101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

<div align="center">

Lot-specific information
Olerup SSP® HLA-B low resolution

</div>

Product number:	**101.501-48/12 – including *Taq* pol.**
	101.501-48u/12u – without *Taq* pol.
Lot number:	**5H1**
Expiry date:	**2021-10-01**
Number of tests:	**48 tests – Product No. 101.501-48/48u**
	12 tests – Product No. 101.501-12/12u
Number of wells per test:	**63 + 1**
Storage - pre-aliquoted primers:	**dark at -20ºC**
- PCR Master Mix:	**-20ºC**
- Adhesive PCR seals	**RT**
- Product Insert	**RT**

<div align="center">

This Product Description is only valid for Lot No. 5H1.

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

**CHANGES COMPARED TO THE PREVIOUS *OLERUP* SSP®
HLA-B LOW RESOLUTION LOT (2G5)**

</div>

The HLA-B low resolution primer set, specificity and interpretation tables have been updated for the HLA-B alleles reported since the previous *Olerup* SSP® HLA-B low resolution lot was made **(Lot No. 2G5)**. The kit design is based on IMGT/HLA database 3.34.0.

Changes to revision R01 compared to R00:
1. Primer mix 26 does not amplify the B*47:04 allele. This has been corrected in the Specificity and Interpretation tables.
2. Notes on Bw assignment of HLA-B alleles have been added in the section "Uniquely identified alleles".
3. Additional information has been added regarding gel electrophoresis run time for primer mixes 56 and 57 under the Specificity table.

OLERUP SSP
GENOMIC HLA TYPING

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Lot No.: 5H1

Lot-specific information

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
2	-	Added	3'-primer added for the B*08:146 allele.
4	Modified	Modified, added	5'-primer and 3'-primer modified. 3'-primer added for improved resolution of the B*44:07 allele.
7	-	Removed	Redundant 3'-primer removed.
14	Modified	-	5'-primer modified and positive control exchanged for improved HLA-specific amplification and decreased tendency of primer oligomer formation.
26	-	Modified	3'-primer modified for improved HLA-specific amplification.
39	Removed	-	Removed redundant 5'-primer variant.
54	Modified	-	5'-primers modified for improved HLA-specific amplification.
56	Added	-	Strength of the specific band has been optimized.

October 2019
Rev. No.: 01

CE
0088

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ALERUP SSP®
GENOMIC-LA TYPING

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Lot No.: 5H1

Lot-specific information

Well **64** contains <u>Negative Control primer pairs</u>, that will amplify more than 95% 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 430 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer[1]	164	340	440	45	45	43	36
	5'-CAC3'	5'-Agg3'	5'-TTA3'	5'-Tgg3'	5'-Tgg3'	5'-Tgg3'	5'-TAC3'
							36
							5'-TAT3'
3'-primer[2]	231	2nd I	507	59	58	57	47
	5'-TgC3'	5'-AAA3'	5'-TTg3'	5'-CTC3'	5'-ggC3'	5'-CTC3'	5'-ACA3'
							48
							5'-gCA3'
							48
							5'-gCC3'
							52
							5'-TgT3'
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

[1]The 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.
[2]The 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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October 2019   For *In Vitro* Diagnostic Use.
Rev. No.: 01

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Lot No.: 5H1

Lot-specific information
PRODUCT DESCRIPTION

HLA-B low resolution SSP typing

CONTENT
The primer set contains 5'- and 3'-primers for grouping the B*07:02 to B*83:01 alleles into the corresponding serological groups B7 to B81 as well as primer pairs for recognizing the Bw4 and Bw6 sequence motifs.

PLATE LAYOUT
Each test consists of 64 PCR reactions in a 64 well cut 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 'HLA-B low' in silver/gray ink.
Well No. 1 is marked with the Lot No. '5H1'.
Wells 1 to 63 – HLA-B low resolution primers.
Well 64 – Negative Control.
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
Only HLA-B alleles will be amplified by the HLA-B low resolution typing kit, except that a few HLA-A and HLA-C alleles will be amplified by some primer mixes. For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES
All the HLA-B alleles recognized by the HLA Nomenclature Committee in October 2018[1,2] will be amplified by the primers in the HLA-B low resolution SSP kit. The HLA-B alleles will be grouped into their corresponding serological specificities[3,4].

October 2019   CE   For *In Vitro* Diagnostic Use.
Rev. No.: 01   0088

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Lot No.: 5H1

Lot-specific information

Notes on Bw assignment

The Bw4 and Bw6 status of HLA-B alleles is based their serological type:

	Serological Type
Bw4	B5, B5102, B5103, B13, B17, B27, B37, B38(16), B44(12), B47, B49(21), B51(5), B52(5), B53, B57(17), B58(17), B59, B63(15), B77(15)
Bw6	B7, B703, B8, B14, B18, B22, B2708, B35, B39(16), B3901, B3902, B40, B4005, B41, B42, B45(12), B46, B48, B50(21), B54(22), B55(22), B56(22), B60(40), B61(40), B62(15), B64(14), B65(14), B67, B70, B71(70), B72(70), B73, B75(15), B76(15), B78, B81, B82

However, according to the HLA Dictionary[5] there are several exceptions to these associations. This product contains reactions specific to the sequences that code for the Bw4 and Bw6 epitopes. A small number of alleles classified as Bw4 or Bw6 in the HLA Dictionary are not amplified neither by the Bw4 nor the Bw6 primer mix:

Bw Reactivity	Allele
Bw6	B*15:377Q, B*35:01:39, B*35:02:09, B*39:01:15

[1]HLA-B alleles listed on the IMGT/HLA web page 2018-October-18, release 3.34.0, 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]It is not possible to identify all serological splits and combinations of the B15 group of alleles, as the serological reactivity of several of the B*15 alleles is not known.

The resolution has been updated to fulfill the NMDP medium resolution confirmatory typing requirements effective from February 1st 2001.

DNA-based HLA-B typing resolution required:
B*07:xx, B*08:xx, B*13:xx, B*14:xx, B*18:xx, B*27:xx, B*15:22, B*35:xx, B*37:xx, B*38:xx, B*39:xx, B*40:05, B*41:xx, B*42:xx, B*44:xx, B*45:xx, B*46:xx, B*47:xx, B*48:xx, B*49:xx, B*50:xx, B*51:xx, B*52:xx, B*53:xx, B*54:xx, B*55:xx, B*56:xx, B*57:xx, B*58:xx, B*59:xx, B*67:xx, B*73:xx, B*78:xx, B*81:xx, B*82:xx,

B*40EJD[a]	40:01, 40:07, 40:10, 40:12, 40:14, 40:15, 40:16
B*40EJB[b]	40:02, 40:03, 40:04, 40:06, 40:08, 40:09, 40:11, 40:13, 40:18, 40:19, 40:20
B*15EJA[c]	15:01, 15:04, 15:05, 15:06, 15:07, 15:20, 15:24, 15:25, 15:26N, 15:27, 15:28, 15:30, 15:32, 15:33, 15:34, 15:35, 15:36, 15:38, 15:39, 15:40, 15:43, 15:45
B*15AHM[d]	15:16, 15:17
B*15EHZ[e]	15:03, 15:09, 15:10, 15:18, 15:23, 15:29, 15:37, 15:47
B*15CYP[f]	15:02, 15:08, 15:11, 15:15, 15:21, 15:31, 15:44
B*15AND[g]	15:12, 15:14, 15:19
B*1513[h]	

[a]B60 serologic equivalent cluster.
[b]B61 serologic equivalent cluster.
[c]B62 serologic equivalent cluster.
[d]B63 serologic equivalent cluster.
[e]B70 serologic equivalent cluster.

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Rev. No.: 01   **0088**

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Lot No.: 5H1

Lot-specific information

[f]B75 serologic equivalent cluster.
[g]B76 serologic equivalent cluster.
[h]B77 serologic equivalent cluster.

[4]The following alleles give rise to identical amplification patterns with the HLA-B low resolution primer set. These alleles can be separated by the respective high resolution primer sets.

Alleles	Alleles
B*55:23, 55:32, B*56:18, 56:32	B*57:67:01, B*58:36

[5]Holdsworth, R Hurley, C K Marsh, S G E Lau, M Noreen, H J Kempenich, J H Setterholm, M Maiers, M: 'The HLA dictionary 2008 : a summary of HLA-A , -B , -C , -DRB1 / 3 / 4 / 5 , and -DQB1 alleles and their association with serologically defined HLA-A, -B, -C, -DR and -DQ antigens', Tissue Antigens, 2009, 73(2), pp. 95-170.

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Lot No.: 5H1

Lot-specific information
SPECIFICITY TABLE

HLA-B low resolution SSP typing

Specificities and sizes of the PCR products of the 63+1 primer mixes used for HLA-B low resolution SSP typing

Primer Mix	Size of spec. PCR product[1]	Size of control band[2]	HLA-B serol.[3]	Amplified HLA-B alleles[4]
1[5,8]	110 bp	**800 bp**	7, 703, 40, 41, 42, 48, 61	*07:02:01:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:52, 07:54-07:59, 07:61-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:163, 07:166-07:208, 07:210-07:222, 07:224-07:225, 07:227-07:234, 07:236-07:300, 07:302-07:335, 08:79, 08:156, 08:187, 15:138, 15:230, 15:241, 15:297, 35:66, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:128, 40:136, 40:158, 40:183, 40:198, 40:231, 40:279, 40:355, 41:08, 42:05:01-42:05:02, 44:150, 48:05, 48:08, 48:15, **C*02:23, C*03:260, C*04:77**
2	215 bp	1070 bp	8, 44	*08:01:01:01-08:05, 08:07-08:25, 08:27-08:49, 08:51-08:61, 08:63-08:64, 08:66-08:84, 08:86N-08:93, 08:95-08:122, 08:124-08:131, 08:133-08:208, 13:93, 15:142, 15:180, 15:429, 35:218, 35:256, 37:62, 40:328, 44:49, 44:156, 49:25, 51:68, 51:176, 52:77, **C*06:147**
3	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 61, 62, 77	*07:20, 07:24, 07:60, 07:100, 07:131, 07:220, 07:223, 08:21, 08:25, 08:175, 13:01:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:57, 13:59-13:66, 13:68-13:96, 13:99-13:123Q, 15:07:01:01-15:07:03, 15:36ʷ, 15:45, 15:55, 15:68, 15:89ʷ, 15:126, 15:197:02, 15:207, 15:324, 15:329, 15:331, 15:360, 15:383, 15:405, 15:431, 15:450, 35:05:01:01-35:05:03, 35:16-35:17:02, 35:22, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 35:113-35:114, 35:125, 35:164, 35:199, 35:232, 35:242, 35:318, 35:346, 35:368, 35:389, 40:05:01:01-40:05:01:02, 40:71, 40:174, 44:08ʷ, 44:54, 44:57ʷ, 44:60, 44:106, 44:110, 44:135, 44:158, 44:184, 44:211, 44:213, 46:12, 51:64, 51:148, 53:14, 55:51, 58:18, **C*03:05, C*03:25, C*03:27, C*03:143, C*03:167, C*03:296:01-03:296:02, C*03:335, C*03:346, C*03:407**
4[5,6,7]	105 bp, 130 bp, 260 bp	**800 bp**	12, 13, 14, 15, 17, 18, 21, 27, 35, 39, 40, 41, 44, 45, 47, 48, 49, 50, 57, 58, 60, 61, 62, 64, 65	*07:68:01-07:68:03, 07:100, 07:218, 07:220, 07:237, 07:262, 08:71, 08:118, 13:01:01:01-13:01:09, 13:01:11-13:04, 13:06-13:13:02, 13:15-13:23, 13:25-13:57, 13:59-13:82, 13:84-13:92, 13:94-13:96, 13:99-13:101, 13:102ʷ, 13:103N-13:105, 13:107-13:123Q, 14:01:01:01-14:02:08, 14:02:10-14:05, 14:07N, 14:09, 14:11-14:19, 14:21-14:36, 14:38-14:54, 14:57-14:66, 15:07:01:01-15:07:03, 15:45-15:46, 15:53, 15:55, 15:68, 15:106, 15:126, 15:197:02, 15:207, 15:212, 15:324, 15:329, 15:331, 15:336, 15:347, 15:360, 15:383, 15:399, 15:405, 15:431, 15:450, 18:14, 18:44:01-18:44:02, 18:107, 27:32, 27:106, 27:138, 27:180, 35:05:01:01-35:05:03, 35:22, 35:46-35:47, 35:51, 35:58, 35:63, 35:66, 35:72, 35:89, 35:97, 35:137, 35:147, 35:154, 35:182, 35:199, 35:207, 35:217, 35:232, 35:278, 35:317, 35:368, 35:389, 38:19, 39:03:01:01-39:03:01:02, 39:14:01:01-39:14:01:02, 39:24:01-39:24:02, 39:29, 39:37, 39:76, 39:79, 39:120, 40:01:01-40:01:39, 40:01:41-40:01:58, 40:07, 40:10:01:01-40:10:02, 40:14:01-40:16, 40:22N-40:23, 40:25, 40:30-40:36, 40:38, 40:42-40:43, 40:45-40:49, 40:51-40:55, 40:58-40:63, 40:65-40:67, 40:69, 40:71-40:73, 40:76-40:77, 40:79-40:81, 40:84,

