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<b>Manual No.</b>	<b>02</b>
<b>Revision</b>	<b>August 24, 2017</b>
<b>Product No.</b>	<b>102</b>
<b>Lot No.</b>	<b>B15-2</b>


**CTS** Collaborative Transplant Study

**WORKING INSTRUCTION**

**HLA-B\***  
**CTS-PCR-SSP TRAY KIT**

**LOCUS- AND LOT-SPECIFIC MANUAL**

To be applied to the following product:

<b>Product No.</b>	<b>Description</b>
102	HLA-B CTS-PCR-SSP TRAY KIT 

**1. Main differences**

- **Between Lot B15-2 (the current lot) and Lot B15-1:**  
Mix 31 was optimized.

**2. Introduction**

- Intended use: This kit reveals a low/intermediate resolution typing of HLA-B using the PCR-SSP method.
- Allele coverage: IMGT/HLA Sequence Database Release 3.27.0, January 2017, except:  
B\*08:01:32/08:12:03/08:26:01-08:26:03/08:50/08:94/08:112/08:170, B\*13:22:01-13:22:02/13:58/13:86/13:97, B\*14:02:03/14:02:06/14:08:01-14:08:02/14:21/14:42/14:53/14:55, B\*15:162/15:253/15:396, B\*27:05:23/27:75/27:140, B\*37:05/37:22/37:29, B\*39:01:11/39:06:05/39:24:02/39:30/39:34/39:36/39:80/39:82/39:107, B\*44:02:13/44:03:37/44:83/44:134/44:201, B\*51:45/51:81/51:148, B\*53:38/53:44, B\*55:58, B\*57:82, B\*58:27 and B\*59:08.  
The alleles listed above are considered to be rare and can be detected e. g. by sequencing with the CTS-SEQUENCE Kit (you may contact us for further information).
- This manual is only valid for **Lot No. B15-2**.
- This manual should be used together with the Main Manual (General Information), 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: 48 allele-specific mixes
- Number of tests per tray: 2
- Number of trays per kit: 10
- The primer mixes are aliquoted and dried in thin-walled, purple 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 Table (Table 1) to confirm the correct product size.
- Use the Amplification Pattern Tables (Table 2 and 3) to make the allele assignment, or use the SCORE Software ([www.IHWG.org](http://www.IHWG.org)) for detailed result interpretation.

#### 8. Interpretation Hints

- The quality and quantity of DNA as well as of the Taq polymerase are extremely crucial factors. If your bands are too weak, you might try to adjust these two factors until you obtain optimal results.
- Please refer to Section 7 of the 'Working instruction for the CTS-PCR-SSP TRAY and MINITRAY KITS' (Manual No. 100A) supplied along with this product.

#### 9. Special notes

- The following mixes will give **short** allele-specific PCR products (<200 bp): **mixes 5, 9, 20, 43, and 47**. These PCR products might be difficult to be distinguished from the 89 bp amplification control (internal positive control) PCR product. In general, the allele-specific product will give a much stronger signal than that of the amplification control and will not migrate as far into the gel as the amplification control band. If you are not sure whether the (strong) signal represents an allele-specific product or just the amplification control, you might let the gel run for an additional 15 minutes at a lower voltage. By this way, the allele-specific band can be separated from the amplification control band and you will be able to clearly see a double signal at this position: a strong allele-specific band and - compared to that - a weaker shorter amplification control band. Since three of these mixes correspond to quite frequent alleles (B\*18 and B\*35 = mix 5; B\*27 = mix 9; B\*15(62) = mix 43), it is recommended to start your evaluation by checking these four reactions carefully first!
- Some HLA-B\* mixes will amplify **two or even three fragments of different sizes** (e. g. mixes 9, 15, 19, 25 and 35). Mixes with 2 fragments of almost the same size are not mentioned here.
- **Mix 9**
  - The most common B\*27 alleles (B\* 27:02, \*27:04 and \*27:05) will generate two fragments: a **short** fragment (155 bp) + a **long** fragment (525 bp).
  - Amplification of B\*27:06 will result **only** in a **short** fragment (155 bp).
  - B\*47:01:01:01-47:08 will **only** give rise to a **long** fragment (525bp).
- **HLA-B\*07**
  - The common HLA-B\*07 alleles react positively with mix 1 and mix 28. Some HLA-B\*07 alleles may cause additional weakly positive reactions with mix 24, especially if high amounts of Taq polymerase or high DNA-concentrations are used.

- **HLA-B\*13**

- **B\*13:01** reacts positively with **mix 3**, whereas **B\*13:02** is amplified by **mix 3 and mix 34**.
- The rare alleles **B\*13:03 and B\*13:04** can only be detected by **mix 34**.
- **Mix 34** may show **different PCR products for B\*13**:
  - 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).

## **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 me or my coworkers at:

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E-mail: [hien.tran@med.uni-heidelberg.de](mailto:hien.tran@med.uni-heidelberg.de)

Hien Tran, M.D.

### 13. Appendix

**Table 1:** Sizes of the PCR products and allele specificities of each **HLA-B\*** CTS. PCR-SSP primer mix (**Lot-No B15-2**) based on IMGT/HLA Sequence Database Release 3.27.0, January 2017

Position	Position	Mix	Allele	Serology	Size
H1	H7	Mix 1	<b>B*07:02:01:01-07:02:32/07:02:33w/07:02:34-07:02:42/07:02:43w/07:02:44-07:05:05/07:05:06w/07:05:07-07:18:02/07:20-07:32/07:34-07:39/07:41-07:52/07:55-07:59/07:61-07:93/07:95-07:99/07:101-07:121/07:124-07:138/07:140-07:164/07:166-07:218/07:220-07:234/07:236-07:242/07:244-07:289, B*08:79/08:156, 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, B*48:06, B*81:01-81:08, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02</b>	B7, -, B703, B7/B42, Null, B81, Cw7	see below
			B*07:02:01:01-07:02:32/07:02:33w/07:02:34-07:02:42/07:02:43w/07:02:44-07:05:05/07:05:06w/07:05:07-07:12/07:14-07:18:02/07:20-07:32/07:34-07:39/07:41-07:52/07:55-07:59/07:61-07:93/07:95-07:99/07:101-07:121/07:124-07:138/07:140-07:164/07:166-07:218/07:220-07:234/07:236-07:242/07:244-07:289, B*08:79/08:156, 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*81:01-81:08	B7, -, B703, B7/B42, Null, B81	630 bp
			B*07:13, B*46:06, C*02:23, C*03:260, C*04:77, C*07:38:01-07:38:02	-, Cw7	615 bp
G1	G7	Mix 2	<b>B*07:29/07:186, B*08:01:01:01-08:01:31/08:01:33-08:05/08:07-08:12:02/08:13-08:25/08:27-08:48/08:51-08:61/08:63-08:93/08:95-08:106/08:108-08:111/08:113-08:169/08:171-08:175, B*13:93, B*15:142/15:180, B*39:12, B*40:328, B*44:49/44:156, B*49:25, B*51:68/51:176, C*02:14:01-02:14:02/02:107, C*06:02:37/06:106:01/06:127:02, 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, C*12:16</b>	-, B8, Null, B39(16), Cw7	see below
			B*08:09/08:84, B*13:93, B*49:25, B*51:68/51:176, C*07:463	B8, -	545 bp
			B*07:29/07:186, B*08:01:01:01-08:01:31/08:01:33-08:05/08:07-08:08N/08:10-08:12:02/08:13-08:25/08:27-08:48/08:51-08:61/08:63-08:83/08:85-08:93/08:95-08:106/08:108-08:111/08:113-08:169/08:171-08:175, B*15:142/15:180, B*39:12, B*40:328, B*44:49/44:156, C*02:14:01-02:14:02/02:107, C*06:02:37/06:106:01/06:127:02, 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, C*12:16	-, B8, Null, B39(16), Cw7	560 bp
F1	F7	Mix 3	B*13:01:01-13:02:19/13:06-13:21/13:23/13:25-13:36/13:37w/13:38-13:39/13:41-13:44/13:47/13:49N-13:57/13:59-13:61/13:63N-13:85/13:87-13:96/13:98-13:99	B13, -, Null	585 bp
E1	E7	Mix 4	B*15:64:02, B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:02-18:07:01/18:08-18:12:01/18:13-18:15/18:17N-18:25/18:27-18:28/18:30-18:36/18:38-18:40/18:42-18:47/18:49-18:54/18:56-18:60/18:62-18:81/18:83-18:96/18:98/18:99w/18:100-18:106/18:107w/18:108-18:121/18:123-18:134, B*35:20:02, B*44:03:12w	-, B18, Null, B35	465 bp
D1	D7	Mix 5	B*07:65/07:134, B*08:32/08:133, B*15:202/15:239/15:308/15:376, B*18:01:01:01-18:08/18:10-18:15/18:17N-18:36/18:38-18:47/18:50-18:53/18:55-18:65/18:68-18:78/18:80-18:106/18:109-18:124/18:126-18:131/18:133-18:134, B*35:01:01:01-35:03:02/35:03:04-35:08:01/35:08:03-35:08:04/35:08:06-35:18/35:20:01-35:24:02/35:28-35:45/35:48/35:50-35:55/35:57-35:62/35:64:01-35:72/35:74-35:153/35:155-35:197/35:199-35:202/35:204-35:206/35:208-35:209/35:211-35:216N/35:218-35:253/35:255-35:270/35:272-35:273/35:275-35:298/35:300-35:310/35:312-35:316/35:318-35:335, B*37:11/37:14/37:37, B*39:19:01-39:19:02, B*40:185/40:209/40:308/40:350, B*46:40:01-46:40:02, B*56:06/56:45, B*58:64, B*78:01:01:01-78:05/78:07-78:08	-, B18, Null, B35, B35/22, B39(16), B78	135 bp

Position	Position	Mix	Allele	Serology	Size
C1	C7	Mix 6	B*08:107, B*35:01:01:01-35:01:16/35:01:18-35:02:05/35:02:06w/35:02:07-35:03:06/35:03:08-35:04:02/35:05:01:01-35:09:03/35:11:01-35:11:03/35:14:01-35:15:02/35:17:01-35:19/35:21/35:23-35:25/35:27/35:29:01-35:30/35:32:01/35:33-35:38/35:40N-35:42:02/35:45-35:50/35:52-35:58/35:61:02-35:62/35:64:01-35:66/35:68:01-35:68:02/35:70-35:71/35:74-35:75/35:77-35:78/35:81/35:84/35:89-35:94/35:96-35:98/35:100-35:101:02/35:103-35:111/35:113-35:116/35:119-35:134N/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-35:225/35:227-35:229/35:231-35:232/35:235-35:241/35:243-35:250/35:252-35:260/35:262-35:264/35:267-35:269/35:271-35:275/35:277-35:293/35:295/35:297-35:316/35:319-35:335, B*51:56:02, B*53:01:01-53:06/53:08:01-53:08:02/53:10-53:16/53:18-53:27/53:29-53:37/53:39/53:41-53:43/53:45, C*06:147	-, B35, Null, B53	400 bp

