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**CTS** Collaborative Transplant Study



Manual No.	21
Revision	March 17, 2023
Product No.	121
Lot No.	A17-2 B16-2 DR43-3

## WORKING INSTRUCTION

### HLA-A\*/-B\*/-DRB1\* CTS-PCR-SSP TRAY KIT

#### LOCUS- AND LOT-SPECIFIC MANUAL

To be applied to the following product:

Product No.	Description
121	HLA-A*/-B*/-DRB1* CTS-PCR-SSP TRAY KIT  

#### 1. Main differences

- **Between lot A17-2 (the current lot) and lot A17-1:**  
The kit was updated to cover new alleles included in the IMGT/HLA Sequence Database of January 2023. Deleted and renamed alleles were taken into consideration.
- **Between lot B16-2 (the current lot) and lot B16-1:**  
The kit was updated to cover new alleles included in the IMGT/HLA Sequence Database of January 2023. Deleted and renamed alleles were taken into consideration.
- **Between lot DR43-3 (the current lot) and the previous lot DR43-2:**  
The kit was updated to cover new alleles included in the IMGT/HLA Sequence Database of January 2023. Deleted and renamed alleles were taken into consideration.

## 2. Introduction

- Intended use: This kit reveals a low/intermediate resolution typing of HLA-A\*, -B\* and -DRB1\* (besides HLA-DRB3\*/4\*/5\* low resolution) by the PCR-SSP method.
- Allele coverage: IMGT/HLA Sequence Database Release 3.51.0, January 2023 for HLA-A\*, -B\* and -DRB1\*, except:
  - **HLA-A\*** A\*01:01:65-01:01:66/01:01:131/01:38/01:72/01:102/01:139/01:167/01:221/01:267/01:284/01:390/01:399/01:418N, 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, A\*24:129, A\*25:01:09/25:01:17/25:81, A\*26:01:59/26:01:65/26:60N/26:85/26:125/26:131/26:143-26:144/26:204:01:01-26:204:01:02, A\*29:01:07/29:02:36/29:60/29:111, A\*30:12:02/30:26/30:82/30:84/30:184Q/30:189/30:206, 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\*33:01:05/33:03:26-33:03:27/33:03:31/33:03:56/33:03:58/33:18:02-33:19/33:30/33:32:0133/32:02/33:35/33:66/33:81/33:89/33:122/33:130/33:135/33:140N/33:152/33:158-33:159/33:175Q/33:188/33:215, 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, A\*74:16:01, A\*80:02/80:04
  - **HLA-B\*** 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\*14:01:12/14:02:03/14:02:06/14:08:01-14:08:02/14:21/14:42:01/14:53/14:55, 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\*39:01:11/39:06:05/39:24:02/39:30/39:34/39:36/39:80/39:82/39:107/39:128/39:136/39:156, 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-DRB1\*** DRB1\*01:01:31/01:02:12/01:18:01-01:18:02/01:22/01:33N/01:44:01-01:44:02/01:60/01:76/01:134, DRB1\*04:11:04/04:156, DRB1\*08:01:06/08:57/08:80, DRB1\*09:09/09:23, DRB1\*10:12, DRB1\*11:02:03/11:04:13/11:86/11:94/11:110/11:123/11:156/11:167/11:172/11:185/11:187/11:192/11:208/11:294N, DRB1\*12:31N/12:42/12:57/12:83, DRB1\*13:195, DRB1\*14:231N/14:247, DRB1\*15:01:22/15:34, DRB1\*16:50, DRB3\*01:68/01:95/01:104/01:109, DRB3\*02:26-02:27/02:47/02:58/02:66/02:91/02:111/02:131/02:143/02:160, DRB4\*01:14N/01:62/01:88, DRB4\*03:01N, DRB5\*01:01:10/01:51/01:73/01:79Q/01:87/01:97/01:110These alleles are considered to be rare.
- This manual is only valid for **Lot No. A17-2 B16-2 DR43-3**.
- This manual should be used together with the Main Manual (General Information) which is the 'Working instruction for the CTS-PCR-SSP **TRAY and MINITRAY KITS**' (Manual No. 100A).

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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-DRB1 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 thin-walled, blue 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. In addition, the quality and quantity of DNA is a crucial factor and can affect the mix reactivities. Under suboptimal test conditions, some mixes could give rise to false positive reactions (if there are any potentially false positive reactions when using this specific lot, they are indicated in Section 9).
- Alleles that are known to amplify weakly are listed with "w" (= weak) in the tables (Appendix).
- Please also refer to Sections 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-DRB1\* locus**
    - Mix **5** and mix **6** detect (among other alleles) the most common HLA-DRB1\*03 alleles which correspond either to serological split HLA-DR17 or HLA-DR18, respectively.
    - The following mix could give a false positive reaction: Mix **7**.

## 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](mailto: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. A17-2**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

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?/01:01:132-01:04:01:02N/01:06-01:33/01:35-01:37:01:02/01:39-01:71/01:73-01:101/01:103-01:138/01:140-01-01:166/01:168-01:199/01:201-01:220/01:222-01:243/01:245-01:266:02/01:267w/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, 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	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*36:01:01:01-36:13	-, 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?/02:07:01:01-02:07:14/02:07:16-02:08:01/02:09:01:01-02:22:02/02:24:01-02:35:01/02:35:03-02:47/02:49:01-02:49:02/02:51/02:53N-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-02:984/02:986-02:991/02:993-02:1020/02:1021?/02:1022/02:1023?/02:1024-02:1027/02:1031N-02:1032/02:1033?/02:1034-02:1045Q/02:1047-02:1086/02:1087?/02:1088-02:1089, A*23:01:21, A*24:02:76/24:310:02, B*07:02:80, B*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*03:01:01:01-03:193/03:195-03:199/03:201-03:259/03:261-03:458Q, 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/03:383-03:395/03:397/03:399-03:412/03:414-03:428/03:430-03:458Q, 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-03:199/03:201-03:204/03:206-03:207/03:209-03:220/03:222-03:224/03:226-03:242/03:244/03:246-03:259/03:261-03:288/03:290-03:299/03:301-03:318/03:320-03:325/03:327-03:331/03:333-03:395/03:397-03:451/03:453-03:458Q, 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/03:344:01-03:346/03:348-03:376/03:378-03:413/03:415-03:417/03:419-03:451/03:453-03:458Q, 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, 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, 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/24:157/24:159-24:190/24:192-24:199/24:201-24:210/24:212-24:236/24:238-24:272/24:274-24:289/24:291-24:308/24:311-24:325/24:327-24:341/24:343w/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?/24:523-24:561:02/24:563-24:589, 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, 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, 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/24:157/24:159-24:190/24:192-24:199/24:201-24:207:02/24:209-24:210/24:212-24:236/24:238-24:272/24:274-24:289/24:291-24:308/24:311-24:325/24:327-24:341/24:343w/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-24:561:02/24:563-24:589, 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*24:02:01:01-24:02:73/24:02:75-24:02:145/24:02:147-24:03:04/24:05:01-24:05:02/24:07:01:01-24:11N/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/24:570-24:571/24:573-24:589, 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/25:76:01-25:80/25:83-25:84, 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?, A*32:101Q, B*07:02:74w/07:225w/07:260w, B*57:148?, 04:01:49, 12:328, 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?, B*57:148?, C*12:328, 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/25:76:01-25:80/25:83-25:84, 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/25:44-25:58/25:60-25:76:02/25:78-25:80/25:83-25:84, A*26:01:01:01-26:01:26/26:01:28-26:01:37/26:01:38w/26:01:39-26:01:58/26:01:60-26:01:64/26:01:66-26:03:01:02/26:03:03-26:18/26:20:01-26:30/26:31w/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/26:171-26:183/26:185-26:203/26:205-26:229, A*34:01:01:01-34:11/34:13-34:18/34:20-34:22/34:23w-34:24w/34:25-34:30N, A*66:01:01:01-66:22/66:24-66:29/66:31-66:40/66:41w/66:42-66:47, 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, A*26:01:01:01-26:01:26/26:01:28-26:01:37/26:01:38w/26:01:39-26:01:58/26:01:60-26:01:64/26:01:66-26:03:01:02/26:03:03-26:06/26:08:01:01-26:18/26:20:01-26:30/26:31w/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/26:171-26:183/26:185-26:203/26:205-26:229, A*34:01:01:01-34:11/34:13-34:18/34:20-34:22/34:23w-34:24w/34:25-34:30N, A*66:01:01:01-66:22/66:24-66:29/66:31-66:40/66:41w/66:43-66:47, 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
G2	Mix 10	A*01:01:56, A*02:06:31/02:135/02:309/02:454, A*25:11/25:81?/25:82?, A*26:01:01:01-26:01:01:53/26:01:03-26:01:12/26:01:14-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:03:01:02/26:03:03-26:32/26:34-26:43:02/26:45-26:59/26:61-26:84/26:86-26:109/26:111-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N-26:203/26:205-26:224/26:225?/26:226/26:228-26:229, 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

Position	Mix	Allele	Serology	Size
		A*01:01:56, A*25:81?-25:82?, A*26:01:01:01-26:01:01:53/26:01:03-26:01:12/26:01:14-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:02:02/26:04-26:05/26:07:01-26:20:02/26:22-26:29/26:31-26:32/26:34-26:35/26:37-26:43:02/26:45-26:59/26:61-26:77/26:79-26:84/26:86-26:91/26:93-26:109/26:112:01-26:124/26:126-26:130/26:132-26:142/26:143w/26:145N/26:147-26:176/26:178-26:192/26:194-26:203/26:205-26:224/26:225?/26:226/26:228, 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	-, 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, A*66:01:01:01-66:02:01:03/66:04/66:06-66:14/66:16-66:27N/66:29-66:38/66:40-66:47, 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, 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, A*03:02:01:01w-03:02:06w/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, 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-11:438, 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	<b>A*03:01:39, 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-29:172, 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</b>	-, A29(19), Null	<b>see below</b>
		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, A*74:10/74:41-74:42	A29(19), Null, -	160 bp
		A*03:01:39, 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-29:172, A*32:30:01-32:30:02/32:32, A*68:01:28/68:01:36/68:130:02	-, A29(19), Null	515 bp
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?	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?/31:205-31:209/31:211-31:219	-, A31(19), Null	185 bp
G3	Mix 18	<b>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, 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/32:95-32:100/32:102-32:157/32:159-32:173</b>	-, A24(9)/A3, A31(19), A32(19), Null	<b>see below</b>

Position	Mix	Allele	Serology	Size
		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, 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/32:95-32:100/32:102-32:157/32:159-32:173	-, 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*33:01:01:01-33:01:04/33:01:06-33:01:18/33:03:01:01-33:03:25/33:03:26w/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?/33:216-33:234, 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*33:01:01:01-33:01:04/33:01:06-33:01:18/33:03:01:01-33:03:25/33:03:26w/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?/33:216-33:234, 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, A*29:19/29:39/29:48/29:159, A*68:01:28/68:01:36/68:130:02, A*74:01:01:01-74:09/74:11-74:15/74:16:02-74:40/74:43-74:44	-, 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, A*29:51/29:69/29:73, A*32:109, 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/68:294-68:298, 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, A*03:241/03:343, A*69:01:01:01-69:09, 07:1034?	A2, -, A69(28)	390 bp
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/02:01:34-02:01:39/02:01:41-02:01:81/02:01:83-02:03:10/02:04:01-02:05:04/02:05:06-02:06:06/02:06:08-02:07:11/02:07:13-02:11:01:06/02:11:03-02:22:02/02:24:01-02:35:01/02:35:02w/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-02:1089, 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, 06:247w, 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

Position	Mix	Allele	Serology	Size
		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/02:01:34-02:01:39/02:01:41-02:01:50/02:01:53-02:01:62/02:01:64-02:01:73/02:01:75-02:01:76/02:01:78-02:01:81/02:01:83-02:01:113/02:01:115-02:01:152/02:01:154-02:03:10/02:04:01-02:05:02/02:05:04/02:05:06-02:06:06/02:06:08-02:06:11/02:06:13/02:06:15-02:06:19/02:06:21-02:07:11/02:07:13-02:07:14/02:07:16/02:07:18-02:11:01:06/02:11:03/02:11:05-02:11:08/02:11:10-02:22:01:02/02:24:01-02:35:01/02:36-02:42:01/02:43N-02:44/02:47/02:49:01-02:49:02/02:51-02:54/02:57-02:60/02:62-02:76:01/02:77/02:79:01-02:91/02:93:01-02:97:02/02:99:01-02:99:02/02:101:01-02:102/02:104-02:112/02:114-02:121/02:123-02:128/02:130-02:140/02:142/02:145-02:168/02:170-02:175/02:177-02:184/02:186-02:194/02:196-02:200/02:202:01-02:204/02:207-02:216/02:218-02:243:01/02:244-02:248/02:250N-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-02:1021/02:1023-02:1026/02:1029-02:1030/02:1032-02:1089, A*03:89:01, A*30:22w, B*07:02:80w, B*35:01:60w, B*51:01:34w, B*58:01:24, 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/02:01:34-02:01:39/02:01:41-02:01:66/02:01:68-02:01:81/02:01:83-02:01:121/02:01:123-02:01:126/02:01:128-02:03:10/02:04:01-02:05:04/02:05:06-02:06:06/02:06:08-02:07:05/02:07:07-02:07:11/02:07:13-02:07:23/02:09:01:01-02:11:01:06/02:11:03-02:19/02:21-02:22:02/02:24:01-02:33/02:35:02w/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-02:1021/02:1023-02:1027/02:1029-02:1089, A*03:89:01, A*24:02:06/24:340, A*30:07w/30:22w	A2, Low A2, -, A203, Null, A2/19, A24(9)	165 bp
		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/02:01:34-02:01:39/02:01:41-02:01:48/02:01:50-02:01:81/02:01:83-02:01:107/02:01:109-02:01:154/02:01:156-02:03:10/02:04:01-02:05:04/02:05:06-02:05:12/02:06:01:01-02:06:01:16/02:06:03-02:06:06/02:06:08-02:07:11/02:07:13-02:10/02:12-02:22:02/02:24:01-02:34/02:36-02:42:01/02:43N-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-02:1030/02:1033-02:1089, A*03:89:01, A*30:13w/30:16w/30:44w/30:46w, 06:247w	A2, Low A2, -, A203, Null, A2/19	190 bp
A3	Mix 24	<b>A*43:01-43:03, A*80:01:01:01-80:01:02/80:03/80:05-80:09N</b>	A43, Null, -, A80	see below

