

101.214-24/06 – including *Taq* polymerase
 101.214-24u/06u – without *Taq* polymerase

Visit www.caredx.com for
 “Instructions for Use” (IFU)

Lot No.: 4R2

Lot-specific information

Olerup SSP[®] DQB1*03

Product number:	101.214-24/06 – including <i>Taq</i> pol. 101.214-24u/06u – without <i>Taq</i> pol.
Lot number:	4R2
Expiry date:	2026-10-01
Number of tests:	24 test – Product No. 101.214-24/24u 6 tests – Product No. 101.214-06/06u
Number of wells per test:	63+1
Storage - pre-aliquoted primers:	dark, between -15°C and -25°C
- PCR Master Mix:	between -15°C and -25°C
- Adhesive PCR seals	RT

This Product Description is only valid for Lot No. 4R2.

Complete product documentation consists of generic Instructions for Use (IFU), lot specific Product Insert, Worksheet and Certificate

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP[®] DQB1*03 LOT (4N9)

- The product documentation has been updated for new alleles of IMGT 3.49.0.
- The kit resolution focuses on common and well documented (CWD) alleles¹.

¹As described in section Uniquely Identified Alleles

The DQB1*03 primer set, specificity and interpretation tables have been updated for the HLA-DQB1 alleles described since the previous *Olerup SSP[®] DQB1*03* lot was made (**Lot No. 4N9**).

The DQB1*03 primer set is unchanged compared to the previous *Olerup SSP[®] DQB1*03* (**Lot No. 4N9**).

Changes in revision R01 compared to R00:

1. Primer mix 57 does not amplify the DQB1*03:196, 03:442 and 06:323 alleles. This correction has been implemented in the Specificity and Interpretation tables.

¹S. J. Mack, P. Cano, J. A. Hollenbach et al.
 Common and well-documented HLA alleles: 2012 update to the CWD catalogue. *Tissue Antigens*, 2013, 81, 194–203



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Well **64** contains Negative Control primer pairs, that will amplify the majority of the *Olerup* SSP[®] HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all 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.

The PCR product generated by the positive control primer pair is 200 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

¹The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

²The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.



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PRODUCT DESCRIPTION

DQB1*03 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DQB1*03:01 to DQB1*03:493 alleles.

Please note that DQB1 amplifications usually are somewhat less pronounced than e.g. DRB and DQA1 amplifications even when using the same DNA preparation and exactly the same experimental procedures.

PLATE LAYOUT

Each test consists of 64 PCR reactions in a 64 well PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	NC

The 64 well cut PCR plate is marked with ‘DQB1*03’ in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘4R2’.

Wells 1 to 63 – DQB1*03 high resolution primers.

Well 64 – Negative Control (NC).

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded. The PCR plates are covered with a PCR-compatible foil.

INTERPRETATION

Due to the sharing of sequence motifs, non-DQB1*03 alleles will be amplified by some primer mixes. The interpretation of DQB1*03 subtypings is not influenced by the DQB2 and DQB3 genes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the DQB1*03 alleles, i.e. **DQB1*03:01 to DQB1*03:493**, recognized by the HLA Nomenclature Committee in July 2022^{1,2} will be amplified by the primers in the DQB1*03 subtyping kit³.

The DQB1*03 kit enables separation of the confirmed DQB1*03 alleles as listed in the IMGT/HLA database 3.29.0. An HLA allele is listed as confirmed by IMGT/HLA if it has been sequenced by more than a single laboratory or from multiple sources. Current allele confirmation status for DQB1*03 alleles is listed below.



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The DQB1*03 kit also enables identification of many null and alternatively expressed alleles.

The following DQB1*03 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix
DQB1*03:35, 03:328	29
DQB1*03:49:01-03:49:02, 03:329	43
DQB1*03:97, 03:402	43
DQB1*03:190, 03:287	35
DQB1*03:245, 03:315	29
DQB1*03:286, 03:381	43

¹HLA-DQB1 alleles listed on the IMGT/HLA web page 2022-July-12, release 3.49.0, www.ebi.ac.uk/imgt/hla.

²Alleles 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>.

³The following alleles cannot be separated by the HLA-DQB1*03 primer set. These alleles can be distinguished by the DQ low resolution kit and/or the HLA-DQB1*04 high resolution kit.

Alleles
DQB1*03:25:01, DQB1*04:03:03
DQB1*03:72, 03:100, DQB1*04:63
DQB1*03:132, DQB1*04:75

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in DQB1*03 homo- and heterozygotes is available upon request.



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ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
DQB1*03:01:01:01	Confirmed	DQB1*03:01:35	Unconfirmed	DQB1*03:04:01	Confirmed	DQB1*03:43	Unconfirmed
DQB1*03:01:01:02	Unconfirmed	DQB1*03:01:36	Unconfirmed	DQB1*03:04:02	Unconfirmed	DQB1*03:44	Confirmed
DQB1*03:01:01:03	Confirmed	DQB1*03:01:37	Unconfirmed	DQB1*03:04:03	Unconfirmed	DQB1*03:45	Confirmed
DQB1*03:01:01:04	Unconfirmed	DQB1*03:01:38	Unconfirmed	DQB1*03:05:01	Confirmed	DQB1*03:46	Unconfirmed
DQB1*03:01:01:05	Confirmed	DQB1*03:01:39	Unconfirmed	DQB1*03:05:02	Unconfirmed	DQB1*03:47	Confirmed
DQB1*03:01:01:06	Unconfirmed	DQB1*03:02:01:01	Confirmed	DQB1*03:05:03	Confirmed	DQB1*03:48	Unconfirmed
DQB1*03:01:01:07	Confirmed	DQB1*03:02:01:02	Confirmed	DQB1*03:05:04	Unconfirmed	DQB1*03:49	Unconfirmed
DQB1*03:01:01:08	Confirmed	DQB1*03:02:01:03	Unconfirmed	DQB1*03:06	Unconfirmed	DQB1*03:50	Unconfirmed
DQB1*03:01:01:09	Unconfirmed	DQB1*03:02:01:04	Unconfirmed	DQB1*03:07	Unconfirmed	DQB1*03:51	Unconfirmed
DQB1*03:01:01:10	Unconfirmed	DQB1*03:02:02	Unconfirmed	DQB1*03:08	Unconfirmed	DQB1*03:52	Confirmed
DQB1*03:01:01:11	Unconfirmed	DQB1*03:02:03	Unconfirmed	DQB1*03:09	Confirmed	DQB1*03:53	Confirmed
DQB1*03:01:01:12	Unconfirmed	DQB1*03:02:04	Unconfirmed	DQB1*03:10:01	Unconfirmed	DQB1*03:54	Confirmed
DQB1*03:01:01:14	Unconfirmed	DQB1*03:02:05	Unconfirmed	DQB1*03:10:02	Confirmed	DQB1*03:55	Confirmed
DQB1*03:01:01:15	Unconfirmed	DQB1*03:02:06	Confirmed	DQB1*03:11	Confirmed	DQB1*03:56	Confirmed
DQB1*03:01:01:16	Unconfirmed	DQB1*03:02:07	Confirmed	DQB1*03:12	Unconfirmed	DQB1*03:57	Unconfirmed
DQB1*03:01:01:17	Unconfirmed	DQB1*03:02:08	Unconfirmed	DQB1*03:13	Confirmed	DQB1*03:58	Confirmed
DQB1*03:01:01:18	Unconfirmed	DQB1*03:02:09	Confirmed	DQB1*03:14:01	Unconfirmed	DQB1*03:59	Confirmed
DQB1*03:01:02	Unconfirmed	DQB1*03:02:10	Confirmed	DQB1*03:14:02	Confirmed	DQB1*03:60	Unconfirmed
DQB1*03:01:03	Confirmed	DQB1*03:02:11	Confirmed	DQB1*03:15	Unconfirmed	DQB1*03:61	Unconfirmed
DQB1*03:01:04	Confirmed	DQB1*03:02:12	Confirmed	DQB1*03:16	Confirmed	DQB1*03:62	Confirmed
DQB1*03:01:05	Unconfirmed	DQB1*03:02:13	Confirmed	DQB1*03:17:01	Confirmed	DQB1*03:63	Confirmed
DQB1*03:01:06	Unconfirmed	DQB1*03:02:14	Unconfirmed	DQB1*03:17:02	Confirmed	DQB1*03:64	Confirmed
DQB1*03:01:07	Unconfirmed	DQB1*03:02:15	Confirmed	DQB1*03:18	Unconfirmed	DQB1*03:65	Confirmed
DQB1*03:01:08	Confirmed	DQB1*03:02:16	Confirmed	DQB1*03:19:01	Confirmed	DQB1*03:66N	Unconfirmed
DQB1*03:01:09	Unconfirmed	DQB1*03:02:17	Unconfirmed	DQB1*03:19:02	Unconfirmed	DQB1*03:67	Confirmed
DQB1*03:01:10	Unconfirmed	DQB1*03:02:18	Unconfirmed	DQB1*03:20	Unconfirmed	DQB1*03:68	Confirmed
DQB1*03:01:11	Unconfirmed	DQB1*03:02:19	Confirmed	DQB1*03:21	Unconfirmed	DQB1*03:69	Unconfirmed
DQB1*03:01:12	Unconfirmed	DQB1*03:02:20	Unconfirmed	DQB1*03:22	Unconfirmed	DQB1*03:70	Confirmed
DQB1*03:01:13	Unconfirmed	DQB1*03:02:21	Confirmed	DQB1*03:23:01	Unconfirmed	DQB1*03:71	Unconfirmed
DQB1*03:01:14	Confirmed	DQB1*03:02:22	Unconfirmed	DQB1*03:23:02	Unconfirmed	DQB1*03:72	Confirmed
DQB1*03:01:15	Unconfirmed	DQB1*03:02:23	Unconfirmed	DQB1*03:24	Unconfirmed	DQB1*03:73	Unconfirmed
DQB1*03:01:16	Unconfirmed	DQB1*03:02:24	Unconfirmed	DQB1*03:25:01	Confirmed	DQB1*03:74	Unconfirmed
DQB1*03:01:17	Confirmed	DQB1*03:02:25	Unconfirmed	DQB1*03:25:02	Unconfirmed	DQB1*03:75	Confirmed
DQB1*03:01:18	Unconfirmed	DQB1*03:03:02:01	Confirmed	DQB1*03:26	Confirmed	DQB1*03:76	Unconfirmed
DQB1*03:01:19	Unconfirmed	DQB1*03:03:02:02	Unconfirmed	DQB1*03:27	Confirmed	DQB1*03:77	Unconfirmed
DQB1*03:01:20	Unconfirmed	DQB1*03:03:02:03	Unconfirmed	DQB1*03:28	Unconfirmed	DQB1*03:78	Unconfirmed
DQB1*03:01:21	Confirmed	DQB1*03:03:02:04	Confirmed	DQB1*03:29	Unconfirmed	DQB1*03:79	Unconfirmed
DQB1*03:01:22	Confirmed	DQB1*03:03:03	Unconfirmed	DQB1*03:30	Unconfirmed	DQB1*03:80	Unconfirmed
DQB1*03:01:23	Unconfirmed	DQB1*03:03:04	Confirmed	DQB1*03:31	Unconfirmed	DQB1*03:81	Confirmed
DQB1*03:01:24	Unconfirmed	DQB1*03:03:05	Confirmed	DQB1*03:32	Unconfirmed	DQB1*03:82	Unconfirmed
DQB1*03:01:25	Unconfirmed	DQB1*03:03:06	Unconfirmed	DQB1*03:33	Unconfirmed	DQB1*03:83	Unconfirmed
DQB1*03:01:26	Unconfirmed	DQB1*03:03:07	Confirmed	DQB1*03:34	Unconfirmed	DQB1*03:84N	Unconfirmed
DQB1*03:01:27	Confirmed	DQB1*03:03:08	Confirmed	DQB1*03:35	Unconfirmed	DQB1*03:85	Unconfirmed
DQB1*03:01:28	Unconfirmed	DQB1*03:03:09	Unconfirmed	DQB1*03:36	Unconfirmed	DQB1*03:86	Unconfirmed
DQB1*03:01:29	Unconfirmed	DQB1*03:03:10	Unconfirmed	DQB1*03:37	Confirmed	DQB1*03:87	Unconfirmed
DQB1*03:01:30	Unconfirmed	DQB1*03:03:11	Confirmed	DQB1*03:38	Unconfirmed	DQB1*03:88	Unconfirmed
DQB1*03:01:31	Unconfirmed	DQB1*03:03:12	Unconfirmed	DQB1*03:39	Unconfirmed	DQB1*03:89	Unconfirmed
DQB1*03:01:32	Unconfirmed	DQB1*03:03:13	Unconfirmed	DQB1*03:40	Confirmed	DQB1*03:90N	Unconfirmed
DQB1*03:01:33	Unconfirmed	DQB1*03:03:14	Unconfirmed	DQB1*03:41	Unconfirmed	DQB1*03:91Q	Unconfirmed
DQB1*03:01:34	Unconfirmed	DQB1*03:03:15	Unconfirmed	DQB1*03:42	Unconfirmed	DQB1*03:92	Unconfirmed