October 2019
Rev. No.: 01

CE
0088

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101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
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Lot No.: 5H1

				Lot-specific information
				40:87:01-40:88, 40:92, 40:100-40:102, 40:106, 40:108, 40:110, 40:112-40:114:02, 40:116-40:118N, 40:121, 40:123-40:126, 40:128-40:130:02, 40:132, 40:134-40:136, 40:139-40:141, 40:146-40:147, 40:150-40:156, 40:158, 40:160:01-40:160:02, 40:163-40:164, 40:166, 40:168, 40:170-40:172, 40:174-40:175, 40:178-40:179, 40:182-40:183, 40:186:01-40:188, 40:191-40:199, 40:204, 40:207-40:208, 40:212-40:213, 40:215-40:219, 40:221-40:223, 40:227-40:228, 40:231, 40:233-40:242, 40:245, 40:247, 40:249-40:250, 40:252-40:253, 40:257-40:265N, 40:272-40:273, 40:277-40:282, 40:285-40:286N, 40:288, 40:298:01-40:301, 40:308, 40:310, 40:312, 40:315-40:316, 40:319, 40:321, 40:323-40:327, 40:329, 40:332-40:333, 40:336, 40:338N-40:339, 40:342, 40:344, 40:346, 40:352-40:353, 40:355, 40:357-40:358, 40:360, 40:367-40:368, 40:370, 40:372N, 40:377, 40:380-40:383, 40:385-40:386, 40:391-40:392, 40:394-40:398, 40:400, 41:01:01:01-41:56, 42:10, 42:17, 44:02:01:01-44:02:31, 44:02:33-44:02:39, 44:02:41-44:03:06, 44:03:08-44:03:18, 44:03:21-44:03:30, 44:03:32-44:05:04, 44:07-44:48, 44:50:01-44:82, 44:84:01-44:102, 44:104-44:129, 44:132-44:155, 44:157-44:193, 44:195N-44:211, 44:213-44:223, 44:226-44:230, 44:231ʷ, 44:232-44:245, 44:247-44:297, 45:01:01-45:23, 46:12, 47:01:01:02-47:10, 48:12, 48:14, 48:29, 49:01:01:01-49:02, 49:04:01-49:14, 49:16-49:24, 49:26-49:30, 49:32-49:59, 50:01:01:01-50:02, 50:04-50:20, 50:31-50:33, 50:35-50:42, 50:44-50:59, 51:64, 51:203, 53:14, 53:30, 54:38, 57:11, 57:45, 57:51, 57:69, 57:71, 57:88, 58:02:01-58:02:02, 58:06-58:07, 58:18, 58:25, 58:38, 58:43, 58:60, **C*01:30, C*01:32:01-01:32:02, C*06:20, C*06:207, C*12:87, C*14:76, C*14:82, C*16:85, C*16:98, C*16:102, C*16:110**
5[7]	185 bp, 235 bp	**800 bp**	7, 16, 17, 27, 2708, 37, 38, 3901, 3902, 39, 64, 67	*07:02:32, 07:85:02, 07:197, 14:01:01:01-14:01:05, 14:01:07-14:01:09, 14:07N-14:08:02, 14:10, 14:12, 14:14, 14:19, 14:26, 14:32, 14:40, 14:46-14:47, 14:49, 14:53-14:55, 14:65, 27:01-27:05:15, 27:05:17-27:05:19, 27:05:21-27:06, 27:07:04, 27:08-27:10, 27:12:01:01-27:13, 27:16-27:18, 27:20, 27:23, 27:26-27:27, 27:29, 27:31, 27:35-27:37, 27:39-27:42, 27:44-27:46, 27:48-27:61, 27:64N-27:69, 27:72-27:75, 27:77-27:80, 27:82-27:124, 27:126, 27:128-27:129, 27:131-27:137, 27:140-27:149, 27:151-27:152, 27:154-27:163, 27:165-27:179, 27:181-27:182, 37:02, 38:01:01:01-38:01:07, 38:01:09-38:02:02, 38:02:04-38:03, 38:07-38:24, 38:26-38:32, 38:34N-38:79, 39:01:01:01-39:01:01:09, 39:01:03:01-39:01:08, 39:01:10-39:02:01, 39:03:01:01-39:03:01:02, 39:05:01:01-39:06:02:04, 39:06:04-39:09:03, 39:11, 39:14:01:01-39:15, 39:18, 39:19:02, 39:22, 39:24:01-39:39:01, 39:40:01N-39:44, 39:46-39:48, 39:50-39:62, 39:64-39:71, 39:73-39:75, 39:77, 39:79-39:82, 39:84-39:88, 39:90-39:91, 39:93-39:95N, 39:97N-39:98, 39:100, 39:102-39:104, 39:106-39:109, 39:111-39:125, 39:127-39:128, 39:130, 39:132, 39:134-39:141, 47:04-47:05, 48:21, 48:26, 67:01:01, 67:03-67:04, 67:06-67:07
6	190 bp	**800 bp**	14, 35, 38, 39, 65	*07:28, 08:87, 14:02:01:01-14:02:02, 14:02:04-14:02:05, 14:02:07-14:06:02, 14:09, 14:11, 14:13, 14:15-14:18, 14:20, 14:22-14:23, 14:25, 14:27, 14:29-14:31, 14:33-14:39, 14:41N, 14:43-14:45, 14:48, 14:50-14:52, 14:56-14:64, 15:77, 15:189, 15:233, 35:03:17, 35:26, 38:05, 38:33, 39:04, 39:129, 44:16, 44:37:01-44:37:02, 44:64:01-44:64:02, 44:91, 44:132, 44:150, 44:190, 44:268, 44:275, 44:290, 52:26, 57:04:01-57:04:03, **A*23:31, A*24:106, C*01:115, C*02:97, C*07:231, C*14:79, C*16:10**

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Lot No.: 5H1

Lot-specific information

7	180 bp, 290 bp	1070 bp	15, 22, 46, 62, 63, 71, 72, 75, 76, 77	*15:01:01:01-15:01:03, 15:01:06-15:02:12, 15:03:03, 15:04:01:01-15:08:02, 15:10:02, 15:11:01-15:11:03, 15:11:05-15:15, 15:17:01:01-15:17:07, 15:19-15:21:01:02, 15:24:01-15:28, 15:30:01:01-15:36, 15:38:01-15:40:02, 15:42-15:46, 15:48, 15:50, 15:55-15:58, 15:60, 15:63, 15:65-15:66, 15:70-15:71, 15:73, 15:75-15:79N, 15:81-15:89, 15:92, 15:94N, 15:96-15:97, 15:101-15:102, 15:104-15:107, 15:109-15:113, 15:116-15:118, 15:120-15:122, 15:125-15:126, 15:128-15:129, 15:135-15:150, 15:152, 15:154-15:155, 15:157, 15:159-15:160, 15:162-15:172, 15:174-15:175, 15:177-15:179:02, 15:181N-15:185, 15:187-15:196, 15:199, 15:201-15:209N, 15:211, 15:213-15:219, 15:223-15:225, 15:227-15:228, 15:230-15:234, 15:236-15:237, 15:239-15:241, 15:244-15:251:02, 15:256-15:262N, 15:264-15:265, 15:267-15:273, 15:276-15:280, 15:283-15:289, 15:291, 15:295-15:305, 15:308-15:310, 15:315-15:322, 15:324-15:328, 15:330-15:334, 15:339-15:346, 15:348-15:350, 15:352-15:353, 15:355-15:361, 15:363:01-15:368, 15:370-15:375N, 15:377Q-15:378, 15:381, 15:383-15:387, 15:390-15:396, 15:398-15:407, 15:409-15:413, 15:415-15:417, 15:419-15:425, 15:428-15:432, 15:437-15:438, 15:440-15:443, 15:446, 15:449-15:450, 15:452-15:454N, 15:456-15:474, 15:476, 46:01:01-46:70, 46:72-46:74, **C*01:73, C*05:01:28, C*07:02:30, C*08:16:02, C*14:02:27**
8	165 bp, 225 bp, 285 bp, 330 bp	1070 bp	5, 8, 12, 21, 22, 37, 41, 42, 44, 45, 48, 51, 56, 57, 60, 62, 70, 71, 72, 82	*08:01:01:01-08:01:22, 08:01:24-08:05, 08:08N-08:13, 08:15-08:27, 08:29-08:36, 08:38:01-08:48, 08:50-08:73, 08:75-08:76, 08:78, 08:80-08:86N, 08:88, 08:90-08:106, 08:109-08:110, 08:112-08:155, 08:157-08:163, 08:165-08:199, 08:201-08:208, 13:46, 15:03:01:01-15:03:08, 15:09:01-15:10:04, 15:18:01:01-15:18:07, 15:23, 15:29, 15:37, 15:46-15:47:02, 15:49, 15:51-15:54, 15:61-15:62, 15:64:01-15:64:02, 15:69, 15:72, 15:74, 15:80, 15:83, 15:90-15:91, 15:93, 15:98-15:99, 15:103, 15:106, 15:108, 15:114-15:115, 15:119, 15:123-15:124, 15:127, 15:131-15:134, 15:143, 15:151, 15:153, 15:156, 15:158, 15:161, 15:173, 15:176, 15:186, 15:197:01-15:198, 15:200, 15:210, 15:212, 15:220-15:221, 15:226N, 15:229, 15:235, 15:238, 15:242:01-15:243, 15:252-15:253, 15:255, 15:259, 15:263, 15:266, 15:274-15:275:02, 15:281-15:282, 15:290, 15:292-15:294N, 15:306-15:307, 15:311-15:314, 15:323, 15:329, 15:335, 15:337-15:338, 15:351, 15:354, 15:369, 15:379-15:380N, 15:382, 15:388-15:389, 15:397, 15:414, 15:426-15:427, 15:433, 15:435, 15:439, 15:444-15:445, 15:447-15:448, 15:451, 15:455, 15:475, 35:87, 37:12, 38:30, 40:12, 40:136, 40:231, 40:279, 41:01:01:01-41:03:02, 41:05-41:09, 41:11-41:17, 41:19-41:48, 41:50, 41:53-41:56, 42:01:01-42:02:01:02, 42:04-42:08, 42:10-42:15, 42:17-42:19, 42:21-42:25, 44:14-44:15:01:02, 44:18, 44:20, 44:62, 44:100, 44:166, 44:213, 45:01:01-45:23, 51:08:01:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 55:20, 55:56, 56:13, 57:09, 82:01:01:01-82:03, **C*03:342, C*07:46, C*07:356, C*07:546, C*12:184, C*15:99, C*16:85**
9	180 bp, 390 bp	1070 bp	63	*15:01:01:02N, 15:16:01:01-15:17:07, 15:67, 15:95, 15:162, 15:168, 15:177, 15:196, 15:208, 15:216, 15:222, 15:230, 15:254, 15:268, 15:273, 15:356, 15:361-15:362, 15:396, 15:403, 15:408, 15:411, 15:423-15:424, 15:446, 15:462
10	180 bp	**800 bp**	13, 22, 55, 60	*07:78, 13:01:01:01-13:02:24, 13:07N-13:09, 13:11, 13:14-13:20, 13:22:01-13:23, 13:25, 13:27-13:34, 13:36-13:45, 13:47, 13:49N-13:50, 13:52, 13:54-13:58, 13:60-13:61, 13:63N-13:70, 13:73-13:78,

