

Heidelberg University Hospital
Institute of Immunology
Transplantation Immunology
Im Neuenheimer Feld 305
69120 Heidelberg – Germany
 Phone: +49 6221 564013
 Fax: +49 6221 564200
 www.ctstransplant.org

Manual No.	02
Revision	April 11, 2024
Product No.	102
Lot No.	B16-3



CTS Collaborative Transplant Study

WORKING INSTRUCTION

HLA-B* CTS-PCR-SSP TRAY KIT

LOCUS- AND LOT-SPECIFIC MANUAL

To be applied to the following product:

Product No.	Description
102	HLA-B CTS-PCR-SSP TRAY KIT   0197

1. Main differences

- Between Lot B16-3 (the current lot) and Lot B16-2:**
 The kit was updated to cover new alleles included in the IMGT/HLA Sequence Database of January 2024. Deleted and renamed alleles were taken into consideration.

2. Introduction

- Intended use: This kit reveals a low/intermediate resolution typing of HLA-B using the PCR-SSP method.
- Allele coverage: IMGT/HLA Sequence Database Release 3.55.0, January 2024, except:
- B*08:01:32/08:12:03/08:26:01-08:26:03/08:50/08:94/08:112/08:170/08:181/08:232/08:263/08:272/08:297/08:299, B*13:22:01-13:22:02/13:58/13:86/13:97, B*14:01:12/14:02:03/14:02:06/14:08:01-14:08:02/14:21:01/14:42:01/14:53/14:55, B*15:162/15:253/15:396/15:553, B*27:05:23/27:75/27:140/27:189/27:239/27:250, B*37:01:12/37:05/37:22:01-37:22:03/37:29/37:95, B*38:73, B*39:01:11/39:06:05/39:24:02/39:30/39:34/39:36/39:80/39:82/39:102/39:107/39:128/39:136/39:156, B*44:02:13/44:03:37/44:03:51/44:83/44:134/44:201/44:445, B*51:45/51:81/51:148/51:220, B*53:38/53:44, B*55:58/55:121, B*57:82, B*58:27, B*59:08
 The alleles listed above are considered to be rare.
- This manual is only valid for **Lot No. B16-3**.
- This manual should be used together with the Main Manual (General Information) which is the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A).

Content

1.	Main differences	1
2.	Introduction.....	1
3.	Content.....	2
4.	Kit Composition	3
5.	Materials, Reagents and Equipment not supplied	3
6.	Sample Requirements, PCR and Gel Electrophoresis	3
7.	Result Evaluation.....	3
8.	Interpretation Hints.....	3
9.	Special notes	3
10.	Troubleshooting	4
11.	Precaution	4
12.	Contact	4
13.	Appendix	5
14.	Certificate of Analysis.....	43
Table 1:	Allele specificities and sizes of the PCR products of each HLA-B* CTS-PCR-SSP primer mix (Lot-No B16-3) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024	5
Table 2:	Amplification patterns for all HLA-B* alleles detected by the HLA-B* CTS-PCR-SSP reagents (Lot-No B16-3) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024	24

3. Kit Composition

- Number of PCR primer mixes per test: 48 HLA-specific mixes
- Number of tests per tray: 2
- Number of trays per kit: 10
- The primer mixes are aliquoted and dried in PCR-trays.
- PCR buffer: 3.0 ml of Mastermix SSP (without Taq polymerase)

For storage condition, please refer to Section 1 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

4. Materials, Reagents and Equipment not supplied

Please refer to Section 2 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

5. Sample Requirements, PCR and Gel Electrophoresis

Please refer to Section 3 to 6 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

6. Result Evaluation

- Check the approximate size of the PCR product against the Primer Mix Specificity Table (Appendix / Table 1) to confirm the correct product size.
- Use the Amplification Pattern Table (Appendix / Table 2 and 3) to make the allele assignments or use the SCORE Software for detailed result interpretation.

7. Interpretation Hints

- Weak or false positive reactions can occur if you use a different Taq polymerase. In addition, the quality and quantity of DNA is a crucial factor that can affect the mix reactivities. Under suboptimal test conditions, some mixes could give rise to false positive reactions (if there are any potentially false positive reactions when using this specific lot, they are indicated in Section 9).
- Alleles that are known to amplify weakly are listed with "w" (= weak) in the tables (Appendix).
- Please refer to Section 7 and 8 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

8. Special notes

- The following mixes will give **short** allele-specific PCR products (<200 bp): **mixes 5, 9, 20, 43, and 47**. These PCR products might be difficult to be distinguished from the 89 bp amplification control (internal positive control) PCR product. In general, the allele-specific product will give a much stronger signal than that of the amplification control and will not migrate as far into the gel as the amplification control band. If you are not sure whether the (strong) signal represents an allele-specific product or just the amplification control, you might let the gel run for an additional 15 minutes at a lower voltage. By this way, the allele-specific band can be separated from the amplification control band and you will be able to clearly see a double signal at this position: a strong allele-specific band and - compared to that - a weaker shorter amplification control band. Since three of these mixes correspond to quite frequent alleles (B*18 and B*35 = mix 5; B*27 = mix 9; B*15(62) = mix 43), it is recommended to start your evaluation by checking these four reactions carefully first!
Some HLA-B* mixes will amplify two or even three fragments of different sizes (e. g. mixes 9, 15, 19, 25 and 35). Mixes with 2 fragments of almost the same size are not mentioned here.
- **Mix 9**
The most common B*27 alleles (B* 27:02, *27:04 and *27:05) will generate two fragments: a **short** fragment (155 bp) + a **long** fragment (525 bp). In this case the long fragment can be weak.

- **HLA-B*07**
 - The common HLA-B*07 alleles react positively with mix 1 and mix 28. Some HLA-B*07 alleles may cause additional weakly positive reactions with mix 24, especially if high amounts of Taq polymerase or high DNA-concentrations are used.
- **HLA-B*13**
 - **B*13:01** reacts positively with **mix 3**, whereas **B*13:02** is amplified by **mix 3 and mix 34**.
 - The rare alleles **B*13:03 and B*13:04** can only be detected by **mix 34**.
 - **Mix 34** may show **different PCR products for B*13**, for example:
 - Amplification of **B*13:04** results in **two fragments** (430 bp and 490 bp).
 - Amplification of **B*13:02:01/03/08/09/14-16/18/19** shows only **the smaller fragment** (430 bp).
 - Amplification of **B*13:10** shows only **the larger fragment** (490 bp).
- Potentially false positive reactions: Mixes **31** and **37**.

9. Troubleshooting

Please refer to Section 8 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

10. Precaution

Please refer to Material Safety Data Sheet for the CTS-PCR-SSP TRAY and MINITRAY KITS (Manual No. 100B) supplied along with this product.

11. Contact

If you have any particular questions concerning this kit, which are not answered in this or the Main Manual, please do not hesitate to contact us at:

Phone: +49 6221 564013

Fax: +49 6221 564200

E-mail: dna.labor@med.uni-heidelberg.de

12. Appendix

Table 1: Allele specificities and sizes of the PCR products of each **HLA-B*** CTS-PCR-SSP primer mix (**Lot-No B16-3**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Position	Position	Mix	Allele	Serology	Size
H1	H7	Mix 1	B*07:02:01:01-07:02:05/07:02:07-07:02:32/07:02:33w/07:02:34-07:02:42/07:02:43w/07:02:44-07:02:84/07:02:86-07:05:05/07:05:06w/07:05:07-07:06:02/07:06:03w/07:06:04-07:18:02/07:20-07:32/07:34-07:39/07:41-07:52/07:55-07:59/07:61-07:93/07:95-07:99/07:101-07:121/07:124-07:138/07:140-07:164/07:166-07:218/07:220-07:234/07:236-07:242/07:244-07:289/07:291-07:342/07:344-07:358/07:360Q-07:385/07:387/07:389-07:399/07:401-07:441/07:443-07:452/07:454-07:467Q/07:469N-07:470/07:471?/07:472N-07:484/07:486-07:492, B*08:79:01-08:79:02/08:156/08:187, B*15:297, B*18:35w/18:110w, B*35:66, B*38:63, B*40:25/40:106/40:166, B*42:05:01/42:05:02w, B*46:06/46:87, B*48:06, B*56:96, B*81:01:01:01-81:10, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02	B7, -, B703, B7/B42, Null, B81, Cw7	see below:
			B*07:02:01:01-07:02:05/07:02:07-07:02:32/07:02:33w/07:02:34-07:02:42/07:02:43w/07:02:44-07:02:84/07:02:86-07:05:05/07:05:06w/07:05:07-07:06:02/07:06:03w/07:06:04-07:12/07:14:01-07:18:02/07:20-07:32/07:34-07:39/07:41-07:52/07:55-07:59/07:61-07:93/07:95-07:99/07:101-07:121/07:124-07:138/07:140-07:164/07:166-07:218/07:220-07:234/07:236-07:242/07:244-07:289/07:291-07:342/07:344-07:358/07:360Q-07:385/07:387/07:389-07:399/07:401-07:441/07:443-07:452/07:454-07:467Q/07:469N-07:470/07:471?/07:472N-07:484/07:486-07:492, B*08:79:01-08:79:02/08:156/08:187, B*15:297, B*18:35w/18:110w, B*35:66, B*38:63, B*40:25/40:106/40:166, B*42:05:01/42:05:02w, B*48:06, B*56:96, B*81:01:01:01-81:10	B7, -, B703, B7/B42, Null, B81	630 bp
			B*07:13, B*46:06/46:87, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02	-, Cw7	615 bp
G1	G7	Mix 2	B*07:29/07:186/07:383, B*08:01:01:01-08:01:31/08:01:33-08:05/08:07-08:12:02/08:13-08:25/08:27-08:48/08:51-08:61/08:63-08:93/08:95-08:106/08:108-08:111/08:113-08:169/08:171-08:180/08:182-08:225/08:227-08:231/08:233-08:238/08:240-08:241/08:243-08:262/08:264-08:271/08:273-08:296/08:298/08:300Q-08:305/08:306?/08:307-08:312, B*13:93, B*15:142/15:180/15:429, B*38:84, B*39:12:01:01-39:12:01:02/39:178, B*40:328, B*44:49/44:156, B*49:25, B*51:68/51:176, B*52:77, C*02:14:01-02:14:02/02:107/02:164, C*06:02:37/06:106:01/06:127:02/06:264, C*07:01:07/07:04:03/07:14/07:27:02/07:31:02/07:43:02/07:184/07:199:02/07:257:02/07:257:04/07:294/07:463/07:526:01/07:681/07:758/07:850, C*12:16:01-12:16:02/12:217	-, B8, Null, B39(16), Cw7	see below:
			B*08:09/08:84, B*13:93, B*39:178, B*49:25, B*51:68/51:176, B*52:77, 07:463/07:758	B8, -	545 bp
			B*07:29/07:186/07:383, B*08:01:01:01-08:01:31/08:01:33-08:05/08:07-08:08N/08:10-08:12:02/08:13-08:25/08:27-08:48/08:51-08:61/08:63-08:83/08:85-08:93/08:95-08:106/08:108-08:111/08:113-08:169/08:171-08:180/08:182-08:225/08:227-08:231/08:233-08:238/08:240-08:241/08:243-08:262/08:264-08:271/08:273-08:296/08:298/08:300Q-08:305/08:306?/08:307-08:312, B*15:142/15:180/15:429, B*38:84, B*39:12:01:01-39:12:01:02, B*40:328, B*44:49/44:156, C*02:14:01-02:14:02/02:107/02:164, C*06:02:37/06:106:01/06:127:02/06:264, C*07:01:07/07:04:03/07:14/07:27:02/07:31:02/07:43:02/07:184/07:199:02/07:257:02/07:257:04/07:294/07:526:01/07:681/07:850, C*12:16:01-12:16:02/12:217	-, B8, Null, B39(16), Cw7	560 bp
F1	F7	Mix 3	B*13:01:01:01-13:02:32/13:02:33?/13:02:34-13:02:39/13:02:40?/13:02:41/13:06-13:21/13:23/13:25-13:36/13:37w/13:38-13:39/13:41-13:44/13:47/13:49N-13:57/13:59-13:61/13:63N-13:85/13:87-13:96/13:98-13:127/13:129-13:142/13:143w/13:144/13:146-13:152/13:154-13:158/13:160-13:173/13:175-13:177/13:179-13:187, B*15:663	B13, -, Null	585 bp

Position	Position	Mix	Allele	Serology	Size
E1	E7	Mix 4	B*15:64:02, B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:01:25-18:01:53/18:01:54w/18:02:01-18:07:01/18:08-18:12:01/18:13-18:15/18:17N-18:25/18:27-18:28/18:30-18:36/18:37:02-18:40/18:42-18:47/18:49-18:54/18:56-18:60/18:62-18:81/18:83-18:96/18:98:01-18:98:02/18:99w/18:100-18:106Q/18:107w/18:108-18:121/18:123-18:164/18:166-18:167/18:169-18:177/18:179-18:188/18:190/18:192-18:234, B*35:01:57/35:20:02, B*44:03:12w, B*53:01:26, C*06:02:101?, C*12:301	-, B18, Null, B35	465 bp
D1	D7	Mix 5	B*07:65/07:134/07:400, B*08:32/08:133/08:180/08:239, B*15:202/15:239/15:308/15:376, B*18:01:01:01-18:03:01:03/18:04:01-18:08/18:10-18:15/18:17N-18:36/18:38-18:47/18:50-18:53/18:55-18:65/18:68-18:78/18:80-18:106Q/18:109-18:124/18:126-18:131:01:02/18:133-18:135:01:02/18:137-18:141/18:143-18:177/18:179-18:193/18:196-18:197/18:199-18:234, B*35:01:01:01-35:01:75/35:01:76?/35:02:01:01-35:03:02/35:03:04-35:08:01:13/35:08:03-35:08:04/35:08:06-35:18/35:20:01-35:24:02/35:28:01:01-35:43:01/35:43:03-35:45/35:48/35:50-35:55/35:57-35:62/35:64:01-35:72/35:74-35:153/35:155-35:197/35:199-35:202/35:204-35:206/35:208:01-35:209/35:211-35:216N/35:218-35:253/35:255-35:270/35:272-35:273/35:275-35:298/35:300-35:310/35:312-35:316/35:318-35:354/35:356-35:360/35:362-35:449/35:451-35:470/35:472-35:521/35:522?/35:523-35:524/35:525?/35:526-35:549/35:552-35:569/35:571-35:582/35:584-35:593/35:595-35:596, B*37:11/37:14/37:37/37:67, B*39:19:01-39:19:02/39:186, B*40:185/40:209/40:308/40:350/40:365, B*45:22, B*46:40:01-46:40:02, B*55:130, B*56:06/56:45, B*58:64, B*78:01:01:02-78:05/78:07-78:08, C*07:1011	-, B18, Null, B35, B35/22, B39(16), B78	135 bp
C1	C7	Mix 6	B*08:01:65/08:107, B*35:01:01:01-35:01:16/35:01:18-35:01:55/35:01:56w/35:01:57-35:01:66/35:01:68-35:02:05/35:02:06w/35:02:07-35:03:06/35:03:08-35:03:35/35:03:36?/35:04:01:01-35:04:02/35:05:01:01-35:08:16/35:09:01:01-35:09:04/35:11:01-35:11:04/35:12:04/35:14:01-35:15:02/35:17:01:01-35:19/35:21/35:23-35:25/35:27/35:29:01-35:30:01:02/35:32:01/35:33-35:38/35:40N-35:42:03/35:45-35:50/35:51:02-35:58/35:61:02-35:62/35:64:01-35:66/35:68:01-35:68:02/35:70-35:71/35:74-35:75/35:77-35:78/35:81/35:84/35:89-35:94/35:96-35:98/35:100-35:101:02/35:103-35:111/35:113-35:116/35:119-35:134N/35:136-35:148/35:150:01-35:163/35:165N-35:175/35:177-35:184/35:187-35:190/35:192-35:198/35:200/35:202w/35:203-35:206/35:209-35:211/35:213-35:214/35:216N-35:225/35:227-35:229/35:231-35:232/35:235-35:241/35:243-35:250/35:252-35:260/35:262-35:264/35:267-35:269/35:271-35:275/35:277-35:293/35:295/35:297-35:316/35:319-35:360/35:362-35:372/35:373w/35:374-35:381N/35:383-35:413/35:415-35:424/35:426-35:431/35:433-35:438/35:440-35:462/35:464-35:470/35:472-35:473/35:478-35:533/35:535-35:540/35:542N-35:546/35:548/35:550-35:559/35:560?/35:562-35:569/35:572-35:574N/35:575?/35:576-35:578/35:580-35:584/35:586-35:596, B*49:67, B*51:56:02/51:372, B*53:01:01:01-53:06/53:08:01-53:08:02/53:10-53:16/53:18-53:27/53:29-53:37/53:39/53:41-53:43:02/53:45-53:61/53:63-53:74, C*06:147	-, B35, Null, B53	400 bp

Position	Position	Mix	Allele	Serology	Size
B1	B7	Mix 7	<p>B*07:12/07:14:01w-07:14:02w/07:18:01/07:18:02w/07:77/07:137/07:162-07:163/07:193/07:235/07:248/07:359w, B*08:49/08:129w/08:255w, B*13:36, B*14:10w/14:102/14:127, B*15:02:01:01-15:02:04/15:02:05w/15:02:06-15:02:16/ 15:13:01-15:13:03/15:21:01:01-15:21:01:02/15:44/15:80w/15:88-15:89:02/15:112w/15:121/15:139/15:144/15:170/15:194/ 15:213-15:214/15:223/15:265/15:283/15:291/15:297/15:301-15:302N/15:308/15:319/15:325/15:328/15:330/15:341/ 15:345/15:357-15:358/15:374/15:378/15:394/15:399/15:404/15:418/15:420/15:425/15:437-15:438/15:454N/15:460w/ 15:491/15:495/15:505/15:537/15:557/15:567/15:569/15:574/15:592/15:596N/15:615/15:623/15:627/15:630/15:646/ 15:648/15:659/15:664/15:674, B*18:18:01:01-18:18:01:02/18:105/18:149w-18:150w/18:204, B*35:01:01:01-35:01:03/ 35:01:04w/35:01:05-35:01:72/35:01:73w/35:01:74-35:02:16/35:02:17w/35:02:18-35:03:19/35:03:20w/35:03:21-35:03:35/ 35:03:36?/35:04:01:01-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:04/35:11:01-35:11:04/35:12:01:01w- 35:12:01:04w/35:12:02/35:12:03w-35:12:04w/35:14:01-35:15:02/35:18-35:21/35:23w/35:24:01/35:24:02w/35:25-35:27/ 35:29:01-35:29:03/35:33-35:36/35:38/35:39w/35:40N-35:42:03/35:45-35:49:02/35:49:03w/35:50/35:52-35:57/35:59:01w/ 35:59:02/35:61:01w-35:61:02w/35:62/35:64:01-35:65Q/35:70-35:71/35:74/35:76-35:78/35:81-35:85/35:88/35:90-35:96/ 35:98/35:100-35:101:02/35:103-35:112:02/35:115-35:116/35:119/35:120w/35:121-35:124/35:126-35:134N/35:136-35:148/ 35:149w/35:150:01-35:150:02/35:152-35:175/35:177-35:184/35:187-35:198/35:200/35:201w/35:203-35:206/35:209- 35:220/35:222-35:225/35:227-35:231/35:233w/35:236-35:241/35:243-35:250/35:252-35:257/35:258w/35:259-35:264/ 35:266w/35:267-35:269/35:271-35:272/35:274-35:275/35:277-35:285/35:287/35:288w/35:289-35:291/35:293-35:316/ 35:319-35:360/35:362-35:366/35:369-35:372/35:374-35:388/35:390N-35:394/35:395w/35:396-35:415/35:417-35:424/ 35:425w/35:426/35:428Q-35:439:01:02/35:441-35:458/35:460Q-35:470/35:473-35:474/35:478-35:480/35:482-35:497/ 35:500-35:508N/35:510-35:518/35:520/35:522/35:524/35:526-35:533/35:536-35:540/35:542N-35:548/35:550-35:569/ 35:571w/35:573-35:575/35:576w/35:577-35:578/35:580-35:596, B*37:08/37:67, B*38:20:01w/38:20:02/38:111, B*39:09:01:01-39:09:01:06/39:09:03-39:09:06/39:42w/39:88/39:112/39:127/39:155/39:158/39:170-39:171/39:195w, B*40:68, B*42:13, B*44:06w/44:12w/44:232w/44:263/44:356w/44:365w, B*51:04:01/51:04:02w/51:42w/51:46w/ 51:56:01w/51:56:02-51:56:03/51:139/51:200/51:227w/51:281w/51:359w/51:396, B*53:01:01:01-53:13/53:15-53:16/53:18- 53:27/53:29-53:37/53:39-53:43:02/53:45-53:46/53:48N-53:66/53:68-53:71/53:72w/53:73-53:74, B*56:09/56:11/56:12w/ 56:60, B*83:01w, C*07:1059, C*15:27</p>	<p>B7, -, B75(15), B77(15), B70, B15, Null, B35, B35/22, B37, B39(16), B44(12), B51(5), B53, B56(22), B55(22)</p>	see below