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Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
DQB1*03:93	Unconfirmed	DQB1*03:143	Unconfirmed	DQB1*03:193	Unconfirmed	DQB1*03:243	Confirmed
DQB1*03:94	Unconfirmed	DQB1*03:144	Unconfirmed	DQB1*03:194	Confirmed	DQB1*03:244	Unconfirmed
DQB1*03:95N	Unconfirmed	DQB1*03:145	Unconfirmed	DQB1*03:195	Confirmed	DQB1*03:245	Confirmed
DQB1*03:96	Unconfirmed	DQB1*03:146	Unconfirmed	DQB1*03:196	Confirmed	DQB1*03:246	Confirmed
DQB1*03:97	Unconfirmed	DQB1*03:147	Unconfirmed	DQB1*03:197Q	Confirmed	DQB1*03:247	Confirmed
DQB1*03:98	Unconfirmed	DQB1*03:148	Unconfirmed	DQB1*03:198	Unconfirmed	DQB1*03:248	Unconfirmed
DQB1*03:99Q	Unconfirmed	DQB1*03:149	Unconfirmed	DQB1*03:199	Confirmed	DQB1*03:249	Unconfirmed
DQB1*03:100	Unconfirmed	DQB1*03:150	Confirmed	DQB1*03:200	Confirmed	DQB1*03:250	Unconfirmed
DQB1*03:101	Unconfirmed	DQB1*03:151	Unconfirmed	DQB1*03:201	Confirmed	DQB1*03:251	Unconfirmed
DQB1*03:102	Confirmed	DQB1*03:152	Unconfirmed	DQB1*03:202	Unconfirmed	DQB1*03:252	Unconfirmed
DQB1*03:103	Unconfirmed	DQB1*03:153	Unconfirmed	DQB1*03:203	Unconfirmed	DQB1*03:253	Unconfirmed
DQB1*03:104	Unconfirmed	DQB1*03:154	Unconfirmed	DQB1*03:204	Confirmed	DQB1*03:254	Unconfirmed
DQB1*03:105	Confirmed	DQB1*03:155	Unconfirmed	DQB1*03:205	Confirmed	DQB1*03:255	Confirmed
DQB1*03:106	Confirmed	DQB1*03:156	Unconfirmed	DQB1*03:206	Unconfirmed	DQB1*03:256	Unconfirmed
DQB1*03:107	Unconfirmed	DQB1*03:157	Unconfirmed	DQB1*03:207	Confirmed	DQB1*03:257	Unconfirmed
DQB1*03:108	Unconfirmed	DQB1*03:158	Confirmed	DQB1*03:208	Unconfirmed	DQB1*03:258	Unconfirmed
DQB1*03:109	Confirmed	DQB1*03:159	Unconfirmed	DQB1*03:209	Unconfirmed	DQB1*03:259	Unconfirmed
DQB1*03:110	Unconfirmed	DQB1*03:160	Unconfirmed	DQB1*03:210	Unconfirmed	DQB1*03:260	Unconfirmed
DQB1*03:111	Unconfirmed	DQB1*03:161	Unconfirmed	DQB1*03:211	Confirmed	DQB1*03:261	Unconfirmed
DQB1*03:112	Unconfirmed	DQB1*03:162	Confirmed	DQB1*03:212	Confirmed	DQB1*03:262	Unconfirmed
DQB1*03:113	Confirmed	DQB1*03:163	Unconfirmed	DQB1*03:213N	Unconfirmed	DQB1*03:263	Unconfirmed
DQB1*03:114	Confirmed	DQB1*03:164	Unconfirmed	DQB1*03:214	Unconfirmed	DQB1*03:264	Unconfirmed
DQB1*03:115	Unconfirmed	DQB1*03:165	Unconfirmed	DQB1*03:215	Unconfirmed	DQB1*03:265	Unconfirmed
DQB1*03:116	Unconfirmed	DQB1*03:166	Unconfirmed	DQB1*03:216	Unconfirmed	DQB1*03:266	Unconfirmed
DQB1*03:117	Unconfirmed	DQB1*03:167	Unconfirmed	DQB1*03:217	Unconfirmed	DQB1*03:267	Unconfirmed
DQB1*03:118N	Confirmed	DQB1*03:168	Unconfirmed	DQB1*03:218	Unconfirmed	DQB1*03:268	Unconfirmed
DQB1*03:119	Confirmed	DQB1*03:169	Unconfirmed	DQB1*03:219	Unconfirmed	DQB1*03:269N	Unconfirmed
DQB1*03:120	Unconfirmed	DQB1*03:170	Confirmed	DQB1*03:220	Unconfirmed		
DQB1*03:121	Unconfirmed	DQB1*03:171	Unconfirmed	DQB1*03:221	Confirmed		
DQB1*03:122	Unconfirmed	DQB1*03:172	Unconfirmed	DQB1*03:222	Unconfirmed		
DQB1*03:123	Unconfirmed	DQB1*03:173	Unconfirmed	DQB1*03:223	Unconfirmed		
DQB1*03:124	Unconfirmed	DQB1*03:174	Unconfirmed	DQB1*03:224	Unconfirmed		
DQB1*03:125	Unconfirmed	DQB1*03:175	Unconfirmed	DQB1*03:225	Confirmed		
DQB1*03:126	Unconfirmed	DQB1*03:176	Unconfirmed	DQB1*03:226	Unconfirmed		
DQB1*03:127	Unconfirmed	DQB1*03:177	Confirmed	DQB1*03:227	Unconfirmed		
DQB1*03:128	Unconfirmed	DQB1*03:178	Unconfirmed	DQB1*03:228	Confirmed		
DQB1*03:129	Unconfirmed	DQB1*03:179	Unconfirmed	DQB1*03:229	Unconfirmed		
DQB1*03:130	Confirmed	DQB1*03:180	Unconfirmed	DQB1*03:230	Unconfirmed		
DQB1*03:131	Unconfirmed	DQB1*03:181	Unconfirmed	DQB1*03:231	Unconfirmed		
DQB1*03:132	Confirmed	DQB1*03:182	Unconfirmed	DQB1*03:232	Confirmed		
DQB1*03:133	Unconfirmed	DQB1*03:183	Unconfirmed	DQB1*03:233	Confirmed		
DQB1*03:134	Unconfirmed	DQB1*03:184	Confirmed	DQB1*03:234	Unconfirmed		
DQB1*03:135	Unconfirmed	DQB1*03:185	Unconfirmed	DQB1*03:235	Unconfirmed		
DQB1*03:136	Unconfirmed	DQB1*03:186	Unconfirmed	DQB1*03:236	Unconfirmed		
DQB1*03:137	Unconfirmed	DQB1*03:187	Unconfirmed	DQB1*03:237N	Unconfirmed		
DQB1*03:138	Confirmed	DQB1*03:188	Confirmed	DQB1*03:238	Unconfirmed		
DQB1*03:139	Confirmed	DQB1*03:189	Unconfirmed	DQB1*03:239	Confirmed		
DQB1*03:140	Unconfirmed	DQB1*03:190	Unconfirmed	DQB1*03:240	Confirmed		
DQB1*03:141	Unconfirmed	DQB1*03:191	Confirmed	DQB1*03:241	Unconfirmed		
DQB1*03:142	Unconfirmed	DQB1*03:192	Unconfirmed	DQB1*03:242	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2017-August-10, release 3.29.0, www.ebi.ac.uk/imgt/hla.



