Gel Documentation Form and Worksheet

HLA-B\*51 (101.561-24/03, -24u/03u) Lot No: 2L8 Expiry Date: 2024-11-01

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

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

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

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

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

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

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

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

**Gel Picture**

|  |
| --- |
| PHOTO DOCUMENT |









Abbreviations

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, 25, 30 and 54 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B\*51 primer mixes.

Primer mixes 25, 30, 39, 41, 65, 66, 75 and 81 may have tendencies of unspecific amplifications.

Primer mixes 39, 58, 60 and 77 have a tendency to giving rise to primer oligomer formation.

Primer mix 85 contains a negative control, which will amplify the majority 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 products generated by the HGH positive control primer pair is 200 base pairs.





 

















**1**HLA-B\*51 alleles in bold lettering are listed as confirmed alleles on the IMGT/HLA web page [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla), release 3.25.0, July 2016.

**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**The following HLA-B\*51 primer mixes have two or more product sizes:

|  |  |  |  |
| --- | --- | --- | --- |
| Primer Mix | Size of spec. PCR product | Amplified HLA-B\*51 alleles | Other amplified HLA Class I alleles |
|  **7** | 240 bp270 bp | \*51:156\*51:06:01-51:06:04, 51:45, 51:62, 51:64, 51:135, 51:194, 51:293, 51:319 | \*07:218, 07:220, 08:118, 14:01:01:01-14:09, 14:11-14:19, 14:21-14:36, 14:38-14:45, 14:47-14:61, 14:63-14:78N, 14:80-14:90, 15:37-15:38:02, 15:185, 15:323, 15:335, 15:364, 15:368, 15:435, 18:01:01:01-18:01:29, 18:01:31-18:09, 18:12:01-18:15, 18:17N-18:20, 18:23N-18:34, 18:36-18:38, 18:40-18:55, 18:57:01-18:57:02, 18:59-18:68, 18:70-18:88, 18:90-18:100, 18:102-18:104, 18:106Q-18:109, 18:111-18:148, 18:151-18:163, 18:166-18:167, 18:169-18:188, 18:190-18:195, 27:28, 27:62, 39:32, 39:43, 39:48, 40:51, 40:113, 40:163, 40:174, 56:31, 67:06, **C\*01:30, C\*02:142, C\*05:216:01:01-05:216:01:02, C\*06:207, C\*07:516, C\*07:521:01-07:521:02, C\*08:51, C\*08:114, C\*12:87, C\*14:76** |
| **10** | 160 bp245 bp | \*51:01:09, 51:01:21, 51:01:25, 51:10, 51:24:02-51:24:04, 51:197, 51:217, 51:279\*51:21, 51:36, 51:101, 51:143, 51:153, 51:157, 51:197, 51:280, 51:295, 51:300 | \*07:78, 07:84, 27:14, 27:81, 27:130, 40:06:01:01-40:06:04:03, 40:06:06-40:06:25, 40:44, 40:53, 40:70:01-40:70:02, 40:75, 40:83, 40:86, 40:93, 40:96, 40:103, 40:109-40:110, 40:127, 40:131, 40:148, 40:159, 40:161-40:162, 40:165, 40:167, 40:177, 40:190, 40:230, 40:244, 40:256N, 40:268-40:270, 40:275, 40:294-40:295, 40:298:01-40:298:02, 40:306-40:307, 40:311, 40:313, 40:317-40:318, 40:330, 40:340-40:342, 40:348-40:350, 40:354, 40:361N-40:364, 40:366, 40:373-40:374, 40:376, 40:387-40:389, 40:408, 40:411, 40:423, 40:425, 40:427, 40:434, 40:445, 40:449, 40:451, 40:453-40:454, 40:459-40:460, 49:01:14, 52:54, 54:11, 56:20:02, 73:01:01:01-73:02, **C\*03:464, C\*05:152, C\*07:463, C\*07:758**\*08:09, 08:84, 08:254, 13:46, 13:53, 13:131, 14:37, 15:42, 15:83:01:01-15:83:01:02, 15:485, 35:60, 35:276, 39:06:01-39:06:06, 