Position	Position	Mix	Allele	Serology	Size
			B*07:12/07:14:01w-07:14:02w/07:18:01/07:18:02w/07:137/07:162/07:235/07:359w, B*08:129w/08:255w, B*13:36, B*14:10w/14:102/14:127, B*15:02:01:01-15:02:04/15:02:05w/15:02:06-15:02:16/15:13:01-15:13:03/15:21:01:01-15:21:01:02/15:44/15:80w/15:88-15:89:02/15:112w/15:121/15:139/15:144/15:170/15:194/15:213-15:214/15:223/15:265/15:283/15:291/15:297/15:301-15:302N/15:308/15:319/15:325/15:328/15:330/15:341/15:345/15:357-15:358/15:374/15:378/15:394/15:399/15:404/15:418/15:420/15:425/15:437-15:438/15:454N/15:460w/15:491/15:495/15:505/15:537/15:557/15:567/15:569/15:574/15:592/15:596N/15:615/15:623/15:627/15:630/15:646/15:648/15:659/15:664/15:674, B*18:105/18:149w-18:150w, B*35:01:01:01-35:01:03/35:01:04w/35:01:05-35:01:72/35:01:73w/35:01:74-35:02:16/35:02:17w/35:02:18-35:03:19/35:03:20w/35:03:21-35:03:35/35:03:36?/35:04:01:01-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:04/35:11:01-35:11:04/35:12:01:01w-35:12:01:04w/35:12:02/35:12:03w-35:12:04w/35:14:01-35:15:02/35:18-35:21/35:23w/35:24:01/35:24:02w/35:25-35:27/35:29:01-35:29:03/35:33-35:36/35:38/35:39w/35:40N-35:42:03/35:45-35:49:02/35:49:03w/35:50/35:52-35:57/35:59:01w/35:59:02/35:61:01w-35:61:02w/35:62/35:64:01-35:65Q/35:70-35:71/35:74/35:76-35:78/35:81-35:85/35:88/35:90-35:96/35:98/35:100-35:101:02/35:103-35:112:02/35:115-35:116/35:119/35:120w/35:121-35:124/35:126-35:134N/35:136-35:148/35:149w/35:150:01-35:150:02/35:152-35:175/35:177-35:184/35:187-35:198/35:200/35:201w/35:203-35:206/35:209-35:220/35:222-35:225/35:227-35:231/35:233w/35:236-35:241/35:243-35:250/35:252-35:257/35:258w/35:259-35:264/35:266w/35:267-35:269/35:271-35:272/35:274-35:275/35:277-35:285/35:287/35:288w/35:289-35:291/35:293-35:316/35:319-35:360/35:362-35:366/35:369-35:372/35:374-35:388/35:390N-35:394/35:395w/35:396-35:415/35:417-35:424/35:425w/35:426/35:428Q-35:432/35:434-35:439:01:02/35:441-35:458/35:460Q-35:470/35:473-35:474/35:478-35:480/35:482-35:497/35:500-35:508N/35:510-35:518/35:520/35:522/35:524/35:526-35:533/35:536-35:540/35:542N-35:548/35:550-35:569/35:571w/35:573-35:575/35:576w/35:577-35:578/35:580-35:596, B*38:20:01w/38:20:02, B*39:42w/39:195w, B*40:68, B*42:13, B*44:06w/44:12w/44:232w/44:263/44:356w/44:365w, B*51:04:01/51:04:02w/51:42w/51:46w/51:56:01w/51:56:02-51:56:03/51:139/51:227w/51:281w/51:359w/51:396, B*53:01:01:01-53:06/53:08:01-53:13/53:15-53:16/53:18-53:27/53:29-53:37/53:39-53:43:02/53:45-53:46/53:48N-53:64/53:66/53:68-53:71/53:72w/53:73-53:74, B*56:09/56:11/56:12w/56:60, B*83:01w, C*15:27	B7, -, B75(15), B77(15), B70, B15, Null, B35, B35/22, B44(12), B51(5), B53, B56(22), B55(22)	380 bp
			B*07:77/07:163/07:193/07:248, B*08:49, B*18:18:01:01-18:18:01:02/18:204, B*35:48/35:433, B*37:08/37:67, B*38:111, B*39:09:01:01-39:09:01:06/39:09:03-39:09:06/39:88/39:112/39:127/39:155/39:158/39:170-39:171, B*51:200, B*53:07/53:65, C*07:1059	-, B37, B39(16), B53	395 bp
A1	A7	Mix 8	B*15:13:01-15:13:03/15:418, B*27:30w, B*38:20:01w/38:20:02, B*44:06w/44:25w/44:50:01w/44:50:03/44:95w, B*49:61w, B*51:04:01/51:04:02w/51:42w/51:46w/51:56:01w/51:56:02-51:56:03/51:139/51:227w/51:281w/51:310/51:359w/51:396, B*52:88w, B*53:01:01:01-53:02/53:04-53:06/53:08:01-53:08:02/53:10/53:15-53:30/53:32-53:35/53:37/53:39-53:43:02/53:45-53:46/53:48N-53:54/53:56-53:61/53:62w/53:63-53:64/53:66/53:68-53:71/53:72w/53:73-53:74, B*57:05/57:131, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:46/58:04-58:05/58:09-58:13/58:17N/58:19/58:21-58:24/58:28:01-58:29/58:31N-58:37/58:39N-58:42/58:44-58:45:02/58:47-58:59:02/58:61-58:63/58:65-58:74/58:75w/58:76-58:92/58:93Nw/58:94N-58:103/58:105-58:113/58:114w/58:115-58:120/58:123-58:131:02/58:133N-58:136/58:138-58:145/58:147, C*15:71	B77(15), -, B27, B44(12), B51(5), B53, Null, B58(17)	330 bp
H2	H8	Mix 9	B*27:01-27:05:22/27:05:24-27:21:02/27:23-27:74/27:76-27:139/27:141-27:152/27:154-27:188/27:190-27:214/27:216-27:238/27:240-27:249/27:251-27:270, B*40:124:01-40:124:02/40:180/40:429, B*44:97, B*47:01:01:02-47:13, B*50:20	B27, -, B2708, Null, B47	see below

Position	Position	Mix	Allele	Serology	Size
			B*27:02:01:01-27:05:10/27:05:12-27:05:22/27:05:24-27:11/27:13:01-27:15/27:17/27:19:01:01-27:21:02/27:24-27:25/27:27-27:28/27:30/27:32-27:38/27:40-27:43/27:45-27:58/27:60-27:74/27:76/27:78-27:91/27:93-27:100/27:102-27:118/27:120-27:128/27:130/27:132-27:136/27:138-27:139/27:141-27:152/27:154-27:156/27:158-27:174/27:176N-27:180/27:182-27:188/27:190-27:203/27:205-27:214/27:216-27:238/27:240-27:241/27:243N-27:249/27:251-27:256/27:258-27:270, B*44:97	B27, -, B2708, Null	155 bp
			B*27:01-27:05:22/27:05:24-27:05:31/27:05:33-27:05:35/27:05:37-27:05:60/27:08-27:10/27:12:01:01-27:19:02/27:23/27:25-27:26/27:28-27:32/27:36-27:40/27:42/27:44-27:45/27:47-27:74/27:77/27:79-27:90:04/27:92-27:101/27:103-27:105/27:108-27:124/27:126/27:128-27:129/27:131-27:134/27:137/27:139/27:141-27:150/27:152/27:155-27:163/27:165/27:167/27:169-27:179/27:181-27:185Q/27:188/27:190-27:191/27:193/27:195-27:207/27:209-27:214/27:216-27:217/27:220-27:221/27:223N-27:226/27:228-27:232/27:234-27:238/27:240-27:249/27:252-27:261N/27:263N-27:268/27:270, B*40:124:01-40:124:02/40:180/40:429, B*47:01:01:02-47:13, B*50:20	B27, -, B2708, Null, B47	530 bp
G2	G8	Mix 10	B*07:27/07:236, B*08:126/08:131/08:139, B*18:54/18:195, B*37:01:01:01-37:01:11/37:01:13-37:04:02/37:06:01-37:09/37:12-37:13/37:15-37:21/37:23-37:28/37:30N-37:33N/37:35-37:36/37:38-37:66/37:68-37:94/37:96-37:104/37:105?/37:106-37:110, B*38:17, A*11:133, A*33:60, A*68:234	-, B37, Null	200 bp
F2	F8	Mix 11	B*13:46/13:51/13:79/13:140, B*14:93/14:118?, B*35:471, B*37:10/37:34, B*38:01:01:01-38:02:03/38:02:04w/38:02:05-38:02:09/38:02:10w/38:02:11-38:16/38:18-38:51/38:53-38:72/38:74-38:87/38:89-38:114/38:160-38:173Q, B*39:104, B*44:117/44:251, B*49:50, B*51:13:01-51:13:02/51:92:01-51:92:02/51:172, B*52:14:01-52:14:02/52:75, B*53:04/53:07/53:31/53:33, B*57:76/57:118, B*58:20/58:34, B*59:03, A*24:96/24:256	-, B37, B38(16), B16, Null, B53	see below
			B*13:46/13:51/13:79/13:140, B*14:118?, B*37:10, B*38:02:01:01-38:02:03/38:02:04w/38:02:05-38:02:09/38:02:10w/38:02:11-38:04/38:08/38:15/38:18/38:23/38:29/38:35/38:43-38:50/38:62/38:64/38:72/38:74-38:76/38:79/38:82/38:84-38:85/38:89/38:92/38:97-38:98/38:103N-38:105/38:112/38:160/38:162-38:165N/38:167/38:172-38:173Q, B*44:117/44:251, B*53:31	-, B37, B38(16), B16, Null	395 bp
			B*14:93, B*35:471, B*37:34, B*38:01:01:01-38:01:22/38:05-38:07/38:09-38:14/38:16/38:19-38:22/38:24-38:28/38:30-38:34N/38:36-38:42/38:51/38:53-38:61/38:63/38:65-38:71/38:77-38:78/38:80N-38:81/38:83N/38:86-38:87/38:90-38:91/38:93-38:96/38:99-38:102/38:106-38:111/38:113N-38:114/38:161/38:166/38:168-38:171, B*39:104, B*49:50, B*51:13:01-51:13:02/51:92:01-51:92:02/51:172, B*52:14:01-52:14:02/52:75, B*53:04/53:07/53:33, B*57:76/57:118, B*58:20/58:34, B*59:03, A*24:96/24:256	-, B38(16), B16, Null, B53	395 bp
E2	E8	Mix 12	B*07:45w/07:420w, B*08:55, B*15:48w/15:69/15:108w/15:136w/15:186/15:235/15:249w/15:265/15:449/15:494/15:667w, B*18:168, B*35:35/35:236w/35:259w/35:276/35:468/35:595, B*39:01:01:01-39:01:01:30/39:01:03:01-39:01:10/39:01:12-39:06:04/39:06:06-39:20/39:22-39:24:01:02/39:24:03-39:29/39:31:01:01-39:31:01:02/39:32w/39:35/39:37:01:01-39:42/39:44-39:46/39:47w/39:48-39:49/39:50w/39:51-39:73/39:74w/39:75-39:79/39:81/39:83:01-39:101/39:102w/39:103/39:105-39:106/39:108-39:111/39:113-39:127/39:129-39:135/39:137-39:155/39:157N-39:173/39:174w/39:175N-39:184/39:185?/39:186-39:202/39:203Q?/39:204-39:206, B*40:184/40:424/40:553, B*46:19w/46:93w, B*50:49, B*55:123, B*67:01:01-67:07, C*03:215w, C*07:137:01-07:137:02/07:868, C*14:63	-, B62(15), B71(70), B35, B3901, Low B39, B3902, B39(16), Null, B67	520 bp
D2	D8	Mix 13	B*07:45w/07:420w, B*38:26, B*55:123, B*67:01:01-67:01:03/67:03-67:07	-, B67	545 bp

Position	Position	Mix	Allele	Serology	Size
C2	C8	Mix 14	B*07:133, B*40:01:01-40:01:55/40:01:56w/40:01:57-40:04:03/40:06:01:01-40:11:02/40:13-40:16:01:02/40:18-40:20:01:02/40:22N-40:25/40:27:01-40:27:03/40:29-40:38/40:40/40:42-40:45/40:47-40:50:01:02/40:52-40:62/40:64:01:01-40:70:02/40:72:01-40:91/40:94-40:136/40:138-40:162/40:164-40:170/40:171w/40:172-40:173/40:175-40:176/40:177w/40:178-40:183/40:186:01-40:198/40:200-40:207/40:210-40:264/40:266-40:293/40:294w/40:295-40:307/40:309-40:314/40:315w/40:316-40:323:02/40:325-40:342/40:344-40:349/40:351-40:364/40:366-40:377/40:378w/40:379:01:01-40:423/40:425-40:429/40:431:01-40:457/40:459-40:495/40:497-40:522/40:524-40:552/40:554-40:555, B*41:19, B*44:16/44:21/44:31/44:64:01-44:64:02/44:124/44:150/44:347, B*45:10, B*47:01:01:02-47:07/47:09-47:13, B*48:41, B*49:07, B*50:31	-, B60(40), B61(40), Null, B40, B47, B44(12)	640 bp
B2	B8	Mix 15	B*07:27w/07:50w/07:183w/07:400/07:453, B*08:04:01w-08:04:02w/08:17/08:54:01-08:54:02/08:110w/08:285, B*13:21/13:71/13:108/13:166/13:174, B*15:07:01:01-15:07:03/15:33/15:45/15:55w/15:68/15:78:01:01-15:78:04/15:107/15:116/15:126/15:141/15:150/15:188/15:207/15:248/15:287/15:324/15:331/15:352/15:360/15:383/15:405/15:421/15:431/15:450/15:524/15:614:01:01-15:614:01:02/15:661/15:668/15:673, B*18:14w/18:21w-18:22w/18:40w/18:61w/18:189w/18:217w, B*35:72w/35:534/35:541, B*37:07/37:09/37:12/37:81, B*40:01:01-40:01:08/40:01:10-40:06:31/40:09-40:12:02/40:14:01-40:16:01:02/40:18-40:24/40:25w/40:27:01-40:27:03/40:29-40:40/40:42-40:60/40:62-40:67/40:69-40:74/40:76/40:78-40:86/40:88-40:94/40:96-40:105/40:107-40:120/40:122-40:157/40:159-40:161/40:163-40:165/40:167-40:183/40:185-40:195/40:197-40:219/40:221/40:223-40:231/40:233-40:236/40:238-40:299/40:301-40:312/40:313w/40:314-40:321/40:323:01-40:325/40:326w/40:327-40:362/40:364-40:367/40:370-40:421Q/40:423-40:428N/40:430-40:457/40:459-40:480/40:482-40:512/40:514N-40:516/40:518-40:519/40:521-40:552/40:554-40:555, B*41:01:01:01-41:45N/41:47-41:81, B*42:11, B*44:31/44:53:01-44:54/44:106/44:110/44:135/44:158/44:166/44:182/44:184/44:192:01-44:192:04/44:211/44:213/44:343/44:506, B*45:27, B*48:01:01:01-48:01:14/48:03:01:01-48:05/48:07-48:24/48:27-48:30/48:32-48:59N, B*49:40, B*50:60, B*52:54, C*07:937, C*12:301w, C*16:85	-, B62(15), B15, B35, B37, B60(40), B61(40), B4005, Null, B41, B44(12), B48, B48/40	see below
			B*07:27w/07:50w/07:183w/07:400/07:453, B*08:04:01w-08:04:02w/08:17/08:54:01-08:54:02/08:110w/08:285, B*13:71/13:108/13:174, B*15:07:01:01-15:07:03/15:45/15:55w/15:68/15:126/15:207/15:324/15:331/15:360/15:383/15:405/15:421/15:431/15:450/15:524/15:661/15:668/15:673, B*18:14w/18:22w, B*35:72w/35:541, B*37:07/37:09, B*40:02:01:01-40:02:08/40:02:10-40:03:02/40:05:01:01-40:05:02/40:09/40:15-40:16:01:02/40:18-40:19/40:27:01-40:27:03/40:29/40:31-40:32/40:35:01-40:35:03/40:37/40:39-40:40/40:45/40:50:01:01-40:50:01:02/40:56-40:58/40:71/40:78/40:80/40:82/40:85/40:89-40:91/40:94/40:97-40:98/40:104-40:105/40:107/40:111/40:115/40:119/40:122/40:133Q/40:142N/40:144N-40:145/40:157/40:164/40:169/40:174/40:176/40:180-40:181/40:189/40:200-40:202/40:205-40:206/40:209/40:211/40:214/40:219/40:224-40:225:01/40:226/40:229/40:246/40:248/40:255/40:266-40:267/40:271/40:274/40:276/40:283-40:284/40:287/40:289-40:293/40:296-40:297/40:302-40:305/40:309/40:314/40:320/40:331/40:334:01-40:335/40:345N/40:356/40:359/40:371/40:375/40:378/40:384/40:390/40:399N/40:405/40:409/40:412-40:415/40:420/40:432/40:435/40:437-40:438N/40:440-40:442/40:444/40:455/40:457/40:465/40:467/40:470/40:472/40:489/40:493/40:496/40:500/40:504-40:505/40:511N/40:514N/40:518/40:521-40:522/40:529/40:531/40:534/40:536N/40:540N/40:544:01:01-40:545N, B*41:02:01:01-41:02:11/41:04/41:10-41:11/41:13/41:15/41:18-41:19/41:23-41:24/41:27/41:31/41:36/41:38-41:43/41:45N/41:47/41:49/41:51-41:52/41:55/41:58/41:62/41:65/41:68-41:69/41:71-41:72/41:74/41:81, B*42:11, B*44:54/44:106/44:110/44:135/44:158/44:166/44:184/44:211/44:213, B*48:01:01:01-48:01:11/48:01:13-48:01:14/48:04:01:01-48:05/48:07-48:16/48:18-48:20/48:22/48:24/48:27-48:30/48:32-48:39/48:41-48:56/48:58-48:59N	-, B62(15), B15, B35, B37, B61(40), B4005, B60(40), B41, Null, B44(12), B48	375 bp

Position	Position	Mix	Allele	Serology	Size
			B*07:27w/07:50w/07:183w/07:400/07:453, B*08:04:01w/08:17/08:110w, B*13:21/13:71/13:166/13:174, B*15:33/15:78:01:01-15:78:04/15:107/15:116/15:141/15:150/15:188/15:248/15:287/15:352/15:421/15:524/15:614:01:01-15:614:01:02, B*18:21w/18:40w/18:61w/18:189w/18:217w, B*35:534, B*37:07/37:09/37:12/37:81, B*40:01:01-40:01:08/40:01:10-40:02:13/40:02:15-40:02:19/40:02:22-40:02:25/40:02:27-40:06:31/40:09-40:12:02/40:14:01-40:16:01:02/40:18-40:24/40:25w/40:27:01-40:27:03/40:29-40:34/40:36-40:40/40:42-40:60/40:62-40:67/40:69-40:70:02/40:72:01-40:74/40:76/40:78-40:81/40:83-40:86/40:88-40:94/40:96-40:105/40:107-40:120/40:122-40:157/40:159-40:161/40:163-40:165/40:167-40:183/40:185-40:195/40:197-40:210/40:212-40:219/40:221/40:223-40:231/40:233-40:236/40:238-40:254/40:256N-40:299/40:301-40:312/40:313w/40:314-40:321/40:323:01-40:325/40:326w/40:327-40:362/40:364-40:367/40:370-40:421Q/40:423-40:428N/40:430-40:457/40:459-40:480/40:482-40:512/40:514N-40:516/40:518-40:519/40:521-40:552/40:554-40:555, B*41:01:01:01-41:02:01:01/41:03:01-41:09/41:12/41:14/41:16-41:17/41:20-41:23/41:25-41:26/41:28-41:35/41:37/41:44/41:48/41:50/41:53-41:54/41:56Q-41:68/41:70-41:80, B*44:31/44:53:01-44:53:02/44:182/44:192:01-44:192:04/44:343/44:506, B*45:27, B*48:01:01:01-48:01:14/48:03:01:01-48:05/48:07-48:11/48:13/48:15-48:24/48:27-48:28/48:30/48:33-48:49/48:51-48:59N, B*49:40, B*50:60, B*52:54, C*07:937, C*12:301w, C*16:85	-, B15, B62(15), B37, B60(40), B61(40), B4005, Null, B41, B44(12), B48, B48/40	475 bp
A2	A8	Mix 16	B*27:24/27:36/27:125/27:173, B*40:01:01-40:01:18/40:01:19w/40:01:20-40:01:86/40:07/40:22N-40:23/40:25/40:30-40:31/40:33-40:34/40:36/40:38/40:42-40:43/40:45-40:48/40:51-40:52/40:54-40:55/40:59-40:63/40:65-40:67/40:69/40:73-40:74/40:76/40:79-40:81/40:84/40:87:01-40:88/40:92/40:100-40:102/40:106/40:108/40:112-40:114:02/40:116-40:118N/40:123-40:126/40:128/40:130:01-40:130:02/40:132/40:134-40:135/40:138-40:141/40:146-40:147/40:149-40:156/40:160:01-40:160:02/40:163/40:166/40:168/40:170-40:172/40:175/40:178-40:179/40:182-40:183/40:185-40:188/40:191w/40:192-40:193/40:195-40:196/40:197w/40:198-40:199/40:204/40:207-40:208/40:212-40:213/40:215-40:218/40:221-40:223/40:227-40:228/40:233-40:236/40:238-40:242/40:245:01-40:245:02/40:247/40:249-40:253/40:257-40:265N/40:272-40:273/40:277-40:282/40:285-40:286N/40:288/40:298:01-40:301/40:308/40:310/40:312/40:315-40:316/40:319/40:321/40:323:01-40:324/40:326-40:327/40:329/40:332-40:333/40:336/40:338N-40:339/40:344/40:346/40:352-40:353:02/40:357-40:358/40:360/40:367-40:368/40:370/40:372N/40:377/40:379:01:01-40:379:02/40:381:01-40:383/40:385-40:386/40:391-40:398/40:400-40:404/40:406-40:407/40:416-40:419/40:421Q-40:422/40:424/40:426N/40:428N/40:430-40:431:02/40:433-40:434/40:436/40:439/40:443/40:446-40:448/40:450/40:452/40:456/40:461/40:463/40:466/40:469/40:474-40:475:02/40:479-40:480/40:483N/40:485-40:486/40:490-40:491/40:495/40:497-40:499/40:501-40:503/40:506N-40:510N/40:512-40:513/40:516-40:517/40:523-40:525/40:528/40:530/40:538-40:539/40:548-40:550/40:552/40:554-40:555, B*48:22/48:30	-, B60(40), Null, B40	690 bp