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Lot-specific information
SPECIFICITY TABLE

DQB1*03 SSP subtyping

Specificities and sizes of the PCR products of the 63+1 primer mixes used for DQB1*03 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified DQB1*03 alleles ²	Other amplified DQB1 alleles
1 ⁶	170 bp	515 bp	*03:01:01:01-03:01:01:12, 03:01:01:14-03:01:55, 03:04:01:01-03:04:04, 03:09, 03:13, 03:16, 03:19:01:01-03:19:06, 03:21-03:22:02, 03:24, 03:27-03:29, 03:35-03:36, 03:42, 03:44, 03:46-03:60, 03:69, 03:71, 03:73-03:78, 03:80, 03:82-03:84N, 03:92-03:94, 03:101-03:103, 03:108, 03:113-03:116, 03:118N-03:122, 03:127-03:131, 03:134-03:135, 03:139-03:140, 03:142-03:144, 03:147-03:148, 03:150-03:152, 03:157-03:160, 03:162-03:167, 03:169-03:173, 03:182, 03:184, 03:188, 03:191-03:194, 03:196-03:198:02, 03:201-03:202, 03:206-03:208, 03:216, 03:218-03:219, 03:231-03:232, 03:235-03:236, 03:241-03:243, 03:246, 03:252-03:257, 03:260, 03:264, 03:266-03:268, 03:271, 03:275-03:276N, 03:281, 03:284-03:286, 03:288, 03:290-03:294, 03:297, 03:302-03:303N, 03:305-03:307, 03:309, 03:311-03:312, 03:314, 03:317:01-03:318, 03:326-03:331, 03:338N, 03:340N-03:342, 03:347, 03:350, 03:353, 03:355, 03:358N, 03:360-03:361, 03:366, 03:370, 03:372-03:373, 03:376N-03:378, 03:380-03:382, 03:385N, 03:387, 03:389-03:391, 03:394, 03:396, 03:399N-03:401, 03:404, 03:407N-03:408, 03:417-03:421, 03:423-03:428, 03:430-03:432, 03:434-03:436, 03:438-03:439, 03:448-03:449, 03:451, 03:454-03:455, 03:458, 03:460, 03:465, 03:467-03:470, 03:472-03:473N, 03:475-03:476, 03:480Q, 03:482-03:483, 03:485-03:486, 03:488N, 03:491-03:492	*02:152, 04:09
2 ⁶	220 bp	515 bp	*03:01:01:01-03:01:01:12, 03:01:01:14-03:01:07, 03:01:09-03:01:55, 03:04:01:01-03:04:04, 03:09-03:10:03, 03:13-03:14:02, 03:16, 03:19:01:01-03:19:06, 03:21-03:22:02, 03:24, 03:27-03:29, 03:35-03:36, 03:42, 03:44, 03:46-03:60, 03:69, 03:71, 03:73, 03:75-03:77, 03:80, 03:82-03:84N, 03:92-03:94, 03:101-03:103, 03:108, 03:114-03:116, 03:118N-03:122, 03:127-03:131,	



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3⁴	135 bp	515 bp	*03:02:01:01-03:02:36, 03:07-03:08, 03:11, 03:18, 03:32, 03:37, 03:45:01-03:45:02, 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, 03:223-03:225, 03:228-03:229, 03:233, 03:237N, 03:240, 03:245, 03:247, 03:251, 03:261, 03:263:01:01-03:263:01:02, 03:265, 03:269N, 03:273-03:274, 03:277-03:279, 03:287, 03:289, 03:295-03:296, 03:298-03:301, 03:308, 03:310N, 03:315, 03:320-03:324, 03:333-03:334N, 03:339N, 03:343-03:345, 03:348-03:349, 03:352, 03:362, 03:364, 03:367-03:369, 03:371, 03:379, 03:383, 03:386, 03:388, 03:392, 03:403N, 03:409-03:410, 03:412-03:413, 03:415-03:416, 03:422N, 03:429, 03:433, 03:437, 03:440N-03:442, 03:444, 03:446-03:447, 03:450, 03:452, 03:456-03:457, 03:459, 03:462-03:464, 03:466, 03:471, 03:479, 03:481, 03:484, 03:490, 03:493
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4	220 bp	515 bp	*03:02:01:01-03:03:28, 03:06-03:08, 03:11-03:12, 03:15, 03:18, 03:20, 03:23:01-03:23:03, 03:25:01-03:26, 03:30-03:34, 03:37-03:41, 03:43, 03:45:01-03:45:02, 03:62-03:68, 03:70,
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5⁴	135 bp 430 bp	430 bp	*03:04:01:01-03:04:04, 03:14:01- 03:14:02, 03:80, 03:138, 03:318, 03:327, 03:443, 03:474	*06:246
6^{3,5}	95 bp 130 bp	430 bp	*03:20 *03:05:01-03:05:05, 03:17:01-03:17:02, 03:61, 03:72, 03:100, 03:132, 03:181, 03:226, 03:244, 03:250, 03:262, 03:272, 03:346	*04:09, 04:63, 04:75, 05:131, 05:276
7³	115 bp 150 bp	430 bp	*03:03:06, 03:06, 03:25:01-03:25:02, 03:42, 03:88 *03:84N	*04:01:03, 04:02:16, 04:03:03
8³	110 bp 145 bp	430 bp	*03:15 *03:07, 03:16, 03:438	
9³	65 bp 145 bp	430 bp	*03:40, 03:353 *03:08, 03:119, 03:137, 03:194	*06:02:02, 06:03:02, 06:03:34
10	135 bp 260 bp	430 bp	*03:09 *03:11, 03:26, 03:244	
11⁵	140 bp	430 bp	*03:10:01-03:10:03, 03:12, 03:14:01- 03:14:02, 03:70, 03:179, 03:183, 03:195, 03:474	*06:01:01:01-06:01:06, 06:01:08-06:01:31, 06:01:33-06:01:34, 06:06 [?] , 06:43, 06:54N- 06:58, 06:98, 06:99:02- 06:105, 06:108, 06:120, 06:132, 06:140, 06:153:01-06:153:02,



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	255 bp		*03:47	
12	260 bp	515 bp	*03:01:01:01-03:01:01:12, 03:01:01:14- 03:01:07, 03:01:09-03:01:55, 03:04:01:01-03:04:04, 03:09-03:10:03, 03:12-03:14:02, 03:16, 03:19:01:01- 03:19:06, 03:21-03:22:02, 03:24, 03:27- 03:29, 03:35-03:36, 03:42, 03:44, 03:46- 03:60, 03:70-03:71, 03:73-03:78, 03:80, 03:82-03:84N, 03:92-03:94, 03:101- 03:103, 03:108, 03:114-03:116, 03:118N- 03:122, 03:127-03:131, 03:133-03:135, 03:139-03:140, 03:143-03:144, 03:147- 03:148, 03:150-03:152, 03:157-03:160, 03:162-03:167, 03:169-03:173, 03:179, 03:182-03:183, 03:186-03:188, 03:191- 03:198:02, 03:201-03:202, 03:206, 03:208, 03:216, 03:218-03:219, 03:231- 03:232, 03:235-03:236, 03:241-03:243, 03:246, 03:252-03:257, 03:260, 03:264, 03:266-03:268, 03:271, 03:275-03:276N, 03:281, 03:284-03:286, 03:288, 03:290- 03:294, 03:297, 03:302-03:303N, 03:305- 03:307, 03:309, 03:311-03:312, 03:314, 03:317:01-03:318, 03:326-03:331, 03:338N, 03:340N-03:342, 03:347, 03:350, 03:353-03:355, 03:358N, 03:360- 03:361, 03:366, 03:370, 03:372-03:373, 03:376N-03:378, 03:380-03:381, 03:385N, 03:387, 03:389-03:391, 03:394, 03:396, 03:399N-03:401, 03:404, 03:407N-03:408, 03:417-03:421, 03:423- 03:428, 03:430-03:432, 03:434-03:436, 03:438-03:439, 03:448-03:449, 03:451, 03:454-03:455, 03:458, 03:460, 03:465, 03:467-03:470, 03:472-03:476, 03:480Q, 03:482-03:483, 03:485-03:486, 03:488N, 03:491-03:492	
13³	115 bp 170 bp 205 bp	430 bp	*03:255 *03:13, 03:232 *03:48	



