Gel Documentation Form and Worksheet

DQB1 high resolution for frequent alleles

(101.221-12/12u) Lot No: 9D8 Expiry Date: 2019-02-01

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sample ID:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DNA Conc.(ng/ul):\_\_\_\_\_\_\_\_\_

Test Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tested By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reviewed By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Interpretation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Failed lanes*: \_\_\_\_\_\_\_\_\_\_\_\_ *Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**Gel Picture**

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| --- |
| PHOTO DOCUMENT |









‘ICB’ Internal Control Band,

‘AmpS’ Amplicon Size

**Notes:**

Product sizes are approximate. For detailed information, see the lot-specific Specificity Table and Interpretation Table.

This table is intended as a guide. For interpretation always use the Interpretation Table and/or Specificity Table.

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

Primer mixes 6, 26, 30, 37, 47, 55, 59 and 94 may give rise to a lower yield of HLA-specific PCR product than the other DQB1 primer mixes, most pronounced are primer mixes 26, 55 and 94.

Primer mixes 3, 8, 17, 25, 35, 38, 41, 42, 43 and 64 have a tendency to giving rise to primer oligomer formation.

Primer mixes 2, 10, 12, 18, 20, 21, 31, 33, 35, 36, 38, 39, 40, 42, 43, 75, 77 and 80 may have tendencies of unspecific amplifications.

Primer mix 96 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 430 base pairs.























**1**DQB1 alleles listed on the IMGT/HLA web page 2016-January-19, release 3.23.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

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

**3**Primer mix 4: Specific PCR fragment of 140 bp in the DQB1\*02:02:01-02:03, 02:06, 02:10-02:12, 02:62 and 02:64-02:65 alleles. Specific PCR fragment of 185 bp in the DQB1 \*03:28 and 03:50 alleles.

Primer mix 5: Specific PCR fragment of 145 bp in the DQB1\*02:04 allele. Specific PCR fragment of 170 bp in the DQB1\*03:96, 04:23, 05:06:01-05:07 and 05:50 alleles. Specific PCR fragment of 260 bp in the DQB1\*05:03:02, 05:51, 05:119, 06:06?, 06:129 and 06:146:01 alleles.

Primer mix 8: Specific PCR fragment of 135 bp in the DQB1\*02:01:01-02:02:02, 02:04-02:16, 02:18N-02:36, 02:38-02:65, 03:02:01-03:02:19, 03:07-03:08, 03:11, 03:18, 03:32, 03:37, 03:45, 03:62-03:64, 03:66N-03:68, 03:70, 03:81, 03:85, 03:106-03:107, 03:125, 03:146, 03:153, 03:161, 03:174-03:175, 03:178-03:179, 03:184-03:185, 03:189-03:190, 03:199, 03:203-03:205, 03:210-03:211, 03:213N-03:215, 03:220-03:221, 06:03:13, 06:29, 06:63, 06:123 and 06:139 alleles. Specific PCR fragment of 225 bp in the DQB1\*06:171 allele.

Primer mix 9: Specific PCR fragment of 175 bp in DQB1\*03:04:02-03:05:04, 03:06?-03:08?, 03:10:02?-03:15?, 03:17:01?-03:18?, 03:19, 03:20?, 03:23:01?-03:23:02?, 03:26?, 03:33?-03:34?, 03:37?, 03:40?, 03:48?, 03:52?-03:72?, 03:74?-03:78?, 03:81?-03:82?, 03:100, 03:101?-03:112?, 03:118N?-03:163?, 03:165?-03:167?, 03:170?-03:179?, 03:180-03:181, 03:183?-03:185?, 03:187?-03:189?, 03:192?-03:194?, 03:195, 03:201?-03:205?, 03:207?-03:221?, 04:01:01-04:02:10, 04:04-04:33 alleles. Specific PCR fragment of 220 bp in the DQB1\*02:01:01-02:36, 02:38-02:65, 03:06-03:08, 03:11-03:12, 03:18, 03:20, 03:23:01-03:23:02, 03:25-03:26, 03:33-03:34, 03:37, 03:62-03:68, 03:70, 03:74, 03:81, 03:106-03:107, 03:110-03:113, 03:123-03:126, 03:136-03:137, 03:141, 03:145-03:146, 03:149, 03:153, 03:155-03:156, 03:161, 03:174-03:179, 03:184-03:185, 03:203-03:205, 03:209-03:215, 03:217 and 03:220-03:221 alleles. Specific fragment of 175 bp and 220 bp in the DQB1\*03:02:01-03:03:13, 03:15, 03:30-03:32, 03:38-03:39, 03:41, 03:43, 03:45, 03:79, 03:85-03:91Q, 03:95-03:99Q, 03:117, 03:168, 03:190, 03:199-03:200 and 04:03:01-04:03:02 alleles.

Primer mix 10: Specific PCR fragment of 120 bp in the DQB1\*02:11 and 02:25 alleles. Specific PCR fragment of 145 bp in the DQB1\*02:26, 03:04:01-03:04:02, 03:14:01-03:14:02, 03:80 and 03:138 alleles. Specific PCR fragment of 175 bp in the DQB1\*03:58 allele.

Primer mix 11: Specific PCR fragment of 95 bp in the DQB1\*03:20 allele. Specific PCR fragment of 130 bp in the DQB1\*03:05:01-03:05:04, 03:17:01-03:17:02, 03:53, 03:61-03:62, 03:72, 03:100, 03:132, 03:181 and 04:09 alleles.