Position	Position	Mix	Allele	Serology	Size
H3	H9	Mix 17	B*07:133, B*08:155, B*15:46/15:53/15:106/15:143/15:212/15:525, B*18:48/18:107, B*35:19/35:47/35:63/35:154/35:217/35:274/35:317/35:450, B*37:06:01-37:06:02, B*39:69, B*40:02:01:01-40:06:31/40:08:01:01-40:09/40:11:01:01-40:11:02/40:13-40:16:01:02/40:18-40:20:01:02/40:24/40:26-40:29/40:32/40:35:01-40:35:03/40:37/40:39-40:40/40:44/40:50:01:01-40:50:01:02/40:53/40:56-40:58/40:64:01:01-40:64:02/40:68/40:70:01-40:72:03/40:75/40:77-40:78/40:82-40:83/40:86/40:89-40:91/40:94-40:99/40:103-40:105/40:107/40:109-40:111/40:115/40:119-40:122/40:127/40:129/40:131/40:133Q/40:136/40:142N-40:145/40:148/40:157-40:159/40:161-40:162/40:164-40:165/40:167/40:169/40:173-40:174/40:176/40:177w/40:180-40:181/40:184/40:189-40:190/40:200-40:203/40:205-40:206/40:211/40:214/40:219-40:220/40:224-40:226/40:229-40:230/40:232/40:237/40:243-40:244/40:246/40:248/40:254-40:256N/40:266-40:271/40:274-40:276/40:283-40:284/40:287/40:289-40:293/40:294w/40:295-40:297/40:302-40:307/40:309/40:311/40:313-40:314/40:317-40:318/40:320/40:322/40:330-40:331/40:334:01-40:335/40:337N/40:340-40:343/40:345N/40:347-40:349/40:351/40:354/40:356/40:359/40:361N-40:364/40:366/40:369/40:371w/40:373-40:376/40:378w/40:384/40:387-40:390/40:399N/40:405/40:408-40:415/40:420/40:423/40:425/40:427/40:429/40:432/40:435/40:437-40:438N/40:440-40:442/40:444-40:445/40:449/40:451/40:453-40:455/40:457-40:460/40:464-40:465/40:467-40:468/40:470-40:473/40:476/40:478/40:481N-40:482/40:484/40:487N-40:489/40:492-40:494/40:496/40:500/40:504-40:505/40:511N/40:514N-40:515/40:518-40:522/40:526-40:527/40:529?/40:531-40:537/40:540N-40:547/40:551/40:553, B*41:01:01:01-41:02:09/41:02:10?/41:02:11-41:82, B*44:02:01:01-44:02:12/44:02:14-44:03:36/44:03:38-44:03:50/44:03:52-44:05:06/44:07/44:09-44:30/44:32-44:39/44:41:01-44:43:02/44:45-44:51/44:53:01-44:56N/44:58N-44:59:02/44:61N-44:82/44:84:01-44:129/44:131-44:133/44:135-44:144/44:145w/44:146-44:155/44:157-44:168/44:170-44:181/44:183-44:200/44:202-44:209/44:211-44:232/44:234-44:245:02/44:247-44:371/44:372?/44:373-44:385/44:437-44:444/44:446-44:524/44:526-44:529/44:530w/44:531-44:543/44:544N?/44:545-44:546, B*45:01:01:01-45:21/45:23-45:25/45:27-45:34, B*47:01:01:02-47:13, B*49:01:01:01-49:01:02/49:01:04-49:01:17/49:01:18w/49:01:19-49:02/49:04:01-49:14/49:16-49:25/49:27-49:72/49:74-49:81, B*50:01:01:01-50:02:01:02/50:04:01-50:05/50:07-50:22/50:31-50:74/50:76-50:79, B*51:112, B*53:30/53:39, B*56:67, B*57:45/57:51/57:69, B*58:111, C*16:85	-, B72(70), B35, B61(40), B4005, B60(40), B21, B41, Null, B44(12), B45(12), B12, B47, B49(21), B50(21)	580 bp
G3	G9	Mix 18	B*15:339/15:342, B*18:165w, B*27:18/27:29, B*37:02/37:102, B*40:124:01-40:124:02/40:180/40:429, B*47:01:01:02-47:13, B*48:26, B*50:20	-, B27, B47	425 bp
F3	F9	Mix 19	B*07:12/07:14:01w-07:14:02w/07:18:01/07:18:02w/07:137/07:162/07:174/07:202/07:222/07:235/07:248w/07:279/07:359w, B*08:129w/08:213:01-08:213:02/08:255w, B*14:10w/14:102/14:127, B*15:62/15:80w/15:124/15:654w, B*27:19:01:01w-27:19:01:02w/27:19:02/27:24/27:30w/27:36/27:125/27:127w/27:173, B*35:25-35:26/35:49:01-35:49:02/35:49:03w/35:198/35:254/35:361, B*38:20:01w/38:20:02/38:63, B*39:42w/39:195w, B*40:12:01-40:12:02/40:46/40:430, B*42:13, B*44:40w/44:44w/44:130w/44:156w/44:210:01w-44:210:02w, B*48:01:01:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:40/48:42-48:59N, B*56:09/56:11/56:12w/56:60, B*58:44, B*81:01:01:01-81:10, B*83:01w, C*03:342, C*15:99/15:268	B7, -, B70, B27, B35, B44(12), B48, B48/40, Null, B56(22), B55(22), B81	see below
			B*07:12/07:14:01w-07:14:02w/07:18:01/07:18:02w/07:137/07:162/07:235/07:248w/07:359w, B*08:129w/08:255w, B*14:10w/14:102/14:127, B*15:62/15:80w/15:654w, B*27:19:01:01w-27:19:01:02w/27:19:02/27:30w/27:127w, B*35:25-35:26/35:49:01-35:49:02/35:49:03w/35:198/35:254/35:361, B*38:20:01w/38:20:02, B*39:42w/39:195w, B*42:13, B*44:40w/44:44w/44:130w/44:156w/44:210:01w-44:210:02w, B*48:02:01-48:02:03/48:17/48:25, B*56:09/56:11/56:12w/56:60, B*58:44, B*83:01w, C*03:342, C*15:99/15:268	B7, -, B70, B27, B35, B44(12), B48, B48/40, B56(22), B55(22)	435 bp

Position	Position	Mix	Allele	Serology	Size
			B*07:174/07:202/07:222/07:279, B*08:213:01-08:213:02, B*15:124, B*27:24/27:36/27:125/27:173, B*38:63, B*40:12:01-40:12:02/40:46/40:430, B*48:01:01-01-48:01:14/48:03:01:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:24/48:26-48:40/48:42-48:59N, B*81:01:01-01-81:10	-, B48, B48/40, Null, B81	580 bp
E3	E9	Mix 20	B*13:36, B*15:02:01:01-15:02:12/15:02:13?/15:02:14-15:02:16/15:08:01:01-15:08:02/15:11:01-15:11:07/15:13:01-15:13:03/15:15:01:01-15:15:01:02/15:21:01:01-15:21:01:02/15:31:01:01-15:31:01:03/15:44/15:55/15:76/15:88-15:89:02/15:112/15:121/15:139/15:144/15:148/15:170w/15:189:01-15:189:02/15:191/15:194/15:209N/15:213-15:215/15:223/15:265/15:283-15:284/15:291/15:297/15:301-15:303/15:305/15:319/15:325/15:328/15:330/15:341/15:345/15:350/15:357-15:358/15:367/15:374/15:378/15:384:01-15:384:02/15:394/15:399/15:404/15:418/15:420/15:425/15:437-15:438/15:454N/15:460/15:479/15:486/15:491/15:495/15:505/15:508/15:513/15:537/15:557/15:567/15:569/15:574/15:592/15:596N/15:615/15:622-15:623/15:627/15:629-15:630/15:637/15:646/15:648/15:659/15:662/15:664-15:665/15:674, B*18:143w, B*35:46/35:311/35:583, B*51:104:01-51:104:02	-, B75(15), B77(15), B62(15), B15, Null, B35	140 bp
D3	D9	Mix 21	B*07:09:01-07:09:02/07:11/07:17/07:162/07:235/07:237/07:255/07:287, B*08:28/08:35/08:37/08:89/08:107/08:291, B*14:56, B*15:03:01:01-15:03:13/15:18:01:01-15:18:02/15:18:04-15:18:10/15:23/15:29:01:01-15:29:01:02/15:47:01-15:47:02/15:49/15:51-15:52/15:54/15:61-15:62/15:64:01-15:64:02/15:68-15:69/15:72/15:74/15:80/15:91/15:93/15:98/15:103/15:108/15:114-15:115/15:119/15:123-15:124/15:127/15:131-15:132/15:134/15:151/15:153/15:156/15:158/15:161/15:173/15:176/15:180/15:186/15:197:01-15:198/15:200/15:210/15:220:01:01-15:221/15:226N/15:235/15:238/15:242:01-15:242:02/15:255/15:259/15:263/15:266/15:274-15:275:02/15:281-15:282/15:290/15:292-15:294N/15:306-15:307/15:311/15:314/15:335/15:337/15:351/15:354/15:369/15:379-15:380N/15:382/15:388-15:389/15:397/15:414/15:426/15:433/15:444/15:447-15:448/15:451/15:475/15:487N/15:498/15:502/15:504:01-15:504:03/15:509/15:511/15:517/15:526-15:527/15:539/15:548/15:560/15:570-15:571/15:573/15:582/15:588/15:607/15:610/15:612/15:614:01:01-15:614:01:02/15:616Q-15:617/15:628/15:643/15:650/15:654/15:675-15:676, B*18:37:01-18:37:02/18:125, B*27:41/27:78/27:107/27:269, B*35:25-35:26/35:49:01-35:49:03/35:254, B*38:52/38:88, B*39:07/39:43/39:91/39:134/39:169, B*42:09/42:32, B*48:02:01-48:02:03/48:14/48:23/48:25, B*55:14/55:23/55:32/55:68, B*56:03/56:09/56:18/56:31-56:32/56:50, B*58:44, C*07:46/07:356/07:546	B7, -, B72(70), B71(70), B15, B70, B35, Null, B48, B22	500 bp
C3	C9	Mix 22	B*08:62/08:226/08:242, B*27:83/27:128, B*41:01:01:01-41:07/41:10-41:19/41:20w/41:21-41:32/41:34-41:46/41:48-41:61/41:63-41:82, B*42:02:01:01-42:02:02/42:09/42:17-42:18/42:26-42:27, B*49:76	-, B41, Null, B42	790 bp
B3	B9	Mix 23	B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132/08:146, B*42:01:01:01-42:02:02/42:04-42:10/42:12-42:18/42:20-42:25/42:27-42:34, B*44:90/44:356?, B*45:06, B*55:20/55:56, B*56:13, B*82:01:01:01-82:04, B*83:01	B7, -, B42, B56(22), B82	see below
			B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132/08:146, B*42:01:01:01-42:02:02/42:04-42:10/42:12-42:18/42:20-42:25/42:27-42:34, B*44:90/44:356?, B*45:06, B*55:20/55:56, B*56:13, B*82:01:01:01-82:04, B*83:01	B7, -, B42, B56(22), B82	550 bp
			B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132, B*42:01:01:01-42:01:06/42:02:01:01-42:02:02/42:04-42:06/42:08-42:10/42:12-42:18/42:20-42:25/42:27-42:33, B*44:90/44:356?, B*45:06, B*55:20/55:56, B*56:13, B*82:01:01:01-82:04, B*83:01	B7, -, B42, B56(22), B82	540 bp

Position	Position	Mix	Allele	Serology	Size
A3	A9	Mix 24	<p>B*07:02:01:01w-07:02:05w/07:02:07w-07:04:02w/07:07:01:01w-07:12w/07:14:01w-07:31:02w/07:33:01w-07:33:03w/07:35w-07:39w/07:41w-07:52w/07:54w-07:64w/07:66w-07:68:03w/07:70w-07:77w/07:79w/07:81w-07:89w/07:91w-07:96:02w/07:98w-07:104w/07:106w-07:111Nw/07:113w-07:114w/07:116w-07:122w/07:124w-07:133w/07:135Nw-07:136:02w/07:139:01w-07:139:02w/07:141w-07:174w/07:177w-07:181Nw/07:183w-07:196w/07:198w-07:200w/07:202w-07:205w/07:208w/07:211w-07:212w/07:215w-07:221w/07:223w-07:224w/07:226w-07:236w/07:238w-07:245w/07:248w/07:250w-07:257w/07:259w/07:261w/07:263w/07:265w-07:268w/07:271w-07:277w/07:279w-07:282w/07:285Nw-07:286w/07:288w-07:292w/07:294w-07:303:02w/07:305w-07:315Nw/07:318Nw-07:323w/07:325Nw-07:326w/07:328w-07:331w/07:334w-07:339w/07:341w-07:348w/07:350w-07:351Nw/07:354w-07:355w/07:359w-07:367w/07:369w-07:375w/07:377w/07:379w-07:386Nw/07:388w/07:390w-07:394w/07:396w-07:398w/07:401w-07:406w/07:410w-07:425Nw/07:427w-07:433w/07:435Nw-07:442w/07:444w-07:456w/07:458w-07:459w/07:461w-07:473w/07:475w-07:479Nw/07:481Nw-07:488w/07:490w-07:492w, B*08:07w/08:28w/08:37w/08:87w/08:89w/08:107w/08:111w/08:156w/08:255w/08:310w, B*14:23w/14:56w, B*15:10:01:01w-15:10:09w/15:37w/15:99w/15:312w-15:313w/15:323w/15:338w/15:445w/15:455w/15:503w/15:506w/15:563w, B*27:06:01:01w-27:06:02w/27:21:01w-27:21:02w/27:34w/27:91w/27:106w/27:127w/27:136w/27:138w/27:154w/27:192w/27:208w/27:222w/27:227w/27:262w, B*39:29w, B*40:09w/40:18w/40:24w/40:31w-40:33w/40:42w/40:44w/40:98w/40:120w/40:414/40:458/40:498, B*41:04w/41:21w/41:63w, B*42:16:01w-42:16:02w, B*44:02:01:01-44:02:12/44:02:14-44:02:69/44:02:70w/44:02:71-44:03:36/44:03:38-44:03:50/44:03:52-44:04/44:05:01:01w-44:05:06w/44:07/44:09/44:11-44:13/44:16/44:19N-44:30/44:32-44:42/44:44-44:56N/44:58N-44:59:02/44:61N/44:63-44:69:02/44:70w/44:71-44:74/44:75w/44:76/44:78w/44:79:01-44:81/44:84:01-44:106/44:107w/44:108N-44:116/44:118-44:122/44:123w/44:124-44:133/44:135/44:136w/44:137-44:138Q/44:139w/44:141-44:143/44:145w/44:146-44:155/44:156w/44:157/44:158w/44:159-44:161/44:163:01-44:165/44:167-44:183/44:185-44:197/44:198Nw/44:199-44:200/44:202-44:209/44:210:01w-44:210:02w/44:211-44:212/44:214-44:216/44:217Nw/44:218-44:225/44:227-44:229/44:231-44:235/44:236w/44:237N-44:245:02/44:247-44:249/44:250w/44:252-44:255/44:257-44:262/44:263w-44:264w/44:265-44:275/44:277-44:287/44:288w/44:289-44:307/44:309N-44:329/44:330w/44:331-44:338/44:341N-44:354N/44:356-44:384/44:385?/44:437-44:444/44:446-44:458/44:460-44:464:01:02/44:465w/44:466N-44:524/44:526-44:529/44:530w/44:531-44:540/44:542-44:546, B*48:08w/48:46w, B*49:61, B*55:27w/55:110w, B*83:01w, C*03:342w</p>	B7, -, B703, B7/B42, Null, B8, B71(70), B27, B61(40), B60(40), B44(12), B45(12), B47, B21	see below
			<p>B*07:133w, B*40:09w/40:18w/40:24w/40:31w-40:33w/40:42w/40:44w/40:98w/40:120w/40:414/40:458/40:498, B*41:04w/41:21w/41:63w, B*44:02:01:01-44:02:12/44:02:14-44:02:69/44:02:70w/44:02:71-44:03:36/44:03:38-44:03:50/44:03:52-44:04/44:05:01:01w-44:05:06w/44:07/44:09/44:11-44:13/44:16/44:19N-44:30/44:32-44:39/44:41:01-44:42/44:45-44:56N/44:58N-44:59:02/44:61N/44:63-44:69:02/44:70w/44:71-44:74/44:75w/44:76/44:78w/44:79:01-44:81/44:84:01-44:106/44:107w/44:108N-44:116/44:118-44:122/44:123w/44:124-44:129/44:131-44:133/44:135/44:136w/44:137-44:138Q/44:139w/44:141-44:143/44:145w/44:146-44:155/44:157/44:158w/44:159-44:161/44:163:01-44:165/44:167-44:183/44:185-44:197/44:198Nw/44:199-44:200/44:202-44:209/44:211-44:212/44:214-44:216/44:217Nw/44:218-44:225/44:227-44:229/44:231-44:235/44:236w/44:237N-44:245:02/44:247-44:249/44:250w/44:252-44:255/44:257-44:262/44:263w-44:264w/44:265-44:275/44:277-44:287/44:288w/44:289-44:307/44:309N-44:329/44:330w/44:331-44:338/44:341N-44:354N/44:356-44:384/44:385?/44:437-44:444/44:446-44:458/44:460-44:464:01:02/44:465w/44:466N-44:524/44:526-44:529/44:530w/44:531-44:540/44:542-44:546, B*49:61</p>	-, B61(40), B60(40), B44(12), B45(12), B47, Null, B21	490 bp

