

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.	20
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Product No.	120
Lot No.	A17-3 B16-3 C13-4

CTS Collaborative Transplant Study

WORKING INSTRUCTION

HLA-A*/-B*/-C* CTS-PCR-SSP TRAY KIT

LOCUS- AND LOT-SPECIFIC MANUAL

To be applied to the following product:

Product No.	Description
120	HLA-A*/-B*/-C* CTS-PCR-SSP TRAY KIT  IVD CE 0197

1. Main differences

- Between lot A17-3 (the current lot) and lot A17-2:**
 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.
- 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.
- Between Lot C13-4 (the current lot) and Lot C13-3:**
 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.

HLA-C*04:09N has been renamed to HLA-C*04:09L since January 2025.

2. Introduction

- Intended use: This kit reveals a low/intermediate resolution typing of HLA-A*, -B* and -C* by the PCR-SSP method.
- Allele coverage: IMGT/HLA Sequence Database Release 3.55.0, January 2024 for HLA-A*, -B* and -C*, except:
 - **HLA-A*** 01:01:65-01:01:66/01:01:131/01:01:146/01:38/ 01:72/01:102/01:139/01:167/01:221/01:267 01:284/01:390/01:399/01:418N, A*02:644, A*11:01:35/11:01:57/ 11:01:104/11:23-11:25:03/11:31/11:35/11:40/11:45/11:50Q/11:78N/11:98/11:111-11:112 /11:176/11:183/11:191/11:211/ 11:223/11:226/11:229/11:250/11:258/11:269/11:290/ 11:310N/11:346/11:380/11:389/11:392/11:396-11:397N/11:432N/11:435/11:450, A*24:129, A*25:01:09/25:01:17/25:81, A*26:01:59/26:01:65/26:01:79/ 26:60N/ 26:85/26:125/26:131/26:143-26:144/26:204:01:01-26:204:01:02/26:234, A*29:01:07/29:02:36/29:60/29:111/29:179, A*30:12:02/30:26/30:82/30:84/30:184Q/30:189/30:206/30:210, A*31:01:07/31:01:47/31:21-31:22/31:75/31:90/31:104/31:109/31:202N/31:204/31:210, A*32:01:07/32:01:12/ 32:01:48/32:28/32:33:02/32:34/32:66/32:71/32:75/32:94/32:158,A*33:01:05/33:03:26-33:03:27/33:03:31/33:03:56/33:03:58/33:18:02-33:19/33:30/ 33:32:01-33:32:02/33:35/33:66/33:81/33:89/33:122/33:130/33:135/33:140N/33:152:01-33:152:02/33:158-33:159/33:175Q/33:188/33:215/33:249, A*34:24, A*68:01:11/68:01:25/68:02:07/68:48-68:50:02/68:137/68:184/68:218 /68:230/68:234/ 68:236N/ 68:251N/ 68:258/ 68:286/68:293Q/68:311, A*74:01:10/74:16:01/74:48, A*80:02/80:04
 - **HLA-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
 - **HLA-C*** C*01:02:10/01:02:27-01:02:28/01:02:59/01:50/01:75/01:101-01:102/01:168-01:169:02/01:193/01:212, C*02:180, C*03:45/03:58/03:86/03:94:01-03:94:02/03:607, C*04:01:23/04:01:30/04:07:02/04:15:01/04:130/04:166:02/ 04:178/04:268/04:370/04:385N/04:429, C*05:18:02/05:18:04-05:18:06/ 05:103:01-05:103:02, C*06:210/06:217, C*07:01:103/07:02:48/07:02:111/07:02:121/07:30/ 07:41/07:95/07:140:02/07:165/07:241/07:265/07:304/ 07:307/ 07:338/07:342:01-07:342:02/07:347N/07:447/07:487/07:512/07:525/07:599/07:671/07:755/07:812/ 07:815/07:940:02/07:967/07:986:01-07:986:02/07:1036/07:1063N/ 07:1077/ 07:1108, C*08:16:01-08:16:02, C*12:195:03, C*14:92, C*15:02:21/15:02:25/15:05:15/ 15:10:01/15:10:04/15:23:01/15:63/15:107/15:138/15:208/15:242, C*16:53/16:68/16:98:02/16:110/16:216, C*18:17

These alleles are considered to be rare.

- This manual is only valid for **Lot No. A17-3 B16-3 C13-4**
- 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).

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4. Kit Composition

- Number of PCR primer mixes per test: 96:
 - 24 HLA-specific mixes for HLA-A typing
 - 48 HLA-specific mixes for HLA-B typing
 - 23 HLA-specific mixes for HLA-C typing
 - 1 negative control mix
- Number of tests per tray: 1
- 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.

5. 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.

6. 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.

7. Result Evaluation

- Check the approximate size of the PCR product against the Primer Mix Specificity Tables (Appendix / Table 1, 2 and 3) to confirm the correct product size.
- Use the Amplification Pattern Tables (Appendix / Table 4, 5 and 6) to make the allele assignments or use the SCORE Software for detailed result interpretation.

8. Interpretation Hints

- Weak or false positive reactions can occur if you use a different Taq polymerase. Also the quality and quantity of DNA is a crucial factor and can affect the mix reactivities. Under suboptimal test conditions, some mixes of this lot are particularly prone to give false positive reactions and, if any, are indicated in Section 9.
- Alleles that are known to amplify weakly are listed with "w" (= weak) in the tables (Appendix).
- Please also 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.

9. Special notes

- **HLA-A locus:**
 - The following mixes will give **short** PCR products (<200 bp): Mixes **5, 17, 20, 23 and 24**. These PCR products might be difficult to distinguish from the 90 bp amplification control (internal positive control)!
In general, these specific products will give a much stronger signal than that of the controls. Furthermore, they will not have migrated as far into the gel as the control bands. If you are not sure whether the strong signal is due to a specific or a generic PCR product, you might let the gel run for additional 15 minutes at a lower voltage. By this way the specific band will be separated from the control band, and you will be able to clearly see a double signal at this position: a very strong specific band, and a weaker, shorter amplification control band.
 - Since mix **5** corresponds to A*23 and mix **23** to A*02 (both alleles/allele groups are common), it is recommended to start the interpretation by checking these reactions very carefully first!
 - Some mixes contain specific primers which may give rise to PCR fragments of **two or more** different sizes simultaneously (see Table 1).

- **Mix 4:** 225 bp and 235 bp (these two bands tend to merge into a single band). An additional weak band of 740 bp may occur, but is usually invisible.
- The following mixes could give false positive reactions: Mixes **2, 7, 8, 21**.
- **HLA-B locus:**
 - 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 90 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.
 - Amplification of B*27:06 will result only in a short fragment (155 bp).
 - B*47:01:01:01-47:10 will only give rise to a long fragment (525bp).
 - **Special notes to 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.
 - **Special notes to 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*13:02:01/03/08Q/09/14-16/18/19 shows only the smaller fragment (430 bp).
 - Amplification of B*13:10 shows only the larger fragment (490 bp).
 - The following mixes could give false positive reactions: Mixes **31 and 37**
- **HLA-C locus**
 - **Amplification of HLA-C*03** (considering the most common HLA-C*03 alleles):
 - Mix 3 and mix 4 positive: the DNA has one HLA-C*03 allele that corresponds to HLA-Cw9.
 - Mix 4 and mix 5 positive: the DNA has one HLA-C*03 allele that corresponds to HLA-Cw10.
 - All three mixes (3, 4 and 5) positive: the DNA is heterozygous for HLA-C*03 (Cw9 and Cw10).
 - **Mix 20 amplifies HLA-C*15** and can result in PCR products of different sizes:
 - The common alleles **HLA-C*15:02/05/06/09** etc. usually produce **only one** fragment (a **small** amplicon of 205 bp) due to competition of the primers.
 - HLA-C*15:11 produces a single **large** PCR fragment (800 bp).
 - **Exclusion/detection of C*04:09L:**
 - If **only** mix 6 is positive, the DNA may be C*04 positive (e. g. C*04:01), but negative for C*04:09L.
 - In contrast, if mix 6 **and** 7 are both positive, the DNA is positive for HLA-C*04:09L.
 - **Attention:** The fragment size of mix 7 is relatively **small** (140 bp)!

- PCR-SSP mix no. 1, 5, 12, 15 and 19 will also detect some HLA-**A*** specificities (most of them are considered to be rare). Please take this into consideration when interpreting your results.
- PCR-SSP mix no. 2, 5, 6, 11, 12, 15, 16, 20 and 22 will also detect some HLA-**B*** specificities (most of them are considered to be rare). Please take this into consideration when interpreting your results.
- The following mixes could give false positive reactions: **Mix 6, 12, 16.**

10. 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.

11. 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.

12. 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

13. Appendix

Table 1: Allele specificities and sizes of the PCR products of each **HLA-A*** CTS-PCR-SSP primer mix (**Lot No. A17-3**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Position	Mix	Allele	Serology	Size
H1	Mix 1	A*01:01:01:01:01:01:64/01:01:67-01:01:130/01:01:131?/01:01:132-01:01:145/01:01:147-01:04:01:02N/01:06-01:33/01:35-01:37:01:02/01:39-01:71/01:73-01:101/01:103-01:138/01:140-01:166/01:168-01:199/01:201-01:220/01:222-01:243/01:245-01:266:02/01:267w/01:268-01:283/01:285N-01:379N/01:381-01:389/01:391-01:398/01:399?/01:400N-01:417N/01:419-01:426/01:428-01:447, A*11:27/11:38-11:39/11:94/11:209/11:271/11:326, A*23:31/23:45/23:55/23:128, A*24:15/24:41/24:51/24:92/24:235/24:499/24:504/24:551/24:557, A*25:36/25:59/25:65, A*26:29/26:49/26:205, A*32:13, A*66:10, B*07:64, B*15:12:01-15:12:03/15:19/15:270/15:298/15:304N/15:649/15:679	A1, Null, -, A26(10), B76(15)	225 bp
G1	Mix 2	A*01:200/01:244/01:380:01:01-01:380:01:02/01:427, A*02:609w/02:1022, A*03:107/03:164/03:413, A*11:17, A*26:72, A*32:24, A*36:01:01:01-36:14, A*74:46	-, A36	580 bp
F1	Mix 3	A*02:01:01:01-02:01:07/02:01:09-02:01:15/02:01:18-02:01:19/02:01:21-02:01:25/02:01:27-02:01:51/02:01:53-02:01:63/02:01:65w/02:01:66-02:01:68/02:01:70-02:01:73/02:01:75w/02:01:76-02:01:80/02:01:83-02:01:94/02:01:96-02:03:06/02:03:08-02:05:02/02:05:04-02:05:08/02:05:09w/02:05:10-02:06:11/02:06:13-02:06:18/02:06:20-02:06:30/02:06:31?/02:06:32-02:07:14/02:07:16-02:08:01/02:09:01:01-02:22:02/02:24:01-02:35:01/02:35:03-02:47/02:49:01-02:49:02/02:51/02:53:01N-02:54/02:56:01/02:57-02:59/02:60:01w-02:60:02w/02:61-02:63/02:66-02:71/02:73-02:79:02/02:81-02:87/02:89:01-02:97:02/02:99:01-02:99:02/02:101:01-02:102/02:104/02:106-02:113:02N/02:115-02:116/02:118/02:120-02:121/02:123-02:128/02:130-02:134/02:136-02:151/02:153:01-02:168/02:170-02:177/02:179-02:184/02:186-02:187/02:189-02:192/02:193w/02:194/02:196-02:222N/02:224-02:228/02:230-02:245/02:247-02:253/02:254w/02:255-02:274/02:276-02:278/02:280-02:285/02:286w/02:287/02:289:01/02:290-02:297/02:299-02:300/02:302-02:303/02:305N-02:307/02:308w/02:310/02:311w/02:312-02:338/02:340-02:347/02:349-02:376/02:378-02:382/02:384-02:405/02:407-02:411/02:413-02:453/02:455-02:487/02:488w/02:489-02:490N/02:492-02:503/02:505-02:509/02:511-02:526/02:528:01-02:570:02/02:572-02:581Q/02:583-02:590/02:591:02-02:593/02:594w/02:595-02:600/02:602-02:621/02:623-02:640/02:642/02:645-02:648:02/02:649w/02:650-02:661/02:663-02:675N/02:677/02:679-02:680/02:682-02:710N/02:711w/02:712-02:780/02:782-02:788N/02:790-02:825/02:827Q/02:830:01-02:830:02/02:832N-02:871N/02:873-02:875/02:877-02:922/02:924-02:926/02:928-02:943/02:945N-02:984/02:986-02:991/02:993:01-02:1020/02:1021?/02:1022/02:1023?/02:1024-02:1027/02:1031N-02:1032/02:1033?/02:1034-02:1045Q/02:1047-02:1086/02:1087?/02:1088-02:1104N/02:1105?/02:1106-02:1109/02:1110?/02:1111-02:1144/02:1145?, A*23:01:21, A*24:02:76/24:310:02, B*07:02:80, B*15:01:83?/15:10:07	A2, Low A2, -, A203, A210, Null	455 bp
E1	Mix 4	A*01:13/01:176/01:194/01:427, A*02:34w-02:35:03w/02:56:01w-02:56:02w/02:62w/02:103w/02:237w/02:580w/02:741w/02:809w/02:907w/02:927w, A*03:01:01:01-03:193/03:195-03:199/03:201-03:259/03:261-03:479, A*11:130/11:199:01/11:199:02w-11:199:03w/11:222, A*30:55/30:89/30:186, A*32:04/32:17w/32:52, A*34:08, A*36:02, A*68:71, A*69:07, A*74:13/74:42?	-, A2, A3, Null	see below
		A*01:13/01:176/01:194, A*02:34w-02:35:03w/02:56:01w-02:56:02w/02:62w/02:103w/02:580w/02:741w/02:907w, A*03:01:01:01-03:01:07/03:01:09-03:01:11/03:01:13-03:01:22/03:01:24-03:01:68/03:01:70-03:01:82/03:01:84-03:01:93/03:01:95-03:07:02/03:10-03:11N/03:13-03:31/03:33-03:35/03:37-03:40/03:42-03:56:01:02/03:58/03:60-03:71/03:73-03:87/03:90-03:106/03:110/03:112-03:127/03:129N-03:141/03:143-03:148/03:150-03:151/03:153-03:171/03:174-03:175/03:177/03:181-03:193/03:195/03:197:01N-03:197:02N/03:201-03:202/03:204/03:206-03:210/03:212-03:215/03:217-03:218/03:220/03:222-03:242/03:244/03:246-03:251/03:253-03:258/03:261-03:266N/03:268-03:272/03:274-03:299/03:301-03:318/03:320-03:329N/03:331-03:381N/03:383-03:395/03:397/03:399-03:412/03:414-03:428/03:430-03:462/03:464Q-03:478, A*11:199:01/11:199:02w-11:199:03w/11:222, A*30:55/30:186, A*32:17w, A*34:08, A*68:71, A*69:07, A*74:13/74:42?	-, A2, A3, Null	225 bp

Position	Mix	Allele	Serology	Size
		A*01:427, A*02:237w/02:809w/02:927w, A*03:01:01:01-03:01:11/03:01:13-03:01:29/03:01:31-03:01:34/03:01:36-03:01:49/03:01:51-03:01:89/03:01:91-03:01:105/03:01:107-03:04:03/03:07:01:01-03:09/03:11N/03:13-03:17:02/03:19-03:39/03:41/03:43-03:58/03:60-03:71/03:73-03:87/03:89:02-03:96/03:99-03:104/03:106-03:121/03:123:01-03:134/03:136-03:148/03:150-03:166/03:168N-03:178N/03:181-03:186/03:188-03:193/03:195/03:197:01N-03:199/03:201-03:204/03:206-03:207/03:209-03:220/03:222-03:224/03:226-03:242/03:244/03:246-03:259/03:261-03:288/03:290-03:299/03:301-03:318/03:320-03:325/03:327-03:331/03:333-03:395/03:397-03:451/03:453-03:460/03:462-03:479, A*32:04/32:52, A*36:02	-, A3, Null	740 bp
		A*01:427, A*03:01:01:01-03:01:05/03:01:07-03:01:29/03:01:31-03:01:34/03:01:36-03:01:48/03:01:51-03:01:89/03:01:91-03:01:105/03:01:107-03:04:03/03:07:01:01-03:09/03:11N-03:17:02/03:19-03:39/03:41/03:43-03:74/03:76-03:83/03:85-03:94/03:96/03:99-03:104/03:107-03:121/03:123:01-03:134/03:136-03:166/03:168N-03:176/03:178N-03:186/03:188-03:193/03:195-03:199/03:201-03:203/03:205-03:207/03:209-03:214/03:216-03:224/03:226-03:234Q/03:236-03:248/03:250-03:259/03:261-03:287/03:290-03:321/03:323N-03:325/03:327-03:331/03:333-03:342N/03:344:01-03:346/03:348-03:376/03:378-03:413/03:415-03:417/03:419-03:451/03:453-03:460/03:462-03:467/03:469-03:479, A*11:130, A*30:89, A*32:04, A*36:02	-, A3, Null	235 bp
D1	Mix 5	A*23:01:01:01-23:17:02/23:17:03?/23:18-23:23/23:25-23:33/23:35-23:56/23:58-23:65/23:67-23:68/23:70-23:103N/23:105-23:112/23:114-23:127/23:129/23:131-23:135, A*24:24/24:71/24:315/24:392/24:527, A*29:07/29:49, A*31:29, A*32:170, A*33:187, B*18:27	A23(9), -, Null	195 bp
C1	Mix 6	A*02:46/02:48/02:70/02:129/02:571/02:1050, A*03:30/03:152/03:273, A*11:325, A*23:01:01:01-23:02/23:04-23:08N/23:10:01-23:22/23:24-23:27/23:29-23:36/23:38N-23:50/23:52-23:60/23:62-23:68/23:70-23:79/23:81-23:82/23:84N-23:99/23:101-23:112/23:114-23:127/23:129-23:135, A*24:02:01:01-24:02:16/24:02:18-24:02:48/24:02:50-24:02:63/24:02:64w/24:02:65/24:02:66w/24:02:67-24:02:88/24:02:90-24:07:04/24:09N-24:11N/24:13:01-24:15/24:17:01:01-24:20:02/24:22-24:23/24:25-24:28/24:30/24:32-24:41/24:43-24:64/24:66/24:68-24:76/24:78-24:88/24:90:01N-24:128/24:130-24:155N/24:157/24:159-24:190/24:192-24:199/24:201-24:210/24:212-24:236/24:238-24:272:02/24:274-24:289/24:291-24:308/24:311-24:325/24:327-24:341/24:343w/24:344-24:358/24:360-24:369/24:371-24:388N/24:390-24:391/24:393-24:414/24:415w/24:416-24:427N/24:428Nw/24:429N-24:470/24:472-24:488/24:490-24:505/24:507-24:521/24:522?/24:523-24:561:02/24:563-24:600/24:602-24:605/24:606?/24:607/24:459:02/24:609-24:615/24:616?/24:617-24:618, A*25:77/25:82, A*31:08, A*32:79, A*33:21/33:53, A*68:249	A2, -, A23(9), Null, A24(9), Low A24(9), A2403, A9, A24(9)/A3	see below
		A*03:30/03:152/03:273, A*11:325, A*23:31/23:45/23:53/23:70, A*24:17:01:01-24:17:01:02/24:41/24:62/24:106/24:208:01-24:208:02:02/24:296/24:330/24:488/24:499/24:503/24:535/24:551/24:555/24:557/24:609, A*25:77/25:82, A*31:08, A*32:79, A*33:21/33:53, A*68:249	-, A24(9)	435 bp
		A*02:46/02:48/02:70/02:129/02:571/02:1050, A*23:01:01:01-23:02/23:04-23:08N/23:10:01-23:22/23:24-23:27/23:29-23:36/23:38N-23:50/23:52-23:60/23:62-23:68/23:71-23:79/23:81-23:82/23:84N-23:99/23:101-23:112/23:114-23:127/23:129-23:135, A*24:02:01:01-24:02:16/24:02:18-24:02:48/24:02:50-24:02:63/24:02:64w/24:02:65/24:02:66w/24:02:67-24:02:88/24:02:90-24:07:04/24:09N-24:11N/24:13:01-24:15/24:17:01:01-24:20:02/24:22-24:23/24:25-24:28/24:30/24:32-24:41/24:43-24:64/24:66/24:68-24:76/24:78-24:88/24:90:01N-24:128/24:130-24:155N/24:157/24:159-24:190/24:192-24:199/24:201-24:207:02/24:209-24:210/24:212-24:236/24:238-24:272:02/24:274-24:289/24:291-24:308/24:311-24:325/24:327-24:341/24:343w/24:344-24:358/24:360-24:369/24:371-24:388N/24:390-24:391/24:393-24:414/24:415w/24:416-24:427N/24:428Nw/24:429N-24:470/24:472-24:488/24:490-24:498/24:500-24:505/24:507-24:521/24:522?/24:523-24:550/24:552-24:554/24:556N-24:561:02/24:563-24:600/24:602-24:605/24:606?/24:607/24:459:02/24:610-24:615/24:616?/24:617-24:618, A*68:249	A2, -, A23(9), Null, A24(9), Low A24(9), A2403, A9, A24(9)/A3	470 bp