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14 ⁵	130 bp	430 bp	*03:01:01:01-03:01:01:12, 03:01:01:14-03:01:12, 03:01:14, 03:01:16-03:01:24, 03:01:26-03:01:55, 03:04:01:01-03:04:04, 03:09-03:10:03, 03:13-03:14:02, 03:19:01:01-03:19:06, 03:21-03:22:02, 03:24, 03:27-03:29, 03:35-03:36, 03:42, 03:44, 03:46-03:60, 03:69, 03:71, 03:73, 03:75-03:77, 03:80, 03:82-03:84N, 03:92-03:94, 03:101-03:103, 03:108-03:109, 03:114-03:116, 03:118N-03:122, 03:127-03:129, 03:131, 03:133-03:135, 03:138-03:140, 03:142-03:144, 03:147-03:148, 03:150, 03:152, 03:154, 03:157-03:160, 03:162-03:167, 03:169-03:171, 03:173, 03:180, 03:182-03:183, 03:186-03:188, 03:191-03:196, 03:198:01-03:198:02, 03:201, 03:206-03:208, 03:216, 03:218-03:219, 03:231-03:232, 03:235-03:236, 03:241-03:243, 03:246, 03:252-03:257, 03:260, 03:264, 03:266-03:268, 03:271, 03:275-03:276N, 03:281, 03:284-03:286, 03:288, 03:290-03:294, 03:297, 03:302-03:303N, 03:305-03:307, 03:309, 03:311-03:312, 03:317:01-03:318, 03:326-03:331, 03:335, 03:338N, 03:340N-03:342, 03:347, 03:350, 03:353-03:354N, 03:358N, 03:360-03:361, 03:366, 03:370, 03:372-03:373, 03:376N-03:378, 03:380-03:381, 03:385N, 03:387, 03:389-03:391, 03:394, 03:396, 03:399N-03:401, 03:404, 03:407N-03:408, 03:417-03:421, 03:423-03:428, 03:430-03:432, 03:434-03:436, 03:438-03:439, 03:443, 03:448-03:449, 03:451, 03:454-03:455, 03:458, 03:460, 03:465, 03:467-03:470, 03:472-03:476, 03:480Q, 03:482-03:483, 03:485-03:486, 03:488N, 03:491-03:492	*06:209
15	135 bp	515 bp	*03:01:01:01-03:01:01:12, 03:01:01:14-03:01:07, 03:01:09-03:01:33, 03:01:35-03:01:36, 03:01:38-03:03:22, 03:03:24-03:15, 03:17:01-03:22:02, 03:24, 03:26-03:103, 03:106-03:108, 03:110-03:152, 03:155-03:171, 03:173-03:188, 03:190-03:204, 03:206-03:213N, 03:215-03:216, 03:218-03:233, 03:235-03:257, 03:260, 03:262-03:281, 03:283-03:324, 03:326-03:332, 03:334N, 03:336-03:338N, 03:340N-03:354N, 03:356N-03:386, 03:388-03:420, 03:422N-03:435, 03:437-03:442, 03:444-03:449, 03:451-03:493	*04:09, 04:63, 04:75
16 ⁵	130 bp	430 bp	*03:01:01:01-03:01:01:12, 03:01:01:14-03:01:02, 03:01:04:01-03:01:07, 03:01:09-03:01:12, 03:01:14, 03:01:16-03:01:24, 03:01:26-03:01:55, 03:03:02:01-03:03:28, 03:06, 03:09-03:10:03, 03:12-03:13, 03:15-03:17:02,	*02:03:02, 02:77, 02:180, 04:09-04:10, 04:50, 04:63



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17	165 bp 225 bp	430 bp	*03:43, 03:87 *03:18, 03:85
18⁶	175 bp	515 bp	*03:02:01:01-03:02:33, 03:02:35-03:03:28, 03:05:01-03:05:05, 03:06 [?] -03:07 [?] , 03:08, 03:11, 03:14:01 [?] -03:15 [?] , 03:17:01 [?] -03:18 [?] , 03:19:01:01-03:19:06, 03:20 [?] , 03:23:01 [?] , 03:23:02, 03:23:03 [?] , 03:25:01, 03:25:02 [?] -03:26 [?] , 03:30-03:32, 03:33 [?] -03:34 [?] , 03:37-03:41, 03:43, 03:45:01-03:45:02, 03:48 [?] , 03:52 [?] -03:54 [?] , 03:56 [?] -03:67 [?] , 03:68, 03:69 [?] -03:70 [?] , 03:71-03:72, 03:74 [?] -03:78 [?] , 03:79, 03:81 [?] -03:82 [?] , 03:85-03:91Q, 03:95N-03:100, 03:101 [?] -03:104 [?] , 03:105, 03:106 [?] -03:112 [?] , 03:117, 03:118N [?] , 03:120 [?] -03:131 [?] , 03:132, 03:133 [?] -03:135 [?] , 03:136, 03:137 [?] , 03:138, 03:140 [?] -03:149 [?] , 03:150, 03:151 [?] -03:163 [?] , 03:165 [?] -03:167 [?] , 03:168, 03:170 [?] -03:171 [?] , 03:173 [?] -03:179 [?] , 03:180-03:181, 03:183 [?] , 03:184, 03:185 [?] , 03:187, 03:188 [?] -03:189 [?] , 03:190, 03:192 [?] -03:194 [?] , 03:195, 03:199-03:200, 03:201 [?] -03:205 [?] , 03:207 [?] -03:210 [?] , *04:01:01:01-04:02:01:01, 04:02:01:04-04:44, 04:46N-04:92



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19 ⁶	175 bp	515 bp	*03:01:01:01-03:01:01:12, 03:01:01:14- 03:01:55, 03:04:01:01-03:04:04, 03:06 [?] - 03:07 [?] , 03:09-03:10:03, 03:12-03:13, 03:14:01 [?] -03:15 [?] , 03:16, 03:17:01 [?] - 03:18 [?] , 03:20 [?] , 03:21-03:22:02, 03:23:01 [?] , 03:23:03 [?] , 03:24, 03:25:02 [?] - 03:26 [?] , 03:27-03:29, 03:33 [?] -03:34 [?] , 03:35-03:36, 03:42, 03:44, 03:46-03:47, 03:48 [?] , 03:49:01:01-03:51, 03:52 [?] -03:54 [?] , 03:55, 03:56 [?] -03:67 [?] , 03:69 [?] -03:70 [?] , 03:73, 03:74 [?] -03:78 [?] , 03:80, 03:81 [?] - 03:82 [?] , 03:83-03:84N, 03:92-03:94, 03:101 [?] -03:104 [?] , 03:106 [?] -03:112 [?] , 03:113-03:116, 03:118N [?] , 03:119, 03:120 [?] -03:131 [?] , 03:133 [?] -03:135 [?] , 03:137 [?] , 03:139, 03:140 [?] -03:149 [?] , 03:151 [?] -03:163 [?] , 03:164, 03:165 [?] - 03:167 [?] , 03:169, 03:170 [?] -03:171 [?] , 03:172, 03:173 [?] -03:179 [?] , 03:182, 03:183 [?] , 03:185 [?] , 03:186, 03:188 [?] - 03:189 [?] , 03:191, 03:192 [?] -03:194 [?] , 03:196-03:198:02, 03:201 [?] -03:205 [?] , 03:206, 03:207 [?] -03:210 [?] , 03:212 [?] - 03:214 [?] , 03:216 [?] -03:221 [?] , 03:223 [?] - 03:228 [?] , 03:230 [?] , 03:231, 03:232 [?] - 03:238 [?] , 03:240 [?] , 03:241-03:243, 03:244 [?] , 03:246, 03:252-03:254, 03:255 [?] - 03:262 [?] , 03:264, 03:266, 03:267 [?] - 03:270 [?] , 03:271, 03:273 [?] -03:275 [?] ,