Position	Position	Mix	Allele	Serology	Size
B1	B7	Mix 7	B*07:12/07:14w/07:18:01/07:18:02w/07:77/07:137/07:162-07:163/07:193/07:235/07:248, B*08:49/08:129w, B*13:36, B*14:10w, B*15:02:01-15:02:04/15:02:05w/15:02:06-15:02:11/15:13:01-15:13:02/15:21/15:44/15:80w/15:88-15:89/15:112w/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, B*18:18/18:105, B*35:01:01:01-35:01:03/35:01:04w/35:01:05-35:03:19/35:03:20w/35:03:21-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:03/35:11:01-35:11:03/35:12:01w/35:12:02/35:12:03w/35:14:01-35:15:02/35:18-35:21/35:23w/35:24:01/35:24:02w/35:25-35:27/35:29:01-35:29:02/35:33-35:36/35:38/35:39w/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/35:70-35:71/35:74/35:76-35:78/35:81-35:85/35:88/35:90-35:96/35:98/35:100-35:101:02/35:103-35:112/35:115-35:116/35:119/35:120w/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/35:289-35:291/35:293-35:316/35:319-35:335, B*37:08, B*38:20w, B*39:09:01/39:09:03/39:42w/39:88/39:112, B*40:68, B*42:13, B*44:06w/44:12w/44:232w/44:263, B*51:04/51:42w/51:46w/51:56:01w/51:56:02-51:56:03/51:139/51:200, B*53:01:01-53:13/53:15-53:16/53:18-53:27/53:29-53:37/53:39-53:43/53:45, B*56:09/56:11/56:12w, 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
			B*07:12/07:14w/07:18:01/07:18:02w/07:137/07:162/07:235, B*08:129w, B*13:36, B*14:10w, B*15:02:01-15:02:04/15:02:05w/15:02:06-15:02:11/15:13:01-15:13:02/15:21/15:44/15:80w/15:88-15:89/15:112w/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, B*18:105, B*35:01:01:01-35:01:03/35:01:04w/35:01:05-35:03:19/35:03:20w/35:03:21-35:04:03/35:06-35:08:02/35:08:03w/35:08:04-35:09:03/35:11:01-35:11:03/35:12:01w/35:12:02/35:12:03w/35:14:01-35:15:02/35:18-35:21/35:23w/35:24:01/35:24:02w/35:25-35:27/35:29:01-35:29:02/35:33-35:36/35:38/35:39w/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/35:70-35:71/35:74/35:76-35:78/35:81-35:85/35:88/35:90-35:96/35:98/35:100-35:101:02/35:103-35:112/35:115-35:116/35:119/35:120w/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/35:289-35:291/35:293-35:316/35:319-35:335, B*38:20w, B*39:42w, B*40:68, B*42:13, B*44:06w/44:12w/44:232w/44:263, B*51:04/51:42w/51:46w/51:56:01w/51:56:02-51:56:03/51:139, B*53:01:01-53:06/53:08:01-53:13/53:15-53:16/53:18-53:27/53:29-53:37/53:39-53:43/53:45, B*56:09/56:11/56:12w, 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)	380 bp
			B*07:77/07:163/07:193/07:248, B*08:49, B*18:18, B*35:48, B*37:08, B*39:09:01/39:09:03/39:88/39:112, B*51:200, B*53:07	-, B37, B39(16), B53	395 bp
A1	A7	Mix 8	B*15:13:01-15:13:02/15:418, B*27:30w, B*38:20w, B*44:06w/44:25w/44:50:01w/44:95w, B*51:04/51:42w/51:46w/51:56:01w/51:56:02-51:56:03/51:139, B*53:01:01-53:02/53:04-53:06/53:08:01-53:08:02/53:10/53:15-53:30/53:32-53:35/53:37/53:39-53:43/53:45, B*57:05, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:22/58:04-58:05/58:09-58:13/58:17N/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/58:76-58:87, C*15:71	B77(15), -, B27, B44(12), B51(5), B53, B58(17), Null	330 bp

Position	Position	Mix	Allele	Serology	Size
H2	H8	Mix 9	B*27:01-27:05:22/27:05:24-27:21/27:23-27:74/27:76-27:139/27:141-27:152/27:154-27:161, B*40:124:01-40:124:02/40:180, B*44:97, B*47:01:01-47:10, B*50:20	B27, -, B2708, Null, B47	see below
			B*27:02:01:01-27:05:10/27:05:12-27:05:22/27:05:24-27:11/27:13-27:15/27:17/27:19-27:21/27:24-27:25/27:27-27:28/27:30/27:32-27:38/27:40-27:43/27:45-27:58/27:60-27:74/27:76/27:78-27:91/27:93-27:100/27:102-27:118/27:120-27:128/27:130/27:132-27:136/27:138-27:139/27:141-27:152/27:154-27:156/27:158-27:161, B*44:97	B27, -, B2708, Null	155 bp
			B*27:01-27:05:22/27:05:24-27:05:31/27:08-27:10/27:12-27:19/27:23/27:25-27:26/27:28-27:32/27:36-27:40/27:42/27:44-27:45/27:47-27:74/27:77/27:79-27:90:04/27:92-27:101/27:103-27:105/27:108-27:124/27:126/27:128-27:129/27:131-27:134/27:137/27:139/27:141-27:150/27:152/27:155-27:161, B*40:124:01-40:124:02/40:180, B*47:01:01-47:10, B*50:20	B27, -, B2708, Null, B47	530 bp
G2	G8	Mix 10	B*07:27/07:236, B*08:126/08:131/08:139, B*18:54, B*37:01:01-37:04:02/37:06:01-37:09/37:12-37:13/37:15-37:21/37:23-37:28/37:30N-37:33N/37:35-37:36/37:38-37:65, B*38:17, A*11:133, A*33:60	-, B37, Null	200 bp
F2	F8	Mix 11	B*13:46/13:51/13:79, B*37:10/37:34, B*38:01:01-38:02:03/38:02:04w/38:02:05-38:16/38:18-38:51/38:53-38:66, B*39:104, B*44:117/44:251, B*51:13:01-51:13:02/51:92:01-51:92:02/51:172, B*52:14, B*53:04/53:07/53:31/53:33, B*57:76, B*58:20/58:34, B*59:03, A*24:96/24:256	-, B37, B38(16), B16, Null, B53	395 bp
E2	E8	Mix 12	B*07:45w, B*08:55, B*15:48w/15:69/15:108w/15:136w/15:186/15:235/15:249w/15:265, B*35:35/35:236w/35:259w/35:276, B*39:01:01:01-39:01:01:05/39:01:03-39:01:10/39:01:12-39:06:04/39:07-39:20/39:22-39:24:01/39:25N-39:29/39:31/39:32w/39:35/39:37-39:42/39:44-39:46/39:47w/39:48-39:49/39:50w/39:51-39:73/39:74w/39:75-39:79/39:81/39:83-39:101/39:102w/39:103/39:105-39:106/39:108-39:111/39:113-39:126, B*40:184, B*46:19w, B*50:49, B*67:01:01-67:07, C*03:215w, C*07:137:01-07:137:02, C*14:63	-, B62(15), B71(70), B35, B3901, Low B39, B3902, B39(16), Null, B67	520 bp
D2	D8	Mix 13	B*38:26, B*67:01:01-67:01:03/67:03-67:07	-, B67	545 bp
C2	C8	Mix 14	B*07:133, B*40:01:01-40:04/40:06:01:01-40:11:02/40:13-40:16/40:18-40:20/40:22N-40:25/40:27:01-40:27:02/40:29-40:38/40:40/40:42-40:45/40:47-40:50/40:52-40:62/40:64-40:70:02/40:72:01-40:91/40:94-40:136/40:138-40:162/40:164-40:170/40:171w/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/40:316-40:323/40:325-40:342/40:344-40:349/40:351-40:352, B*41:19, B*44:16/44:21/44:31/44:64:01-44:64:02/44:124/44:150, B*45:10, B*47:01:01:01-47:07/47:09-47:10, B*48:41, B*49:07, B*50:31	-, B60(40), B61(40), Null, B40, B47, B44(12)	640 bp



Position	Position	Mix	Allele	Serology	Size
			B*07:27w/07:50w/07:183w, B*08:04:01w-08:04:02w/08:17/08:54:01-08:54:02/08:110w, B*13:21/13:71, B*15:07:01-15:07:03/15:33/15:45/15:55w/15:68/15:78:01-15:78:03/15:107/15:116/15:126/15:141/15:150/15:188/15:207/15:248/15:287/15:324/15:331/15:352/15:360/15:383/15:405/15:421, B*18:14w/18:21w-18:22w/18:40w/18:61w, B*35:72w, B*37:07/37:09/37:12, B*40:01:01-40:01:08/40:01:10-40:06:16/40:09-40:12/40:14:01-40:16/40:18-40:24/40:25w/40:27:01-40:27:02/40:29-40:40/40:42-40:60/40:62-40:67/40:69-40:74/40:76/40:78-40:86/40:88-40:94/40:96-40:105/40:107-40:120/40:122-40:157/40:159-40:161/40:163-40:165/40:167-40:183/40:185-40:195/40:197-40:219/40:221/40:223-40:231/40:233-40:236/40:238-40:299/40:301-40:312/40:313w/40:314-40:321/40:323-40:325/40:326w/40:327-40:352, B*41:01:01-41:45N/41:47-41:50, B*42:11, B*44:31/44:53:01-44:54/44:106/44:110/44:135/44:158/44:166/44:182/44:184/44:192:01-44:192:02/44:211/44:213, B*48:01:01-48:01:06/48:03:01-48:05/48:07-48:24/48:27-48:30/48:32-48:41, B*49:40, B*52:54, C*16:85	-, B62(15), B15, B35, B37, B60(40), B61(40), B4005, Null, B41, B44(12), B48, B48/40	see below
B2	B8	Mix 15	B*07:27w/07:50w/07:183w, B*08:04:01w-08:04:02w/08:17/08:54:01-08:54:02/08:110w, B*13:71, B*15:07:01-15:07:03/15:45/15:55w/15:68/15:126/15:207/15:324/15:331/15:360/15:383/15:405/15:421, B*18:14w/18:22w, B*35:72w, B*37:07/37:09, B*40:02:01:01-40:02:08/40:02:10-40:03/40:05:01:01-40:05:01:02/40:09/40:15-40:16/40:18-40:19/40:27:01-40:27:02/40:29/40:31-40:32/40:35:01-40:35:02/40:37/40:39-40:40/40:45/40:50/40:56-40:58/40:71/40:78/40:80/40:82/40:85/40:89-40:91/40:94/40:97-40:98/40:104-40:105/40:107/40:111/40:115/40:119/40:122/40:133Q/40:142N/40:144N-40:145/40:157/40:164/40:169/40:174/40:176/40:180-40:181/40:189/40:200-40:202/40:205-40:206/40:209/40:211/40:214/40:219/40:224-40:226/40:229/40:246/40:248/40:255/40:266-40:267/40:271/40:274/40:276/40:283-40:284/40:287/40:289-40:293/40:296-40:297/40:302-40:305/40:309/40:314/40:320/40:331/40:334-40:335/40:345N, B*41:02:01-41:02:07/41:04/41:10-41:11/41:13/41:15/41:18-41:19/41:23-41:24/41:27/41:31/41:36/41:38-41:43/41:45N/41:47/41:49, B*42:11, B*44:54/44:106/44:110/44:135/44:158/44:166/44:184/44:211/44:213, B*48:01:01-48:01:06/48:04:01-48:05/48:07-48:16/48:18-48:20/48:22/48:24/48:27-48:30/48:32-48:39/48:41	-, B62(15), B15, B35, B37, B61(40), B4005, B60(40), B41, Null, B44(12), B48	375 bp
			B*07:27w/07:50w/07:183w, B*08:04:01w/08:17/08:110w, B*13:21/13:71, B*15:33/15:78:01-15:78:03/15:107/15:116/15:141/15:150/15:188/15:248/15:287/15:352/15:421, B*18:21w/18:40w/18:61w, B*37:07/37:09/37:12, B*40:01:01-40:01:08/40:01:10-40:02:13/40:02:15-40:02:19/40:02:22-40:06:16/40:09-40:12/40:14:01-40:16/40:18-40:24/40:25w/40:27:01-40:27:02/40:29-40:34/40:36-40:40/40:42-40:60/40:62-40:67/40:69-40:70:02/40:72:01-40:74/40:76/40:78-40:81/40:83-40:86/40:88-40:94/40:96-40:105/40:107-40:120/40:122-40:157/40:159-40:161/40:163-40:165/40:167-40:183/40:185-40:195/40:197-40:210/40:212-40:219/40:221/40:223-40:231/40:233-40:236/40:238-40:254/40:256N-40:299/40:301-40:312/40:313w/40:314-40:321/40:323-40:325/40:326w/40:327-40:352, B*41:01:01-41:02:01/41:03:01-41:09/41:12/41:14/41:16-41:17/41:20-41:23/41:25-41:26/41:28-41:35/41:37/41:44/41:48/41:50, B*44:31/44:53:01-44:53:02/44:182/44:192:01-44:192:02, B*48:01:01-48:01:06/48:03:01-48:05/48:07-48:11/48:13/48:15-48:24/48:27-48:28/48:30/48:33-48:41, B*49:40, B*52:54, C*16:85	-, B15, B62(15), B37, B60(40), B61(40), B4005, Null, B41, B44(12), B48, B48/40	475 bp