Primer mix 12: Specific PCR fragment of 65 bp in the DQB1\*03:40 allele. Specific PCR fragment of 125 bp in the DQB1\*03:03:06, 03:06, 03:08, 03:25, 03:137, 03:194, 04:01:03, 06:02:02 and 06:03:02 alleles. Specific PCR fragment of 150 bp in the DQB1\*03:119 allele. Specific PCR fragment of 195 bp in the DQB1\*03:57 allele.

Primer mix 13: Specific PCR fragment of 110 bp in the DQB1\*03:15 allele. Specific PCR fragment of 135 bp in the DQB1\*03:16 allele. Specific PCR fragment of 150 bp in the DQB1\*03:07 allele. Specific PCR fragment of 195 bp in the DQB1\*03:54, 03:162, 03:183 and 03:204 alleles.

Primer mix 14: Specific PCR fragment of 135 bp in the DQB1\*03:09 and 05:56 alleles. Specific PCR fragment of 180 bp in the DQB1\*03:55 and 03:204 alleles. Specific PCR fragment of 260 bp in the DQB1\*03:11 and 03:26 alleles.

Primer mix 15: Specific PCR fragment of 135 bp in the DQB1\*03:10:01-03:10:02, 03:12, 03:14:01-03:14:02, 03:70, 03:179, 03:183, 03:195, 06:01:01-06:01:15, 06:06?, 06:43, 06:54N-06:58, 06:98, 06:99:02-06:105, 06:108, 06:120, 06:132, 06:140, 06:153, 06:157, 06:167-06:168, 06:177, 06:181 and 06:194 alleles. Specific PCR fragment of 200 bp in the DQB1\*02:42 allele. Specific PCR fragment of 250 bp in the DQB1\*03:27 allele.

Primer mix 17: Specific PCR fragment of 110 bp in the DQB1\*05:03:12, 06:23, 06:82, 06:99:01, 06:156, 06:162 and 06:169 alleles. Specific PCR fragment of 165 bp in the DQB1\*03:13 allele. Specific PCR fragment of 195 bp in the DQB1\*03:28 allele. Specific PCR fragment of 215 bp in the DQB1\*03:47 allele. Specific PCR fragment of 300 bp in the DQB1\*06:34 allele.

Primer mix 18: Specific PCR fragment of 80 bp in the DQB1\*03:188 allele. Specific PCR fragment of 130 bp in the DQB1\*03:24 and 03:79 alleles. Specific PCR fragment of 190 bp in the DQB1\*03:60, 03:73, 03:112, 04:30, 05:73, 05:98, 05:116, 06:28, 06:56 and 06:79:01-06:79:02 alleles. Specific PCR fragment of 220 bp in the DQB1\*03:18 allele. Specific PCR fragment of 260 bp in the DQB1\*02:36 allele.

Primer mix 21: Specific PCR fragment of 125 bp in DQB1\*04:11 allele. Specific PCR fragment of 205 bp in DQB1\*04:01:01-04:01:04, 04:05-04:08, 04:14-04:17 and 04:27 alleles.

Primer mix 22: Specific PCR fragment of 140 bp in DQB1\*04:14 allele. Specific PCR fragment of 205 bp in DQB1\*03:132, 04:02:01-04:02:07, 04:02:09-04:03:01, 04:04, 04:09-04:13, 04:18-04:19 and 04:21-04:33 alleles.

Primer mix 24: Specific PCR fragment of 115 bp in the DQB1\*05:02:01-05:02:13, 05:05:01-05:05:02, 05:14, 05:17, 05:19, 05:26, 05:33-05:37, 05:46-05:47, 05:53, 05:57, 05:59, 05:65, 05:79, 05:83, 05:86-05:88, 05:90N, 05:94, 05:100, 05:102, 05:106, 05:113 and 05:116-05:118 alleles. Specific PCR fragment of 215 bp in the DQB1\*05:72 allele.

Primer mix 25: Specific PCR fragment of 95 bp in the DQB1\*05:01:09-05:1:10, 05:02:02, 05:03:02, 05:03:17 and 05:58 alleles. Specific PCR fragment of 120 bp in the DQB1\*05:03:12, 05:23 and 05:43 alleles. Specific PCR fragment of 215 bp in the DQB1\*05:72 alleles. Specific PCR fragment of 95 bp and 120 bp in the DQB1\*04:28, 05:03:01:01-05:03:01:02, 05:03:03-05:03:11, 05:03:13, 05:03:15-05:03:16, 05:06:01-05:06:02, 05:08-05:10, 05:13, 05:15-05:16, 05:24, 05:28, 05:38-05:42, 05:50, 05:56, 05:60, 05:64, 05:66:01-05:67, 05:78, 05:85, 05:91, 05:96, 05:98, 05:101, 05:108-05:109 and 05:119 alleles.

Primer mix 27: Specific PCR fragment of 170 bp in the DQB1\*03:67 allele. Specific PCR fragment of 210 bp in the DQB1\*06:01:01-06:02:25, 06:05:02?-06:06?, 06:10-06:11:03, 06:13:01-06:13:02, 06:16, 06:18:01-06:20, 06:24, 06:29, 06:33, 06:35, 06:37, 06:43, 06:45, 06:47-06:51:02, 06:53-06:57, 06:68, 06:70-06:84, 06:95-06:109, 06:111-06:117, 06:120, 06:122-06:127, 06:130-06:132, 06:136-06:140, 06:147, 06:150-06:153, 06:157, 06:159, 06:161, 06:163, 06:166-06:167, 06:173-06:179N, 06:181-06:183, 06:188, 06:192, 06:197-06:198 and 06:200 alleles.