39:34, 39:57, 39:62, 39:64, 39:83:01-39:83:03, 39:90, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 41:01:01:01-41:01:07, 41:05-41:07, 41:09, 41:12, 41:14, 41:16, 41:20-41:22, 41:25-41:26, 41:28-41:30, 41:32-41:35, 41:37, 41:44, 41:50, 41:53-41:54, 41:57, 41:59-41:61, 41:64, 41:66, 42:04, 45:08, 46:18, 50:45, 50:49, 52:37, 52:71, 52:84, 54:01:01:01-54:02, 54:04-54:05N, 54:07-54:08N, 54:10-54:25, 54:27-54:32, 54:34-54:37, 54:39, 54:41, 55:01:01:01-55:01:06, 55:01:08-55:03, 55:05, 55:07, 55:10-55:13, 55:15-55:21, 55:23, 55:25-55:48, 55:50, 55:52-55:85, 55:87-55:109, 56:23, 56:54, 59:01:01:01-59:03, 59:05-59:08, 59:10N, 78:07, **C\*05:152, C\*07:463, C\*07:758, C\*12:183, C\*14:92** |
| **15** | 100 bp 230 bp | \*51:14\*51:19, 51:101, 51:276 | \*35:276, 39:06:01-39:06:06, 39:57, 39:62, 39:64, 39:83:01-39:83:03, 39:90, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 50:49, 52:71, 52:84 |
| **16** | 170 bp195 bp | \*51:15, 51:35, 51:62, 51:106:01-51:106:02, 51:223, 51:225\*51:18 | \*13:03, 13:48, 13:120, 15:73:01:01-15:73:01:02, 15:303, 15:486, 15:552, 35:291, 35:432, 35:446, 40:71, 44:10, 44:15:01:01-44:15:01:02, 44:18, 44:140, 44:339-44:340, 45:01:01:01-45:01:10, 45:04-45:07, 45:11-45:23, 45:24w, 45:25, 46:11, 49:01:01:01-49:01:07, 49:01:09-49:03, 49:06, 49:08-49:14, 49:16-49:17, 49:19N-49:49, 49:51-49:60N, 49:62-49:68, 50:01:01:01-50:02:01:02, 50:04-50:08, 50:10-50:13, 50:15-50:19, 50:32, 50:34-50:38, 50:40-50:44, 50:46-50:48, 50:50-50:70, 52:25:01-52:25:02, 54:03, 54:33, 54:40, 56:01:01:01-56:01:04, 56:01:06-56:01:12, 56:01:14-56:02:03, 56:04:01:01-56:04:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20:01-56:20:02, 56:24-56:30, 56:33-56:49, 56:51-56:53, 56:55:01:02-56:59, 56:61-56:65, 56:67-56:74, 58:73, 59:04, 82:01:01:01-82:04, **C\*03:19, C\*03:102, C\*15:15** |
| **18** | 140 bp 220 bp | \*51:28\*51:08:01:01-51:08:04, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 51:263, 51:274-51:275 | \*08:09, 08:84, 08:254, 13:46, 15:83:01:01-15:83:01:02, 41:01:01:01-41:01:07, 41:05-41:07, 41:09, 41:12, 41:14, 41:16-41:17, 41:20-41:22, 41:25-41:26, 41:28-41:30, 41:32-41:35, 41:37, 41:44, 41:50, 41:53-41:54, 41:56Q-41:57, 41:59-41:61, 41:64, 41:66, 42:04, 44:15:01:01-44:15:01:02, 44:18, 44:20, 44:100, 45:01:01:01-45:25, 52:19, 55:20, 55:56, 56:13 |
| **20** | 110 bp200 bp | \*51:26\*51:185 | \*52:09:01 |
| **21** | 130 bp 185 bp | \*51:38\*51:27N | \*13:42 |
| **25** | 120 bp 175 bp 205 bp | \*51:38, 51:142\*51:30\*51:53 | \*13:42, 35:364, 35:379, 35:462, 52:80, **C\*04:01:117**\*35:474, **C\*04:01:117, C\*05:01:38, C\*15:02:43**\*49:55, 52:29, 55:54 |
| **26** | 105 bp 155 bp | \*51:13:01-51:13:02, 51:37, 51:63:01-51:63:02, 51:92:01-51:92:02, 51:97, 51:172, 51:216, 51:251\*51:32 | \*13:04, 13:46, 13:72, 13:127, 13:140, 15:04:01:01-15:04:04, 15:16:01:01-15:16:04, 15:67, 15:95, 15:137, 15:155, 15:222, 15:254, 15:293, 15:310, 15:362, 15:408, 15:499, 15:517, 15:531, 15:550, 35:37, 35:235, 35:265, 35:276, 39:06:01-39:06:06, 39:33-39:34, 39:50, 39:57, 39:62, 39:64, 39:83:01-39:83:03, 39:90, 39:102, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 40:86, 40:159, 40:330, 41:30, 41:50, 45:02, 45:09, 46:32:01-46:32:02, 49:04:01-49:05:02, 49:50, 50:09, 50:33, 52:14:01-52:14:02, 52:39, 52:75, 52:97, 54:14, 55:13, 55:23, 55:32, 55:58, 55:68, 56:22, 56:50, 58:122, 59:03, 73:01:01:01-73:02, C**\*05:152, C\*07:463, C\*07:758, C\*12:183**\*07:329, 27:69, 27:192, 40:213, 42:28, 58:52 |