Position	Position	Mix	Allele	Serology	Size
A2	A8	Mix 16	B*27:24/27:36/27:125, B*40:01:01-40:01:18/40:01:19w/40:01:20-40:01:49/40:07/40:22N-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/40:198-40:199/40:204/40:207-40:208/40:212-40:213/40:215-40:218/40:221-40:223/40:227-40:228/40:233-40:236/40:238-40:242/40:245/40:247/40:249-40:253/40:257-40:265N/40:272-40:273/40:277-40:282/40:285-40:286N/40:288/40:298-40:301/40:308/40:310/40:312/40:315-40:316/40:319/40:321/40:323-40:324/40:326-40:327/40:329/40:332-40:333/40:336/40:338N-40:339/40:344/40:346/40:352, B*48:22/48:30	-, B60(40), Null, B40	690 bp
H3	H9	Mix 17	B*07:133, B*08:155, B*15:46/15:53/15:106/15:143/15:212, B*18:48/18:107, B*35:19/35:47/35:63/35:154/35:217/35:274/35:317, B*37:06:01-37:06:02, B*39:69, B*40:02:01:01-40:06:16/40:08-40:09/40:11:01-40:11:02/40:13-40:16/40:18-40:20/40:24/40:26-40:29/40:32/40:35:01-40:35:02/40:37/40:39-40:40/40:44/40:50/40:53/40:56-40:58/40:64/40:68/40:70:01-40:72:02/40:75/40:77-40:78/40:82-40:83/40:86/40:89-40:91/40:94-40:99/40:103-40:105/40:107/40:109-40:111/40:115/40:119-40:122/40:127/40:129/40:131/40:133Q/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/40:295-40:297/40:302-40:307/40:309/40:311/40:313-40:314/40:317-40:318/40:320/40:322/40:330-40:331/40:334-40:335/40:337N/40:340-40:343/40:345N/40:347-40:349/40:351, B*41:01:01-41:50, B*44:02:01:01-44:02:12/44:02:14-44:03:36/44:03:38-44:05:04/44:07/44:09-44:30/44:32-44:39/44:41:01-44:43:02/44:45-44:51/44:53:01-44:56N/44:58N-44:59:02/44:61N-44:82/44:84:01-44:129/44:131-44:133/44:135-44:144/44:145w/44:146-44:155/44:157-44:168/44:170-44:181/44:183-44:200/44:202-44:209/44:211-44:232/44:234-44:245/44:247-44:266, B*45:01:01-45:19, B*47:01:01:01-47:10, B*49:01:01-49:01:02/49:01:04-49:02/49:04:01-49:14/49:16-49:25/49:27-49:47, B*50:01:01:01-50:02/50:04-50:05/50:07-50:20/50:31-50:50, B*51:112, B*53:30/53:39, B*57:45/57:51/57:69, C*16:85	-, B72(70), B35, B61(40), B4005, B60(40), B21, B41, Null, B44(12), B45(12), B12, B47, B49(21), B50(21)	580 bp
G3	G9	Mix 18	B*15:339/15:342, B*27:18/27:29, B*37:02, B*40:124:01-40:124:02/40:180, B*47:01:01:01-47:10, B*48:26, B*50:20	-, B27, B47	425 bp

Position	Position	Mix	Allele	Serology	Size
F3	F9	Mix 19	<b>B*07:12/07:14w/07:18:01/07:18:02w/07:137/07:162/07:174/07:202/07:222/07:235/07:248w/07:279, B*08:129w, B*14:10w, B*15:62/15:80w/15:124, B*27:19w/27:24/27:30w/27:36/27:125/27:127w, B*35:25-35:26/35:49/35:198/35:254, B*38:20w/38:63, B*39:42w, B*40:12/40:46, B*42:13, B*44:40w/44:44w/44:130w/44:156w/44:210w, B*48:01:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:40, B*56:09/56:11/56:12w, B*58:44, B*81:01-81:08, 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*07:12/07:14w/07:18:01/07:18:02w/07:137/07:162/07:235/07:248w, B*08:129w, B*14:10w, B*15:62/15:80w, B*27:19w/27:30w/27:127w, B*35:25-35:26/35:49/35:198/35:254, B*38:20w, B*39:42w, B*42:13, B*44:40w/44:44w/44:130w/44:156w/44:210w, B*48:02:01-48:02:03/48:17/48:25, B*56:09/56:11/56:12w, 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*15:124, B*27:24/27:36/27:125, B*38:63, B*40:12/40:46, B*48:01:01-48:01:06/48:03:01-48:04:02/48:06-48:07/48:09/48:11/48:15-48:24/48:26-48:40, B*81:01-81:08	-, B48, B48/40, B81, Null	580 bp
E3	E9	Mix 20	B*13:36, B*15:02:01-15:02:11/15:08:01-15:08:02/15:11:01-15:11:07/15:13:01-15:13:02/15:15/15:21/15:31/15:44/15:55/15:76/15:88-15:89/15:112/15:121/15:139/15:144/15:148/15:170w/15:189/15:191/15:194/15:209N/15:213-15:215/15:223/15:265/15:283-15:284/15:291/15:297/15:301-15:303/15:305/15:319/15:325/15:328/15:330/15:341/15:345/15:350/15:357-15:358/15:367/15:374/15:378/15:384/15:394/15:399/15:404/15:418/15:420, B*35:46/35:311, B*51:104	-, B75(15), B77(15), B62(15), B15, Null, B35	140 bp
D3	D9	Mix 21	B*07:09/07:11/07:17/07:162/07:235/07:237/07:255/07:287, B*08:28/08:35/08:37/08:89/08:107, B*15:03:01:01-15:03:06/15:18:01:01-15:18:02/15:18:04-15:18:06/15:23/15:29/15:47:01-15:47:02/15:49/15:51-15:52/15:54/15:61-15:62/15:64:01-15:64:02/15:68-15:69/15:72/15:74/15:80/15:91/15:93/15:98/15:103/15:108/15:114-15:115/15:119/15:123-15:124/15:127/15:131-15:132/15:134/15:151/15:153/15:156/15:158/15:161/15:173/15:176/15:180/15:186/15:197:01-15:198/15:200/15:210/15:220-15:221/15:226N/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, B*18:37/18:125, B*27:41/27:78/27:107, B*35:25-35:26/35:49/35:254, B*38:52, B*39:07/39:43/39:91, B*42:09, B*48:02:01-48:02:03/48:14/48:23/48:25, B*55:14/55:23/55:32/55:68, B*56:03/56:09/56:18/56:31-56:32/56:50, B*58:44, C*07:46/07:356/07:546	B7, -, B72(70), B71(70), B15, B70, B35, Null, B48, B22	500 bp
C3	C9	Mix 22	B*08:62, B*27:83/27:128, B*41:01:01-41:07/41:10-41:19/41:20w/41:21-41:32/41:34-41:46/41:48-41:50, B*42:02:01:01-42:02:01:02/42:09/42:17-42:18	-, B41, Null, B42	790 bp
B3	B9	Mix 23	<b>B*07:04/07:19/07:25/07:146, B*08:123/08:132/08:146, B*42:01:01-42:02:01:02/42:04-42:10/42:12-42:18/42:20-42:24, B*44:90, B*45:06, B*55:20/55:56, B*56:13, B*82:01-82:03, B*83:01, C*07:151</b>	B7, -, B42, B56(22), B82	see below
			B*07:04/07:19/07:25/07:146, B*08:123/08:132/08:146, B*42:01:01-42:02:01:02/42:04-42:10/42:12-42:18/42:20-42:24, B*44:90, B*45:06, B*55:20/55:56, B*56:13, B*82:01-82:03, B*83:01, C*07:151	B7, -, B42, B56(22), B82	550 bp
			B*07:04/07:19/07:25/07:146, B*08:123/08:132, B*42:01:01-42:02:01:02/42:04-42:06/42:08-42:10/42:12-42:18/42:20-42:24, B*44:90, B*45:06, B*55:20/55:56, B*56:13, B*82:01-82:03, B*83:01, C*07:151	B7, -, B42, B56(22), B82	540 bp