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20	150 bp	430 bp	*03:21, 03:452	*02:64, 02:79, 05:35, 05:182, 05:259, 06:243, 06:255
	240 bp		*03:246	*06:310
21	160 bp	515 bp	*03:22:01:01-03:22:02, 03:96, 03:251	*02:108, 02:144, 04:23, 05:103 ^w , 05:226, 05:231 ^w , 06:04:01:01 ^w -06:04:15 ^w , 06:04:17 ^w -06:05:02 ^w , 06:06 [?] , 06:07:01 ^w -06:07:02 ^w , 06:08:02 [?] -06:08:03 [?] , 06:09:01:01 ^w -06:09:12 ^w , 06:11:02 [?] -06:11:03 [?] , 06:12 ^w , 06:13:02 [?] -06:13:03 [?] , 06:15:01 [?] , 06:17 [?] -06:18:01 [?] , 06:18:02 ^w , 06:19:01 [?] , 06:21 ^w , 06:22:01 [?] -06:25 [?] , 06:27:01 [?] -06:27:02 [?] , 06:29 [?] -06:32:02 [?] , 06:34 ^w , 06:35 [?] , 06:36 ^w , 06:38 ^w , 06:40 [?] , 06:41:01:01 ^w -06:42 ^w , 06:45 [?] , 06:50 [?] , 06:51:02 [?] , 06:52 ^w , 06:53:01 [?] -06:54N [?] , 06:56 [?] -06:57:01 [?] , 06:58 ^w , 06:59 [?] -06:61 [?] , 06:63 [?] -06:67 [?] , 06:69:01 [?] -06:72 [?] , 06:74 [?] , 06:76 [?] , 06:79:02 [?] -06:83 [?] , 06:84:01:01 ^w -06:84:01:02 ^w , 06:85 [?] , 06:89 [?] , 06:91 [?] , 06:93 [?] -06:97 [?] ,



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22	160 bp	515 bp	*03:23:01	*05:03:12, 05:43:02, 06:03:01:01-06:03:03, 06:03:05-06:03:07, 06:03:11-06:03:25, 06:03:27-06:03:33,



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23^{3,4}	95 bp 125 bp 150 bp 185 bp 220 bp	430 bp	*03:41, 03:224 *03:24-03:25:02, 03:79, 03:89, 03:234, 03:239, 03:447 *03:84N *03:45:01-03:45:02 *03:258	*04:03:01-04:03:03, 04:81
24^{3,5}	120 bp 210 bp	430 bp	*03:39 *03:27, 03:48, 03:56	
25^{3,4}	105 bp 130 bp 155 bp 180 bp 240 bp	430 bp	*03:206 *03:24, 03:79, 03:447 *03:80, 03:257 *03:29, 03:118N, 03:237N *03:34	*04:81 *02:14:01:01- 02:14:01:02
26	180 bp	430 bp	*03:30, 03:52, 03:72, 03:100, 03:132, 03:179, 03:215, 03:270, 03:474	*04:09, 04:63, 04:75, 06:29, 06:96:01- 06:96:02, 06:139, 06:209, 06:322:01- 06:322:03, 06:337
27⁶	170 bp 225 bp 250 bp	430 bp	*03:32, 03:87 *03:85 *03:31	



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28	200 bp 230 bp	430 bp	*03:37-03:38:02, 03:46, 03:252, 03:277 *03:225	
29³	110 bp	515 bp	*03:33, 03:245, 03:328	*05:281, 06:228, 06:304N
	165 bp 255 bp		*03:35, 03:315 *03:243	*02:126
30⁴	135 bp 175 bp	515 bp	*03:36, 03:149 *03:150, 03:490	
31³	115 bp 195 bp 225 bp	430 bp	*03:255 *03:28 *03:56, 03:83	
32³	100 bp	430 bp	*03:44	
33^{3,7}	85 bp 160 bp	430 bp	*03:59 *03:204	*06:37, 06:374
34	190 bp	430 bp	*03:58, 03:82, 03:198:01, 03:222	
35	135 bp	430 bp	*03:190, 03:205, 03:214	*02:157, 04:15, 04:42, 05:102, 06:223, 06:406
	190 bp 235 bp		*03:51, 03:54, 03:287 *03:117	*02:196, 04:35
36	145 bp 175 bp 200 bp	430 bp	*03:205, 03:214 *03:55, 03:60, 03:250 *03:269N	*04:15
37	180 bp 230 bp	430 bp	*03:60, 03:77 *03:53, 03:62, 03:225	
38	170 bp 225 bp	430 bp	*03:58, 03:194, 03:232 *03:57, 03:83	*06:82, 06:233, 06:302
39³	105 bp 140 bp	430 bp	*03:240 *03:25:01-03:25:02, 03:66N, 03:234, 03:239 *03:68 *03:86	*04:03:01-04:03:03, 06:193N *02:151
40	180 bp 230 bp	430 bp	*03:67-03:68, 03:228 *03:104, 03:212	*06:17, 06:24, 06:30, 06:42, 06:318 *02:47
41	135 bp 175 bp 210 bp	430 bp	*03:282N *03:63, 03:75, 03:168 *03:201, 03:269N	
42³	80 bp 165 bp 220 bp	430 bp	*03:188 *03:64, 03:76-03:77 *03:201	
43⁴	175 bp	430 bp	*03:49:01:01-03:49:01:02, 03:198:01, 03:222, 03:247, 03:285-03:286, 03:402, 03:471 *03:97, 03:329, 03:349, 03:381	*02:10, 02:81, 05:152, 06:359, 06:381, 06:396 *06:86, 06:104, 06:366
44	250 bp 160 bp 220 bp 270 bp	430 bp	*03:199, 03:211 *03:78 *03:71	
45^{3,5}	90 bp 135 bp 170 bp 230 bp	430 bp	*03:65 *03:282N *03:133, 03:200, 03:462 *03:81, 03:159	*02:84, 04:14 *02:116
46^{3,4}	115 bp 175 bp	515 bp	*03:88-03:89 *03:191	



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47	175 bp	430 bp	*03:06 [?] -03:07 [?] , 03:14:01 [?] -03:15 [?] , 03:17:01 [?] -03:18 [?] , 03:19:01:01-03:19:06, 03:20 [?] , 03:23:01 [?] , 03:23:03 [?] , 03:25:02 [?] - 03:26 [?] , 03:48 [?] , 03:52 [?] -03:54 [?] , 03:56 [?] - 03:67 [?] , 03:69 [?] -03:70 [?] , 03:71, 03:74 [?] - 03:78 [?] , 03:81 [?] -03:82 [?] , 03:101 [?] -03:104 [?] , 03:106 [?] -03:112 [?] , 03:118N [?] , 03:120 [?] - 03:131 [?] , 03:133 [?] -03:135 [?] , 03:137 [?] , 03:140 [?] -03:149 [?] , 03:150, 03:151 [?] - 03:163 [?] , 03:165 [?] -03:167 [?] , 03:170 [?] - 03:171 [?] , 03:173 [?] -03:179 [?] , 03:183 [?] , 03:185 [?] , 03:187, 03:188 [?] -03:189 [?] , 03:192 [?] -03:194 [?] , 03:201 [?] -03:205 [?] , 03:207 [?] -03:210 [?] , 03:212 [?] -03:214 [?] , 03:216 [?] -03:221 [?] , 03:223 [?] -03:228 [?] , 03:230 [?] , 03:232 [?] -03:238 [?] , 03:240 [?] , 03:244 [?] , 03:255 [?] -03:262 [?] , 03:267 [?] - 03:270 [?] , 03:273 [?] -03:275 [?] , 03:278 [?] , 03:286, 03:335, 03:351 [?] -03:353 [?] , 03:356N [?] , 03:359 [?] , 03:376N, 03:381, 03:387 [?] , 03:394, 03:401, 03:425 [?] , 03:433 [?] , 03:437 [?] -03:438 [?] , 03:441 [?] , 03:449 [?] -03:450 [?] , 03:455 [?] -03:456 [?] , 03:485, 03:492 [?]	
48⁵	145 bp	430 bp	*03:105-03:106, 03:109, 03:120	
49	140 bp 175 bp	430 bp	*03:94, 03:164, 03:182 *03:191	*04:44
50^{3,5}	105 bp 150 bp	515 bp	*03:206 *03:98, 03:165, 03:182	
51^{3,5}	105 bp 140 bp 165 bp	430 bp	*03:90N, 03:240 *03:239 *03:115, 03:213N, 03:228, 03:368	*02:106, 04:43, 05:246, 05:287, 06:17, 06:24, 06:30, 06:42, 06:109
52^{3,5}	220 bp 80 bp 185 bp	430 bp	*03:258 *03:188 *03:99Q, 03:118N, 03:133, 03:162, 03:183, 03:200, 03:223, 03:233, 03:237N, 03:351, 03:462	*02:84, 04:14
53³	125 bp 155 bp 190 bp	430 bp	*03:130, 03:271 *03:139, 03:199 *03:162, 03:183, 03:204, 03:223, 03:233, 03:351	
54³	95 bp 170 bp 220 bp	430 bp	*03:91Q *03:146, 03:158, 03:170, 03:207 *03:181	
55⁷	155 bp 195 bp	430 bp	*03:102 *03:114	
56	155 bp 200 bp	430 bp	*03:95N, 03:210 *03:150, 03:170, 03:490	
57³	100 bp 215 bp 240 bp	515 bp	*03:169 *03:246	*05:45, 05:201 *06:327 *06:310



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58⁷	155 bp 180 bp	430 bp	*03:102 *03:197Q	
59³	100 bp	430 bp	*03:10:01-03:10:03, 03:14:01-03:14:02, 03:138, 03:180, 03:183, 03:195, 03:474	*06:01:01:01-06:01:31, 06:01:33-06:01:34, 06:43, 06:45, 06:54N- 06:57:02, 06:98, 06:99:02-06:105, 06:108, 06:120, 06:132, 06:140, 06:153:01- 06:153:02, 06:157, 06:177, 06:181, 06:194, 06:205, 06:209, 06:214, 06:229, 06:239, 06:243, 06:245-06:247, 06:251, 06:257-06:258, 06:263, 06:268, 06:274, 06:277, 06:285, 06:302, 06:305, 06:307, 06:309-06:310, 06:312, 06:321, 06:323, 06:330N, 06:359, 06:382, 06:418-06:419, 06:421, 06:427, 06:435
60	185 bp	430 bp	*03:132, 03:215	*04:75, 06:29, 06:123, 06:139, 06:337
61^{4,5}	115 bp 155 bp 255 bp	430 bp	*03:116 *03:221, 03:450 *03:243	*06:51:01-06:51:02, 06:377 *02:126
62	175 bp	430 bp	*03:50, 03:247, 03:285	
63	160 bp	430 bp	*03:276N	
64⁸	-	-	Negative Control	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DQB1*03 SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherit feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²For several DQB1 alleles 1st and/or 3rd exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

³HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.