Position	Mix	Allele	Serology	Size
		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. B16-2**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

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-07:474, 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*81:01:01:01-81:10, C*02:23,C*03:260, C*04:77, C*07:38:01-C*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- 07:474, 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*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?, 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-C*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?, 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?/13:02:34-13:02:38/13:06-13:21/13:23/13:25-13:36/13:37w/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- 13:173/13:175-13:176	B13, -, Null	585 bp
E4	Mix 4	B*15:64:02, B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:01:25-18:07:01/18:08-18:12:01/18:13-18:15/18:17N- 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/18:108-18:121/18:123-18:164/18:166-18:167/18:169-18:177/18:179-18:188/18:190/18:192-18:226, 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/18:109-18:124/18:126-18:131:01:02/18:133-18:135:01:02/18:137-18:141/18:143-18:177/18:179-18:193/18:196-18:197/18:199-18:226, B*35:01:01:01-35:03:02/35:03:04-35:08:01:13/35:08:03-35:08:04/35:08:06-35:18/35:20:01-35:24:02/35:28:01:01-35:43:01/35:43:03-35:45/35:48/35:50-35:55/35:57-35:62/35:64:01-35:72/35:74-35:153/35:155-35:197/35:199-35:202/35:204-35:206/35:208:01-35:209/35:211-35:216N/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?/35:526-35:549/35:552-35:569/35:571-35:575, 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/35:02:07-35:03:06/35:03:08-35:04:02/35:05:01:01-35:09:04/35:11:01-35:11:03/35:12:04/35:14:01-35:15:02/35:17:01:01-35:19/35:21/35:23-35:25/35:27/35:29:01-35:30:01:02/35:32:01/35:33-35:38/35:40N-35:42:02/35:45-35:50/35:51:02-35:58/35:61:02-35:62/35:64:01-35:66/35:68:01-35:68:02/35:70-35:71/35:74-35:75/35:77-35:78/35:81/35:84/35:89-35:94/35:96-35:98/35:100-35:101:02/35:103-35:111/35:113-35:116/35:119-35:134N/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?, B*49:67, B*51:56:02/51:372, B*53:01:01:01-53:06/53:08:01-53:08:02/53:10-53:16/53:18-53:27/53:29-53:37/53:39/53:41-53:43:02/53:45-53:61/53:63-53:72, 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, B*15:02:01:01-15:02:04/15:02:05w/15:02:06-15:02:12/15:13:01-15:13:03/15:21:01:01-15:21:01:02/15:44/15:80w/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, 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/35:02:01:01-35:02:16/35:02:17w/35:02:18-35:03:19/35:03:20w/35:03:21-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:04/35:11:01-35:11:03/35:12:01:01w-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-35:42:02/35:45-35:50/35:52-35:57/35:59:01w/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, B*37:08/37:67, B*38:20:01w/38:20:02, B*39:09:01:01-39:09:01:06/39:09:03-39:09:05/39:42w/39:88/39:112/39:127/39:155/39:158/39:170-39:171, 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, 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, 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, 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, B*15:02:01:01-15:02:04/15:02:05w/15:02:06-15:02:12/15:13:01-15:13:03/15:21:01:01-15:21:01:02/15:44/15:80w/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, 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/35:02:01:01-35:02:16/35:02:17w/35:02:18-35:03:19/35:03:20w/35:03:21-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:04/35:11:01-35:11:03/35:12:01:01w-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-35:42:02/35:45-35:50/35:52-35:57/35:59:01w/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, B*38:20:01w/38:20:02, B*39:42w, 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, 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, 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*39:09:01:01-39:09:01:06/39:09:03-39:09:05/39:88/39:112/39:127/39:155/39:158/39:170-39:171, B*51:200, B*53:07/53:65	-, 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, 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, B*57:05/57:131, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:44/58:04-58:05/58:09-58:13/58:17N/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/58:115-58:120/58:123-58:131/58:133N-58:136/58:138-58:140, C*15:71	B77(15), -, B27, B44(12), B51(5), B53, Null, B58(17)	330 bp
H5	Mix 9	<b>B*27:01-27:05:22/27:05:24-27:21:02/27:23-27:74/27:76-27:139/27:141-27:152/27:154-27:188/27:190-27:214/27:216-27:238/27:240-27:249/27:251-27:265, B*40:124:01-40:124:02/40:180/40:429, B*44:97, B*47:01:01:02-47:12, B*50:20</b>	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-27:249/27:251-27:256/27:258-27:265, B*44:97	B27, -, B2708, Null	155 bp

Position	Mix	Allele	Serology	Size
		B*27:01-27:05:22/27:05:24-27:05:31/27:05:33-27:05:35/27:05:37-27:05:59/27:08-27:10/27:12:01:01-27:19:01:02/27:23/27:25-27:26/27:28-27:32/27:36-27:40/27:42/27:44-27:45/27:47-27:74/27:77/27:79-27:90:04/27:92-27:101/27:103-27:105/27:108-27:124/27:126/27:128-27:129/27:131-27:134/27:137/27:139/27:141-27:150/27:152/27:155-27:163/27:165/27:167/27:169-27:179/27:181-27:185Q/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-27:265, B*40:124:01-40:124:02/40:180/40:429, B*47:01:01:02-47:12, 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?/37:106-37:107, 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, 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/38:02:11-38:16/38:18-38:51/38:53-38:72/38:74-38:87/38:89-38:104/38:160-38:173Q, 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, B*18:168, B*35:35/35:236w/35:259w/35:276/35:468, B*39:01:01:01-39:01:01:29/39:01:03:01-39:01:10/39:01:12-39:06:04/39:06:06-39:20/39:22-39:24:01/39:24:03-39:29/39:31:01:01-39:31:01:02/39:32w/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?/39:186-39:194Q, B*40:184/40:424, B*46:19w/46:93w, B*50:49, B*55:123, B*67:01:01-67:07, 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/40:01:57-40:04:02/40:06:01:01-40:11:02/40:13-40:16:01:02/40:18-40:20:01:02/40:22N-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/40:379:01:01-40:423/40:425-40:429/40:431-40:457/40:459-40:495/40:497-40:522/40:524-40:528, 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*47:01:01:02-47:07/47:09-47:12, 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, 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-40:516/40:518-40:519/40:521-40:528, B*41:01:01:01-41:45N/41:47-41:79, 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*48:01:01:01-48:01:12/48:03:01:01-48:05/48:07-48:24/48:27-48:30/48:32-48:57, 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, 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, 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, B*42:11, B*44:54/44:106/44:110/44:135/44:158/44:166/44:184/44:211/44:213, B*48:01:01:01-48:01:11/48:04:01:01-48:05/48:07-48:16/48:18-48:20/48:22/48:24/48:27-48:30/48:32-48:39/48:41-48:56	-, 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-40:516/40:518-40:519/40:521-40:528, 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-41:68/41:70-41:79, 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*48:01:01:01-48:01:12/48:03:01:01-48:05/48:07-48:11/48:13/48:15-48:24/48:27-48:28/48:30/48:33-48:49/48:51-48:57, 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
A5	Mix 16	B*27:24/27:36/27:125/27:173, B*40:01:01-40:01:18/40:01:19w/40:01:20-40:01:80/40:07/40:22N-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/40:430-40:431/40:433-40:434/40:436/40:439/40:443/40:446-40:448/40:450/40:452/40:456/40:461/40:463/40:466/40:469/40:474-40:475:02/40:479-40:480/40:483N/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, B*48:22/48:30	-, B60(40), Null, B40	690 bp

Position	Mix	Allele	Serology	Size
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, B*41:01:01:01-41:02:09/41:02:10?/41:02:11-41:79, 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/44:146-44:155/44:157-44:168/44:170-44:181/44:183-44:200/44:202-44:209/44:211-44:232/44:234-44:245:02/44:247-44:365/44:437-44:444/44:446-44:524/44:526-44:529/44:530w/44:531-44:543/44:544N?/44:545-44:546, B*45:01:01:01-45:21/45:23-45:25/45:27-45:30, B*47:01:01:02-47:12, B*49:01:01:01-49:01:02/49:01:04-49:01:17/49:01:18w/49:01:19-49:02/49:04:01-49:14/49:16-49:25/49:27-49:72/49:74-49:78, 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*47:01:01:02-47:12, B*48:26, B*50:20	-, B27, B47	425 bp
F6	Mix 19	<b>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, B*15:62/15:80w/15:124, B*27:19:01:01w-27:19:01:02w/27:24/27:30w/27:36/27:125/27:127w/27:173, B*35:25-35:26/35:49:01-35:49:02/35:198/35:254/35:361, B*38:20:01w/38:20:02/38:63, B*39:42w, 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*48:01:01:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:40/48:42-48:57, 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</b>	B7, -, B70, B27, B35, B44(12), B48, B48/40, B56(22), B55(22), B81, Null	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, B*15:62/15:80w, B*27:19:01:01w-27:19:01:02w/27:30w/27:127w, B*35:25-35:26/35:49:01-35:49:02/35:198/35:254/35:361, B*38:20:01w/38:20:02, B*39:42w, 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	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*48:01:01:01-48:01:12/48:03:01:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:24/48:26-48:40/48:42-48:57, B*81:01:01:01-81:10	-, B48, B48/40, B81, Null	580 bp

Position	Mix	Allele	Serology	Size
E6	Mix 20	B*13:36, B*15:02:01:01-15:02:12/15:08:01:01-15:08:02/15:11:01-15:11:07/15:13:01-15:13:03/15:15:01:01-15:15:01:02/15:21:01:01-15:21:01:02/15:31:01:01-15:31:01:03/15:44/15:55/15:76/15:88-15:89:02/15:112/15:121/15:139/15:144/15:148/15:170w/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, B*18:143w, B*35:46/35:311, 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/15:498/15:502/15:504:01-15:504:02/15:509/15:511/15:517/15:526-15:527/15:539/15:548/15:560/15:570-15:571/15:573/15:582/15:588/15:607/15:610/15:612/15:614:01:01-15:614:01:02/15:616Q-15:617/15:628/15:643/15:650, B*18:37:01-18:37:02/18:125, B*27:41/27:78/27:107, B*35:25-35:26/35:49:01-35:49:02/35:254, 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/41:21-41:32/41:34-41:46/41:48-41:61/41:63-41:79, 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>B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132/08:146, B*42:01:01:01-42:02:02/42:04-42:10/42:12-42:18/42:20-42:25/42:27-42:33, 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</b>	B7, -, B42, B56(22), B82	<b>see below</b>
		B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132/08:146, B*42:01:01:01-42:02:02/42:04-42:10/42:12-42:18/42:20-42:25/42:27-42:33, 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	550 bp
		B*07:04:01-07:04:02/07:19/07:25/07:146/07:349, B*08:123/08:132, B*42:01:01:01-42:02:02/42:04-42:06/42:08-42:10/42:12-42:18/42:20-42:25/42:27-42:33, B*44:90/44:356?, B*45:06, B*55:20/55:56, B*56:13, B*82:01:01:01-82:04, B*83:01	B7, -, B42, B56(22), B82	540 bp

Position	Mix	Allele	Serology	Size
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-07:161Nw/07:163w-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, B*08:07w/08:28w/08:37w/08:87w/08:89w/08:107w/08:111w/08:156w/08:255w, B*14:23w/14:56w, B*15:10:01:01w-15:10:08w/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/44:356-44:365/44:437-44:444/44:446-44:458/44:460-44:464:01:02/44:465w/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>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*45:01:01:01-45:03/45:05-45:07/45:09/45:11-45:23/45:25/45:27-45:30, 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</b>	-, 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
G7	Mix 26	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*45:01:01:01-45:03/45:05-45:07/45:09/45:11-45:23/45:25/45:27-45:30, 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
		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, B*44:76/44:79:01-44:79:02/44:146/44:150/44:459, B*47:10, B*49:01:01:01-49:01:01:18/49:01:03-49:02/49:04:01-49:10/49:12-49:14/49:16-49:25/49:27-49:44/49:46-49:72/49:74-49:78, B*50:01:01:01-50:02:01:02/50:04:01-50:05/50:07-50:22/50:31-50:48/50:50-50:69/50:71-50:74/50:76-50:79, B*51:112	-, B72(70), B4005, B61(40), B21, B49(21), Null, B50(21), B45(12)	605 bp

Position	Mix	Allele	Serology	Size
F7	Mix 27	B*07:78/07:182N/07:424/07:473, B*13:09/13:39/13:67, 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, B*45:01:01:01-45:01:12/45:03-45:08/45:10-45:25/45:27-45:28N/45:30, 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, 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/55:91-55:102/55:104-55:109/55:111-55:120/55:122-55:134, B*56:01:01:01-56:02:03/56:04:01:01-56:04:04/56:08/56:10/56:13-56:14/56:16-56:17/56:19N-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*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, 08:207, 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>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?/07:02:88-07:02:97/07:04:01-07:07:03/07:09:01w-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/07:377-07:399/07:401-07:427/07:429-07:452/07:454-07:474, 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*42:01:01:01-42:02:02/42:04-42:06/42:08/42:09w/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, 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/55:119-55:120/55:122-55:134, 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*67:01:01-67:01:03/67:03-67:07, B*81:01:01:01-81:10, B*82:01:01:01-82:04</b>	B7, -, B7/B42, Null, B35/22, B54(22), B55(22), B22, B56(22), B78, B67, B81, B82	see below
		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?/07:02:88-07:02:97/07:04:01-07:07:03/07:09:01w-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, 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*42:01:01:01-42:02:02/42:04-42:06/42:08/42:09w/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, 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, 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