Position	Position	Mix	Allele	Serology	Size
			B*07:02:01:01w-07:02:05w/07:02:07w-07:04:02w/07:07:01:01w-07:12w/07:14:01w-07:31:02w/07:33:01w-07:33:03w/07:35w-07:39w/07:41w-07:52w/07:54w-07:64w/07:66w-07:68:03w/07:70w-07:77w/07:79w/07:81w-07:89w/07:91w-07:96:02w/07:98w-07:104w/07:106w-07:111Nw/07:113w-07:114w/07:116w-07:122w/07:124w-07:132w/07:135Nw-07:136:02w/07:139:01w-07:139:02w/07:141w-07:174w/07:177w-07:181Nw/07:183w-07:196w/07:198w-07:200w/07:202w-07:205w/07:208w/07:211w-07:212w/07:215w-07:221w/07:223w-07:224w/07:226w-07:236w/07:238w-07:245w/07:248w/07:250w-07:257w/07:259w/07:261w/07:263w/07:265w-07:268w/07:271w-07:277w/07:279w-07:282w/07:285Nw-07:286w/07:288w-07:292w/07:294w-07:303:02w/07:305w-07:315Nw/07:318Nw-07:323w/07:325Nw-07:326w/07:328w-07:331w/07:334w-07:339w/07:341w-07:348w/07:350w-07:351Nw/07:354w-07:355w/07:359w-07:367w/07:369w-07:375w/07:377w/07:379w-07:386Nw/07:388w/07:390w-07:394w/07:396w-07:398w/07:401w-07:406w/07:410w-07:425Nw/07:427w-07:433w/07:435Nw-07:442w/07:444w-07:456w/07:458w-07:459w/07:461w-07:473w/07:475w-07:479Nw/07:481Nw-07:488w/07:490w-07:492w, B*08:07w/08:28w/08:37w/08:87w/08:89w/08:107w/08:111w/08:156w/08:255w/08:310w, B*14:23w/14:56w, B*15:10:01:01w-15:10:09w/15:37w/15:99w/15:312w-15:313w/15:323w/15:338w/15:445w/15:455w/15:503w/15:506w/15:563w, B*27:06:01:01w-27:06:02w/27:21:01w-27:21:02w/27:34w/27:91w/27:106w/27:127w/27:136w/27:138w/27:154w/27:192w/27:208w/27:222w/27:227w/27:262w, B*39:29w, B*42:16:01w-42:16:02w, B*44:40/44:44/44:130/44:156w/44:210:01w-44:210:02w, B*48:08w/48:46w, B*55:27w/55:110w, B*83:01w, C*03:342w	B7, -, B703, B7/B42, Null, B8, B71(70), B27, B44(12)	490 bp
H4	H10	Mix 25	B*07:20/07:140/07:153/07:359, B*15:14/15:91/15:131/15:161/15:518/15:551/15:578/15:592/15:634, B*18:56/18:169, B*35:45/35:71/35:169/35:309/35:452/35:545, B*39:173, B*40:132/40:178/40:458/40:523, B*44:02:10/44:06/44:09/44:34:01/44:46:01-44:46:02/44:75/44:90/44:129/44:131/44:254/44:277/44:356/44:438N, B*45:01:01:01-45:03/45:05-45:07/45:09/45:11-45:23/45:25/45:27-45:34, B*46:17, B*50:02:01:01-50:02:01:02/50:21/50:56, B*51:23/51:42/51:108/51:359, B*55:122, B*56:74, B*82:01:01:01-82:03, B*83:01, C*08:93, C*14:61	-, B76(15), B44(12), B45(12), Null, B82	see below
			B*44:02:10/44:06/44:34:01, B*51:23/51:42/51:108/51:359	B44(12), -	715 bp
			B*07:20/07:140/07:153/07:359, B*15:14/15:91/15:131/15:161/15:518/15:551/15:578/15:592/15:634, B*18:56/18:169, B*35:45/35:71/35:169/35:309/35:452/35:545, B*39:173, B*40:132/40:178/40:458/40:523, B*44:09/44:46:01-44:46:02/44:75/44:90/44:129/44:131/44:254/44:277/44:356/44:438N, B*45:01:01:01-45:03/45:05-45:07/45:09/45:11-45:23/45:25/45:27-45:34, B*46:17, B*50:02:01:01-50:02:01:02/50:21/50:56, B*55:122, B*56:74, B*82:01:01:01-82:03, B*83:01, C*08:93, C*14:61	-, B76(15), B45(12), Null, B82	545 bp
G4	G10	Mix 26	B*07:133, B*15:46/15:53/15:106/15:143/15:212/15:525, B*40:05:01:01-40:05:02/40:15-40:16:01:02/40:23/40:26/40:28/40:32/40:51/40:95/40:98/40:148/40:158/40:161/40:174/40:183/40:198/40:309/40:355/40:466/40:496/40:542-40:543, B*44:76/44:79:01-44:79:02/44:146/44:150/44:459, B*47:10, B*49:01:01:01-49:01:01:19/49:01:03-49:02/49:04:01-49:10/49:12-49:14/49:16-49:25/49:27-49:44/49:46-49:72/49:74-49:81, B*50:01:01:01-50:02:01:02/50:04:01-50:05/50:07-50:22/50:31-50:48/50:50-50:69/50:71-50:74/50:76-50:79, B*51:112	-, B72(70), B4005, B61(40), B21, B49(21), Null, B50(21), B45(12)	605 bp

Position	Position	Mix	Allele	Serology	Size
F4	F10	Mix 27	B*07:78/07:182N/07:424/07:473, B*13:09/13:39/13:67/13:183, B*14:37, B*15:18:03/15:42/15:73:01:01-15:73:01:02/15:86/15:224/15:303/15:485-15:486/15:552, B*18:191, B*35:60/35:291/35:432/35:446/35:545, B*39:17, B*40:48/40:71/40:377/40:522/40:540N, B*45:01:01:01-45:01:13/45:03-45:08/45:10-45:25/45:27-45:28N/45:30-45:34, B*46:11/46:18, B*50:01:01:01-50:01:17/50:01:19-50:02:01:02/50:04:01-50:08/50:10-50:13/50:15/50:17-50:19/50:21-50:22/50:31-50:32/50:34-50:40/50:42-50:79, B*54:01:01:01-54:03/54:05N/54:07-54:08N/54:10/54:13/54:16-54:35/54:36w/54:37-54:40/54:41w/54:43-54:45/54:46w/54:47, B*55:01:01:01-55:01:12/55:01:14-55:03/55:05/55:07/55:09-55:12/55:15-55:16/55:18-55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33-55:48/55:50/55:52/55:53w/55:54-55:57/55:59-55:67/55:69-55:80/55:82-55:85/55:87-55:89N/55:91-55:102/55:104-55:109/55:111-55:120/55:122-55:133/55:136, B*56:01:01:01-56:02:03/56:04:01:01-56:04:05/56:08/56:10/56:13-56:14/56:16-56:17/56:19N-56:20:02/56:23-56:30/56:33-56:45/56:47-56:49/56:51-56:64/56:66-56:87/56:89-56:91, B*55:134, B*56:93/56:95-56:96, B*82:01:01:01-82:04, C*01:90/01:136/01:145:01N, C*03:19/03:102/03:307/03:318N, C*07:289/07:536/07:725, C*08:207:01, C*12:03:66/12:15/12:208, C*15:07:01:01-15:07:01:02/15:43/15:85/15:144	-, Null, B71(70), B62(15), B35, B60(40), B45(12), B50(21), B54(22), B55(22), B22, B56(22), B82, Cw3	395 bp
E4	E10	Mix 28	B*07:02:01:01-07:02:05/07:02:07-07:02:27/07:02:28w/07:02:29-07:02:86/07:02:87?/07:02:88-07:02:98/07:04:01-07:07:03/07:09:01w-07:09:02w/07:10/07:11w/07:12/07:15/07:18:01-07:26/07:29-07:31:02/07:33:01-07:36/07:39-07:49N/07:51-07:68:03/07:70-07:84/07:86-07:95/07:97-07:114/07:116-07:117/07:118w/07:119-07:125/07:126w/07:127-07:131/07:132w/07:133-07:179/07:181N-07:196/07:198-07:206/07:208-07:218/07:220-07:224/07:226-07:227/07:229:01-07:234/07:235w/07:236/07:237w/07:238-07:245/07:246w/07:247-07:254/07:255w/07:256-07:258/07:261-07:283/07:285N/07:287-07:301/07:302w/07:303:01-07:305/07:307-07:313/07:315N-07:326/07:327w/07:328-07:336/07:337w/07:338-07:350/07:352-07:358/07:360Q-07:375/07:376w/07:377-07:399/07:401-07:427/07:429-07:452/07:454-07:492, B*08:123/08:132, B*15:76w/15:101w/15:255w, B*35:76w/35:229w/35:368w/35:561w, B*38:26, B*40:166/40:513w, B*42:01:01:01-42:01:06/42:02:01:01-42:02:02/42:04-42:06/42:08/42:09w/42:10/42:12-42:16:01/42:16:02w/42:17-42:19/42:21-42:25/42:27-42:31/42:32w/42:33, B*45:06, B*54:01:01:01-54:05N/54:06w-54:07w/54:08N/54:09w/54:10-54:13/54:14w/54:16-54:29/54:31-54:35/54:36w/54:37-54:40/54:42-54:45/54:47, B*55:01:01:01-55:02:10/55:02:12-55:05/55:07-55:17/55:19-55:22/55:23w/55:24-55:26/55:27w/55:28:01-55:31/55:32w/55:33-55:52/55:53w/55:54-55:57/55:59-55:60/55:62-55:63/55:64w/55:65-55:67/55:68w/55:69-55:77/55:79-55:93/55:95-55:117N/55:119-55:120/55:122-55:133/55:135-55:136, B*56:01:01:01-56:02:03/56:03w/56:04:01:01-56:07/56:09w/56:10/56:11w/56:12-56:13/56:15-56:16/56:18w/56:19N-56:21/56:22w/56:24-56:30/56:31w-56:32w/56:34-56:41/56:43/56:45-56:49/56:50w/56:51-56:53/56:55:01:02-56:66/56:68-56:87/56:88w/56:90, B*55:134, B*56:93/56:05:02/56:95-56:96, B*67:01:01-67:01:03/67:03-67:07, B*81:01:01:01-81:10, B*82:01:01:01-82:04	B7, -, B7/B42, Null, B35/22, B54(22), B55(22), B22, B56(22), B78, B67, B81, B82	see below

Position	Position	Mix	Allele	Serology	Size
			B*07:02:01:01-07:02:05/07:02:07-07:02:27/07:02:28w/07:02:29-07:02:86/07:02:87?/07:02:88-07:02:98/07:04:01-07:07:03/07:09:01w-07:09:02w/07:10/07:11w/07:12/07:15/07:18:01-07:26/07:29-07:31:02/07:33:01-07:36/07:39-07:49N/07:51-07:68:03/07:70-07:77/07:79-07:84/07:86-07:95/07:97-07:114/07:116-07:117/07:118w/07:119-07:125/07:126w/07:127-07:131/07:132w/07:133-07:179/07:181N/07:183-07:196/07:198-07:206/07:208-07:218/07:220-07:224/07:226-07:227/07:229-01-07:234/07:235w/07:236/07:237w/07:238-07:245/07:246w/07:247-07:254/07:255w/07:256-07:258/07:261-07:283/07:285N/07:287-07:301/07:302w/07:303:01-07:305/07:307-07:313/07:315N-07:326/07:327w/07:328-07:336/07:337w/07:338-07:350/07:352-07:358/07:360Q-07:375/07:376w/07:377-07:399/07:401-07:423/07:425N-07:427/07:429-07:452/07:454-07:472N/07:474-07:492, B*08:123/08:132, B*15:76w/15:101w/15:255w, B*35:76w/35:229w/35:368w/35:561w, B*38:26, B*40:166/40:513w, B*42:01:01:01-42:01:06/42:02:01:01-42:02:02/42:04-42:06/42:08/42:09w/42:10/42:12-42:16:01/42:16:02w/42:17-42:19/42:21-42:25/42:27-42:31/42:32w/42:33, B*54:04/54:06w-54:07w/54:09w/54:11/54:14w/54:25/54:31/54:42, B*55:01:04/55:01:17/55:04/55:08/55:13-55:14/55:17/55:20/55:23w/55:27w/55:28:01-55:28:02/55:32w/55:34/55:39/55:42/55:44/55:47/55:49/55:51/55:53w/55:64w/55:68w/55:81/55:86/55:110/55:135, B*56:03w/56:05:01-56:06/56:09w/56:11w/56:12/56:15/56:18w/56:21/56:22w/56:31w-56:32w/56:50w/56:53/56:88w/56:05:02, B*67:01:01-67:01:03/67:03-67:07, B*81:01:01:01-81:10	B7, -, B7/B42, Null, B35/22, B54(22), B55(22), B56(22), B22, B78, B67, B81	410 bp
			B*07:78/07:182N/07:424/07:473, B*45:06, B*54:01:01:01-54:03/54:05N/54:07w/54:08N/54:10/54:12-54:13/54:16-54:29/54:31-54:35/54:36w/54:37-54:40/54:43-54:45/54:47, B*55:01:01:01-55:02:10/55:02:12-55:03/55:05/55:07/55:09-55:12/55:15-55:16/55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33-55:48/55:50/55:52/55:53w/55:54-55:57/55:59-55:60/55:62-55:63/55:64w/55:65-55:67/55:69-55:77/55:79-55:80/55:82-55:85/55:87-55:93/55:95-55:109/55:111-55:117N/55:119-55:120/55:122-55:133/55:136, B*56:01:01:01-56:02:03/56:04:01:01-56:04:05/56:07/56:10/56:13/56:16/56:19N-56:20:02/56:24-56:30/56:34-56:41/56:43/56:45-56:49/56:51-56:53/56:55:01:02-56:66/56:68-56:87/56:90, B*55:134, B*56:93/56:95-56:96, B*82:01:01:01-82:04	-, Null, B54(22), B55(22), B22, B56(22), B82	425 bp
D4	D10	Mix 29	B*54:01:01:01-54:01:06/54:01:08-54:05N/54:07-54:08N/54:10-54:37/54:39-54:47, B*55:07/55:124, B*59:06, C*03:464, C*07:463w/07:758, C*14:92	B54(22), -, Null	435 bp
C4	C10	Mix 30	B*07:20w/07:24/07:60/07:100/07:131/07:220/07:223/07:235/07:358/07:359w/07:464/07:485, B*15:76/15:101/15:255/15:509, B*35:76/35:229w/35:368/35:561, B*44:90/44:356w, B*45:06w, B*54:03/54:06/54:33/54:40, B*55:08/55:51, B*56:01:01:01-56:01:12/56:01:14-56:07/56:09/56:11/56:13/56:15-56:16/56:20:01-56:22/56:24-56:30/56:34-56:41/56:43/56:45-56:53/56:55:01:02-56:59/56:61-56:65/56:68-56:73/56:74w/56:75-56:88/56:90, B*55:134, B*56:93/56:05:02/56:95-56:96, B*82:01:01:01w-82:02:02w/82:03-82:04, B*83:01w, C*03:542	-, B7, B35/22, B56(22), B22, B78, Null, B82	560 bp
B4	B10	Mix 31	B*44:18:01:01-44:18:01:02/44:355, B*49:01:01:01-49:01:24/49:03/49:06-49:14/49:16-49:17/49:19N-49:49/49:51-49:60N/49:62-49:69/49:71-49:81, B*51:15/51:62/51:106:01-51:106:02/51:157/51:223/51:225/51:281/51:300, B*52:25:01-52:25:02/52:115N, B*54:12, B*55:103, B*56:65, B*58:73, B*59:01:01:01-59:01:01:02/59:04-59:07/59:09-59:10N/59:12, A*24:90:02N, C*15:71	-, B49(21), Null, B59	395 bp

Position	Position	Mix	Allele	Serology	Size
A4	A10	Mix 32	B*07:143, B*15:71/15:175/15:204/15:210/15:212/15:225/15:344/15:381/15:426/15:559/15:571, B*18:15/18:19/18:21/18:30/18:57:01-18:57:02/18:101/18:152/18:164, B*27:04:01-27:04:06/27:06:01:01-27:06:02/27:10/27:15/27:18/27:20-27:21:02/27:24-27:25/27:40/27:54/27:63/27:66N/27:68-27:69/27:79/27:86/27:91-27:92/27:100/27:103/27:105-27:109/27:112-27:115/27:120/27:138/27:147/27:149/27:153/27:165/27:168/27:173/27:183/27:192/27:208/27:210-27:211/27:214/27:222/27:226/27:229/27:240/27:245/27:247/27:257/27:262/27:267-27:269, B*37:07/37:97, B*40:05:01:01-40:05:02/40:15-40:16:01:02/40:23/40:26/40:28/40:32/40:51/40:95/40:98/40:148/40:158/40:161/40:174/40:183/40:198/40:309/40:355/40:466/40:496/40:542-40:543, B*46:14, B*49:01:01:01-49:01:01:19/49:01:03-49:09/49:12-49:14/49:16-49:23/49:26-49:30/49:32-49:44/49:46-49:81, B*50:01:01:01-50:02:01:02/50:04:01-50:12/50:14-50:22/50:31-50:42/50:44-50:48/50:50-50:69/50:71-50:79, B*51:103/51:116/51:151, B*52:51, A*26:89, C*03:278/03:504, C*06:77	-, B62(15), B27, Null, B4005, B61(40), B21, B49(21), B50(21), B45(12)	715 bp
H5	H11	Mix 33	B*35:186/35:570, B*46:01:01:01-46:01:04/46:01:05w/46:01:07-46:01:25/46:01:27-46:05/46:07N-46:30/46:31w/46:32:01-46:40:02/46:42-46:44/46:46-46:53/46:55N-46:78/46:80-46:100, B*56:14, B*67:02:01:01-67:02:01:02, C*01:32:01-01:32:02, C*02:56, C*03:102/03:263:01-03:263:03/03:514, C*04:180:01-04:180:02, 05:217, C*06:20, C*07:81/07:168/07:896, C*08:123/08:139, C*14:82/14:92, C*15:126, C*16:98:01/16:98:02?/16:102/16:110	-, B46, Null	470 bp

Position	Position	Mix	Allele	Serology	Size
G5	G11	Mix 34	<p>B*07:409, B*13:02:01:01-13:04/13:08-13:10/13:14-13:16/13:18-13:19/13:26:01-13:27/13:30-13:35/13:37-13:38/13:40-13:42/13:44-13:49N/13:53-13:56:02N/13:59/13:62/13:64-13:70/13:72/13:74-13:75/13:81-13:82/13:84-13:85/13:88-13:89/13:91/13:93-13:94/13:96/13:98-13:105/13:111-13:121/13:123Q-13:128/13:130-13:134/13:136-13:137N/13:139N-13:140/13:143/13:145/13:147/13:149-13:160/13:164-13:167/13:169/13:172w/13:174-13:179/13:181-13:182/13:184-13:186, B*15:01:01:01-15:01:04/15:01:06-15:01:46/15:01:47w/15:01:48-15:01:49/15:01:50w/15:01:51-15:02:16/15:04:01:01-15:08:02/15:11:01-15:16:05/15:19-15:21:01:02/15:24:01-15:28/15:31:01:01-15:36/15:38:01-15:40:02/15:42-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/15:81-15:85/15:87-15:89:02/15:92/15:94N-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125:01-15:126/15:128-15:129/15:135-15:142/15:144-15:149N/15:152/15:154:01-15:155/15:157/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/15:171-15:172/15:174-15:175/15:178-15:179:02/15:181N-15:185/15:187/15:189:01-15:195/15:199/15:201/15:202w/15:203-15:207/15:209N/15:211/15:213-15:215/15:217-15:218Q/15:222-15:223/15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251:03/15:254/15:256-15:258N/15:260-15:262:02N/15:264-15:265/15:267-15:272N/15:276-15:280/15:283-15:289/15:291/15:295-15:305/15:309-15:310/15:315-15:322/15:325-15:328/15:330-15:333/15:336/15:340-15:341/15:343-15:350/15:352-15:353/15:355/15:357-15:360/15:362-15:368/15:370-15:375N/15:377Q-15:378/15:381/15:383-15:387/15:390-15:395/15:398-15:402/15:404-15:410/15:412-15:413/15:415/15:417-15:422/15:425/15:428-15:432/15:437-15:438/15:440-15:443/15:449-15:450/15:452/15:454N/15:456-15:459/15:461/15:463N-15:474/15:476-15:485/15:489-15:497/15:499/15:501/15:505/15:507-15:508/15:510/15:512-15:515/15:518-15:522/15:524/15:528N-15:529/15:531/15:533:01-15:538/15:540N/15:542-15:545/15:547/15:549:01N-15:552/15:554/15:556-15:559/15:561-15:562N/15:564-15:569/15:572/15:574/15:576-15:581/15:583-15:587/15:589/15:590?/15:591-15:602/15:604N-15:605/15:608-15:609/15:613/15:615/15:618/15:621-15:627/15:629-15:636/15:638-15:641/15:645/15:647-15:649/15:651-15:653/15:656-15:674/15:677-15:680, B*18:143w/18:178, B*35:46/35:207/35:583, B*44:08/44:57/44:60, B*46:01:01:01-46:01:26/46:01:27w/46:01:28-46:03/46:05-46:39/46:41N-46:46/46:48-46:60/46:62-46:69/46:71-46:73/46:75-46:76/46:78-46:85/46:87-46:100, B*51:104:01-51:104:02, B*52:02:01-52:02:02, B*55:35, B*56:39, B*57:01:01:01-57:01:01:29/57:01:03-57:01:32/57:01:34-57:01:48/57:04:01-57:04:03/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:93/57:95/57:97-57:100/57:102-57:106/57:108-57:117/57:119/57:121-57:123/57:125-57:136/57:138-57:147/57:149-57:154/57:156-57:169/57:171-57:176, B*58:36, C*01:73, C*07:336w</p>	-, B13, B15/B21, Null, B62(15), B75(15), B76(15), B77(15), B63(15), B35, B44(12), B46, B57(17)	see below
			<p>B*13:02:01:01-13:04/13:08-13:09/13:14-13:16/13:18-13:19/13:27/13:30-13:35/13:37-13:38/13:40-13:42/13:44-13:49N/13:53-13:56:02N/13:59/13:62/13:64-13:70/13:72/13:74-13:75/13:81-13:82/13:84-13:85/13:88-13:89/13:91/13:93-13:94/13:96/13:98-13:105/13:111-13:121/13:123Q-13:128/13:130-13:134/13:136-13:137N/13:139N-13:140/13:143/13:145/13:147/13:149-13:160/13:164-13:167/13:169/13:172w/13:175-13:179/13:181-13:182/13:184-13:186, B*15:04:01:01-15:04:01:03/15:04:03-15:04:04/15:42/15:83:01:01-15:83:01:02/15:137/15:155/15:303/15:310/15:485/15:499/15:531/15:552, B*46:11/46:18/46:32:01, B*51:104:01-51:104:02, B*52:02:01-52:02:02, B*55:35, B*56:39, B*57:175</p>	B13, -, B15/B21, Null, B62(15)	430 bp