Position	Mix	Allele	Serology	Size
B1	Mix 7	A*11:178/11:190, A*23:105, A*24:02:01:01-24:02:73/24:02:75-24:02:145/24:02:147-24:02:166/24:02:167?/24:02:168-24:03:05/24:05:01-24:05:02/24:07:01:01-24:11N/24:14:01:01-24:15/24:17:01:01-24:17:01:02/24:20:01:01-24:21:03/24:23/24:25-24:27/24:29-24:43/24:45N-24:64/24:66-24:86N/24:88/24:90:01N-24:93/24:95-24:106/24:108/24:110-24:128/24:130-24:137/24:139-24:166/24:168-24:187/24:189-24:203/24:205-24:206/24:208:01-24:210/24:212/24:214-24:226:02/24:229-24:284/24:286-24:288/24:291-24:298/24:300-24:314/24:316-24:338/24:340-24:354/24:356-24:372/24:374-24:376/24:377w/24:378Q/24:380/24:382-24:391/24:393-24:404/24:407-24:423/24:425N-24:445N/24:447Q-24:470/24:472-24:477/24:479Q-24:514N/24:516-24:555/24:556N?/24:557-24:559/24:560?/24:561:01-24:568N/24:570-24:571/24:573-24:598/24:600-24:607/24:459:02/24:609/24:611-24:618, A*25:04/25:44, A*32:02/32:22, B*51:55, B*57:129	-, A24(9), Low A24(9), A2403, A9, Null, A32(19)	510 bp
A1	Mix 8	A*02:06:31/02:52/02:135/02:309/02:454/02:992, A*25:01:01:01-25:01:01:12/25:01:02w/25:01:03-25:01:08/25:01:10-25:01:16/25:01:18-25:10/25:11w/25:12N-25:23/25:25-25:32/25:34-25:42N/25:44-25:58/25:60-25:74/25:75w/25:76:01-25:80/25:83-25:87, A*30:01:01:01-30:04:01:03/30:04:03-30:04:04/30:06-30:12:01/30:13-30:20/30:22-30:25/30:27N-30:81/30:83/30:85-30:89/30:91-30:95/30:97-30:123N/30:125-30:151/30:153-30:183/30:185-30:188/30:189?/30:190-30:205/30:206?/30:207-30:209N/30:210?/30:211-30:218/30:220Q-30:223, A*32:101Q, B*07:02:74w/07:225w/07:260w, B*57:148?, C*04:01:49/04:229:02?, C*12:328, C*15:222	-, A25(10), Null, A30(19)	see below
		A*02:52/02:992, A*30:01:01:01-30:02:09/30:02:11-30:04:01:03/30:04:03-30:04:04/30:06-30:12:01/30:13-30:20/30:22-30:25/30:27N-30:81/30:83/30:85-30:89/30:91-30:95/30:97-30:123N/30:125-30:151/30:153-30:183/30:185-30:188/30:189?/30:190-30:205/30:206?/30:207-30:209N/30:210?/30:211-30:218/30:220Q-30:223, B*57:148?, C*04:229:02?, C*12:328, C*15:222	-, A30(19), Null	550 bp
		A*02:06:31/02:135/02:309/02:454, A*30:02:10, C*04:01:49	-	560 bp
		A*32:101Q, B*07:225w/07:260w	-	395 bp
		A*25:01:01:01-25:01:01:12/25:01:02w/25:01:03-25:01:08/25:01:10-25:01:16/25:01:18-25:10/25:11w/25:12N-25:23/25:25-25:32/25:34-25:42N/25:44-25:58/25:60-25:74/25:75w/25:76:01-25:80/25:83-25:87, B*07:02:74w	A25(10), -, Null	405 bp
H2	Mix 9	A*02:06:31/02:135/02:309/02:454, A*25:01:01:01-25:01:07/25:01:08w/25:01:10-25:01:16/25:01:18-25:13/25:15-25:38/25:39w/25:40-25:42N/25:44-25:58/25:60-25:76:02/25:78-25:80/25:83-25:87, A*26:01:01:01-26:01:26/26:01:28-26:01:37/26:01:38w/26:01:39-26:01:58/26:01:60-26:01:64/26:01:66-26:01:78/26:01:79?/26:01:80-26:03:01:02/26:03:03-26:18/26:20:01-26:30/26:31w/26:32-26:43:02/26:45-26:59/26:61-26:71N/26:73-26:75/26:76w/26:77-26:83/26:86-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N-26:169/26:170w/26:171-26:183/26:185-26:203/26:205-26:233/26:234?/26:235-26:237/26:238?/26:239-26:242, A*34:01:01:01-34:11/34:13-34:18/34:20-34:22/34:23w-34:24w/34:25-34:31, A*66:01:01:01-66:22/66:24-66:29/66:31-66:40/66:41w/66:42-66:48, A*68:294, B*07:02:74, B*18:02:02, B*38:02:04	-, A25(10), Null, A26(10), A10, A34(10), A66(10)	see below
		A*02:06:31/02:135/02:309/02:454, A*25:46/25:83, A*26:07:01-26:07:02/26:92, A*66:42	-, A26(10)	450 bp
		A*25:01:01:01-25:01:07/25:01:08w/25:01:10-25:01:16/25:01:18-25:13/25:15-25:38/25:39w/25:40-25:42N/25:44-25:45/25:47-25:58/25:60-25:76:02/25:78-25:80/25:84-25:87, A*26:01:01:01-26:01:26/26:01:28-26:01:37/26:01:38w/26:01:39-26:01:58/26:01:60-26:01:64/26:01:66-26:01:78/26:01:79?/26:01:80-26:03:01:02/26:03:03-26:06/26:08:01:01-26:18/26:20:01-26:30/26:31w/26:32-26:43:02/26:45-26:59/26:61-26:71N/26:73-26:75/26:76w/26:77-26:83/26:86-26:91/26:93-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N-26:169/26:170w/26:171-26:183/26:185-26:203/26:205-26:233/26:234?/26:235-26:237/26:238?/26:239-26:242, A*34:01:01:01-34:11/34:13-34:18/34:20-34:22/34:23w-34:24w/34:25-34:31, A*66:01:01:01-66:22/66:24-66:29/66:31-66:40/66:41w/66:43-66:48, A*68:294, B*07:02:74, B*18:02:02, B*38:02:04	A25(10), -, Null, A26(10), A10, A34(10), A66(10)	445 bp

Position	Mix	Allele	Serology	Size
G2	Mix 10	A*01:01:56, A*02:06:31/02:135/02:309/02:454, A*24:609, A*25:11/25:81?-25:82?, A*26:01:01:01-26:01:01:55/26:01:03-26:01:12/26:01:14-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:01:78/26:01:79?/26:01:80-26:03:01:02/26:03:03-26:32/26:34-26:43:02/26:45-26:59/26:61-26:84/26:86-26:109/26:111-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N-26:203/26:205-26:224/26:225?/26:226/26:228-26:233/26:234?/26:235-26:242, A*30:02:10, A*43:01-43:03	-, A26(10), Null, A10, A43	see below
		A*02:06:31/02:135/02:309/02:454, A*25:11, A*26:03:01:01-26:03:01:02/26:03:03/26:06/26:21/26:30/26:36/26:78/26:92/26:111/26:146/26:177/26:193/26:229	-, A26(10)	415 bp
		A*01:01:56, A*24:609, A*25:81?-25:82?, A*26:01:01:01-26:01:01:55/26:01:03-26:01:12/26:01:14-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:01:78/26:01:79?/26:01:80-26:02:02/26:04-26:05/26:07:01-26:20:02/26:22-26:29/26:31-26:32/26:34-26:35/26:37-26:43:02/26:45-26:59/26:61-26:77/26:79-26:84/26:86-26:91/26:93-26:109/26:112:01-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N/26:147-26:176/26:178-26:192/26:194-26:203/26:205-26:224/26:225?/26:226/26:228/26:230N-26:233/26:234?/26:235-26:242, A*30:02:10, A*43:01-43:03	-, A26(10), Null, A10, A43	405 bp
F2	Mix 11	A*02:741, A*26:48/26:69, A*33:183, A*34:01:01:01-34:01:07/34:05/34:11-34:12/34:14/34:16-34:18/34:23/34:27/34:31	-, A34(10)	580 bp
E2	Mix 12	A*03:103:01-03:103:02/03:282, A*11:116/11:140/11:372, A*25:02/25:75, A*26:13/26:19/26:33/26:226, A*29:32, A*31:89/31:115, A*32:17, A*33:125/33:131, A*34:01:01:01-34:01:07/34:05-34:06/34:11-34:12/34:14/34:16-34:19/34:23/34:27/34:31, A*66:01:01:01-66:02:01:03/66:04/66:06-66:14/66:16-66:27N/66:29-66:38/66:40-66:48, A*68:262/68:294, A*74:13/74:42	-, A25(10), A34(10), A66(10), Null	415 bp
D2	Mix 13	A*01:51, A*03:24, A*11:10, A*25:43, A*30:163, A*33:49/33:144, A*34:02:01:01-34:04/34:07-34:10N/34:13/34:15/34:20-34:22/34:25-34:26N/34:28?/34:29N-34:30N, A*68:103:01-68:103:02, A*69:01:05, B*35:08:14w/35:14:03w	-, A3, A11, A34(10), Null	385 bp
C2	Mix 14	A*02:12-02:13/02:19/02:27/02:37-02:38/02:44/02:49:01/02:54/02:142/02:226N/02:271/02:280/02:417/02:543/02:630/02:662/02:682-02:683/02:723/02:804/02:840/02:948/02:1094, A*03:02:01:01w-03:02:08w/03:10/03:31w-03:32w/03:65w/03:69Nw/03:73w/03:76w/03:82w/03:90w/03:106w/03:113w/03:160w/03:167/03:198w/03:218w/03:223w/03:225/03:236w-03:237w/03:242w/03:244w/03:253w/03:274w-03:275Nw/03:281w/03:285w/03:309w/03:314w/03:318w-03:319w/03:333w/03:348w/03:356w/03:385w/03:453w/03:458Qw/03:466w/03:473w/03:477w, A*11:01:01:01-11:01:34/11:01:36-11:01:56/11:01:58-11:01:103/11:01:104w/11:01:105-11:16/11:18-11:22/11:23w/11:26-11:27/11:29-11:30/11:32:01-11:34/11:36-11:39/11:41-11:44/11:46-11:49/11:51-11:52Q/11:54:01-11:77/11:79-11:93/11:95-11:97/11:98w/11:99N-11:110/11:113-11:129/11:130w/11:131-11:157/11:159-11:175/11:177/11:179-11:182Q/11:184-11:189/11:192-11:210N/11:212-11:222/11:224-11:225/11:227-11:228/11:229w/11:230-11:249/11:250w/11:251N-11:257/11:258w/11:259-11:268/11:270/11:272Q-11:289/11:291-11:309/11:311-11:325/11:327-11:345/11:346w/11:347N-11:371/11:373-11:379/11:381-11:388N/11:389?/11:390-11:391/11:392?/11:393-11:395/11:396?-11:397N?/11:398-11:431/11:432N?/11:433N-11:434/11:435?/11:436N-11:449/11:450?/11:451-11:462, A*24:19/24:28/24:44/24:89/24:290/24:379/24:406/24:424, A*30:164, A*31:24w/31:97w/31:136w, A*33:19w/33:59w/33:102w/33:150w/33:177w/33:190w, A*66:19, A*68:09/68:26/68:28/68:129/68:134/68:171:02N/68:204, A*69:03	A2, -, Null, A3, A11, A9, A24(9), A28	520 bp
B2	Mix 15	A*03:01:39/03:02:08, A*29:01:01:01-29:01:06/29:01:08-29:02:35/29:02:37-29:59/29:61-29:110/29:111w/29:112N-29:178/29:179?/29:180-29:184, A*32:30:01-32:30:02/32:32, A*68:01:28/68:01:36/68:130:02, A*74:10/74:41-74:42/74:46	-, A29(19), Null	see below
		A*29:01:01:01-29:01:06/29:01:08-29:02:35/29:02:37-29:12/29:14-29:18/29:20-29:38/29:40-29:47/29:49-29:59/29:61-29:97/29:99-29:110/29:111w/29:112N-29:158/29:160-29:171/29:173-29:178/29:179?/29:180-29:183, A*74:10/74:41-74:42/74:46	A29(19), Null, -	160 bp
		A*03:01:39/03:02:08, A*29:01:01:01-29:01:06/29:01:08/29:01:10-29:02:35/29:02:37-29:31/29:33-29:59/29:61-29:110/29:111w/29:112N-29:178/29:179?/29:180-29:184, A*32:30:01-32:30:02/32:32, A*68:01:28/68:01:36/68:130:02	-, A29(19), Null	515 bp

Position	Mix	Allele	Serology	Size
A2	Mix 16	A*30:01:01:01-30:01:07/30:01:08w/30:01:09-30:02:09/30:02:11-30:04:04/30:06-30:11:02/30:13-30:17/30:19-30:20/30:22-30:25/30:27N-30:40/30:42-30:54/30:56-30:81/30:83/30:85-30:151/30:153-30:165/30:167-30:183/30:185-30:188/30:189?/30:190-30:205/30:206?/30:207-30:208N/30:210?/30:211-30:223	A30(19), -, Null	570 bp
H3	Mix 17	A*29:14, A*30:152, A*31:01:02:01-31:01:06/31:01:08-31:01:46/31:01:47?/31:01:48-31:07/31:09-31:20/31:23-31:74/31:76-31:88/31:91-31:103/31:104w/31:105-31:108/31:110-31:201N/31:202N?/31:203/31:204?/31:205-31:209/31:211-31:227, A*33:249?	-, A31(19), Null	185 bp
G3	Mix 18	A*02:829, A*03:152/03:219, A*23:03:01/23:83, A*24:18/24:21:03/24:204/24:208:01/24:213, A*29:13, A*31:07-31:08/31:10/31:222, A*32:01:01:01-32:01:06/32:01:08-32:01:11/32:01:13-32:01:47/32:01:49-32:27N/32:29-32:30:01/32:31-32:33:01/32:33:03/32:35-32:65/32:67-32:70/32:72-32:74/32:75w/32:76-32:93/32:94w/32:95-32:100/32:102-32:157/32:159-32:181	-, A24(9)/A3, A31(19), A32(19), Null	see below
		A*02:829, A*23:03:01/23:83, A*24:21:03/24:208:01, A*29:13, A*31:07-31:08/31:10/31:222, A*32:01:01:01-32:01:06/32:01:08-32:01:11/32:01:13-32:01:47/32:01:49-32:03:01:02/32:05-32:27N/32:29-32:30:01/32:31-32:33:01/32:33:03/32:35-32:65/32:67-32:70/32:72-32:74/32:75w/32:76-32:93/32:94w/32:95-32:100/32:102-32:157/32:159-32:181	-, A31(19), A32(19), Null	410 bp
		A*03:152/03:219, A*24:18/24:204/24:213, A*32:04/32:52	-, A24(9)/A3	520 bp
F3	Mix 19	A*02:24:02/02:65/02:152/02:507, A*29:48/29:105/29:164, A*32:15/32:93, A*33:01:01:01-33:01:04/33:01:06-33:01:19/33:03:01:01-33:03:25/33:03:26w/33:03:28-33:03:30/33:03:31w/33:03:32-33:03:55/33:03:56?/33:03:57/33:03:59-33:18:01/33:20/33:22-33:29/33:31/33:33-33:34/33:36-33:37/33:39-33:52/33:54-33:65/33:66w/33:67-33:80N/33:82-33:88/33:90-33:121/33:123N-33:129N/33:131-33:134/33:136-33:139/33:140Nw/33:141-33:151/33:153-33:157N/33:158w/33:160-33:174N/33:176N-33:187/33:188w/33:189-33:214/33:215?/33:216-33:248N/33:249?/33:250-33:260, A*74:04/74:21/74:43, B*07:02:40, B*08:01:07, B*15:02:07, B*55:02:10	-, A2/19, A33(19), A19, Null, B8	see below
		A*02:24:02/02:65/02:152/02:507, A*29:48, A*32:93, A*33:08-33:09, A*74:04/74:21/74:43	-, A2/19, A33(19), A19	475 bp
		A*29:105/29:164, A*32:15, A*33:01:01:01-33:01:04/33:01:06-33:01:19/33:03:01:01-33:03:25/33:03:26w/33:03:28-33:03:30/33:03:31w/33:03:32-33:03:55/33:03:56?/33:03:57/33:03:59-33:07/33:10-33:18:01/33:20/33:22-33:29/33:31/33:33-33:34/33:36-33:37/33:39-33:52/33:54-33:65/33:66w/33:67-33:80N/33:82-33:88/33:90-33:121/33:123N-33:129N/33:131-33:134/33:136-33:139/33:140Nw/33:141-33:151/33:153-33:157N/33:158w/33:160-33:174N/33:176N-33:187/33:188w/33:189-33:214/33:215?/33:216-33:248N/33:249?/33:250-33:260, B*07:02:40, B*08:01:07, B*15:02:07, B*55:02:10	-, A33(19), Null, B8	470 bp
E3	Mix 20	A*02:01:165, A*03:01:39/03:02:08, A*29:19/29:39/29:48/29:159, A*68:01:28/68:01:36/68:130:02, A*74:01:01:01-74:01:09/74:01:10?/74:02:01:01-74:09/74:11-74:15/74:16:02-74:40/74:43-74:45/74:47N/74:49	-, A74(19), Null	160 bp
D3	Mix 21	A*02:01:09/02:05:05/02:06:07/02:07:12/02:11:02/02:35:03/02:50/02:76:02-02:76:03/02:122/02:243:02-02:243:03/02:528:02/02:570:01/02:591:01, A*03:171/03:271/03:373/03:428/03:442, A*11:57/11:158/11:359, A*24:94/24:138/24:188/24:228/24:293/24:515/24:610, A*29:51/29:69/29:73, A*32:109, A*33:252, A*68:01:01:01-68:01:10/68:01:12-68:01:24/68:01:26-68:02:06/68:02:08-68:47/68:51-68:128/68:130:01-68:136/68:138-68:183/68:185-68:217/68:219-68:229/68:231-68:233/68:235/68:237-68:250/68:252-68:257/68:258?/68:259-68:285/68:287-68:292N/68:294-68:310/68:311?, A*69:01:01:01-69:06/69:08-69:09, B*44:497	A2, -, A68(28), A28, Null, A69(28)	645 bp
C3	Mix 22	A*02:34-02:35:03/02:56:01-02:56:02/02:62/02:78/02:103/02:741/02:907/02:1095, A*03:241/03:343, A*68:308, A*69:01:01:01-69:09, C*07:1034?	A2, -, A69(28)	390 bp