Primer mix 30: Specific PCR fragment of 105 bp in DQB1\*04:15 and 04:16 alleles. Specific PCR fragment of 150 bp in DQB1\*03:23:01, 05:03:12, 06:03:01-06:03:03, 06:03:05-06:03:07, 06:03:11-06:03:22, 06:04:02, 06:07:01, 06:08:01, 06:09:02, 06:11:01-06:11:03, 06:26N, 06:28, 06:30-06:32:01, 06:40-06:41, 06:44, 06:59-06:62, 06:64-06:65, 06:67, 06:90-06:92, 06:94, 06:110, 06:118:01, 06:128, 06:133-06:134, 06:141, 06:143-06:145, 06:148, 06:154, 06:161, 06:165, 06:169-06:170, 06:184-06:185, 06:187, 06:191, 06:195-06:196 and 06:199 alleles. Specific PCR fragment of 205 bp in the DQB1\*04:20 and 04:27 alleles. Specific PCR fragment of 235 bp in the DQB1\*03:06, 03:25, 04:04-04:05 and 04:18 alleles.

Primer mix 33: Specific PCR fragment of 120 bp in the DQB1\*03:133 and 03:200 alleles. Specific PCR fragment of 170 bp in the DQB1\*06:04:01-06:05:02, 06:06w, 06:07:01-06:07:02, 06:09:01-06:09:03, 06:09:06, 06:18:01-06:18:02, 06:22:02, 06:25, 06:27:01-06:27:02, 06:32:01-06:32:02, 06:34, 06:36, 06:38-06:39, 06:52, 06:58, 06:66, 06:69, 06:85-06:86, 06:88-06:89, 06:93-06:94, 06:118:01-06:118:02, 06:121, 06:129, 06:135, 06:142, 06:155, 06:158N, 06:160, 06:164, 06:168, 06:171-06:172, 06:180, 06:186, 06:189 and 06:193N alleles .

Primer mix 34: Specific PCR fragment of 105 bp in DQB1\*05:07 and 05:75 alleles. Specific PCR fragment of 130 bp in the DQB1\*05:25, 06:04:01-06:05:01, 06:06, 06:08:01-06:09:06, 06:12-06:13:02, 06:17-06:18:02, 06:21-06:22:03, 06:27:01-06:27:02, 06:34, 06:36, 06:38-06:39, 06:42, 06:52, 06:58, 06:69, 06:85-06:86, 06:88-06:89, 06:93, 06:119, 06:121, 06:129, 06:135, 06:142, 06:149, 06:155, 06:158N, 06:160, 06:164, 06:171, 06:180, 06:186, 06:189 and 06:193N alleles.

Primer mix 35: Specific PCR fragment of 160 bp in DQB1\*03:27, 03:48, 03:87, 06:35, 06:53 and 06:145 alleles. Specific PCR fragment of 210 bp in the DQB1\*05:101 alleles. Specific PCR fragment of 250 bp in the DQB1\*03:31, 05:73, 05:80, 06:05:01, 06:05:02?-06:06?, 06:20, 06:31, 06:45 and 06:156 alleles.

Primer mix 36: Specific PCR fragment of 95 bp in DQB1\*03:90N allele. Specific PCR fragment of 155 bp in the DQB1\*06:164 allele. Specific PCR fragment of 180 bp in DQB1\*03:68 allele. Specific PCR fragment of 210 bp in DQB1\*06:05:01, 06:05:02?-06:06?, 06:09:01-06:09:06, 06:12, 06:15:01-06:15:02, 06:22:01-06:22:03, 06:42, 06:46, 06:66, 06:88, 06:94, 06:118:01-06:119, 06:121, 06:142 and 06:189 alleles.

Primer mix 37: Specific PCR fragment of 130 bp in DQB1\*05:63 allele. Specific PCR fragment of 165 bp in DQB1\*05:39 allele. Specific PCR fragment of 185 bp in DQB1\*05:21, 06:06 and 06:149 alleles.

Primer mix 38: Specific PCR fragment of 100 bp in DQB1\*04:28, 05:38, 05:62, 05:119, 06:14:01-06:14:03, 06:69, 06:156 and 06:162 alleles. Specific PCR fragment of 130 bp in the DQB1\*03:01:04, 05:04, 05:08, 05:18, 05:26, 05:52, 05:77 and 06:01:10 alleles. Specific PCR fragment of 180 bp in the DQB1\*03:98, 06:10 and 06:130 alleles. Specific PCR fragment of 105 bp and 180 bp in the DQB1\*05:79 allele.

Primer mix 39: Specific PCR fragment of 115 bp in the DQB1\*03:88 allele. Specific PCR fragment of 140 bp in the DQB1\*03:165 allele. Specific PCR fragment of 170 bp in the DQB1\*03:29-03:30, 03:52, 03:72, 03:100, 03:132, 03:215, 04:09, 06:29, 06:96 and 06:139 alleles. Specific PCR fragment of 195 bp in the DQB1\*04:13, 05:62, 06:13:01-06:13:02, 06:16, 06:22:01-06:22:03, 06:55, 06:69 and 06:119 alleles.