Position	Mix	Allele	Serology	Size
		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, 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/55:119-55:120/55:122-55:134, B*56:01:01:01-56:02:03/56:04:01:01-56:04:04/56:07/56:10/56:13/56:16/56:19N-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*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/54:10-54:37/54:39-54:46, 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, 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*55:08/55:51/55:134, 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*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/49:62-49:69/49:71-49:78, 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, 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, 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, B*46:14, B*49:01:01:01-49:01:01:18/49:01:03-49:09/49:12-49:14/49:16-49:23/49:26-49:30/49:32-49:44/49:46-49:78, 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
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-46:78/46:80-46:98N, 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, C*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*16:98/16:102/16:110	-, B46, Null	470 bp



Position	Mix	Allele	Serology	Size
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/13:174-13:176, 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/15:01:51-15:02:12/15:04:01:01-15:08:02/15:11:01-15:16:05/15:19-15:21:01:02/15:24:01-15:28/15:31:01:01-15:36/15:38:01-15:40:02/15:42-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/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/15:152/15:154-15:155/15:157/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/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/15:542-15:545/15:547/15:549N-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-15:605/15:608-15:609/15:613/15:615/15:618/15:621-15:627/15:629-15:636/15:638-15:641/15:645/15:647-15:649/15:651-15:652, B*18:143w/18:178, B*35:46/35:207, 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-46:46/46:48-46:60/46:62-46:69/46:71-46:73/46:75-46:76/46:78-46:85/46:87-46:98N, B*51:104:01-51:104:02, B*52:02:01-52:02:02, B*55:35, B*56:39, B*57:01:01:01-57:01:01:27/57:01:03-57:01:32/57:01:34-57:01:46/57:04:01-57:04:03/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:93/57:95/57:97-57:100/57:102-57:106/57:108-57:117/57:119/57:121-57:123/57:125-57:136/57:138-57:147/57:149-57:154/57:156-57:165, 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/13:175-13:176, 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	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/15:01:51-15:02:12/15:04:01:01-15:08:02/15:11:01-15:16:05/15:19-15:21:01:02/15:24:01-15:28/15:31:01:01-15:36/15:38:01-15:40:02/15:43-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/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/15:152/15:154-15:155/15:157/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/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/15:542-15:545/15:547/15:549N-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-15:605/15:608-15:609/15:613/15:615/15:618/15:621-15:627/15:629-15:636/15:638-15:641/15:645/15:647-15:649/15:651-15:652, B*18:143w/18:178, B*35:46/35:207, 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-46:46/46:48-46:60/46:62-46:69/46:71-46:73/46:75-46:76/46:78-46:85/46:87-46:98N, B*57:01:01:01-57:01:01:27/57:01:03-57:01:32/57:01:34-57:01:46/57:04:01-57:04:03/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:93/57:95/57:97-57:100/57:102-57:106/57:108-57:117/57:119/57:121-57:123/57:125-57:136/57:138-57:147/57:149-57:154/57:156-57:165, 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>B*57:01:01:01-57:10/57:12-57:81/57:84-57:117/57:119-57:130N/57:132-57:165, B*58:14</b>	B57(17), -, Null	<b>see below</b>
		B*57:01:01:01-57:04:03/57:06-57:10/57:12-57:81/57:84-57:117/57:119-57:130N/57:132-57:165, 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*58:01:01:01-58:01:04/58:01:06-58:01:28/58:01:30-58:02:02/58:04-58:26/58:28:01-58:29/58:31N-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?/58:139-58:140	-, 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, 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-49:78w, B*51:01:01:01-51:04:01/51:04:02w/51:05:01:01-51:05:01:02/51:07:01-51:24:05/51:26-51:40:02/51:42w/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, B*52:01:01:01-52:19/52:21:01-52:67/52:69-52:87/52:88w/52:89N-52:111, 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, B*54:12, B*55:103, B*56:21/56:65, B*57:05/57:131, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:44/58:04-58:05/58:08:01-58:13/58:17N/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/58:115-58:120/58:122-58:131/58:133N-58:136/58:138-58:140, 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?/51:194-51:196/51:198/51:200-51:213/51:215-51:219/51:221/51:223-51:224/51:226-51:244/51:246-51:250/51:252-51:294/51:296-51:299/51:301-51:309/51:311-51:326/51:328-51:337/51:339/51:341-51:357N/51:360-51:377N, 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*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?/51:194-51:196/51:198/51:200-51:219/51:221-51:224/51:226-51:230:01:03/51:232:01-51:294/51:296-51:299/51:301-51:309/51:311-51:326/51:328-51:337/51:339-51:357N/51:360-51:377N, B*55:01:04/55:02:11/55:28:02, B*56:05:01-56:06/56:21, 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/52:98-52:111, 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*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, 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*15:09:01-15:10:08/15:18:01:01-15:18:10/15:21:01:01-15:21:01:02/15:23/15:37/15:51/15:72/15:80/15:90/15:99/15:108/15:115/15:119/15:133-15:134/15:153/15:161w/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/15:498/15:503-15:504:02/15:506/15:526/15:530/15:548/15:563/15:570/15:573/15:607/15:611-15:612/15:615/15:620/15:623/15:643/15:646, B*35:26/35:82/35:85/35:135/35:294, B*38:30/38:65, 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, 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?/15:01:72-15:01:74/15:01:76-15:02:12/15:04:01:01-15:08:02/15:11:01-15:12:03/15:14-15:15:01:02/15:19-15:21:01:02/15:25:01:01-15:28/15:30:01:01-15:35:02/15:38:01-15:40:02/15:42/15:44-15:45/15:48/15:50/15:55-15:56/15:58/15:60/15:63/15:65-15:66/15:70-15:71/15:73:01:01-15:73:01:02/15:75-15:79N/15:81-15:86/15:88/15:92/15:94N/15:96-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125:01-15:126/15:128-15:129/15:135-15:142/15:144-15:150/15:152/15:154-15:155/15:159-15:160:01:02/15:163-15:167/15:169/15:170w/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-15:545/15:547/15:549N/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-15:606/15:608-15:609/15:615/15:618/15:621-15:627/15:629-15:641/15:645-15:649/15:651-15:652, B*18:143w/18:178, B*35:46/35:207/35:311, 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, 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, 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/14:09/14:11-14:12/14:14-14:20/14:22-14:36/14:38-14:41N/14:42:02-14:52/14:54/14:57-14:95/14:97-14:101N/14:103-14:116	B64(14), -, B65(14), B14, Null	400 bp
B9	Mix 47	B*14:02:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:03/14:05-14:06:02/14:09/14:11/14:13/14:15-14:18/14:20/14:22-14:23/14:24w/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, B*15:189:01-15:189:02, B*35:01:64/35:03:17/35:26/35:29:03, B*38:05/38:33, B*39:04/39:129, B*49:26, B*51:01:68	B65(14), -, B14, Null, B38(16), B39(16)	185 bp
A9	Mix 48	B*51:241, B*73:01:01:01-73:03, 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-DRB1\*** CTS-PCR-SSP primer mix (**Lot No. DR43-3**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

Position	Mix	Allele	Serology	Size
H10	Mix 1	DRB1*01:01:01:01-01:01:01:30/01:01:01:32-01:01:01:44/01:01:01:45?/01:01:01:46-01:02:11/01:02:13-01:17/01:19-01:21/01:23-01:32/01:34-01:38/01:39Nw-01:40Nw/01:41-01:43/01:45-01:48/01:49w/01:50-01:59/01:61-01:64/01:65:01w-01:65:02w/01:66-01:75/01:77-01:133/01:135-01:141	DR1, -, DR103, Null	140 bp
G10	Mix 2	DRB1*15:01:01:01-15:01:21/15:01:23-15:33/15:35-15:112/15:113Nw/15:114-15:216, DRB1*16:09:01-16:10:02/16:33/16:36-16:37/16:58/16:66	DR15(2), -, DR2, Null, DR16(2)	140 bp/ 215 bp
F10	Mix 3	DRB1*15:21, DRB1*16:01:01:01-16:01:08/16:01:09w/16:01:10-16:05:02/16:07-16:49/16:51-16:73	-, DR16(2), DR2, Null	210 bp
E10	Mix 4	DRB1*03:01:01:01-03:01:01:25/03:01:02:01w-03:01:02:02w/03:01:03/03:01:05-03:01:13/03:01:14w/03:01:15-03:02:01:02/03:02:02w/03:02:03-03:05:02/03:05:03w/03:06-03:11:01/03:11:03-03:13:01/03:13:02w/03:14-03:15:01:02/03:15:02w/03:16-03:41:02/03:43-03:75/03:77-03:83/03:85-03:86/03:88-03:91/03:93-03:96/03:98-03:110/03:112-03:124/03:127w/03:128-03:129/03:130w/03:131-03:134/03:135w/03:136-03:144/03:145w/03:146-03:156N/03:158-03:161/03:163-03:173/03:175-03:176/03:178-03:189N/03:190w/03:191-03:205, DRB1*11:07:01/11:07:02w/11:53/11:103:01-11:103:02/11:105/11:107/11:125/11:136/11:173, DRB1*14:104w/14:111w/14:171, DRB3*01:14w	DR17(3), -, DR18(3), DR3, Null, DR11(5)	225 bp
D10	Mix 5	DRB1*03:01:01:01-03:01:41/03:04:01-03:04:02/03:06/03:08/03:10-03:11:01/03:11:03/03:12?/03:13:01-03:13:02/03:15:01:01-03:16/03:18-03:20/03:22-03:23/03:25:01-03:26/03:28/03:30-03:34/03:36-03:37/03:39/03:42-03:48/03:50-03:52:02/03:54w/03:55-03:56/03:58-03:62/03:64-03:73/03:75-03:80/03:82-03:87/03:89/03:91-03:96/03:98-03:99/03:100:01w-03:100:02w/03:104/03:106-03:112/03:114/03:116-03:118/03:121/03:123-03:129/03:132-03:153/03:156N-03:166/03:168-03:170/03:172-03:175/03:177/03:180-03:184/03:186-03:187/03:189N-03:204N/03:205w, DRB1*09:06, DRB1*11:59/11:83/11:135/11:182, DRB1*13:27:01-13:27:02/13:71/13:129/13:144/13:176/13:326, DRB1*14:82/14:95/14:132, DRB3*01:34, DRB3*03:33	DR17(3), -, DR3, Null, DR13(6)	220 bp
C10	Mix 6	DRB1*03:02:01:01-03:02:06/03:05:01-03:05:03/03:09/03:14/03:27/03:29/03:38/03:53/03:74/03:81/03:88/03:90/03:102-03:103/03:115/03:122/03:130-03:131/03:154/03:167/03:176/03:178-03:179/03:188, DRB1*11:09:01:01-11:09:01:02/11:20/11:28:02/11:87/11:122, DRB1*13:02:01:01-13:02:03/13:02:05-13:02:22/13:05:01:01-13:05:03/13:26:01-13:26:02/13:29:01:01-13:29:01:02/13:31/13:34/13:36/13:39/13:41/13:50:02-13:50:03/13:56/13:63/13:65/13:67/13:73-13:74/13:85/13:96:01-13:96:02/13:99/13:103-13:104/13:109/13:119-13:120/13:123-13:124/13:126/13:128/13:136/13:139-13:140/13:142N-13:143/13:145/13:147/13:155/13:157-13:159/13:165/13:168/13:170-13:171:02/13:179/13:189/13:196/13:198-13:199/13:202-13:203/13:207-13:212/13:220/13:225/13:235-13:237/13:239-13:241/13:243-13:244/13:255N/13:257/13:264-13:265/13:268N-13:269/13:275/13:277/13:280/13:282/13:285/13:288-13:289N/13:292-13:293/13:296-13:298N/13:301-13:302/13:306/13:310N/13:312/13:318/13:320/13:325/13:331-13:332/13:334, DRB1*14:02:01:01-14:02:07/14:02:09-14:03:02/14:09/14:13/14:19/14:24/14:27:01-14:27:02/14:30/14:46-14:48/14:51/14:63/14:67/14:85/14:89/14:98/14:109/14:115/14:134-14:135/14:144/14:174/14:179/14:194/14:198/14:200/14:209/14:218/14:222N-14:223/14:226/14:239/14:242:01-14:242:02, DRB1*16:08, DRB3*01:08/01:46/01:52/01:71, DRB3*02:06?/02:20	DR18(3), -, DR3, DR11(5), DR13(6), Null, DR14(6), DR1403	190 bp
B10	Mix 7	DRB1*03:49, DRB1*04:01:01:01-04:05:11/04:05:13-04:11:03/04:11:05-04:155/04:157N-04:361, DRB1*08:38, DRB1*11:22/11:102:01-11:102:02/11:175/11:275/11:278, DRB1*14:10:01:01-14:10:01:02/14:57/14:143/14:161/14:182	-, DR4, Null, DR14(6)	85 bp/ 145 bp/ 200 bp/ 260 bp