Position	Position	Mix	Allele	Serology	Size
			B*07:409, B*13:04/13:10/13:26:01-13:26:02/13:72/13:127/13:174, B*15:01:01:01-15:01:04/15:01:06-15:01:46/15:01:47w/15:01:48-15:01:49/15:01:50w/15:01:51-15:02:16/15:04:01:01-15:08:02/15:11:01-15:16:05/15:19-15:21:01:02/15:24:01-15:28/15:31:01:01-15:36/15:38:01-15:40:02/15:43-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/15:81-15:82/15:84-15:85/15:87-15:89:02/15:92/15:94N-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125:01-15:126/15:128-15:129/15:135-15:136/15:138-15:142/15:144-15:149N/15:152/15:154:01-15:155/15:157/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/15:171-15:172/15:174-15:175/15:178-15:179:02/15:181N-15:185/15:187/15:189:01-15:195/15:199/15:201/15:202w/15:203-15:207/15:209N/15:211/15:213-15:215/15:217-15:218Q/15:222-15:223/15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251:03/15:254/15:256-15:258N/15:260-15:262:02N/15:264-15:265/15:267-15:272N/15:276-15:280/15:283-15:289/15:291/15:295-15:302N/15:304N-15:305/15:309-15:310/15:315-15:322/15:325-15:328/15:330-15:333/15:336/15:340-15:341/15:343-15:350/15:352-15:353/15:355/15:357-15:360/15:362-15:368/15:370-15:375N/15:377Q-15:378/15:381/15:383-15:387/15:390-15:395/15:398-15:402/15:404-15:410/15:412-15:413/15:415/15:417-15:422/15:425/15:428-15:432/15:437-15:438/15:440-15:443/15:449-15:450/15:452/15:454N/15:456-15:459/15:461/15:463N-15:474/15:476-15:484/15:489-15:497/15:499/15:501/15:505/15:507-15:508/15:510/15:512-15:515/15:518-15:522/15:524/15:528N-15:529/15:531/15:533:01-15:538/15:540N/15:542-15:545/15:547/15:549:01N-15:551/15:554/15:556-15:559/15:561-15:562N/15:564-15:569/15:572/15:574/15:576-15:581/15:583-15:587/15:589/15:590?/15:591-15:602/15:604N-15:605/15:608-15:609/15:613/15:615/15:618/15:621-15:627/15:629-15:636/15:638-15:641/15:645/15:647-15:649/15:651-15:653/15:656-15:674/15:677-15:680, B*18:143w/18:178, B*35:46/35:207/35:583, B*44:08/44:57/44:60, B*46:01:01:01-46:01:26/46:01:27w/46:01:28-46:03/46:05-46:10/46:12-46:17/46:19-46:39/46:41N-46:46/46:48-46:60/46:62-46:69/46:71-46:73/46:75-46:76/46:78-46:85/46:87-46:100, B*57:01:01:01-57:01:01:29/57:01:03-57:01:32/57:01:34-57:01:48/57:04:01-57:04:03/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:93/57:95/57:97-57:100/57:102-57:106/57:108-57:117/57:119/57:121-57:123/57:125-57:136/57:138-57:147/57:149-57:154/57:156-57:169/57:171-57:176, B*58:36, C*01:73, C*07:336w	-, B15/B21, B62(15), Null, B75(15), B76(15), B77(15), B63(15), B35, B44(12), B46, B57(17)	490 bp
F5	F11	Mix 35	B*57:01:01:01-57:10/57:12-57:81/57:84-57:117/57:119-57:130N/57:132-57:173/57:174?/57:176, B*58:14	B57(17), -, Null	see below
			B*57:01:01:01-57:04:03/57:06-57:10/57:12-57:81/57:84-57:117/57:119-57:130N/57:132-57:173/57:174?/57:176, B*58:14	B57(17), -, Null	360 bp
			B*57:04:01/57:05	B57(17), -	410 bp
E5	E11	Mix 36	B*57:01:19/57:14:01, B*58:01:01:01-58:01:04/58:01:06-58:01:28/58:01:30-58:02:03/58:04-58:26/58:28:01-58:29/58:31N-58:76/58:78-58:81/58:83-58:115/58:117-58:118/58:120-58:134/58:135?/58:136-58:137/58:138?/58:139-58:147	-, B58(17), B17, Null	490 bp

Position	Position	Mix	Allele	Serology	Size
D5	D11	Mix 37	B*15:13:01-15:13:03/15:16:01:01w-15:16:05w/15:67w/15:95w/15:222w/15:254w/15:362w/15:408w/15:418/15:550w/15:602w/15:613w/15:680w, B*27:30w, B*38:20:01w/38:20:02, B*40:109/40:340, B*41:60w, B*44:06w/44:18:01:01w-44:18:01:02w/44:25w/44:50:01w/44:50:03/44:95w/44:355w, B*49:01:01:01w-49:01:01:03w/49:01:01:04/49:01:01:05w-49:01:24w/49:03w-49:14w/49:16w-49:46w/49:48w-49:53w/49:54/49:55w-49:69w/49:71?-49:72?/49:73w-49:81w, B*51:01:01:01-51:01:102/51:01:103?/51:01:104-51:04:01/51:04:02w/51:05:01:01-51:05:01:03/51:07:01-51:24:05/51:26-51:40:02/51:42w/51:43-51:44N/51:46w/51:48-51:53/51:55/51:56:01w/51:56:02-51:58/51:60-51:61:02/51:63:01-51:63:02/51:65-51:77/51:79-51:80/51:82-51:113/51:114w/51:115-51:134/51:136-51:147/51:149N-51:189/51:191-51:193:02/51:195-51:212/51:214-51:219/51:221-51:226/51:227w/51:228-51:246/51:248-51:257/51:259-51:280/51:281w/51:282-51:292/51:294-51:318N/51:320-51:340/51:342-51:351/51:354-51:358/51:359w/51:360-51:370/51:372w/51:373-51:377N/51:379-51:398, B*52:01:01:01-52:19/52:21:01-52:67/52:69-52:87/52:88w/52:89N-52:116, B*53:01:01:01-53:02/53:04-53:06/53:08:01-53:08:02/53:10/53:15-53:30/53:32-53:35/53:37/53:39-53:43:02/53:45-53:46/53:48N-53:54/53:56-53:64/53:66/53:68-53:71/53:72w/53:73-53:74, B*54:12, B*55:103, B*56:21/56:65, B*57:05/57:131/57:175, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:46/58:04-58:05/58:08:01-58:13/58:17N/58:19/58:21-58:24/58:28:01-58:29/58:31N-58:37/58:39N-58:42/58:44-58:45:02/58:47-58:59:02/58:61-58:63/58:65-58:74/58:75w/58:76-58:92/58:93Nw/58:94N-58:103/58:105-58:113/58:114w/58:115-58:120/58:122-58:131:02/58:133N-58:136/58:138-58:145/58:147, B*59:01:01:01-59:07/59:09-59:12, C*15:71	B77(15), -, B63(15), B27, B44(12), B49(21), Null, B51(5), B5102, B5103, B52(5), B53, B58(17), B17, B59	330 bp
C5	C11	Mix 38	B*08:274, B*35:01:10/35:03:32/35:04:02/35:251:01, B*51:01:01:01-51:01:03/51:01:05-51:01:10/51:01:11w/51:01:12/51:01:14-51:01:16/51:01:17w/51:01:18-51:02:03/51:02:05-51:06:04/51:08:01:01-51:08:04/51:08:06-51:09:03/51:11N-51:12/51:13:02-51:14/51:16-51:21/51:23/51:24:03-51:24:05/51:26-51:41N/51:43/51:46/51:48-51:61:02/51:63:01/51:64-51:80/51:82-51:91/51:92:02-51:106:01/51:107w/51:108-51:117/51:119-51:135/51:137-51:147/51:149N-51:156/51:158:01-51:167/51:169/51:170w/51:171-51:193:01/51:193:02?/51:194-51:196/51:198/51:200-51:213/51:215-51:219/51:221/51:223-51:224/51:226-51:244/51:246-51:250/51:252-51:282/51:283w/51:284-51:294/51:296-51:299/51:301-51:309/51:311-51:326/51:328-51:337/51:339/51:341-51:357N/51:360-51:390/51:391Nw/51:392-51:398, B*78:01:01:02-78:02:02/78:04/78:07-78:10	-, B35, B51(5), B5102, B5103, Null, B78	450 bp
B5	B11	Mix 39	B*07:02:11/07:05:03, B*08:274, B*15:09:01-15:09:02/15:252/15:435, B*18:205, B*35:01:10/35:03:32/35:04:02/35:251:01, B*39:10:03, B*51:01:01:01-51:01:03/51:01:05-51:01:12/51:01:14-51:01:37/51:01:39-51:02:03/51:02:05-51:08:04/51:08:06-51:09:03/51:11N-51:12/51:13:02-51:14/51:16-51:23/51:24:03-51:24:05/51:26-51:41N/51:43-51:44N/51:46/51:48-51:61:02/51:63:01/51:64-51:80/51:82-51:91/51:92:02-51:106:01/51:107w/51:108-51:135/51:137-51:147/51:149N-51:156/51:158:01-51:167/51:169/51:170w/51:171-51:177/51:179-51:193:01/51:193:02?/51:194-51:196/51:198/51:200-51:219/51:221-51:224/51:226-51:230:01:04/51:232:01-51:294/51:296-51:299/51:301-51:309/51:311-51:326/51:328-51:337/51:339-51:357N/51:360-51:390/51:391Nw/51:392-51:398, B*55:01:04/55:02:11/55:28:02, B*56:05:01-56:06/56:21/56:05:02, B*78:01:01:02-78:04/78:07-78:10	B7, -, B70, B35, B51(5), B5102, B5103, Null, B55(22), B56(22), B78	460 bp
A5	A11	Mix 40	B*13:02:38/13:62, B*15:01:02/15:277-15:278, B*18:205w, B*40:01:06/40:06:30/40:26/40:28/40:95, B*41:02:09, B*44:03:40/44:62/44:459, B*48:01:08, B*49:18:01, B*50:01:21/50:14, B*51:07:01w-51:07:02w/51:214w/51:222w/51:251w/51:310/51:340w, B*52:01:01:01-52:01:04/52:01:06-52:01:14/52:01:16-52:05/52:07:01-52:13/52:14:02-52:24/52:25:02-52:72/52:73w/52:74-52:96N/52:98-52:116, B*53:28, B*78:05-78:06	-, B62(15), B60(40), B21, B51(5), B52(5), Null	450 bp

Position	Position	Mix	Allele	Serology	Size
H6	H12	Mix 41	B*07:02:11/07:05:03, B*08:274, B*15:01:02/15:09:01-15:09:02/15:243/15:252/15:277-15:278/15:435, B*18:205, B*27:153, B*35:01:10/35:03:32/35:04:02/35:251:01, B*39:10:03, B*40:01:06/40:06:30/40:26/40:28/40:95, B*41:02:09, B*48:01:08, B*50:01:21/50:14, B*55:01:04/55:02:11/55:28:02, B*56:05:01-56:06/56:05:02, B*78:01:01:02-78:10, C*12:03:31, C*14:02:37/14:92	B7, -, B62(15), B70, B35, B60(40), B21, B55(22), B56(22), B78	410 bp
G6	G12	Mix 42	B*14:19/14:27, B*15:09:01-15:10:09/15:18:01:01-15:18:10/15:21:01:01-15:21:01:02/15:23/15:37/15:51/15:72/15:80/15:90/15:99/15:108/15:115/15:119/15:133-15:134/15:153/15:161w/15:176/15:189:01-15:189:02/15:197:01-15:198/15:200/15:221/15:226N/15:229/15:263/15:275:01-15:275:02/15:290/15:292-15:294N/15:306-15:307/15:311-15:314/15:329/15:335/15:337-15:338/15:351/15:354/15:380N/15:382/15:388/15:394/15:404/15:414/15:420/15:426-15:427/15:433-15:436/15:439/15:445/15:447/15:451/15:455/15:487N/15:498/15:503-15:504:03/15:506/15:526/15:530/15:548/15:563/15:570/15:573/15:607/15:611-15:612/15:615/15:620/15:623/15:643/15:646/15:675, B*35:26/35:82:01-35:82:02/35:85/35:135/35:294, B*38:30/38:65/38:106, B*39:32-39:33/39:74, B*44:263w, B*49:26, B*51:22, B*56:33, B*78:03	-, B70, B71(70), B75(15), Null	575 bp
F6	F12	Mix 43	B*07:409, B*13:09/13:67/13:183, B*15:01:01:01-15:01:04/15:01:06-15:01:46/15:01:48/15:01:51-15:01:70/15:01:71?/15:01:72-15:01:74/15:01:76-15:02:16/15:04:01:01-15:08:02/15:11:01-15:12:03/15:14-15:15:01:02/15:19-15:21:01:02/15:25:01:01-15:28/15:30:01:01-15:35:02/15:38:01-15:40:02/15:42/15:44-15:45/15:48/15:50/15:55-15:56/15:58/15:60/15:63/15:65-15:66/15:70-15:71/15:73:01:01-15:73:01:02/15:75-15:79N/15:81-15:86/15:88/15:92/15:94N/15:96-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125:01-15:126/15:128-15:129/15:135-15:142/15:144-15:150/15:152/15:154:01-15:155/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/15:171-15:172/15:174-15:175/15:178-15:179:02/15:181N-15:185/15:187-15:195/15:199/15:201/15:202w/15:203-15:207/15:209N/15:211/15:213-15:215/15:217-15:219/15:223-15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251:03/15:257-15:258N/15:260-15:262:02N/15:264-15:265/15:267/15:269-15:272N/15:276-15:280/15:283-15:288/15:291/15:295-15:305/15:309-15:310/15:315-15:317/15:319-15:322/15:324-15:328/15:330-15:334/15:336/15:340-15:350/15:352-15:353/15:355/15:357-15:359/15:363:01-15:368/15:370-15:375N/15:377Q-15:378/15:381/15:383-15:387/15:390-15:395/15:398-15:402/15:404-15:407/15:409-15:410/15:412-15:413/15:415-15:417/15:419-15:422/15:425/15:428-15:432/15:437-15:438/15:440-15:441/15:443/15:449-15:450/15:452-15:454N/15:456-15:461/15:463N-15:474/15:476-15:486/15:488-15:497/15:499/15:501/15:507-15:508/15:510/15:512-15:515/15:518-15:522/15:524/15:528N-15:529/15:531/15:533:01-15:538/15:540N-15:545/15:547/15:549:01N-15:549:02N/15:551-15:552/15:554/15:556-15:559/15:561-15:562N/15:564-15:569/15:572/15:574/15:576-15:578/15:580-15:581/15:583-15:585/15:587/15:589/15:590w/15:591-15:593/15:595-15:601/15:604N-15:606/15:608-15:609/15:615/15:618/15:621-15:627/15:629-15:641/15:645-15:649/15:651-15:653/15:656-15:668/15:670-15:674/15:677-15:679, B*18:143w/18:178, B*35:46/35:207/35:311/35:583, B*40:21/40:137, B*46:72, B*55:35, B*56:39, B*57:12	-, B62(15), Null, B75(15), B76(15), B15, B35	150 bp
E6	E12	Mix 44	B*15:12:01/15:12:02w/15:12:03/15:14/15:19/15:270/15:298/15:304N/15:518/15:551/15:578/15:592/15:634/15:649/15:679, B*44:08/44:57/44:60, B*46:17, B*57:07/57:93/57:119	B76(15), -, Null, B44(12)	650 bp
D6	D12	Mix 45	B*07:219, B*15:16:01:01-15:17:07/15:67/15:95/15:168/15:177/15:196/15:208/15:216/15:230/15:254/15:268/15:273/15:356/15:361-15:362/15:403/15:408/15:411/15:423-15:424/15:446/15:462/15:500/15:516/15:523/15:532/15:546Q/15:550/15:555/15:575N/15:602-15:603/15:613/15:619/15:642/15:644/15:655/15:680, B*57:13/57:22/57:57/57:63/57:161, B*58:06/58:08:01-58:08:02/58:19/58:46/58:78/58:91	-, B63(15), Null, B17	530 bp

Position	Position	Mix	Allele	Serology	Size
C6	C12	Mix 46	B*14:01:01:01-14:01:11/14:01:13-14:02:02/14:02:04-14:02:05/14:02:07-14:04/14:07N/14:09/14:11-14:12/14:14-14:20/ 14:21:02-14:36/14:38-14:41N/14:42:02-14:52/14:54/14:57-14:95/14:97-14:101N/14:103-14:127	B64(14), -, B65(14), B14, Null	400 bp
B6	B12	Mix 47	B*14:02:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:03/14:05-14:06:02/14:09/14:11/14:13/14:15-14:18/14:20/14:21:02- 14:23/14:24w/14:25/14:27/14:29-14:31/14:33-14:39/14:41N/14:42:02-14:45/14:48/14:50-14:52/14:56-14:64/14:66-14:70Q/ 14:72N-14:76N/14:79N/14:84-14:85N/14:88-14:94/14:96/14:98-14:101N/14:106-14:107/14:109/14:111/14:114-14:116/ 14:118-14:119/14:120?/14:122-14:123/14:125-14:127, B*15:189:01-15:189:02, B*35:01:64/35:03:17/35:26/35:29:03, B*38:05/38:33/38:112, B*39:04/39:129, B*49:26, B*51:01:68	B65(14), -, B14, Null, B38(16), B39(16)	185 bp
A6	A12	Mix 48	B*51:241, B*73:01:01:01-73:04, C*07:463w/07:758	-, B73	300 bp

Amplification control (internal positive control): 90 base pairs (bp)

w = weak

? = nucleotide sequence information not available for the primer matching sequence or alleles with unknown reactivities

Bold: mixes which result in PCR fragments of different sizes (the specificities are first indicated all in one row, then split into several groups in the subsequent rows depending on the fragment size)

Table 2: Amplification patterns for all HLA-B* alleles detected by the **HLA-B*** CTS-PCR-SSP reagents (**Lot-No B16-3**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Allele	Mixes	Serology
B*07:02:01:01-07:02:05/07:02:07-07:02:10/07:02:12-07:02:27/07:02:29-07:02:32/07:02:34-07:02:42/07:02:44-07:02:84/07:02:86/07:02:88-07:02:98/07:07:01:01-07:07:03/07:10/07:15/07:21-07:23/07:26/07:30-07:31:02/07:35-07:36/07:39/07:41-07:44N/07:46-07:49N/07:51-07:52/07:55-07:59/07:61-07:64/07:66-07:68:03/07:70-07:76/07:79/07:81-07:84/07:86-07:89/07:91-07:93/07:95/07:98-07:99/07:101-07:104/07:106-07:111N/07:113-07:114/07:116-07:117/07:119-07:121/07:124-07:125/07:127-07:130/07:135N-07:136:02/07:141-07:142/07:144-07:145/07:147-07:152/07:154-07:161N/07:164/07:166-07:173/07:177-07:179/07:181N/07:184-07:185/07:187-07:192/07:194-07:196/07:198-07:200/07:203-07:205/07:208/07:211-07:212/07:215-07:218/07:221/07:224/07:226-07:227/07:229:01-07:234/07:238-07:242/07:244-07:245/07:250-07:254/07:256-07:257/07:261/07:263/07:265-07:268/07:271-07:277/07:280-07:282/07:285N/07:288-07:289/07:291-07:292/07:294-07:301/07:303:01-07:303:02/07:305/07:307-07:313/07:315N/07:318N-07:323/07:325N-07:326/07:328-07:331/07:334-07:336/07:338-07:339/07:341-07:342/07:344-07:348/07:350/07:354-07:355/07:360Q-07:367/07:369-07:375/07:377/07:379-07:382/07:384-07:385/07:390-07:394/07:396-07:398/07:401-07:406/07:410-07:419/07:421-07:423/07:425N/07:427/07:429-07:433/07:435N-07:441/07:444-07:452/07:454-07:456/07:458-07:459/07:461-07:463/07:465-07:467Q/07:469N-07:470/07:472N/07:475-07:479N/07:481N-07:484/07:486-07:488/07:490-07:492	1+24w+28	B7, -, B7/B42, Null
B*07:02:11	1+24w+28+39+41	B7
B*07:02:28/07:118/07:126/07:132/07:302/07:337	1+24w+28w	-
B*07:02:33/07:02:43	1w+24w+28	-
B*07:02:85/07:33:01-07:33:03/07:54/07:94/07:122/07:139:01-07:139:02/07:165/07:243/07:290/07:343N/07:386N/07:388/07:442/07:468N, B*55:110	24w+28	-, Null
B*07:02:87	1+24w+28?	-
B*07:03/07:08:01-07:08:02/07:16/07:28/07:37:01-07:38/07:85:01-07:85:02/07:96:01-07:96:02/07:180/07:228:01-07:228:02/07:259/07:286/07:306/07:314/07:351N/07:428	1+24w	B703, -, Null
B*07:04:01-07:04:02/07:25/07:146	1+23+24w+28	B7, -
B*07:05:01:01-07:05:02/07:05:04-07:05:05/07:05:07-07:06:02/07:06:04-07:06:05/07:34/07:80/07:90/07:97/07:105/07:112/07:138/07:175-07:176/07:201N/07:206/07:209-07:210/07:213-07:214/07:247/07:249/07:258/07:262:01-07:262:02/07:264/07:269-07:270/07:278/07:283/07:293/07:304/07:316N-07:317/07:324/07:332-07:333/07:340/07:352-07:353/07:356-07:357/07:368/07:378/07:387/07:389/07:395/07:399/07:407-07:408/07:426Q/07:434/07:443/07:457/07:460N/07:474/07:480/07:489	1+28	B7, -, Null
B*07:05:03	1+28+39+41	B7
B*07:05:06/07:06:03	1w+28	-
B*07:09:01-07:09:02/07:11/07:255	1+21+24w+28w	B7, -
B*07:12/07:18:01	1+7+19+24w+28	B7, -
B*07:13/07:32/07:69/07:115/07:197/07:207/07:225/07:260/07:284, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02	1	-, Cw7
B*07:14:01-07:14:02	1+7w+19w+24w	B7, -
B*07:17	1+21+24w	B7
B*07:18:02	1+7w+19w+24w+28	-
B*07:19, B*42:16:01	23+24w+28	-
B*07:20	1+24w+25+28+30w	-
B*07:24/07:131/07:220/07:223/07:464	1+24w+28+30	B7, -
B*07:27	1+10+15w+24w	-