Primer mix 40: Specific PCR fragment of 95 bp in the DQB1\*03:196, 05:45 and 06:40 allele. Specific PCR fragment of 135 bp in the DQB1\*05:27 allele. Specific PCR fragment of 155 bp in the DQB1\*02:64, 03:21-03:22, 03:96, 04:23, 05:35, 06:04:01w-06:05:02w, 06:06?, 06:07:01w-06:07:02w, 06:08:01?-06:08:03?, 06:09:01w-06:09:06w, 06:10?-06:11:03?, 06:12w, 06:13:01?-06:18:01?, 06:18:02w, 06:19:01?-06:20?, 06:21w, 06:22:01?-06:32:02?, 06:34w, 06:35?, 06:36w, 06:37?, 06:38w, 06:40?, 06:41w-06:42w, 06:45?-06:46?, 06:48?-06:50?, 06:51:02?, 06:52w, 06:53?-06:83?, 06:84w, 06:85?, 06:89?, 06:91?-06:97?, 06:118:01w, 06:118:02?-06:126?, 06:128?, 06:129w, 06:131?-06:147?, 06:149?-06:184?, 06:186w, 06:189w and 06:190?-06:199?. Specific PCR fragment of 195 bp in the DQB1\*05:41N and 05:90 alleles.

Primer mix 41: Specific PCR fragment of 155 bp in the DQB1\*03:213N allele. Specific PCR fragment of 185 bp in the DQB1\*03:45, 06:17, 06:24, 06:30, 06:38 and 06:42 alleles. Specific PCR fragment of 265 bp in the DQB1\*06:127 allele. Specific PCR fragment of 300 bp in the DQB1\*06:52 allele.

Primer mix 42: Specific PCR fragment of 100 bp in the DQB1\*03:41, 04:06, 04:12 and 04:16 alleles. Specific PCR fragment of 145 bp in the DQB1\*03:66N, 03:213, 06:10, 06:25, 06:130 and 06:193N alleles. Specific PCR fragment of 195 bp in the DQB1\*02:08, 03:06, 03:25, 04:03:01-04:03:02 and 05:79 alleles. Specific PCR fragment of 230 bp in the DQB1\*04:18 allele.

Primer mix 43: Specific PCR fragment of 85 bp in the DQB1\*03:59 allele. Specific PCR fragment of 155 bp in the DQB1\*02:05 allele. Specific PCR fragment of 240 bp in the DQB1\*03:71 allele. Specific PCR fragments of 85 bp and 110 bp in the DQB1\*06:37 allele. Specific PCR fragment of 155 bp and 185 bp in the DQB1\*06:100 allele. Specific PCR fragment of 185 bp and 215 bp in the DQB1\*06:26N allele. Specific PCR fragment of 240 bp and 270 bp in the DQB1\*06:33 and 06:143 alleles.

Primer mix 44: Specific PCR fragment of 120 bp in the DQB1\*03:42, 03:89 and 03:164 alleles. Specific PCR fragment of 155 bp in the DQB1\*03:94, 04:02:07, 04:09, 05:62, 06:02:01-06:02:04, 06:02:06-06:02:25, 06:05:02, 06:10, 06:13:01-06:16, 06:20, 06:22:01-06:24, 06:29, 06:33, 06:37, 06:46-06:51:02, 06:68-06:84, 06:96-06:97, 06:106-06:107, 06:109, 06:111-06:117, 06:119, 06:122, 06:124-06:127, 06:130, 06:136-06:138, 06:146:01-06:147, 06:150-06:151, 06:156, 06:159, 06:161-06:162, 06:166, 06:173-06:175, 06:178-06:179N, 06:182-06:183, 06:188, 06:192, 06:198 and 06:200 alleles.

Primer mix 45: Specific PCR fragment of 130 bp in the DQB1\*06:07:01-06:07:02, 06:15:01-06:15:02, 06:36, 06:46, 06:66, 06:92, 06:118:01-06:118:02 and 06:172 alleles. Specific PCR fragment of 155 bp in the DQB1\*06:164 allele. Specific PCR fragment of 260 bp in the DQB1\*06:85 allele.

Primer mix 46: Specific PCR fragment of 160 bp in the DQB1\*06:03:11, 06:21, 06:92 and 06:199 alleles. Specific PCR fragment of 210 bp in the DQB1\*06:03:15, 06:03:19, 06:27:01-06:27:02, 06:30, 06:32:01-06:32:02, 06:60, 06:62 and 06:168 alleles. Specific PCR fragment of 160 bp and 210 bp in the DQB1\*06:03:01-06:03:10, 06:03:12-06:03:14, 06:03:16-06:03:18, 06:03:20-06:03:22, 06:08:01-06:08:03, 06:14:01-06:14:03, 06:28, 06:31, 06:40-06:41, 06:44, 06:59, 06:61, 06:63-06:65, 06:67, 06:87, 06:90-06:91, 06:110, 06:128, 06:133-06:134, 06:141, 06:143-06:145, 06:148, 06:154, 06:170, 06:184-06:185, 06:187, 06:190-06:191 and 06:195-06:196 alleles.