October 2019
Rev. No.: 01

CE
0088

For *In Vitro* Diagnostic Use.

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Lot No.: **5H1**

<div align="center">

Lot-specific information

</div>

				13:80-13:85, 13:87-13:107, 13:109-13:119, 13:121-13:123Q, 40:48, 40:377, 45:10, 49:07, 50:31, 54:26, 55:09, 55:22, 55:24, 56:60, 59:09
11[5]	100 bp, 195 bp	1070 bp	8, 12, 27, 38, 39, 3902, 44, 45, 48, 60, 70, 71, 72, 82	*07:27, 07:50, 07:219, 08:04:01-08:04:02, 08:17, 08:54:01-08:54:02, 08:110, 13:97, 15:03:01:01-15:03:08, 15:47:01-15:47:02, 15:49, 15:54, 15:61-15:62, 15:64:01-15:64:02, 15:68-15:69, 15:91, 15:98, 15:103, 15:123, 15:127, 15:131-15:132, 15:151, 15:156, 15:158, 15:173, 15:210, 15:220, 15:235, 15:242:01-15:242:02, 15:253, 15:259, 15:266, 15:274, 15:281-15:282, 15:369, 15:379, 15:389, 15:397, 15:444, 15:448, 15:475, 18:37:01-18:37:02, 18:125, 27:18, 27:29, 35:361, 37:28, 38:03, 39:02:01-39:02:03, 39:08, 39:13:01-39:13:02, 39:23, 39:39:01-39:39:02, 39:49, 39:88, 39:101, 39:105, 39:110, 40:12, 40:46, 40:93, 42:11, 44:10, 44:15:01:01-44:15:01:02, 44:18, 44:40, 44:44, 44:117, 44:130, 44:140, 44:156, 44:210:01-44:210:02, 44:251, 45:01:01-45:03, 45:05-45:07, 45:11-45:23, 48:01:01:01-48:05, 48:07-48:30, 48:32-48:40, 48:42-48:47, 49:20, 50:02, 50:56, 52:16, 55:18, 56:44, 58:44, 82:01:01:01-82:03, **C*05:102, C*05:184, C*08:93, C*15:25**
12	280 bp	1070 bp	5, 7, 8, 13, 15, 16, 17, 18, 22, 35, 40, 42, 44, 46, 48, 49, 51, 53, 55, 56, 57, 58, 60, 61, 62, 63, 70, 71, 72, 75, 76, 77, 78	*07:09:01-07:09:02, 07:11, 07:17, 07:162, 07:235, 07:237, 07:255, 07:287, 08:28, 08:35, 08:37, 08:89, 08:107, 13:04, 13:10, 13:26:01-13:26:02, 13:72, 14:56, 15:01:01:01-15:01:04, 15:01:06-15:02:11, 15:03:01:01-15:08:02, 15:11:01-15:16:03, 15:18:01:01-15:21:01:02, 15:23-15:29, 15:31-15:36, 15:38:01-15:40:02, 15:43-15:44, 15:46-15:47:02, 15:49-15:57, 15:60-15:62, 15:64:01-15:72, 15:74-15:76, 15:78:01-15:82, 15:84-15:85, 15:87-15:89, 15:91-15:98, 15:101-15:129, 15:131-15:132, 15:134-15:136, 15:138-15:149N, 15:151-15:161, 15:163-15:167, 15:169-15:176, 15:178-15:187, 15:189-15:195, 15:197:01-15:207, 15:209N-15:215, 15:217-15:223, 15:225-15:228, 15:231-15:232, 15:234-15:242:02, 15:244-15:247, 15:249-15:251:02, 15:254-15:268, 15:270-15:272N, 15:274-15:286, 15:288-15:302N, 15:304N-15:311, 15:314-15:322, 15:325-15:328, 15:330-15:333, 15:335-15:337, 15:340-15:341, 15:343-15:355, 15:357-15:360, 15:362-15:395, 15:397-15:399, 15:401-15:402, 15:404-15:410, 15:412-15:415, 15:417-15:419, 15:421-15:422, 15:425-15:426, 15:428-15:434, 15:436-15:438, 15:440-15:444, 15:447-15:454N, 15:456-15:459, 15:461, 15:463N-15:476, 18:01:01:01-18:15, 18:17N-18:25, 18:27-18:40, 18:42-18:60, 18:62-18:121, 18:123-18:147, 18:149-18:158, 27:41, 27:107, 35:01:01:01-35:01:54, 35:05:01:01-35:05:03, 35:07-35:08:10, 35:10-35:11:03, 35:14:01-35:17:02, 35:19-35:21, 35:23-35:30, 35:32:01-35:32:02, 35:35, 35:37, 35:40N-35:43:01, 35:43:03, 35:45-35:54, 35:57-35:58, 35:61:01-35:64:02, 35:66-35:69, 35:71-35:72, 35:76-35:80, 35:82, 35:86, 35:89-35:94, 35:97, 35:99-35:105, 35:107-35:108:02, 35:110-35:126, 35:130N-35:135, 35:137-35:148, 35:158-35:159, 35:161, 35:165N-35:166, 35:168, 35:170-35:171, 35:173:01N-35:178, 35:180, 35:185-35:192, 35:194, 35:196-35:197, 35:200, 35:202-35:203, 35:206-35:210, 35:212, 35:215-35:219, 35:222, 35:224-35:229, 35:232, 35:238-35:241, 35:244-35:245, 35:247-35:250, 35:252-35:255, 35:259-35:260, 35:262-35:265, 35:268-35:269, 35:271-35:272, 35:275, 35:277, 35:280, 35:283-35:284, 35:286-35:289, 35:293-35:295, 35:297, 35:299-35:308, 35:310, 35:313-35:315, 35:317-35:319, 35:322, 35:324-35:325, 35:327-35:328, 35:330-35:334, 35:336-35:338, 35:340-35:343, 35:346-35:348, 35:351-35:353, 35:356, 35:359, 35:363, 35:365, 35:368-35:370, 35:373, 35:376, 35:380, 35:382-35:383, 35:385-35:386,

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Lot No.: 5H1

				Lot-specific information
				35:388-35:390N, 35:392-35:393, 37:35, 37:56, 38:52, 39:07, 39:43, 39:91, 39:134, 40:03:01:01-40:03:01:02, 40:20:01:01-40:20:01:02, 40:38, 40:52, 40:59-40:60, 40:105, 40:158-40:159, 40:222, 40:267, 40:284, 40:352, 41:24, 41:30, 41:51, 42:09, 44:17, 44:43:01-44:43:02, 44:144, 44:230, 44:256, 44:276, 45:09, 46:01:01-46:10, 46:12-46:17, 46:19-46:60, 46:62-46:69, 46:71-46:73, 48:02:01-48:02:03, 48:14, 48:23, 48:25, 49:04:01-49:05, 50:33, 51:37, 51:45, 51:63:01-51:63:02, 51:97, 51:216, 51:220, 51:251, 52:39, 53:01:01:01-53:03, 53:05:01-53:06, 53:08:01-53:18, 53:20-53:30, 53:32, 53:34-53:35, 53:37-53:41, 53:43-53:52, 54:06, 54:09, 54:14, 55:14, 55:23, 55:32, 55:68, 56:03, 56:09, 56:18, 56:31-56:32, 56:50, 57:01:01:01-57:01:32, 57:01:34-57:01:36, 57:06, 57:08, 57:10-57:11, 57:13-57:16, 57:18-57:27, 57:29-57:31, 57:33-57:38, 57:40-57:41, 57:43-57:45, 57:47-57:56, 57:58-57:62, 57:64-57:65, 57:67:01-57:69, 57:71-57:75, 57:77-57:79N, 57:81, 57:83, 57:85-57:93, 57:95, 57:97-57:100, 57:102-57:110, 58:01:01-58:02:02, 58:04-58:07, 58:09-58:19, 58:21-58:26, 58:29, 58:31N-58:33, 58:35-58:64, 58:66-58:72N, 58:74-58:97
13[9]	195 bp	1070 bp	27, 35, 37, 44, 58, 76	*07:27, 07:236, 07:240, 08:126, 08:131, 08:139, 15:12:01-15:12:03, 15:14, 15:19, 15:91, 15:131, 15:161, 15:270, 15:298, 15:304N, 18:54, 18:56, 18:108, 18:132, 35:45, 35:71, 37:01:01:01-37:01:11, 37:01:13-37:09, 37:12-37:13, 37:15-37:21, 37:23-37:28, 37:30N-37:33N, 37:35-37:36, 37:38-37:66, 37:68-37:76, 38:17, 44:17, 44:43:01-44:43:02, 44:144, 44:230, 44:256, 45:09, 46:17, 53:22, 57:93, 58:07, **A*24:174, C*02:82, C*06:165, C*14:61**
14[5]	105 bp, 395 bp, 435 bp	**800 bp**	5, 7, 15, 41, 42, 62, 63, 70, 71, 75, 77	*07:04:01-07:04:02, 07:25, 07:146, 08:187, 15:09:01-15:10:04, 15:13:01-15:13:02, 15:16:01:01-15:18:07, 15:21:01:01-15:21:01:02, 15:23-15:24:02, 15:37, 15:44, 15:51-15:52, 15:66-15:67, 15:72, 15:76, 15:80, 15:87, 15:90, 15:93, 15:95, 15:99, 15:101, 15:108, 15:114-15:115, 15:119, 15:124, 15:133-15:134, 15:153, 15:157, 15:161-15:162, 15:168, 15:176-15:177, 15:186, 15:189, 15:196-15:198, 15:200, 15:208, 15:216, 15:221-15:222, 15:226N, 15:229-15:230, 15:238, 15:243, 15:252, 15:254-15:255, 15:263, 15:268, 15:273, 15:275:01-15:275:02, 15:290, 15:292-15:294N, 15:306-15:307, 15:311-15:314, 15:323, 15:329, 15:335, 15:337-15:338, 15:351, 15:354, 15:356, 15:361-15:362, 15:376, 15:380N, 15:382, 15:388, 15:394, 15:396, 15:403-15:404, 15:408, 15:411, 15:414, 15:418, 15:420, 15:423-15:424, 15:426-15:427, 15:433-15:436, 15:439, 15:442, 15:445-15:447, 15:451, 15:455, 15:462, 40:136, 40:231, 40:279, 41:08, 42:05:01-42:05:02, **C*07:335, C*14:62**
15[5]	115 bp, 150 bp	1070 bp	18	*08:176, 18:01:01:01-18:15, 18:17N-18:28, 18:30-18:71, 18:73-18:91, 18:93-18:101, 18:103-18:106, 18:108-18:158, 35:289, 48:28
16[5]	80 bp	1070 bp	7, 27, 2708, 44, 60	*07:73, 08:88, 08:102, 27:01-27:05:22, 27:05:24-27:21, 27:23-27:51, 27:53-27:66N, 27:68-27:74, 27:76-27:139, 27:141-27:182, 38:22, 40:46, 40:93, 44:40, 44:44, 44:130, 44:210:01-44:210:02, 49:26
17[5]	100 bp, 150 bp	**800 bp**	12, 13, 17, 18, 22, 27, 35, 37, 39, 44, 45, 47, 48, 51, 53, 56, 57, 58, 62, 70, 75, 77, 78	*07:137, 07:235, 08:49, 08:60, 08:76, 08:129, 08:181, 13:01:01:01-13:01:14, 13:06-13:07N, 13:12:01-13:13:02, 13:17, 13:20-13:23, 13:25-13:26:02, 13:28-13:29, 13:36, 13:39, 13:43, 13:50-13:52, 13:57, 13:60-13:61, 13:63N, 13:73, 13:76N-13:80, 13:83, 13:86-13:87, 13:90, 13:92, 13:95, 13:106-13:107, 13:109-13:110, 13:122, 14:10, 15:02:01:01-15:02:12, 15:13:01-15:13:02, 15:20-15:21:01:02, 15:25:01-15:25:03, 15:36, 15:44, 15:62, 15:77, 15:80, 15:85, 15:88-15:89, 15:106, 15:112, 15:121, 15:139, 15:144, 15:154,