Position	Mix	Allele	Serology	Size
B3	Mix 23	A*02:01:01:01-02:01:07/02:01:10-02:01:11/02:01:12w/02:01:13-02:01:15/02:01:17-02:01:19/02:01:21-02:01:32/02:01:33w/02:01:34-02:01:39/02:01:41-02:01:81/02:01:83-02:03:10/02:03:12Q-02:05:04/02:05:06-02:06:06/02:06:08-02:07:11/02:07:13-02:11:01:06/02:11:03-02:22:02/02:24:01-02:35:01/02:35:02w/02:36-02:42:01/02:43N-02:76:01/02:77/02:79:01-02:97:02/02:99:01-02:99:02/02:101:01-02:121/02:123-02:140/02:142-02:243:01/02:244-02:311/02:313-02:469/02:471-02:528:01/02:529-02:569/02:571-02:590/02:591-02-02:635/02:636w/02:637-02:643N/02:645-02:673/02:674w/02:675N-02:740/02:741w/02:742-02:795Q/02:797N-02:802/02:804-02:814/02:815w/02:816-02:828/02:830:01-02:958/02:959?/02:960-02:967/02:968?/02:969-02:981/02:982?/02:983-02:1009/02:1010?/02:1011Q-02:1096/02:1097?/02:1098-02:1106/02:1107N?/02:1108-02:1117/02:1118?/02:1119N-02:1145, A*03:89:01, A*24:02:06/24:340, A*30:07w/30:13w/30:16w/30:22w/30:44w/30:46w, B*07:02:80w, B*35:01:60w, B*51:01:34w, B*58:01:24, C*06:247w, C*07:02:27w/07:577w	A2, Low A2, -, A203, A210, Null, A2/19, A24(9)	see below
		A*02:556, B*51:01:34w	-	175 bp
		A*02:50/02:556	A2, -	205 bp
		A*02:50/02:556	A2, -	225 bp
		A*02:01:01:01-02:01:07/02:01:10-02:01:11/02:01:12w/02:01:13-02:01:15/02:01:18-02:01:19/02:01:21-02:01:32/02:01:33w/02:01:34-02:01:39/02:01:41-02:01:50/02:01:53-02:01:62/02:01:64-02:01:73/02:01:75-02:01:76/02:01:78-02:01:81/02:01:83-02:01:113/02:01:115-02:01:152/02:01:154-02:03:10/02:03:12Q-02:05:02/02:05:04/02:05:06-02:06:06/02:06:08-02:06:11/02:06:13/02:06:15-02:06:19/02:06:21-02:07:11/02:07:13-02:07:14/02:07:16/02:07:18-02:11:01:06/02:11:03/02:11:05-02:11:08/02:11:10-02:22:01:02/02:24:01-02:35:01/02:36-02:42:01/02:43N-02:44/02:47/02:49:01-02:49:02/02:51-02:54/02:57-02:60:02/02:62-02:76:01/02:77/02:79:01-02:91/02:93:01-02:97:02/02:99:01-02:99:02/02:101:01-02:102/02:104-02:112/02:114-02:121/02:123-02:128/02:130-02:140/02:142/02:145-02:168/02:170-02:175/02:177-02:184/02:186-02:194/02:196-02:200/02:202:01-02:204/02:207-02:216/02:218-02:243:01/02:244-02:248/02:250N-02:311/02:313-02:314:02N/02:316-02:320/02:322-02:357/02:359-02:368/02:370-02:371/02:373N-02:377/02:379-02:409/02:411-02:418/02:420-02:469/02:471-02:481/02:483-02:503/02:505-02:513/02:515-02:528:01/02:529-02:543/02:545-02:569/02:572-02:590/02:591-02-02:600/02:602-02:635/02:636w/02:637-02:643N/02:645-02:673/02:674w/02:675N-02:696:02N/02:698-02:740/02:741w/02:742-02:745/02:747-02:765/02:767-02:795Q/02:797N-02:802/02:804-02:814/02:815w/02:816-02:828/02:830:01-02:872/02:874-02:880N/02:882-02:958/02:959?/02:960-02:967/02:968?/02:969-02:981/02:982?/02:983-02:1009/02:1010?/02:1011Q-02:1021/02:1023-02:1026/02:1029-02:1030/02:1032-02:1096/02:1097?/02:1098-02:1106/02:1107N?/02:1108-02:1117/02:1118?/02:1119N-02:1145, A*03:89:01, A*30:22w, B*07:02:80w, B*35:01:60w, B*51:01:34w, B*58:01:24, C*07:02:27w/07:577w	A2, Low A2, -, A203, A210, Null, A2/19	135 bp
		A*02:01:01:01-02:01:07/02:01:10-02:01:11/02:01:12w/02:01:13-02:01:15/02:01:17-02:01:19/02:01:21-02:01:30/02:01:32/02:01:33w/02:01:34-02:01:39/02:01:41-02:01:66/02:01:68-02:01:81/02:01:83-02:01:121/02:01:123-02:01:126/02:01:128-02:03:10/02:03:12Q-02:05:04/02:05:06-02:06:06/02:06:08-02:07:05/02:07:07-02:07:11/02:07:13-02:07:23/02:09:01:01-02:11:01:06/02:11:03-02:19/02:21-02:22:02/02:24:01-02:33/02:35:02w/02:36-02:42:01/02:43N-02:49:02/02:51-02:54/02:57-02:61/02:63-02:76:01/02:77/02:79:01-02:97:02/02:99:01-02:99:02/02:101:01-02:102/02:104-02:121/02:123-02:127/02:129-02:138/02:140/02:142-02:157:02/02:159-02:168/02:170-02:194/02:196-02:207/02:210-02:243:01/02:244-02:249/02:251-02:257/02:259-02:271/02:273-02:291/02:293Q-02:311/02:313-02:316/02:318-02:350N/02:352-02:385/02:387-02:414/02:416-02:469/02:472-02:492/02:494-02:528:01/02:529-02:569/02:571-02:579/02:581Q-02:584/02:586-02:590/02:591-02-02:608N/02:610:01-02:633/02:635/02:636w/02:637-02:643N/02:645-02:662/02:664-02:673/02:674w/02:675N-02:676/02:678-02:701/02:703-02:737/02:739-02:740/02:742-02:786/02:788N-02:795Q/02:797N-02:802/02:804/02:806N-02:814/02:816-02:828/02:830:01-02:853/02:855-02:906/02:908-02:944/02:946N-02:957/02:959?/02:960-02:967/02:968?/02:969-02:981/02:982?/02:983-02:1000/02:1002-02:1009/02:1010?/02:1011Q-02:1021/02:1023-02:1027/02:1029-02:1094/02:1096/02:1097?/02:1098-02:1106/02:1107N?/02:1108-02:1109/02:1111-02:1117/02:1118?/02:1119N-02:1134/02:1136-02:1145, A*03:89:01, A*24:02:06/24:340, A*30:07w/30:22w	A2, Low A2, -, A203, A210, Null, A2/19, A24(9)	165 bp

Position	Mix	Allele	Serology	Size
		A*02:01:01:01-02:01:02:02/02:01:04-02:01:07/02:01:10-02:01:11/02:01:12w/02:01:13-02:01:15/02:01:17-02:01:19/02:01:21-02:01:32/02:01:33w/02:01:34-02:01:39/02:01:41-02:01:48/02:01:50-02:01:81/02:01:83-02:01:107/02:01:109-02:01:154/02:01:156-02:03:10/02:03:12Q-02:05:04/02:05:06-02:05:12/02:06:01:01-02:06:01:16/02:06:03-02:06:06/02:06:08-02:07:11/02:07:13-02:10/02:12-02:22:02/02:24:01-02:34/02:36-02:42:01/02:43N-02:47/02:49:01-02:49:02/02:51-02:68/02:70-02:76:01/02:77/02:79:01-02:80/02:82N-02:86:02/02:88N-02:89:02/02:91-02:97:02/02:99:01-02:99:02/02:101:01-02:111/02:113:01N-02:115/02:117-02:121/02:123/02:125N-02:127/02:130-02:135/02:137-02:140/02:142-02:145/02:147-02:183/02:185-02:243:01/02:244-02:246/02:248-02:260/02:262-02:296:02/02:299-02:307/02:309-02:311/02:313-02:330/02:332-02:365/02:367-02:380/02:382-02:393/02:395N-02:442/02:444-02:456/02:458-02:469/02:471-02:489/02:491-02:493/02:495-02:496/02:498-02:502/02:504-02:513/02:516N-02:528:01/02:529-02:533/02:535-02:569/02:572-02:576/02:578/02:581Q-02:583/02:585-02:588/02:590/02:591:02-02:626/02:628-02:635/02:636w/02:637-02:643N/02:646-02:673/02:674w/02:675N-02:700/02:702-02:704/02:706-02:713/02:715N-02:731/02:733-02:737/02:739-02:740/02:742-02:746/02:748N/02:750/02:752-02:753/02:755-02:756/02:758-02:772/02:774-02:795Q/02:797N-02:802/02:804-02:807N/02:809-02:814/02:816-02:820/02:822-02:828/02:830:01-02:892/02:894-02:905/02:908-02:922/02:924-02:925/02:927-02:931/02:933/02:935-02:939/02:942-02:958/02:960-02:963/02:965-02:967/02:968?/02:969-02:981/02:982?/02:983-02:985/02:987-02:990/02:992-02:995/02:997Q-02:1009/02:1010?/02:1011Q-02:1030/02:1033-02:1094/02:1096/02:1097?/02:1098-02:1099/02:1101-02:1106/02:1107N?/02:1109-02:1111/02:1113-02:1117/02:1118?/02:1119N-02:1125/02:1127-02:1128/02:1130-02:1142/02:1144-02:1145, A*03:89:01, A*30:13w/30:16w/30:44w/30:46w, C*06:247w	A2, Low A2, -, A203, A210, Null, A2/19	190 bp
A3	Mix 24	A*43:01-43:03, A*80:01:01:01-80:01:02/80:03/80:05-80:09N	A43, Null, -, A80	see below
		A*80:01:01:01-80:01:02/80:03/80:05-80:09N	A80, -, Null	170 bp
		A*43:01-43:03	A43, Null, -	445 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: 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	Mix	Allele	Serology	Size
H4	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
G4	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, C*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
F4	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
E4	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

Position	Mix	Allele	Serology	Size
D4	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
C4	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	Mix	Allele	Serology	Size
B4	Mix 7	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	B7, -, B75(15), B77(15), B70, B15, Null, B35, B35/22, B37, B39(16), B44(12), B51(5), B53, B56(22), B55(22)	see below

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
A4	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
H5	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
		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

Position	Mix	Allele	Serology	Size
		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
G5	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
F5	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	395 bp
E5	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
D5	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
C5	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
B5	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

Position	Mix	Allele	Serology	Size
		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
		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

Position	Mix	Allele	Serology	Size
A5	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
H6	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
G6	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

Position	Mix	Allele	Serology	Size
F6	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
		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
E6	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
D6	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
C6	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
B6	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

Position	Mix	Allele	Serology	Size
		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
A6	Mix 24	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	B7, -, B703, B7/B42, Null, B8, B71(70), B27, B61(40), B60(40), B44(12), B45(12), B47, B21	490 bp
H7	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

Position	Mix	Allele	Serology	Size
G7	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
F7	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
E7	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	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
D7	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
C7	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
B7	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
A7	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

Position	Mix	Allele	Serology	Size
H8	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
G8	Mix 34	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*57:01:01:01-57:01:29/57:01:03-57:01:32/57:01:34-57:01:48/57:04:01-57:04:03/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/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	-, B13, B15/ B21, Null, B62(15), B75(15), B76(15), B77(15), B63(15), B35, B44(12), B46, B57(17)	see below
		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	B13, -, B15/ B21, Null, B62(15)	430 bp

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
F8	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
E8	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	Mix	Allele	Serology	Size
D8	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
C8	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
B8	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
A8	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
H9	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

Position	Mix	Allele	Serology	Size
G9	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
F9	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
E9	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
D9	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
C9	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
B9	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

Position	Mix	Allele	Serology	Size
A9	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 3: Allele specificities and sizes of the PCR products of each **HLA-C*** CTS-PCR-SSP primer mix (**Lot-No C13-4**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Position	Mix	Allele	Serology	Size
H10	Mix 1	C*01:02:01:01-01:02:09/01:02:11-01:02:18/01:02:19w/01:02:20/01:02:21w/01:02:22-01:02:26/01:02:29-01:02:58/01:02:60-01:03:01/01:03:02w/01:03:03-01:36:01/01:36:02w/01:37N-01:49:02/01:51-01:54/01:55w/01:56N-01:66/01:67w/01:68-01:74/01:76-01:100/01:103-01:113/01:114-01w/01:114:02-01:121Q/01:122w/01:123-01:130/01:132-01:155/01:156w/01:157-01:167/01:170-01:176/01:178-01:192/01:194-01:202/01:203?/01:204-01:211N/01:213-01:226/01:227?/01:228N-01:240/01:242-01:255/01:256?/01:257N-01:266N, 04:71w/04:436Nw, 05:200, 14:58w, A*01:91w, A*03:99w, A*32:86w	Cw1, -, Null	570 bp
G10	Mix 2	C*01:10, 02:02:01-02:02:03/02:02:06-02:02:55/02:02:56w/02:02:57-02:02:61/02:02:62?/02:02:63-02:40:02/02:42/02:44-02:57/02:59-02:77/02:79-02:81/02:83-02:135N/02:136w/02:137-02:164/02:167-02:179/02:181-02:196/02:198-02:227N, 03:34/03:142/03:261/03:272/03:384/03:386, 04:32/04:77/04:265/04:447, 05:105/05:206, 06:08, 07:15/07:850, 08:31/08:185/08:246/08:268, 12:119/12:198, 14:25, 16:29/16:50, 17:01:01:02-17:06/17:08-17:16:02/17:18-17:22/17:24-17:32/17:34-17:71/17:72?/17:73-17:74, 18:03, B*07:13, B*46:06/46:25/46:30	-, Cw2, Null	570 bp
F10	Mix 3	C*03:03:01:01-03:03:64/03:03:65?/03:03:66-03:03:67/03:11:01-03:11:02/03:13:01:01-03:13:02/03:18:01-03:18:03/03:20N-03:22Q/03:30-03:31/03:39/03:43:01-03:43:02/03:49-03:50/03:52-03:53/03:55-03:56/03:59/03:61-03:62/03:66-03:69/03:75-03:76/03:79/03:81/03:83/03:85/03:88/03:96:02?/03:97/03:102-03:103/03:112/03:116:01-03:116:02/03:119:01-03:120/03:122/03:124/03:126-03:127/03:132:01/03:133/03:141-03:142/03:144/03:150/03:152/03:158/03:160-03:161/03:165:01/03:167-03:168/03:171/03:175-03:177/03:182/03:185/03:187-03:189N/03:192/03:195-03:196/03:202-03:207/03:214/03:217/03:220/03:223/03:227-03:231/03:237/03:241-03:243/03:253-03:254/03:262/03:267-03:268/03:271-03:276/03:284-03:285/03:288-03:291/03:295/03:304/03:307-03:308/03:312/03:316N/03:319-03:321/03:324-03:325/03:327/03:336/03:339w/03:341/03:345-03:346/03:351-03:352/03:356-03:357/03:360/03:363N-03:364/03:367/03:370/03:372:01-03:372:02/03:374-03:375/03:377N-03:378/03:380N/03:383/03:389/03:395/03:398/03:413-03:414/03:416/03:418/03:421N-03:422/03:427-03:428/03:430/03:432N-03:433/03:436/03:438/03:440/03:444N/03:447N/03:450/03:457/03:460-03:461/03:471-03:472/03:474/03:476-03:477/03:479/03:481/03:490/03:495/03:503/03:506-03:507/03:509N/03:514-03:517/03:519-03:520/03:524/03:527-03:529/03:533/03:534w/03:537/03:541-03:542/03:545/03:550-03:551/03:556/03:559-03:560N/03:563/03:567-03:568/03:573-03:574/03:578-03:579/03:582-03:583/03:585-03:587/03:592/03:594-03:595/03:597-03:598/03:601/03:606/03:608-03:609/03:611?/03:616-03:617/03:622/03:624/03:628N/03:632/03:634-03:636N/03:639-03:640/03:645/03:651	Cw9(w3), -, Null, Cw3	535 bp
E10	Mix 4	C*01:02:68/01:02:71/01:97/01:131, 03:02:01-03:02:20/03:02:22-03:02:27/03:02:29?/03:02:30-03:03:31/03:03:33-03:03:42/03:03:43w/03:03:44-03:04:22/03:04:23w/03:04:24-03:04:26/03:04:28/03:04:30w/03:04:31-03:04:58/03:04:60-03:04:87/03:04:88?/03:04:89?/03:04:90-03:06:02/03:08-03:11:02/03:13:01:01-03:13:02/03:16-03:24/03:26:01-03:40:01/03:40:03-03:42:01/03:43:01/03:44/03:46-03:57:02/03:59-03:85/03:87:02-03:93/03:95-03:98/03:100-03:101/03:103-03:118/03:119:02-03:129/03:131-03:139/03:141-03:162/03:164-03:178/03:180-03:183/03:184:01w/03:184:02-03:189N/03:190w/03:191-03:219/03:221-03:242/03:244Q-03:262/03:263:03w/03:264-03:266/03:269-03:272/03:273w/03:275-03:276/03:277Nw/03:278-03:296:02/03:298-03:310/03:311w/03:312-03:315/03:317-03:330/03:332-03:360/03:362-03:376/03:378-03:446N/03:448Q-03:460/03:462N-03:513/03:515-03:551/03:552?/03:553-03:578/03:579?/03:580-03:584/03:585?/03:586Q-03:606/03:608/03:610-03:652/03:654, 04:11/04:29/04:36/04:55/04:172/04:214/04:449/04:473, 07:02:32/07:17:03/07:141:03/07:242/07:857/07:953, 08:01:07/08:02:07/08:33:02, 12:02:19/12:03:20/12:85:02/12:233/12:397, 14:02:01:01-14:02:01:32/14:02:03-14:02:36/14:02:38?/14:02:39-14:02:41/14:03:01:01-14:03:05/14:05-14:11/14:13-14:16/14:18-14:48/14:50-14:63/14:65-14:71/14:72w/14:73-14:76/14:78-14:81/14:83-14:91/14:93N-14:107/14:109-14:139/14:141N-14:159, 16:01:06, B*14:02:30?	-, Cw10(w3), Cw9(w3), Null, Cw3	450 bp