Position	Position	Mix	Allele	Serology	Size
A3	A9	Mix 24	B*07:02:01:01w-07:04w/07:07w-07:12w/07:14w-07:31w/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/07:139w/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-07:234w/07:236w/07:238w-07:245w/07:248w/07:250w-07:254w/07:256w-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-07:290w, B*08:07w/08:87w/08:111w/08:156w, B*14:23w, B*15:10:01w-15:10:04w/15:37w/15:99w/15:312w-15:313w/15:323w/15:338w, B*27:06w/27:21w/27:34w/27:91w/27:106w-27:107w/27:127w/27:136w/27:138w/27:154w, B*39:29w, B*40:09w/40:18w/40:24w/40:31w-40:33w/40:42w/40:44w/40:98w/40:120w, B*41:04w/41:21w, B*42:16w, B*44:02:01:01-44:02:12/44:02:14-44:03:36/44:03:38-44:05:01/44:05:02w-44:05:04w/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/44:159-44:161/44:163-44:165/44:167-44:183/44:185-44:197/44:198Nw/44:199-44:200/44:202-44:209/44:210w/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-44:245/44:247-44:249/44:250w/44:252-44:255/44:257-44:262/44:263w-44:264w/44:265-44:266, B*48:08w, B*55:27w, 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
H4	H10	Mix 25	<b>B*07:20/07:140/07:153, B*15:14/15:91/15:131/15:161, B*18:56, B*35:45/35:71/35:169/35:309, B*40:132/40:178, B*44:02:10/44:06/44:09/44:34:01/44:46/44:75/44:90/44:129/44:131/44:254, B*45:01:01-45:03/45:05-45:07/45:09/45:11-45:19, B*46:17, B*50:02, B*51:23/51:42/51:108, B*82:01-82:03, B*83:01, C*08:93, C*14:61</b>	-, B76(15), B44(12), B45(12), B82	see below
			B*44:02:10/44:06/44:34:01, B*51:23/51:42/51:108	B44(12), -	715 bp
H4	H10	Mix 25	B*07:20/07:140/07:153, B*15:14/15:91/15:131/15:161, B*18:56, B*35:45/35:71/35:169/35:309, B*40:132/40:178, B*44:09/44:46/44:75/44:90/44:129/44:131/44:254, B*45:01:01-45:03/45:05-45:07/45:09/45:11-45:19, B*46:17, B*50:02, B*82:01-82:03, B*83:01, C*08:93, C*14:61	-, B76(15), B45(12), B82	545 bp
			B*07:133, B*15:46/15:53/15:106/15:143/15:212, B*40:05:01:01-40:05:01:02/40:15-40:16/40:23/40:26/40:28/40:32/40:51/40:95/40:98/40:148/40:158/40:161/40:174/40:183/40:198/40:309, B*44:76/44:79:01-44:79:02/44:146/44:150, B*47:10, B*49:01:01/49:01:03-49:02/49:04:01-49:10/49:12-49:14/49:16-49:25/49:27-49:44/49:46-49:47, B*50:01:01:01-50:02/50:04-50:05/50:07-50:20/50:31-50:48/50:50, B*51:112	-, B72(70), B4005, B61(40), B21, B49(21), Null, B50(21), B45(12)	605 bp
G4	G10	Mix 26	B*07:133, B*15:46/15:53/15:106/15:143/15:212, B*40:05:01:01-40:05:01:02/40:15-40:16/40:23/40:26/40:28/40:32/40:51/40:95/40:98/40:148/40:158/40:161/40:174/40:183/40:198/40:309, B*44:76/44:79:01-44:79:02/44:146/44:150, B*47:10, B*49:01:01/49:01:03-49:02/49:04:01-49:10/49:12-49:14/49:16-49:25/49:27-49:44/49:46-49:47, B*50:01:01:01-50:02/50:04-50:05/50:07-50:20/50:31-50:48/50:50, B*51:112	-, B72(70), B4005, B61(40), B21, B49(21), Null, B50(21), B45(12)	605 bp
F4	F10	Mix 27	B*07:78/07:182N, B*13:09/13:39/13:67, B*14:37, B*15:18:03/15:42/15:73/15:86/15:224/15:303, B*35:60/35:291, B*39:17, B*40:48/40:71, B*45:01:01-45:01:02/45:03-45:08/45:10-45:19, B*46:11/46:18, B*50:01:01:01-50:02/50:04-50:08/50:10-50:13/50:15/50:17-50:19/50:31-50:32/50:34-50:40/50:42-50:50, B*54:01:01-54:03/54:05N/54:07-54:08N/54:10/54:13/54:16-54:35/54:36w/54:37-54:38, B*55:01:01-55:01:12/55:01:14-55:03/55:05/55:07/55:09-55:12/55:15-55:16/55:18-55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33-55:48/55:50/55:52/55:53w/55:54-55:57/55:59-55:67/55:69-55:80/55:82/55:84, B*56:01:01:01-56:02:02/56:04/56:08/56:10/56:13-56:14/56:16-56:17/56:19N-56:20:02/56:23-56:30/56:33-56:45/56:47-56:49/56:51-56:52, B*82:01-82:03, C*01:90/01:136, C*03:19/03:102/03:307/03:318N, C*07:289/07:536, C*12:15, C*15:07/15:43/15:85	-, Null, B71(70), B62(15), B35, B60(40), B45(12), B50(21), B54(22), B55(22), B22, B56(22), B82, Cw3	395 bp

Position	Position	Mix	Allele	Serology	Size
E4	E10	Mix 28	B*07:02:01:01-07:02:27/07:02:28w/07:02:29-07:02:51/07:04-07:07/07:09w/07:10/07:11w/07:12/07:15/07:18:01-07:26/ 07:29-07:31/07:33:01-07:36/07:39-07:49N/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- 07:224/07:226-07:227/07:229-07:234/07:235w/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/07:287-07:290, B*08:123/08:132, B*15:76w/15:101w/15:255w, B*35:76w/35:229w, B*38:26, B*40:166, B*42:01:01-42:02:01:02/42:04-42:06/42:08/42:09w/42:10/42:12-42:19/42:21-42:24, B*45:06, B*54:01:01-54:05N/54:06w-54:07w/54:08N/54:09w/54:10-54:13/54:14w/54:16-54:29/54:31-54:35/54:36w/54:37-54:38, B*55:01:01-55:05/55:07-55:17/55:19-55:22/55:23w/55:24-55:26/55:27w/55:28-55:31/55:32w/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/55:69-55:77/55:79-55:82/55:84, B*56:01:01-56:02:02/ 56:03w/56:04-56:07/56:09w/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/56:51-56:52, B*67:01:01-67:01:03/67:03-67:07, B*81:01-81:08, B*82:01- 82:03	B7, -, B7/B42, Null, B35/22, B54(22), B55(22), B22, B56(22), B78, B67, B81, B82	see below
			B*07:02:01:01-07:02:27/07:02:28w/07:02:29-07:02:51/07:04-07:07/07:09w/07:10/07:11w/07:12/07:15/07:18:01-07:26/ 07:29-07:31/07:33:01-07:36/07:39-07:49N/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/ 07:208-07:218/07:220-07:224/07:226-07:227/07:229-07:234/07:235w/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/07:287-07:290, B*08:123/08:132, B*15:76w/15:101w/15:255w, B*35:76w/35:229w, B*38:26, B*40:166, B*42:01:01-42:02:01:02/42:04-42:06/42:08/42:09w/42:10/42:12-42:19/42:21-42:24, B*54:04/54:06w-54:07w/54:09w/54:11/54:14w/54:25/54:31, B*55:01:04/55:04/55:08/55:13-55:14/55:17/55:20/55:23w/ 55:27w/55:28/55:32w/55:34/55:39/55:42/55:44/55:47/55:49/55:51/55:53w/55:64w/55:68w/55:81, 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, B*67:01:01-67:01:03/67:03-67:07, B*81:01-81:08	B7, -, B7/B42, Null, B35/22, B54(22), B55(22), B56(22), B22, B78, B67, B81	410 bp
			B*07:78/07:182N, B*45:06, B*54:01:01-54:03/54:05N/54:07w/54:08N/54:10/54:12-54:13/54:16-54:29/54:31-54:35/54:36w/ 54:37-54:38, B*55:01:01-55:03/55:05/55:07/55:09-55:12/55:15-55:16/55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33- 55:48/55:50/55:52/55:53w/55:54-55:57/55:59-55:60/55:62-55:63/55:64w/55:65-55:67/55:69-55:77/55:79-55:80/55:82/55:84, B*56:01:01:01-56:02:02/56:04/56:07/56:10/56:13/56:16/56:19N-56:20:02/56:24-56:30/56:34-56:41/56:43/56:45-56:49/ 56:51-56:52, B*82:01-82:03	-, Null, B54(22), B55(22), B22, B56(22), B82	425 bp
D4	D10	Mix 29	B*54:01:01-54:01:06/54:02-54:05N/54:07-54:08N/54:10-54:37, B*55:07, B*59:06, C*07:463w	B54(22), -, Null	435 bp
C4	C10	Mix 30	B*07:20w/07:24/07:60/07:100/07:131/07:220/07:223/07:235, B*15:76/15:101/15:255, B*35:76/35:229w, B*44:90, B*45:06w, B*54:03/54:06/54:33, B*55:08/55:51, B*56:01:01:01-56:07/56:09/56:11/56:13/56:15-56:16/56:20:01-56:22/56:24- 56:30/56:34-56:41/56:43/56:45-56:52, B*82:01w-82:02:02w/82:03, B*83:01w	-, B7, B35/22, B56(22), B22, B78, Null, B82	560 bp
B4	B10	Mix 31	B*44:18, B*49:01:01-49:01:08/49:03/49:06-49:14/49:16-49:17/49:19N-49:47, B*51:15/51:62/51:157, B*52:25:01, B*54:12, B*58:73, B*59:01:01:01-59:01:01:02/59:04-59:07/59:09, A*24:90:02N, C*15:71	-, B49(21), Null, B59	395 bp

Position	Position	Mix	Allele	Serology	Size
A4	A10	Mix 32	B*07:143, B*15:71/15:175/15:204/15:210/15:212/15:225/15:344/15:381, B*18:15/18:19/18:21/18:30/18:57/18:101, B*27:04:01-27:04:06/27:06/27:10/27:15/27:18/27:20-27:21/27:24-27:25/27:40/27:54/27:63/27:66N/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, B*37:07, B*40:05:01:01-40:05:01:02/40:15-40:16/40:23/40:26/40:28/40:32/40:51/40:95/40:98/40:148/40:158/40:161/40:174/40:183/40:198/40:309, B*46:14, B*49:01:01/49:01:03-49:09/49:12-49:14/49:16-49:23/49:26-49:30/49:32-49:44/49:46-49:47, B*50:01:01:01-50:02/50:04-50:12/50:14-50:20/50:31-50:42/50:44-50:48/50:50, B*51:103/51:116/51:151, B*52:51, A*26:89, C*03:278, C*06:77	-, B62(15), B27, Null, B4005, B61(40), B21, B49(21), B50(21), B45(12)	715 bp
H5	H11	Mix 33	B*35:186, B*46:01:01-46:01:04/46:01:05w/46:01:07-46:05/46:07N-46:30/46:31w/46:32-46:40:02/46:42-46:44/46:46-46:53/46:55N-46:71, B*56:14, B*67:02, C*01:32:01-01:32:02, C*02:56, C*03:102/03:263:01-03:263:02, C*04:180:01-04:180:02, C*06:20, C*07:81/07:168, C*08:123/08:139, C*14:82, C*15:126, C*16:98/16:102	-, B46, Null	470 bp