Position	Mix	Allele	Serology	Size
A10	Mix 8	DRB1*01:21w, DRB1*07:01:01:01-07:01:01:02/07:01:01:04-07:01:30/07:03-07:139/07:140?/07:141-07:146	-, DR7, Null	115 bp/ 190 bp
H11	Mix 9	DRB1*08:01:01:01-08:01:02/08:01:04-08:01:05/08:01:07-08:02:04/08:02:05?/08:03:02:01-08:04:01:05/08:04:03-08:19/08:21-08:30:03/ 08:32-08:56/08:58-08:66/08:68:01-08:79/08:81-08:119, DRB1*11:67/11:193:01-11:193:02, DRB1*12:16:01-12:16:03/12:22/12:39:01- 12:39:02/12:46/12:96, DRB1*14:04:01:01-14:04:09/14:15/14:28/14:31/14:50:01-14:50:02/14:68:01-14:68:02/14:71/14:73/14:76/ 14:79/14:93/14:107/14:120/14:138/14:145/14:148/14:152N/14:180/14:196/14:201/14:205:01/14:206/14:210Q/14:220/14:224/ 14:229/14:233/14:241/14:249-14:250	DR8, -, Null, DR1404, DR14(6)	165 bp/ 215 bp/ 250 bp
G11	Mix 10	DRB1*09:01:02:01-09:05/09:07-09:08/09:10-09:22/09:24-09:52N	DR9, -, Null	220 bp
F11	Mix 11	DRB1*01:34w, DRB1*10:01:01:01/10:01:01:03-10:11/10:13-10:30/10:31w/10:32-10:45	-, DR10	205 bp
E11	Mix 12	DRB1*01:75, DRB1*03:08/03:65/03:140, DRB1*04:15/04:61/04:138/04:145/04:154/04:170/04:265/04:291/04:323/04:339, DRB1*08:31/08:41/08:63/08:75, DRB1*10:23, DRB1*11:01:01:01/11:01:01:03-11:02:02/11:02:04-11:04:12/11:04:14-11:11:01/11:11:03- 11:21/11:22?/11:23:01-11:25/11:26?/11:27:01-11:39/11:40?/11:41-11:70/11:72-11:85/11:87-11:93/11:95-11:109/11:111-11:122/ 11:124:01-11:155/11:157-11:166/11:168-11:171/11:173-11:184/11:186/11:188-11:191/11:193:01-11:202/11:203w/11:204-11:207/ 11:209-11:210/11:211w/11:212-11:253/11:254w/11:255-11:263/11:265-11:292/11:295-11:312, DRB1*12:04/12:49, DRB1*14:11:01:01- 14:11:01:02, DRB1*15:99/15:109, DRB1*16:16/16:27, DRB3*01:42, DRB3*02:18, DRB5*01:13/01:41	-, DR4, DR11(5), DR11(5)/DR13 (6), Null, DR14(6)	125 bp
D11	Mix 13	DRB1*08:25/08:32/08:47/08:53/08:87, DRB1*12:01:01:01-12:01:04/12:01:05w/12:01:06-12:19:02/12:20w/12:21-12:30/12:32-12:41/ 12:43-12:56/12:58-12:82/12:84-12:88/12:89?/12:90-12:103	-, DR12(5), Null	105 bp/ 210 bp
C11	Mix 14	DRB1*03:125, DRB1*11:09:01:01-11:09:01:02/11:16:01:01-11:16:01:02/11:20/11:28:02/11:40w/11:58:01/11:59w/11:83/11:87/11:113/ 11:115/11:122w/11:182, DRB1*13:01:01:01-13:02:22/13:05:01:01-13:06/13:10/13:15-13:16:01:02/13:18/13:26:01-13:28:02/13:31- 13:32/13:34-13:36/13:39-13:42:02/13:50:02-13:51/13:53/13:59/13:61:01-13:61:02/13:63w/13:65/13:67/13:69/13:73-13:74/13:79- 13:80/13:85/13:87/13:91-13:93/13:96:01-13:96:02/13:98-13:99/13:102-13:105/13:109-13:110/13:111w/13:112-13:113N/13:117:01:01- 13:117:01:02/13:120-13:121/13:123-13:128/13:130-13:131/13:136-13:148/13:153/13:155-13:160/13:165-13:166/13:168/13:170- 13:171:02/13:173/13:176-13:177/13:179/13:183-13:187/13:189-13:191/13:198-13:203/13:205/13:207-13:215/13:217-13:218/13:220- 13:222/13:223w/13:225-13:226/13:233/13:234w/13:236-13:245/13:248-13:249N/13:251-13:252N/13:254-13:275/13:277/13:279- 13:283/13:285/13:287-13:294/13:296w/13:297-13:306/13:308-13:311/13:313/13:315/13:318/13:320/13:322N-13:325/13:327-13:328/ 13:331-13:332/13:334, DRB1*14:27:01-14:27:02/14:63/14:67/14:78, DRB1*16:08	-, DR11(5), DR11(5)/DR13 (6), DR13(6), Null, DR14(6)	130 bp
B11	Mix 15	DRB1*03:12/03:155/03:158, DRB1*11:03:01-11:03:04/11:11:01/11:11:03/11:36/11:40-11:41/11:55/11:59/11:63:01-11:63:02/11:68/ 11:76/11:85/11:122/11:138-11:139/11:151/11:161/11:168/11:176/11:213/11:231/11:233/11:237/11:241/11:260/11:301N, DRB1*13:03:01:01-13:04/13:12:01-13:13/13:20:01:01-13:21:02/13:24:01:01-13:24:01:03/13:29:01:01-13:30/13:32-13:33:03/13:38/ 13:43/13:48-13:49:02/13:54-13:55/13:58/13:63/13:65-13:66:02/13:71/13:75/13:78/13:81/13:88-13:90/13:93-13:95/13:101/13:108/ 13:111/13:115/13:118/13:120/13:122/13:133-13:134/13:139/13:149/13:151-13:152/13:154/13:161/13:164/13:167/13:169/13:174/ 13:188/13:194/13:216/13:219/13:227-13:228/13:230/13:247/13:253/13:276/13:295N/13:307/13:317/13:319N/13:321/13:329N/ 13:333, DRB1*14:13/14:63/14:65/14:78/14:85/14:169-14:170	DR3, -, DR11(5), Null, DR13(6), DR14(6)	170 bp/ 200 bp
A11	Mix 16	DRB1*11:09:01:01-11:09:01:02/11:28:02/11:40w/11:58:01/11:59w/11:83/11:87/11:113/11:115/11:122w/11:182, DRB1*13:05:01:01- 13:05:03/13:18/13:26:01-13:26:02/13:42:01-13:42:02/13:50:02-13:50:03/13:63w/13:111w/13:136/13:144/13:158:01-13:158:02/ 13:189/13:199/13:203/13:277/13:302, DRB1*14:27:01-14:27:02, DRB1*16:08	DR11(5), -, DR13(6), DR14(6)	130 bp

Position	Mix	Allele	Serology	Size
H12	Mix 17	DRB1*03:01:01:01:03:01:06/03:01:07w/03:01:08-03:01:13/03:01:14w/03:01:15-03:07:02/03:09-03:11:01/03:11:03-03:37/03:38w/03:39-03:41:02/03:43-03:45/03:46w/03:47-03:58/03:59w/03:60-03:64/03:66-03:78/03:79w/03:80-03:86/03:88-03:110/03:112-03:126/03:127w/03:128-03:129/03:130w/03:131-03:134/03:135w/03:136-03:139/03:141-03:155/03:157-03:161/03:163-03:186/03:187?/03:188-03:189N/03:190w/03:191-03:205, DRB1*08:01:01:01:08:01:02/08:01:04-08:01:05/08:01:07-08:02:04/08:02:05?/08:03:02:01-08:04:01:05/08:04:03-08:24:02/08:25w/08:26-08:30:03/08:32-08:33/08:34w/08:35-08:40/08:42-08:46/08:47w/08:48-08:51/08:52w/08:53-08:56/08:58-08:62/08:64-08:68:02/08:70-08:74/08:76-08:79/08:81-08:108/08:109w/08:110-08:111/08:112w-08:113w/08:114-08:119, DRB1*11:264/11:293, DRB1*12:01:01:01w-12:01:07w/12:01:09w-12:01:11w/12:01:12?/12:02:01:01w-12:02:05w/12:02:07w-12:03:03w/12:05w-12:08w/12:09/12:10w-12:17w/12:19:01w-12:23w/12:24N-12:25/12:26w-12:30w/12:32w/12:34w-12:41w/12:43w-12:45w/12:46/12:48/12:50w-12:53w/12:54/12:55w-12:56w/12:58w-12:61w/12:62/12:63w-12:66w/12:67/12:68w-12:75w/12:76/12:77w-12:82w/12:84w-12:88w/12:89?/12:90w-12:95w/12:96/12:97w-12:103w, DRB1*13:01:01:01-13:01:40/13:01:41w/13:02:01:01-13:02:11/13:02:12w/13:02:13-13:53/13:54w/13:55-13:66:02/13:68-13:76/13:77w/13:78-13:99/13:100w/13:101-13:102/13:103w/13:104-13:159/13:160w/13:161/13:162w/13:163-13:164/13:165w/13:166-13:182/13:184-13:194/13:196-13:198/13:199w/13:201-13:217/13:218w/13:219-13:227/13:229-13:247/13:250-13:298N/13:300-13:335, DRB1*14:01:01:01-14:09/14:12:01-14:38:02/14:40-14:45/14:47/14:48w/14:49-14:54:01:17/14:54:03-14:54:07/14:54:08w/14:54:09-14:56/14:58-14:60/14:62-14:65/14:67-14:124/14:125w/14:126:01-14:140/14:142/14:144-14:147/14:149-14:176/14:177w/14:178-14:181/14:183-14:194/14:195Nw/14:196-14:198/14:200-14:221/14:223-14:230/14:232-14:246/14:248?/14:249-14:251, DRB3*01:14w	DR17(3), -, DR18(3), DR3, Null, DR8, DR12(5), DR13(6), DR14(6), DR1403, DR1404, DR6	165 bp/ 170 bp/ 175 bp
G12	Mix 18	DRB1*03:10/03:97/03:126/03:191, DRB1*08:08/08:29, DRB1*11:17/11:52-11:54:02/11:89/11:150/11:159/11:202/11:267/11:283/11:293, DRB1*12:66/12:96, DRB1*13:43/13:45/13:76/13:159/13:171:01/13:179/13:188/13:191/13:197/13:206/13:217/13:302, DRB1*14:01:01:01-14:01:05/14:04:01:01-14:05:05/14:07:01-14:08/14:11:01:01-14:11:01:02/14:14/14:16/14:18/14:22-14:23:04/14:25:01-14:26/14:28/14:31-14:33/14:35-14:36/14:38:01-14:39/14:42-14:45/14:49-14:51/14:53-14:56/14:58-14:62/14:64/14:68:01-14:76/14:79/14:82/14:86-14:88/14:90-14:93/14:95-14:97/14:99/14:101/14:103-14:107/14:110-14:114/14:117-14:120/14:122/14:124/14:125w/14:126:01-14:126:02/14:128-14:134/14:137N-14:140/14:142/14:145-14:155/14:157-14:158/14:160-14:164/14:166N-14:169/14:171-14:173/14:175/14:178/14:180/14:184-14:193/14:196-14:197N/14:199-14:208/14:210Q-14:211/14:213-14:217/14:219-14:221/14:224-14:225/14:227-14:230/14:232-14:238/14:240-14:241/14:243-14:246/14:248?-14:249?/14:250-14:251	DR17(3), -, DR11(5), DR14(6), DR1404, DR6, DR13(6), Null	175 bp/ 225 bp
F12	Mix 19	DRB1*03:126/03:157w/03:177, DRB1*04:211, DRB1*11:09:01:01-11:09:01:02/11:28:02w/11:58:01w/11:83/11:87/11:113/11:115w/11:182/11:280, DRB1*12:58, DRB1*13:05:01:01-13:06/13:18/13:26:01-13:26:02/13:42:01-13:42:02/13:50:02w-13:50:03w/13:56/13:77/13:119/13:136/13:144/13:146/13:156-13:158:02/13:163/13:181/13:189w/13:193/13:199/13:203/13:235/13:277/13:302/13:331, DRB1*14:02:01:01-14:03:02/14:06:01-14:06:06/14:09/14:12:01-14:13/14:17-14:18/14:27:01-14:27:02/14:29-14:30/14:33/14:46-14:48/14:51-14:52/14:59/14:63-14:64/14:67/14:78/14:80-14:81/14:83/14:85/14:89/14:95/14:98w/14:106/14:108/14:115/14:121/14:132-14:135/14:144/14:154/14:165/14:170/14:174/14:176-14:177/14:179/14:194-14:195N/14:198/14:200/14:209/14:212/14:218/14:222N-14:223/14:239/14:242:01-14:242:02/14:246, DRB1*16:08w	-, DR11(5), DR13(6), DR14(6), DR1403, DR6, Null	145 bp/ 150 bp
E12	Mix 20	DRB1*09:07, DRB5*01:01:01:01-01:01:09/01:01:11-01:02:01/01:02:02w/01:03-01:25/01:26w/01:27N-01:47/01:48Nw/01:49N-01:50/01:52N-01:72/01:74w/01:75-01:78/01:80-01:86/01:88-01:96/01:98-01:109/01:111-01:112/01:113w/01:114-01:130, DRB5*02:02:01-02:37	-, DR51, Null	175 bp/ 210 bp
D12	Mix 21	DRB1*03:42/03:87, DRB1*14:141, DRB3*01:01:02:01-01:13/01:15-01:67/01:69-01:94/01:96-01:103/01:105N-01:106/01:107?/01:108/01:110-01:112, DRB3*02:01-02:25/02:28-02:46/02:48-02:57/02:59-02:65/02:67N-02:77/02:78w/02:79-02:90/02:92-02:108/02:109Nw/02:110/02:112-02:116/02:117w/02:118-02:123/02:124w/02:125N-02:130/02:132-02:142/02:144-02:159/02:161/02:162w/02:163-02:189/02:190?, DRB3*03:01:01:01-03:01:12/03:01:13w/03:01:14-03:21/03:23-03:45/03:46w/03:47-03:61	-, DR52, Null	215 bp



Position	Mix	Allele	Serology	Size
C12	Mix 22†	DRB4*01:01:01:01/01:01:01:03-01:01:01:04/01:02-01:03:01:01/01:03:01:03-01:03:01:12/01:03:01:14-01:03:02:02/01:152, DRB4*02:01N	DR53, -, Null	150 bp
B12	Mix 23	DRB4*01:03:01:02N/01:03:01:13N	Null	275 bp
A12	Mix 24	Negative Control		None (440 bp)

**Amplification control (internal positive control):** 440 base pairs (bp)

w = weak

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

**Mix 6:** HLA-DRB1\*03:81 serology unclear

**HLA-DRB1\*08:04:02** is not listed since the primer matching sequences are unknown

† = Alleles which are not sequenced in the primer binding sites of mixes 22 (according to the IMGT/HLA Database of January 2023) have been excluded from the list of allele specificities of this mix: HLA-DRB4\*01:01:02-01:01:10/01:03:03-01:13/01:15-01:61N/01:63-01:87/01:89-01:151/01:153-01:167.