| **27** | 205 bp 345 bp | \*51:33\*51:39 | **\***35:482, 44:165, 58:53\*13:132, 37:52, 44:24, 44:181, 81:06? |
| **28** | 205 bp255 bp | \*51:33\*51:23, 51:108 | \*35:482, 44:165, 58:53\*44:15:01:01-44:15:01:02, 44:18, 44:20, 44:47, 44:100, 44:197, 44:339, 45:01:01:01-45:03, 45:05-45:07, 45:09, 45:11-45:23, 45:25, 49:20, 50:02:01:01-50:02:01:02, 50:56, 52:15, 56:74 |
| **31** | 105 bp 225 bp | \*51:13:01-51:13:02, 51:37, 51:63:01-51:63:02, 51:92:01-51:92:02, 51:97, 51:172, 51:216, 51:251\*51:05, 51:29, 51:54, 51:61:01-51:61:02, 51:82, 51:197, 51:217, 51:279 | \*13:04, 13:46, 13:72, 13:127, 13:140, 15:04:01:01-15:04:04, 15:16:01:01-15:16:04, 15:67, 15:95, 15:137, 15:155, 15:222, 15:254, 15:293, 15:310, 15:362, 15:408, 15:499, 15:517, 15:531, 15:550, 35:37, 35:235, 35:265, 35:276, 39:06:01-39:06:06, 39:33-39:34, 39:50, 39:57, 39:62, 39:64, 39:83:01-39:83:03, 39:90, 39:102, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 40:86, 40:159, 40:330, 41:30, 41:50, 45:02, 45:09, 46:32:01-46:32:02, 49:04:01-49:05:02, 49:50, 50:09, 50:33, 52:14:01-52:14:02, 52:39, 52:75, 52:97, 54:14, 55:13, 55:23, 55:32, 55:58, 55:68, 56:22, 56:50, 58:122, 59:03, 73:01:01:01-73:02, **C\*05:152, C\*07:463, C\*07:758, C\*12:183**\*07:78, 07:84, 13:18, 13:31, 13:41, 13:128, 13:131, 15:04:01:01-15:04:04, 15:137, 15:303, 15:499, 15:531, 35:265, 39:33, 40:161, 46:32:01-46:32:02, 49:41, 50:47, 52:21:01-52:21:02, 52:24, 52:97, 54:10, 54:20, 54:33, 54:40, 55:09, 55:21, 55:37, 55:52, 56:43, **C\*05:152, C\*12:183, C\*14:92** |
| **36** | 110 bp215 bp | \*51:165\*51:43 | \*14:61, 15:214, 18:81, 35:250, 37:93, 39:145, 39:158, 40:427, 44:311, 55:108, 57:29\*52:76 |
| **37** | 165 bp 225 bp | \*51:44N, 51:245N\*51:55 |  |
| **38** | 205 bp250 bp | \*51:37, 51:45, 51:63:01-51:63:02, 51:97, 51:216, 51:251\*51:173Q | \*14:56, 15:38:01-15:38:02, 15:185, 15:335, 15:364, 15:368, 18:01:01:01-18:09, 18:12:01-18:15, 18:17N-18:20, 18:22-18:25, 18:27-18:34, 18:36-18:40, 18:42-18:55, 18:57:01-18:57:02, 18:59-18:60, 18:62-18:100, 18:102-18:109, 18:111-18:121, 18:123-18:147, 18:149-18:163, 18:167, 35:21, 35:24:01-35:24:02, 35:188, 35:190, 35:287, 39:43, 52:39, 53:02, 53:06, 53:28, 56:31, 57:14:01-57:14:02, 58:09, 58:76, **C\*02:142, C\*06:207, C\*07:516, C\*07:521:01-07:521:02, C\*12:87, C\*14:76** |
| **41** | 225 bp305 bp380 bp | \*51:05, 51:29, 51:54, 51:61:01-51:61:02, 51:82, 51:197, 51:217, 51:279\*51:48, 51:166\*51:169 | \*07:78, 07:84, 13:18, 13:31, 13:41, 13:128, 13:131, 15:04:01:01-15:04:04, 15:137, 15:303, 15:499, 15:531, 35:265, 39:33, 40:161, 46:32:01-46:32:02, 49:41, 50:47, 52:21:01-52:21:02, 52:24, 52:97, 54:10, 54:20, 54:33, 54:40, 55:09, 55:21, 55:37, 55:52, 56:43, **C\*05:152, C\*12:183, C\*14:92**\*15:140, 15:367, 15:441, **C\*02:83, C\*05:224, C\*08:24, C\*12:323, C\*16:90** |
| **42** | 100 bp 135 bp | \*51:60\*51:49 |  |
| **43** | 115 bp 215 bp | \*51:58\*51:50 |  |
| **44** | 285 bp385 bp | \*51:76, 51:166 \*51:51 | \*08:39, 13:112, 15:140, 35:101:02, 35:195, 35:211, 44:185, 54:34**C\*01:83w** |
| **45** | 145 bp190 bp | \*51:178N\*51:52 |  |
| **46** | 80 bp 170 bp | \*51:57\*51:123 | \*07:206\*55:59 |