CE
0088

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Lot No.: **5H1**

				Lot-specific information
				15:165, 15:170, 15:194, 15:204, 15:213-15:214, 15:223, 15:240, 15:250, 15:265, 15:271, 15:283, 15:289, 15:291, 15:297, 15:301-15:302N, 15:308, 15:319, 15:325, 15:328, 15:330, 15:341, 15:345, 15:357-15:358, 15:366, 15:374, 15:378, 15:393-15:394, 15:399, 15:402, 15:404, 15:407, 15:418, 15:420, 15:425, 15:437-15:438, 15:454N, 15:458, 15:460, 15:463N, 15:468, 18:22, 18:69, 18:105, 18:149-18:150, 27:19, 27:30, 27:127, 27:150, 35:01:01:01-35:04:03, 35:06-35:21, 35:23-35:30, 35:33-35:36, 35:38-35:42:02, 35:45-35:50, 35:52, 35:54-35:57, 35:59:01-35:59:02, 35:61:01-35:63, 35:65Q, 35:69-35:71, 35:74, 35:76-35:78, 35:80-35:85, 35:88, 35:90-35:96, 35:98, 35:100-35:101:02, 35:103-35:113, 35:115-35:116, 35:120-35:126, 35:128-35:134N, 35:136-35:150:02, 35:152-35:173:02N, 35:175-35:184, 35:186-35:198, 35:200-35:204, 35:206-35:231, 35:233, 35:236-35:250, 35:252-35:259, 35:261-35:264, 35:266-35:272, 35:274-35:275, 35:277-35:291, 35:293-35:330, 35:332-35:366, 35:370-35:388, 35:390N-35:396, 37:01:01:01-37:01:07, 37:01:09, 37:01:11-37:01:14, 37:03N-37:06:02, 37:08, 37:10-37:43, 37:45-37:50, 37:52-37:76, 38:20:01-38:20:02, 39:42, 40:04, 40:28, 40:30, 40:34, 40:64:01:01-40:64:01:02, 40:68, 40:99, 40:129, 40:137, 40:160:01-40:160:02, 40:343, 41:48, 42:13, 44:02:01:01-44:02:33, 44:02:35-44:14, 44:16-44:17, 44:19N, 44:21-44:30, 44:32-44:40, 44:42-44:46, 44:48-44:52N, 44:55-44:64:02, 44:66-44:98, 44:101-44:105, 44:107-44:134, 44:136-44:137, 44:139-44:157, 44:159-44:165, 44:167-44:181, 44:183, 44:185-44:191, 44:194-44:196, 44:198N-44:212, 44:214-44:229, 44:231-44:235, 44:237N-44:245, 44:247-44:297, 46:33, 46:67, 48:02:01-48:02:03, 48:25, 50:17, 51:04:01-51:04:02, 51:42, 51:46, 51:56:01-51:56:03, 51:139, 51:186, 51:227, 53:01:01:01-53:13, 53:15-53:43, 53:45-53:46, 53:48N-53:52, 55:14, 56:09, 56:11-56:12, 56:60, 57:01:01:01-57:01:04, 57:01:06-57:10, 57:12, 57:14:01-57:20, 57:22-57:30, 57:32-57:46, 57:48-57:81, 57:84-57:110, 58:01:01:01-58:01:02, 58:01:04-58:01:15, 58:01:17-58:01:29, 58:04-58:05, 58:09-58:15, 58:17N, 58:19, 58:21-58:24, 58:28:01-58:29, 58:31N-58:37, 58:39N-58:42, 58:44-58:45:02, 58:47-58:59:02, 58:62-58:97, 83:01, **C*03:102, C*03:263:01-03:263:02, C*03:317, C*03:382, C*15:24, C*15:126**
18	140 bp	1070 bp	8, 18, 22, 35, 39, 78	*07:65, 07:134, 08:32, 08:133, 08:180, 15:202, 15:239, 15:308, 15:376, 18:01:01:01-18:03:01, 18:04:01-18:08, 18:10-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:53, 18:55-18:65, 18:68-18:106, 18:108-18:124, 18:126-18:135, 18:137-18:158, 35:01:01:01-35:02:08, 35:02:10-35:18, 35:20:01-35:24:02, 35:27-35:43:01, 35:43:03-35:45, 35:48, 35:50-35:62, 35:64:01-35:72, 35:74-35:153, 35:155-35:197, 35:199-35:206, 35:208-35:209, 35:211-35:216N, 35:218-35:253, 35:255-35:270, 35:272-35:273, 35:275-35:310, 35:312-35:316, 35:318-35:360, 35:362-35:396, 37:05, 37:11, 37:14, 37:29, 37:37, 37:67, 39:19:01-39:19:02, 40:185, 40:209, 40:308, 40:350, 40:365, 45:22, 46:40:01-46:40:02, 56:06, 56:45, 58:64, 78:01:01:01-78:10
19[5,8]	55 bp, 245 bp, 390 bp, 415 bp	1070 bp	5, 15, 44, 48, 60, 62, 63, 70, 71, 72, 75, 76, 77, 82	*15:01:01:01-15:01:04, 15:01:06-15:21:01:02, 15:23-15:40:02, 15:42-15:58, 15:60-15:67, 15:69-15:99, 15:102-15:129, 15:131-15:179:02, 15:181N-15:235, 15:237-15:254, 15:256-15:476, 40:12, 46:50, 82:01:01:01-82:03, **C*03:179, C*06:147, C*14:61, C*16:85**
20[8]	210 bp	**800 bp**	27, 37	*07:27, 07:236, 07:273, 08:49, 08:126, 18:54, 37:01:01:01-37:76, 38:17, **C*07:302**