Position	Mix	Allele	Serology	Size
D10	Mix 5	C*01:65/01:131, 03:02:01-03:02:15/03:02:16w/03:02:17-03:02:32/03:04:01-01-03:04:37/03:04:39-03:04:59/03:04:60w/03:04:61-03:04:101/03:05:01-01-03:10/03:14/03:17:01-03:17:02/03:19/03:23N-03:29/03:33-03:38:02/03:40:01-03:40:04/03:42:01-03:42:02/03:44/03:46-03:48/03:51/03:54/03:57:01-03:57:02/03:63-03:65/03:70-03:74/03:77-03:78/03:80:01-03:80:02/03:82/03:84/03:87:01-03:87:02/03:89-03:93/03:95/03:98/03:100-03:101/03:104-03:111/03:114-03:115:02/03:117-03:118/03:121N/03:123/03:125:01-03:125:02/03:128-03:131/03:134-03:135/03:137-03:140:01:02/03:143/03:145-03:149/03:153-03:157/03:159/03:162-03:164/03:166/03:169Q-03:170/03:172-03:174/03:178-03:181/03:183-03:184:02/03:186:01-03:186:02/03:190-03:191/03:193/03:197-03:201N/03:208N-03:213/03:215-03:216/03:218-03:219/03:221-03:222/03:224N-03:226/03:232-03:236/03:238-03:240/03:244Q-03:250/03:252/03:255-03:259/03:261/03:263:01-03:266/03:269-03:270/03:277N-03:282/03:283w/03:287:01-03:287:02/03:292/03:294/03:296:01-03:296:02/03:298-03:303/03:305-03:306/03:309-03:311/03:313/03:315/03:317-03:318N/03:323N/03:326/03:328-03:335/03:337-03:338/03:340/03:342-03:344:01:02/03:347-03:350/03:353-03:355/03:358-03:359/03:361-03:362/03:365-03:366N/03:368-03:369/03:371/03:373/03:376/03:379/03:381-03:382/03:385-03:388/03:390-03:394/03:396:01N/03:396:02N?/03:397/03:399-03:412/03:415/03:417/03:419-03:420/03:423-03:426/03:429/03:431/03:434/03:437/03:439/03:441-03:443/03:445N-03:446N/03:448Q-03:449N/03:452-03:456/03:458-03:459/03:462N-03:470N/03:473/03:475/03:478/03:480:01-03:480:02/03:482-03:489/03:491:01-03:494/03:496-03:502Q/03:504-03:505/03:508N/03:510N-03:511N/03:513/03:518/03:521-03:523/03:525-03:526/03:530-03:532/03:538-03:539/03:543-03:544/03:546-03:549/03:552-03:555/03:557-03:558/03:561-03:562/03:564-03:566/03:569-03:572/03:575Q-03:577/03:580-03:581/03:584/03:588-03:589/03:593/03:596/03:599-03:600/03:602-03:605/03:610/03:612-03:615/03:618N-03:621/03:623/03:625N-03:626/03:627?/03:629-03:631/03:633/03:637:01-03:638/03:641-03:644/03:646-03:650/03:652-03:654, 05:201, 15:171/15:218, A*03:146, A*24:449, A*68:118, B*15:96/15:331, B*27:118, B*35:537, B*44:274, B*51:238, B*56:37	-, Cw10(w3), Cw3, Null, B62(15)	535 bp
C10	Mix 6	C*02:02:11/02:61:02/02:197/02:209, 04:01:01-01-04:01:01:29/04:01:01:31-04:01:22/04:01:24-04:01:29/04:01:31-04:01:157/04:03:01-01-04:03:08/04:03:10-04:07:01/04:08-04:14/04:15:02-04:20/04:23-04:36/04:38-04:79/04:81-04:99/04:101-04:117/04:118w/04:119-04:129/04:131-04:166:01/04:166:03-04:177/04:179-04:186/04:187w/04:188-04:267/04:269-04:359/04:361-04:366/04:368-04:369N/04:371N-04:384/04:386/04:388-04:403/04:404w/04:405-04:421/04:423-04:428Q/04:430-04:460/04:461?/04:462-04:476/04:478-04:495/04:497-04:509N/04:511-04:514, 05:01:20/05:64:01, 08:02:06/08:19:01/08:62:01/08:144:01, 12:02:09/12:03:65/12:10:01/12:31:01/12:96/12:233/12:328/12:397, 15:02:37/15:78:02/15:194/15:246, 16:49:02/16:104, B*07:02:77, B*08:01:36, B*13:02:40, B*15:01:50/15:436, B*18:03:02, B*37:01:06, B*55:01:25, B*67:02:01:01-67:02:01:02	Cw2, -, Cw4, Null, B37	475 bp
B10	Mix 7	C*04:09L	?	140 bp
A10	Mix 8	C*02:02:65/02:22, 04:223:01/04:387, 05:01:01-01-05:01:01:85/05:01:03-05:01:17/05:01:19/05:01:21-05:01:30/05:01:33-05:01:68/05:01:70-05:01:76/05:03-05:04:01/05:05:01-05:18:01/05:18:03/05:19/05:21-05:31/05:33-05:102/05:104-05:106:01/05:108/05:110-05:127/05:130-05:146/05:149-05:169N/05:170w/05:171:01-01-05:206/05:208N-05:214/05:216:01-01-05:216:01:02/05:217w/05:218-05:244N/05:246-05:258/05:259N?/05:260N-05:293, 06:02:52, 08:10, 16:02:05	-, Cw5, Null	430 bp
H11	Mix 9	C*02:51, 04:223:01-04:223:02/04:387, 05:01:01-01-05:01:11/05:01:13-05:01:58/05:01:60/05:01:61?/05:01:62-05:01:76/05:03-05:11/05:13-05:17/05:19-05:29:01/05:30-05:44:02/05:46:01-01-05:96/05:98-05:102/05:104-05:105/05:108-05:114/05:116-05:133/05:135-05:139/05:141-05:142/05:144-05:150/05:152-05:227/05:229-05:244N/05:246-05:270N/05:271N?/05:273-05:283/05:284?/05:285-05:293, 08:02:01-01-08:02:10/08:02:12-08:02:39/08:04:01-01-08:05/08:07/08:12:01-01-08:13/08:15:01-08:15:02/08:17-08:19:02/08:23/08:25/08:28-08:32/08:34/08:37/08:43/08:45/08:47-08:49/08:51-08:53/08:55N/08:57/08:62:01-08:63/08:67-08:71/08:73-08:77/08:90/08:92-08:94/08:100/08:103:01-01-08:104/08:108/08:110-08:116/08:120/08:123/08:125-08:126/08:132/08:134/08:139-08:140/08:142/08:146/08:149-08:152/08:156/08:158-08:159/08:161N/08:166-08:172/08:179-08:185/08:188/08:191/08:195/08:198/08:200-08:202/08:206-08:207:02/08:211/08:213-08:216/08:218/08:222/08:223?/08:224N-08:227/08:229-08:231/08:233/08:237-08:240/08:242-08:243/08:245-08:248/08:256-08:258/08:262-08:264/08:266-08:271/08:274-08:275, 12:144/12:185, 16:27	-, Cw5, Null, Cw8	575 bp

Position	Mix	Allele	Serology	Size
G11	Mix 10	C*01:23/01:58, 04:37/04:230/04:360/04:477/04:496/04:510, 06:02:01:01-06:02:01:97/06:02:03-06:02:45/06:02:47-06:02:83/ 06:02:84w/06:02:85-06:29/06:31-06:34:02/06:36-06:46N/06:48/06:50-06:57/06:59-06:71/06:73-06:85/06:87-06:100/06:102:01- 06:116N/06:118-06:125/06:128N-06:130/06:132:01-06:135/06:137-06:138/06:139w/06:140-06:141/06:145w/06:146-06:170/ 06:171:01:01Nw-06:171:01:02Nw/06:172-06:197/06:199-06:203/06:205-06:209:02/06:211:01:01N-06:216/06:218-06:263N/06:265- 06:303/06:305-06:325/06:326Q?/06:327-06:333/06:334?/06:335-06:343/06:344?/06:345-06:357N/06:359N-06:372, 07:31:01-07:31:02/ 07:364/07:514:01-07:514:02, 12:28/12:135/12:325, 16:26/16:46/16:55/16:64	-, Cw6, Null	310 bp
F11	Mix 11	C*06:31/06:118, 07:01:01:01-07:01:02:15/07:01:04-07:01:13/07:01:15-07:01:62/07:01:63w/07:01:64-07:01:102/07:01:104-07:02:24/ 07:02:25w-07:02:26w/07:02:27-07:02:47/07:02:49-07:02:55/07:02:57-07:02:110/07:02:112-07:02:120/07:02:122-07:02:145/ 07:02:146?/07:02:147-07:21/07:22w/07:23-07:25/07:27:01-07:29:02/07:31:01-07:32N/07:35-07:40/07:42-07:61N/07:62w/07:63/ 07:65-07:91/07:93:01-07:94/07:97-07:130/07:131:01w/07:132w/07:133:01-07:136/07:137:01w/07:137:02/07:138w-07:139w/ 07:141:01-07:164N/07:166-07:240/07:243-07:245/07:247-07:264N/07:266/07:267w/07:268-07:292/07:293w/07:294/07:297-07:303/ 07:305-07:306/07:308-07:313/07:315/07:318-07:321/07:322w/07:323-07:324/07:326-07:337/07:339-07:341:02/07:343:01:01-07:346/ 07:348-07:350N/07:352-07:367/07:368:02w/07:369-07:401/07:403-07:446/07:448/07:450:01-07:486/07:488-07:511/07:513Q-07:516/ 07:518/07:519w/07:520-07:524/07:526:01-07:577/07:580-07:582Q/07:584-07:598/07:600:01N-07:600:02N/07:601w/07:602-07:670/ 07:672N-07:698/07:699w/07:700-07:713Q/07:715:01-07:722/07:725-07:754N/07:757-07:811/07:813-07:814/07:816-07:820N/07:822- 07:844/07:846:01-07:849N/07:851-07:869/07:871-07:890/07:892-07:893/07:895-07:910/07:911?/07:912-07:915/07:916?/07:917- 07:922/07:923?/07:924-07:935/07:937-07:938/07:939?/07:941-07:952/07:954N-07:966/07:968-07:969/07:971-07:985:02/07:987- 07:988/07:990-07:1025/07:1026?/07:1027-07:1035/07:1037N-07:1062N/07:1064-07:1076/07:1078-07:1107, 16:21/16:80, B*08:143	-, Cw7, Null	720 bp
E11	Mix 12	C*01:160, 06:31w/06:118, 07:01:01:01-07:01:02:15/07:01:04-07:01:44/07:01:45w/07:01:46-07:01:56/07:01:58-07:01:90/07:01:91w/ 07:01:92-07:01:102/07:01:104-07:02:39/07:02:41-07:02:47/07:02:49-07:02:110/07:02:112-07:02:120/07:02:123-07:02:145/07:02:146?/ 07:02:147-07:03/07:05-07:10/07:13:01:01-07:18:09/07:18:11-07:19/07:21/07:22w/07:23-07:29:02/07:31:01-07:33N/07:35-07:40/ 07:42-07:44/07:46-07:62/07:65-07:67/07:69-07:72/07:74-07:91/07:93:01-07:94/07:97-07:100/07:102-07:135/07:136w/07:137:02/ 07:138w/07:141:01-07:141:03/07:143-07:150Q/07:152N-07:164N/07:166-07:171/07:173-07:180/07:182-07:198N/07:200-07:240/ 07:243-07:263/07:264Nw/07:266-07:271/07:273-07:294/07:296-07:301/07:303/07:305-07:306/07:308-07:322/07:325-07:327/ 07:330:01-07:330:02/07:331w/07:332-07:335/07:337/07:339-07:341:02/07:343:01:01-07:346/07:348-07:353/07:356/07:359-07:360/ 07:362-07:363/07:366-07:375/07:377/07:379-07:384/07:386-07:389/07:391-07:393N/07:396-07:402:02/07:404-07:405:02/07:407- 07:419/07:421-07:425/07:427/07:429-07:446/07:448-07:458/07:460-07:465/07:468-07:479/07:481-07:486/07:488-07:500/07:502- 07:511/07:513Q-07:522/07:524/07:526:01-07:528/07:529w/07:530:01-07:533/07:536-07:561/07:564-07:568/07:570-07:577/07:579- 07:582Q/07:584/07:587-07:598/07:601-07:621/07:623-07:624/07:627-07:650:02/07:652-07:654/07:657-07:663Q/07:665-07:670/ 07:673/07:675N-07:677/07:678w/07:679-07:692/07:694-07:697Q/07:699-07:722/07:724-07:741/07:743N-07:750N/07:752N-07:754N/ 07:756-07:779:01:02/07:781-07:796N/07:798-07:811/07:813-07:814/07:816-07:827/07:829-07:830/07:832-07:837/07:840N-07:843/ 07:844w/07:845-07:846:02/07:847w/07:848-07:849N/07:851/07:853-07:857/07:859-07:867/07:869-07:875/07:877-07:880/07:882- 07:890/07:893-07:894/07:898-07:900/07:902-07:910/07:911?/07:912-07:916/07:918-07:925/07:927-07:928/07:930-07:938/07:939?/ 07:942?/07:943-07:947/07:949-07:950/07:952/07:954N-07:966/07:968-07:969/07:970N?/07:971-07:973/07:975-07:985:02/07:987- 07:1009/07:1011/07:1013-07:1031/07:1032?/07:1034-07:1035/07:1037N-07:1062N/07:1064-07:1069/07:1071/07:1073/07:1075- 07:1076/07:1078-07:1079Q/07:1080?/07:1081?/07:1082-07:1084/07:1086-07:1089/07:1091-07:1103/07:1105-07:1107, 08:14/08:80, 16:80, A*01:199, A*11:133, B*07:51/07:220/07:226/07:332, B*08:143, B*15:200, B*39:60/39:82/39:136	-, Cw7, Null	675 bp

Position	Mix	Allele	Serology	Size
D11	Mix 13	C*01:43, 02:87, 03:280/03:530, 07:101/07:148/07:161/07:583, 08:01:01:01-08:01:07/08:01:09-08:02:17/08:02:18w/08:02:19-08:09/08:11-08:12:01:02/08:14-08:15:02/08:17/08:18w/08:19:01-08:24/08:26N-08:54/08:56-08:63/08:65-08:93/08:95-08:145/08:146w/08:147-08:232/08:233?/08:234-08:272/08:273?/08:274-08:275, 12:127/12:203, 16:139	-, Cw8, Null	165 bp
C11	Mix 14	C*01:04w/01:21, 07:01:20/07:01:27/07:02:38/07:04:08/07:17:04, 08:160w, 12:02:01-12:02:05/12:02:07/12:02:09-12:02:11/12:02:13/12:02:15-12:02:18/12:02:20-12:02:29/12:02:31-12:02:33/12:02:35-12:02:39/12:02:41-12:02:49/12:02:51-12:02:52/12:03:19/12:03:32/12:08/12:10:01-12:10:02/12:14:02/12:16:01-12:16:02/12:18:01/12:22/12:27/12:30/12:36/12:40/12:44/12:49w/12:56/12:64/12:67-12:69/12:72-12:74/12:80N/12:83-12:85:01/12:86/12:96/12:103-12:106/12:112/12:114/12:117/12:123-12:124/12:126-12:128/12:130/12:132/12:134/12:136-12:137/12:142/12:145/12:148N/12:151/12:155Q/12:161-12:162/12:166/12:168-12:169/12:177/12:179/12:183/12:193/12:196/12:198/12:200/12:204/12:207-12:208/12:212/12:214/12:217/12:219N/12:221-12:222/12:226/12:228/12:231/12:234/12:236N/12:239-12:241/12:243/12:247/12:250/12:252/12:255/12:261/12:263/12:268/12:270N/12:275/12:279-12:281/12:285/12:287/12:294/12:296/12:298/12:303-12:304/12:307-12:308/12:315/12:327N/12:329N/12:335-12:336/12:338/12:344/12:351Q/12:359/12:363/12:371/12:381/12:383?/12:387-12:388/12:391-12:392/12:396, 14:02:21w/14:03:05w	-, Null	465 bp
B11	Mix 15	C*01:04/01:21, 02:02:70, 03:03:40, 05:01:60/05:106:02, 08:01:19/08:02:02/08:160, 12:02:01-12:02:13/12:02:15-12:02:18/12:02:20-12:02:23/12:02:25-12:02:29/12:02:31-12:02:33/12:02:35-12:02:39/12:02:41-12:02:49/12:02:51-12:03:01:64/12:03:03-12:03:07/12:03:09-12:03:15/12:03:18-12:03:19/12:03:21-12:03:26/12:03:28-12:03:29/12:03:31-12:03:32/12:03:33w/12:03:35-12:03:72/12:03:73?/12:03:74-12:03:83/12:04:02:01-12:04:02:02/12:05:01-12:08/12:10:01-12:13:01:02/12:14:02-12:18:01/12:20-12:24:01/12:25/12:27/12:29-12:32/12:34-12:58/12:60-12:72/12:74-12:75/12:77-12:85:01/12:86-12:131/12:133-12:134/12:136-12:143/12:145/12:147-12:180/12:182-12:184/12:186-12:195:02/12:196-12:223/12:225-12:232N/12:234-12:286/12:288-12:298/12:300-12:304/12:306-12:324N/12:326-12:378/12:379?/12:380-12:396, 14:02:08/14:02:21/14:03:05, 15:02:14/15:02:39, 16:01:17/16:02:13/16:15:02, A*03:01:64, A*30:01:14, A*33:03:65, B*27:05:27, B*35:205:02, B*40:02:21, B*57:01:24	-, Cw8, Null	425 bp
A11	Mix 16	C*02:12/02:49w/02:55:01w-02:55:02w/02:115, 03:15w/03:27/03:38:01-03:38:02/03:69/03:130w/03:136/03:163w/03:246/03:274w/03:297w/03:431/03:461w, 04:03:01:01w-04:03:01:05w/04:03:03w-04:03:11w/04:06:01w-04:06:03w/04:16w/04:80w/04:103:01w-04:103:02w/04:107w/04:147w/04:160:01w-04:160:02w/04:171w/04:190w/04:256w/04:286w/04:294w/04:299w/04:335w/04:337w/04:351:01w-04:351:02w/04:357w/04:363w/04:381w/04:383w/04:393w/04:400w/04:402w/04:473/04:489w/04:506w, 05:42w/05:46:01:01w-05:46:01:02w, 06:03:01w-06:03:02w/06:76:01w-06:76:02w/06:132:01w-06:132:02w, 07:26:01:01-07:26:03/07:92/07:96:01-07:96:02/07:314:01-07:314:03/07:317/07:351/07:578/07:583/07:723/07:756/07:821N/07:845/07:870/07:891/07:894, 08:05/08:21/08:25/08:137, 12:02:01-12:03:12/12:03:13w/12:03:14-12:03:83/12:04:01w-12:04:03w/12:06/12:07w/12:08/12:10:01-12:11/12:12w/12:13:01:01-12:15/12:18:01-12:20/12:22-12:32/12:34-12:40/12:41w/12:42Q-12:48/12:50-12:53/12:54w/12:56-12:59/12:60w/12:61-12:97/12:99:01-12:114/12:116-12:125/12:126w/12:127-12:141/12:142w/12:143-12:145/12:146w/12:148N-12:163/12:164?/12:165-12:187/12:189-12:194/12:196-12:214/12:216/12:218-12:268/12:270N-12:298/12:300/12:302-12:324N/12:325w/12:326-12:352/12:353w/12:354-12:357/12:358?/12:359-12:361/12:362w-12:363w/12:364-12:372/12:373?/12:374-12:382/12:383?/12:384-12:397, 15:03w/15:16:01w-15:16:02w/15:25, 16:15:02/16:25w/16:64/16:189w/16:201, 17:01:01:02w-17:03:01:09w/17:03:03w-17:19w/17:21w/17:22/17:23w-17:26w/17:28w-17:39w/17:41w-17:57w/17:58?/17:59w-17:61w/17:62/17:63w-17:74w, 18:09w, A*25:55w, B*07:13/07:15/07:160w/07:463w, B*35:570w, B*67:02:01:01-67:02:01:02	-, Null, B7	230 bp