| **48** | 95 bp220 bp | \*51:37, 51:90, 51:92:01-51:92:02, 51:197, 51:216, 51:261, 51:274, 51:298\*51:61:01-51:61:02 | \*07:84, 13:04, 13:35, 13:72, 13:127, 15:04:01:01-15:04:04, 15:16:01:01-15:16:04, 15:67, 15:95, 15:155, 15:222, 15:254, 15:293, 15:310, 15:362, 15:408, 15:499, 15:517, 15:531, 15:550, 35:37, 35:235, 35:265, 40:44, 40:159, 41:21, 44:20, 44:47, 44:100, 44:197, 45:09, 46:32:01-46:32:02, 49:04:01-49:05:02, 50:33, 50:39, 52:12, 52:26, 52:63, 52:75, 54:14-54:16, 55:23, 55:27, 55:46, 55:68, 56:50, 58:122, **C\*03:464, C\*07:463, C\*07:758, C\*12:183****\***13:31, 13:41, 13:131, 15:04:01:01-15:04:04, 15:137, 15:303, 15:499, 15:531, 35:265, 46:32:01-46:32:02, 50:47, 52:21:01-52:21:02, 52:97, 54:33, 54:40, 55:21, 56:43, **C\*12:183** |
| **51** | 85 bp135 bp215 bp | \*51:68\*51:136\*51:72 | \*08:56:03\*50:66 |
| **53** | 135 bp165 bp260 bp | \*51:136\*51:71, 51:174:01-51:174:02\*51:70 | \*13:105, 55:29\*52:55 |
| **54** | 120 bp 250 bp | \*51:74\*51:124, 51:156 | \*08:155, 35:46-35:47, 35:154, 35:207, 35:217, 35:257, 35:278, 35:450, 40:07-40:08, 40:13, 40:68, 40:106, 40:162, 40:220, 40:232, 41:46, 44:232, 49:67, 53:30 |
| **55** | 75 bp 200 bp | \*51:77\*51:75 |  |
| **57** | 145 bp210 bp | \*51:79, 51:178N\*51:54, 51:78:01-51:78:02 | **A\*24:426N**\*13:17, 13:33, 15:36, 15:89:01-15:89:02, 15:256, 15:339, 15:505, 44:02:10, 44:34:01-44:34:02, 44:83, 44:225, 44:245, 44:269, 52:20, 53:09, 53:11-53:13, 53:31, 53:36, 53:38, 56:07, 59:08 |
| **59** | 120 bp 240 bp | \*51:83\*51:88 |  |
| **60** | 85 bp 190 bp | \*51:94\*51:84, 51:130 | \*13:121\*39:141, 49:12, 55:87 |
| **61** | 100 bp 210 bp | \*51:85, 51:192, 51:214, 51:261, 51:274\*51:87, 51:115, 51:181 | \*27:14, 27:81, 44:20, 44:47, 44:100, 44:197, 50:20, 52:26\*40:376, 49:45, 56:59, **C\*07:463, C\*07:758** |
| **62** | 180 bp 250 bp | \*51:86, 51:132\*51:95 | \*39:57, 50:55 |
| **63** | 70 bp200 bp | \*51:91\*51:146 | \*13:86, 35:02:01:01-35:02:07, 35:02:08w, 35:02:09-35:02:16, 35:81, 35:83, 35:95, 35:129N, 35:146, 35:154, 35:162, 35:172, 35:182-35:184, 35:211, 35:220, 35:258, 35:270, 35:273, 35:285, 35:309, 35:311, 35:323, 35:335, 35:339, 35:357, 35:361, 35:366-35:367, 35:372, 35:374, 35:377-35:379, 35:387, 35:391, 35:394, 35:396, 35:403, 35:407, 35:410, 35:419, 35:443, 35:483, 35:487, 45:12, 50:36, 53:19, 53:36, 58:65 |
| **64** | 115 bp 170 bp | \*51:67\*51:66, 51:89 | \*35:314 |
| **65** | 185 bp 215 bp | \*51:98N\*51:103, 51:116, 51:151 | \*08:62, 08:242, 18:07:01-18:07:02, 18:29, 18:79, 18:136, 27:23, 35:50, 35:84, 35:162, 35:217, 35:231, 35:280, 35:323, 35:441, 37:21, 37:67, 40:07-40:08, 40:13, 40:68, 40:106, 40:162, 40:220, 40:232, 41:46, 42:26, 49:67 |
| **66** | 175 bp 210 bp | \*51:109, 51:132\*51:120 |  |
| **67** | 110 bp 160 bp230 bp | \*51:93, 51:122\*51:231\*51:100 |  |
| **68** | 160 bp190 bp | \*51:134\*51:105 | \*35:358 |
| **69** | 105 bp225 bp | \*51:147\*51:110N | **A\*02:01:33w, A\*23:01:14w** |
| **72** | 90 bp145 bp170 bp | \*51:118N\*51:169\*51:164 | \*35:467, 39:46w, 44:118w, 49:64 |
| **73** | 170 bp295 bp | \*51:127, 51:174:01-51:174:02\*51:149N | \*13:105, 55:29, 55:43 |
| **76** | 175 bp255 bp | \*51:168\*51:152, 51:173Q |  |
| **81** | 185 bp215 bp | \*51:98N\*51:167 |  |
| **83** | 195 bp215 bp | \*51:35\*51:17 |  |
| **84** | 140 bp270 bp | \*51:126\*51:04:01-51:04:02, 51:46, 51:56:01-51:56:03, 51:139, 51:227, 51:281, 51:310 | **C\*05:216:01:01-05:216:01:02, C\*08:114**\*14:10, 18:22, 18:69w, 18:105, 18:149-18:150, 35:21, 35:24:01-35:24:02, 35:81, 35:96, 35:109, 35:157, 35:188, 35:190, 35:233, 35:287, 37:04:01w-37:04:02w, 40:28, 44:190, 44:203:01-44:203:02, 44:275, 44:290, 52:88, 53:02, 53:06, 53:28, 57:14:01-57:14:02, 58:09, 58:76, **C\*03:384, C\*15:39, C\*15:130, C\*15:195** |