Allele	Mixes	Serology
B*07:29/07:186/07:383	1+2+24w+28	-
B*07:40/07:53/07:123, B*42:19, B*55:01:13/55:04/55:13/55:17/55:28:01/55:49/55:81/55:86/55:90/55:135	28	B7, -, B55(22)
B*07:45/07:420	1+12w+13w+24w+28	-
B*07:50	1+15w+24w	-
B*07:60/07:100/07:485	24w+28+30	-
B*07:65/07:134	1+5+28	-
B*07:77/07:163/07:193	1+7+24w+28	-
B*07:78/07:182N	1+27+28	-, Null
B*07:133	1+14+17+24w+26+28	-
B*07:137	1+7+19+28	-
B*07:140	1+25+28	-
B*07:143	1+24w+28+32	-
B*07:153	1+24w+25+28	-
B*07:162	1+7+19+21+24w+28	-
B*07:174/07:202/07:279	1+19+24w+28	-
B*07:183	1+15w+24w+28	-
B*07:219	24w+45	-
B*07:222, B*81:01:01:01-81:10	1+19+28	-, B81, Null
B*07:235	7+19+21+24w+28w+30	-
B*07:236	1+10+24w+28	-
B*07:237	1+21+28w	-
B*07:246/07:327/07:376	1+28w	-
B*07:248	1+7+19w+24w+28	-
B*07:287	1+21+28	-
B*07:349, B*42:05:01	1+23+28	-
B*07:358	1+28+30	-
B*07:359	7w+19w+24w+25+30w	-
B*07:400, B*35:534/35:541, B*40:209/40:350/40:365	5+15	-
B*07:409	1+28+34+43	-
B*07:424/07:473	1+24w+27+28	-
B*07:453, B*48:08	15+24w	-
B*07:471	1?+24w+28	-
B*08:01:01:01-08:01:31/08:01:33-08:01:64/08:01:66-08:03/08:05/08:08N-08:12:02/08:13-08:16/08:18-08:25/08:27/08:29-08:31/08:33-08:34/08:36/08:38:01-08:48/08:51-08:53:02/08:56:01-08:61/08:63-08:78/08:80-08:86N/08:88/08:90-08:93/08:95-08:106/08:108-08:109/08:113-08:122/08:124-08:125/08:127-08:128/08:130/08:134-08:138/08:140-08:145/08:147-08:154/08:157-08:169/08:171-08:179/08:182-08:186/08:188-08:212/08:214N-08:225/08:227-08:231/08:233-08:238/08:240-08:241/08:243-08:254/08:256-08:262/08:264-08:271/08:273/08:275-08:284Q/08:286-08:290/08:292-08:296/08:298/08:300Q-08:305/08:307-08:309/08:311-08:312, C*02:14:01-02:14:02/02:107/02:164, C*06:02:37/06:106:01/06:127:02/06:264, C*07:01:07/07:04:03/07:14/07:27:02/07:31:02/07:43:02/07:184/07:199:02/07:257:02/07:257:04/07:294/07:526:01/07:681/07:850, C*12:16:01-12:16:02/12:217	2	B8, -, Null, Cw7
B*08:01:65	2+6	-
B*08:04:01-08:04:02/08:110	2+15w	-
B*08:07/08:87/08:111/08:310	2+24w	B8, -
B*08:17/08:54:01-08:54:02/08:285	2+15	-
B*08:28/08:37/08:89	2+21+24w	-

Allele	Mixes	Serology
B*08:32/08:133/08:180	2+5	-
B*08:35/08:291, B*15:180	2+21	-
B*08:49, B*39:112, B*53:09, C*07:1059, C*15:27	7	-
B*08:55, B*39:12:01:01-39:12:01:02/39:178	2+12	-, B39(16)
B*08:62/08:226/08:242, B*42:26	22	-
B*08:79:01-08:79:02/08:187	1+2	-
B*08:107	6+21+24w	-
B*08:123/08:132	2+23+28	-
B*08:126/08:131/08:139	2+10	-
B*08:129	2+7w+19w	-
B*08:146	2+23	-
B*08:155	2+17	-
B*08:156	1+2+24w	-
B*08:213:01-08:213:02	2+19	-
B*08:239, B*15:239/15:376, B*18:01:09/18:01:12/18:01:24/18:07:02-18:07:03:02/18:12:02/18:26/18:29/18:41/18:55/18:82/18:97/18:122, B*35:10/35:13:01-35:13:03/35:16/35:22:01:01-35:22:01:02/35:28:01:01-35:28:01:03/35:31/35:32:02-35:32:03/35:43:01/35:43:03-35:44/35:51:01/35:67/35:69/35:79-35:80/35:86-35:87/35:99/35:102/35:117-35:118/35:176/35:185/35:199/35:208:01-35:208:02/35:226/35:234/35:242/35:251:02/35:265/35:270/35:318/35:475-35:477/35:549/35:579, B*37:11/37:14/37:37, C*07:1011	5	-, B35
B*08:255	2+7w+19w+24w	-
B*08:274	2+38+39+41	-
B*08:306	2?	-
B*13:01:01:01-13:01:23/13:06-13:07N/13:11-13:13:02/13:17/13:20/13:23/13:25/13:28-13:29/13:43/13:50/13:52/13:57/13:60-13:61/13:63N/13:73/13:76N-13:78/13:80/13:83/13:87/13:90/13:92/13:95/13:106-13:107/13:109-13:110/13:122/13:129/13:135/13:138/13:141-13:142/13:144/13:146/13:148/13:161N-13:163/13:168/13:170-13:171/13:173/13:180/13:187	3	B13, -, Null
B*13:02:01:01-13:02:32/13:02:34-13:02:37/13:02:39/13:02:41/13:08/13:10/13:14-13:16/13:18-13:19/13:26:01-13:27/13:30-13:35/13:38/13:41-13:42/13:44/13:47/13:49N/13:53-13:56:02N/13:59/13:64-13:66/13:68-13:70/13:72/13:74-13:75/13:81-13:82/13:84-13:85/13:88-13:89/13:91/13:94/13:96/13:98-13:105/13:111-13:121/13:123Q-13:127/13:130-13:134/13:136-13:137N/13:139N/13:147/13:149-13:152/13:154-13:158/13:160/13:164-13:165/13:167/13:169/13:175-13:177/13:179/13:181-13:182/13:184-13:186	3+34	B13, -, Null
B*13:02:33/13:02:40	3?+34	-
B*13:02:38	3+34+40	-
B*13:03-13:04/13:40/13:45/13:48/13:128/13:145/13:153/13:159/13:178, B*15:01:49/15:01:75/15:24:01-15:24:02/15:36/15:43/15:57/15:87/15:157/15:256/15:289/15:318/15:442/15:579/15:586/15:594/15:669N, B*46:01:06/46:01:26/46:41N/46:45/46:54/46:79N, B*57:11/57:83, C*01:73	34	-, B15/B21, B62(15), Null
B*13:09/13:67	3+27+34+43	-
B*13:21/13:71/13:108	3+15	-
B*13:36	3+7+20	-
B*13:37/13:143	3w+34	-
B*13:39	3+27	-
B*13:46	11+34	-
B*13:51/13:79	3+11	-
B*13:62	34+40	-
B*13:93	2+3+34	-

Allele	Mixes	Serology
B*13:140	3+11+34	-
B*13:166	3+15+34	-
B*13:172	3+34w	-
B*13:174, B*15:360	15+34	-
B*13:183	3+27+43	-
B*14:01:01:01-14:01:11/14:01:13-14:01:15/14:04/14:07N/14:12/14:14/14:26/14:28/14:32/14:40/14:46-14:47/14:49/14:54/14:65/14:71/14:77-14:78/14:80-14:83/14:86-14:87/14:95/14:97/14:103-14:105/14:108Q/14:110/14:112-14:113N/14:117/14:121/14:124	46	B64(14), -, Null
B*14:02:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:03/14:09/14:11/14:15-14:18/14:20/14:21:02-14:22/14:25/14:29-14:31/14:33-14:36/14:38-14:39/14:41N/14:42:02-14:45/14:48/14:50-14:52/14:57-14:64/14:66-14:70Q/14:72N-14:76N/14:79N/14:84-14:85N/14:88-14:92/14:94/14:98-14:101N/14:106-14:107/14:109/14:111/14:114-14:116/14:119/14:122-14:123/14:125-14:126	46+47	B65(14), -, B14, Null
B*14:05-14:06:02/14:13/14:96	47	-, B14
B*14:10	7w+19w	-
B*14:19	42+46	-
B*14:23	24w+46+47	-
B*14:24	46+47w	-
B*14:27	42+46+47	-
B*14:37	27+47	-
B*14:56	21+24w+47	-
B*14:93	11+46+47	-
B*14:102	7+19	-
B*14:118	11?+46+47	-
B*14:120	46+47?	-
B*14:127	7+19+46+47	-

Allele	Mixes	Serology
B*15:01:01:01-15:01:01:66/15:01:03-15:01:04/15:01:06-15:01:46/15:01:48/15:01:51-15:01:70/15:01:72-15:01:74/15:01:76-15:01:84/15:04:01:01-15:06/15:20/15:25:01:01-15:28/15:32:01-15:32:02/15:34:01-15:35:02/15:38:01-15:40:02/15:50/15:56/15:60/15:63/15:65-15:66/15:70/15:75/15:77/15:79N/15:81-15:85/15:92/15:94N/15:96-15:97/15:102/15:104-15:105/15:109-15:111N/15:113/15:117-15:118/15:120/15:122/15:125:01-15:125:02/15:128-15:129/15:135/15:137-15:138/15:140/15:145-15:147/15:149N/15:152/15:154:01-15:155/15:159-15:160:01:02/15:163-15:167/15:169/15:171-15:172/15:174/15:178-15:179:02/15:181N-15:185/15:187/15:190N/15:192-15:193/15:195/15:199/15:201/15:203/15:205-15:206/15:211/15:217-15:218Q/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:247/15:250-15:251:03/15:257-15:258N/15:260-15:262:02N/15:264/15:267/15:269/15:271-15:272N/15:276/15:279-15:280/15:285-15:286/15:288/15:295-15:296/15:299-15:300/15:309-15:310/15:315-15:317/15:320-15:322/15:326-15:327/15:332-15:333/15:336/15:340/15:343/15:346-15:349:02/15:353/15:355/15:359/15:363:01-15:366/15:368/15:370-15:373/15:375N/15:377Q/15:385-15:387/15:390-15:393/15:395/15:398/15:400N-15:402/15:406-15:407/15:409-15:410/15:412-15:413/15:415/15:417/15:419/15:422/15:428/15:430/15:432/15:440-15:441/15:443/15:452/15:456-15:459/15:461/15:463N-15:474/15:476-15:478/15:480-15:484/15:489-15:490/15:492-15:493/15:496N-15:497/15:499/15:501/15:507/15:510/15:512/15:514-15:515/15:519-15:522/15:528N-15:529/15:531/15:533:01-15:536/15:538/15:540N/15:542-15:545/15:547/15:549:01N-15:549:02N/15:554/15:556/15:558/15:561-15:562N/15:564-15:566/15:568/15:572/15:576-15:577/15:580-15:581/15:583-15:585/15:587/15:589/15:591/15:593/15:595/15:597-15:601/15:604N-15:605/15:608-15:609/15:618/15:621/15:624-15:626/15:631-15:633/15:635-15:636/15:638-15:641/15:645/15:647/15:651-15:653/15:656-15:658/15:660/15:666/15:670-15:672/15:677-15:678, B*18:178, B*35:207	34+43	B62(15), Null, -
B*15:01:02/15:277-15:278	34+40+41+43	B62(15), -
B*15:01:47/15:01:50, C*07:336	34w	-
B*15:01:71	34+43?	-
B*15:02:01:01-15:02:04/15:02:06-15:02:12/15:02:14-15:02:16/15:44/15:88/15:121/15:139/15:144/15:194/15:213-15:214/15:223/15:283/15:291/15:301-15:302N/15:319/15:325/15:328/15:330/15:341/15:345/15:357-15:358/15:374/15:378/15:399/15:425/15:437-15:438/15:454N/15:491/15:495/15:537/15:557/15:567/15:569/15:574/15:596N/15:627/15:630/15:648/15:659/15:664/15:674	7+20+34+43	B75(15), -, Null
B*15:02:05/15:112	7w+20+34+43	-, B15
B*15:02:13	7+20?+34+43	-
B*15:03:01:01-15:03:13/15:29:01:01-15:29:01:02/15:47:01-15:47:02/15:49/15:52/15:54/15:61/15:64:01/15:74/15:93/15:98/15:103/15:114/15:123/15:127/15:132/15:151/15:156/15:158/15:173/15:220:01:01-15:220:04/15:238/15:242:01-15:242:02/15:259/15:266/15:274/15:281-15:282/15:369/15:379/15:389/15:397/15:444/15:448/15:475/15:502/15:511/15:517/15:527/15:539/15:560/15:582/15:588/15:610/15:616Q-15:617/15:628/15:650/15:676, B*18:37:01, B*38:52/38:88, B*39:43, C*07:46/07:356/07:546	21	B72(70), -, B15, B71(70), B70
B*15:07:01:01-15:07:03/15:33/15:45/15:78:01:01-15:78:04/15:107/15:116/15:126/15:141/15:207/15:248/15:287/15:331/15:352/15:383/15:405/15:421/15:431/15:450/15:524/15:661/15:668/15:673	15+34+43	B62(15), -, B15
B*15:08:01:01-15:08:02/15:11:01-15:11:07/15:15:01:01-15:15:01:02/15:31:01:01-15:31:01:03/15:148/15:191/15:209N/15:215/15:284/15:305/15:350/15:367/15:384:01-15:384:02/15:479/15:508/15:513/15:622/15:629/15:662/15:665	20+34+43	B75(15), -, B62(15), Null
B*15:09:01-15:09:02/15:435	39+41+42	B70, -
B*15:10:01:01-15:10:09/15:37/15:99/15:312-15:313/15:338/15:445/15:455/15:503/15:506/15:563	24w+42	B71(70), -, B70
B*15:12:01/15:12:03/15:19/15:270/15:298/15:304N/15:649/15:679	34+43+44	B76(15), -, Null

Allele	Mixes	Serology
B*15:12:02	34+43+44w	-
B*15:13:01-15:13:03/15:418	7+8+20+34+37	B77(15), -
B*15:14/15:518/15:551/15:578/15:634	25+34+43+44	B76(15), -
B*15:16:01:01-15:16:05/15:67/15:95/15:254/15:362/15:408/15:550/15:602/15:613/15:680	34+37w+45	B63(15), -
B*15:17:01:01-15:17:07/15:168/15:177/15:196/15:208/15:216/15:230/15:273/15:356/15:361/15:403/15:411/15:423-15:424/15:446/15:462/15:500/15:516/15:523/15:532/15:546Q/15:555/15:575N/15:603/15:619/15:642/15:644/15:655	45	B63(15), -, Null
B*15:18:01:01-15:18:02/15:18:04-15:18:10/15:23/15:51/15:72/15:115/15:119/15:134/15:153/15:176/15:197:01-15:198/15:200/15:221/15:226N/15:263/15:275:01-15:275:02/15:290/15:292-15:294N/15:306-15:307/15:311/15:314/15:335/15:337/15:351/15:354/15:380N/15:382/15:388/15:414/15:433/15:447/15:451/15:487N/15:498/15:504:01-15:504:03/15:526/15:548/15:570/15:573/15:607/15:612/15:643/15:675	21+42	B71(70), -, B70, Null
B*15:18:03, B*56:33	27+42	B71(70), -
B*15:21:01:01-15:21:01:02/15:394/15:404/15:420/15:615/15:623	7+20+34+42+43	B75(15), -
B*15:30:01:01-15:30:01:03/15:58/15:219/15:334/15:416/15:453/15:488/15:541/15:606	43	B62(15), -
B*15:42/15:485/15:552	27+34+43	-
B*15:46/15:53/15:106/15:143/15:525	17+26	B72(70), -
B*15:48	12w+43	B62(15)
B*15:55	15w+20+34+43	B15
B*15:62/15:124, B*48:02:01-48:02:03/48:25	19+21	-, B48
B*15:64:02, B*18:37:02/18:125	4+21	-
B*15:68/15:614:01:01-15:614:01:02, B*48:14	15+21	B35, -
B*15:69/15:186/15:235, B*39:07/39:91/39:134/39:169	12+21	-
B*15:71/15:175/15:204/15:225/15:344/15:381/15:559	32+34+43	B62(15), -
B*15:73:01:01-15:73:01:02/15:86/15:224	27+43	B62(15), -
B*15:76	20+28w+30+34+43	-
B*15:80	7w+19w+21+42	B70
B*15:89:01-15:89:02/15:505	7+20+34	-
B*15:90/15:133/15:229/15:329/15:427/15:434/15:436/15:439/15:530/15:611/15:620, B*39:33	42	-
B*15:91/15:131	21+25	-
B*15:101	28w+30+34+43	-
B*15:108	12w+21+42	B71(70)
B*15:136/15:249/15:667	12w+34+43	-
B*15:142/15:429	2+34+43	-
B*15:150/15:188/15:324, B*40:21/40:137	15+43	-
B*15:161	21+25+42w	-
B*15:170	7+20w+34w+43w	-
B*15:189:01-15:189:02	20+34+42+43+47	-
B*15:202	5+34w+43w	-
B*15:210/15:571	21+32	-
B*15:212, B*49:02/49:70, B*50:01:18/50:09/50:16/50:33/50:41	17+26+32	-, B49(21)
B*15:222	34+37w	-
B*15:243, C*12:03:31, C*14:02:37	41	-
B*15:252	39+41	-
B*15:255, B*56:03/56:50	21+28w+30	-, B22

Allele	Mixes	Serology
B*15:265	7+12+20+34+43	-
B*15:268	34+45	-
B*15:297	1+7+20+34+43	-
B*15:303	20+27+34+43	-
B*15:308, B*35:01:17/35:01:67/35:03:07/35:04:03/35:08:17/35:12:02/ 35:20:01/35:59:02/35:83/35:88/35:95/35:112:01-35:112:02/35:164/35:191/ 35:212/35:215:01-35:215:02/35:230/35:261/35:296/35:382/35:414/ 35:439:01:01-35:439:01:02/35:463/35:474/35:547/35:585, B*37:67	5+7	-, B35
B*15:323	24w	-
B*15:339	18	-
B*15:342	18+43	-
B*15:426	21+32+42	-
B*15:449/15:494	12+34+43	-
B*15:460	7w+20+43	-
B*15:486	20+27+43	-
B*15:509	21+30	-
B*15:590	34?+43w	-
B*15:592	7+20+25+34+43+44	-
B*15:637	20+43	-
B*15:646	7+20+42+43	-
B*15:654	19w+21	-
B*15:663	3+34+43	-
B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:01:25- 18:01:53/18:02:01-18:03:01:03/18:04:01-18:07:01/18:08/18:10-18:12:01/ 18:13/18:17N/18:20/18:23N-18:25/18:27-18:28/18:31-18:34/18:36/18:38- 18:39/18:42-18:47/18:50-18:53/18:58-18:60/18:62-18:65/18:68-18:78/18:80- 18:81/18:83-18:96/18:98:01-18:98:02/18:100/18:102-18:104/18:106Q/18:109/ 18:111-18:121/18:123-18:124/18:126-18:131:01:02/18:133-18:135:01:02/ 18:137-18:141/18:144-18:148/18:151/18:153-18:163/18:166-18:167/18:170- 18:177/18:179-18:188/18:190/18:192-18:193/18:196-18:197/18:199-18:203/ 18:206-18:216/18:218-18:234	4+5	B18, -, Null
B*18:01:54/18:99	4w+5	-
B*18:03:02/18:09/18:49/18:66-18:67/18:79/18:108/18:132/18:136/18:142/ 18:194:01:01-18:194:01:02/18:198	4	-, B18
B*18:14/18:22/18:40/18:217	4+5+15w	-
B*18:15/18:19/18:30/18:57:01-18:57:02/18:101/18:152/18:164	4+5+32	-
B*18:18:01:01-18:18:01:02/18:105/18:204, B*35:20:02	4+5+7	-, B35
B*18:21	4+5+15w+32	-
B*18:35/18:110	1w+4+5	-
B*18:48, B*35:63/35:317, B*44:10/44:14-44:15:01:02/44:17/44:43:01- 44:43:02/44:77/44:82/44:140/44:144/44:162/44:226/44:230/44:256/44:276/ 44:308/44:339-44:340/44:541	17	-, B44(12), B12
B*18:54/18:195	4+10	-
B*18:56/18:169	4+5+25	-
B*18:61/18:189, B*35:72	5+15w	-
B*18:107	4w+17	-
B*18:143	4+5+20w+34w+43w	-
B*18:149-18:150	4+5+7w	-
B*18:165	5+18w	-
B*18:168, B*35:276, B*39:19:01-39:19:02/39:186	5+12	-, B39(16)

