01:01-08:01:22, 08:01:24-08:05, 08:08N-08:12:03, 08:15-08:19N, 08:21-08:24, 08:26:01-08:27, 08:29-08:36, 08:38-08:39, 08:41-08:48, 08:50-08:54:02, 08:56:01-08:69, 08:71-08:73, 08:75-08:76, 08:78, 08:80-08:86N, 08:88, 08:90-08:106, 08:109-08:110, 08:112-08:142, 08:144-08:155, 08:157-08:163, 08:165-08:170, 08:172-08:184, 15:83, 35:87, 37:12, 38:30, 40:136, 40:231, 40:279, 41:01:01-41:03:02, 41:05-41:09, 41:11-41:17, 41:19-41:20, 41:22-41:48, 41:50, 42:01:01-42:02:01:02, 42:04-42:08, 42:10-42:15, 42:17-42:18, 42:21-42:24, 45:14, 51:08:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 55:20, 55:56, 56:13, 57:09, 82:01-82:03 |
| **43**4 | 110 bp 165 bp | **800 bp** | \*44:52N, 44:115\*44:29, 44:89 |  |
| **44**4 | 85 bp 160 bp | **800 bp** | \*44:53:01-44:53:02, 44:182, 44:192:01-44:192:02\*44:73, 44:76, 44:79:01-44:79:02, 44:146, 44:150  | \*07:28, 08:87, **C\*01:115, C\*02:97, C\*07:231, C\*14:79, C\*16:10**\*07:28, 15:77, 15:233, 52:26, **C\*01:115, C\*02:97, C\*14:79** |
| **45**6 | 220 bp 250 bp285 bp | **800 bp** | \*44:36\*44:54, 44:86, 44:106, 44:135, 44:158, 44:184, 44:213 \*44:173 | \*07:20, 07:140, 07:153, 52:56, 53:27 |
| **46** | 175 bp450 bp | 1070 bp | \*44:66, 44:267N \*44:56N | \*51:11N\*40:337N |
| **47**4 | 65 bp 115 bp140 bp195 bp | 1070 bp | \*44:93, 44:139\*44:72, 44:204\*44:191\*44:58N |  |
| **48**4 | 105 bp 140 bp 175 bp260 bp595 bp | 1070 bp | \*44:61N\*44:59:01-44:59:02, 44:136, 44:191\*44:237N\*44:78, 44:120, 44:195N\*44:59:01-44:59:02, 44:136  | \*35:223\*35:204, **C\*03:147** |
|  |  |  |  |  |
| **49**4 | 85 bp | **800 bp** | \*44:108N, 44:267N | \*18:23N, 51:11N |
| **50**4 | 95 bp160 bp195 bp 285 bp | 1070 bp | \*44:111, 44:200\*44:171N\*44:137, 44:227\*44:148  | \*58:76, **C\*03:251, C\*03:314, C\*05:10, C\*05:148, C\*08:44, C\*08:61, C\*08:82, C\*08:126, C\*15:130** |
| **51**4 | 110 bp200 bp240 bp | 1070 bp | \*44:115\*44:217N\*44:259 |  |
| **52**6 | 130 bp285 bp405 bp | 1070 bp | \*44:143, 44:261\*44:173\*44:118  | \*39:46 |
| **53** | 210 bp240 bp | 1070 bp | \*44:122\*44:259 |  |
| **54** | 175 bp270 bp | 1070 bp | \*44:253\*44:126:01-44:126:02, 44:159, 44:195N  | **C\*03:337**\*15:394, 35:247, 58:45:01-58:45:02, **C\*03:96, C\*15:52** |
| **557** | 255 bp | 1070 bp | \*44:110, 44:138Q, 44:149N, 44:211 |  |
| **56**4 | 110 bp250 bp280 bp | 1070 bp | \*44:198N \*44:160Q\*44:104, 44:148  | **C\*03:265N****\***35:333Q, 37:16Q, **C\*15:96Q**\*58:76, **C\*03:251, C\*03:314, C\*05:10, C\*05:148, C\*08:44, C\*08:61, C\*08:82, C\*08:126, C\*15:130** |
|  |  |  |  |  |
| **57**6 | 185 bp | 1070 bp | \*44:60, 44:83-44:84:01, 44:194, 44:205:01-44:205:02, 44:225, 44:269 | \*07:149, 13:01:01:01-13:04, 13:06-13:08, 13:10-13:12:01, 13:13:01-13:23, 13:25-13:29, 13:31-13:38, 13:40-13:66, 13:68-13:100, 13:102-13:103N, 15:36, 15:89, 15:256, 15:339, 18:09, 37:10, 51:54, 51:78:01-51:78:02, 52:20, 53:09, 53:11-53:13, 53:31, 53:36, 53:38 |
| **58** | 210 bp245 bp | 1070 bp | \*44:87-44:88, 44:223\*44:271 |  |
| **59** | 185 bp | 1070 bp | \*44:84:02, 44:156 | \*08:02, 08:117, 15:115, 38:02:01-38:02:06, 38:03-38:04, 38:08, 38:15, 38:18, 38:23, 38:29, 38:35, 38:43-38:50, 38:62, 38:64, 56:07, 59:08 |
| **60**4 | 100 bp | 1070 bp | \*44:187 |  |
| **61** | 210 bp255 bp | 1070 bp | \*44:130, 44:156, 44:221, 44:224, 44:258 \*44:15, 44:55, 44:103, 44:188, 44:212  | \*07:149, 08:02, 08:117, 15:115, 18:09, 37:10, 38:02:01-38:02:06, 38:03-38:04, 38:08, 38:15, 38:18, 38:23, 38:29, 38:35, 38:43-38:45, 38:47-38:50, 38:62, 38:64\*13:23, 13:55, 18:09, 27:01, 27:142, 37:10, 40:47, 40:96, 40:157, 40:201, 49:02 |
| **62**4 | 115 bp175 bp300 bp | 1070 bp | \*44:38 \*44:253\*44:71  | \*13:80, 35:326**C\*03:337****C\*15:141** |
| **63** | 210 bp | 1070 bp | \*44:03:01:01-44:03:01:10, 44:03:03-44:03:12, 44:03:14-44:03:18, 44:03:20-44:03:25, 44:03:32-44:03:39, 44:13, 44:26, 44:29-44:30, 44:32, 44:36-44:37:01, 44:38-44:40, 44:43:01, 44:45-44:46, 44:50:01-44:50:02, 44:57, 44:60-44:61N, 44:64:02, 44:69:01, 44:77, 44:79:01-44:79:02, 44:81-44:82, 44:85, 44:92, 44:94, 44:96, 44:98, 44:103, 44:105, 44:107-44:111, 44:114-44:115, 44:120, 44:122, 44:125, 44:128:02-44:130, 44:141, 44:144, 44:147, 44:154-44:157, 44:159-44:161, 44:163-44:165, 44:167, 44:174, 44:178, 44:180, 44:182-44:183, 44:186, 44:188-44:189, 44:192:01, 44:193, 44:198N, 44:202-44:203, 44:205:01, 44:207, 44:210, 44:215, 44:222-44:224, 44:228, 44:231-44:234, 44:237N, 44:239, 44:245, 44:250-44:252, 44:258-44:259, 44:271 | \*13:21, 14:10, 15:02:05, 15:25:02, 15:80, 18:22, 18:69, 27:19, 27:30, 35:01:04, 35:12:01, 35:12:03-35:12:04, 35:16-35:17:02, 35:30, 35:39, 35:59:01, 35:113, 35:125, 35:149, 35:201, 35:233, 35:242, 35:266, 35:318, 38:20, 39:42, 39:106, 40:99, 40:160:01, 51:42, 51:56:01, 53:17:01, 56:12, 58:01:20, 58:59:02, **C\*03:03:04, C\*03:04:02, C\*03:04:06, C\*03:04:18, C\*03:04:31, C\*03:04:33, C\*03:04:46, C\*03:07:02, C\*03:38:01, C\*03:40:04, C\*03:125, C\*03:143, C\*03:263:01, C\*03:323N, C\*03:346, C\*03:362, C\*07:43:02, C\*07:184, C\*15:05:08, C\*15:140, C\*17:01:10** |
| **64**10 |  |  | **Negative Control** |  |

1Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-B\*44 SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an 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.

2The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

3For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

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

5Primer mix 36 has a tendency giving rise to primer oligomer formation.

6Primer mixes 25, 29, 37, 45, 52, 55 and 57 may have tendencies of unspecific amplifications, most pronounced in primer mix 45.

7Primer mix 39 may give rise to a lower yield of HLA-specific PCR product than the other B\*44 primer mixes.

8In primer mix 42 the positive control band may be weaker than for other HLA-B\*44 primer mixes.

9We assume that the fourth exon nucleotide sequences are conserved within allelic groups. Primer mix 25 amplifies the B\*44:27 and B\*44:31 alleles. The purpose of primer mixes 23 and 25 is to distinguish e.g. the B\*44:02,44:02 and B\*44:02,44:27 genotypes.

10Primer mix 64 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 430 base pairs.

‘?’, nucleotide sequence information not available for the primer matching sequence.

‘w’, might be weakly amplified.

**Primer Specification**









**1**The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

**2**The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the [www.ebi.ac.uk/imgt/hla](https://mail.allenex.se/owa/redir.aspx?C=c1adb548e5dd401393c1b651e5c96b4e&URL=http%3a%2f%2fwww.ebi.ac.uk%2fimgt%2fhla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

**3**The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the [www.ebi.ac.uk/imgt/hla](https://mail.allenex.se/owa/redir.aspx?C=c1adb548e5dd401393c1b651e5c96b4e&URL=http%3a%2f%2fwww.ebi.ac.uk%2fimgt%2fhla) web site. The sequence of the 3 terminal nucleotides of the primer is given.







**1**The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

**2**The specificity of each primer solution in the kit has been tested against 48 well characterized cell line

DNAs and where applicable, additional cell line DNAs.

**3**Primer mix 39 amplifies C\*07:04 alleles in the CH1007 and TUBO cell lines. Primer mix 63 amplifies C\*03:04 in the GU373 cell line.

 No DNAs carrying the alleles to be amplified by primer solutions 10, 18, 19, 21, 22, 24, 26, 28, 29, 33, 43 to 56, 58, 60 and 62 were available.

The specificities of the primers in primer solutions 10, 18, 21, 26, 29, 33, 44 to 46, 50, 55 and 56 were tested by separately adding one, two or three additional 5’-primers, respectively one, two or three additional 3’-primers.

In primer solutions 19, 22, 28, 43, 47, 48, 54, 60 and 62 it was only possible to test the 5’-primers, the 3’-primers were not possible to test.

In primer solutions 49, 51 to 53 and 58 it was only possible to test the 3’-primers, the 5’-primers were not possible to test. In primer solution 24 neither the 5’-primer nor the 3’-primer was possible to test.

In primer solutions 1, 3, 5, 6, 11, 18, 21, 26, 31, 33, 34, 45, 46 and 55 one, two or three of the 5’-primers were not possible to test. In primer solutions 1, 2, 7, 10, 16, 17, 35, 36, 44, 46, 50 and 56 one or more of the 3’-primers were not possible to test.

Additional primers in primer solutions 6 to 8, 27, 31, 35, 36, 42 and 61 were tested by separately adding one 5’-primer and/or one 3’-primer.

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