October 2019 $C\epsilon$ For *In Vitro* Diagnostic Use.
Rev. No.: 01   **0088**

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Lot No.: **5H1**

Lot-specific information

21	170 bp	**800 bp**	16, 35, 38, 39, 3901, 3902, 67, 72	*08:55, 15:69, 15:186, 15:449, 35:35, 35:276, 38:01:01:01-38:02:05, 38:02:07-38:09, 38:11-38:21, 38:23-38:29, 38:31-38:35, 38:38-38:44, 38:46-38:49, 38:51, 38:53-38:62, 38:64, 38:66-38:69, 38:71-38:79, 39:01:01:01-39:01:01:09, 39:01:03:01-39:01:18, 39:01:20-39:20, 39:22-39:24:02, 39:26-39:29, 39:31:01:01-39:31:01:02, 39:35, 39:37-39:42, 39:44-39:46, 39:48-39:49, 39:51-39:73, 39:75-39:81, 39:83-39:101, 39:103-39:106, 39:108-39:111, 39:113-39:127, 39:129-39:135, 39:137-39:141, 40:184, 50:49, 51:101, 52:71, 58:20, 58:84, 67:01:01-67:07, **C*15:51**
22[5]	110 bp	1070 bp	38	*27:07:04, 38:01:01:01-38:01:07, 38:01:09-38:02:02, 38:02:04-38:03, 38:05, 38:08-38:24, 38:26-38:34N, 38:36-38:79, 49:26, 52:01:10, **A*23:01:18, A*25:01:08**
23	395 bp	1070 bp	14, 16, 38, 39, 3901, 64, 65	*07:69, 07:85:01-07:85:02, 07:180, 07:306, 08:65, 14:01:01:01-14:01:07, 14:01:09-14:20, 14:22-14:41N, 14:43-14:48, 14:50-14:56, 14:58-14:66, 38:01:01:01-38:02:08, 38:04-38:05, 38:08-38:25, 38:27-38:53, 38:55Q-38:73, 38:75-38:79, 39:01:01:01-39:01:01:09, 39:01:03:01-39:01:24, 39:03:01:01-39:07, 39:09:01:01-39:09:03, 39:11-39:12:01:02, 39:14:01:01-39:15, 39:18-39:19:02, 39:22, 39:24:01-39:38Q, 39:40:01N-39:48, 39:50-39:57, 39:59-39:62, 39:64-39:82, 39:84-39:87N, 39:90-39:95N, 39:97N-39:98, 39:100, 39:102-39:104, 39:106-39:109, 39:111-39:125, 39:127-39:130, 39:132-39:141, 40:75[?], 40:322[?], 49:26
24	160 bp, 425 bp	1070 bp	7, 703, 8, 14, 15, 16, 21, 39, 3901, 3902, 40, 41, 42, 45, 48, 50, 60, 61, 64, 65, 67, 70, 73, 81	*07:02:01:01-07:26, 07:28-07:35, 07:37:01-07:37:02, 07:39-07:64, 07:66-07:80, 07:82-07:148, 07:150-07:178, 07:181N-07:191, 07:193-07:194, 07:196-07:218, 07:220-07:235, 07:237-07:256, 07:258-07:270, 07:272N, 07:274-07:335, 08:01:01:01-08:01:03, 08:01:05-08:01:45, 08:04:01-08:05, 08:07-08:35, 08:37-08:51, 08:53:01-08:77, 08:79-08:116, 08:118-08:125, 08:127-08:130, 08:132-08:135, 08:137-08:138, 08:140-08:146, 08:148N-08:208, 14:01:01:01-14:01:04, 14:01:06-14:02:04, 14:02:06-14:02:07, 14:02:09-14:29, 14:31-14:66, 15:68, 27:14, 27:81, 27:130, 39:01:01:01-39:01:01:09, 39:01:03:01-39:06:04, 39:06:06-39:20, 39:22-39:24:01, 39:25N-39:103, 39:105-39:141, 40:01:01-40:01:04, 40:01:06-40:01:58, 40:06:01:01-40:06:04:02, 40:06:06-40:07, 40:09[?], 40:14:01[?]-40:14:02[?], 40:14:03, 40:15[?], 40:16, 40:18[?], 40:21[?]-40:22N[?], 40:23, 40:24[?]-40:25[?], 40:27:02[?]-40:29[?], 40:30-40:32, 40:33[?]-40:36[?], 40:38[?], 40:42-40:44, 40:45[?]-40:46[?], 40:48, 40:49[?], 40:51-40:54, 40:55[?]-40:58[?], 40:59-40:60, 40:61[?]-40:63[?], 40:65[?], 40:66, 40:67[?]-40:69[?], 40:70:01-40:70:02, 40:71[?], 40:72:01-40:73, 40:74[?], 40:75, 40:77, 40:78[?], 40:79, 40:80[?]-40:82[?], 40:83, 40:84[?]-40:85[?], 40:86, 40:87:01[?]-40:88[?], 40:91[?]-40:92[?], 40:93, 40:95[?], 40:96, 40:98[?], 40:100[?]-40:102[?], 40:103, 40:104[?]-40:108[?], 40:109-40:110, 40:111[?]-40:112[?], 40:113-40:114:01, 40:114:02[?]-40:116[?], 40:118N[?]-40:121[?], 40:123[?], 40:124:01, 40:124:02[?]-40:126[?], 40:127, 40:128[?]-40:130:01[?], 40:130:02-40:131, 40:132[?]-40:134[?], 40:136[?]-40:137[?], 40:138-40:140, 40:141[?], 40:145[?], 40:146-40:148, 40:149[?], 40:150, 40:151[?], 40:152-40:153, 40:154[?], 40:155:01N-40:155:02N, 40:156[?], 40:158[?], 40:159, 40:160:01[?]-40:160:02[?], 40:161-40:162, 40:163[?]-40:164[?], 40:165, 40:166[?], 40:167, 40:168[?]-40:169[?], 40:170-40:172, 40:173[?]-40:176[?], 40:177, 40:178[?]-40:185[?], 40:186:01, 40:186:02[?]-40:187[?], 40:189[?], 40:190, 40:191[?]-40:200[?], 40:202[?]-40:213[?], 40:215[?]-40:228[?], 40:230, 40:231[?]-40:236[?], 40:237, 40:238[?]-40:243[?], 40:244-40:245, 40:246[?]-40:248[?], 40:249-40:253, 40:256N, 40:257[?], 40:258-40:265N, 40:268-40:270, 40:272-40:273, 40:274[?], 40:275, 40:276[?],

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Lot No.: 5H1

				Lot-specific information
				40:277-40:278, 40:279?-40:280?, 40:282?-40:283?, 40:285-40:286N, 40:287?-40:291N?, 40:293?, 40:294-40:295, 40:297?, 40:298:01-40:298:02, 40:299?-40:300?, 40:301, 40:306-40:307, 40:308?, 40:310?, 40:311, 40:312?, 40:313, 40:315?, 40:316-40:318, 40:319?, 40:321, 40:322?, 40:323, 40:324?-40:329?, 40:330, 40:331?, 40:332, 40:333?, 40:336?-40:339?, 40:340-40:342, 40:343?, 40:346, 40:348-40:350, 40:351?-40:352?, 40:354-40:355, 40:357?-40:360?, 40:361N-40:364, 40:365?, 40:366-40:368, 40:370, 40:372N-40:374, 40:376-40:377, 40:380-40:383, 40:385-40:389, 40:391-40:393, 40:395, 40:396?, 40:397-40:398, 40:400?, 41:01:01:01-41:45N, 41:47-41:56, 42:01:01-42:02:01:02, 42:04-42:21, 42:23-42:25, 45:01:01-45:23, 48:01:01:01-48:17, 48:19-48:47, 50:01:01:01-50:02, 50:04-50:20, 50:31-50:59, 51:01:09, 51:01:21, 51:01:25, 51:10, 51:24:02-51:24:04, 51:197, 51:217, 52:54, 54:11, 56:20:02, 67:01:01-67:07, 73:01-73:02, 81:02, **C*05:152, C*07:463**
25[10]	180 bp	1070 bp	15, 40, 44, 48, 60	*15:116, 15:124, 15:352, 15:412, 27:125, 35:230, 35:331, 38:63, 40:01:01-40:01:06, 40:01:08-40:01:17, 40:01:19-40:01:58, 40:07, 40:10:01:01-40:10:02, 40:12, 40:21-40:23, 40:25, 40:30, 40:33-40:34, 40:36, 40:38, 40:42-40:43, 40:46-40:49, 40:51-40:52, 40:54-40:55, 40:59-40:63, 40:65-40:67, 40:69, 40:73-40:74, 40:76, 40:79, 40:81, 40:84, 40:87:01-40:88, 40:92, 40:100-40:102, 40:106, 40:108, 40:112-40:114:02, 40:116-40:118N, 40:123-40:126, 40:128, 40:130:01-40:130:02, 40:132, 40:134-40:135, 40:137-40:141, 40:146-40:147, 40:149-40:156, 40:160:01-40:160:02, 40:163, 40:166, 40:168, 40:170-40:172, 40:175, 40:178-40:179, 40:182-40:183, 40:185-40:188, 40:191, 40:193-40:196, 40:198-40:199, 40:204, 40:207-40:208, 40:210, 40:212-40:213, 40:215-40:218, 40:221-40:223, 40:227-40:228, 40:231, 40:234-40:236, 40:238-40:242, 40:245, 40:247, 40:249-40:253, 40:257-40:265N, 40:272-40:273, 40:277-40:282, 40:285-40:286N, 40:288, 40:299-40:301, 40:308, 40:310, 40:312, 40:315, 40:319, 40:321, 40:323-40:329, 40:332-40:333, 40:336, 40:338N-40:339, 40:344, 40:346, 40:352-40:353, 40:355, 40:357-40:358, 40:360, 40:365, 40:367-40:368, 40:370, 40:372N, 40:377, 40:381-40:383, 40:385-40:386, 40:391-40:398, 40:400, 44:31, 44:169, 44:182, 46:06, 46:43, 48:03:01-48:03:02, 48:17, 48:23, 48:40, 57:59, **C*03:129, C*03:234, C*05:136, C*17:16:01-17:16:02**
26[8]	130 bp, 290 bp, 465 bp, 570 bp	1070 bp	13, 17, 18, 21, 35, 40, 4005, 41, 46, 47, 50, 57, 60, 61, 62, 63	*13:02:06, 13:26:01, 13:72, 15:16:03, 15:20, 15:85, 15:194, 15:393, 15:407, 18:22, 18:48, 18:52, 18:105, 27:107, 35:46, 35:50, 35:84, 35:207, 35:231, 40:02:01:01-40:06:16, 40:08-40:09, 40:10:02?, 40:11:01-40:11:02, 40:13, 40:14:01?-40:14:02?, 40:15?, 40:18-40:20:01:02, 40:22N?, 40:24, 40:25?, 40:26-40:29, 40:33?-40:34?, 40:35:01-40:35:02, 40:36?, 40:37, 40:38?, 40:39, 40:44, 40:45?, 40:47?, 40:49?, 40:50, 40:53?, 40:55?, 40:56, 40:57?-40:58?, 40:61?-40:63?, 40:64:01:01-40:64:01:02, 40:65?, 40:67?, 40:68, 40:69?, 40:70:01-40:71, 40:74-40:75, 40:76?, 40:78, 40:80?-40:81?, 40:82, 40:84?, 40:85-40:86, 40:87:01?-40:88?, 40:89-40:91, 40:92?, 40:94-40:99, 40:100?-40:102?, 40:103-40:105, 40:106?, 40:107, 40:108?, 40:109, 40:110?, 40:111, 40:112?, 40:114:02?, 40:115, 40:116?, 40:118N?, 40:119-40:120, 40:121?, 40:122, 40:123?, 40:124:02?-40:126?, 40:127, 40:128?-40:130:01?, 40:131, 40:132?, 40:133Q, 40:134?-40:136?, 40:141?, 40:142N-40:145, 40:148-40:149, 40:151?, 40:154?, 40:156?, 40:157, 40:158?, 40:159, 40:160:01?-40:160:02?, 40:161-40:162, 40:163?-40:164?, 40:165, 40:166?, 40:167, 40:168?,