Allele	Mixes	Serology
B*18:191, B*35:60	5+27	-, B35
B*18:205	4+5+39+40w+41	-
B*27:01-27:03/27:05:02:01-27:05:22/27:05:24-27:05:60/27:07:01-27:09/ 27:11-27:14/27:16-27:17/27:23/27:26-27:28/27:31-27:33/27:35/27:37-27:39/ 27:42-27:53/27:55-27:62/27:64N-27:65N/27:67/27:70-27:74/27:76-27:77/ 27:80-27:82/27:84-27:85/27:87-27:90:04/27:93-27:99/27:101-27:102/27:104/ 27:110-27:111/27:116-27:119/27:121-27:124/27:126/27:129-27:135/27:137/ 27:139/27:141-27:146/27:148/27:150-27:152/27:155-27:164/27:166-27:167/ 27:169-27:172/27:174-27:182/27:184-27:188/27:190-27:191/27:193-27:207/ 27:209/27:212N-27:213/27:216-27:221/27:223N-27:225N/27:228/27:230- 27:238/27:241-27:244/27:246N/27:248-27:249/27:251-27:256/27:258- 27:261N/27:263N-27:266/27:270	9	B27, -, B2708, Null
B*27:04:01-27:04:06/27:10/27:15/27:20/27:25/27:40/27:54/27:63/27:66N/ 27:68-27:69/27:79/27:86/27:92/27:100/27:103/27:105/27:108-27:109/27:112- 27:115/27:120/27:147/27:149/27:165/27:168/27:183/27:210-27:211/27:214/ 27:226/27:229/27:240/27:245/27:247/27:257/27:267-27:268	9+32	B27, -, Null
B*27:06:01:01-27:06:02/27:21:01-27:21:02/27:91/27:106/27:138/27:192/ 27:208/27:222/27:262	9+24w+32	B27, -
B*27:18	9+18+32	-
B*27:19:01:01-27:19:01:02	9+19w	B27, -
B*27:19:02	9+19	-
B*27:24/27:173	9+16+19+32	-
B*27:29	9+18	B27
B*27:30	8w+9+19w+37w	B27
B*27:34/27:136/27:154/27:227	9+24w	-
B*27:36/27:125	9+16+19	-
B*27:41/27:78	9+21	-
B*27:83/27:128	9+22	-
B*27:107/27:269	9+21+32	-
B*27:127	9+19w+24w	-
B*27:153	32+41	-
B*35:01:01:01-35:01:03/35:01:05-35:01:09/35:01:11-35:01:16/35:01:18- 35:01:55/35:01:58-35:01:63/35:01:65-35:01:66/35:01:68-35:01:72/35:01:74- 35:01:75/35:02:01:01-35:02:05/35:02:07-35:02:16/35:02:18-35:03:02/ 35:03:04-35:03:06/35:03:08-35:03:16/35:03:18-35:03:19/35:03:21-35:03:31/ 35:03:33-35:03:35/35:04:01:01-35:04:01:02/35:06-35:08:01:13/35:08:04/ 35:08:06-35:08:16/35:09:01:01-35:09:04/35:11:01-35:11:04/35:14:01- 35:15:02/35:18/35:21/35:24:01/35:29:01-35:29:02/35:33-35:34/35:36/35:38/ 35:40N-35:42:03/35:48/35:50/35:52-35:55/35:57/35:62/35:64:01-35:65Q/ 35:70/35:74/35:77-35:78/35:81/35:84/35:90-35:94/35:96/35:98/35:100- 35:101:02/35:103-35:111/35:115-35:116/35:119/35:121-35:124/35:126- 35:134N/35:136-35:148/35:150:01-35:150:02/35:152-35:153/35:155-35:163/ 35:165N-35:168/35:170-35:175/35:177-35:184/35:187-35:190/35:192-35:197/ 35:200/35:204-35:206/35:209/35:211/35:213-35:214/35:216N/35:218-35:220/ 35:222-35:225/35:227-35:228/35:231/35:237-35:241/35:243-35:250/35:252- 35:253/35:255-35:257/35:260/35:262-35:264/35:267-35:269/35:272/35:275/ 35:277-35:285/35:287/35:289-35:290/35:293/35:295/35:297-35:298/35:300- 35:308/35:310/35:312-35:316/35:319-35:354/35:356-35:360/35:362-35:366/ 35:369-35:372/35:374-35:381N/35:383-35:388/35:390N-35:394/35:396- 35:413/35:415/35:417-35:424/35:426/35:428Q-35:431/35:433-35:438/35:441- 35:445/35:447-35:449/35:451/35:453N-35:458/35:460Q-35:462/35:464- 35:467/35:469-35:470/35:473/35:478-35:480/35:482-35:497/35:500-35:508N/ 35:510-35:518/35:520/35:524/35:526-35:533/35:536-35:540/35:542N-35:544/ 35:546/35:548/35:552-35:559/35:562-35:569/35:573-35:574N/35:577-35:578/ 35:580-35:582/35:584/35:586-35:593/35:596	5+6+7	B35, -, Null

Allele	Mixes	Serology
B*35:01:04/35:01:73/35:02:17/35:03:20/35:08:03/35:12:04/35:23/35:24:02/ 35:61:02/35:120/35:258/35:288/35:395/35:576	5+6+7w	B35, -
B*35:01:10/35:03:32/35:04:02	5+6+7+38+39+41	B35, -
B*35:01:56/35:02:06	5+6w+7	-
B*35:01:57	4+5+6+7	-
B*35:01:64/35:03:17/35:29:03	5+6+7+47	-
B*35:01:76/35:522	5?+6+7	-
B*35:03:03/35:08:02/35:08:05/35:27/35:56/35:203/35:210/35:271/35:299/ 35:355/35:550-35:551N/35:594, B*53:03/53:11-53:13/53:36/53:55/53:65	6+7	B35, -, Null, B53
B*35:03:36	5+6?+7?	-
B*35:05:01:01-35:05:06/35:17:01:01-35:17:05/35:30:01:01-35:30:01:02/ 35:32:01/35:37/35:51:02/35:58/35:68:01-35:68:02/35:75/35:89/35:97/35:113- 35:114/35:125/35:151:01-35:151:02/35:221/35:232/35:235/35:273/35:286/ 35:292/35:367/35:389/35:416/35:427N/35:440/35:459N/35:472/35:481/ 35:498-35:499/35:509/35:519/35:521/35:523/35:535/35:572	5+6	B35, -, Null
B*35:12:01:01-35:12:01:04/35:12:03/35:39/35:59:01/35:61:01/35:149/35:201/ 35:233/35:266/35:425/35:571	5+7w	B35, -
B*35:19/35:47/35:154/35:217/35:274/35:450	6+7+17	B35, -
B*35:25/35:49:01-35:49:02/35:254	6+7+19+21	B35, -
B*35:26	7+19+21+42+47	-
B*35:35/35:468/35:595	5+6+7+12	B35, -
B*35:45/35:71/35:169/35:309/35:452	5+6+7+25	-
B*35:46/35:583	6+7+20+34+43	B35, -
B*35:49:03	6+7w+19w+21	-
B*35:66	1+5+6	-
B*35:76/35:561	5+7+28w+30	B35/22, -
B*35:82:01-35:82:02/35:85/35:294	5+7+42	-
B*35:135	5+42	-
B*35:186, B*46:40:01-46:40:02	5+33	-
B*35:198	6+7+19	-
B*35:202/35:373	5+6w	-
B*35:229	5+6+7+28w+30w	-
B*35:236/35:259	5+6+7+12w	-
B*35:251:01, B*78:01:01:02-78:02:02/78:04/78:07-78:08	5+38+39+41	-, B78
B*35:291/35:446	5+6+7+27	-
B*35:311	6+7+20+43	-
B*35:361, B*48:31, C*15:99/15:268	19	-
B*35:368	5+6+28w+30	-
B*35:432	5+7+27	-
B*35:471, B*37:10/37:34, B*38:01:01:01-38:02:03/38:02:05-38:02:09/ 38:02:11-38:04/38:06-38:16/38:18-38:19/38:21-38:25/38:27-38:29/38:31- 38:32/38:34N-38:51/38:53-38:62/38:64/38:66-38:72/38:74-38:83N/38:85- 38:87/38:89-38:105/38:107-38:110/38:113N-38:114/38:160-38:173Q, B*39:104, B*57:118, A*24:96/24:256	11	-, B37, B38(16), B16, Null
B*35:525	5?+6	-
B*35:545	5+6+7+25+27	-
B*35:560/35:575	5+6?+7	-

Allele	Mixes	Serology
B*35:570, B*46:04/46:47/46:61/46:70/46:74/46:77/46:86, C*01:32:01-01:32:02, C*02:56, C*03:263:01-03:263:03/03:514, C*04:180:01-04:180:02, C*05:217, C*06:20, C*07:81/07:168/07:896, C*08:123/08:139, C*14:82, C*15:126, C*16:98:01/16:102/16:110	33	-, B46
B*37:01:01:01-37:01:11/37:01:13-37:01:31/37:03N-37:04:02/37:13/37:15-37:21/37:23-37:28/37:30N-37:33N/37:35-37:36/37:38-37:66/37:68-37:80/37:82N-37:94/37:96/37:98-37:101/37:103-37:104/37:106-37:110, B*38:17, A*11:133, A*33:60, A*68:234	10	B37, -, Null
B*37:02/37:102	10+18	-
B*37:06:01-37:06:02	10+17	-
B*37:07	10+15+32	-
B*37:08	7+10	B37
B*37:09/37:12/37:81	10+15	B37, -
B*37:97	10+32	-
B*37:105	10?	-
B*38:02:04/38:02:10	11w	-
B*38:05/38:33/38:112	11+47	B38(16), -
B*38:20:01	7w+8w+11+19w+37w	-
B*38:20:02	7+8+11+19+37	-
B*38:26	11+13+28	-
B*38:30/38:65/38:106	11+42	-
B*38:63	1+11+19	-
B*38:84	2+11	-
B*38:111, B*53:07	7+11	-, B53
B*39:01:01:01-39:01:01:30/39:01:03:01-39:01:10/39:01:12-39:03:02/39:05:01:01-39:06:04/39:06:06-39:06:09/39:08/39:09:02/39:10:01-39:10:02/39:11/39:13:01-39:16/39:18/39:20/39:22-39:24:01:02/39:24:03-39:28/39:31:01:01-39:31:01:02/39:35/39:37:01:01-39:41/39:44-39:46/39:48-39:49/39:51-39:68/39:70-39:73/39:75-39:79/39:81/39:83:01-39:87N/39:89-39:90/39:92-39:101/39:103/39:105-39:106/39:108-39:111/39:113-39:126/39:130-39:133N/39:135/39:137-39:154/39:157N/39:159-39:168/39:172/39:175N-39:177/39:179-39:184/39:187-39:194Q/39:196-39:202/39:204-39:206, C*07:137:01-07:137:02/07:868, C*14:63	12	B3901, Low B39, -, B3902, B39(16), Null
B*39:04/39:129	12+47	B39(16), -
B*39:09:01:01-39:09:01:06/39:09:03-39:09:06/39:88/39:127/39:155/39:158/39:170-39:171	7+12	B39(16), -
B*39:10:03	12+39+41	-
B*39:17	12+27	-
B*39:29	12+24w	-
B*39:32/39:74	12w+42	-
B*39:42/39:195	7w+12+19w	-
B*39:47/39:50/39:102/39:174, C*03:215	12w	-
B*39:69, B*40:184/40:553	12+17	-
B*39:173	12+25	-
B*39:185/39:203Q	12?	-

Allele	Mixes	Serology
B*40:01:01-40:01:05/40:01:07-40:01:08/40:01:10-40:01:18/40:01:20-40:01:55/ 40:01:57-40:01:86/40:22N/40:30/40:34/40:36/40:38/40:43/40:45/40:47/ 40:52/40:54-40:55/40:59-40:60/40:62/40:65-40:67/40:69/40:73-40:74/40:76/ 40:79-40:81/40:84/40:88/40:100-40:102/40:108/40:112-40:114-02/40:116- 40:118N/40:123/40:125-01-40:126/40:128/40:130-01-40:130-02/40:134- 40:135/40:138-40:141/40:146-40:147/40:149-40:156/40:160-01-40:160-02/ 40:168/40:170/40:172/40:175/40:179/40:182/40:186-01-40:188/40:192- 40:193/40:195/40:204/40:207/40:212-40:213/40:215-40:218/40:221/40:223/ 40:227-40:228/40:233-40:236/40:238-40:242/40:245-01-40:245-02/40:247/ 40:249-40:253/40:257-40:264/40:272-40:273/40:277-40:282/40:285-40:286N/ 40:288/40:298-01-40:299/40:301/40:310/40:312/40:316/40:319/40:321/ 40:323-01-40:323-02/40:327/40:329/40:332-40:333/40:336/40:338N-40:339/ 40:344/40:346/40:352-40:353-02/40:357-40:358/40:360/40:367/40:370/ 40:372N/40:379-01-01-40:379-02/40:381-01-40:383/40:385-40:386/40:391- 40:398/40:400-40:404/40:406-40:407/40:416-40:419/40:421Q/40:426N/ 40:428N/40:431-01-40:431-02/40:433-40:434/40:436/40:439/40:443/40:446- 40:448/40:450/40:452/40:456/40:461/40:463/40:469/40:474-40:475-02/ 40:479-40:480/40:483N/40:485-40:486/40:490-40:491/40:495/40:497/40:499/ 40:501-40:503/40:506N-40:510N/40:512/40:516/40:524-40:525/40:528/ 40:530/40:538-40:539/40:548-40:550/40:552/40:554-40:555	14+15+16	B60(40), -, Null, B40
B*40:01:06	14+15+16+40+41	B60(40)
B*40:01:09/40:07/40:61/40:87-01-40:87-02/40:196/40:222/40:300/40:368/ 40:422/40:517	14+16	-, B60(40)
B*40:01:19/40:191/40:197	14+15+16w	-
B*40:01:56/40:171/40:315	14w+15+16	-
B*40:02:01:01-40:04:03/40:06:01-01-40:06:29/40:06:31/40:11:01-01-40:11:02/ 40:14:01-40:14:03/40:19-40:20:01-02/40:27:01-40:27:03/40:29/40:35-01- 40:35-03/40:37/40:40/40:50:01-01-40:50:01-02/40:53/40:56-40:58/ 40:64:01-01-40:64:02/40:70:01-40:70:02/40:72:01-40:72:03/40:78/40:82- 40:83/40:86/40:89-40:91/40:94/40:96-40:97/40:99/40:103-40:105/40:107/ 40:110-40:111/40:115/40:119/40:122/40:127/40:129/40:131/40:133Q/ 40:136/40:142N-40:145/40:157/40:159/40:164-40:165/40:167/40:169/40:173/ 40:176/40:181/40:189-40:190/40:200-40:203/40:205-40:206/40:211/40:214/ 40:219/40:224-40:226/40:229-40:230/40:243-40:244/40:246/40:248/40:254- 40:256N/40:266-40:271/40:274-40:276/40:283-40:284/40:287/40:289-40:293/ 40:295-40:297/40:302-40:307/40:311/40:314/40:317-40:318/40:320/40:330- 40:331/40:334-01-40:335/40:337N/40:341-40:342/40:345N/40:347-40:349/ 40:351/40:354/40:356/40:359/40:361N-40:362/40:364/40:366/40:373-40:376/ 40:384/40:387-40:390/40:399N/40:405/40:408-40:413/40:415/40:420/40:423/ 40:425/40:427/40:432/40:435/40:437-40:438N/40:440-40:442/40:444-40:445/ 40:449/40:451/40:453-40:455/40:457/40:459-40:460/40:464-40:465/40:467- 40:468/40:470-40:473/40:476/40:478/40:482/40:484/40:487N-40:489/40:492- 40:494/40:500/40:504-40:505/40:511N/40:514N-40:515/40:518-40:519/ 40:521/40:526-40:527/40:531-40:537/40:541/40:544-01-01-40:547/40:551	14+15+17	B61(40), -, B60(40), B40, Null
B*40:05:01:01-40:05:02/40:174/40:496	15+17+26+32	B4005, -
B*40:06:30	14+15+17+40+41	-
B*40:08:01:01-40:08:01:02/40:13/40:75/40:77/40:121/40:162/40:220/40:232/ 40:237/40:322/40:363/40:369/40:481N/40:520	14+17	-, Null
B*40:09/40:18/40:24/40:44/40:120	14+15+17+24w	B61(40), -
B*40:10:01:01-40:10:02/40:49/40:85/40:194/40:210/40:231/40:325/40:380/ 40:462/40:477, B*44:31, B*48:41	14+15	B60(40), -, B44(12)
B*40:12:01-40:12:02, B*48:01:01:01-48:01:07/48:01:09-48:01:14/48:03:01-01- 48:04:02/48:07/48:09/48:11/48:15-48:21/48:24/48:27-48:29/48:32-48:40/ 48:42-48:45/48:47-48:59N	15+19	-, B48, B48/40, Null
B*40:15-40:16:01:02/40:148/40:161/40:309/40:542-40:543	14+15+17+26+32	-, B61(40)
B*40:23/40:183/40:198/40:466	14+15+16+26+32	-

Allele	Mixes	Serology
B*40:25	1+14+15w+16	-
B*40:26/40:28, B*50:14	17+26+32+40+41	B21, -
B*40:31/40:33/40:42	14+15+16+24w	B60(40), -
B*40:32/40:98	14+15+17+24w+26+32	-
B*40:39/40:343, B*41:08-41:09/41:33/41:47/41:62, B*44:166/44:184/44:213, C*16:85	15+17	B41, -
B*40:46/40:430, B*48:22/48:30	15+16+19	-
B*40:48/40:377	14+15+16+27	B60(40), -
B*40:51	15+16+26+32	-
B*40:63/40:92/40:163/40:199/40:208/40:265N/40:324	15+16	-, Null
B*40:68	7+14+17	-
B*40:71	15+17+27	-
B*40:93, B*42:11, B*48:05/48:10/48:12-48:13, C*07:937	15	-, B48
B*40:95	14+17+26+32+40+41	-
B*40:106	1+14+16	-
B*40:109/40:340	14+15+17+37	-
B*40:124:01-40:124:02	9+14+15+16+18	-
B*40:132/40:178	14+15+16+25	-
B*40:158	14+17+26+32	-
B*40:166	1+14+16+28	-
B*40:177/40:294/40:378	14w+15+17w	-
B*40:180	9+14+15+17+18	-
B*40:185/40:308	5+15+16	-
B*40:313	14+15w+17	-
B*40:326	14+15w+16	-
B*40:328	2+14+15	-
B*40:355	14+15+26+32	-
B*40:371	14+15+17w	-
B*40:414	14+15+17+24	-
B*40:424	12+15+16	-
B*40:429, B*47:01:01:02-47:07/47:09/47:11-47:13	9+14+17+18	-, B47
B*40:458, B*44:02:10/44:09/44:34:01/44:46:01-44:46:02/44:129/44:131/44:254/44:277/44:438N	17+24+25	-, B44(12), B45(12), Null
B*40:498	14+15+16+24	-
B*40:513	14+16+28w	-
B*40:522/40:540N	14+15+17+27	-, Null
B*40:523	15+16+25	-
B*40:529	14+15+17?	-
B*41:01:01:01-41:02:08/41:02:11-41:03:02/41:05-41:07/41:10-41:18/41:22-41:32/41:34-41:45N/41:48-41:59/41:61/41:64-41:81	15+17+22	B41, -, Null
B*41:02:09	15+17+22+40+41	-
B*41:02:10	15+17?+22	-
B*41:04/41:21/41:63	15+17+22+24w	-
B*41:19	14+15+17+22	-
B*41:20	15+17+22w	-
B*41:46/41:82	17+22	-
B*41:60	15+17+22+37w	-