**Table 4:** Amplification patterns for all **HLA-A\*** specificities detected by the HLA-A\* CTS-PCR-SSP primer mixes (**Lot No. A17-2**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

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*01:01:01:01-01:01:01:55/01:01:01:57-01:01:01:64/01:01:01:67-01:01:01:130/01:01:01:132-01:04:01:02N/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, 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	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*36:01:01:01-36:01:02/36:03-36:13	-, 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*02:01:01:01-02:01:07/02:01:10-02:01:11/02:01:13-02:01:15/02:01:18-02:01:19/02:01:21-02:01:25/02:01:27-02:01:32/02:01:34-02:01:39/02:01:41-02:01:51/02:01:53-02:01:63/02:01:66-02:01:68/02:01:70-02:01:73/02:01:76-02:01:80/02:01:83-02:01:94/02:01:96-02:01:164/02:01:166-02:03:06/02:03:08-02:03:10/02:04:01-02:05:02/02:05:04/02:05:06-02:05:08/02:05:10-02:06:06/02:06:08-02:06:11/02:06:13-02:06:18/02:06:20-02:06:30/02:07:01:01-02:07:11/02:07:13-02:07:14/02:07:16-02:08:01/02:09:01:01-02:11:01:06/02:11:03-02:11:12/02:14-02:18/02:20:01-02:22:02/02:24:01/02:25-02:26/02:28-02:33/02:36/02:39-02:42:01/02:43N/02:45/02:47/02:49:02/02:51/02:53N/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-02:947/02:949-02:958/02:960-02:967/02:969-02:981/02:983-02:984/02:986-02:991/02:993-02:1009/02:1011Q-02:1020/02:1024-02:1027/02:1031N-02:1032/02:1034-02:1045Q/02:1047-02:1049/02:1051-02:1086/02:1088-02:1089	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/ 02:279/02:288/02:289/02:298/02:301N/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*02:01:40/02:03:11/02:42:02/02:141/02:312/02:470/02:570/02:796N/ 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	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/68:295-68:298, 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*32:01:01:01-32:01:06/32:01:08-32:01:11/32:01:13-32:01:47/32:01:49-32:01:54/32:03:01:01-32:03:01:02/32:05-32:12/32:14/32:16/32:18-32:21/32:23/32:25-32:27N/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/32:95-32:100/32:102-32:108/32:110-32:157/32:159-32:169/32:171-32:173	-, A32(19), Null																		18						
A*02:927	-				w																				23
A*02:959/02:968/02:982/02:1010	-			3																					?
A*02:1021/02:1023/02:1033/02:1087	-			?																					23
A*02:1022	-		2	3																					23
A*03:01:01:01-03:01:38/03:01:40-03:01:118/03:03N-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	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*03:02:01:01-03:02:06/03:31-03:32/03:65/03:69N/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, A*11:130	A3, -, Null				4										w											
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-11:438, 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, B*51:55, B*57:129	-, A24(9), Null							7																		
A*11:199:02-11:199:03	-				w										14											

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*11:325, 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	-, 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, 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, A*24:02:74/24:02:146/24:04/24:06/ 24:13:01-24:13:02/24:22/24:87/24:107/24:109/24:167/24:207:01- 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, 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*24:02:01:01-24:02:05/24:02:07-24:02:16/24:02:18-24:02:48/24:02:50-24:02:63/24:02:65/24:02:67-24:02:73/24:02:75/24:02:77-24:02:88/24:02:90-24:02:145/24:02:147-24:03:04/24:05:01-24:05:02/24:07:01:01-24:07:04/24:09N-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/24:157/24:159-24:166/24:168-24:187/24:189-24:190/24:192-24:199/24:201-24:203/24:205-24:206/24:208:02:01-24:210/24:212/24:214-24:226:02/24:229-24:234/24:236/24:238-24:272/24:274-24:284/24:286-24:288/24:291-24:292/24:294Q-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/24:570-24:571/24:573-24:589	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*24:15/24:41/24:51/24:92/24:235/24:499/24:504/24:551/24:557	-	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, 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	-						?	7																	
A*24:556N/24:560	Null, -						6	?																	



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/25:45-25:58/25:60-25:64/25:66-25:74/25:76:01-25:76:02/25:78-25:80/25:83-25:84	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*30:12:01/30:18/30:41/30:166, A*32:101Q, 04:01:49, 12:328, 15:222	-, A30(19)								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*26:01:01:01-26:01:01:53/26:01:03-26:01:12/26:01:14-26:01:26/26:01:28-26:01:37/26:01:39-26:01:58/26:01:60-26:01:62/26:01:64/26:01:66-26:03:01:02/26:03:03-26:12:01:02/26:14-26:18/26:20:01-26:28/26:30/26:32/26:34-26:43:02/26:45-26:47/26:50-26:59/26:61-26:68/26:70-26:71N/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-26:224/26:228-26:229	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*26:13/26:226	-									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/66:29/66:31-66:38/66:40/66:42-66:47	-, 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*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-29:158/29:160-29:163/29:165-29:172, 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*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	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	-															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/31:203/31:205-31:209/31:211-31:219	-, A31(19), Null																	17								
A*30:163	-								8					13			16									
A*30:164	-								8						14		16									
A*30:189/30:206	-								?								?									
A*31:01:47/31:202N/31:204	-, Null																	?								
A*31:07/31:10	-, 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*33:01:01:01-33:01:04/33:01:06-33:01:18/33:03:01:01-33:03:25/33:03:28- 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/ 33:178-33:182/33:184-33:186/33:189/33:191-33:214/33:216-33:234, 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*34:01:01:01-34:01:07/34:05/34:11/34:14/34:16-34:18/34:27	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	-																					?			
A*68:262	-												12									21			
A*68:294	-									9			12									21			
A*69:01:01:01-69:02/69:04-69:06/69:08-69:09	A69(28), -																					21	22		
A*69:03	-														14							21	22		
A*74:01:01:01-74:03:03/74:05-74:09/74:11-74:12N/74:14N-74:15/74:16:02-74:20/74:22-74:40/74:44	A74(19), -, Null																					20			
A*74:04/74:21/74:43	-																			19	20				
A*74:13	-				4								12									20			
A*74:42	-				?								12			15									
A*80:01:01:01-80:01:02/80:03/80:05-80:09N	A80, -, Null																								24
B*07:225/07:260	-								w																
B*35:01:60, B*51:01:34, 06:247, 07:02:27/07:577	-																							w	
B*35:08:14/35:14:03	-													w											
B*57:148	-								?																
*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 reagents (**Lot No. B16-2**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

Allele	Mixes	Serology
B*07:02:01:01-07:02:05/07:02:07-07:02:10/07:02:12-07:02:27/07:02:29-07:02:32/07:02:34-07:02:42/07:02:44-07:02:84/07:02:86/07:02:88-07:02:97/07:07:01:01-07:07:03/07:10/07:15/07:21-07:23/07:26/07:30-07:31:02/07:35-07:36/07:39/07:41-07:44N/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	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	1+28	B7, -, Null
B*07:05:03	1+28+39+41	B7
B*07:05:06/07:06:03	1w+28	-
B*07:09:01-07:09:02/07:11/07:255	1+21+24w+28w	B7, -
B*07:12/07:18:01	1+7+19+24w+28	B7, -
B*07:13/07:32/07:69/07:115/07:197/07:207/07:225/07:260/07:284, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02	1	-, Cw7
B*07:14:01-07:14:02	1+7w+19w+24w	B7, -
B*07:17	1+21+24w	B7
B*07:18:02	1+7w+19w+24w+28	-
B*07:19, B*42:16:01	23+24w+28	-

Allele	Mixes	Serology
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	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	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+28	-
B*07:174/07:202/07:279	1+19+24w+28	-
B*07:183	1+15w+24w+28	-
B*07:219	24w+45	-
B*07:222, B*81:01:01:01-81:10	1+19+28	-, B81, Null
B*07:235	7+19+21+24w+28w+30	-
B*07:236	1+10+24w+28	-
B*07:237	1+21+28w	-
B*07:246/07:327/07:376	1+28w	-
B*07:248	1+7+19w+24w+28	-
B*07:287	1+21+28	-
B*07:349, B*42:05:01	1+23+28	-
B*07:358	1+28+30	-
B*07:359	7w+19w+24w+25+30w	-

Allele	Mixes	Serology
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, 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	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*15:27	7	-
B*08:55, B*39:12:01:01-39:12:01:02/39:178	2+12	-, B39(16)
B*08:62/08:226/08:242, B*42:26	22	-
B*08:79:01-08:79:02/08:187	1+2	-
B*08:107	6+21+24w	-
B*08:123/08:132	2+23+28	-
B*08:126/08:131/08:139	2+10	-
B*08:129	2+7w+19w	-
B*08:146	2+23	-
B*08:155	2+17	-
B*08:156	1+2+24w	-
B*08:213:01-08:213:02	2+19	-

Allele	Mixes	Serology
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*35:10/35:13/35:16/35:22:01:01-35:22:01:02/35:28:01:01-35:28:01:03/35:31/35:32:02-35:32:03/35:43:01/35:43:03-35:44/35:51:01/35:67/35:69/35:79-35:80/35:86-35:87/35:99/35:102/35:117-35:118/35:176/35:185/35:199/35:208:01-35:208:02/35:226/35:234/35:242/35:251:02/35:265/35:270/35:318/35:475-35:477/35:549, 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*13:01:01:01-13:01:21/13:06-13:07N/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	3	B13, -, Null
B*13:02:01:01-13:02:32/13:02:34-13:02:37/13:08/13:10/13:14-13:16/13:18-13:19/13:26:01-13:27/13:30-13:35/13:38/13:41-13:42/13:44/13:47/13:49N/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/13:147/13:149-13:152/13:154-13:158/13:160/13:164-13:165/13:167/13:169/13:175-13:176	3+34	B13, -, Null
B*13:02:33	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, 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, 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*14:01:01:01-14:01:11/14:01:13/14:04/14:07N/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	46	B64(14), -, Null
B*14:02:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:03/14:09/14:11/14:15-14:18/14:20/14:22/14:25/14:29-14:31/14:33-14:36/14:38-14:39/ 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	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*15:01:01:01-15:01:01:65Q/15:01:03-15:01:04/15:01:06-15:01:46/15:01:48/15:01:51-15:01:70/15:01:72-15:01:74/15:01:76-15:01:78/ 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/15:152/15:154-15:155/15:159-15:160:01:02/ 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/15:542-15:545/15:547/15:549N/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/ 15:651-15:652, 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?	-

Allele	Mixes	Serology
B*15:02:01:01-15:02:04/15:02:06-15:02:12/15:44/15:88/15:121/15:139/15:144/15:194/15:213-15:214/15:223/15:283/15:291/15:301-15:302N/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	7+20+34+43	B75(15), -, Null
B*15:02:05/15:112	7w+20+34+43	-, B15
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, 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+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	20+34+43	B75(15), -, B62(15), Null
B*15:09:01-15:09:02/15:435	39+41+42	B70, -
B*15:10:01:01-15:10:08/15:37/15:99/15:312-15:313/15:338/15:445/15:455/15:503/15:506/15:563	24w+42	B71(70), -, B70
B*15:12:01/15:12:03/15:19/15:270/15:298/15:304N/15:649	34+43+44	B76(15), -, Null
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	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	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/15:498/15:504:01-15:504:02/15:526/15:548/15:570/15:573/15:607/15:612/15:643	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

Allele	Mixes	Serology
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	12w+34+43	-
B*15:142/15:429	2+34+43	-
B*15:150/15:188/15:324, B*40:21/40:137	15+43	-
B*15:161	21+25+42w	-
B*15:170	7+20w+34w+43w	-
B*15:189:01-15:189:02	20+34+42+43+47	-
B*15:202	5+34w+43w	-
B*15:210/15:571	21+32	-
B*15:212, B*49:02/49:70, B*50:01:18/50:09/50:16/50:33/50:41	17+26+32	-, B49(21)
B*15:222	34+37w	-
B*15:243, C*12:03:31, C*14:02:37	41	-
B*15:252	39+41	-
B*15:255, B*56:03/56:50	21+28w+30	-, B22
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	-

Allele	Mixes	Serology
B*15:308, B*35:01:17/35:01:67/35:03:07/35:04:03/35:12:02/35:20:01/35:59:02/35:83/35:88/35:95/35:112:01-35:112:02/35:164/35:191/35:212/35:215:01-35:215:02/35:230/35:261/35:296/35:382/35:414/35:439:01:01-35:439:01:02/35:463/35:474/35:547, B*37:67	5+7	-, B35
B*15:323	24w	-
B*15:339	18	-
B*15:342	18+43	-
B*15:426	21+32+42	-
B*15:449/15:494	12+34+43	-
B*15:460	7w+20+43	-
B*15:486	20+27+43	-
B*15:509	21+30	-
B*15:590	34?+43w	-
B*15:592	7+20+25+34+43+44	-
B*15:637	20+43	-
B*15:646	7+20+42+43	-
B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:01:25-18:03:01:03/18:04:01-18:07:01/18:08/18:10-18:12:01/18:13/18:17N/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/18:109/18:111-18:121/18:123-18:124/18:126-18:131:01:02/18:133-18:135:01:02/18:137-18:141/18:144-18:148/18:151/18:153-18:163/18:166-18:167/18:170-18:177/18:179-18:188/18:190/18:192-18:193/18:196-18:197/18:199-18:203/18:206-18:216/18:218-18:226	4+5	B18, -, Null
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*18:99	4w+5	-
B*18:107	4w+17	-