Primer mix 47: Specific PCR fragment of 110 bp in the DQB1\*03:42 allele. Specific PCR fragment of 155 bp in the DQB1\*03:30, 03:72, 03:84N, 03:98, 03:100, 03:132, 03:215, 04:01:01-04:03:02, 04:06-04:10, 04:12-04:14, 04:16-04:33, 05:38, 05:119, 06:02:05, 06:02:16, 06:05:02, 06:13:02, 06:14:03, 06:19:01-06:19:02, 06:22:01-06:22:02, 06:69, 06:95, 06:119, 06:123w, 06:139 and 06:152 alleles. Specific PCR fragment of 290 bp in the DQB1\*06:02:04 and 06:72 alleles.

Primer mix 48: Specific PCR fragment of 170 bp in the DQB1\*03:32, 03:43 and 04:07 alleles. Specific PCR fragment of 225 bp in the DQB1\*03:85 allele.

Primer mix 49: Specific PCR fragment of 105 bp in the DQB1\*03:33, 03:196, 05:32, 05:42 and 05:45 alleles. Specific PCR fragment of 135 bp in the DQB1\*05:87Q allele. Specific PCR fragment of 160 bp in the DQB1\*02:33, 02:41, 03:35, 05:14, 05:84 and 06:103 alleles.

Primer mix 50: Specific PCR fragment of 125 bp in the DQB1\*03:130 allele. Specific PCR fragment of 155 bp in the DQB1\*03:80 and 03:139 alleles. Specific PCR fragment of 200 bp in the DQB1\*03:37, 03:38, 03:46, 03:162 and 03:183 alleles. Specific PCR fragment of 240 bp in the DQB1\*02:14:01-02:14:02, 03:34 and 03:143 alleles.

Primer mix 51: Specific PCR fragment of 130 bp in the DQB1\*03:36, 03:39, 03:53, 03:62 and 03:149 alleles. Specific PCR fragment of 185 bp in the DQB1\*03:51 and 03:158 alleles. Specific PCR fragment of 240 bp in the DQB1\*02:06, 02:48, 03:24, 03:79 and 06:117 alleles. Specific PCR fragment of 270 bp in the DQB1\*02:09 allele.

Primer mix 52: Specific PCR fragment of 95 bp in the DQB1\*03:06?-03:08?, 03:10:02?-03:15?, 03:17:01?-03:18?, 03:19, 03:20?, 03:23:01?-03:23:02?, 03:26?, 03:37?, 03:40?, 03:48?, 03:52?-03:71?, 03:74?-03:78?, 03:81?-03:82?, 03:101?-03:112?, 03:118N?-03:163?, 03:165?-03:167?, 03:170?-03:179?, 03:183?-03:185?, 03:187?-03:189?, 03:192?-03:194?, 03:201?-03:205?, 03:207?-03:221? and 04:08 alleles. Specific PCR fragment of 220 bp in the DQB1\*06:98 and 06:126 alleles.

Primer mix 53: Specific PCR fragment of 130 bp in the DQB1\*03:162, 03:183 and 06:153 alleles. Specific PCR fragment of 160 bp in the DQB1\*02:51 allele. Specific PCR fragment of 195 bp in the DQB1\*02:07:02, 05:09, 05:29 and 05:30 allele.

Primer mix 54: Specific PCR fragment of 110 bp in the DQB1\*05:17 and 05:23 allele. Specific PCR fragment of 150 bp in the DQB1\*03:115 and 06:109- 06:110 alleles. Specific PCR fragment of 190 bp in the DQB1\*05:10, 05:12, 05:47, 05:71, 06:105 and 06:185 alleles.

Primer mix 56: PCR fragment of 100 bp in the DQB1\*06:44 and 06:47 alleles. PCR fragment of 150 bp in the DQB1\*03:177 allele. Specific PCR fragment of 190 bp in the DQB1\*03:114 and 03:197Q alleles. Specific PCR fragment of 220 bp in the DQB1\*06:43 allele. Specific PCR fragment of 265 bp in the DQB1\*03:83 allele.

Primer mix 57: Specific PCR fragment of 150 bp in the DQB1\*02:54 allele. Specific PCR fragment of 185 bp in the DQB1\*02:07:01, 03:01:01:01-03:01:31, 03:04:01-03:04:02, 03:06?-03:08?, 03:09-03:10:01, 03:10:02?-03:15?, 03:16, 03:17:01?-03:18?, 03:20?, 03:21-03:22, 03:23:01?-03:23:02?, 03:24, 03:26?, 03:27-03:29, 03:33?-03:34?, 03:35-03:36, 03:37?, 03:40?, 03:42, 03:44, 03:46-03:47, 03:48?, 03:49-03:51, 03:52?-03:71?, 03:73, 03:74?-03:78?, 03:80, 03:81?-03:82?, 03:83-03:84N, 03:92-03:94, 03:101?-03:112?, 03:113-03:116, 03:118N?, 03:119, 03:120?-03:138?, 03:139, 03:140?-03:163?, 03:164, 03:165?-03:167?, 03:169, 03:170?-03:179?, 03:182, 03:183?-03:185?, 03:186, 03:187?-03:189?, 03:191, 03:192?-03:194?, 03:196-03:198, 03:201?-03:205?, 03:206 and 03:207?-03:221? .

Primer mix 58: Specific PCR fragment of 180 bp in the DQB1\*05:05:01-05:05:02, 05:11:01-05:11:02, 05:28 and 05:66:01-05:66:02 alleles. Specific PCR fragment of 215 bp in the DQB1\*05:30 allele. Specific PCR fragment of 250 bp in the DQB1\*05:03:02, 05:51-05:52, 05:119 and 06:06? allele. Specific PCR fragment of 150 bp and 215 bp in the DQB1\*03:119 allele. Specific PCR fragment of 180 bp and 250 bp in the DQB1\*03:56, 06:129 and 06:146:01 alleles.