October 2019
Rev. No.: 01

CE
0088

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Lot No.: 5H1

				Lot-specific information
				40:169, 40:173-40:174, 40:175?, 40:176, 40:178?-40:179?, 40:180-40:181, 40:182?, 40:184, 40:186:02?-40:188?, 40:189-40:190, 40:191?-40:199?, 40:200-40:203, 40:204?, 40:205-40:206, 40:207?-40:208?, 40:210?, 40:211, 40:212?-40:213?, 40:214, 40:215?-40:219?, 40:220, 40:221?-40:223?, 40:224-40:226, 40:227?-40:228?, 40:229-40:230, 40:231?, 40:232, 40:233?-40:236?, 40:238?-40:242?, 40:243-40:244, 40:246, 40:247?, 40:248, 40:254-40:256N, 40:257?, 40:266-40:271, 40:274-40:276, 40:279?-40:282?, 40:283-40:284, 40:287, 40:288?, 40:289-40:293, 40:295-40:297, 40:298:01?-40:300?, 40:302-40:307, 40:308?, 40:309, 40:311, 40:312?, 40:313-40:314, 40:315?, 40:317, 40:318?-40:319?, 40:320, 40:322, 40:324?-40:329?, 40:330-40:331, 40:333?, 40:334-40:335, 40:336?, 40:337N, 40:338N?-40:339?, 40:340-40:341, 40:342?, 40:343, 40:344?, 40:345N, 40:347-40:351, 40:354, 40:356, 40:357?-40:358?, 40:359, 40:360?, 40:361N-40:364, 40:366, 40:369, 40:371, 40:374-40:376, 40:384, 40:387-40:390, 40:396?, 40:399N, 40:400?, 44:103, 44:131, 44:139?, 44:212, 46:01:07, 46:33, 47:01:01:02-47:01:02, 47:02-47:03, 47:05-47:10, 57:05, 57:67:01, 58:36, **C*01:73**
27[5]	105 bp	1070 bp	7, 8, 22, 41, 42	*07:04:01-07:04:02, 07:25, 07:146, 08:01:01:01-08:01:24, 08:01:26-08:05, 08:07-08:12:03, 08:14-08:19N, 08:21-08:24, 08:26:01-08:30N, 08:32-08:39, 08:41-08:54:02, 08:56:01-08:69, 08:71-08:78, 08:80-08:102, 08:104-08:112, 08:114-08:133, 08:135-08:142, 08:144-08:155, 08:157-08:168, 08:170, 08:172-08:174, 08:176-08:204, 08:206-08:208, 35:87, 40:136, 40:231, 40:279, 41:01:01:01-41:08, 41:10-41:28, 41:30-41:31, 41:33-41:56, 42:01:01-42:02:01:02, 42:04-42:07, 42:09-42:18, 42:20-42:25, 44:166, 55:20
28	325 bp	**800 bp**	7, 22, 27, 2708, 35, 42, 45, 46, 54, 55, 56, 67, 73, 78, 81, 82	*07:02:01:01-07:02:66, 07:04:01-07:07, 07:09:01-07:15, 07:17-07:26, 07:28-07:31, 07:33:01-07:36, 07:39-07:46, 07:47ʷ, 07:48-07:49N, 07:51-07:68:03, 07:70-07:84, 07:86-07:179, 07:181N-07:206, 07:208-07:218, 07:220-07:227, 07:229-07:231N, 07:233-07:305, 07:307-07:335, 08:123, 08:132, 14:21, 14:57, 15:76, 15:101, 15:255, 27:01-27:11, 27:13-27:15, 27:17, 27:19-27:21, 27:24-27:28, 27:30-27:38, 27:40-27:58, 27:60-27:76, 27:78-27:91, 27:93-27:118, 27:120-27:128, 27:130-27:136, 27:138-27:152, 27:154-27:182, 35:76, 35:186, 35:229, 35:368, 37:60, 38:26, 40:166, 42:01:01-42:02:01:02, 42:04-42:06, 42:08-42:10, 42:12-42:23, 42:25, 44:90, 44:97, 45:06, 46:01:01-46:01:25, 46:02ʷ, 46:03-46:40:02, 46:42-46:48, 46:50-46:74, 54:01:01-54:29, 54:31-54:38, 55:01:01:01-55:05, 55:07-55:17, 55:19-55:77, 55:79-55:95, 56:01:01:01-56:16, 56:18-56:22, 56:24-56:32, 56:34-56:41, 56:43, 56:45-56:53, 56:55:01:02-56:62, 67:01:01-67:07, 73:01-73:02, 81:01:01-81:08, 82:01:01:01-82:03, 83:01
29[5]	80 bp, 115 bp, 160 bp, 195 bp, 225 bp, 260 bp	1070 bp	12, 35, 37, 44, 47, 57	*08:49, 08:60, 08:76, 08:87, 08:129, 08:181, 27:127, 35:38, 35:45, 35:71, 35:115, 35:169, 35:260, 35:309, 37:01:01:01-37:01:07, 37:01:09, 37:01:11-37:01:14, 37:03N-37:06:02, 37:08, 37:10-37:38, 37:41-37:43, 37:45-37:50, 37:52-37:65, 37:67-37:76, 40:132, 40:178, 40:231, 40:279, 41:48, 42:13, 44:02:01:01-44:14, 44:16-44:17, 44:19N-44:36, 44:38-44:63, 44:65-44:134, 44:136-44:149N, 44:151-44:157, 44:159-44:165, 44:167-44:183, 44:185-44:212, 44:214-44:229, 44:231-44:235, 44:237N-44:245, 44:247-44:267N, 44:269-44:274, 44:277-44:289, 44:291-44:297, 48:11, 51:42, 53:22, 57:07, 57:09, 57:24, 57:93, 58:94N, 83:01, **C*15:25**
30	215 bp	**800 bp**	5, 8, 12, 17, 21, 22, 41, 42, 44, 45,	*08:09, 08:84, 13:46, 15:83, 41:01:01:01-41:01:05, 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, 41:56, 42:04,

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

			51, 5102, 5103, 52, 53, 56, 62	44:06, 44:15:01:01-44:15:01:02, 44:18, 44:20, 44:100, 45:01:01-45:23, 49:03, 51:01:01:01-51:01:01:29, 51:01:03-51:01:08, 51:01:10-51:01:39, 51:01:41-51:02:01:02, 51:02:03-51:04:02, 51:06:01-51:06:03, 51:07:01, 51:08:01:01-51:09:01, 51:09:03-51:14, 51:16-51:24:05, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:88, 51:90-51:92:02, 51:94-51:102, 51:104-51:115, 51:117-51:118N, 51:120-51:131, 51:133-51:143, 51:145-51:147, 51:149N-51:175, 51:177-51:178N, 51:181-51:217, 51:219-51:225, 51:227-51:255, 52:01:02:01-52:01:02:03, 52:01:04, 52:01:09, 52:02:01, 52:03, 52:06:01-52:06:02, 52:09:01, 52:10:03, 52:19, 52:21:01, 52:31:02, 53:01:13, 53:06, 55:20, 55:56, 56:13, 57:01:20, 58:08:01, **A*23:01:14**
31[9]	130 bp, 280 bp	**800 bp**	7, 17, 18, 22, 35, 37, 46, 51, 53, 60, 62, 78	*07:12, 07:14, 07:18:01-07:18:02, 07:137, 07:162-07:163, 07:199, 07:225, 07:227, 07:248, 14:10, 15:57ʷ, 15:289, 15:297, 15:318, 18:22, 18:69, 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, 37:04:01-37:04:02, 40:28, 40:30, 40:34, 40:59, 40:137, 40:160:01-40:160:02, 44:150, 44:190, 44:203, 44:275, 44:290, 46:01:01-46:39, 46:41N-46:46, 46:48-46:71, 46:73-46:74, 48:17, 51:04:01-51:04:02, 51:46, 51:56:01-51:56:03, 51:139, 51:227, 53:02, 53:06, 53:28, 57:14:01-57:14:02, 58:09, 58:76, **C*01:73, C*03:260, C*03:384, C*15:39, C*15:130**
32[11]	90 bp, 410 bp	1070 bp	7, 15, 22, 27, 2708 35, 47, 54, 55, 56, 78, 81, 82	*07:65, 27:01ʷ, 27:02:01:01-27:11, 27:13-27:15, 27:17, 27:19-27:21, 27:24-27:28, 27:30-27:38, 27:40-27:58, 27:60-27:76, 27:78-27:91, 27:93-27:118, 27:120-27:128, 27:130-27:136, 27:138-27:152, 27:154-27:182, 35:76, 35:186, 35:229, 35:368, 37:60, 44:90, 44:97, 47:01:01:02-47:03, 47:06-47:10, 54:01:01-54:29, 54:31-54:38, 55:01:01:01-55:05, 55:07-55:17, 55:19-55:77, 55:79-55:95, 56:01:01:01-56:16, 56:18-56:22, 56:24-56:32, 56:34-56:41, 56:43, 56:45-56:53, 56:55:01:02-56:62, 81:01:01-81:01:02, 81:05, 82:01:01:01-82:03, 83:01, **A*24:208:02, C*14:79**
33[5]	90 bp, 175 bp	1070 bp	7, 15, 27, 2708, 35, 48, 60, 62, 75, 77, 81	*07:174, 07:202, 07:222, 07:279, 13:36, 15:02:01:01-15:02:12, 15:08:01-15:08:02, 15:11:01-15:11:07, 15:13:01-15:13:02, 15:15, 15:21:01:01-15:21:01:02, 15:31, 15:44, 15:55, 15:76ʷ, 15:88-15:89, 15:112, 15:121, 15:139, 15:144, 15:148, 15:170, 15:189, 15:191, 15:194, 15:209N, 15:213-15:215, 15:223, 15:265, 15:283-15:284, 15:291, 15:297, 15:301-15:303, 15:305, 15:319, 15:325, 15:328, 15:330, 15:341, 15:345, 15:350, 15:357-15:358, 15:367, 15:374, 15:378, 15:384, 15:394, 15:399, 15:404, 15:418, 15:420, 15:425, 15:437-15:438, 15:454N, 15:460, 27:24, 35:46, 35:311, 40:31, 40:45, 40:80, 48:01:01:01-48:01:07, 48:04:01-48:04:02, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 48:24, 48:27-48:39, 48:41-48:47, 56:39ʷ, 81:01:01-81:08
34[5]	105 bp, 145 bp, 395 bp, 430 bp	1070 bp	44, 49, 59, 61	*15:143, 40:13, 40:19, 40:61, 40:109, 40:117, 40:292, 40:340, 40:394, 41:46, 44:18, 44:25, 44:50:01, 44:95, 49:01:01:01-49:01:13, 49:04:01-49:14, 49:16-49:25, 49:27-49:59, 51:112, 53:30, 53:39, 54:12, 56:21, 56:42, 56:54, 57:45, 57:51, 57:69, 59:01:01:01-59:07, 59:09-59:10N
35[5]	120 bp, 210 bp	**800 bp**	5, 13, 15, 17, 22, 35, 45, 49, 50, 51, 5102, 5103, 52,	*07:78, 07:84, 13:16, 13:31ʷ, 13:48, 13:62, 14:37, 15:04:01:01ʷ-15:04:04ʷ, 15:16:01:01-15:16:03, 15:42, 15:67, 15:95, 15:137ʷ, 15:254, 15:293, 15:303ʷ, 15:310, 15:362, 15:408, 27:153, 35:265ʷ, 40:95, 40:148, 40:161, 46:32ʷ, 49:01:01:01-49:01:01:03, 49:01:03-49:10, 49:12-49:14, 49:16-49:44, 49:46, 49:48-49:59,