Position	Mix	Allele	Serology	Size
H12	Mix 17	C*01:14/01:154w, 02:05:01-02:05:03, 04:37/04:230/04:360/04:477/04:496/04:510, 05:16/05:85/05:107/05:241, 06:02:01:01-06:02:01:97/06:02:03-06:02:11/06:02:13-06:02:64/06:02:65w/06:02:66-06:02:67/06:02:69-06:02:90/06:02:92-06:10/06:12-06:34:02/06:36-06:46N/06:48/06:50-06:51/06:53:01-06:57/06:59-06:60/06:62-06:68/06:70:01-06:71/06:73-06:81/06:83-06:100/06:102:01-06:116N/06:118-06:121/06:122w/06:123/06:124w/06:125-06:126/06:128N-06:130/06:132:01-06:135/06:137-06:138/06:139w/06:140-06:141/06:145w/06:146/06:148-06:159/06:161-06:182/06:183w/06:185-06:209:02/06:211:01:01N-06:216/06:218-06:247/06:249-06:251/06:253-06:263N/06:265-06:279/06:280w/06:281N-06:303/06:305-06:325/06:326Q?/06:327-06:333/06:334?/06:335-06:357N/06:359N-06:372, 12:04:01-12:05:02/12:09/12:33/12:135w/12:154w/12:353, 15:37/15:55/15:58/15:102/15:125/15:133, 16:02:01:01-16:02:14/16:02:16-16:02:17/16:02:18w/16:02:19-16:02:20/16:09/16:12/16:19/16:25/16:37w/16:46-16:48/16:60/16:63/16:69-16:70/16:74/16:77N/16:84/16:88-16:91/16:99/16:101-16:103/16:107-16:108/16:120-16:121/16:123N/16:133/16:136/16:140/16:143-16:145/16:153/16:155-16:156/16:163/16:166-16:167/16:176/16:179/16:181/16:194-16:195N/16:202/16:212/16:215, 17:21	-, Cw6, Null	340 bp
G12	Mix 18	C*02:02:01-02:02:03/02:02:06-02:02:11/02:02:13-02:02:20/02:02:22-02:02:34/02:02:35w/02:02:36-02:02:71/02:04-02:11/02:12w/02:13-02:15/02:17/02:19-02:26:03/02:28-02:31/02:33-02:40:02/02:42-02:64/02:66-02:71/02:72w/02:73-02:86/02:88-02:114/02:116-02:125/02:126w/02:127-02:128/02:130/02:132-02:134/02:136/02:138-02:148/02:149w/02:150N-02:179/02:181-02:196/02:198-02:227N, 04:94:01-04:94:02/04:360/04:477/04:496, 05:08/05:52/05:89/05:106:01-05:106:02, 06:02:01:01-06:02:01:97/06:02:03-06:02:11/06:02:13-06:02:64/06:02:65w/06:02:66-06:02:67/06:02:69-06:02:90/06:02:92-06:03:02/06:07-06:10/06:12-06:39/06:40w/06:41-06:51/06:53:01-06:60/06:62-06:68/06:70:01-06:78/06:80-06:81/06:83-06:117/06:119-06:121/06:122w/06:123/06:124w/06:125-06:146/06:148-06:152N/06:154-06:159/06:161-06:182/06:183w/06:185-06:196/06:198-06:203/06:205-06:209:02/06:211:01:01N-06:216/06:218-06:247/06:249-06:251/06:253-06:270/06:272-06:279/06:280w/06:281N-06:316N/06:317?/06:318-06:372, 12:04:01-12:05:02/12:21/12:33/12:41/12:60/12:72w/12:135w/12:146/12:154w/12:353, 15:74/15:214, 16:91, 18:03	Cw2, -, Null, Cw6	515 bp
F12	Mix 19	C*01:177/01:241?, 03:231/03:557, 04:23/04:54:01-04:54:02/04:100/04:108/04:360/04:367/04:422/04:477/04:496/04:510, 07:64/07:402:01-07:402:02, 12:55/12:269, 14:02:01:01-14:32/14:34w/14:35N-14:40/14:41w/14:42-14:77/14:80-14:91/14:93N-14:95/14:96w/14:97N-14:109/14:111-14:135/14:136?/14:137-14:146/14:148N-14:159, 15:36, 16:150, A*23:52/23:128, A*24:73/24:174/24:325/24:504/24:613	-, Null	600 bp
E12	Mix 20	C*03:08/03:29/03:31/03:246/03:542w/03:555, 07:96:01-07:96:02/07:263/07:756, 15:02:01:01-15:02:20/15:02:22-15:02:24/15:02:26-15:05:07/15:05:09w/15:05:10-15:05:14/15:05:16-15:09:02/15:10:02-15:10:03/15:11-15:13:03/15:15-15:19/15:21-15:22/15:23:02-15:24/15:26/15:27?/15:28-15:35/15:37-15:42/15:43?/15:44:01-15:62/15:64-15:103/15:104w/15:105Q-15:106/15:108-15:137/15:139-15:207/15:209-15:241/15:243Q-15:269N, 16:70, B*56:01:09w, B*82:01:01:01w-82:04w	-, Null, B82	see below
		C*03:08/03:29/03:31/03:246/03:542w/03:555, 07:96:01-07:96:02/07:263/07:756, 15:02:01:01-15:02:20/15:02:22-15:02:24/15:02:26-15:05:07/15:05:09w/15:05:10-15:05:14/15:05:16-15:09:02/15:10:02-15:10:03/15:12-15:13:03/15:15/15:18-15:19/15:21-15:22/15:23:02-15:24/15:26/15:28-15:35/15:37-15:42/15:44:01-15:62/15:64-15:103/15:104w/15:105Q-15:106/15:108-15:137/15:139-15:207/15:209-15:241/15:243Q-15:269N, 16:70, B*56:01:09w, B*82:01:01:01w-82:04w	-, Null, B82	205 bp
		C*15:02:01:01-15:02:20/15:02:22-15:02:24/15:02:26-15:02:32/15:02:33:02-15:05:07/15:05:09w/15:05:10-15:05:14/15:05:16-15:09:02/15:10:02-15:10:03/15:11-15:13:03/15:15-15:19/15:21-15:22/15:23:02-15:24/15:26/15:27?/15:28-15:35/15:37-15:42/15:43?/15:44:01-15:62/15:64-15:101/15:103/15:104w/15:105Q-15:106/15:108-15:129/15:131-15:137/15:139-15:207/15:209-15:213N/15:215-15:241/15:243Q-15:269N	-, Null	800 bp

Position	Mix	Allele	Serology	Size
D12	Mix 21	C*16:01:01:01-16:02:01:06/16:02:02?-16:02:13?/16:02:14-16:02:16/16:02:17?/16:02:18-16:02:20/16:04:01:01-16:04:01:03/16:04:03/16:04:04?-16:04:05?/16:06-16:08/16:09?-16:17?/16:18/16:19?-16:23?/16:24-16:26/16:27?-16:34?/16:36?-16:37?/16:38-16:39:01/16:39:02?/16:41?/16:42/16:43?-16:45?/16:46/16:47?/16:49:01?/16:49:02-16:52/16:54?-16:58?/16:59/16:60?-16:67?/16:69?-16:72?/16:73-16:74/16:75?-16:76?/16:77N/16:78?-16:83?/16:84-16:85/16:86?-16:87?/16:89N?-16:95?/16:96/16:97?-16:98:01?/16:99?-16:100?/16:101-16:102/16:103?-16:105?/16:106/16:107?-16:109?/16:111-16:112/16:113?/16:114/16:115?-16:117?/16:118/16:119?/16:120-16:123N/16:124?/16:125-16:172/16:173?/16:174Q-16:175/16:176?/16:177-16:198/16:200-16:215	-, Null	470 bp
C12	Mix 22	C*04:447/04:480, 05:206, 08:185, 17:01:01:02-17:01:13/17:01:14w/17:01:15-17:06/17:09-17:32/17:34-17:55/17:57-17:69/17:72-17:74, B*37:70	-, Null	210 bp
B12	Mix 23	C*03:39/03:67/03:344:01:01-03:344:01:02, 04:42:01-04:42:02/04:220, 06:02:08/06:34:02, 07:02:32/07:17:03/07:141:03/07:242/07:857/07:953, 14:147, 18:01:01:01-18:08/18:10-18:15/18:16?/18:18-18:19	Cw3, -, Null	655 bp
A12	Mix 24	Negative Control		none (90 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)

Remarks to mix 20: Mix 20 amplifies **HLA-C*15** and can result in PCR products of different sizes: The common alleles **HLA-C*15:02/05/06/09** etc. usually produce only **one** PCR fragment (a **small** amplicon of 205 bp) due to competition of the primers; **HLA-C*15:11** produces a single **large** PCR fragment (800 bp).

Table 4: Amplification patterns for all detectable **HLA-A*** specificities by the HLA-A*. CTS-PCR-SSP primer mixes (**Lot-No A17-3**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*01:01:01:01-01:01:55/01:01:57-01:01:64/01:01:67-01:01:130/01:01:132-01:01:145/01:01:147-01:04:01:02N/01:06-01:12/01:14-01:33/01:35-01:37:01:02/01:39-01:50/01:52:01N-01:71/01:73-01:101/01:103-01:138/01:140:01-01:166/01:168-01:175/01:177-01:193/01:195-01:199/01:201-01:220/01:222-01:243/01:245-01:266:02/01:268-01:283/01:285N-01:379N/01:381-01:389/01:391-01:398/01:400N-01:417N/01:419-01:426/01:428-01:447, A*11:94/11:271/11:326, A*23:128, A*25:59, B*07:64, B*15:12:01-15:12:03/15:19/15:270/15:298/15:304N/15:649/15:679	A1, Null, -, B76(15)	1																							
A*01:01:56	-	1									10														
A*01:01:131/01:399	-	?																							
A*01:13/01:176/01:194	-	1			4																				
A*01:51	-	1												13											
A*01:200/01:244/01:380:01-01:380:01:02, A*11:17, A*36:01:01:01-36:01:02/36:03-36:14	-, A36		2																						
A*01:267	-	w																							
A*01:427, A*03:107/03:164/03:413, A*36:02	-		2		4																				

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*02:01:01:01-02:01:07/02:01:10-02:01:11/02:01:13-02:01:15/02:01:18-02:01:19/02:01:21-02:01:25/02:01:27-02:01:32/02:01:34-02:01:39/02:01:41-02:01:51/02:01:53-02:01:63/02:01:66-02:01:68/02:01:70-02:01:73/02:01:76-02:01:80/02:01:83-02:01:94/02:01:96-02:01:164/02:01:166-02:03:06/02:03:08-02:03:10/02:03:12Q-02:05:02/02:05:04/02:05:06-02:05:08/02:05:10-02:06:06/02:06:08-02:06:11/02:06:13-02:06:18/02:06:20-02:06:30/02:06:32-02:07:11/02:07:13-02:07:14/02:07:16-02:08:01/02:09:01:01-02:11:01:06/02:11:03-02:11:13/02:14-02:18/02:20:01-02:22:02/02:24:01/02:25-02:26/02:28-02:33/02:36/02:39-02:42:01/02:43N/02:45/02:47/02:49:02/02:51/02:53:01N-02:53:02N/02:57-02:59/02:61/02:63/02:66-02:69/02:71/02:73-02:76:01/02:77/02:79:01-02:79:02/02:81-02:87/02:89:01-02:97:02/02:99:01-02:99:02/02:101:01-02:102/02:104/02:106-02:113:02N/02:115-02:116/02:118/02:120-02:121/02:123-02:128/02:130-02:134/02:136-02:140/02:143-02:151/02:153:01-02:168/02:170-02:177/02:179-02:184/02:186-02:187/02:189-02:192/02:194/02:196-02:222N/02:224-02:225N/02:227N-02:228/02:230-02:236/02:238-02:243:01/02:244-02:245/02:247-02:253/02:255-02:270/02:272-02:274/02:276-02:278/02:281-02:285/02:287/02:289:01/02:290-02:297/02:299-02:300/02:302-02:303/02:305N-02:307/02:310/02:313-02:338/02:340-02:347/02:349-02:376/02:378-02:382/02:384-02:405/02:407-02:411/02:413-02:416/02:418-02:453/02:455-02:469/02:471-02:487/02:489-02:490N/02:492-02:503/02:505-02:506N/02:508-02:509/02:511-02:526/02:528:01/02:529-02:542/02:544-02:569/02:572-02:579/02:581Q/02:583-02:590/02:591:02-02:593/02:595-02:600/02:602-02:608N/02:610:01-02:621/02:623-02:629/02:631-02:635/02:637-02:640/02:642/02:645-02:648:02/02:650-02:661/02:663-02:673/02:675N/02:677/02:679-02:680/02:684-02:710N/02:712-02:722/02:724-02:740/02:742-02:780/02:782-02:788N/02:790-02:795Q/02:797N-02:802/02:805Q-02:808/02:810-02:814/02:816-02:825/02:827Q/02:830:01-02:830:02/02:832N-02:839/02:841-02:871N/02:873-02:875/02:877-02:906/02:908-02:922/02:924-02:926/02:928-02:943/02:945N-02:947/02:949-02:958/02:960-02:967/02:969-02:981/02:983-02:984/02:986-02:991/02:993:01-02:1009/02:1011Q-02:1020/02:1024-02:1027/02:1031N-02:1032/02:1034-02:1045Q/02:1047-02:1049/02:1051-02:1086/02:1088-02:1093/02:1096/02:1098-02:1104N/02:1106/02:1108-02:1109/02:1111-02:1117/02:1119N-02:1144	A2, Low A2, -, A203, A210, Null			3																			23		
A*02:01:09/02:05:05/02:06:07/02:07:12/02:11:02/02:76:02-02:76:03/02:243:02-02:243:03/02:528:02/02:570:01	A2, -			3																		21			
A*02:01:12/02:01:33/02:636/02:674/02:815, B*07:02:80	A2, -			3																				w	

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*02:01:17/02:01:26/02:01:52/02:01:64/02:01:69/02:01:74/02:01:81/ 02:01:95/02:03:07/02:05:03/02:06:12/02:06:19/02:07:15/02:08:02/02:55/ 02:64:01-02:64:02/02:72/02:80/02:88N/02:105/02:114/02:117/02:119/ 02:169/02:178/02:185/02:188/02:195/02:223N/02:229/02:246/02:275/ 02:279/02:288/02:289:02/02:298/02:301N/02:304/02:339/02:348/02:377/ 02:383/02:406/02:412/02:491/02:504/02:510/02:527/02:582/02:601/ 02:622N/02:641/02:643N/02:676/02:678/02:681/02:781/02:789N/02:826Q/ 02:828/02:831N/02:872/02:876/02:923/02:944/02:985/02:1028-02:1030/ 02:1046, B*58:01:24	A2, -, Null																							23	
A*02:01:40/02:03:11/02:42:02/02:141/02:312/02:470/02:570:02/02:796N/ 02:803N, B*15:10:07	A2, -, Null			3																					
A*02:01:65/02:01:75/02:05:09/02:60:01-02:60:02/02:193/02:254/02:286/ 02:308/02:311/02:488/02:594/02:649/02:711	-			w																				23	
A*02:01:165	-			3																	20			23	
A*02:06:31	-			?					8	9	10													23	
A*02:12-02:13/02:19/02:27/02:37-02:38/02:44/02:49:01/02:54/02:142/ 02:226N/02:271/02:280/02:417/02:543/02:630/02:682-02:683/02:723/ 02:804/02:840/02:948/02:1094	A2, -, Null			3											14									23	
A*02:24:02/02:507	-			3																19				23	
A*02:34-02:35:01/02:56:01/02:62/02:907	A2, -			3	w																		22	23	
A*02:35:02	A2				w																		22	w	
A*02:35:03	A2			3	w																	21	22		
A*02:46/02:70/02:1050	A2, -			3			6																	23	
A*02:48/02:129/02:571	-						6																	23	
A*02:50	A2																					21		23	
A*02:52/02:992	-								8															23	
A*02:56:02/02:103	-				w																		22	23	
A*02:65/02:152	A2/19, -																			19				23	
A*02:78	A2			3																			22		

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*02:122/02:591:01, A*11:158, A*68:01:01:01-68:01:10/68:01:12-68:01:24/68:01:26-68:01:27/68:01:29-68:01:35/68:01:37-68:02:06/68:02:08-68:08:02/68:10-68:25/68:27:01-68:27:02/68:29-68:47/68:51-68:70/68:72-68:102/68:104:01-68:128/68:130:01/68:131-68:133/68:135-68:136/68:138-68:171:01N/68:172-68:183/68:185-68:203N/68:205N-68:217/68:219-68:229/68:231-68:233/68:235/68:237-68:248/68:250/68:252-68:257/68:259-68:261/68:263Q-68:285/68:287-68:292N/68:295-68:307/68:309-68:310, B*44:497	-, A68(28), A28, Null																				21				
A*02:135/02:309/02:454	-								8	9	10													23	
A*02:237/02:580/02:809	-			3	w																		23		
A*02:609	-		w	3																			23		
A*02:662	-														14								23		
A*02:741	-			3	w							11										22	w		
A*02:829, A*32:01:01:01-32:01:06/32:01:08-32:01:11/32:01:13-32:01:47/32:01:49-32:01:55/32:03:01:01-32:03:01:02/32:05-32:12/32:14/32:16/32:18-32:21/32:23/32:25-32:27N/32:29/32:31/32:33:01/32:33:03/32:35-32:51/32:53-32:65/32:67-32:70/32:72-32:74/32:76-32:78/32:80-32:92N/32:95-32:100/32:102-32:108/32:110-32:157/32:159-32:169/32:171-32:181	-, A32(19), Null																		18						
A*02:927	-				w																		23		
A*02:959/02:968/02:982/02:1010/02:1097/02:1107N/02:1118	-, Null			3																			?		
A*02:1021/02:1023/02:1033/02:1087/02:1105/02:1110/02:1145	-			?																			23		
A*02:1022	-		2	3																			23		
A*02:1095	-			3																		22	23		
A*03:01:01:01-03:01:38/03:01:40-03:01:126/03:03N-03:09/03:11N-03:23:02/03:25-03:29/03:33-03:64/03:66-03:68N/03:70-03:72/03:74-03:75/03:77-03:81/03:83-03:88/03:89:02/03:91N-03:102/03:104-03:105/03:108-03:112/03:114-03:151/03:153-03:159/03:161N-03:163/03:165-03:166/03:168N-03:170/03:172-03:193/03:195-03:197:02N/03:199/03:201-03:217/03:220-03:222/03:224/03:226-03:235/03:238-03:240/03:243/03:245-03:252/03:254-03:259/03:261-03:270/03:272/03:276-03:280:02/03:283N-03:284N/03:286N-03:308/03:310-03:313/03:315-03:317/03:320-03:332/03:334N-03:342N/03:344:01-03:347/03:349-03:355/03:357N-03:372/03:374N-03:384/03:386-03:412/03:414-03:427/03:429-03:441/03:443-03:452/03:454-03:457/03:459-03:465/03:467-03:472/03:474-03:476/03:478-03:479	A3, Null, -				4																				
A*03:01:39	-				4											15					20				