Position	Position	Mix	Allele	Serology	Size
G5	G11	Mix 34	B*13:02:01-13:04/13:08-13:10/13:14-13:16/13:18-13:19/13:26:01-13:27/13:30-13:35/13:37-13:38/13:40-13:42/13:44-13:49N/13:53-13:56:02N/13:59/13:62/13:64-13:70/13:72/13:74-13:75/13:81-13:82/13:84-13:85/13:88-13:89/13:91/13:93-13:94/13:96/13:98-13:99, B*15:01:01:01-15:01:04/15:01:06-15:02:11/15:04:01:01-15:08:02/15:11:01-15:16:03/15:19-15:21/15:24:01-15:28/15:31-15:36/15:38:01-15:40:02/15:42-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/15:81-15:85/15:87-15:89/15:92/15:94N-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125-15:126/15:128-15:129/15:135-15:142/15:144-15:149N/15:152/15:154-15:155/15:157/15:159-15:160/15:163-15:167/15:169/15:170w/15:171-15:172/15:174-15:175/15:178-15:179:02/15:181N-15:185/15:187/15:189-15:195/15:199/15:201/15:202w/15:203-15:207/15:209N/15:211/15:213-15:215/15:217-15:218Q/15:222-15:223/15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251/15:254/15:256-15:258N/15:260-15:262N/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, B*35:46/35:207, B*44:08/44:57/44:60, B*46:01:01-46:03/46:05-46:39/46:41N-46:46/46:48-46:60/46:62-46:69/46:71, B*51:104, B*52:02:01-52:02:02, B*55:35, B*56:39, B*57:01:01/57:01:03-57:01:23/57:04:01-57:04:02/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:90, 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*13:02:01-13:04/13:08-13:09/13:14-13:16/13:18-13:19/13:27/13:30-13:35/13:37-13:38/13:40-13:42/13:44-13:49N/13:53-13:56:02N/13:59/13:62/13:64-13:70/13:72/13:74-13:75/13:81-13:82/13:84-13:85/13:88-13:89/13:91/13:93-13:94/13:96/13:98-13:99, B*15:04:01:01-15:04:01:02/15:04:03-15:04:04/15:42/15:83/15:137/15:155/15:303/15:310, B*46:11/46:18/46:32, B*51:104, B*52:02:01-52:02:02, B*55:35, B*56:39	B13, -, B15/B21, Null, B62(15)	430 bp
			B*13:04/13:10/13:26:01-13:26:02/13:72, B*15:01:01:01-15:01:04/15:01:06-15:02:11/15:04:01:01-15:08:02/15:11:01-15:16:03/15:19-15:21/15:24:01-15:28/15:31-15:36/15:38:01-15:40:02/15:43-15:45/15:50/15:55-15:57/15:60/15:63/15:65-15:67/15:70-15:71/15:75-15:79N/15:81-15:82/15:84-15:85/15:87-15:89/15:92/15:94N-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125-15:126/15:128-15:129/15:135-15:136/15:138-15:142/15:144-15:149N/15:152/15:154-15:155/15:157/15:159-15:160/15:163-15:167/15:169/15:170w/15:171-15:172/15:174-15:175/15:178-15:179:02/15:181N-15:185/15:187/15:189-15:195/15:199/15:201/15:202w/15:203-15:207/15:209N/15:211/15:213-15:215/15:217-15:218Q/15:222-15:223/15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251/15:254/15:256-15:258N/15:260-15:262N/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, B*35:46/35:207, B*44:08/44:57/44:60, B*46:01:01-46:03/46:05-46:10/46:12-46:17/46:19-46:39/46:41N-46:46/46:48-46:60/46:62-46:69/46:71, B*57:01:01/57:01:03-57:01:23/57:04:01-57:04:02/57:06/57:08/57:10-57:11/57:13-57:15/57:18-57:27/57:29-57:31/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:53w/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:79N/57:81/57:83/57:85-57:90, 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

Position	Position	Mix	Allele	Serology	Size
F5	F11	Mix 35	<b>B*57:01:01-57:10/57:12-57:81/57:84-57:90, B*58:14</b>	B57(17), -, Null	<b>see below</b>
			B*57:01:01-57:04:02/57:06-57:10/57:12-57:81/57:84-57:90, B*58:14	B57(17), -, Null	360 bp
			B*57:04:01/57:05	B57(17), -	410 bp
E5	E11	Mix 36	B*57:01:19/57:14:01, B*58:01:01:01-58:01:04/58:01:06-58:02:02/58:04-58:26/58:28:01-58:29/58:31N-58:76/58:78-58:81/58:83-58:87	-, B58(17), B17, Null	490 bp
D5	D11	Mix 37	B*15:13:01-15:13:02/15:16:01:01w-15:16:03w/15:67w/15:95w/15:222w/15:254w/15:362w/15:408w/15:418, B*27:30w, B*38:20w, B*40:109/40:340, B*44:06w/44:18w/44:25w/44:50:01w/44:95w, B*49:01:01w-49:01:08w/49:03w-49:14w/49:16w-49:46w, B*51:01:01:01-51:05/51:07:01-51:24:05/51:26-51:40/51:42w/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-51:189/51:191-51:193/51:195-51:212/51:214-51:217, B*52:01:01:01-52:19/52:21-52:67, B*53:01:01-53:02/53:04-53:06/53:08:01-53:08:02/53:10/53:15-53:30/53:32-53:35/53:37/53:39-53:43/53:45, B*54:12, B*56:21, B*57:05, B*58:01:01:01-58:01:15/58:01:17-58:01:19/58:01:20w/58:01:21-58:01:22/58:04-58:05/58:08:01-58:13/58:17N/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/58:76-58:87, B*59:01:01:01-59:07/59:09, C*15:71	B77(15), -, B63(15), B27, B44(12), B49(21), Null, B51(5), B5102, B5103, B52(5), B53, B58(17), B17, B59	330 bp
C5	C11	Mix 38	B*35:01:10/35:04:02/35:251, 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/51:01:18-51:02:03/51:02:05-51:06:03/51:08:01-51:09:03/51:11N-51:12/51:13:02-51:14/51:16-51:21/51:23/51:24:03-51:24:05/51:26-51:41N/51:43/51:46/51:48-51:61:02/51:63:01/51:64-51:80/51:82-51:91/51:92:02-51:106/51:107w/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/51:171-51:196/51:198/51:200-51:213/51:215-51:217, B*78:01:01:01-78:02:02/78:04/78:07-78:09	B35, -, B51(5), B5102, B5103, Null, B78	450 bp
B5	B11	Mix 39	B*07:02:11/07:05:03, B*15:09/15:252, B*35:01:10/35:04:02/35:251, B*51:01:01:01-51:01:03/51:01:05-51:01:12/51:01:14-51:01:37/51:01:39-51:02:03/51:02:05-51:09:03/51:11N-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/51:46/51:48-51:61:02/51:63:01/51:64-51:80/51:82-51:91/51:92:02-51:106/51:107w/51:108-51:135/51:137-51:147/51:149N-51:156/51:158:01-51:167/51:169/51:170w/51:171-51:177/51:179-51:196/51:198/51:200-51:217, B*55:01:04, B*56:05:01-56:06/56:21, B*78:01:01:01-78:04/78:07-78:09	B7, B70, -, B35, B51(5), B5102, B5103, Null, B55(22), B56(22), B78	460 bp
A5	A11	Mix 40	B*13:62, B*15:01:02/15:277-15:278, B*40:01:06/40:26/40:28/40:95, B*44:03:40/44:62, B*49:18:01, B*50:14, B*51:07:01w-51:07:02w/51:214w, B*52:01:01:01-52:01:04/52:01:06-52:01:14/52:01:16-52:05/52:07-52:13/52:15-52:24/52:25:02-52:68, B*53:28, B*78:05-78:06	-, B62(15), B60(40), B21, B51(5), B52(5), Null	450 bp
H6	H12	Mix 41	B*07:02:11/07:05:03, B*15:01:02/15:09/15:243/15:252/15:277-15:278, B*27:153, B*35:01:10/35:04:02/35:251, B*40:01:06/40:26/40:28/40:95, B*50:14, B*55:01:04, B*56:05:01-56:06, B*78:01:01:01-78:09, C*12:03:31	B7, B62(15), B70, -, B35, B60(40), B21, B55(22), B56(22), B78	410 bp



Position	Position	Mix	Allele	Serology	Size
G6	G12	Mix 42	B*14:19/14:27, B*15:09-15:10:04/15:18:01:01-15:18:06/15:21/15:23/15:37/15:51/15:72/15:80/15:90/15:99/15:108/15:115/15:119/15:133-15:134/15:153/15:161w/15:176/15:189/15:197:01-15:198/15:200/15:221/15:226N/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, 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
F6	F12	Mix 43	B*13:09/13:67, B*15:01:01:01-15:01:04/15:01:06-15:02:11/15:04:01:01-15:08:02/15:11:01-15:12/15:14-15:15/15:19-15:21/15:25:01-15:28/15:30-15:35/15:38:01-15:40:02/15:42/15:44-15:45/15:48/15:50/15:55-15:56/15:58/15:60/15:63/15:65-15:66/15:70-15:71/15:73/15:75-15:79N/15:81-15:86/15:88/15:92/15:94N/15:96-15:97/15:101-15:102/15:104-15:105/15:107/15:109-15:113/15:116-15:118/15:120-15:122/15:125-15:126/15:128-15:129/15:135-15:142/15:144-15:150/15:152/15:154-15:155/15:159-15:160/15:163-15:167/15:169/15:170w/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/15:211/15:213-15:215/15:217-15:219/15:223-15:225/15:227-15:228/15:231-15:234/15:236-15:237/15:240-15:241/15:244-15:251/15:257-15:258N/15:260-15:262N/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, B*35:46/35:207/35:311, B*40:21/40:137, B*55:35, B*56:39, B*57:12	-, B62(15), Null, B75(15), B76(15), B15, B35	150 bp
E6	E12	Mix 44	B*15:12/15:14/15:19/15:270/15:298/15:304N, B*44:08/44:57/44:60, B*46:17, B*57:07	B76(15), -, Null, B44(12)	650 bp
D6	D12	Mix 45	B*07:219, B*15:16:01:01-15:17:05/15:67/15:95/15:168/15:177/15:196/15:208/15:216/15:230/15:254/15:268/15:273/15:356/15:361-15:362/15:403/15:408/15:411/15:423-15:424, B*57:13/57:22/57:57/57:63, B*58:06/58:08:01-58:08:02/58:19/58:46/58:78	-, B63(15), B17	530 bp
C6	C12	Mix 46	B*14:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:04/14:07N/14:09/14:11-14:12/14:14-14:20/14:22-14:36/14:38-14:41N/14:43-14:52/14:54	B64(14), -, B65(14), B14, Null	400 bp
B6	B12	Mix 47	B*14:02:01:01-14:02:02/14:02:04-14:02:05/14:02:07-14:03/14:05-14:06:02/14:09/14:11/14:13/14:15-14:18/14:20/14:22-14:23/14:24w/14:25/14:27/14:29-14:31/14:33-14:39/14:41N/14:43-14:45/14:48/14:50-14:52, B*15:189, B*35:03:17/35:26, B*38:05/38:33, B*39:04, B*49:26	B65(14), -, B14, Null, B38(16), B39(16)	185 bp
A6	A12	Mix 48	B*73:01-73:02, C*07:463w	B73, -	300 bp