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: **5H1**

				Lot-specific information
			55, 56, 62, 63, 78	50:01:01:01-50:02, 50:04-50:11, 50:13-50:16, 50:18-50:20, 50:31-50:46, 50:47ʷ, 50:48, 50:50, 50:52-50:59, 51:01:01:01-51:03, 51:05, 51:07:01-51:09:03, 51:11N-51:14, 51:16-51:24:05, 51:26-51:41N, 51:43-51:44N, 51:48-51:55, 51:57-51:58, 51:60-51:61:02, 51:63:01-51:63:02, 51:65-51:80, 51:82-51:134, 51:136-51:138, 51:140-51:147, 51:149N-51:156, 51:158:01-51:193, 51:195-51:212, 51:214-51:219, 51:221-51:226, 51:228-51:255, 52:01:01:01-52:82, 54:20, 54:33ʷ, 55:01:01:01-55:01:06, 55:01:08-55:01:16, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21ʷ, 55:24-55:25, 55:28-55:29, 55:31, 55:33, 55:36, 55:38, 55:40, 55:44-55:45, 55:52-55:55N, 55:58-55:60, 55:64, 55:66, 55:68, 55:73-55:76, 55:78-55:79, 55:84-55:85, 55:87, 55:90-55:95, 56:05:01-56:06, 56:21, 56:25, 56:37, 58:08:01-58:08:02, 78:01:01:01-78:10, **C*05:152, C*12:183ʷ, C*14:92**
36	430 bp	1070 bp	5, 17, 27, 44, 51, 5102, 5103, 52, 53, 57, 58, 61	*18:67, 18:136, 27:02:01:01-27:02:04, 27:30, 27:53, 27:57, 27:62, 27:65N, 27:75, 27:77, 27:83, 27:95, 27:102, 27:119, 27:126, 27:134, 27:157, 27:163, 27:171-27:172, 27:176N, 27:181, 37:34, 40:13, 40:19?, 40:109?, 40:292?, 40:340?, 44:06, 44:25, 44:50:01, 44:95, 51:01:01:01-51:01:39, 51:01:41-51:24:05, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:255, 52:01:01:01-52:01:28, 52:01:30-52:19, 52:21:01-52:82, 53:01:01:01-53:01:17, 53:01:19-53:02, 53:04-53:08:02, 53:10, 53:14-53:30, 53:32-53:35, 53:37, 53:39-53:52, 57:01:01:01-57:04:02, 57:05-57:11, 57:13-57:110, 58:01:01:01-58:02:02, 58:04-58:16:02, 58:18-58:29, 58:31N-58:63, 58:65-58:97
37	145 bp	1070 bp	12, 21, 35, 40, 4005, 41, 45, 47, 50, 60, 61	*07:133, 08:155, 15:46, 15:53, 15:106, 15:143, 15:212, 18:48, 18:107, 35:19, 35:47, 35:63, 35:154, 35:217, 35:274, 35:317, 39:69, 40:01:01-40:11:02, 40:14:01-40:16, 40:18, 40:20:01:01-40:20:01:02, 40:22N-40:40, 40:42-40:45, 40:48-40:75, 40:77-40:92, 40:94-40:95, 40:97-40:108, 40:111-40:116, 40:118N-40:136, 40:138-40:156, 40:158-40:184, 40:186:01-40:187, 40:189-40:200, 40:202-40:207, 40:210-40:264, 40:266-40:291N, 40:293-40:307, 40:309-40:339, 40:341-40:349, 40:351-40:364, 40:366-40:378, 40:380-40:393, 40:395-40:399N, 41:01:01:01-41:04, 41:06-41:25, 41:27-41:45N, 41:47-41:56, 44:09, 44:46, 44:75, 44:90, 44:129, 44:131, 44:254, 44:277, 45:01:01-45:15, 45:17-45:21, 45:23, 47:02, 47:03ʷ, 48:41, 50:01:01:01-50:02, 50:04-50:05, 50:07-50:20, 50:31-50:59
38[9]	300 bp	1070 bp	7, 12, 13, 15, 17, 18, 21, 27, 2708, 35, 37, 38, 39, 3902, 40, 4005, 41, 44, 45, 47, 48, 49, 50, 52, 60, 61, 62, 70, 72, 76	*07:54, 07:123, 08:17, 08:38:01-08:38:02, 08:54:01-08:54:02, 08:101, 13:01:01:01-13:04, 13:06, 13:08-13:23, 13:25-13:35, 13:37-13:123Q, 15:01:01:01-15:01:04, 15:01:06-15:01:18, 15:01:20-15:01:52, 15:03:01:01-15:03:04, 15:03:06-15:07:03, 15:12:01-15:12:03, 15:14, 15:19-15:20, 15:24:01-15:27:04, 15:30:01:01-15:30:01:02, 15:32:01-15:36, 15:38:01-15:40:02, 15:42-15:43, 15:45-15:50, 15:53-15:54, 15:56-15:58, 15:60-15:63, 15:65-15:66, 15:68-15:71, 15:73-15:75, 15:77-15:79N, 15:81-15:87, 15:91-15:92, 15:94N, 15:96-15:98, 15:101-15:107, 15:109-15:111N, 15:113, 15:116-15:118, 15:122-15:123, 15:125-15:129, 15:131-15:132, 15:135-15:138, 15:140-15:142, 15:145-15:147, 15:150-15:152, 15:154-15:160, 15:163-15:167, 15:169, 15:171-15:175, 15:178-15:179:02, 15:181N-15:185, 15:187-15:188, 15:190N, 15:192-15:193, 15:195, 15:199, 15:201-15:207, 15:210-15:212, 15:217-15:220, 15:224-15:225, 15:227-15:228, 15:231-15:237, 15:239-15:245Q, 15:247-15:251:02, 15:253, 15:255-15:262N, 15:264, 15:266-15:267, 15:269-15:272N, 15:274, 15:276-15:282, 15:286-15:289, 15:295-15:296, 15:298-15:300, 15:304N,

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

				15:309-15:310, 15:315-15:318, 15:320-15:322, 15:324, 15:326-15:327, 15:331-15:334, 15:336, 15:339-15:340, 15:342-15:344, 15:346-15:349:02, 15:352-15:353, 15:355, 15:359-15:360, 15:363:01-15:366, 15:368-15:373, 15:375N-15:377Q, 15:379, 15:381, 15:383, 15:385-15:387, 15:389-15:391, 15:393, 15:395, 15:397-15:398, 15:400N-15:402, 15:405-15:407, 15:409-15:410, 15:412-15:413, 15:415-15:417, 15:419, 15:421-15:422, 15:429-15:432, 15:440-15:444, 15:448-15:450, 15:452-15:453, 15:456-15:459, 15:461, 15:463N-15:476, 18:12:01-18:12:02, 27:01-27:21, 27:24-27:91, 27:93-27:108, 27:110-27:156, 27:158-27:182, 35:10, 35:13, 35:16, 35:28, 35:63, 35:69, 35:80, 35:207, 35:226, 35:270, 35:317-35:318, 35:361, 37:01:01:01-37:07, 37:09-37:66, 37:68-37:76, 38:03-38:04, 38:25, 39:02:01-39:02:03, 39:08, 39:13:01-39:13:02, 39:22-39:23, 39:49, 39:101, 39:105, 39:110, 40:01:01-40:07, 40:09-40:16, 40:18-40:24, 40:26-40:40, 40:42-40:67, 40:70:01-40:105, 40:107-40:165, 40:167-40:231, 40:233-40:312, 40:314-40:356, 40:358-40:378, 40:380-40:400, 41:01:01:01-41:56, 42:11, 44:02:01:01-44:02:21, 44:02:23-44:03:35, 44:03:37-44:05:04, 44:07-44:11, 44:13-44:170, 44:172-44:231, 44:233-44:245, 44:247-44:262, 44:264-44:297, 45:01:01-45:21, 45:23, 47:01:01:02-47:10, 48:01:01:01-48:05, 48:07-48:15, 48:17-48:38, 48:40-48:47, 49:01:01:01-49:14, 49:16-49:25, 49:27-49:59, 50:01:01:01-50:02, 50:04-50:14, 50:16-50:20, 50:31-50:59, 52:01:01:01-52:72, 52:74-52:82, 53:17:01-53:17:02, 53:28, 53:38, 54:35, 55:18, 55:34, 55:40, 78:05-78:06
39[7,13]	160 bp, 370 bp	1070 bp	22, 44, 45, 47, 54	*08:87, 27:127, 41:55, 44:02:01:01-44:02:54, 44:06, 44:08-44:09, 44:11-44:12, 44:16, 44:19N-44:24, 44:27:01:01-44:27:03, 44:33-44:34:02, 44:41:01-44:41:02, 44:44, 44:48-44:49, 44:52N-44:53:02, 44:55, 44:59:01-44:59:02, 44:63, 44:66-44:68, 44:71-44:74, 44:80, 44:83-44:84:02, 44:86-44:87, 44:89-44:91, 44:93, 44:95, 44:97, 44:99-44:102, 44:104, 44:106, 44:112-44:113, 44:116, 44:118-44:119, 44:121, 44:126:01-44:127, 44:131-44:132, 44:137-44:138Q, 44:142, 44:145, 44:148-44:149N, 44:151-44:152, 44:162, 44:168-44:173, 44:176-44:177, 44:179, 44:185, 44:187, 44:190-44:191, 44:195N-44:196, 44:200-44:201, 44:206, 44:208, 44:211-44:212, 44:214, 44:216, 44:218-44:221, 44:225, 44:229, 44:235, 44:238, 44:240-44:244, 44:249, 44:253-44:255, 44:257, 44:260-44:262, 44:265, 44:267N, 44:269-44:270, 44:273-44:274, 44:279, 44:287, 44:289, 44:291-44:293, 44:296-44:297, 54:01:01-54:38, 83:01
40	180 bp, 210 bp	1070 bp	13, 15, 18, 35, 39, 40, 54, 55, 56, 59, 78	*07:65, 07:206, 08:26:03, 13:06, 13:53, 14:37, 15:32:02, 15:42, 15:86, 15:224, 18:04:01, 18:125, 35:08:05, 35:42:02, 35:60, 35:185, 39:17, 39:63, 40:01:11, 40:58, 45:08, 46:18, 46:40:01, 50:45, 50:49, 51:157, 54:01:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:12-54:13, 54:17-54:25, 54:27-54:32, 54:34-54:38, 55:01:01:01-55:03, 55:05, 55:07, 55:10-55:12, 55:15-55:16, 55:18-55:19, 55:21, 55:25-55:26, 55:29-55:31, 55:33-55:45, 55:47-55:48, 55:50, 55:52-55:57, 55:59-55:67, 55:69-55:80, 55:82-55:85, 55:87-55:95, 56:05:01, 56:06, 56:10, 56:23, 56:54, 59:01:01:01-59:01:01:02, 59:05-59:08, 59:10N, 78:01:01:01-78:01:02, 78:02:02-78:03, 78:07-78:10, **C*01:90, C*07:536, C*15:91, C*15:128**
41	180 bp, 205 bp	1070 bp	7, 12, 15, 21, 22, 44, 45, 49, 50,	*07:29, 07:186, 08:123, 08:132, 13:03, 13:48, 13:120, 15:73, 15:303, 40:71, 44:10, 44:15:01:01-44:15:01:02, 44:18, 44:140, 45:01:01-45:01:04, 45:04-45:07, 45:11-45:23, 46:11, 49:01:01:01-49:01:01:07, 49:01:09-49:03, 49:06, 49:08-49:14, 49:16-49:17,