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*03:02:01:01-03:02:07/03:31-03:32/03:65/03:69N/03:73/03:76/03:82/03:90/03:106/03:113/03:160/03:198/03:218/03:223/03:236-03:237/03:242/03:244/03:253/03:274-03:275N/03:281/03:285/03:309/03:314/03:318-03:319/03:333/03:348/03:356/03:385/03:453/03:458Q/03:466/03:473/03:477, A*11:130	A3, -, Null				4										w										
A*03:02:08	-				4										w	15					20				
A*03:10/03:167/03:225, A*11:199:01/11:222	-				4										14										
A*03:24	A3				4									13											
A*03:30/03:273	-				4		6																		
A*03:89:01	-				4																		23		
A*03:103:01-03:103:02/03:282	-				4								12												
A*03:152	-				4		6												18						
A*03:171/03:271/03:373/03:428/03:442, A*68:71	-				4																21				
A*03:219, A*32:04/32:52	-				4													18							
A*03:241/03:343, A*69:07	-				4																	22			
A*11:01:01:01-11:01:34/11:01:36-11:01:56/11:01:58-11:01:103/11:01:105-11:09/11:11-11:16/11:18-11:22/11:26/11:29-11:30/11:32:01-11:34/11:36-11:37/11:41-11:44/11:46-11:49/11:51-11:52Q/11:54:01-11:56/11:58-11:77/11:79-11:93/11:95-11:97/11:99N-11:110/11:113-11:115N/11:117-11:129/11:131-11:139/11:141-11:157/11:159-11:175/11:177/11:179-11:182Q/11:184-11:189/11:192-11:198/11:200-11:208:02N/11:210N/11:212-11:221/11:224-11:225/11:227-11:228/11:230-11:249/11:251N-11:257/11:259-11:268/11:270/11:272Q-11:289/11:291-11:309/11:311-11:324/11:327-11:345/11:347N-11:358/11:360-11:371/11:373-11:379/11:381-11:388N/11:390-11:391/11:393-11:395/11:398-11:431/11:433N-11:434/11:436N-11:449/11:451-11:462, A*24:89/24:290, A*68:129	A11, -, Null														14										
A*11:01:104/11:23/11:98/11:229/11:250/11:258/11:346, A*33:19	-														w										
A*11:10	A11													13	14										
A*11:27/11:38-11:39/11:209	-	1													14										
A*11:57/11:359, A*68:09/68:26/68:28/68:134/68:171:02N/68:204	-, A28, Null														14						21				
A*11:116/11:140	-												12		14										
A*11:178/11:190, A*24:02:17/24:02:49/24:02:89/24:08/24:21:01-24:21:02/24:29/24:31/24:42/24:67/24:77/24:156/24:158N/24:191/24:200/24:237/24:273/24:309-24:310:01/24:326/24:342/24:359N/24:370N/24:389N/24:489/24:506/24:562/24:601, B*51:55, B*57:129	-, A24(9), Null							7																	

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*11:199:02-11:199:03	-				w										14										
A*11:325, A*24:19/24:28/24:44/24:379/24:406/24:424	-, A9, A24(9)						6								14										
A*11:372, A*31:89, A*34:19, A*66:23/66:30	-												12												
A*11:389/11:392/11:396-11:397N/11:432N/11:435/11:450	-, Null														?										
A*23:01:01:01-23:01:20/23:01:22-23:02/23:04-23:08N/23:10:01-23:17:02/ 23:18-23:22/23:25-23:27/23:29-23:30/23:32-23:33/23:35-23:36/23:38N- 23:44/23:46-23:50/23:52-23:54/23:56/23:58-23:60/23:62-23:65/23:67- 23:68/23:70-23:79/23:81-23:82/23:84N-23:99/23:101-23:103N/23:106N- 23:112/23:114-23:127/23:129/23:131-23:135, A*24:315	A23(9), -, Null					5	6																		
A*23:01:21	-			3		5	6																		
A*23:03:01/23:83, A*32:170	-					5													18						
A*23:03:02:01-23:03:02:02/23:09/23:23/23:28/23:37:01-23:37:02/23:51/ 23:61/23:80/23:100, A*24:24/24:392, B*18:27	-					5																			
A*23:17:03	-					?	6																		
A*23:24/23:34/23:57/23:66/23:104/23:130, A*24:02:74/24:02:146/24:04/ 24:06/24:13:01-24:13:03/24:22/24:87/24:107/24:109/24:167/24:207:01- 24:207:02/24:227/24:285/24:289/24:299/24:339/24:355/24:373/24:381/ 24:405/24:446/24:478/24:569/24:572/24:599, A*33:21/33:53	-, A24(9), A9						6																		
A*23:31/23:45/23:55	-	1				5	6																		
A*23:105, A*24:71/24:527	-					5	6	7																	

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*24:02:01:01-24:02:05/24:02:07-24:02:16/24:02:18-24:02:48/24:02:50-24:02:63/24:02:65/24:02:67-24:02:73/24:02:75/24:02:77-24:02:88/24:02:90-24:02:145/24:02:147-24:02:166/24:02:168-24:03:05/24:05:01-24:05:02/24:07:01:01-24:07:04/24:09N-24:11N/24:14:01:01-24:14:01:04/24:17:01:01-24:17:01:02/24:20:01:01-24:20:02/24:23/24:25-24:27/24:30/24:32-24:40N/24:43/24:45N-24:50/24:52-24:64/24:66/24:68-24:70/24:72-24:76/24:78-24:86N/24:88/24:90:01N-24:91/24:93/24:95-24:106/24:108/24:110-24:128/24:130-24:137/24:139-24:155N/24:157/24:159-24:166/24:168-24:187/24:189-24:190/24:192-24:199/24:201-24:203/24:205-24:206/24:208:02:01-24:210/24:212/24:214-24:226:02/24:229-24:234/24:236/24:238-24:272:02/24:274-24:284/24:286-24:288/24:291-24:292/24:294Q-24:298/24:300-24:308/24:311-24:314/24:316-24:325/24:327-24:338/24:341/24:344-24:354/24:356-24:358/24:360-24:369/24:371-24:372/24:374-24:376/24:378Q/24:380/24:382-24:388N/24:390-24:391/24:393-24:404/24:407-24:414/24:416-24:423/24:425N-24:427N/24:429N-24:445N/24:447Q-24:470/24:472-24:477/24:479Q-24:488/24:490-24:498/24:500-24:503/24:505/24:507-24:514N/24:516-24:521/24:523-24:526/24:528-24:550/24:552-24:555/24:558-24:559/24:561:01-24:561:02/24:563-24:568N/24:570-24:571/24:573-24:598/24:600/24:602-24:605/24:607/24:459:02/24:611-24:615/24:617-24:618	A24(9), Low A24(9), -, A2403, A9, Null						6	7																	
A*24:02:06/24:340	A24(9), -						6	7																23	
A*24:02:64/24:02:66/24:343/24:415/24:428N	-, Null						w	7																	
A*24:02:76	-			3			6	7																	
A*24:02:167/24:556N/24:560	-, Null						6	?																	
A*24:15/24:41/24:51/24:92/24:235/24:499/24:504/24:551/24:557	-	1					6	7																	
A*24:18/24:204/24:213, A*31:08, A*32:79	A24(9)/A3, -						6												18						
A*24:21:03, A*32:02/32:22	-, A32(19)							7											18						
A*24:94/24:138/24:188/24:228/24:515/24:610, A*68:249	-						6														21				
A*24:208:01	-						6	7											18						
A*24:293	-						6	7													21				
A*24:310:02	-			3				7																	
A*24:377	-						6	w																	
A*24:522/24:606/24:616	-						?	7																	
A*24:609	-						6	7			10														

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*25:01:01:01-25:01:01:12/25:01:03-25:01:07/25:01:10-25:01:16/25:01:18-25:01:21/25:03/25:05-25:10/25:12N-25:13/25:15-25:23/25:25-25:32/25:34-25:35/25:37-25:38/25:40-25:42N/25:45-25:58/25:60-25:64/25:66-25:74/25:76:01-25:76:02/25:78-25:80/25:83-25:87	A25(10), -, Null								8	9															
A*25:01:02, B*07:02:74	A25(10), -								w	9															
A*25:01:08/25:39	-								8	w															
A*25:02	A25(10)								8	9			12												
A*25:04/25:44	-							7	8	9															
A*25:11	-								w	9	10														
A*25:14, A*30:12:01/30:18:01-30:18:02/30:41/30:166/30:209N, A*32:101Q, 04:01:49, 12:328, 15:222	-, A30(19), Null								8																
A*25:24/25:33, A*26:01:02/26:01:13/26:01:63/26:110/26:227, A*66:03:01:01-66:03:01:03/66:05/66:15/66:28N/66:39N, B*18:02:02, B*38:02:04	-, A26(10), A10, Null									9															
A*25:36/25:65	-	1							8	9															
A*25:43	-												13												
A*25:75	-								w	9			12												
A*25:77	-						6		8																
A*25:81	-										?														
A*25:82	-						6				?														
A*26:01:01:01-26:01:01:55/26:01:03-26:01:12/26:01:14-26:01:26/26:01:28-26:01:37/26:01:39-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:01:78/26:01:80-26:03:01:02/26:03:03-26:12:01:02/26:14-26:18/26:20:01-26:28/26:30/26:32/26:34-26:43:02/26:45-26:47/26:50-26:59/26:61-26:68/26:70-26:71N/26:73-26:75/26:77-26:83/26:86-26:109/26:111-26:124/26:126-26:130/26:132-26:142/26:145N-26:169/26:171-26:183/26:185-26:203/26:206:01N-26:224/26:228-26:233/26:235-26:237/26:239-26:242	A26(10), -, Null, A10									9	10														
A*26:01:27/26:84/26:184	-										10														
A*26:01:38/26:31/26:76/26:170	-									w	10														
A*26:01:79/26:234	-									?	?														
A*26:13/26:226	-									9	10		12												
A*26:19	-										10		12												
A*26:29/26:49/26:205	A26(10), -	1								9	10														

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*26:33, A*34:06, A*66:01:01:01-66:02:01:03/66:04/66:06-66:09/66:11-66:14/66:16-66:18/66:20-66:22/66:24-66:27N/66:29/66:31-66:38/66:40/66:42-66:48	-, A66(10), Null									9			12												
A*26:48/26:69	-									9	10	11													
A*26:72	-		2								10														
A*26:143	-									w	w														
A*26:225	-									9	?														
A*26:238	-									?	10														
A*29:01:01:01-29:01:06/29:01:08-29:02:35/29:02:37-29:06/29:08N-29:12/29:15-29:18/29:20-29:31/29:33-29:38/29:40-29:47/29:50/29:52-29:59/29:61-29:68/29:70-29:72/29:74-29:104/29:106-29:110/29:112N-29:158/29:160-29:163/29:165-29:178/29:180-29:184, A*32:30:02, A*74:10/74:41	A29(19), Null, -															15									
A*29:07/29:49	-					5										15									
A*29:13, A*32:30:01/32:32	-															15			18						
A*29:14	-															15		17							
A*29:19/29:39/29:159	-															15					20				
A*29:32	-												12			15									
A*29:48	-															15				19	20				
A*29:51/29:69/29:73	-															15						21			
A*29:105/29:164	-															15				19					
A*29:111	-															w									
A*29:179	-															?									
A*30:01:01:01-30:01:07/30:01:09-30:02:09/30:02:11-30:04:01:03/30:04:03-30:04:04/30:06/30:08:01-30:11:02/30:14L-30:15/30:17/30:19-30:20/30:23-30:25/30:27N-30:40/30:42-30:43/30:45/30:47-30:54/30:56-30:81/30:83/30:85-30:88/30:91-30:95/30:97-30:123N/30:125-30:151/30:153-30:162/30:165/30:167-30:183/30:185/30:187-30:188/30:190-30:205/30:207-30:208N/30:211-30:218/30:220Q-30:223	A30(19), -, Null								8							16									
A*30:01:08	-								8							w									
A*30:02:10	-								8		10														
A*30:04:02/30:90/30:96/30:124/30:219N	-, Null															16									
A*30:07/30:13/30:16/30:22/30:44/30:46	-								8							16							w		
A*30:55	-				4				8																
A*30:89/30:186	-				4				8							16									

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*30:152, A*31:01:02:01-31:01:06/31:01:08-31:01:46/31:01:48-31:06/31:09/31:11:01-31:20/31:23/31:25-31:28/31:30-31:74/31:76-31:88/31:91-31:96/31:98-31:103/31:105-31:108/31:110-31:114/31:116-31:135/31:137-31:201N/31:203/31:205-31:209/31:211-31:221/31:223-31:227	-, A31(19), Null																	17							
A*30:163	-								8					13			16								
A*30:164	-								8						14		16								
A*30:189/30:206/30:210	-								?								?								
A*31:01:47/31:202N/31:204	-, Null																	?							
A*31:07/31:10/31:222	-, A31(19)																	17	18						
A*31:24/31:97/31:136	-														w			17							
A*31:29	-					5												17							
A*31:104	-																	w							
A*31:115	-												12					17							
A*32:13	-	1																	18						
A*32:15/32:93	-																		18	19					
A*32:17	-				w								12						18						
A*32:24	-		2																18						
A*32:75/32:94	-																		w						
A*32:109	-																		18			21			
A*33:01:01:01-33:01:04/33:01:06-33:01:19/33:03:01:01-33:03:25/33:03:28-33:03:30/33:03:32-33:03:55/33:03:57/33:03:59-33:18:01/33:20/33:22-33:29/33:31/33:33-33:34/33:36-33:37/33:39-33:48/33:50-33:52/33:54-33:58/33:60-33:65/33:67-33:80N/33:82-33:88/33:90-33:101/33:103-33:121/33:123N-33:124/33:126-33:129N/33:132-33:134/33:136-33:139/33:141-33:143N/33:145-33:149/33:151/33:153-33:157N/33:160-33:174N/33:176N/33:178-33:182/33:184-33:186/33:189/33:191-33:214/33:216-33:248N/33:250-33:251/33:253-33:260, B*07:02:40, B*08:01:07, B*15:02:07, B*55:02:10	A33(19), -, A19, Null, B8																		19						
A*33:03:26/33:03:31/33:66/33:140N/33:158/33:188	-, Null																			w					
A*33:03:56/33:215	-																		?						
A*33:49/33:144	-													13						19					
A*33:59/33:102/33:150/33:177/33:190	-														w					19					
A*33:125/33:131	-												12							19					
A*33:183	-											11								19					

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A*33:187	-					5														19					
A*33:249	-																	?		?					
A*33:252	-																			19		21			
A*34:01:01:01-34:01:07/34:05/34:11/34:14/34:16-34:18/34:27/34:31	A34(10), -									9		11	12												
A*34:02:01:01-34:04/34:07/34:09-34:10N/34:13/34:15/34:20-34:22/34:25-34:26N/34:29N-34:30N	A34(10), -, Null									9				13											
A*34:08	-				4					9				13											
A*34:12	-											11	12												
A*34:23	-									w		11	12												
A*34:24	-									w															
A*34:28	-									9				?											
A*43:01-43:03	A43, Null, -										10														24
A*66:10	-	1								9			12												
A*66:19	-									9			12		14										
A*66:41	-									w			12												
A*68:01:28/68:01:36/68:130:02	-															15				20	21				
A*68:103:01-68:103:02	-													13								21			
A*68:258/68:311	-																					?			
A*68:262	-												12									21			
A*68:294	-									9			12									21			
A*68:308, A*69:01:01:01-69:01:04/69:02/69:04-69:06/69:08-69:09	-, A69(28)																					21	22		
A*69:01:05	-													13								21	22		
A*69:03	-														14							21	22		
A*74:01:01:01-74:01:09/74:02:01:01-74:03:03/74:05-74:09/74:11-74:12N/74:14N-74:15/74:16:02-74:20/74:22-74:40/74:44-74:45/74:47N/74:49	A74(19), -, Null																			20					
A*74:01:10	-																				?				
A*74:04/74:21/74:43	-																			19	20				
A*74:13	-				4								12								20				
A*74:42	-				?								12			15									
A*74:46	-		2													15									
A*80:01:01:01-80:01:02/80:03/80:05-80:09N	A80, -, Null																								24
B*07:225/07:260	-								w																

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
B*15:01:83	-			?																					
B*35:01:60, B*51:01:34, C*06:247, C*07:02:27/07:577	-																							w	
B*35:08:14/35:14:03	-													w											
B*57:148, C*04:229:02	-								?																
*C*07:1034	-																						?		

w = weak,

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

Table 5: Amplification patterns for all **HLA-B*** alleles detected by the HLA-B*. CTS-PCR-SSP primer mixes (**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

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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	-

Allele	Mixes	Serology
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
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	-

Allele	Mixes	Serology
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)
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

Allele	Mixes	Serology
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
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	-

Allele	Mixes	Serology
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	-

Allele	Mixes	Serology
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	-
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

Allele	Mixes	Serology
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?	-
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/40:30/40:34/40:36/40:38/40:43/40:45/40:47/40:52/40:54-40:55/40:59-40:60/40:62/40:65-40:67/40:69/40:73-40:74/40:76/40:79-40:81/40:84/40:88/40:100-40:102/40:108/40:112-40:114/40:116-40:118N/40:123/40:125/40:126/40:128/40:130/40:130:02/40:134-40:135/40:138-40:141/40:146-40:147/40:149-40:156/40:160/40:160:02/40:168/40:170/40:172/40:175/40:179/40:182/40:186/40:188/40:192-40:193/40:195/40:204/40:207/40:212-40:213/40:215-40:218/40:221/40:223/40:227-40:228/40:233-40:236/40:238-40:242/40:245/40:245:02/40:247/40:249-40:253/40:257-40:264/40:272-40:273/40:277-40:282/40:285-40:286N/40:288/40:298/40:299/40:301/40:310/40:312/40:316/40:319/40:321/40:323/40:323:02/40:327/40:329/40:332-40:333/40:336/40:338N-40:339/40:344/40:346/40:352-40:353/40:357-40:358/40:360/40:367/40:370/40:372N/40:379/40:379:01-40:379:02/40:381/40:383/40:385-40:386/40:391-40:398/40:400-40:404/40:406-40:407/40:416-40:419/40:421Q/40:426N/40:428N/40:431/40:431:02/40:433-40:434/40:436/40:439/40:443/40:446-40:448/40:450/40:452/40:456/40:461/40:463/40:469/40:474-40:475/40:479-40:480/40:483N/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*40:01:09/40:07/40:61/40:87/40:87:02/40:196/40:222/40:300/40:368/40:422/40:517	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	-

Allele	Mixes	Serology
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	-
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

Allele	Mixes	Serology
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	-

Allele	Mixes	Serology
B*41:46/41:82	17+22	-
B*41:60	15+17+22+37w	-
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	-

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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), -

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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
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), -

Allele	Mixes	Serology
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	-
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	-

Allele	Mixes	Serology
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	-

Allele	Mixes	Serology
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	-
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

Table 6: Amplification patterns of **HLA-C*** and other HLA alleles detected by the HLA-C* CTS-PCR-SSP primer mixes (**Lot No. C13-4**) based on IMGT/HLA Sequence Database Release 3.55.0, January 2024

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*01:02:01:01-01:02:09/01:02:11-01:02:18/01:02:20/01:02:22-01:02:26/01:02:29-01:02:58/ 01:02:60-01:02:67/01:02:69-01:02:70/01:02:72-01:03:01/01:03:03/01:05-01:09:02/01:11-01:13/ 01:15-01-01:20/01:22/01:24-01:36:01/01:37N-01:42/01:44-01:49:02/01:51-01:54/01:56N-01:57/ 01:59-01:64/01:66/01:68-01:74/01:76-01:96/01:98N-01:100/01:103-01:113/01:114:02-01:121Q/ 01:123-01:130/01:132-01:153/01:155/01:157-01:159/01:161-01:167/01:170-01:176/01:178- 01:192/01:194-01:202/01:204-01:211N/01:213-01:226/01:228N-01:240/01:242-01:255/01:257N- 01:266N	Cw1, -, Null	1																						
C*01:02:19/01:02:21/01:03:02/01:36:02/01:55/01:67/01:114:01/01:122/01:156, A*01:91, A*03:99, A*32:86	-	w																						
C*01:02:68/01:02:71/01:97	-	1			4																			
C*01:04	-	1													w	15								
C*01:10	-	1	2																					
C*01:14	-	1																17						
C*01:21	-	1													14	15								
C*01:23/01:58	-	1									10													
C*01:43	-	1												13										
C*01:65	-	1				5																		