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

**w** = weak

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

**Table 2:** Amplification patterns for all HLA-B\* alleles detected by the **HLA-B\*** CTS-PCR-SSP reagents (**Lot-No B15-2**) based on IMGT/HLA Sequence Database Release 3.27.0, January 2017

Allele	Mixes	Serology
B*07:02:01:01-07:02:10/07:02:12-07:02:27/07:02:29-07:02:32/07:02:34-07:02:42/07:02:44-07:02:51/07:07/07:10/07:15/07:21-07:23/07:26/07:30-07:31/07:35-07:36/07:39/07:41-07:44/07:46-07:49N/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/07:184-07:185/07:187-07:192/07:194-07:196/07:198-07:200/07:203-07:205/07:208/07:211-07:212/07:215-07:218/07:221/07:224/07:226-07:227/07:229-07:234/07:238-07:242/07:244-07:245/07:250-07:254/07:256-07:257/07:261/07:263/07:265-07:268/07:271-07:277/07:280-07:282/07:285N/07:288-07:289	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	1+24w+28w	-
B*07:02:33/07:02:43	1w+24w+28	-
B*07:03/07:08:01-07:08:02/07:16/07:28/07:37-07:38/07:85/07:96:01-07:96:02/07:180/07:228:01-07:228:02/07:259/07:286	1+24w	B703, -
B*07:04/07:25/07:146	1+23+24w+28	B7, -
B*07:05:01:01-07:05:02/07:05:04-07:05:05/07:05:07-07:06:02/07:34/07:80/07:90/07:97/07:105/07:112/07:138/07:175-07:176/07:201N/07:206/07:209-07:210/07:213-07:214/07:247/07:249/07:258/07:262/07:264/07:269-07:270/07:278/07:283	1+28	B7, -, Null
B*07:05:03	1+28+39+41	B7
B*07:05:06	1w+28	-
B*07:09/07:11	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	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	23+24w+28	-
B*07:20	1+24w+25+28+30w	-
B*07:24/07:131/07:220/07:223	1+24w+28+30	B7, -
B*07:27	1+10+15w+24w	-
B*07:29/07:186	1+2+24w+28	-
B*07:33:01-07:33:03/07:54/07:94/07:122/07:139/07:165/07:243/07:290	24w+28	-
B*07:40/07:53/07:123, B*42:19, B*55:01:13/55:04/55:13/55:17/55:28/55:49/55:81	28	B7, -, B55(22)
B*07:45	1+12w+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	-

Allele	Mixes	Serology
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*81:01-81:08	1+19+28	-, B81, Null
B*07:235, B*56:09	7+19+21+28w+30	-
B*07:236	1+10+24w+28	-
B*07:237/07:255	1+21+28w	-
B*07:246	1+28w	-
B*07:248	1+7+19w+24w+28	-
B*07:287	1+21+28	-
B*08:01:01:01-08:01:31/08:01:33-08:03/08:05/08:08N-08:12:02/08:13-08:16/ 08:18-08:25/08:27/08:29-08:31/08:33-08:34/08:36/08:38-08:48/08:51- 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/ 08:134-08:138/08:140-08:145/08:147-08:154/08:157-08:169/08:171-08:175, C*02:14:01-02:14:02/02:107, C*06:02:37/06:106:01/06:127:02, 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, C*12:16	2	B8, -, Null, Cw7
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	2+15	-
B*08:28/08:35/08:37/08:89, B*15:180	2+21	-
B*08:32/08:133	2+5	-
B*08:49, B*39:112, B*53:09, C*15:27	7	-
B*08:55, B*39:12	2+12	-, B39(16)
B*08:62	22	-
B*08:79	1+2	-
B*08:107	6+21	-
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*13:01:01-13:01:12/13:06-13:07N/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	3	B13, -, Null
B*13:02:01-13:02:19/13:08/13:10/13:14-13:16/13:18-13:19/13:26:01-13:27/ 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- 13:89/13:91/13:94/13:96/13:98-13:99	3+34	B13, -, Null
B*13:03-13:04/13:40/13:45/13:48, B*15:24:01-15:24:02/15:36/15:43/15:57/ 15:87/15:157/15:256/15:289/15:318, B*46:01:06/46:41N/46:45/46:54, 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	3+15	-

Allele	Mixes	Serology
B*13:36	3+7+20	-
B*13:37	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*14:01:01-14:01:06/14:04/14:07N/14:12/14:14/14:26/14:28/14:32/14:40/ 14:46-14:47/14:49/14:54	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/14:43- 14:45/14:48/14:50-14:52	46+47	B65(14), -, B14, Null
B*14:05-14:06:02/14:13	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*15:01:01:01-15:01:01:09/15:01:03-15:01:04/15:01:06-15:01:40/15:04:01:01- 15:06/15:20/15:25:01-15:28/15:32:01-15:32:02/15:34-15:35/15:38:01- 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/15:113/15:117-15:118/15:120/15:122/15:125/15:128-15:129/15:135/ 15:137-15:138/15:140/15:145-15:147/15:149N/15:152/15:154-15:155/15:159- 15:160/15:163-15:167/15:169/15:171-15:172/15:174/15:178-15:179:02/ 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/ 15:236-15:237/15:240-15:241/15:244-15:247/15:250-15:251/15:257-15:258N/ 15:260-15:262N/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/ 15:343/15:346-15:349/15:353/15:355/15:359/15:363:01-15:366/15:368/ 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, B*35:207	34+43	B62(15), Null, -
B*15:01:02/15:277-15:278	34+40+41+43	B62(15), -
B*15:02:01-15:02:04/15:02:06-15:02:11/15:44/15:88/15:121/15:139/15:144/ 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	7+20+34+43	B75(15), -, Null
B*15:02:05/15:112	7w+20+34+43	-, B15
B*15:03:01:01-15:03:06/15:29/15:47:01-15:47:02/15:49/15:52/15:54/15:61/ 15:64:01/15:74/15:93/15:98/15:103/15:114/15:123/15:127/15:132/15:151/ 15:156/15:158/15:173/15:220/15:238/15:242:01-15:242:02/15:259/15:266/ 15:274/15:281-15:282/15:369/15:379/15:389/15:397, B*18:37, B*38:52, B*39:43, C*07:46/07:356/07:546	21	B72(70), -, B15, B71(70), B70
B*15:07:01-15:07:03/15:33/15:45/15:78:01-15:78:03/15:107/15:116/15:126/ 15:141/15:207/15:248/15:287/15:331/15:352/15:383/15:405/15:421	15+34+43	B62(15), -, B15
B*15:08:01-15:08:02/15:11:01-15:11:07/15:15/15:31/15:148/15:191/15:209N/ 15:215/15:284/15:305/15:350/15:367/15:384	20+34+43	B75(15), -, B62(15), Null
B*15:09	39+41+42	B70
B*15:10:01-15:10:04/15:37/15:99/15:312-15:313/15:338	24w+42	B71(70), -, B70
B*15:12/15:19/15:270/15:298/15:304N	34+43+44	B76(15), -, Null

Allele	Mixes	Serology
B*15:13:01-15:13:02/15:418	7+8+20+34+37	B77(15), -
B*15:14	25+34+43+44	B76(15)
B*15:16:01:01-15:16:03/15:67/15:95/15:254/15:362/15:408	34+37w+45	B63(15), -
B*15:17:01:01-15:17:05/15:168/15:177/15:196/15:208/15:216/15:230/15:273/15:356/15:361/15:403/15:411/15:423-15:424	45	B63(15), -
B*15:18:01:01-15:18:02/15:18:04-15:18:06/15:23/15:51/15:72/15:115/15:119/15:134/15:153/15:176/15:197:01-15:198/15:200/15:221/15:226N/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	21+42	B71(70), -, B70, Null
B*15:18:03, B*56:33	27+42	B71(70), -
B*15:21/15:394/15:404/15:420	7+20+34+42+43	B75(15), -
B*15:30/15:58/15:219/15:334/15:416	43	B62(15), -
B*15:42	27+34+43	-
B*15:46/15:53/15:106/15:143	17+26	B72(70), -
B*15:48	12w+43	B62(15)
B*15:55	15w+20+34+43	B15
B*15:62/15:124, B*48:02:01-48:02:03/48:25	19+21	-, B48
B*15:64:02, B*18:125	4+21	-
B*15:68, B*48:14	15+21	B35, -
B*15:69/15:186/15:235, B*39:07/39:91	12+21	-
B*15:71/15:175/15:204/15:225/15:344/15:381	32+34+43	B62(15), -
B*15:73/15:86/15:224	27+43	B62(15), -
B*15:76	20+28w+30+34+43	-
B*15:80	7w+19w+21+42	B70
B*15:89	7+20+34	-
B*15:90/15:133/15:229/15:329, 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	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	20+34+42+43+47	-
B*15:202	5+34w+43w	-
B*15:210	21+32	-
B*15:212, B*49:02, B*50:09/50:16/50:33/50:41	17+26+32	-, B49(21)
B*15:222	34+37w	-
B*15:239/15:376, B*18:01:09/18:01:12/18:01:24/18:07:02/18:12:02/18:26/18:29/18:41/18:55/18:82/18:97/18:122, B*35:10/35:13/35:16/35:22/35:28/35:31/35:32:02/35:43:01-35:44/35:51/35:67/35:69/35:79-35:80/35:86-35:87/35:99/35:102/35:117-35:118/35:176/35:185/35:199/35:208/35:226/35:234/35:242/35:265/35:270/35:318, B*37:11/37:14/37:37	5	-, B35
B*15:243, C*12:03:31	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	-