Allele	Mixes	Serology
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*27:01-27:03/27:05:02:01-27:05:22/27:05:24-27:05:59/27:07:01-27:09/27:11-27:14/27:16-27:17/27:23/27:26-27:28/27:31-27:33/27:35/27:37-27:39/27:42-27:53/27:55-27:62/27:64N-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-27:265	9	B27, -, B2708, Null
B*27:04:01-27:04:06/27:10/27:15/27:20/27:25/27:40/27:54/27:63/27:66N/27:68-27:69/27:79/27:86/27:92/27:100/27:103/27:105/27:108-27:109/27:112-27:115/27:120/27:147/27:149/27:165/27:168/27:183/27:210-27:211/27:214/27:226/27:229/27:240/27:245/27:247/27:257	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*27:24/27:173	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	9+21+32	-
B*27:127	9+19w+24w	-
B*27:153	32+41	-

Allele	Mixes	Serology
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/ 35:02:01:01-35:02:05/35:02:07-35:02:16/35:02:18-35:03:02/35:03:04-35:03:06/35:03:08-35:03:16/35:03:18-35:03:19/35:03:21-35:03:31/35:03:33- 35:04:01:02/35:06-35:08:01:13/35:08:04/35:08:06-35:09:04/35:11:01-35:11:03/35:14:01-35:15:02/35:18/35:21/35:24:01/35:29:01-35:29:02/ 35:33-35:34/35:36/35:38/35:40N-35:42:02/35:48/35:50/35:52-35:55/35:57/35:62/35:64:01-35:65Q/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	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	5+6+7w	B35, -
B*35:01:10/35:03:32/35:04:02	5+6+7+38+39+41	B35, -
B*35:01:56/35:02:06	5+6w+7	-
B*35:01:57	4+5+6+7	-
B*35:01:64/35:03:17/35:29:03	5+6+7+47	-
B*35:03:03/35:08:02/35:08:05/35:27/35:56/35:203/35:210/35:271/35:299/35:355/35:550-35:551N, B*53:03/53:11-53:13/53:36/53:55/53:65	6+7	B35, -, Null, B53
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	5+6+7+12	B35, -
B*35:45/35:71/35:169/35:309/35:452	5+6+7+25	-
B*35:46	6+7+20+34+43	B35
B*35:66	1+5+6	-
B*35:76/35:561	5+7+28w+30	B35/22, -
B*35:82/35:85/35:294	5+7+42	-
B*35:135	5+42	-
B*35:186, B*46:40:01-46:40:02	5+33	-

Allele	Mixes	Serology
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	19	-
B*35:368	5+6+28w+30	-
B*35:432	5+7+27	-
B*35:471, B*37:10/37:34, B*38:01:01:01-38:02:03/38:02:05-38:02:09/38:02:11-38:04/38:06-38:16/38:18-38:19/38:21-38:25/38:27-38:29/38:31-38:32/38:34N-38:51/38:53-38:62/38:64/38:66-38:72/38:74-38:83N/38:85-38:87/38:89-38:104/38:160-38:173Q, B*39:104, B*57:118, A*24:96/24:256	11	-, B37, B38(16), B16, Null
B*35:522	5?+6+7	-
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, 16:98/16:102/16:110	33	-, B46
B*37:01:01:01-37:01:11/37:01:13-37:01:29/37:03N-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-37:94/37:96/37:98-37:101/37:103-37:104/37:106-37:107, 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	11+47	B38(16), -
B*38:20:01	7w+8w+11+19w+37w	-
B*38:20:02	7+8+11+19+37	-

Allele	Mixes	Serology
B*38:26	11+13+28	-
B*38:30/38:65	11+42	-
B*38:63	1+11+19	-
B*38:84	2+11	-
B*39:01:01:01-39:01:01:29/39:01:03:01-39:01:10/39:01:12-39:03:02/39:05:01:01-39:06:04/39:06:06-39:06:08/39:08/39:09:02/39:10:01-39:11/39:13:01-39:16/39:18/39:20/39:22-39:24:01/39:24:03-39:28/39:31:01:01-39:31:01:02/39:35/39:37:01:01-39:41/39:44-39:46/39:48-39:49/39:51-39:68/39:70-39:73/39:75-39:79/39:81/39:83:01-39:87N/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, C*07:137:01-07:137:02/07:868, C*14:63	12	B3901, Low B39, -, B3902, B39(16), Null
B*39:04/39:129	12+47	B39(16), -
B*39:09:01:01-39:09:01:06/39:09:03-39:09:05/39:88/39:127/39:155/39:158/39:170-39:171	7+12	B39(16), -
B*39:17	12+27	-
B*39:29	12+24w	-
B*39:32/39:74	12w+42	-
B*39:42	7w+12+19w	-
B*39:47/39:50/39:102/39:174, C*03:215	12w	-
B*39:69, B*40:184	12+17	-
B*39:173	12+25	-
B*39:185	12?	-
B*40:01:01:01-40:01:05/40:01:07-40:01:08/40:01:10-40:01:18/40:01:20-40:01:55/40:01:57-40:01:80/40:22N/40:30/40:34/40:36/40:38/40:43/40:45/40:47/40:52/40:54-40:55/40:59-40:60/40:62/40:65-40:67/40:69/40:73-40:74/40:76/40:79-40:81/40:84/40:88/40:100-40:102/40:108/40:112-40:114:02/40:116-40:118N/40:123/40:125:01-40:126/40:128/40:130:01-40:130:02/40:134-40:135/40:138-40:141/40:146-40:147/40:149-40:156/40:160:01-40:160:02/40:168/40:170/40:172/40:175/40:179/40:182/40:186:01-40:188/40:192-40:193/40:195/40:204/40:207/40:212-40:213/40:215-40:218/40:221/40:223/40:227-40:228/40:233-40:236/40:238-40:242/40:245:01-40:245:02/40:247/40:249-40:253/40:257-40:264/40:272-40:273/40:277-40:282/40:285-40:286N/40:288/40:298:01-40:299/40:301/40:310/40:312/40:316/40:319/40:321/40:323:01-40:323:02/40:327/40:329/40:332-40:333/40:336/40:338N-40:339/40:344/40:346/40:352-40:353:02/40:357-40:358/40:360/40:367/40:370/40:372N/40:379:01:01-40:379:02/40:381:01-40:383/40:385-40:386/40:391-40:398/40:400-40:404/40:406-40:407/40:416-40:419/40:421Q/40:426N/40:428N/40:431/40:433-40:434/40:436/40:439/40:443/40:446-40:448/40:450/40:452/40:456/40:461/40:463/40:469/40:474-40:475:02/40:479-40:480/40:483N/40:485-40:486/40:490-40:491/40:495/40:497/40:499/40:501-40:503/40:506N-40:510N/40:512/40:516/40:524-40:525/40:528	14+15+16	B60(40), -, Null, B40
B*40:01:06	14+15+16+40+41	B60(40)
B*40:01:09/40:07/40:61/40:87:01-40:87:02/40:196/40:222/40:300/40:368/40:422/40:517	14+16	-, B60(40)
B*40:01:19/40:191/40:197	14+15+16w	-
B*40:01:56/40:171/40:315	14w+15+16	-



Allele	Mixes	Serology
B*40:02:01:01-40:04:02/40:06:01:01-40:06:29/40:06:31/40:11:01:01-40:11:02/40:14:01-40:14:03/40:19-40:20:01:02/40:27:01-40:27:03/40:29/40:35:01-40:35:03/40:37/40:40/40:50:01:01-40:50:01:02/40:53/40:56-40:58/40:64:01:01-40:64:02/40:70:01-40:70:02/40:72:01-40:72:03/40:78/40:82-40:83/40:86/40:89-40:91/40:94/40:96-40:97/40:99/40:103-40:105/40:107/40:110-40:111/40:115/40:119/40:122/40:127/40:129/40:131/40:133Q/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	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*48:01:01:01-48:01:07/48:01:09-48:01:12/48:03:01:01-48:04:02/48:07/48:09/48:11/48:15-48:21/48:24/48:27-48:29/48:32-48:40/48:42-48:45/48:47-48:57	15+19	-, B48, B48/40
B*40:15-40:16:01:02/40:148/40:161/40:309	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
B*40:95	14+17+26+32+40+41	-

Allele	Mixes	Serology
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*47:01:01:02-47:07/47:09/47:11-47:12	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	14+15+17+27	-
B*40:523	15+16+25	-
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/41:48-41:59/41:61/41:64-41:79	15+17+22	B41, -, Null
B*41:02:09	15+17+22+40+41	-
B*41:02:10	15+17?+22	-
B*41:04/41:21/41:63	15+17+22+24w	-
B*41:19	14+15+17+22	-
B*41:20	15+17+22w	-
B*41:46	17+22	-

Allele	Mixes	Serology
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*42:02:01:01-42:02:02/42:17-42:18/42:27	22+23+28	B42, -
B*42:05:02	1w+23+28	-
B*42:07/42:20	23	-
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/ 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/ 44:357-44:364/44:437/44:439-44:444/44:446-44:458/44:460-44:464:01:02/44:466N-44:505/44:507-44:524/44:526-44:529/44:531-44:540/44:542- 44:543/44:545-44:546	17+24	B44(12), -, Null, B21
B*44:02:70/44:05:01:01-44:05:06/44:70/44:78/44:107/44:123/44:136/44:139/44:198N/44:217N/44:236/44:250/44:264/44:288/44:330/44:465	17+24w	-, B44(12), Null
B*44:03:12	4w+17+24	-
B*44:03:40	17+24+40	-
B*44:06, B*51:42/51:359	7w+8w+25+37w	B44(12), -
B*44:08/44:57/44:60	34+44	B44(12), -
B*44:12/44:232/44:365	7w+17+24	B44(12), -
B*44:16/44:21/44:64:01-44:64:02/44:124/44:347	14+17+24	B47, -
B*44:18:01:01-44:18:01:02/44:355, B*49:01:02/49:11/49:45	17+31+37w	-, B49(21)
B*44:25/44:50:01/44:95	8w+17+24+37w	-
B*44:40/44:44/44:130	19w+24	B44(12), -
B*44:49	2+17+24	-
B*44:50:03	8+17+24+37	-
B*44:52N/44:169/44:233	24	Null, -
B*44:53:01-44:54/44:106/44:110/44:135/44:192:01-44:192:04/44:211/44:343/44:506	15+17+24	B44(12), -

Allele	Mixes	Serology
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*44:459	17+26+40	-
B*44:544N	17?+24	Null
B*45:01:01:01-45:01:12/45:03/45:05/45:07/45:11-45:21/45:23/45:25/45:28N/45:30	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-46:60/46:62-46:69/46:71/46:73/46:75-46:76/46:78/46:80-46:85/46:88-46:92/46:94-46:98N	33+34	B46, -, Null
B*46:01:05/46:31	33w+34	-
B*46:01:27	33+34w	-
B*46:06	1+34	-
B*46:11/46:18	27+33+34	-
B*46:14	32+33+34	-

Allele	Mixes	Serology
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*49:01:01:01-49:01:01:03/49:01:01:05-49:01:01:18/49:01:04-49:01:17/49:01:19-49:01:24/49:06/49:08-49:09/49:12-49:14/49:16-49:17/49:19N-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/49:62-49:66/49:68-49:69/49:74-49:75/49:77-49:78	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	-
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	-

Allele	Mixes	Serology
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*51:01:01:01-51:01:03/51:01:05-51:01:10/51:01:12/51:01:14-51:01:16/51:01:18-51:01:37/51:01:39-51:01:67/51:01:69-51:02:03/51:02:05-51:03/51:05:01:01-51:05:01:02/51:08:01:01-51:08:04/51:08:06-51:09:03/51:11N-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-51:175/51:177/51:179-51:189/51:191-51:193:01/51:195-51:196/51:198/51:201-51:212/51:215-51:219/51:221/51:224/51:226/51:228-51:230:01:03/51:232:01-51:240/51:242-51:244/51:246/51:248-51:250/51:252-51:257/51:259-51:280/51:282-51:292/51:294/51:296-51:299/51:301-51:309/51:311-51:318N/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	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	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*51:04:01/51:56:03/51:139	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	38+39	B51(5), -, Null
B*51:07:01-51:07:02/51:214/51:222/51:251/51:340	37+39+40w	B51(5), -
B*51:13:01/51:92:01, B*52:14:01, B*59:03	11+37	-
B*51:13:02/51:92:02/51:172	11+37+38+39	-
B*51:15/51:106:02/51:157/51:225/51:300, B*52:25:01, B*59:01:01:01-59:01:01:02/59:04-59:05/59:07/59:09-59:10N/59:12	31+37	-, B59, Null
B*51:22	37+39+42	-

Allele	Mixes	Serology
B*51:23/51:108	25+37+38+39	-
B*51:44N/51:118N/51:245N	37+39	Null
B*51:56:02	6+7+8+37+38+39	-
B*51:62, A*24:90:02N	31	-, Null
B*51:68/51:176	2+37+38+39	-
B*51:103/51:116/51:151	32+37+38+39	-
B*51:104:01-51:104:02	20+34+37+38+39	-
B*51:106:01/51:223	31+37+38+39	-
B*51:107/51:170	37+38w+39w	-
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*52:01:01-01-52:01:04/52:01:06-52:01:14/52:01:16-52:01:52/52:03-52:05/52:07:01-52:13/52:15-52:19/52:21:01-52:24/52:26-52:50/52:52-52:53/52:55-52:67/52:69-52:72/52:74/52:76/52:78-52:87/52:89N-52:96N/52:98-52:111	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	31+37+40	-
B*52:51	32+37+40	-
B*52:54	15+37+40	-
B*52:73	37+40w	-
B*52:77	2+37+40	-
B*52:88	8w+37w+40	-
B*53:01:01-01-53:01:25/53:01:27-53:02/53:05:01-53:06/53:08:01-53:08:02/53:10/53:15-53:16/53:18-53:27/53:29/53:32/53:34-53:35/53:37/53:41-53:43:02/53:45-53:46/53:48N-53:54/53:56-53:61/53:63-53:64/53:66/53:68-53:71	6+7+8+37	B53, -, Null
B*53:01:26	4+6+7+8+37	-