Primer mix 59: Specific PCR fragment of 100 bp in the DQB1\*03:44, 05:13 and 05:117 alleles. Specific PCR fragment of 190 bp in the DQB1\*03:114 and 06:54N alleles. Specific PCR fragment of 220 bp in the DQB1\*05:24 and 05:101 alleles.

Primer mix 60: Specific PCR fragment of 110 bp in the DQB1\*05:88 allele. Specific PCR fragment of 150 bp in the DQB1\*05:40 and 05:69 alleles. Specific PCR fragment of 180 bp in the DQB1\*05:15, 05:33 and 05:49 allele.

Primer mix 61: Specific PCR fragment of 110 bp in the DQB1\*05:88 allele. Specific PCR fragment of 155 bp in the DQB1\*05:40 and 05:69 alleles. Specific PCR fragment of 210 bp in the DQB1\*05:16, 05:34, 05:44, 05:73, 05:98, 05:116, 06:156, 06:162 and 06:169 alleles.

Primer mix 62: Specific PCR fragment of 85 bp in the DQB1\*05:110N allele. Specific PCR fragment of 135 bp in the DQB1\*03:75 allele. Specific PCR fragment of 160 bp in the DQB1\*05:62, 06:02:19, 06:79:02, 06:95, 06:97 and 06:158N alleles. Specific PCR fragment of 225 bp in the DQB1\*03:30, 03:72, 03:100, 03:215, 06:05:02, 06:15:01-06:15:02, 06:22:01-06:22:03, 06:37, 06:48, 06:51:01-06:51:02, 06:69 and 06:139 alleles.

Primer mix 63: Specific PCR fragment of 180 bp in the DQB1\*06:50 allele. Specific PCR fragment of 220 bp in the DQB1\*03:86 allele.

Primer mix 64: Specific PCR fragment of 100 bp in the DQB1\*02:16 and 02:21 alleles. Specific PCR fragment of 160 bp in the DQB1\*02:51 and 04:17 alleles. Specific PCR fragment of 230 bp in the DQB1\*02:20N allele.

Primer mix 65: Specific PCR fragment of 115 bp in the DQB1\*02:21 and 05:36 alleles. Specific PCR fragment of 220 bp in the DQB1\*02:46 allele.

Primer mix 66: Specific PCR fragment of 110 bp in the DQB1\*03:116 and 05:57 alleles. Specific PCR fragment of 130 bp in the DQB1\*02:18N, 05:31, 05:46, 05:108 and 06:111 alleles. Specific PCR fragment of 165 bp in the DQB1\*02:19 allele. Specific PCR fragment of 195 bp in the DQB1\*05:41N and 05:90N alleles.

Primer mix 67: Specific PCR fragment of 100 bp in the DQB1\*02:15, 02:27 and 02:58N alleles. Specific PCR fragment of 160 bp in the DQB1\*02:30 allele.

Primer mix 68: Specific PCR fragment of 100 bp in the DQB1\*02:23, 02:24 and 02:27 alleles. Specific PCR fragment of 175 bp in the DQB1\*02:28 allele.

Primer mix 69: Specific PCR fragment of 105 bp in the DQB1\*02:24, 02:31 and 02:58N alleles. Specific PCR fragment of 185 bp in the DQB1\*02:29 allele.

Primer mix 71: Specific PCR fragment of 80 bp in the DQB1\*03:188 allele. Specific PCR fragment of 160 bp in the DQB1\*03:63, 03:76, 03:139, 03:168 and 03:211 alleles. Specific PCR fragment of 185 bp in the DQB1\*03:118N allele.

Primer mix 72: Specific PCR fragment of 135 bp in the DQB1\*05:37 and 05:104 alleles. Specific PCR fragment of 165 bp in the DQB1\*03:64 and 03:77 alleles. Specific PCR fragment of 190 bp in the DQB1\*02:50, 03:99Q and 03:118N alleles.

Primer mix 73: Specific PCR fragment of 95 bp in the DQB1\*02:53Q and 03:65 alleles. Specific PCR fragment of 125 bp in the DQB1\*03:23:01-03:23:02, 03:217 and 04:10 alleles. Specific PCR fragment of 160 bp in the DQB1\*03:211 allele. Specific PCR fragment of 225 bp in the DQB1\*03:78, 03:81 and 03:159 alleles.

Primer mix 74: Specific PCR fragment of 115 bp in the DQB1\*05:19 and 05:22 allele. Specific PCR fragment of 140 bp in the DQB1\*04:25N allele. Specific PCR fragment of 185 bp in the DQB1\*05:71 allele.

Primer mix 75: Specific PCR fragment of 115 bp in the DQB1\*05:75 allele. Specific PCR fragment of 155 bp in the DQB1\*03:102 and 05:20 alleles. Specific PCR fragment of 180 bp in the DQB1\*03:197Q, 06:06?, 06:55 and 06:58 alleles

Primer mix 76: Specific PCR fragment of 145 bp in the DQB1\*03:04:02, 03:10:01, 03:12, 03:14:02, 03:70, 03:179, 03:195, 06:01:01, 06:01:03-06:01:06, 06:01:08-06:01:11, 06:01:13-06:01:15, 06:43, 06:53, 06:55-06:57, 06:98, 06:99:02-06:100, 06:102N-06:105, 06:108, 06:120, 06:132, 06:140, 06:153, 06:157, 06:167-06:168, 06:181 and 06:194 alleles. Specific PCR fragment of 145 bp and 185 bp in the DQB1\*06:54N allele.