Allele	Mixes	Serology
B*15:297	1+7+20+34+43	-
B*15:303	20+27+34+43	-
B*15:308, B*35:01:17/35:03:07/35:04:03/35:12:02/35:20:01/35:59:02/35:83/35:88/35:95/35:112/35:164/35:191/35:212/35:215/35:230/35:261/35:296	5+7	-, B35
B*15:323	24w	-
B*15:339	18	-
B*15:342	18+43	-
B*15:360	15+34	-
B*18:01:01:01-18:01:08/18:01:10-18:01:11/18:01:13-18:01:23/18:02-18:07:01/18:08/18:10-18:12:01/18:13/18:17N/18:20/18:23N-18:25/18:27-18:28/18:31-18:34/18:36/18:38-18:39/18:42-18:47/18:50-18:53/18:58-18:60/18:62-18:65/18:68-18:78/18:80-18:81/18:83-18:96/18:98/18:100/18:102-18:104/18:106/18:109/18:111-18:121/18:123-18:124/18:126-18:131/18:133-18:134	4+5	B18, -, Null
B*18:09/18:49/18:66-18:67/18:79/18:108/18:132	4	B18, -
B*18:14/18:22/18:40	4+5+15w	-
B*18:15/18:19/18:30/18:57/18:101	4+5+32	-
B*18:18/18:105, 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*44:10/44:14-44:15/44:17/44:43:01-44:43:02/44:77/44:82/44:140/44:144/44:162/44:226/44:230/44:256	17	-, B44(12), B12
B*18:54	4+10	-
B*18:56	4+5+25	-
B*18:61, B*35:72	5+15w	-
B*18:99	4w+5	-
B*18:107	4w+17	-
B*27:01-27:03/27:05:02-27:05:22/27:05:24-27:05:32/27:07:01-27:09/27:11-27:14/27:16-27:17/27:23/27:26-27:28/27:31-27:33/27:35/27:37-27:39/27:42-27:53/27:55-27:62/27:64N-27:65N/27:67/27:70-27:74/27:76-27:77/27:80-27:82/27:84-27:85/27:87-27:90:04/27:93-27:99/27:101-27:102/27:104/27:110-27:111/27:116-27:119/27:121-27:124/27:126/27:129-27:135/27:137/27:139/27:141-27:146/27:148/27:150-27:152/27:155-27:161	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	9+32	B27, -, Null
B*27:06/27:21/27:91/27:106/27:138	9+24w+32	B27, -
B*27:18	9+18+32	-
B*27:19	9+19w	B27
B*27:24	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	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+24w+32	-
B*27:127	9+19w+24w	-
B*27:153	32+41	-

Allele	Mixes	Serology
B*35:01:01:01-35:01:03/35:01:05-35:01:09/35:01:11-35:01:16/35:01:18-35:02:05/35:02:07-35:03:02/35:03:04-35:03:06/35:03:08-35:03:16/35:03:18-35:03:19/35:03:21-35:04:01/35:06-35:08:01/35:08:04/35:08:06-35:09:03/35:11:01-35:11:03/35:14:01-35:15:02/35:18/35:21/35:24:01/35:29:01-35:29:02/35:33-35:34/35:36/35:38/35:40N-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/35:218-35:220/35:222-35:225/35:227-35:228/35:231/35:237-35:241/35:243-35:250/35:252-35:253/35:255-35:257/35:260/35:262-35:264/35:267-35:269/35:272/35:275/35:277-35:285/35:287/35:289-35:290/35:293/35:295/35:297-35:298/35:300-35:308/35:310/35:312-35:316/35:319-35:335	5+6+7	B35, -, Null
B*35:01:04/35:03:20/35:08:03/35:23/35:24:02/35:61:02/35:120/35:258/35:288	5+6+7w	B35, -
B*35:01:10/35:04:02	5+6+7+38+39+41	B35
B*35:02:06	5+6w+7	-
B*35:03:03/35:08:02/35:08:05/35:27/35:56/35:203/35:210/35:271/35:299, B*53:03/53:11-53:13/53:36	6+7	B35, -, B53
B*35:03:17	5+6+7+47	-
B*35:05:01:01-35:05:03/35:17:01-35:17:02/35:30/35:32:01/35:37/35:58/35:68:01-35:68:02/35:75/35:89/35:97/35:113-35:114/35:125/35:151/35:221/35:232/35:235/35:273/35:286/35:292	5+6	B35, -
B*35:12:01/35:12:03/35:39/35:59:01/35:61:01/35:149/35:201/35:233/35:266	5+7w	B35, -
B*35:19/35:47/35:154/35:217/35:274	6+7+17	B35, -
B*35:25/35:49/35:254	6+7+19+21	B35, -
B*35:26	7+19+21+42+47	-
B*35:35	5+6+7+12	B35
B*35:45/35:71/35:169/35:309	5+6+7+25	-
B*35:46	6+7+20+34+43	B35
B*35:60	5+27	B35
B*35:66	1+5+6	-
B*35:76	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	-
B*35:198	6+7+19	-
B*35:202	5+6w	-
B*35:229	5+6+7+28w+30w	-
B*35:236/35:259	5+6+7+12w	-
B*35:251, B*78:01:01:01-78:02:02/78:04/78:07-78:08	5+38+39+41	-, B78
B*35:276, B*39:19:01-39:19:02	5+12	-, B39(16)
B*35:291	5+6+7+27	-
B*35:311	6+7+20+43	-
B*37:01:01-37:01:11/37:03N-37:04:02/37:13/37:15-37:21/37:23-37:28/37:30N-37:33N/37:35-37:36/37:38-37:65, B*38:17, A*11:133, A*33:60	10	B37, -, Null
B*37:02	10+18	-
B*37:06:01-37:06:02	10+17	-
B*37:07	10+15+32	-
B*37:08	7+10	B37

Allele	Mixes	Serology
B*37:09/37:12	10+15	B37, -
B*37:10/37:34, B*38:01:01-38:02:03/38:02:05-38:04/38:06-38:16/38:18-38:19/ 38:21-38:25/38:27-38:29/38:31-38:32/38:34N-38:51/38:53-38:62/38:64/38:66, B*39:104, A*24:96/24:256	11	B37, -, B38(16), B16, Null
B*38:02:04	11w	-
B*38:05/38:33	11+47	B38(16), -
B*38:20	7w+8w+11+19w+37w	-
B*38:26	11+13+28	-
B*38:30/38:65	11+42	-
B*38:63	1+11+19	-
B*39:01:01:01-39:01:01:05/39:01:03-39:01:10/39:01:12-39:03/39:05:01- 39:06:04/39:08/39:09:02/39:10:01-39:11/39:13:01-39:16/39:18/39:20/39:22- 39:24:01/39:25N-39:28/39:31/39:35/39:37-39:41/39:44-39:46/39:48-39:49/ 39:51-39:68/39:70-39:73/39:75-39:79/39:81/39:83-39:87N/39:89-39:90/39:92- 39:101/39:103/39:105-39:106/39:108-39:111/39:113-39:126, C*07:137:01- 07:137:02, C*14:63	12	B3901, Low B39, -, B3902, B39(16), Null
B*39:04	12+47	B39(16)
B*39:09:01/39:09:03/39:88	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, C*03:215	12w	-
B*39:69, B*40:184	12+17	-
B*40:01:01-40:01:05/40:01:07-40:01:08/40:01:10-40:01:18/40:01:20-40:01:49/ 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/ 40:125-40:126/40:128/40:130:01-40:130:02/40:134-40:135/40:138-40:141/ 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- 40:236/40:238-40:242/40:245/40:247/40:249-40:253/40:257-40:264/40:272- 40:273/40:277-40:282/40:285-40:286N/40:288/40:298-40:299/40:301/40:310/ 40:312/40:316/40:319/40:321/40:323/40:327/40:329/40:332-40:333/40:336/ 40:338N-40:339/40:344/40:346/40:352	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	14+16	-, B60(40)
B*40:01:19/40:191/40:197	14+15+16w	-
B*40:02:01:01-40:04/40:06:01:01-40:06:16/40:11:01-40:11:02/40:14:01- 40:14:03/40:19-40:20/40:27:01-40:27:02/40:29/40:35:01-40:35:02/40:37/ 40:40/40:50/40:53/40:56-40:58/40:64/40:70:01-40:70:02/40:72:01-40:72:02/ 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/ 40:320/40:330-40:331/40:334-40:335/40:337N/40:341-40:342/40:345N/ 40:347-40:349/40:351	14+15+17	B61(40), -, B60(40), B40, Null
B*40:05:01:01-40:05:01:02/40:174	15+17+26+32	B4005, -
B*40:08/40:13/40:75/40:77/40:121/40:162/40:220/40:232/40:237/40:322	14+17	-



Allele	Mixes	Serology
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, B*44:31, B*48:41	14+15	B60(40), -, B44(12)
B*40:12, B*48:01:01-48:01:06/48:03:01-48:04:02/48:07/48:09/48:11/48:15-48:21/48:24/48:27-48:29/48:32-48:40	15+19	-, B48, B48/40
B*40:15-40:16/40:148/40:161/40:309	14+15+17+26+32	-, B61(40)
B*40:23/40:183/40:198	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, B*44:166/44:184/44:213, C*16:85	15+17	B41, -
B*40:46, B*48:22/48:30	15+16+19	-
B*40:48	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	15	-, B48
B*40:95	14+17+26+32+40+41	-
B*40:106	1+14+16	-
B*40:109/40:340	14+15+17+37	-
B*40:124:01-40:124:02	9+14+15+16+18	-
B*40:132/40:178	14+15+16+25	-
B*40:158	14+17+26+32	-
B*40:166	1+14+16+28	-
B*40:171/40:315	14w+15+16	-
B*40:177/40:294	14w+15+17w	-
B*40:180	9+14+15+17+18	-
B*40:185/40:308	5+15+16	-
B*40:209/40:350	5+15	-
B*40:313	14+15w+17	-
B*40:326	14+15w+16	-
B*40:328	2+14+15	-
B*41:01:01-41:03:02/41:05-41:07/41:10-41:18/41:22-41:32/41:34-41:45N/41:48-41:50	15+17+22	B41, -, Null
B*41:04/41:21	15+17+22+24w	-
B*41:19	14+15+17+22	-
B*41:20	15+17+22w	-
B*41:46	17+22	-
B*42:01:01-42:01:03/42:04/42:06/42:08/42:10/42:12/42:14-42:15/42:21-42:24, B*55:20	23+28	B42, -
B*42:02:01:01-42:02:01:02/42:17-42:18	22+23+28	B42, -
B*42:05:01	1+23+28	-
B*42:05:02	1w+23+28	-
B*42:07/42:20, C* 07:151	23	-
B*42:09	21+22+23+28w	-
B*42:13	7+19+23+28	-