Allele	Mixes	Serology
B*53:04/53:33	6+7+8+11+37	-
B*53:07	7+11	B53
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, 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, B*56:01:13/56:10/56:19N/56:66	27+28	-, B55(22), B22, Null
B*54:03/54:33/54:40	27+28+29+30	-
B*54:04/54:11/54:42	28+29	-, B54(22)
B*54:06, B*56:22/56:88	28w+30	-
B*54:07	27+28w+29	-
B*54:09	28w	-
B*54:12	28+29+31+37	-
B*54:14	28w+29	-
B*54:15, C*03:464	29	-
B*54:30	27+29	-
B*54:36	27w+28w+29	-
B*54:41/54:46	27w+29	-
B*55:01:04	27+28+39+41	B55(22)
B*55:02:11	27+39+41	-
B*55:08/55:51, B*56:07/56:15/56:46	28+30	B56(22), -
B*55:14	21+28	-
B*55:18/55:61/55:78/55:94/55:118N, B*56:08/56:17/56:23/56:42/56:44/56:54/56:89/56:91, 01:90/01:136/01:145:01N, 03:19/03:307/03:318N, 07:289/07:536/07:725, 08:207, 12:03:66/12:15/12:208, 15:07:01:01-15:07:01:02/15:43/15:85/15:144	27	-, Null, Cw3



Allele	Mixes	Serology
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*55:134, B*56:01:01:01-56:01:12/56:01:14-56:02:03/56:04:01:01-56:04:04/56:16/56:20:01-56:20:02/56:24-56:30/56:34-56:38N/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	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*57:01:01:01-57:01:01:27/57:01:03-57:01:18/57:01:20-57:01:32/57:01:34-57:01:46/57:04:01-57:04:03/57:06/57:08/57:10/57:14:02-57:15/57:18-57:21/57:23-57:27/57:29-57:31:02/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:75/57:77-57:79N/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-57:165	34+35	B57(17), -, Null
B*57:01:02/57:01:33/57:02:01:01-57:03:05/57:09/57:16-57:17/57:28N/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	35	B57(17), -, Null

Allele	Mixes	Serology
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*58:01:01:01-58:01:04/58:01:06-58:01:15/58:01:17-58:01:19/58:01:21-58:01:28/58:01:30-58:01:44/58:04-58:05/58:09-58:13/58:17N/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-58:103/58:105-58:110/58:112-58:113/58:115/58:117-58:118/58:120/58:123-58:131/58:133N-58:134/58:136/58:139-58:140	8+36+37	B58(17), -, Null
B*58:01:16/58:02:01:01-58:02:02/58:07/58:15-58:16:02/58:18/58:25-58:26/58:38/58:43/58:60/58:104/58:121/58:132/58:137	36	-, B58(17)
B*58:01:20/58:75/58:93N/58:114	8w+36+37w	-, Null
B*58:06/58:46	36+45	-
B*58:08:01-58:08:02	36+37+45	B17, -
B*58:14	35+36	-
B*58:19/58:78/58:91	8+36+37+45	-
B*58:20	11+36	-
B*58:34	8+11+36+37	-
B*58:36	8+34+36+37	-
B*58:44	8+19+21+36+37	-
B*58:64	5+36	-
B*58:73	8+31+36+37	-
B*58:111	8+17+36+37	-
B*58:122	36+37	-
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, -

Allele	Mixes	Serology
B*67:02:01:01-67:02:01:02	12+33	-
B*73:01:01:01-73:03	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	-

w = weak

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

**Table 6:** Amplification patterns of **HLA-DRB1\*** and other HLA-DRB\* alleles detected by the HLA-DRB1\* CTS-PCR-SSP primer mixes (**Lot No. DR43-3**) based on IMGT/HLA Sequence Database Release 3.51.0, January 2023

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
DRB1*01:01:01:01:01:01:30/01:01:32-01:01:44/01:01:46-01:02:11/01:02:13-01:17/01:19-01:20:02/01:23-01:32/01:35-01:38/01:41-01:43/01:45-01:48/01:50-01:59/01:61-01:64/01:66-01:74/01:77-01:133/01:135-01:141	DR1, -, DR103, Null	1																						
DRB1*01:01:45	-	?																						
DRB1*01:21	-	1							w															
DRB1*01:34	-	1										w												
DRB1*01:39N-01:40N/01:49/01:65:01-01:65:02	Null, -	w																						
DRB1*01:75	-	1											12											
DRB1*03:01:01:01:03:01:01:25/03:01:03/03:01:05-03:01:06/03:01:08-03:01:13/03:01:15-03:01:41/03:04:01-03:04:02/03:06/03:11:01/03:11:03/03:13:01/03:15:01:01-03:15:01:02/03:16/03:18-03:20/03:22-03:23/03:25:01-03:26/03:28/03:30-03:34/03:36-03:37/03:39/03:43-03:45/03:47-03:48/03:50-03:52:02/03:55-03:56/03:58/03:60-03:62/03:64/03:66-03:73/03:75/03:77-03:78/03:80/03:82-03:83/03:85-03:86/03:89/03:91/03:93-03:96/03:98-03:99/03:104/03:106-03:110/03:112/03:114/03:116-03:118/03:121/03:123-03:124/03:128-03:129/03:132-03:134/03:136-03:139/03:141-03:144/03:146-03:153/03:159-03:161/03:163-03:166/03:168-03:170/03:172-03:173/03:175/03:180-03:184/03:186/03:189N/03:192-03:204N	DR17(3), -, DR3, Null				4	5												17						
DRB1*03:01:02:01-03:01:02:02/03:13:02/03:15:02/03:145	DR17(3), -				w	5												17						
DRB1*03:01:04/03:76/03:84/03:92/03:174N, DRB1*13:129/13:326	DR17(3), -, Null					5												17						
DRB1*03:01:07/03:46/03:59/03:79	DR17(3), -				4	5												w						
DRB1*03:01:14/03:127/03:135/03:190	-				w	5												w						
DRB1*03:02:01:01-03:02:01:02/03:02:03-03:02:06/03:05:01-03:05:02/03:09/03:14/03:27/03:29/03:53/03:74/03:81/03:88/03:90/03:102-03:103/03:115/03:122/03:131/03:154/03:167/03:176/03:178-03:179/03:188	DR18(3), -, DR3				4		6												17					
DRB1*03:02:02/03:05:03	DR18(3), DR3				w		6											17						
DRB1*03:03/03:07:01:01-03:07:02/03:17/03:21/03:24/03:35/03:40-03:41:02/03:57/03:63/03:101/03:105/03:113/03:119-03:120/03:171/03:185	DR18(3), DR3, -				4													17						
DRB1*03:08/03:65/03:140	-				4	5							12											
DRB1*03:10/03:191	DR17(3), -				4	5												17	18					
DRB1*03:12	DR3				4	?										15		17						
DRB1*03:38	-				4		6											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
DRB1*03:42/03:87, DRB3*01:34, DRB3*03:33	-					5																21		
DRB1*03:49	-				4			7										17						
DRB1*03:54/03:100:01-03:100:02/03:205	-				4	w												17						
DRB1*03:97, DRB1*11:293, DRB1*13:45/13:76/13:197/13:206, DRB1*14:01:01:01-14:01:05/14:05:01:01-14:05:05/14:07:01-14:08/14:14/ 14:16/14:22-14:23:04/14:25:01-14:26/14:32:01-14:32:03/14:35-14:36/ 14:38:01-14:38:02/14:42-14:45/14:49/14:53-14:54:01:17/14:54:03-14:54:07/ 14:54:09-14:56/14:58/14:60/14:62/14:69-14:70/14:72/14:74-14:75/14:86- 14:88/14:90-14:92N/14:96-14:97/14:99/14:101/14:103/14:105/14:110/ 14:112-14:114/14:117-14:119/14:122/14:124/14:126:01-14:126:02/14:128- 14:131/14:137N/14:139-14:140/14:142/14:146-14:147/14:149-14:151/14:153/ 14:155/14:157-14:158/14:160/14:162-14:164/14:166N-14:168/14:172-14:173/ 14:175/14:178/14:184-14:193/14:197N/14:202-14:204/14:205:02/14:207- 14:208/14:211/14:213-14:217/14:219/14:221/14:225/14:227-14:228/14:230/ 14:232/14:234-14:238/14:240/14:243-14:245/14:251	-, DR14(6), DR6, DR13(6), Null																	17	18					
DRB1*03:111/03:162, DRB1*09:06	-					5																		
DRB1*03:125, DRB1*13:27:01-13:27:02/13:176	-, DR13(6)					5									14			17						
DRB1*03:126, DRB1*14:95/14:132	-					5												17	18	19				
DRB1*03:130	-				w		6											w						
DRB1*03:155	-				4											15		17						
DRB1*03:156N	Null				4	5																		
DRB1*03:157	-					5												17		w				
DRB1*03:158	-				4	5										15		17						
DRB1*03:177	-					5												17		19				
DRB1*03:187	-				4	5												?						
DRB1*04:01:01:01-04:05:11/04:05:13-04:11:03/04:11:05-04:14/04:16-04:60/ 04:62-04:137/04:139-04:144/04:146-04:153/04:155/04:157N-04:169/04:171- 04:210/04:212N-04:264N/04:266N-04:290/04:292-04:322/04:324-04:338/ 04:340-04:361, DRB1*14:10:01:01-14:10:01:02/14:57/14:143/14:182	DR4, -, Null, DR14(6)							7																
DRB1*04:15/04:61/04:138/04:145/04:154/04:170/04:265/04:291/04:323/ 04:339, DRB1*11:102:01-11:102:02/11:175/11:275/11:278	DR4, -							7					12											
DRB1*04:211	-							7														19		
DRB1*07:01:01:01-07:01:01:02/07:01:01:04-07:01:30/07:03-07:139/07:141- 07:146	DR7, -, Null								8															
DRB1*07:140	-								?															

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		
DRB1*08:01:01:01-08:01:02/08:01:04-08:01:05/08:01:07-08:02:04/ 08:03:02:01-08:04:01:05/08:04:03-08:07/08:09:01-08:19/08:21-08:24:02/ 08:26-08:28/08:30:01-08:30:03/08:33/08:35-08:37/08:39-08:40/08:42-08:46/ 08:48-08:51/08:54-08:56/08:58-08:62/08:64-08:66/08:68:01-08:68:02/08:70- 08:74/08:76-08:79/08:81-08:86/08:88-08:108/08:110-08:111/08:114-08:119, DRB1*14:15	DR8, -, Null									9								17								
DRB1*08:02:05	-									?								?								
DRB1*08:08/08:29, DRB1*14:04:01:01-14:04:09/14:28/14:31/14:50:01- 14:50:02/14:68:01-14:68:02/14:71/14:73/14:76/14:79/14:93/14:107/14:120/ 14:138/14:145/14:152N/14:180/14:196/14:201/14:205:01/14:206/14:210Q/ 14:220/14:224/14:229/14:233/14:241/14:250	-, DR1404, DR14(6), Null									9								17	18							
DRB1*08:20/08:67, DRB1*11:264, DRB1*13:07:01-13:09/13:11:01-13:11:02/ 13:14:01-13:14:03/13:17/13:19/13:22:01:01-13:23:02/13:25/13:37/13:44/ 13:46-13:47/13:50:01/13:52/13:57/13:60/13:62/13:64/13:68/13:70/13:72/ 13:82-13:84/13:86/13:97:01-13:97:02/13:106-13:107/13:114/13:116/13:132/ 13:135/13:150/13:172/13:175/13:178/13:180/13:182/13:192/13:204/13:224/ 13:229/13:231-13:232/13:246/13:250/13:278Q/13:284/13:286/13:314/ 13:316/13:330/13:335, DRB1*14:20-14:21/14:34/14:37/14:40-14:41/14:77/ 14:84/14:94/14:100/14:102/14:116/14:123/14:127:01-14:127:02/14:136/ 14:156/14:159/14:181/14:183	-, DR13(6), DR14(6)																	17								
DRB1*08:25/08:47, DRB1*12:16:01-12:16:03/12:22/12:39:01-12:39:02	-									9				13				w								
DRB1*08:31, DRB1*11:01:01:01/11:01:01:03-11:02:02/11:02:04-11:02:07/ 11:04:01:01-11:04:12/11:04:14-11:06:03/11:08:01-11:08:03/11:10:01- 11:10:02/11:12:01-11:15:02/11:18-11:19:03/11:21/11:23:01-11:25/11:27:01- 11:28:01:02/11:28:03-11:35/11:37:01-11:39/11:42:01-11:51/11:56-11:57/ 11:58:02/11:60-11:62:02/11:64-11:66:02/11:69-11:70/11:72-11:75/11:77- 11:82/11:84:01-11:84:03/11:88/11:90-11:93/11:95-11:101:03/11:104/11:106/ 11:108-11:109/11:111-11:112/11:114/11:116-11:121/11:124:01-11:124:02/ 11:126-11:134/11:137/11:140-11:149/11:152-11:155/11:157-11:158/11:160/ 11:162-11:166/11:169N-11:171/11:174/11:177-11:181/11:183-11:184/11:186/ 11:188-11:191/11:194:01-11:201/11:204-11:207/11:209-11:210/11:212/ 11:214-11:230/11:232/11:234-11:236/11:238-11:240/11:242-11:253/11:255- 11:259/11:261-11:263/11:265-11:266/11:268-11:274/11:276-11:277/11:279/ 11:281-11:282/11:284-11:292/11:295-11:300/11:302-11:312	DR11(5), -, Null												12													
DRB1*08:32/08:53/08:87, DRB1*12:46	-									9				13				17								
DRB1*08:34/08:52/08:109/08:112-08:113	-									9								w								
DRB1*08:38	-							7		9								17								