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⁴Primer mixes 3, 5, 23, 25, 30, 43, 45, 46, 48, 51, 52 and 61 may have a tendency to giving rise to primer oligomer formation.

⁵Primer mixes 6, 11, 14, 16, 19, 24 and 50 may have tendencies of unspecific amplifications.

⁶Primer mixes 1, 2, 18, 27 and 33 may give rise to a lower yield of HLA-specific PCR product than the other DQB1*03 primer mixes.

⁷Primer mixes 55 and 58 may give rise to a long unspecific amplification product at approximately 1000 bp. This should be disregarded when interpreting the DQB1*03 typings.

⁸Primer mix 64 contains a negative control, which will amplify the majority of the 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 200 base pairs.

Abbreviations

w: might be weakly amplified.

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



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PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	170	220	135	220	135	95	115	110	65	135	140	260
Length of int. pos. control ¹	515	515	515	515	430	430	430	430	430	430	430	515
5'-primer(s) ²	45(230) 5'-ggA 3'	26(173) 5'-TTA 3'	26(173) 5'-TCT 3'	26(173) 5'-TCT 3'	26(173) 5'-TTA 3'	26(173) 5'-ggg 3'	38(210) 5'-gCA 3'	49(242) 5'-ggT 3'	38(210) 5'-gCA 3'	14(136) 5'-gCC 3'	13(134) 5'-ggC 3'	13(134) 5'-ggC 3'
						38(208) 5'-ACA 3'	140(514) 5'-CAA 3'	55(260) 5'-gCA 3'		135(500) 5'-TgA 3'		
								63(285) 5'-Agg 3'				
3'-primer(s) ³	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	57(266) 5'-Cgg 3'	86(353) 5'-gCT 3'	57(266) 5'-Cgg 3'	55(260) 5'-gCg 3'	62(282) 5'-CTA 3'	86(353) 5'-gCT 3'	46(232) 5'-CAA 3'	86(353) 5'-gCT 3'	45(230) 5'-CCC 3'	86(353) 5'-gCT 3'
	86(353) 5'-gTT 3'	87(357) 5'-CgT 3'	57(266) 5'-CAg 3'	87(356) 5'-ggg 3'			163(583) 5'-CAC 3'		70(304) 5'-CCC 3'	167(596) 5'-CAT 3'	48(240) 5'-gCg 3'	87(357) 5'-CgT 3'
	87(357) 5'-CgT 3'		57(266) 5'-Cgg 3'	87(357) 5'-CgA 3'			165(589) 5'-ggT 3'		75(320) 5'-CCC 3'		85(349) 5'-CAT 3'	
							176(622) 5'-CTA 3'					
Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec. PCR product	115	130	135	130	165	175	175	150	160	160	95	120
	170				225			240			125	210
	205										150	
											185	
											220	
Length of int. pos. control ¹	430	430	515	430	430	515	515	430	515	515	430	430
5'-primer(s) ²	26(173) 5'-TTA 3'	26(173) 5'-TTA 3'	55(260) 5'-gCC 3'	57(266) 5'-TgA 3'	27(175) 5'-TTC 3'	140(514) 5'-CAA 3'	140(514) 5'-CAA 3'	104(406) 5'-CAC 3'	130(485) 5'-CCA 3'	9(122) 5'-gTA 3'	26(173) 5'-TCT 3'	26(173) 5'-TTA 3'
				57(266) 5'-TgA 3'	123(464) 5'-CTT 3'			133(493) 5'-TTT 3'			140(514) 5'-CAA 3'	102(400) 5'-TCT 3'
					142(520) 5'-gCC 3'							
					146(533) 5'-CCA 3'							
3'-primer(s) ³	51(248) 5'-gCA 3'	55(260) 5'-gCg 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	185(650) 5'-CgA 3'	185(650) 5'-Cgg 3'	170(604) 5'-gAC 3'	170(604) 5'-gAC 3'	48(240) 5'-gCg 3'	45(229) 5'-CCA 3'	81(338) 5'-TgC 3'
	67(296) 5'-ggT 3'	55(260) 5'-gCg 3'	87(357) 5'-CgA 3'	87(357) 5'-CgT 3'	185(650) 5'-CgA 3'		185(650) 5'-CCg 3'				56(263) 5'-CAA 3'	83(343) 5'-gTC 3'
	71(308) 5'-ggA 3'	55(260) 5'-ggg 3'		87(357) 5'-CgA 3'							74(318) 5'-AAg 3'	83(343) 5'-gTg 3'
	81(338) 5'-TgC 3'										74(318) 5'-AAA 3'	127(477) 5'-TTC 3'
											86(354) 5'-Agg 3'	
											167(595) 5'-ACA 3'	
											170(604) 5'-gAT 3'	
											176(622) 5'-CTA 3'	
Well No.	13	14	15	16	17	18	19	20	21	22	23	24



101.214-24/06 – including *Taq* polymerase
101.214-24u/06u – without *Taq* polymerase

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Lot-specific information

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec.	105	180	170	200	110	135	115	100	85	190	135	145
PCR product	130		225	230	165	175	195		160		190	175
	155		250		255		225				235	200
	180											
	240											
Length of int.	430	430	430	430	515	515	430	430	430	430	430	430
pos. control ¹												
5'-primer(s) ²	20(154) 5'-ACA 3'	9(121) 5'-TgC 3'	116(442) 5'-TgA 3'	24(166) 5'-gCC 3'	99(391) 5'-CAA 3'	10(125) 5'-CCg 3'	26(173) 5'-TTA 3'	13(134) 5'-ggC 3'	37(205) 5'-AgA 3'	26(173) 5'-TTA 3'	34(197) 5'-CCA 3'	34(196) 5'-ACT 3'
	37(207) 5'-TAA 3'	9(122) 5'-gTT 3'	123(464) 5'-CTT 3'	30(184) 5'-gAC 3'	129(481) 5'-AAA 3'	24(166) 5'-gCA 3'		62(282) 5'-AAg 3'	102(400) 5'-TCT 3'	52(251) 5'-gCT 3'	39(211) 5'-CAT 3'	
	48(239) 5'-CCA 3'		141(517) 5'-CTA 3'	30(184) 5'-gAC 3'	145(530) 5'-CAT 3'					102(400) 5'-TCT 3'	41(217) 5'-TCC 3'	
	140(514) 5'-CAA 3'		146(533) 5'-CCA 3'	31(187) 5'-ACg 3'	147(535) 5'-CCT 3'							52(251) 5'-gCT 3'
				36(204) 5'-gAC 3'								
3'-primer(s) ³	86(353) 5'-gCT 3'	55(260) 5'-gCg 3'	185(650) 5'-CgA 3'	86(353) 5'-gCT 3'	170(604) 5'-gAC 3'	55(260) 5'-gCg 3'	51(248) 5'-gCA 3'	32(191) 5'-TAC 3'	77(326) 5'-CCg 3'	71(308) 5'-ggC 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'
	161(577) 5'-CAT 3'	55(260) 5'-gCg 3'				55(260) 5'-gCg 3'	77(325) 5'-CgC 3'			79(332) 5'-TgT 3'	130(484) 5'-CCA 3'	
	170(604) 5'-gAT 3'						83(343) 5'-gTC 3'			150(546) 5'-CCC 3'	150(544) 5'-gTC 3'	
	182(641) 5'-ggC 3'						88(359) 5'-TgA 3'				167(596) 5'-CAA 3'	
Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Well No.	37	38	39	40	41	42	43	44	45	46	47	48
Length of spec.	180	170	105	180	135	80	175	160	90	115	175	145
PCR product	230	225	140	230	175	165	250	220	135	175		
			190		210	220		270	170			
			235						230			
Length of int.	430	430	430	430	430	430	430	430	430	515	430	430
pos. control ¹												
5'-primer(s) ²	23(164) 5'-gCA 3'	26(173) 5'-TTA 3'	26(173) 5'-TCT 3'	26(173) 5'-TCT 3'	27(175) 5'-ATA 3'	27(175) 5'-ATA 3'	102(400) 5'-TCT 3'	10(126) 5'-CAT 3'	23(163) 5'-AgA 3'	140(514) 5'-CAA 3'	140(516) 5'-ACC 3'	55(260) 5'-gCC 3'
	24(166) 5'-gCC 3'				34(196) 5'-ACT 3'	41(219) 5'-gAg 3'		26(173) 5'-TTT 3'	44(226) 5'-ACA 3'			
	39(211) 5'-CAT 3'				38(209) 5'-CgA 3'	47(235) 5'-TgA 3'		47(235) 5'-TgC 3'	55(259) 5'-g.C 3'			
	41(219) 5'-gAg 3'				44(227) 5'-CgC 3'	48(239) 5'-TCC 3'		48(239) 5'-TCA 3'	70(306) 5'-AgC 3'			
					55(259) 5'-g.C 3'	74(316) 5'-CgA 3'						
3'-primer(s) ³	86(353) 5'-gCT 3'	70(304) 5'-CCC 3'	48(238) 5'-CCA 3'	71(307) 5'-ggC 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	142(520) 5'-AAT 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	165(589) 5'-ggT 3'	185(650) 5'-CgA 3'	87(355) 5'-gAC 3'
		71(308) 5'-ggC 3'	56(263) 5'-CAA 3'	73(314) 5'-CCT 3'			146(532) 5'-ggC 3'			167(595) 5'-ACA 3'		88(358) 5'-gCC 3'
		71(308) 5'-ggA 3'	61(278) 5'-TCT 3'	76(324) 5'-gTT 3'			150(546) 5'-CCC 3'			184(647) 5'-Tgg 3'		93(374) 5'-gCA 3'
		88(359) 5'-TgA 3'	76(324) 5'-gTT 3'	87(356) 5'-ggg 3'			172(611) 5'-AgA 3'					
		89(362) 5'-TCA 3'	90(365) 5'-AgT 3'	89(361) 5'-CgC 3'								
Well No.	37	38	39	40	41	42	43	44	45	46	47	48