Allele	Mixes	Serology
B*44:02:01:01-44:02:09/44:02:11-44:02:12/44:02:14-44:03:11/44:03:13-44:03:36/44:03:38-44:03:39/44:04-44:05:01/44:07/44:11/44:13/44:19N-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/44:151-44:155/44:157/44:159-44:161/44:163-44:165/44:167-44:168/44:170-44:181/44:183/44:185-44:191/44:193-44:197/44:199-44:200/44:202-44:209/44:212/44:214-44:216/44:218-44:225/44:227-44:229/44:231/44:234-44:235/44:237N-44:245/44:247-44:249/44:252-44:253/44:255/44:257-44:262/44:265-44:266	17+24	B44(12), -, Null, B21
B*44:02:10/44:09/44:34:01/44:46/44:129/44:131/44:254	17+24+25	B44(12), B45(12), -
B*44:03:12	4w+17+24	-
B*44:03:40	17+24+40	-
B*44:05:02-44:05:04/44:70/44:78/44:107/44:123/44:136/44:139/44:198N/44:217N/44:236/44:250/44:264	17+24w	B44(12), -, Null
B*44:06, B*51:42	7w+8w+25+37w	B44(12)
B*44:08/44:57/44:60	34+44	B44(12), -
B*44:12/44:232	7w+17+24	B44(12), -
B*44:16/44:21/44:64:01-44:64:02/44:124	14+17+24	B47, -
B*44:18, 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*44:52N/44:169/44:233	24	Null, -
B*44:53:01-44:54/44:106/44:110/44:135/44:192:01-44:192:02/44:211	15+17+24	B44(12), -
B*44:62	17+40	-
B*44:75	17+24w+25	-
B*44:76/44:79:01-44:79:02/44:146	17+24+26	-
B*44:90	17+23+24+25+30	-
B*44:97	9+17+24	-
B*44:117/44:251	11+17	-
B*44:145	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	19w+24w	-
B*44:263	7+17+24w+42w	-
B*45:01:01-45:01:02/45:03/45:05/45:07/45:11-45:19	17+25+27	B45(12), -
B*45:02/45:09	17+25	-
B*45:04/45:08	17+27	-
B*45:06	17+23+25+27+28+30w	-
B*45:10	14+17+27	-
B*46:01:01-46:01:04/46:01:07-46:03/46:05/46:07N-46:10/46:12-46:13:03/46:15N-46:16/46:20-46:30/46:32-46:39/46:42-46:44/46:46/46:48-46:53/46:55N-46:60/46:62-46:69/46:71	33+34	B46, -, Null
B*46:01:05/46:31	33w+34	-

Allele	Mixes	Serology
B*46:04/46:47/46:61/46:70, C*01:32:01-01:32:02, C*02:56, C*03:263:01-03:263:02, C*04:180:01-04:180:02, C*06:20, C*07:81/07:168, C*08:123/08:139, C*14:82, C*15:126, C*16:98/16:102	33	B46, -
B*46:06	1+34	-
B*46:11/46:18	27+33+34	-
B*46:14	32+33+34	-
B*46:17	25+33+34+44	-
B*46:19	12w+33+34	-
B*47:01:01:01-47:07/47:09	9+14+17+18	B47, -
B*47:08	9+17+18	-
B*47:10	9+14+17+18+26	-
B*48:06	1+19	-
B*48:08	15+24w	-
B*48:23	15+19+21	-
B*48:26	18+19	-
B*48:31, C*15:99	19	-
B*49:01:01/49:01:04-49:01:08/49:06/49:08-49:09/49:12-49:14/49:16-49:17/49:19N-49:23/49:27-49:30/49:32-49:39/49:41-49:44/49:46	17+26+31+32+37w	B49(21), -, Null
B*49:01:03	26+31+32+37w	-
B*49:03	31+32+37w	-
B*49:04:01-49:05/49:18:02	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	17+26+31+32	-
B*50:01:01:01-50:01:08/50:04-50:05/50:07-50:08/50:10-50:12/50:15/50:17-50:19/50:32/50:34-50:40/50:42/50:44-50:48/50:50	17+26+27+32	B50(21), -
B*50:02	17+25+26+27+32	B45(12)
B*50:06	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*51:01:01:01-51:01:03/51:01:05-51:01:10/51:01:12/51:01:14-51:01:16/51:01:18-51:01:37/51:01:39-51:02:03/51:02:05-51:03/51:05/51:08:01-51:09:03/51:11N-51:12/51:14/51:16-51:21/51:24:03-51:24:05/51:26-51:40/51:43/51:48-51:53/51:55/51:57-51:58/51:60-51:61:02/51:63:01/51:65-51:67/51:69-51:77/51:79-51:80/51:82-51:91/51:93-51:102/51:105/51:106/51:109-51:111/51:113/51:115/51:117/51:119-51:134/51:137-51:138/51:140-51:147/51:149N-51:150/51:152-51:156/51:158:01-51:167/51:169/51:171/51:173Q-51:175/51:177/51:179-51:189/51:191-51:193/51:195-51:196/51:198/51:201-51:212/51:215-51:217	37+38+39	B51(5), -, B5102, B5103, Null
B*51:01:04/51:01:13/51:02:04/51:10/51:24:01-51:24:02/51:63:02/51:136/51:168/51:197/51:199, B*52:01:05/52:01:15/52:06:01-52:06:03, B*59:02	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	37+38	-, Null
B*51:04/51:56:03/51:139	7+8+37+38+39	B51(5), -

Allele	Mixes	Serology
B*51:06:01-51:06:03/51:41N/51:54/51:59/51:64/51:78:01-51:78:02/51:135/51:190/51:194/51:213	38+39	B51(5), -, Null
B*51:07:01-51:07:02/51:214	37+39+40w	B51(5), -
B*51:13:01/51:92:01, B*52:14, B*59:03	11+37	-
B*51:13:02/51:92:02/51:172	11+37+38+39	-
B*51:15/51:157, B*52:25:01, B*59:01:01:01-59:01:01:02/59:04-59:05/59:07/59:09	31+37	-, B59
B*51:22	37+39+42	-
B*51:23/51:108	25+37+38+39	-
B*51:44N/51:118N	37+39	Null
B*51:46/51:56:01	7w+8w+37w+38+39	B51(5), -
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	20+34+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*51:200	7+37+38+39	-
B*52:01:01:01-52:01:04/52:01:06-52:01:14/52:01:16-52:01:29/52:03-52:05/52:07-52:13/52:15-52:19/52:21-52:24/52:25:02/52:26-52:50/52:52-52:53/52:55-52:67	37+40	B52(5), -, Null
B*52:02:01-52:02:02	34+37+40	-
B*52:20/52:68	40	-
B*52:51	32+37+40	-
B*52:54	15+37+40	-
B*53:01:01-53:02/53:05:01-53:06/53:08:01-53:08:02/53:10/53:15-53:16/53:18-53:27/53:29/53:32/53:34-53:35/53:37/53:41-53:43/53:45	6+7+8+37	B53, -
B*53:04/53:33	6+7+8+11+37	-
B*53:07	7+11	B53
B*53:14, C* 06:147	6	-
B*53:17:01-53:17:02, B*58:01:05/58:77/58:82	8+37	-
B*53:28	8+37+40	-
B*53:30/53:39	6+7+8+17+37	-
B*53:31	6+7+11	-
B*53:40	7+8+37	-
B*54:01:01-54:01:06/54:02/54:05N/54:08N/54:10/54:13/54:16-54:29/54:31-54:32/54:34-54:35/54:37, B*55:07	27+28+29	B54(22), -, Null
B*54:01:07/54:38, B*55:01:01-55:01:03/55:01:05-55:01:12/55:01:14-55:03/55:05/55:09-55:12/55:15-55:16/55:19/55:21-55:22/55:24-55:26/55:29-55:31/55:33-55:34/55:36-55:48/55:50/55:52/55:54-55:55N/55:57/55:59-55:60/55:62-55:63/55:65-55:67/55:69-55:77/55:79-55:80/55:82/55:84, B*56:10/56:19N	27+28	-, B55(22), B22, Null
B*54:03/54:33	27+28+29+30	-
B*54:04/54:11	28+29	-, B54(22)
B*54:06, B*56:22	28w+30	-
B*54:07	27+28w+29	-
B*54:09	28w	-
B*54:12	28+29+31+37	-

Allele	Mixes	Serology
B*54:14	28w+29	-
B*54:15	29	-
B*54:30	27+29	-
B*54:36	27w+28w+29	-
B*55:01:04	27+28+39+41	B55(22)
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, B*56:08/56:17/56:23/56:42/56:44, C*01:90/01:136, C*03:19/03:307/03:318N, C*07:289/07:536, C*12:15, 15:07/15:43/15:85	27	-, Cw3, Null
B*55:23/55:32/55:68, B*56:18/56:31-56:32	21+28w	-
B*55:27	24w+28w	-
B*55:35	27+28+34+43	-
B*55:53	27w+28w	-
B*55:56	23+27+28	-
B*55:64	27+28w	-
B*56:01:01:01-56:02:02/56:04/56:16/56:20:01-56:20:02/56:24-56:30/56:34-56:38N/56:40-56:41/56:43/56:47-56:49/56:51-56:52	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*56:11	7+19+28w+30	B56(22)
B*56:12	7w+19w+28	B55(22)
B*56:13	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*57:01:01/57:01:03-57:01:18/57:01:20-57:01:23/57:04:01-57:04:02/57:06/57:08/57:10/57:14:02-57:15/57:18-57:21/57:23-57:27/57:29-57:31/57:33-57:38/57:40-57:41/57:43-57:44/57:47-57:50/57:52/57:54-57:56/57:58-57:62/57:64-57:65/57:67:01-57:68/57:71-57:75/57:77-57:79N/57:81/57:85-57:90	34+35	B57(17), -, Null
B*57:01:02/57:02:01-57:03:03/57:09/57:16-57:17/57:28N/57:32/57:39/57:42/57:46/57:66/57:70/57:80/57:84	35	B57(17), -, Null
B*57:01:19/57:14:01	34+35+36	-
B*57:05	8+35+37	-
B*57:07	35+44	-
B*57:12	35+43	-
B*57:13/57:22	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*58:01:01:01-58:01:04/58:01:06-58:01:15/58:01:17-58:01:19/58:01:21-58:01:22/58:04-58:05/58:09-58:13/58:17N/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/58:74/58:76/58:79-58:81/58:83-58:87	8+36+37	B58(17), -, Null
B*58:01:16/58:02:01-58:02:02/58:07/58:15-58:16:02/58:18/58:25-58:26/58:38/58:43/58:60	36	-, B58(17)
B*58:01:20/58:75	8w+36+37w	-
B*58:06/58:46	36+45	-

Allele	Mixes	Serology
B*58:08:01-58:08:02	36+37+45	B17, -
B*58:14	35+36	-
B*58:19/58:78	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*59:06	29+31+37	-
B*67:01:01-67:01:03/67:03-67:07	12+13+28	B67, -
B*67:02	12+33	-
B*73:01-73:02	48	B73, -
B*78:03	5+39+41+42	-
B*78:05	5+40+41	-
B*78:06	40+41	-
B*78:09	38+39+41	-
B*82:01-82:02:02	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, 03:278, 06:77	32	-
C*03:342	19+24w	-
C*07:336	34w	-
C*07:463	2+29w+48w	-
C*08:93, C*14:61	25	-
C*15:71	8+31+37	-

w = weak