Primer mix 77: Specific PCR fragment of 95 bp in the DQB1\*06:155 allele. Specific PCR fragment of 185 bp in the DQB1\*06:60-06:61 alleles.

Primer mix 78: Specific PCR fragment of 100 bp in the DQB1\*06:64 allele. Specific PCR fragment of 135 bp in the DQB1\*06:94 and 06:170 alleles. Specific PCR fragment of 170 bp in the DQB\*06:62 allele.

Primer mix 79: Specific PCR fragment of 90 bp in the DQB1\*06:65 allele. Specific PCR fragment of 125 bp in the DQB1\*06:93 allele. Specific PCR fragment of 190 bp in the DQB1\*06:116 allele.

Primer mix 80: Specific PCR fragment of 105 bp in the DQB1\*06:70 allele. Specific PCR fragment of 175 bp in the DQB1\*06:76 and 06:163 alleles.

Primer mix 81: Specific PCR fragment of 120 bp in the DQB1\*03:95N and 03:210 alleles. Specific PCR fragment of 170 bp in the DQB1\*03:30, 03:72, 03:100, 03:132, 03:158, 03:170, 03:215, 04:09, 06:29, 06:71, 06:96, 06:139 and 06:163 alleles.

Primer mix 82: Specific PCR fragment of 170 bp in the DQB1\*06:77N allele. Specific PCR fragment of 235 bp in the DQB1\*06:107 allele. Specific PCR fragment of 280 bp in the DQB1\*06:73 allele.

Primer mix 83: Specific PCR fragment of 165 bp in the DQB1\*06:78 allele. Specific PCR fragment of 235 bp in the DQB1\*06:107 allele. Specific PCR fragment of 260 bp in the DQB1\*06:74 allele.

Primer mix 84: Specific PCR fragment of 120 bp in the DQB1\*06:80 allele. Specific PCR fragment of 190 bp in the DQB1\*06:75N and 06:106 alleles.

Primer mix 85: Specific PCR fragment of 180 bp in the DQB1\*06:67, 06:174 and 06:191 alleles. Specific PCR fragment of 215 bp in the DQB1\*06:68 and 06:112N alleles. Specific PCR fragment of 265 bp in the DQB1\*06:127 allele.

Primer mix 86: Specific PCR fragment of 95 bp in the DQB1\*06:59 and 06:150 alleles. Specific PCR fragment of 125 bp in the DQB1\*06:99:01-06:99:02 alleles. Specific PCR fragment of 95 bp and 180 bp in the DQB1\*06:90 and 06:191 alleles. Specific PCR fragment of 125 bp and 220 bp in the DQB1\*06:112N allele.

Primer mix 87: Specific PCR fragment of 85 bp in the DQB1\*03:08, 03:137, 03:194, 06:29, 06:63, 06:87 and 06:96 alleles. Specific PCR fragment of 110 bp in the DQB1\*06:59, 06:91 and 06:150 alleles. Specific PCR fragment of 150 bp in the DQB1\*06:179N allele.

Primer mix 88: Specific PCR fragment of 110 bp in the DQB1\*06:125 allele. Specific PCR fragment of 215 bp in the DQB1\*06:57 and 06:81 alleles.

Primer mix 89: Specific PCR fragment of 110 bp in the DQB1\*06:125 allele. Specific PCR fragment of 150 bp in the DQB1\*06:101 allele. Specific PCR fragment of 185 bp in the DQB1\*06:144N allele. Specific PCR fragment of 260 bp in the DQB1\*06:83 allele.

Primer mix 90: Specific PCR fragment of 130 bp in the DQB1\*06:102N allele. Specific PCR fragment of 240 bp in the DQB1\*03:97, 03:117, 06:86 and 06:104 alleles.

Primer mix 91: Specific PCR fragment of 70 bp in the DQB1\*03:10:02, 03:183, 04:02:07w, 05:03:14, 05:43, 06:66, 06:96 and 06:172 alleles. Specific PCR fragment of 100 bp in the 06:51:02 and 06:142 alleles. Specific PCR fragment of 70 bp and 100 in the DQB1\*06:01:12, 06:51:01 and 06:99:01 alleles.

Primer mix 92: Specific PCR fragment of 105 bp in the DQB1\*02:22 allele. Specific PCR fragment of 160 bp in the DQB1\*02:19 and 02:54 alleles. Specific PCR fragment of 230 bp in the DQB1\*02:12 allele.

Primer mix 93: Specific PCR fragment of 95 bp in the DQB1\*03:91Q allele. Specific PCR fragment of 170 bp in the DQB1\*02:13 and 02:41 alleles. Specific PCR fragment of 225 bp in the DQB1\*03:85 allele.