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Lot-specific information

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec.	140	105	105	80	125	95	155	155	100	155	100	185
PCR product	175	150	140	185	155	170	195	200	215	180		
			165		190	220			240			
			220									
Length of int. pos. control ¹	430	515	430	430	430	430	430	430	515	430	430	430
5'-primer(s) ²	140(514) 5'-CAA 3'	140(514) 5'-CAA 3'	26(173) 5'-TCT 3'	32(192) 5'-..T 3'	37(205) 5'-AgA 3'	8(119) 5'-CgC 3'	13(134) 5'-ggC 3'	10(125) 5'-CCg 3'	104(406) 5'-CAC 3'	13(134) 5'-ggC 3'	26(173) 5'-TTA 3'	9(122) 5'-gTT 3'
			135(500) 5'-TgA 3'	37(205) 5'-Agg 3'	37(205) 5'-Agg 3'	13(133) 5'-AgA 3'		16(142) 5'-gCC 3'	112(430) 5'-ACT 3'			
				37(207) 5'-TAA 3'	48(239) 5'-CCC 3'	16(142) 5'-gCC 3'		29(182) 5'-CAA 3'	151(547) 5'-ACA 3'			
				44(226) 5'-ACA 3'	48(239) 5'-TCA 3'	125(470) 5'-Agg 3'						
				74(316) 5'-CgA 3'	58(268) 5'-ACT 3'	167(595) 5'-AgA 3'						
3'-primer(s) ³	170(604) 5'-gAA 3'	161(577) 5'-CAT 3'	48(238) 5'-.Cg 3'	86(353) 5'-gCT 3'	86(353) 5'-gCT 3'	55(260) 5'-gCg 3'	52(250) 5'-CgC 3'	66(294) 5'-ACT 3'	170(604) 5'-gAC 3'	52(250) 5'-CgC 3'	45(230) 5'-CCC 3'	57(266) 5'-Cgg 3'
	174(617) 5'-CgC 3'	172(611) 5'-AgC 3'	48(238) 5'-CCA 3'			185(650) 5'-CgA 3'	64(287) 5'-TCC 3'			60(274) 5'-gTA 3'	48(240) 5'-gCg 3'	
	177(625) 5'-gTT 3'	177(625) 5'-gTT 3'	55(260) 5'-gCg 3'									
	184(647) 5'-Tgg 3'	179(632) 5'-ggT 3'	64(286) 5'-CTA 3'									
			71(307) 5'-ggC 3'									
			86(354) 5'-Agg 3'									
			175(619) 5'-CAT 3'									
Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Well No.	61	62	63									
Length of spec.	115	175	160									
PCR product	155											
	255											
Length of int. pos. control ¹	430	430	430									
5'-primer(s) ²	28(179) 5'-gAC 3'	102(400) 5'-TCT 3'	1 st I 5'-... 3'									
	99(391) 5'-CAA 3'											
	145(530) 5'-CAA 3'											
3'-primer(s) ³	66(294) 5'-ATg 3'	146(532) 5'-ggT 3'	1 st I 5'-CCT 3'									
	170(604) 5'-gAC 3'	146(532) 5'-ggC 3'										
Well No.	61	62	63									



101.214-24/06 – including *Taq* polymerase
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Lot-specific information

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 430 or 515 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the longer, 515 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.



101.214-24/06 – including *Taq* polymerase
 101.214-24u/06u – without *Taq* polymerase

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Lot No.: **4R2**

Lot-specific information

CELL LINE VALIDATION SHEET																			
DQB1*03 SSP subtyping kit ²																			
			Production No.	Well															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				201784901	201784902	201784903	201905104	201784905	201784906	201784907	201784908	202245409	201784910	202134711	201784912	201905113	201784914	201895915	201895916
	IHWC cell line ¹	DQB1																	
1	9001 SA	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*06:01	*02:02	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-
3	9011 E4181324	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
4	9275 GU373	*02:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*05:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*03:02	*06:01	-	-	+	+	-	-	-	-	-	-	+	-	-	-	+	-
7	9020 QBL	*02:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
9	9026 YAR	*03:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
10	9107 LKT3	*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*02:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*03:03		-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+
13	9004 JESTHOM	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*03:03		-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+
16	9037 SWEIG007	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
17	9282 CTM3953540	*02:01	*06:03	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*06:02	*02:02	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
20	9059 SLE005	*06:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
22	9056 KOSE	*05:03	*06:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*05:03	*06:01	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
24	9035 JBUSH	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
25	9049 IBW9	*02:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*02:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*04:01	*05:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:02	*03:01	+	+	+	+	-	-	-	-	-	-	-	+	-	+	+	+
29	9050 MOU	*02:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*04:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*02:01		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
33	9098 MT14B	*03:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
34	9104 DHIF	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
35	9302 SSTO	*03:05		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
36	9024 KT17	*03:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-
37	9065 HHKB	*06:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
39	9315 CML	*02:01	*03:01	+	+	+	+	-	-	-	-	-	-	-	+	-	+	+	+
40	9134 WHONP199	*02:02	*03:03	-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	+
41	9055 H0301	*06:09		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
43	9076 T7526	*03:03		-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+
44	9057 TEM	*05:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*02:02		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU	*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*03:01		+	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+
48	9303 TER-ND	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



101.214-24/06 – including *Taq* polymerase
 101.214-24u/06u – without *Taq* polymerase

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Lot-specific information

CELL LINE VALIDATION SHEET																				
DQB1*03 SSP subtyping kit ²																				
				Production No.	Well															
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
					201784917	201784918	201905119	201784920	201784921	201784922	202134723	201784924	202127925	201784926	201784927	202016828	201784929	201905130	201784931	201784932
	IHWC cell line ¹	DQB1																		
1	9001 SA	*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
2	9280 LK707	*06:01	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-			
3	9011 E4181324	*06:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
4	9275 GU373	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
5	9009 KAS011	*05:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
6	9353 SM	*03:02	*06:01		-	+	-	-	-	-	-	-	-	-	-	-	-			
7	9020 QBL	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
8	9025 DEU	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
9	9026 YAR	*03:02			-	+	-	-	-	-	-	-	-	-	-	-	-			
10	9107 LKT3	*04:01			-	+	-	-	-	-	-	-	-	-	-	-	-			
11	9051 PITOUT	*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
12	9052 DBB	*03:03			-	+	-	-	-	-	-	-	-	-	-	-	-			
13	9004 JESTHOM	*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
14	9071 OLGA	*04:02			-	+	-	-	-	-	-	-	-	-	-	-	-			
15	9075 DKB	*03:03			-	+	-	-	-	-	-	-	-	-	-	-	-			
16	9037 SWEIG007	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
17	9282 CTM3953540	*02:01	*06:03		-	-	-	-	-	+	-	-	-	-	-	-	-			
18	9257 32367	*06:02	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-			
19	9038 BM16	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
20	9059 SLE005	*06:04			-	-	-	-	W	-	-	-	-	-	-	-	-			
21	9064 AMALA	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
22	9056 KOSE	*05:03	*06:04		-	-	-	-	W	-	-	-	-	-	-	-	-			
23	9124 IHL	*05:03	*06:01		-	-	-	-	-	-	-	-	-	-	-	-	-			
24	9035 JBUSH	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
25	9049 IBW9	*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
26	9285 WT49	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
27	9191 CH1007	*04:01	*05:01		-	+	-	-	-	-	-	-	-	-	-	-	-			
28	9320 BEL5GB	*02:02	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	-			
29	9050 MOU	*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
30	9021 RSH	*04:02			-	+	-	-	-	-	-	-	-	-	-	-	-			
31	9019 DUCAF	*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
32	9297 HAG	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
33	9098 MT14B	*03:02			-	+	-	-	-	-	-	-	-	-	-	-	-			
34	9104 DHIF	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
35	9302 SSTO	*03:05			-	+	-	-	-	-	-	-	-	-	-	-	-			
36	9024 KT17	*03:02			-	+	-	-	-	-	-	-	-	-	-	-	-			
37	9065 HHKB	*06:03			-	-	-	-	+	-	-	-	-	-	-	-	-			
38	9099 LZL	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
39	9315 CML	*02:01	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	-			
40	9134 WHONP199	*02:02	*03:03		-	+	-	-	-	-	-	-	-	-	-	-	-			
41	9055 H0301	*06:09			-	-	-	-	-	-	-	-	-	-	-	-	-			
42	9066 TAB089	*06:01			-	-	-	-	-	-	-	-	-	-	-	-	-			
43	9076 T7526	*03:03			-	+	-	-	-	-	-	-	-	-	-	-	-			
44	9057 TEM	*05:03			-	-	-	-	-	-	-	-	-	-	-	-	-			
45	9239 SHJO	*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
46	9013 SCHU	*06:02			-	-	-	-	-	-	-	-	-	-	-	-	-			
47	9045 TUBO	*03:01			-	-	+	-	-	-	-	-	-	-	-	-	-			
48	9303 TER-ND	*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-			