Allele	Mixes	Serology
B*42:01:01:01-42:01:06/42:04/42:06/42:08/42:10/42:12/42:14-42:15/42:21-42:25/42:28-42:31/42:33, B*55:20	23+28	B42, -
B*42:01:07/42:07/42:20/42:34	23	-
B*42:02:01:01-42:02:02/42:17-42:18/42:27	22+23+28	B42, -
B*42:05:02	1w+23+28	-
B*42:09	21+22+23+28w	-
B*42:13	7+19+23+28	-
B*42:16:02	23+24w+28w	-
B*42:32	21+23+28w	-
B*44:02:01:01-44:02:09/44:02:11-44:02:12/44:02:14-44:02:69/44:02:71-44:03:11/44:03:13-44:03:36/44:03:38-44:03:39/44:03:41-44:03:50/44:03:52-44:04/44:07/44:11/44:13/44:19N-44:20/44:22-44:24/44:26-44:30/44:32-44:33/44:34:02-44:39/44:41:01-44:42/44:45/44:47-44:48:02/44:50:02/44:51/44:55-44:56N/44:58N-44:59:02/44:61N/44:63/44:65-44:69:02/44:71-44:74/44:80-44:81/44:84:01-44:89/44:91-44:94/44:96/44:98-44:105/44:108N-44:109/44:111-44:116/44:118-44:122/44:125-44:128:02/44:132-44:133/44:137-44:138Q/44:141-44:143/44:147-44:149N/44:151-44:155/44:157/44:159-44:161/44:163:01-44:165/44:167-44:168/44:170-44:181/44:183/44:185-44:191/44:193-44:197/44:199-44:200/44:202-44:209/44:212/44:214-44:216/44:218-44:225/44:227-44:229/44:231/44:234-44:235/44:237N-44:245:02/44:247-44:249/44:252-44:253/44:255/44:257-44:262/44:265-44:275/44:278-44:287/44:289-44:307/44:309N-44:329/44:331-44:338/44:341N-44:342/44:344-44:346/44:348-44:354N/44:357-44:364/44:366N-44:371/44:373-44:384/44:437/44:439-44:444/44:446-44:458/44:460-44:464:01:02/44:466N-44:505/44:507-44:524/44:526-44:529/44:531-44:540/44:542-44:543/44:545-44:546	17+24	B44(12), -, Null, B21
B*44:02:70/44:05:01:01-44:05:06/44:70/44:78/44:107/44:123/44:136/44:139/44:198N/44:217N/44:236/44:250/44:264/44:288/44:330/44:465	17+24w	-, B44(12), Null
B*44:03:12	4w+17+24	-
B*44:03:40	17+24+40	-
B*44:06, B*51:42/51:359	7w+8w+25+37w	B44(12), -
B*44:08/44:57/44:60	34+44	B44(12), -
B*44:12/44:232/44:365	7w+17+24	B44(12), -
B*44:16/44:21/44:64:01-44:64:02/44:124/44:347	14+17+24	B47, -
B*44:18:01:01-44:18:01:02/44:355, B*49:01:02/49:11/49:45	17+31+37w	-, B49(21)
B*44:25/44:50:01/44:95	8w+17+24+37w	-
B*44:40/44:44/44:130	19w+24	B44(12), -
B*44:49	2+17+24	-
B*44:50:03	8+17+24+37	-
B*44:52N/44:169/44:233	24	Null, -
B*44:53:01-44:54/44:106/44:110/44:135/44:192:01-44:192:04/44:211/44:343/44:506	15+17+24	B44(12), -
B*44:62	17+40	-
B*44:75	17+24w+25	-
B*44:76/44:79:01-44:79:02/44:146	17+24+26	-
B*44:90	17+23+24+25+30	-
B*44:97	9+17+24	-
B*44:117/44:251	11+17	-
B*44:145/44:530	17w+24w	-
B*44:150	14+17+24+26	-
B*44:156	2+19w+24w	-

Allele	Mixes	Serology
B*44:158	15+17+24w	-
B*44:182	15+24	-
B*44:210:01-44:210:02	19w+24w	-
B*44:263	7+17+24w+42w	-
B*44:356	7w+17+23?+24+25 +30w	-
B*44:372/44:544N	17?+24	-, Null
B*44:385	17+24?	-
B*44:459	17+26+40	-
B*45:01:01:01-45:01:13/45:03/45:05/45:07/45:11-45:21/45:23/45:25/45:28N/ 45:30-45:34	17+25+27	B45(12), -, Null
B*45:02/45:09/45:29	17+25	-
B*45:04/45:08/45:24, B*50:70, B*56:67	17+27	-
B*45:06	17+23+25+27+28+30w	-
B*45:10	14+17+27	-
B*45:22	5+25+27	-
B*45:27	15+17+25+27	-
B*46:01:01:01-46:01:04/46:01:07-46:01:25/46:01:28-46:03/46:05/46:07N- 46:10/46:12-46:13:03/46:15N-46:16/46:20-46:30/46:32:01-46:39/46:42-46:44/ 46:46/46:48-46:53/46:55N-46:60/46:62-46:69/46:71/46:73/46:75-46:76/ 46:78/46:80-46:85/46:88-46:92/46:94-46:100	33+34	B46, -, Null
B*46:01:05/46:31	33w+34	-
B*46:01:27	33+34w	-
B*46:06	1+34	-
B*46:11/46:18	27+33+34	-
B*46:14	32+33+34	-
B*46:17	25+33+34+44	-
B*46:19/46:93	12w+33+34	-
B*46:72	33+34+43	-
B*46:87	1+33+34	-
B*47:08	9+17+18	-
B*47:10	9+14+17+18+26	-
B*48:01:08	15+19+40+41	-
B*48:06	1+19	-
B*48:23	15+19+21	-
B*48:26	18+19	-
B*48:46	15+19+24w	-
B*49:01:01:01-49:01:01:03/49:01:01:05-49:01:01:19/49:01:04-49:01:17/ 49:01:19-49:01:24/49:06/49:08-49:09/49:12-49:14/49:16-49:17/49:19N-49:23/ 49:27-49:30/49:32-49:39/49:41-49:44/49:46/49:48-49:49/49:51-49:53/49:55- 49:60N/49:62-49:66/49:68-49:69/49:74-49:75/49:77-49:81	17+26+31+32+37w	B49(21), -, Null
B*49:01:01:04/49:54	17+26+31+32+37	-
B*49:01:03	26+31+32+37w	-
B*49:01:18	17w+26+31+32+37w	-
B*49:03/49:73	31+32+37w	-
B*49:04:01-49:05:02/49:18:02	17+26+32+37w	-, B49(21)
B*49:07	14+17+26+31+32+37w	-
B*49:10/49:24/49:31	17+26+31+37w	-
B*49:18:01	17+26+32+37w+40	-

Allele	Mixes	Serology
B*49:25	2+17+26+31+37w	-
B*49:26	31+32+37w+42+47	-
B*49:40	15+17+26+31+32+37w	-
B*49:47:01-49:47:02	17+26+31+32	-
B*49:50	11+17+26+32+37w	-
B*49:61	8w+17+24+26+32+37w	-
B*49:67	6+17+26+31+32+37w	-
B*49:71-49:72	17+26+31+32+37?	-
B*49:76	17+22+26+31+32+37w	-
B*50:01:01:01-50:01:17/50:01:19-50:01:20/50:01:22-50:01:23/50:04:01-50:05/50:07-50:08/50:10-50:12/50:15/50:17-50:19/50:22/50:32/50:34-50:40/50:42/50:44-50:48/50:50-50:55/50:57-50:59/50:61-50:69/50:71-50:74/50:76-50:79	17+26+27+32	B50(21), -, Null
B*50:01:21	17+26+27+32+40+41	-
B*50:02:01:01-50:02:01:02/50:21/50:56	17+25+26+27+32	B45(12), -
B*50:06/50:75	27+32	-
B*50:13/50:43	17+26+27	-
B*50:20	9+17+18+26+32	-
B*50:31	14+17+26+27+32	-
B*50:49	12+17+27	-
B*50:60	15+17+26+27+32	-
B*51:01:01:01-51:01:03/51:01:05-51:01:10/51:01:12/51:01:14-51:01:16/51:01:18-51:01:37/51:01:39-51:01:67/51:01:69-51:01:102/51:01:104-51:02:03/51:02:05-51:03/51:05:01:01-51:05:01:03/51:08:01:01-51:08:04/51:08:06-51:09:03/51:11N-51:12/51:14/51:16-51:21/51:24:03-51:24:05/51:26-51:40:02/51:43/51:48-51:53/51:55/51:57-51:58/51:60-51:61:02/51:63:01/51:65-51:67/51:69-51:77/51:79-51:80/51:82-51:91/51:93-51:102/51:105/51:109-51:111/51:113/51:115/51:117/51:119-51:134/51:137-51:138/51:140-51:147/51:149N-51:150/51:152-51:156/51:158:01-51:167/51:169/51:171/51:173Q-51:175/51:177/51:179-51:189/51:191-51:193:01/51:195-51:196/51:198/51:201-51:212/51:215-51:219/51:221/51:224/51:226/51:228-51:230:01:04/51:232:01-51:240/51:242-51:244/51:246/51:248-51:250/51:252-51:257/51:259-51:280/51:282/51:284-51:292/51:294/51:296-51:299/51:301-51:309/51:311-51:318N/51:320-51:326/51:328-51:337/51:339/51:342-51:351/51:354-51:357N/51:360-51:370/51:373-51:377N/51:379-51:390/51:392-51:395/51:397-51:398	37+38+39	B51(5), -, B5102, B5103, Null
B*51:01:04/51:01:13/51:02:04/51:08:05/51:10/51:24:01-51:24:02/51:63:02/51:136/51:168/51:197/51:199/51:295/51:327/51:338/51:358, B*52:01:05/52:01:15/52:06:01-52:06:03/52:97, B*59:02/59:11	37	B51(5), B5102, -, B52(5), B59
B*51:01:11/51:01:17/51:283	37+38w+39	B51(5), -
B*51:01:38/51:178N/51:231	37+38	-, Null
B*51:01:68	37+38+39+47	-
B*51:01:103	37?+38+39	-
B*51:04:01/51:56:03/51:139/51:396	7+8+37+38+39	B51(5), -
B*51:04:02/51:46/51:56:01/51:227	7w+8w+37w+38+39	-, B51(5)
B*51:06:01:01-51:06:04/51:41N/51:54/51:59/51:64/51:78:01-51:78:02/51:135/51:190/51:194/51:213/51:247/51:258/51:293/51:319/51:341/51:352-51:353/51:371/51:378	38+39	B51(5), -, Null
B*51:07:01-51:07:02/51:214/51:222/51:251/51:340	37+39+40w	B51(5), -
B*51:13:01/51:92:01, B*52:14:01, B*59:03	11+37	-
B*51:13:02/51:92:02/51:172	11+37+38+39	-
B*51:15/51:106:02/51:157/51:225/51:300, B*52:25:01, B*59:01:01:01-59:01:01:02/59:04-59:05/59:07/59:09-59:10N/59:12	31+37	-, B59, Null
B*51:22	37+39+42	-

Allele	Mixes	Serology
B*51:23/51:108	25+37+38+39	-
B*51:44N/51:118N/51:245N	37+39	Null
B*51:56:02	6+7+8+37+38+39	-
B*51:62, A*24:90:02N	31	-, Null
B*51:68/51:176	2+37+38+39	-
B*51:103/51:116/51:151	32+37+38+39	-
B*51:104:01-51:104:02	20+34+37+38+39	-
B*51:106:01/51:223	31+37+38+39	-
B*51:107/51:170/51:391N	37+38w+39w	-, Null
B*51:112	17+26+37+38+39	-
B*51:114	37w+38+39	-
B*51:193:02	37+38?+39?	-
B*51:200	7+37+38+39	-
B*51:241	37+38+39+48	-
B*51:281	7w+8w+31+37w+38+39	-
B*51:310, B*53:28	8+37+40	-
B*51:372	6+37w+38+39	-
B*52:01:01:01-52:01:04/52:01:06-52:01:14/52:01:16-52:01:56/52:03-52:05/52:07:01-52:13/52:15-52:19/52:21:01-52:24/52:26-52:50/52:52-52:53/52:55-52:67/52:69-52:72/52:74/52:76/52:78-52:87/52:89N-52:96N/52:98-52:114/52:116	37+40	B52(5), -, Null
B*52:02:01-52:02:02	34+37+40	-
B*52:14:02/52:75	11+37+40	-
B*52:20/52:68	40	-
B*52:25:02/52:115N	31+37+40	-, Null
B*52:51	32+37+40	-
B*52:54	15+37+40	-
B*52:73	37+40w	-
B*52:77	2+37+40	-
B*52:88	8w+37w+40	-
B*53:01:01:01-53:01:25/53:01:27-53:02/53:05:01-53:06/53:08:01-53:08:02/53:10/53:15-53:16/53:18-53:27/53:29/53:32/53:34-53:35/53:37/53:41-53:43:02/53:45-53:46/53:48N-53:54/53:56-53:61/53:63-53:64/53:66/53:68-53:71/53:73-53:74	6+7+8+37	B53, -, Null
B*53:01:26	4+6+7+8+37	-
B*53:04/53:33	6+7+8+11+37	-
B*53:14/53:47/53:67, C*06:147	6	-
B*53:17:01-53:17:02, B*58:01:05/58:01:29/58:77/58:82/58:116/58:119	8+37	-
B*53:30/53:39	6+7+8+17+37	-
B*53:31	6+7+11	-
B*53:40	7+8+37	-
B*53:62	7+8w+37	-
B*53:72	6+7w+8w+37w	-
B*54:01:01:01-54:01:06/54:01:08-54:02/54:05N/54:08N/54:10/54:13/54:16-54:29/54:31-54:32/54:34-54:35/54:37/54:39/54:43-54:45/54:47, B*55:07/55:124	27+28+29	B54(22), -, Null

Allele	Mixes	Serology
B*54:01:07/54:38, B*55:01:01:01-55:01:03/55:01:05-55:01:12/55:01:14-55:02:10/55:02:12-55:03/55:05/55:09-55:12/55:15-55:16/55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33-55:34/55:36-55:48/55:50/55:52/55:54-55:55N/55:57/55:59-55:60/55:62-55:63/55:65-55:67/55:69-55:77/55:79-55:80/55:82-55:85/55:87-55:89N/55:91-55:93/55:95-55:102/55:104-55:109/55:111-55:117N/55:119-55:120/55:125N-55:129/55:131-55:133/55:136, B*56:01:13/56:10/56:19N/56:66	27+28	-, B55(22), B22, Null
B*54:03/54:33/54:40	27+28+29+30	-
B*54:04/54:11/54:42	28+29	-, B54(22)
B*54:06, B*56:22/56:88	28w+30	-
B*54:07	27+28w+29	-
B*54:09	28w	-
B*54:12	28+29+31+37	-
B*54:14	28w+29	-
B*54:15, C*03:464	29	-
B*54:30	27+29	-
B*54:36	27w+28w+29	-
B*54:41/54:46	27w+29	-
B*55:01:04	27+28+39+41	B55(22)
B*55:02:11	27+39+41	-
B*55:08/55:51, B*56:07/56:15/56:46	28+30	B56(22), -
B*55:14	21+28	-
B*55:18/55:61/55:78/55:94/55:118N, B*56:08/56:17/56:23/56:42/56:44/56:54/56:89/56:91, C*01:90/01:136/01:145:01N, C*03:19/03:307/03:318N, C*07:289/07:536/07:725, C*08:207:01, C*12:03:66/12:15/12:208, C*15:07:01:01-15:07:01:02/15:43/15:85/15:144	27	-, Null, Cw3
B*55:23/55:32/55:68, B*56:18/56:31-56:32	21+28w	-
B*55:27	24w+28w	-
B*55:28:02	28+39+41	-
B*55:35	27+28+34+43	-
B*55:53	27w+28w	-
B*55:56	23+27+28	-
B*55:64	27+28w	-
B*55:103	28+31+37	-
B*55:122	25+27+28	-
B*55:123	12+13+27+28	-
B*55:130	5+27+28	-
B*56:01:01:01-56:01:12/56:01:14-56:02:03/56:04:01:01-56:04:05/56:16/56:20:01-56:20:02/56:24-56:30/56:34-56:38N/56:40-56:41/56:43/56:47-56:49/56:51-56:53/56:55:01:02-56:59/56:61-56:64/56:68-56:73/56:75-56:87/56:90, B*55:134, B*56:93/56:95	27+28+30	B56(22), -, Null
B*56:05:01/56:05:02	28+30+39+41	B56(22)
B*56:06	5+28+30+39+41	B78
B*56:09	7+19+21+28w+30	-
B*56:11	7+19+28w+30	B56(22)
B*56:12	7w+19w+28	B55(22)
B*56:13, B*82:04	23+27+28+30	B56(22), -
B*56:14, C*03:102	27+33	-
B*56:21	28+30+37+39	-
B*56:39	27+28+30+34+43	-

Allele	Mixes	Serology
B*56:45	5+27+28+30	-
B*56:60	7+19+27+28	-
B*56:65	28+30+31+37	-
B*56:74	25+27+28+30w	-
B*56:96	1+27+28+30	-
B*57:01:01:01-57:01:01:29/57:01:03-57:01:18/57:01:20-57:01:32/57:01:34-57:01:48/57:04:01-57:04:03/57:06/57:08/57:10/57:14:02-57:15/57:18-57:21/57:23-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:75/57:77-57:79N/57:81/57:85-57:92/57:95/57:97-57:100/57:102-57:106/57:108-57:117/57:121-57:123/57:125-57:130N/57:132-57:136/57:138-57:147/57:149-57:154/57:156-57:160/57:162N-57:169/57:171-57:173/57:176	34+35	B57(17), -, Null
B*57:01:02/57:01:33/57:02:01:01-57:03:06/57:09/57:16-57:17/57:28N/57:32/57:39/57:42/57:46/57:66/57:70/57:80/57:84/57:94/57:96/57:101/57:107/57:120/57:124/57:137/57:148/57:155/57:170	35	B57(17), -, Null
B*57:01:19/57:14:01	34+35+36	-
B*57:05	8+35+37	-
B*57:07	35+44	-
B*57:12	35+43	-
B*57:13/57:22/57:161	34+35+45	-
B*57:45/57:51/57:69	17+35	-
B*57:53	34w+35	-
B*57:57/57:63	35+45	-
B*57:76	11+34+35	-
B*57:93/57:119	34+35+44	-
B*57:131	8+34+37	-
B*57:174	34+35?	-
B*57:175	34+37	-
B*58:01:01:01-58:01:04/58:01:06-58:01:15/58:01:17-58:01:19/58:01:21-58:01:28/58:01:30-58:01:46/58:04-58:05/58:09-58:13/58:17N/58:21-58:24/58:28:01-58:29/58:31N-58:33/58:35/58:37/58:39N-58:42/58:45:01-58:45:02/58:47-58:59:02/58:61-58:63/58:65-58:72N/58:74/58:76/58:79-58:81/58:83-58:90/58:92/58:94N-58:103/58:105-58:110/58:112-58:113/58:115/58:117-58:118/58:120/58:123-58:131:02/58:133N-58:134/58:136/58:139-58:145/58:147	8+36+37	B58(17), -, Null
B*58:01:16/58:02:01:01-58:02:03/58:07/58:15-58:16:02/58:18/58:25-58:26/58:38/58:43/58:60/58:104/58:121/58:132/58:137/58:146	36	-, B58(17)
B*58:01:20/58:75/58:93N/58:114	8w+36+37w	-, Null
B*58:06/58:46	36+45	-
B*58:08:01-58:08:02	36+37+45	B17, -
B*58:14	35+36	-
B*58:19/58:78/58:91	8+36+37+45	-
B*58:20	11+36	-
B*58:34	8+11+36+37	-
B*58:36	8+34+36+37	-
B*58:44	8+19+21+36+37	-
B*58:64	5+36	-
B*58:73	8+31+36+37	-
B*58:111	8+17+36+37	-
B*58:122	36+37	-

Allele	Mixes	Serology
B*58:135/58:138	8+36?+37	-
B*59:06	29+31+37	-
B*67:01:01-67:01:03/67:03-67:07	12+13+28	B67, -
B*67:02:01:01-67:02:01:02	12+33	-
B*73:01:01:01-73:04	48	B73, -
B*78:03	5+39+41+42	-
B*78:05	5+40+41	-
B*78:06	40+41	-
B*78:09-78:10	38+39+41	-
B*82:01:01:01-82:02:02	23+25+27+28+30w	B82, -
B*82:03	23+25+27+28+30	-
B*83:01	7w+19w+23+24w+25+30w	-
A*26:89, C*03:278/03:504, C*06:77	32	-
C*03:342	19+24w	-
C*03:542	30	-
C*06:02:101	4?	-
C*07:463	2+29w+48w	-
C*07:758	2+29+48	-
C*08:93, C*14:61	25	-
C*12:301	4+15w	-
C*14:92	29+33+41	-
C*15:71	8+31+37	-
C*16:98:02	33?	-

w = weak

? = nucleotide sequence information not available for the primer matching sequence or alleles with unknown reactivities

13. Certificate of Analysis



HEIDELBERG
UNIVERSITY
HOSPITAL

Heidelberg University Hospital
Institute of Immunology
Transplantation Immunology
Im Neuenheimer Feld 305
69120 Heidelberg – Germany

Phone: +49 6221 564013
Fax: +49 6221 564200
www.ctstransplant.org

CTS Collaborative Transplant Study

Certificate of Analysis

HLA-B* CTS-PCR-SSP Tray Kit

Product number	102
Lot number	B16-3
Number of HLA-specific primer mixes per test	48

Mix specifications

The specificity of each primer pair has been tested against a panel of well characterized DNAs.

Result

No false positive or false negative amplifications were obtained under our test conditions of the bulk reagents.

Date of approval	30.04.2024
Approved by	H. Tran, M.D. Quality Control, Supervisor