**4**The following DQB1 alleles can be distinguished by the different sizes of the specific PCR product:

|  |  |  |  |
| --- | --- | --- | --- |
| Alleles | Primer mix | Alleles | Primer mix |
| DQB1\*02:15, 02:30 | 67 | DQB1\*06:02:04, 06:02:16 | 47 |
| DQB1\*02:16, 02:20N | 64 | DQB1\*06:31, 06:145 | 35 |
| DQB1\*02:23, 02:28 | 68 | DQB1\*06:35, 06:45 | 35 |
| DQB1\*02:29, 02:31 | 69 | DQB1\*06:48, 06:97 | 62 |
| DQB1\*03:31, 03:87 | 35 | DQB1\*06:70, 06:76 | 80 |
| DQB1\*03:59, 03:71 | 43 | DQB1\*06:73, 06:77N | 82 |
| DQB1\*04:03:01, 04:12 | 42 | DQB1\*06:74, 06:78 | 83 |
| DQB1\*04:05, 04:15 | 30 | DQB1\*06:75N, 06:80 | 84 |
| DQB1\*05:10, 05:23 | 54 | DQB1\*06:102N, 06:104 | 90 |
| DQB1\*05:13, 05:24 | 59 | DQB1\*06:131, 06:176 | 54 |
| DQB1\*05:17, 05:47 | 54 |

5This lot of the DQB1\*high kit cannot distinguish the DQB1\*02:10 and the DQB1\*02:02:01-02:02:02, 02:62 and 02:65 alleles or the DQB1\*03:49 and the DQB1\*3:01:01:01-03:01:02, 03:01:05-03:01:07, 03:01:09-03:01:12, 03:01:14, 03:01:16-03:01:24, 03:01:26-03:01:31, 03:92-03:93, 03:169, 03:182, 03:191, 03:198 and 03:206 alleles.

The DQB1 typing kit cannot distinguish the following silent mutations: the DQB1\*02:01:01-02:01:23 alleles, the DQB1\*02:02:01:01 and 02:02:02 alleles, the DQB1\*02:14:01-02:14:02 alleles, the DQB1\*03:01:01:01-03:01:02, 03:01:05-03:01:07, 03:01:09-03:01:12, 03:01:14, 03:01:16-03:01:24 and 03:01:26-03:01:31 alleles, the DQB1\*03:01:03, 03:01:13, 03:01:15 and 03:01:25 alleles, the DQB1\*03:02:01-03:02:19 alleles, the DQB1\*03:03:02:01-03:03:05 and 03:03:07-03:03:13 alleles, the DQB1\*03:05:01-03:05:04 alleles, the DQB1\*03:17:01-03:17:02 alleles, the DQB1\*04:01:01-04:01:02 and 04:01:04 alleles, the DQB1\*04:02:01-04:02:06 and the 04:02:09-04:02:10 alleles, the DQB1\*05:01:01:01-05:01:08, 05:01:11-05:01:22 and 05:89:01-05:89:02 alleles, the DQB1\*05:01:09-05:01:10 alleles, the DQB1\*05:02:01 and 05:02:03-05:02:13 alleles, the DQB1\*05:03:01:01-05:03:01:02, 05:03:03-05:03:11, 05:03:13 and 05:03:15-05:03:17 alleles, the DQB1\*05:05:01-05:05:02 alleles, the DQB1\*05:06:01-05:06:02 alleles, the DQB1\*05:11:01-05:11:02 alleles, the DQB1\*05:66:01-05:66:02, the DQB1\*06:01:01, 06:01:03-06:01:06, 06:01:08-06:01:09, 06:01:11 and 06:01:13-06:01:15 alleles, the DQB1\*06:01:02 and 06:01:07 alleles, the DQB1\*06:02:01, 06:02:03, 06:02:06, 06:02:08-06:02:15, 06:02:17-06:02:18 and 06:02:20-06:02:25 alleles, the DQB1\*06:02:04 and 06:02:16 alleles, the DQB1\*06:03:01, 06:03:03, 06:03:05-06:03:07, 06:03:11-06:03:12, 06:03:14-06:03:18 and 06:03:20-06:03:22 alleles, the DQB1\*06:03:04 and 06:03:08-06:03:09 alleles, the DQB1\*06:04:01 and 06:04:03-06:04:10 alleles, the DQB1\*06:08:02-06:08:03 alleles, the DQB1\*06:09:03, 06:09:06 alleles, the DQB1\*06:11:02-06:11:03 alleles, the DQB1\*06:14:01-06:14:02 alleles, the DQB1\*06:15:01-06:15:02 alleles, the DQB1\*06:19:01-06:19:02 alleles or the DQB1\*06:27:01-06:27:02 alleles.

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

‘w’, might be weakly amplified.

Change in revision R01 compared to R00:

1. The alleles amplified by primer mixes 5 and 41 have been corrected in the Specificity and Interpretation Tables.

Change in revision R02 compared to R01:

1. Primer mix 25 may have tendencies of primer oligomer formation. A foot note has been added in the Specificity Table.

Change in revision R03 compared to R02:

1. Primer mixes 17 and 51 do not amplify the DQB1\*02:10 and 03:49 alleles. Thus, this lot of the DQB1\*high kit cannot distinguish the DQB1\*02:10 and the DQB1\*02:02:01-02:02:02, 02:62 and 02:65 alleles or the DQB1\*03:49 and the DQB1\*3:01:01:01-03:01:02, 03:01:05-03:01:07, 03:01:09-03:01:12, 03:01:14, 03:01:16-03:01:24, 03:01:26-03:01:31, 03:92-03:93, 03:169, 03:182, 03:191, 03:198 and 03:206 alleles. This has been corrected in the Interpretation and Specificity Tables.