4The following HLA-B\*51 alleles can be distinguished by the different sizes of the specific PCR product:

|  |  |  |  |
| --- | --- | --- | --- |
| **Alleles** | **Primer mix** | **Alleles** | **Primer mix** |
| B\*51:26, 51:185 | 20 | B\*51:70, 51:71 | 53 |
| B\*51:30, 51:142 | 25 | B\*51:74, 51:124 | 54 |
| B\*51:51, 51:76 | 44 | B\*51:75, 51:77 | 55 |
| B\*51:55, 51:245N | 37 | B\*51:83, 51:88 | 59 |
| B\*51:57, 51:123 | 46 | B\*51:84, 51:94 | 60 |
| B\*51:66, 51:67 | 64 | B\*51:86, 51:95 | 62 |
| B\*51:68, 51:72 | 51 | B\*51:127, 51:149N | 73 |

**5**The following alleles will give rise to identical amplification patterns. These alleles can e.g. be distinguished by the HLA-B low resolution kit and/or the respective high-resolution kits.

|  |
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| **Alleles** |
| B\*51:119, 51:176, 51:179, 51:218, 51:226, B\*52:06:03 |
| B\*51:220, B\*53:01:13 |

Abbreviations

w: might be weakly amplified.

?: nucleotide sequence information not available for the primer matching sequence.