101.214-24/06 – including *Taq* polymerase
 101.214-24u/06u – without *Taq* polymerase

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Lot No.: **4R2**

Lot-specific information

CELL LINE VALIDATION SHEET																					
DQB1*03 SSP subtyping kit ²																					
					Production No.	Well															
						33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
						201784933	201784934	201784935	201784936	201784937	201784938	202245439	201905140	201895941	201784942	201905143	201784944	201905145	202245446	201784947	201905148
	IHWC cell line ¹			DQB1																	
1	9001	SA		*05:01		-	-	-	-	-	-	-	-	-	-	-					
2	9280	LK707		*06:01	*02:02	-	-	-	-	-	-	-	-	-	-	-					
3	9011	E4181324		*06:01		-	-	-	-	-	-	-	-	-	-	-					
4	9275	GU373		*02:01		-	-	-	-	-	-	-	-	-	-	-					
5	9009	KAS011		*05:02		-	-	-	-	-	-	-	-	-	-	-					
6	9353	SM		*03:02	*06:01	-	-	-	-	-	-	-	-	-	-	-					
7	9020	QBL		*02:01		-	-	-	-	-	-	-	-	-	-	-					
8	9025	DEU		*03:01		-	-	-	-	-	-	-	-	-	-	-					
9	9026	YAR		*03:02		-	-	-	-	-	-	-	-	-	-	-					
10	9107	LKT3		*04:01		-	-	-	-	-	-	-	-	-	-	-					
11	9051	PITOUT		*02:02		-	-	-	-	-	-	-	-	-	-	-					
12	9052	DBB		*03:03		-	-	-	-	-	-	-	-	-	-	-					
13	9004	JESTHOM		*05:01		-	-	-	-	-	-	-	-	-	-	-					
14	9071	OLGA		*04:02		-	-	-	-	-	-	-	-	-	-	-					
15	9075	DKB		*03:03		-	-	-	-	-	-	-	-	-	-	-					
16	9037	SWEIG007		*03:01		-	-	-	-	-	-	-	-	-	-	-					
17	9282	CTM3953540		*02:01	*06:03	-	-	-	-	-	-	-	-	-	-	-					
18	9257	32367		*06:02	*02:02	-	-	-	-	-	-	-	-	-	-	-					
19	9038	BM16		*03:01		-	-	-	-	-	-	-	-	-	-	-					
20	9059	SLE005		*06:04		-	-	-	-	-	-	-	-	-	-	-					
21	9064	AMALA		*03:01		-	-	-	-	-	-	-	-	-	-	-					
22	9056	KOSE		*05:03	*06:04	-	-	-	-	-	-	-	-	-	-	-					
23	9124	IHL		*05:03	*06:01	-	-	-	-	-	-	-	-	-	-	-					
24	9035	JBUSH		*03:01		-	-	-	-	-	-	-	-	-	-	-					
25	9049	IBW9		*02:02		-	-	-	-	-	-	-	-	-	-	-					
26	9285	WT49		*02:01		-	-	-	-	-	-	-	-	-	-	-					
27	9191	CH1007		*04:01	*05:01	-	-	-	-	-	-	-	-	-	-	-					
28	9320	BEL5GB		*02:02	*03:01	-	-	-	-	-	-	-	-	-	-	-					
29	9050	MOU		*02:02		-	-	-	-	-	-	-	-	-	-	-					
30	9021	RSH		*04:02		-	-	-	-	-	-	-	-	-	-	-					
31	9019	DUCAF		*02:01		-	-	-	-	-	-	-	-	-	-	-					
32	9297	HAG		*03:01		-	-	-	-	-	-	-	-	-	-	-					
33	9098	MT14B		*03:02		-	-	-	-	-	-	-	-	-	-	-					
34	9104	DHIF		*03:01		-	-	-	-	-	-	-	-	-	-	-					
35	9302	SSTO		*03:05		-	-	-	-	-	-	-	-	-	-	-					
36	9024	KT17		*03:02		-	-	-	-	-	-	-	-	-	-	-					
37	9065	HHKB		*06:03		-	-	-	-	-	-	-	-	-	-	-					
38	9099	LZL		*03:01		-	-	-	-	-	-	-	-	-	-	-					
39	9315	CML		*02:01	*03:01	-	-	-	-	-	-	-	-	-	-	-					
40	9134	WHONP199		*02:02	*03:03	-	-	-	-	-	-	-	-	-	-	-					
41	9055	H0301		*06:09		-	-	-	-	-	-	-	-	-	-	-					
42	9066	TAB089		*06:01		-	-	-	-	-	-	-	-	-	-	-					
43	9076	T7526		*03:03		-	-	-	-	-	-	-	-	-	-	-					
44	9057	TEM		*05:03		-	-	-	-	-	-	-	-	-	-	-					
45	9239	SHJO		*02:02		-	-	-	-	-	-	-	-	-	-	-					
46	9013	SCHU		*06:02		-	-	-	-	-	-	-	-	-	-	-					
47	9045	TUBO		*03:01		-	-	-	-	-	-	-	-	-	-	-					
48	9303	TER-ND		*05:01		-	-	-	-	-	-	-	-	-	-	-					



101.214-24/06 – including *Taq* polymerase
101.214-24u/06u – without *Taq* polymerase

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Lot No.: **4R2**

Lot-specific information

CELL LINE VALIDATION SHEET																					
DQB1*03 SSP subtyping kit ²																					
					Production No.	Well															
						49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
						201784949	201905150	201905151	201784952	201784953	201784954	201784955	201905156	201905157	201784958	202134759	201784960	201895961	201784962	201905163	
	IHWC cell line ¹		DQB1																		
1	9001 SA		*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707		*06:01	*02:02		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
3	9011 E4181324		*06:01			-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
4	9275 GU373		*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011		*05:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM		*03:02	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
7	9020 QBL		*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR		*03:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3		*04:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT		*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB		*03:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM		*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA		*04:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB		*03:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540		*02:01	*06:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367		*06:02	*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005		*06:04			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE		*05:03	*06:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL		*05:03	*06:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
24	9035 JBUSH		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9		*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49		*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007		*04:01	*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB		*02:02	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU		*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH		*04:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF		*02:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B		*03:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO		*03:05			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17		*03:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB		*06:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML		*02:01	*03:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199		*02:02	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055 H0301		*06:09			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089		*06:01			-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
43	9076 T7526		*03:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM		*05:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO		*02:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013 SCHU		*06:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO		*03:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND		*05:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Lot No.: 4R2

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution of the kit has been tested against 48 well characterized IHWC cell line DNAs.

No DNAs carrying the alleles to be amplified by primer solutions 7 to 10, 13, 17, 20, 23 to 46, 48 to 58 and 60 to 63 were available. The specificities of the primers in primer solutions 7, 9, 10, 23, 25 to 28, 35, 38, 39, 52 to 54, 60 and 61 were tested by separately adding additional 5'-primers and 3'-primers accordingly. In primer solutions 8, 17, 20, 29, 30, 33, 36, 37, 41, 42, 44, 45, 56, 57 and 63 it was only possible to test the 3'-primers, the 5'-primers were not possible to be tested. In primer solutions 13, 24, 31, 32, 34, 40, 43, 46, 48 to 51, 55, 58 and 62 it was only possible to test the 5'-primers, the 3'-primers were not possible to be tested. In primer solutions 1 to 4, 7, 9 to 12, 14 to 16, 19, 23, 25, 35, 38, 39 and 59 one or more of the 3'-primers were not possible to be tested, and in primer solution 6, 16, 25 to 28, 35, 52 to 54 and 61 one or more of the 5'-primers were not possible to be tested.



101.214-24/06 – including *Taq* polymerase
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Lot No.: **4R2**

Lot-specific information

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Fax: +46-8-717 88 18

E-mail: orders-se@caredx.com

Web page: www.caredx.com

CareDx Lab Solutions Inc., 901 S. Bolmar St., Suite R, West Chester, PA 19382

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E-mail: orders-us@caredx.com

Web page: www.caredx.com

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