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
DRB1*08:41/08:63/08:75, DRB1*11:67/11:193:01-11:193:02	-									9			12											
DRB1*08:69	-									9														
DRB1*09:01:02:01-09:05/09:08/09:10-09:22/09:24-09:52N	DR9, -, Null										10													
DRB1*09:07	-										10										20			
DRB1*10:01:01:01/10:01:01:03-10:11/10:13-10:22/10:24-10:30/10:32-10:45	DR10, -											11												
DRB1*10:23	-											11	12											
DRB1*10:31	-											w												
DRB1*11:03:01-11:03:04/11:11:01/11:11:03/11:36/11:41/11:55/11:63:01-11:63:02/11:68/11:76/11:85/11:138-11:139/11:151/11:161/11:168/11:176/11:213/11:231/11:233/11:237/11:241/11:260/11:301N	DR11(5), -, Null												12			15								
DRB1*11:07:01/11:103:01-11:103:02/11:105/11:107/11:125/11:136/11:173	DR11(5), -				4								12											
DRB1*11:07:02	-				w								12											
DRB1*11:09:01:01-11:09:01:02/11:87	DR11(5), -					6							12	14		16				19				
DRB1*11:16:01:01-11:16:01:02	DR11(5)/DR13(6), -												12	14										
DRB1*11:17/11:52/11:54:01-11:54:02/11:89/11:150/11:159/11:202/11:267/11:283, DRB1*14:11:01:01-14:11:01:02	-, DR11(5), DR14(6)												12						18					
DRB1*11:20	DR11(5)					6							12	14										
DRB1*11:22	-							7					?											
DRB1*11:26	DR11(5)												?											
DRB1*11:28:02	-					6							12	14		16				w				
DRB1*11:40	-												?	w	15	w								
DRB1*11:53	-				4								12						18					
DRB1*11:58:01/11:115	-												12	14		16				w				
DRB1*11:59	-					5							12	w	15	w								
DRB1*11:83/11:182	-					5							12	14		16				19				
DRB1*11:113	-												12	14		16				19				
DRB1*11:122	-						6						12	w	15	w								
DRB1*11:135	-					5							12											
DRB1*11:203/11:211/11:254	-												w											
DRB1*11:280	-												12							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
DRB1*12:01:01:01-12:01:04/12:01:06-12:01:07/12:01:09-12:01:11/ 12:02:01:01-12:02:05/12:02:07-12:03:03/12:05-12:08/12:10-12:15/12:17/ 12:19:01-12:19:02/12:21/12:23/12:26-12:30/12:32/12:34-12:38/12:40-12:41/ 12:43-12:45/12:50-12:53/12:55-12:56/12:59-12:61/12:63-12:65/12:68-12:75/ 12:77-12:82/12:84-12:88/12:90-12:95/12:97-12:103	DR12(5), -, Null													13				w						
DRB1*12:01:05/12:20	-													w				w						
DRB1*12:01:08/12:02:06/12:18/12:33/12:47	-													13										
DRB1*12:01:12	-													13				?						
DRB1*12:04/12:49	-												12	13										
DRB1*12:09/12:24N-12:25/12:48/12:54/12:62/12:67/12:76	-, Null													13				17						
DRB1*12:58	-													13				w		19				
DRB1*12:66	-													13				w		18				
DRB1*12:89	-													?				?						
DRB1*12:96	-									9				13				17	18					
DRB1*13:01:01:01-13:01:40/13:02:04/13:10/13:15-13:16:01:02/13:28:01- 13:28:02/13:35/13:40/13:51/13:53/13:59/13:61:01-13:61:02/13:69/13:79- 13:80/13:87/13:91-13:92/13:98/13:102/13:105/13:110/13:112-13:113N/ 13:117:01:01-13:117:01:02/13:121/13:125/13:127/13:130-13:131/13:137N- 13:138/13:141/13:148/13:153/13:166/13:173/13:177/13:184-13:187/13:190/ 13:201/13:205/13:213-13:215/13:221-13:222/13:226/13:233/13:238/ 13:242:01-13:242:02/13:245/13:251-13:252N/13:254/13:256/13:258-13:263/ 13:266-13:267/13:270-13:274/13:279/13:281/13:283/13:287/13:290-13:291/ 13:294/13:300/13:303-13:305/13:308-13:309/13:311/13:313/13:315/13:322N- 13:324N/13:327-13:328	DR13(6), -, Null														14			17						
DRB1*13:01:41/13:160/13:218	-														14			w						
DRB1*13:02:01:01-13:02:03/13:02:05-13:02:11/13:02:13-13:02:22/13:31/ 13:34/13:36/13:39/13:41/13:73-13:74/13:85/13:96:01-13:96:02/13:99/ 13:104/13:109/13:123-13:124/13:126/13:128/13:140/13:142N-13:143/ 13:145/13:147/13:155/13:168/13:170/13:171:02/13:198/13:202/13:207- 13:212/13:220/13:225/13:236-13:237/13:239-13:241/13:243-13:244/13:255N/ 13:257/13:264-13:265/13:268N-13:269/13:275/13:280/13:282/13:285/13:288- 13:289N/13:292-13:293/13:297-13:298N/13:301/13:306/13:310N/13:318/ 13:320/13:325/13:332/13:334	DR13(6), -, Null						6								14			17						
DRB1*13:02:12/13:103/13:165	-						6								14			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
DRB1*13:03:01:01-13:04/13:12:01-13:13/13:20:01:01-13:21:02/13:24:01:01-13:24:01:03/13:30/13:33:01-13:33:03/13:38/13:48-13:49:02/13:55/13:58/13:66:01-13:66:02/13:75/13:78/13:81/13:88-13:90/13:94:01-13:95/13:101/13:108/13:115/13:118/13:122/13:133-13:134/13:149/13:151-13:152/13:154/13:161/13:164/13:167/13:169/13:174/13:194/13:216/13:219/13:227/13:230/13:247/13:253/13:276/13:295N/13:307/13:317/13:319N/13:321/13:329N/13:333, DRB1*14:65	DR13(6), -, Null															15		17						
DRB1*13:05:01:01-13:05:03/13:26:01-13:26:02/13:136/13:158:01-13:158:02/13:203/13:277, DRB1*14:27:01-14:27:02	DR13(6), -, DR14(6)					6									14	16	17		19					
DRB1*13:06/13:146/13:156	DR13(6), -														14			17	19					
DRB1*13:18/13:42:01-13:42:02	DR13(6), -														14	16	17		19					
DRB1*13:29:01:01-13:29:01:02	DR13(6), -					6										15		17						
DRB1*13:32/13:93	-														14	15		17						
DRB1*13:43/13:188, DRB1*14:169	-															15		17	18					
DRB1*13:50:02-13:50:03/13:189	-					6									14	16	17		w					
DRB1*13:54	DR14(6)															15		w						
DRB1*13:56/13:119/13:235, DRB1*14:02:01:01-14:02:07/14:02:09-14:03:02/14:09/14:30/14:47/14:89/14:115/14:135/14:144/14:174/14:179/14:194/14:198/14:209/14:218/14:223/14:239/14:242:01-14:242:02	-, DR14(6), DR1403					6												17		19				
DRB1*13:63	-					6									w	15	w	17						
DRB1*13:65/13:120/13:139	-					6									14	15		17						
DRB1*13:67	-					6									14									
DRB1*13:71	-					5										15		17						
DRB1*13:77, DRB1*14:177/14:195N	-, Null																	w		19				
DRB1*13:100/13:162	-																	w						
DRB1*13:111	-														w	15	w	17						
DRB1*13:144	-					5									14	16	17		19					
DRB1*13:157/13:331, DRB1*14:67	-					6									14			17		19				
DRB1*13:159/13:171:01/13:179	-					6									14			17	18					
DRB1*13:163/13:181/13:193, DRB1*14:02:08/14:06:01-14:06:06/14:12:01-14:12:02/14:17/14:29/14:52/14:80-14:81/14:83/14:108/14:121/14:165/14:176/14:212	-, DR14(6), DR6																	17		19				
DRB1*13:183/13:200N/13:248-13:249N/13:299	-, Null														14									
DRB1*13:191/13:217	-														14			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
DRB1*13:196/13:312, DRB1*14:19/14:24/14:109/14:226	-, DR14(6)					6												17						
DRB1*13:199	-					6									14	16	w		19					
DRB1*13:223/13:234	-														w			17						
DRB1*13:228	-															15								
DRB1*13:296	-					6									w			17						
DRB1*13:302	-					6									14	16	17	18	19					
DRB1*14:13/14:85	DR14(6), -					6										15		17	19					
DRB1*14:18/14:33/14:59/14:64/14:106/14:133/14:154/14:246	DR6, -																	17	18	19				
DRB1*14:39/14:54:02/14:61/14:199	-																		18					
DRB1*14:46/14:222N	-, Null					6														19				
DRB1*14:48	-					6												w		19				
DRB1*14:51/14:134/14:200	-					6												17	18	19				
DRB1*14:54:08	-																	w	18					
DRB1*14:63	-					6									14	15	17		19					
DRB1*14:78	-														14	15	17		19					
DRB1*14:82	-					5												17	18					
DRB1*14:98	-					6												17		w				
DRB1*14:104/14:111	-				w													17	18					
DRB1*14:125	-																	w	w					
DRB1*14:141, DRB3*01:01:02:01-01:07/01:09-01:13/01:15-01:33/01:35-01:41/01:43-01:45/01:47-01:51/01:53-01:67/01:69-01:70/01:72-01:94/01:96-01:103/01:105N-01:106/01:108/01:110-01:112, DRB3*02:01-02:05:02/02:07-02:17/02:19/02:21-02:25/02:28-02:46/02:48-02:57/02:59-02:65/02:67N-02:77/02:79-02:90/02:92-02:108/02:110/02:112-02:116/02:118-02:123/02:125N-02:130/02:132-02:142/02:144-02:159/02:161/02:163-02:189, DRB3*03:01:01:01-03:01:12/03:01:14-03:21/03:23-03:32/03:34-03:45/03:47-03:61	-, DR52, Null																					21		
DRB1*14:148	-									9									18					
DRB1*14:161	-							7										17	18					
DRB1*14:170	-															15	17		19					
DRB1*14:171	-				4													17	18					
DRB1*14:248	-																	?	?					
DRB1*14:249	-									9								17	?					

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
DRB1*15:01:01:01-15:01:21/15:01:23-15:20/15:22-15:33/15:35-15:98/15:100-15:108/15:110-15:112/15:114-15:216	DR15(2), -, DR2, Null		2																					
DRB1*15:21, DRB1*16:09:01-16:10:02/16:33/16:36-16:37/16:58/16:66	-, DR16(2)		2	3																				
DRB1*15:99/15:109	-		2										12											
DRB1*15:113N	Null		w																					
DRB1*16:01:01:01-16:01:08/16:01:10-16:05:02/16:07/16:11-16:15/16:17-16:26/16:28-16:32/16:34-16:35/16:38:01-16:49/16:51-16:57/16:59Q-16:65/16:67-16:73	DR16(2), -, DR2, Null			3																				
DRB1*16:01:09	-			w																				
DRB1*16:08	-			3		6									14	16			w					
DRB1*16:16/16:27	-			3									12											
DRB3*01:08/01:46/01:52/01:71, DRB3*02:20	-					6																21		
DRB3*01:14	-				w													w						
DRB3*01:42, DRB3*02:18	-												12									21		
DRB3*01:107, DRB3*02:190	-																					?		
DRB3*02:06	-					?																21		
DRB3*02:78/02:109N/02:117/02:124/02:162, DRB3*03:01:13/03:46	-, Null																					w		
DRB4*01:01:01:01/01:01:01:03-01:01:01:04/01:02-01:03:01:01/01:03:01:03-01:03:01:12/01:03:01:14-01:03:02:02/01:152, DRB4*02:01N	DR53, -, Null																						22	
DRB4*01:03:01:02N/01:03:01:13N	Null																							23
DRB5*01:01:01:01-01:01:09/01:01:11-01:02:01/01:03-01:12/01:14-01:25/01:27N-01:40/01:42-01:47/01:49N-01:50/01:52N-01:72/01:75-01:78/01:80-01:86/01:88-01:96/01:98-01:109/01:111-01:112/01:114-01:130, DRB5*02:02:01-02:37	DR51, -, Null																					20		
DRB5*01:02:02/01:26/01:48N/01:74/01:113	-, Null																					w		
DRB5*01:13/01:41	-												12									20		

w = weak

? = nucleotide sequence information not available for the primer matching sequence or alleles with unknown reactivities (HLA-DRB1\*08:04:02 is not listed)

## 14. Certificates of Analysis



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**CTS** Collaborative Transplant Study

# Certificate of Analysis

## HLA-A\* CTS-PCR-SSP Tray Kit

Product number	101
Lot number	A17-2
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	20.03.2023
Approved by	H. Tran, M.D. Quality Control, Supervisor



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**CTS** Collaborative Transplant Study

## Certificate of Analysis

### HLA-B\* CTS-PCR-SSP Tray Kit

Product number	102
Lot number	B16-2
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	20.03.2023
Approved by	H. Tran, M.D. Quality Control, Supervisor



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## Certificate of Analysis

### HLA-DRB1\* CTS-PCR-SSP Tray Kit

Product number	104
Lot number	DR43-3
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	24.04.2023
Approved by	H. Tran, M.D. Quality Control, Supervisor