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*01:131, 03:02:01-03:02:15/03:02:17-03:02:20/03:02:22-03:02:27/03:02:30-03:02:32/ 03:04:01-03:04:22/03:04:24-03:04:26/03:04:28/03:04:31-03:04:37/03:04:39-03:04:58/ 03:04:61-03:04:87/03:04:90-03:04:101/03:05:01-03:06:02/03:09-03:10/03:17:01-03:17:02/ 03:19/03:23N-03:24/03:26:01-03:26:02/03:28/03:33/03:35:01-03:37:02/03:40:01/03:40:03- 03:40:04/03:42:01/03:44/03:46-03:48/03:51/03:54/03:57:01-03:57:02/03:63-03:65/03:70-03:74/ 03:77-03:78/03:80:01-03:80:02/03:82/03:84/03:87:02/03:89-03:93/03:95/03:98/03:100-03:101/ 03:104-03:111/03:114-03:115:02/03:117-03:118/03:121N/03:123/03:125:01-03:125:02/03:128- 03:129/03:131/03:134-03:135/03:137-03:139/03:143/03:145-03:149/03:153-03:157/03:159/ 03:162/03:164/03:166/03:169Q-03:170/03:172-03:174/03:178/03:180-03:181/03:183/ 03:184:02/03:186:01-03:186:02/03:191/03:193/03:197-03:201N/03:208N-03:213/03:215- 03:216/03:218-03:219/03:221-03:222/03:224N-03:226/03:232-03:236/03:238-03:240/03:244Q- 03:245/03:247-03:250/03:252/03:255-03:259/03:264-03:266/03:269-03:270/03:278-03:279/ 03:281-03:282/03:287:01-03:287:02/03:292/03:294/03:296:01-03:296:02/03:298-03:303/ 03:305-03:306/03:309-03:310/03:313/03:315/03:317-03:318N/03:323N/03:326/03:328-03:330/ 03:332-03:335/03:337-03:338/03:340/03:342-03:343/03:347-03:350/03:353-03:355/03:358- 03:359/03:362/03:365-03:366N/03:368-03:369/03:371/03:373/03:376/03:379/03:381-03:382/ 03:385/03:387-03:388/03:390-03:394/03:396:01N/03:397/03:399-03:412/03:415/03:417/ 03:419-03:420/03:423-03:426/03:429/03:434/03:437/03:439/03:441-03:443/03:445N-03:446N/ 03:448Q-03:449N/03:452-03:456/03:458-03:459/03:462N-03:470N/03:473/03:475/03:478/ 03:480:01-03:480:02/03:482-03:489/03:491:01-03:494/03:496-03:502Q/03:504-03:505/ 03:508N/03:510N-03:511N/03:513/03:518/03:521-03:523/03:525-03:526/03:531N-03:532/ 03:538-03:539/03:543-03:544/03:546-03:549/03:553-03:554/03:558/03:561-03:562/03:564- 03:566/03:569-03:572/03:575Q-03:577/03:580-03:581/03:584/03:588-03:589/03:593/03:596/ 03:599-03:600/03:602-03:605/03:610/03:612-03:615/03:618N-03:621/03:623/03:625N-03:626/ 03:629-03:631/03:633/03:637:01-03:638/03:641-03:644/03:646-03:650/03:652/03:654	-, Cw10(w3), Cw3, Null				4	5																		
C*01:154	-	1																w						
C*01:160	-	1										12												
C*01:177, 04:100/04:367/04:422, 07:64, 14:02:02/14:02:37/14:02:42/14:04/14:12/14:17/14:49/ 14:64/14:77/14:82/14:108/14:140, 15:36, A*23:52/23:128, A*24:73/24:174/24:325/24:504/ 24:613	-																		19					
C*01:203/01:227/01:256	-	?																						
C*01:241	-																		?					
C*02:02:01-02:02:03/02:02:06-02:02:10/02:02:13-02:02:20/02:02:22-02:02:34/02:02:36- 02:02:55/02:02:57-02:02:61/02:02:63-02:02:64/02:02:66-02:02:69/02:02:71/02:04/02:06:01- 02:11/02:13-02:15/02:17/02:19-02:21/02:23-02:26/03:02:28-02:31/02:33-02:40/02:42/02:44- 02:48/02:50/02:52N-02:54/02:56-02:57/02:59-02:61:01/02:62-02:64/02:66-02:71/02:73-02:77/ 02:79-02:81/02:83-02:86/02:88-02:114/02:116-02:125/02:127-02:128/02:130/02:132-02:134/ 02:138-02:148/02:150N-02:164/02:167-02:179/02:181-02:196/02:198-02:208/02:210-02:227N	Cw2, -, Null	2																18						

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*02:02:11/02:61:02/02:209	Cw2, -		2				6												18					
C*02:02:12/02:02:21/02:03/02:16:02:01-02:16:02:02/02:18/02:27:01-02:27:02/02:32/02:65/02:129/02:131/02:135N/02:137, 07:850, B*46:06/46:25/46:30	-, Null		2																					
C*02:02:35/02:72/02:126/02:149	-		2																w					
C*02:02:56/02:136	-		w																18					
C*02:02:62	-		?																18					
C*02:02:65/02:22	-		2						8										18					
C*02:02:70	-		2													15			18					
C*02:05:01-02:05:03	-		2															17	18					
C*02:12	-		2														16		w					
C*02:43:01-02:43:02/02:58/02:78/02:82/02:165N-02:166, 06:35/06:47/06:49N/06:58/06:72/06:101/06:117/06:127:01-01-06:127:02/06:131/06:136/06:142-06:144/06:264/06:304/06:358	-, Null																		18					
C*02:49/02:55:01-02:55:02	-		2														w		18					
C*02:51	-		2						9										18					
C*02:87	-		2											13										
C*02:115, B*07:13	-		2														16							
C*02:197, 04:01:01:01-04:01:01:29/04:01:01:31-04:01:22/04:01:24-04:01:29/04:01:31-04:01:157/04:03:02/04:04:01:01-04:05/04:07:01/04:08/04:10/04:12-04:14/04:15:02-04:15:03/04:17-04:20/04:24-04:28/04:30-04:31/04:33-04:35:02/04:38-04:41/04:43-04:53/04:56-04:70/04:72-04:76/04:78-04:79/04:81-04:93N/04:95N-04:99/04:101-04:102/04:104-04:106/04:109-04:117/04:119-04:129/04:131-04:146/04:148-04:159/04:161-04:166:01/04:166:03-04:170N/04:173N-04:177/04:179-04:186/04:188-04:189/04:191N-04:213/04:215N-04:219/04:221-04:222/04:224-04:229:02/04:231-04:255N/04:257-04:264/04:266-04:267/04:269-04:285/04:287-04:293/04:295-04:298/04:300N-04:334/04:336/04:338Q-04:350N/04:352-04:356/04:358-04:359/04:361-04:362N/04:364N-04:366/04:368-04:369N/04:371N-04:380/04:382Q/04:384/04:386/04:388-04:392/04:394-04:399/04:401/04:403/04:405-04:421/04:423-04:428Q/04:430-04:435/04:437-04:446/04:448/04:450-04:460/04:462-04:472/04:474-04:476/04:478-04:479/04:481-04:488/04:490-04:495/04:497-04:505/04:507-04:509N/04:511-04:514, B*07:02:77, B*08:01:36, B*13:02:40, B*15:01:50/15:436, B*18:03:02, B*37:01:06, B*55:01:25	-, Cw4, Null, B37						6																	
C*03:02:16/03:04:60/03:283	-				4	w																		
C*03:02:21/03:02:28/03:04:27/03:04:29/03:04:59/03:07:01:01-03:07:03/03:14/03:25/03:40:02/03:42:02/03:87:01/03:140:01:01-03:140:01:02/03:179/03:263:01-03:263:02/03:331/03:361/03:653N, A*03:146, A*24:449, A*68:118, B*15:96/15:331, B*27:118, B*35:537, B*44:274, B*51:238, B*56:37	-, Cw3, Null, B62(15)					5																		
C*03:02:29/03:04:88-03:04:89/03:552	-				?	5																		

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*03:03:01:01-03:03:31/03:03:33-03:03:39/03:03:41-03:03:42/03:03:44-03:03:64/03:03:66-03:03:67/03:11:01-03:11:02/03:13:01-03:13:02/03:18:01-03:18:03/03:20N-03:22Q/03:30/03:43:01/03:49-03:50/03:52-03:53/03:55-03:56/03:59/03:61-03:62/03:66/03:68/03:75-03:76/03:79/03:81/03:83/03:85/03:88/03:97/03:103/03:112/03:116:01-03:116:02/03:119:02-03:120/03:122/03:124/03:126-03:127/03:132:01/03:133/03:141/03:144/03:150/03:152/03:158/03:160-03:161/03:165:01/03:167-03:168/03:171/03:175-03:177/03:182/03:185/03:187-03:189N/03:192/03:195-03:196/03:202-03:207/03:214/03:217/03:223/03:227-03:230/03:237/03:241-03:242/03:253-03:254/03:262/03:271/03:275-03:276/03:284-03:285/03:288-03:291/03:295/03:304/03:307-03:308/03:312/03:319-03:321/03:324-03:325/03:327/03:336/03:341/03:345-03:346/03:351-03:352/03:356-03:357/03:360/03:363N-03:364/03:367/03:370/03:372:01-03:372:02/03:374-03:375/03:378/03:380N/03:383/03:389/03:395/03:398/03:413-03:414/03:416/03:418/03:421N-03:422/03:427-03:428/03:430/03:432N-03:433/03:436/03:438/03:440/03:444N/03:450/03:457/03:460/03:471-03:472/03:474/03:476-03:477/03:479/03:481/03:490/03:495/03:503/03:506-03:507/03:509N/03:515-03:517/03:519-03:520/03:524/03:527-03:529/03:533/03:537/03:541/03:545/03:550-03:551/03:556/03:559-03:560N/03:563/03:567-03:568/03:573-03:574/03:578/03:582-03:583/03:586Q-03:587/03:592/03:594-03:595/03:597-03:598/03:601/03:606/03:608/03:616-03:617/03:622/03:624/03:628N/03:632/03:634-03:636N/03:639-03:640/03:645/03:651	Cw9(w3), -, Null, Cw3			3	4																			
C*03:03:32/03:43:02/03:102/03:119:01/03:220/03:243/03:267-03:268/03:316N/03:377N/03:447N/03:514/03:609	-, Null			3																				
C*03:03:40	-			3	4											15								
C*03:03:43/03:273	-			3	w																			
C*03:03:65/03:96:02/03:611	-			?	4																			
C*03:04:23/03:04:30/03:184:01/03:190/03:263:03/03:277N/03:311	-, Null			w	5																			
C*03:04:38/03:04:102/03:16/03:32:01:01-03:32:01:02/03:41:01-03:41:02/03:60/03:96:01/03:113:01-03:113:02/03:132:02/03:151/03:165:02/03:194/03:251/03:260/03:286/03:293/03:314/03:322/03:435/03:451/03:512/03:535:01:01-03:536/03:540/03:590-03:591, 14:33/14:78-14:79/14:110	-			4																				
C*03:08/03:29/03:555	-			4	5																20			
C*03:15/03:297, 04:03:09/04:80, 17:07/17:33, 18:09, A*25:55, B*07:160/07:463, B*35:570	-															w								
C*03:27/03:38:01-03:38:02/03:431	-			4	5											16								
C*03:31	-			3	4																20			
C*03:34/03:261/03:386	-		2	4	5																			
C*03:39/03:67	Cw3, -			3	4																			23
C*03:69	-			3	4											16								

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*03:130/03:163	-					5											w							
C*03:136, 12:02:19/12:03:20/12:85:02	-				4												16							
C*03:142/03:272	-			2	3	4																		
C*03:231	-				3	4														19				
C*03:246	-				4	5											16				20			
C*03:274/03:461	-				3												w							
C*03:280/03:530	-				4	5								13										
C*03:339/03:534	-				w	4																		
C*03:344:01:01-03:344:01:02	-				4	5																	23	
C*03:384	-			2	4																			
C*03:396:02N/03:627	Null, -				4	?																		
C*03:542	-				3	4															w			
C*03:557	-				4	5														19				
C*03:579/03:585	-				3	?																		
C*04:03:01:01-04:03:01:05/04:03:03-04:03:08/04:03:10-04:03:11/04:06:01-04:06:03/04:16/04:103:01-04:103:02/04:107/04:147/04:160:01-04:160:02/04:171/04:190/04:256/04:286/04:294/04:299/04:335/04:337/04:351:01-04:351:02/04:357/04:363/04:381/04:383/04:393/04:400/04:402/04:489/04:506	-						6										w							
C*04:09L	?						6	7																
C*04:11/04:29/04:36/04:55/04:172/04:214/04:449	-				4		6																	
C*04:23/04:54:01-04:54:02/04:108	-						6													19				
C*04:32/04:77/04:265	-			2			6																	
C*04:37, 06:04:01-06:06:01:02/06:79N/06:153:01-06:153:02/06:197/06:271	-, Cw6, Null									10							17							
C*04:42:01-04:42:02/04:220	-						6																23	
C*04:71/04:436N	-, Null	w					6																	
C*04:94:01-04:94:02	-						6												18					
C*04:118/04:187/04:404	-						w																	
C*04:223:01, 05:64:01	-						6		8	9														
C*04:223:02, 05:01:20	-						6			9														
C*04:230	-						6				10							17						
C*04:360/04:477/04:496	-										10							17	18	19				

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*04:387, 05:01:01:01-05:01:01:85/05:01:03-05:01:11/05:01:13-05:01:17/05:01:19/05:01:21-05:01:30/05:01:33-05:01:58/05:01:62-05:01:68/05:01:70-05:01:76/05:03-05:04:01/05:05:01-05:07N/05:09:01-05:11/05:13-05:15/05:17/05:19/05:21-05:29:01/05:30-05:31/05:33-05:41/05:43-05:44:02/05:47-05:51Q/05:53-05:63/05:64:02-05:84/05:86-05:88/05:90-05:96/05:98-05:102/05:104/05:108/05:110-05:114/05:116-05:127/05:130-05:133/05:135-05:139/05:141-05:142/05:144-05:146/05:149-05:150/05:152-05:169N/05:171:01:01-05:199/05:202Q-05:205/05:208N-05:214/05:216:01:01-05:216:01:02/05:218-05:227/05:229-05:240/05:242-05:244N/05:246-05:258/05:260N-05:270N/05:273-05:283/05:285-05:293	-, Cw5, Null								8	9														
C*04:447	-		2				6																22	
C*04:461	-						?																	
C*04:473, 12:233/12:397	-				4		6										16							
C*04:480	-						6																22	
C*04:510	-										10							17		19				
C*05:01:02/05:01:18/05:01:31-05:01:32/05:01:69/05:04:02/05:20/05:32/05:109/05:128N-05:129/05:147-05:148/05:207/05:215, 08:13/08:55N/08:94	Cw5, -, Null								9															
C*05:01:12/05:01:59/05:12/05:18:01/05:18:03/05:29:02/05:45/05:97/05:115/05:134/05:140/05:143/05:151/05:228/05:272, 08:10	-								8															
C*05:01:60	-								8	9						15								
C*05:01:61/05:271N/05:284	-, Null								8	?														
C*05:08/05:52/05:89	-								8	9								18						
C*05:16/05:85/05:241	-								8	9							17							
C*05:42/05:46:01:01-05:46:01:02	-								8	9						w								
C*05:105	-		2						8	9														
C*05:106:01	-								8									18						
C*05:106:02, 12:21	-															15		18						
C*05:107, 06:204, 12:09, 16:48/16:88	-																17							
C*05:170/05:217	-								w	9														
C*05:200	-	1							8	9														
C*05:201	-					5			8	9														
C*05:206	-		2						8	9													22	
C*05:259N	Null								?	9														

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*06:02:01:01-06:02:01:97/06:02:03-06:02:07/06:02:09-06:02:11/06:02:13-06:02:45/06:02:47-06:02:51/06:02:53-06:02:64/06:02:66-06:02:67/06:02:69-06:02:83/06:02:85-06:02:90/06:02:92-06:02:112/06:07/06:09:01-06:10/06:12-06:29/06:32-06:34:01/06:36-06:39/06:41-06:46N/06:48/06:50-06:51/06:53:01-06:57/06:59-06:60/06:62-06:68/06:70:01-06:71/06:73-06:75/06:77-06:78/06:80-06:81/06:83-06:85/06:87-06:100/06:102:01-06:116N/06:119-06:121/06:123/06:125/06:128N-06:130/06:133-06:135/06:137-06:138/06:140-06:141/06:146/06:148-06:152N/06:154-06:159/06:161-06:170/06:172-06:182/06:185-06:196/06:199-06:203/06:205-06:209:02/06:211:01:01N-06:216/06:218-06:247/06:249-06:251/06:253-06:263N/06:265-06:270/06:272-06:279/06:281N-06:303/06:305-06:316N/06:318-06:325/06:327-06:333/06:335-06:343/06:345-06:357N/06:359N-06:372	Cw6, -, Null										10							17	18					
C*06:02:08/06:34:02	-										10							17	18					23
C*06:02:12/06:02:68/06:02:91/06:11/06:52/06:61/06:69/06:82/06:147/06:160/06:184/06:248/06:252	-										10													
C*06:02:46/06:30/06:86/06:126/06:198, 12:33	-																	17	18					
C*06:02:52	-								8		10							17	18					
C*06:02:65/06:122/06:124/06:183/06:280	-										10							w	w					
C*06:02:84/06:171:01:01N-06:171:01:02N	-, Null										w							17	18					
C*06:03:01-06:03:02/06:76:01-06:76:02/06:132:01-06:132:02	-										10						w	17	18					
C*06:08	-		2								10							17	18					
C*06:31	-										10	11	w					17	18					
C*06:40	-										10							17	w					
C*06:118	-										10	11	12					17						
C*06:139/06:145	-										w							w	18					
C*06:317	-										10							17	?					
C*06:326Q/06:334	-										?							?	18					
C*06:344	-										?							17	18					

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*07:01:01:01-07:01:02:15/07:01:04-07:01:13/07:01:15-07:01:19/07:01:21-07:01:26/07:01:28-07:01:44/07:01:46-07:01:56/07:01:58-07:01:62/07:01:64-07:01:90/07:01:92-07:01:102/07:01:104-07:02:24/07:02:27-07:02:31/07:02:33-07:02:37/07:02:39/07:02:41-07:02:47/07:02:49-07:02:55/07:02:57-07:02:110/07:02:112-07:02:120/07:02:123-07:02:145/07:02:147-07:03/07:05-07:10/07:13:01:01-07:14/07:16-07:17:02/07:18:01:01-07:18:09/07:18:11-07:19/07:21/07:23-07:25/07:27:01-07:29:02/07:32N/07:35-07:40/07:42-07:44/07:46-07:61N/07:65-07:67/07:69-07:72/07:74-07:91/07:93:01-07:94/07:97-07:100/07:102-07:130/07:133:01-07:135/07:137:02/07:141:01-07:141:02/07:143-07:147/07:149-07:150Q/07:152N-07:160/07:162-07:164N/07:166-07:171/07:173-07:180/07:182-07:198N/07:200-07:240/07:243-07:245/07:247-07:262/07:266/07:268-07:271/07:273-07:292/07:294/07:297-07:301/07:303/07:305-07:306/07:308-07:313/07:315/07:318-07:321/07:326-07:327/07:330:01-07:330:02/07:332-07:335/07:337/07:339-07:341:02/07:343:01:01-07:346/07:348-07:350N/07:352-07:353/07:356/07:359-07:360/07:362-07:363/07:366-07:367/07:369-07:375/07:377/07:379-07:384/07:386-07:389/07:391-07:393N/07:396-07:401/07:404-07:405:02/07:407-07:419/07:421-07:425/07:427/07:429-07:446/07:448/07:450:01-07:458/07:460-07:465/07:468-07:479/07:481-07:486/07:488-07:500/07:502-07:511/07:513Q/07:515-07:516/07:518/07:520-07:522/07:524/07:526:01-07:528/07:530:01-07:533/07:536-07:561/07:564-07:568/07:570-07:577/07:580-07:582Q/07:584/07:587-07:598/07:602-07:621/07:623-07:624/07:627-07:650:02/07:652-07:654/07:657-07:663Q/07:665-07:670/07:673/07:675N-07:677/07:679-07:692/07:694-07:697Q/07:700-07:713Q/07:715:01-07:722/07:725-07:741/07:743N-07:750N/07:752N-07:754N/07:757-07:779:01:02/07:781-07:796N/07:798-07:811/07:813-07:814/07:816-07:820N/07:822-07:827/07:829-07:830/07:832-07:837/07:840N-07:843/07:846:01-07:846:02/07:848-07:849N/07:851/07:853-07:856N/07:859-07:867/07:869/07:871-07:875/07:877-07:880/07:882-07:890/07:893/07:898-07:900/07:902-07:910/07:912-07:915/07:918-07:922/07:924-07:925/07:927-07:928/07:930-07:935/07:937-07:938/07:943-07:947/07:949-07:950/07:952/07:954N-07:966/07:968-07:969/07:971-07:973/07:975-07:985:02/07:987-07:988/07:990-07:1009/07:1011/07:1013-07:1025/07:1027-07:1031/07:1034-07:1035/07:1037N-07:1062N/07:1064-07:1069/07:1071/07:1073/07:1075-07:1076/07:1078-07:1079Q/07:1082-07:1084/07:1086-07:1089/07:1091-07:1103/07:1105-07:1107, B*08:143	Cw7, -, Null											11	12											
C*07:01:14/07:02:56/07:33N/07:131:02/07:246:01-07:246:02/07:296/07:316/07:325/07:368:01/07:449/07:517/07:579/07:714/07:724/07:936N/07:989, A*01:199, A*11:133, B*07:51/07:220/07:226/07:332, B*15:200, B*39:60/39:82/39:136	-, Null												12											
C*07:01:20/07:01:27/07:02:38/07:17:04	-											11	12		14									
C*07:01:45/07:01:91/07:136/07:264N/07:331/07:529/07:678/07:844/07:847	-, Null											11	w											

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*07:01:57/07:02:40/07:02:122/07:04:01:01-07:04:07/07:04:09-07:04:30/07:11-07:12/07:18:10/07:20:01-07:20:02/07:45/07:63/07:68/07:73:01-07:73:02/07:142/07:151/07:172:01-07:172:02/07:181/07:199:01-07:199:02/07:272/07:302/07:323-07:324/07:328-07:329N/07:336/07:354-07:355/07:357-07:358/07:361/07:365/07:376/07:378/07:385/07:390/07:394-07:395/07:403/07:406/07:420/07:426/07:428/07:459/07:466-07:467/07:480/07:501/07:523/07:534-07:535/07:562-07:563/07:569/07:585-07:586/07:600:01N-07:600:02N/07:622/07:625-07:626/07:651/07:655-07:656/07:664/07:672N/07:674/07:693/07:698/07:742/07:751N/07:780/07:797N/07:828/07:831/07:838-07:839N/07:852/07:858/07:868/07:876/07:881N/07:892/07:895-07:897/07:901/07:917/07:926/07:929/07:941/07:948/07:951/07:974Q/07:1010/07:1012/07:1033/07:1070/07:1072/07:1074N/07:1085/07:1090/07:1104	-, Cw7, Null											11												
C*07:01:63/07:02:25-07:02:26/07:62/07:131:01/07:132/07:267/07:293/07:322/07:368:02/07:519/07:601/07:699	-											w	12											
C*07:02:32/07:17:03/07:141:03/07:857	-				4							11	12											23
C*07:02:146/07:911/07:939	-											?	?											
C*07:04:08	-											11			14									
C*07:15	-		2									11	12											
C*07:22/07:138	-											w	w											
C*07:26:01:01-07:26:03/07:314:01-07:314:03/07:317/07:351/07:821N/07:845/07:870/07:894	-, Null												12				16							
C*07:31:01-07:31:02/07:514:01-07:514:02	-										10	11	12											
C*07:92/07:578/07:723/07:891, 12:02:14/12:02:30/12:02:34/12:02:40/12:02:50/12:03:02/12:03:08/12:03:16-12:03:17/12:03:27/12:03:30/12:03:34:01-12:03:34:02/12:14:01/12:18:02-12:19/12:24:02/12:26/12:59/12:76/12:181/12:224/12:305, 15:25, B*07:15	-, B7																16							
C*07:96:01-07:96:02	-																16				20			
C*07:101	-											11		13										
C*07:137:01/07:139	-											w												
C*07:148/07:161	-											11	12	13										
C*07:242/07:953, 14:147	-				4																			23
C*07:263	-											11	12								20			
C*07:364	-										10	11												
C*07:402:01-07:402:02	-												12						19					
C*07:583, 08:21/08:137	-													13			16							
C*07:756	-												12				16				20			
C*07:916/07:923/07:1026	-											?	12											
C*07:942/07:1032/07:1080-07:1081	-											11	?											

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*07:970N	Null												?											
C*08:01:01:01-08:01:06/08:01:09-08:01:18/08:01:20-08:01:37/08:02:11:01-08:02:11:02/ 08:03:01:01-08:03:05/08:06/08:08:01-08:09/08:11/08:20/08:22:01:01-08:22:02/08:24/08:26N- 08:27/08:33:01/08:33:03-08:33:06/08:35-08:36N/08:38-08:42/08:44/08:46/08:50/08:54/08:56/ 08:58-08:61/08:65-08:66/08:72:01-08:72:02/08:78-08:79/08:81-08:89N/08:91/08:95-08:99/ 08:101-08:102/08:105-08:107/08:109/08:117-08:119/08:121N-08:122/08:124/08:127N-08:131/ 08:133/08:135-08:136/08:138/08:141Q/08:143/08:144:02-08:145/08:147-08:148/08:153- 08:155/08:157/08:162-08:165/08:173N-08:178/08:186-08:187/08:189-08:190/08:192-08:194/ 08:196-08:197/08:199/08:203-08:205/08:208N-08:210/08:212/08:217/08:219-08:221/08:228/ 08:232/08:234-08:236N/08:241/08:244/08:249-08:255/08:259-08:261/08:265/08:272	Cw8, -, Null												13											
C*08:01:07/08:33:02	-				4									13										
C*08:01:19	-													13		15								
C*08:02:01:01-08:02:01:42/08:02:03-08:02:05/08:02:08-08:02:10/08:02:12-08:02:17/08:02:19- 08:02:39/08:04:01:01-08:04:03/08:07/08:12:01:01-08:12:01:02/08:15:01-08:15:02/08:17/ 08:19:02/08:23/08:28-08:30/08:32/08:34/08:37/08:43/08:45/08:47-08:49/08:51-08:53/08:57/ 08:62:02-08:63/08:67-08:71/08:73-08:77/08:90/08:92-08:93/08:100/08:103:01:01-08:104/ 08:108/08:110-08:116/08:120/08:123/08:125-08:126/08:132/08:134/08:139-08:140/08:142/ 08:149-08:152/08:156/08:158-08:159/08:161N/08:166-08:172/08:179-08:184/08:188/08:191/ 08:195/08:198/08:200-08:202/08:206-08:207:02/08:211/08:213-08:216/08:218/08:222/ 08:224N-08:227/08:229-08:231/08:237-08:240/08:242-08:243/08:245/08:247-08:248/08:256- 08:258/08:262-08:264/08:266-08:267/08:269-08:271/08:274-08:275	Cw8, -, Null									9			13											
C*08:02:02	Cw8									9				13		15								
C*08:02:06/08:19:01/08:62:01	-						6			9				13										
C*08:02:07	-				4					9				13										
C*08:02:18/08:18/08:146	-									9				w										
C*08:05	-									9				13			16							
C*08:14/08:80	-												12	13										
C*08:25, 12:144/12:185	-									9							16							
C*08:31/08:246/08:268	-			2						9				13										
C*08:144:01	-						6							13										
C*08:160	-													13	w	15								
C*08:185	-			2						9				13									22	
C*08:223	-									?				13										
C*08:233	-									9				?										

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*08:273	-													?										
C*12:02:01-12:02:05/12:02:07/12:02:10-12:02:11/12:02:13/12:02:15-12:02:18/12:02:20-12:02:23/12:02:25-12:02:29/12:02:31-12:02:33/12:02:35-12:02:39/12:02:41-12:02:49/12:02:51-12:02:52/12:03:19/12:03:32/12:08/12:10:02/12:14:02/12:18:01/12:22/12:27/12:30/12:36/12:40/12:44/12:56/12:64/12:67-12:69/12:74/12:80N/12:83-12:85:01/12:86/12:103-12:106/12:112/12:114/12:117/12:123-12:124/12:128/12:130/12:134/12:136-12:137/12:145/12:148N/12:151/12:155Q/12:161-12:162/12:166/12:168-12:169/12:177/12:179/12:183/12:193/12:196/12:200/12:204/12:207-12:208/12:212/12:214/12:219N/12:221-12:222/12:226/12:228/12:231/12:234/12:236N/12:239-12:241/12:243/12:247/12:250/12:252/12:255/12:261/12:263/12:268/12:270N/12:275/12:279-12:281/12:285/12:294/12:296/12:298/12:303-12:304/12:307-12:308/12:315/12:327N/12:329N/12:335-12:336/12:338/12:344/12:351Q/12:359/12:371/12:381/12:387-12:388/12:391-12:392/12:396	-, Null													14	15	16								
C*12:02:06/12:02:08/12:02:12/12:03:01:01-12:03:01:64/12:03:03-12:03:07/12:03:09-12:03:12/12:03:14-12:03:15/12:03:18/12:03:21-12:03:26/12:03:28-12:03:29/12:03:31/12:03:35-12:03:64/12:03:66-12:03:72/12:03:74-12:03:83/12:06/12:10:03-12:11/12:13:01:01-12:13:01:02/12:15/12:20/12:23-12:24:01/12:25/12:29/12:31:02-12:32/12:34-12:35/12:37-12:39N/12:42Q-12:43/12:45-12:48/12:50-12:53/12:57:01-12:58/12:61-12:63/12:65-12:66/12:70-12:71/12:75/12:77-12:79/12:81-12:82/12:87-12:95/12:97/12:99:01-12:102/12:107-12:111/12:113/12:116/12:118/12:120-12:122/12:125/12:129/12:131/12:133/12:138-12:141/12:143/12:149-12:150/12:152-12:153/12:156-12:160/12:163/12:165/12:167/12:170-12:176/12:178/12:180/12:182/12:184/12:186-12:187/12:189-12:192/12:194/12:197/12:199/12:201-12:202/12:205-12:206/12:209-12:211/12:213/12:216/12:218/12:220/12:223/12:225/12:227/12:229-12:230/12:232N/12:235/12:237-12:238/12:242/12:244-12:246/12:248-12:249/12:251/12:253-12:254/12:256-12:260:02/12:262/12:264-12:267/12:271-12:274:01N/12:276-12:278/12:282-12:284/12:286/12:288-12:293/12:295N/12:297/12:300/12:302/12:306/12:309-12:314/12:316-12:324N/12:326/12:330Q-12:334/12:337/12:339-12:343N/12:345N-12:350/12:352/12:354-12:357/12:360-12:361/12:364-12:370/12:372/12:374-12:378/12:380/12:382/12:384-12:386/12:389-12:390/12:393Q-12:395	-, Null														15	16								
C*12:02:09/12:10:01/12:96	-					6									14	15	16							
C*12:02:24/12:73/12:132/12:287	-														14		16							
C*12:03:13/12:07/12:12/12:54/12:362	-															15	w							
C*12:03:33	-															w	16							
C*12:03:65/12:31:01/12:328	-					6										15	16							
C*12:03:73/12:379	-														?	16								
C*12:04:01/12:04:03	-															w	17	18						
C*12:04:02:01-12:04:02:02/12:353	-															15	w	17	18					

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*12:05:01-12:05:02	-															15		17	18					
C*12:16:01-12:16:02/12:217	-														14	15								
C*12:17/12:98/12:115/12:147/12:188/12:195:01-12:195:02/12:215/12:301, A*03:01:64, A*30:01:14, A*33:03:65, B*27:05:27, B*35:205:02, B*40:02:21, B*57:01:24	-															15								
C*12:28	-										10						16							
C*12:41/12:60	-															15	w		18					
C*12:49	-														w	15								
C*12:55/12:269	-															15				19				
C*12:72	-														14	15	16		w					
C*12:119	-		2													15	16							
C*12:126/12:142/12:363	-														14	15	w							
C*12:127	-													13	14	15	16							
C*12:135	-										10						16	w	w					
C*12:146	-																w		18					
C*12:154	-															15	16	w	w					
C*12:164/12:358/12:373	-															15	?							
C*12:198	-		2												14	15	16							
C*12:203	-													13		15	16							
C*12:325	-										10						w							
C*12:383	-														?	15	?							
C*14:02:01:01-14:02:01:32/14:02:03-14:02:07/14:02:09-14:02:20/14:02:22-14:02:36/14:02:39-14:02:41/14:03:01:01-14:03:04/14:05-14:11/14:13-14:16/14:18-14:24:02/14:26-14:32/14:35N-14:40/14:42-14:48/14:50-14:57/14:59-14:63/14:65-14:71/14:73-14:76/14:80-14:81/14:83-14:91/14:93N-14:95/14:97N-14:107/14:109/14:111-14:135/14:137-14:139/14:141N-14:146/14:148N-14:159	-, Null				4															19				
C*14:02:08	-				4											15				19				
C*14:02:21/14:03:05	-				4										w	15				19				
C*14:02:38	-				?															19				
C*14:25	-		2		4															19				
C*14:34/14:41/14:96	-				4															w				
C*14:58	-		w		4															19				
C*14:72	-				w															19				

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*14:136	-				4															?				
C*15:02:01:01-15:02:13/15:02:15-15:02:20/15:02:22-15:02:24/15:02:26-15:02:36/15:02:38/15:02:40-15:02:64/15:04:01:01-15:05:07/15:05:10-15:05:14/15:05:16-15:09:02/15:10:02-15:10:03/15:11-15:13:03/15:15/15:17-15:19/15:21-15:22/15:23:02-15:24/15:26/15:28-15:35/15:38-15:42/15:44:01-15:54/15:56-15:57/15:59-15:62/15:64-15:73/15:75-15:78:01/15:79-15:101/15:103/15:105Q-15:106/15:108-15:124/15:126-15:132/15:134-15:137/15:139-15:170/15:172-15:193/15:195-15:207/15:209-15:213N/15:215-15:217/15:219-15:241/15:243Q-15:245/15:247N-15:269N	-, Null																				20			
C*15:02:14/15:02:39	-															15					20			
C*15:02:37/15:78:02/15:194/15:246	-					6															20			
C*15:03/15:16:01-15:16:02	-																w				20			
C*15:05:09/15:104, B*56:01:09, B*82:01:01:01-82:04	-, B82																				w			
C*15:27/15:43	-																				?			
C*15:37/15:55/15:58/15:102/15:125/15:133	-																	17			20			
C*15:74/15:214	-																		18		20			
C*15:171/15:218	-				5																20			
C*16:01:01:01-16:01:05/16:01:07-16:01:16/16:01:18-16:01:47/16:02:15/16:04:01:01-16:04:01:03/16:04:03/16:06-16:08/16:18/16:24/16:38-16:39:01/16:42/16:51-16:52/16:59/16:73/16:85/16:96/16:106/16:111-16:112/16:114/16:118/16:122/16:125-16:132N/16:134-16:135/16:137-16:138/16:141-16:142/16:146-16:149/16:151-16:152/16:154/16:157-16:162/16:164-16:165/16:168-16:172/16:174Q-16:175/16:177-16:178/16:180/16:182-16:188/16:190-16:193/16:196-16:198/16:200/16:203-16:211/16:213-16:214	-, Null																					21		
C*16:01:06	-				4																	21		
C*16:01:17	-															15						21		
C*16:02:01:01-16:02:01:06/16:02:14/16:02:16/16:02:19-16:02:20/16:74/16:77N/16:84/16:101-16:102/16:120-16:121/16:123N/16:133/16:136/16:140/16:143-16:145/16:153/16:155-16:156/16:163/16:166-16:167/16:179/16:181/16:194-16:195N/16:202/16:212/16:215	-, Null																	17				21		
C*16:02:02-16:02:04/16:02:06-16:02:12/16:02:17/16:09/16:12/16:19/16:47/16:60/16:63/16:69/16:89N-16:90/16:99/16:103/16:107-16:108/16:176	-, Null																	17				?		
C*16:02:05	-							8										17				?		
C*16:02:13	-															15		17				?		
C*16:02:18	-																w					21		

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*16:04:04-16:04:05/16:10-16:11/16:13-16:14/16:16Q-16:17/16:20/16:22-16:23/16:28/16:30N-16:34/16:36/16:39:02/16:41/16:43-16:45/16:49:01/16:54/16:56-16:58/16:61-16:62/16:65-16:67/16:71-16:72/16:75-16:76/16:78-16:79/16:81-16:83/16:86-16:87/16:92-16:95/16:97-16:98:01/16:100/16:105/16:109/16:113/16:115-16:117/16:119/16:124/16:173	-, Null																					?		
C*16:15:02	-															15	16					?		
C*16:21	-											11										?		
C*16:25	-																w	17				21		
C*16:26	-										10											21		
C*16:27	-									9												?		
C*16:29	-			2																		?		
C*16:37	-																w					?		
C*16:46	-										10						17					21		
C*16:49:02	-					6																21		
C*16:50	-			2																		21		
C*16:55	-										10											?		
C*16:64	-										10						16					?		
C*16:70	-																	17			20	?		
C*16:80	-											11	12									?		
C*16:91	-																17	18				?		
C*16:104	-					6																?		
C*16:139	-													13								21		
C*16:150	-																		19			21		
C*16:189	-																w					21		
C*16:201	-																16					21		
C*17:01:01:02-17:01:13/17:01:15-17:03:01:09/17:03:03-17:06/17:09-17:16:02/17:18-17:19/17:24-17:26/17:28-17:32/17:34-17:39/17:41-17:55/17:57/17:59-17:61/17:63-17:69/17:73-17:74	-		2														w						22	
C*17:01:14	-		2														w						w	
C*17:03:02/17:20/17:27N/17:40	-, Null		2																				22	
C*17:08/17:56/17:70-17:71	-		2														w							
C*17:17/17:23	-																w						22	
C*17:21	-		2														w	17					22	
C*17:22/17:62	-		2														16						22	

Allele	Serology	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C*17:58	-		2														?						22	
C*17:72	-		?														w						22	
C*18:01:01:01-18:02:05/18:04-18:08/18:10-18:15/18:18-18:19	-, Null																							23
C*18:03	-		2																18					23
C*18:16	-																							?
B*14:02:30	-				?																			
B*37:70	-																						22	
B*67:02:01:01-67:02:01:02	-						6										16							

w = weak

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

14. Certificates 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-A* CTS-PCR-SSP Tray Kit

Product number	101
Lot number	A17-3
Number of HLA-specific primer mixes per test	24

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	21.05.2024
Approved by	H. Tran, M.D. Quality Control, Supervisor



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



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-C* CTS-PCR-SSP Tray Kit

Product number	103
Lot number	C13-4
Number of HLA-specific primer mixes per test	23

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	09.07.2024
Approved by	H. Tran, M.D. Quality Control, Supervisor