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

			56, 61, 62, 82, Cw3	49:19N-49:49, 49:51-49:59, 50:01:01:01-50:02, 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, 50:50-50:59, 51:15, 51:62, 51:106:01-51:106:02, 51:223, 51:225, 52:25:01-52:25:02, 54:03, 54:33, 56:01:01:01-56:01:04, 56:01:06-56:01:12, 56:01:14-56:02:02, 56:04:01-56:04:02, 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, 56:61-56:62, 58:73, 59:04, 82:01:01:01-82:03, **C*03:19, C*03:102**
42[5,9]	90 bp, 240 bp	**800 bp**	57	*08:181, 15:462, 55:14, 57:01:01:01-57:01:22, 57:01:24-57:04:01, 57:04:03-57:44, 57:46-57:50, 57:52-57:68, 57:70-57:88, 57:90-57:108, 57:110, 58:36, **C*06:72**
43[5,11]	90 bp	1070 bp	5, 13, 17, 39, 55, 56, 58, 60, 61, 62, 71	*07:182N, 13:11, 15:18:03, 15:73, 15:224, 39:17, 40:48, 40:71, 40:377, 51:62, 56:02:01-56:02:02, 56:04:01-56:04:02, 56:10, 56:51, 56:56-56:57, 58:01:01:01-58:02:02, 58:04-58:29, 58:31N-58:35, 58:37-58:43, 58:45:01-58:97, **C*02:06:01ʷ, C*02:47ʷ**
44[5]	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65ʷ, 07:134ʷ, 08:32, 08:133, 08:180, 15:308, 18:01:01:01-18:03:01, 18:04:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:65, 18:67-18:106, 18:108-18:124, 18:126-18:158, 35:01:01:01-35:08:04, 35:08:06-35:09:03, 35:11:01-35:12:04, 35:14:01-35:15:02, 35:17:01-35:18, 35:20:01-35:24:02, 35:27, 35:29:01-35:43:01, 35:43:03-35:45, 35:48, 35:50-35:62, 35:64:01-35:68:02, 35:70-35:72, 35:74-35:75, 35:76ʷ, 35:77-35:79, 35:81-35:153, 35:155-35:185, 35:187-35:190, 35:192-35:197, 35:199-35:206, 35:208-35:209, 35:211-35:216N, 35:218-35:225, 35:227-35:253, 35:255-35:269, 35:272-35:273, 35:275-35:310, 35:312-35:316, 35:319-35:360, 35:362-35:396, 37:08, 37:67, 38:06-38:07, 39:19:01-39:19:02, 44:06, 45:22, 51:01:01:01-51:24:05, 51:26-51:46, 51:48-51:103, 51:105-51:111, 51:113-51:117, 51:119-51:146, 51:148-51:230, 51:232-51:255, 53:01:01:01-53:16, 53:18-53:27, 53:29, 53:31-53:37, 53:40-53:52, 56:06ʷ, 56:45ʷ, 78:01:01:01-78:04, 78:07-78:10
45[5,7,8]	115 bp, 150 bp	1070 bp	15, 18, 22, 27, 35, 39, 46, 55, 62, 72, 73, 75, 76	*07:100, 13:31, 13:41, 15:01:01:01-15:01:04, 15:01:06-15:01:16, 15:01:18-15:01:30, 15:01:32-15:01:52, 15:04:01:01-15:04:04, 15:07:01:01-15:08:02, 15:11:01-15:12:03, 15:14-15:15, 15:19, 15:24:01-15:24:02, 15:26N-15:28, 15:30:01:01-15:30:01:02, 15:32:01-15:32:02, 15:34-15:35, 15:38:01-15:38:02, 15:43, 15:45-15:46, 15:50, 15:53-15:54, 15:56-15:58, 15:60, 15:63, 15:66, 15:68, 15:70-15:71, 15:73, 15:75-15:77, 15:79N, 15:81-15:82, 15:85, 15:87, 15:92, 15:94N, 15:96-15:97, 15:101-15:102, 15:104-15:105, 15:109-15:111N, 15:113, 15:117-15:118, 15:120, 15:122, 15:125-15:126, 15:128-15:129, 15:135, 15:137, 15:140, 15:142-15:149N, 15:152, 15:154, 15:157, 15:159-15:160, 15:163-15:167, 15:169, 15:171-15:172, 15:174-15:175, 15:178, 15:180-15:184, 15:187, 15:189-15:193, 15:201-15:203, 15:205-15:207, 15:209N, 15:211-15:212, 15:215, 15:217, 15:225, 15:227-15:228, 15:231-15:234, 15:236, 15:239, 15:241, 15:244-15:247, 15:251:01-15:251:02, 15:256-15:262N, 15:264, 15:267, 15:269-15:270, 15:272N, 15:276-15:280, 15:284-15:286, 15:296, 15:298-15:299, 15:303-15:305, 15:309, 15:315-15:318, 15:320-15:321Q, 15:324, 15:326-15:327, 15:331, 15:333-15:334, 15:336, 15:340, 15:342-15:344, 15:346-15:347, 15:349:01-15:350, 15:353, 15:355, 15:359, 15:363:01-15:363:02, 15:365, 15:367-15:368, 15:370-15:373, 15:375N, 15:377Q, 15:381, 15:385-15:387, 15:390-15:392, 15:398, 15:400N-15:401, 15:405-15:406, 15:409-15:410, 15:412-15:413, 15:415-15:417, 15:419, 15:422, 15:428-15:432, 15:440-15:443,

October 2019   **CE**   For *In Vitro* Diagnostic Use.
Rev. No.: 01   **0088**

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Lot No.: 5H1

				Lot-specific information
				15:450, 15:452-15:453, 15:456-15:457, 15:459, 15:461, 15:464-15:467, 15:469-15:474, 15:476, 18:19, 27:25, 27:75, 27:115, 27:161, 35:14:01-35:14:03, 35:43:01, 35:43:03-35:44, 35:62, 35:67, 35:79, 35:86, 35:102, 35:117, 35:135, 35:163, 35:185, 35:213, 35:265, 35:343, 35:390N, 37:60, 37:66, 39:18, 39:36, 44:146, 44:275, 46:01:01-46:02, 46:04-46:05, 46:07N, 46:09-46:10, 46:12, 46:14-46:17, 46:20, 46:22-46:24, 46:26-46:32, 46:34-46:42, 46:44, 46:46-46:53, 46:55N-46:57, 46:60-46:61, 46:63-46:74, 50:47, 51:61:01-51:61:02, 51:220, 52:21:01-52:21:02, 54:06, 54:33, 55:21, 56:03, 56:43, 58:78, 73:01-73:02, **A*26:68, A*26:100, A*68:56, C*02:56, C*06:20, C*12:50**
46[9,12]	360 bp	1070 bp	Bw4	*07:27, 07:36, 07:38, 07:81, 07:149, 07:180, 07:219, 07:236, 07:273, 08:02-08:03, 08:52, 08:78, 08:117, 08:126, 13:01:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:66, 13:68-13:123Q, 15:13:01-15:13:02, 15:16:01:01-15:17:07, 15:23-15:24:02, 15:36, 15:43, 15:67, 15:87, 15:89, 15:95, 15:115, 15:157, 15:162, 15:168, 15:177, 15:196, 15:208, 15:216, 15:222, 15:230, 15:254, 15:256, 15:268, 15:273, 15:339, 15:356, 15:361-15:362, 15:396, 15:403, 15:408, 15:411, 15:418, 15:423-15:424, 15:442, 15:446, 15:462, 18:09, 18:54, 18:67, 18:136, 27:01-27:07:06, 27:09-27:11, 27:13-27:17, 27:19-27:21, 27:23-27:25, 27:27-27:32, 27:34-27:39, 27:41, 27:43, 27:45-27:88, 27:90:01-27:152, 27:154-27:168, 27:170-27:182, 35:36, 35:329, 37:01:01:01-37:04:02, 37:06:01-37:10, 37:12-37:36, 37:38-37:66, 37:68-37:76, 38:01:01:01-38:79, 40:13, 40:19, 40:47, 40:96, 40:109-40:110, 40:117, 40:157, 40:188, 40:201, 40:207, 40:246, 40:292, 40:340, 40:394, 41:46, 44:02:01:01-44:08, 44:10-44:45, 44:47-44:74, 44:76-44:89, 44:91-44:128:02, 44:130, 44:132-44:245, 44:247-44:253, 44:255-44:276, 44:278-44:297, 47:01:01:02-47:01:03, 47:03-47:10, 48:18, 49:01:01:01-49:14, 49:16-49:20, 49:22-49:59, 51:01:01:01-51:24:05, 51:26-51:46, 51:48-51:255, 52:01:01:01-52:82, 53:01:01:01-53:52, 54:12, 55:90, 56:07, 56:21, 56:46, 57:01:01:01-57:11, 57:13-57:110, 58:01:01:01-58:02:02, 58:04-58:29, 58:31N-58:63, 58:65-58:97, 59:01:01:01-59:10N
47	350 bp	1070 bp	Bw6	*07:02:01:01-07:26, 07:28-07:35, 07:37:01-07:37:02, 07:39-07:80, 07:82-07:148, 07:150-07:179, 07:181N-07:191, 07:193-07:218, 07:220-07:235, 07:237-07:272N, 07:274-07:335, 08:01:01:01-08:01:45, 08:04:01-08:05, 08:07-08:51, 08:53:01-08:77, 08:79-08:116, 08:118-08:125, 08:127-08:130, 08:132-08:135, 08:137-08:138, 08:140-08:152, 08:154-08:156, 08:158-08:208, 13:09, 13:39, 13:67, 14:01:01:01-14:66, 15:01:01:01-15:01:04, 15:01:06-15:12:03, 15:14-15:15, 15:18:01:01-15:21:01:02, 15:25:01-15:35, 15:37-15:40:02, 15:42, 15:44-15:58, 15:60-15:66, 15:68-15:86, 15:88, 15:90-15:94N, 15:96-15:99, 15:101-15:114, 15:116-15:129, 15:131-15:156, 15:158-15:161, 15:163-15:167, 15:169-15:176, 15:178-15:195, 15:197:01-15:207, 15:209N-15:215, 15:217-15:221, 15:223-15:229, 15:231-15:253, 15:255, 15:257-15:267, 15:269-15:272N, 15:274-15:276, 15:278-15:338, 15:340-15:355, 15:357-15:360, 15:363:01-15:376, 15:378-15:395, 15:397-15:402, 15:404-15:407, 15:409-15:410, 15:412-15:417, 15:419-15:422, 15:425-15:429, 15:431-15:441, 15:443-15:445, 15:447-15:461, 15:463N-15:476, 18:01:01:01-18:08, 18:10-18:15, 18:17N-18:53, 18:55-18:66, 18:68-18:135, 18:137-18:158, 27:08, 27:12:01:01-27:12:01:02, 27:18, 27:26, 27:33, 27:40, 27:42, 27:44, 27:89, 27:153, 27:165[w], 35:01:01:01-35:01:38, 35:01:40-35:02:08,

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

				Lot-specific information
				35:02:10-35:43:01, 35:43:03-35:72, 35:74-35:221, 35:223-35:247, 35:249-35:292, 35:294-35:328, 35:330-35:396, 37:05, 37:11, 37:14^w, 37:37, 37:67, 39:01:01:01-39:01:01:09, 39:01:03:01-39:01:14, 39:01:16-39:20, 39:22-39:103, 39:105-39:141, 40:01:01-40:12, 40:14:01-40:16, 40:18, 40:20:01:01-40:40, 40:42-40:46, 40:48-40:75, 40:77-40:95, 40:97-40:108, 40:111-40:116, 40:118N-40:156, 40:158-40:187, 40:189-40:200, 40:202-40:291N, 40:293-40:339, 40:341-40:378, 40:380-40:393, 40:395-40:399N, 41:01:01:01-41:25, 41:27-41:45N, 41:47-41:56, 42:01:01-42:02:01:02, 42:04-42:21, 42:23-42:25, 44:09, 44:46, 44:75, 44:90, 44:129, 44:131, 44:254, 44:277, 45:01:01-45:15, 45:17-45:23, 46:01:01-46:74, 47:02, 47:03^w, 48:01:01:01-48:17, 48:19-48:47, 50:01:01:01-50:02, 50:04-50:20, 50:31-50:59, 54:01:01-54:11, 54:13-54:38, 55:01:01:01-55:05, 55:07-55:89N, 55:91-55:95, 56:01:01:01-56:06, 56:08-56:20:02, 56:22-56:45, 56:47-56:62, 57:12, 58:64, 67:01:01-67:07, 73:01-73:02, 78:01:01:01-78:10, 81:01:01-81:08, 82:01:01:01-82:03, 83:01
48	285 bp	**800 bp**	7, 703, 8, 35, 40, 41, 42, 48, 60, 61, 81	*07:02:01:01-07:02:38, 07:02:40-07:06:03, 07:08:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61-07:76, 07:79-07:83, 07:85:01-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:164, 07:166-07:192, 07:194-07:195, 07:199-07:213, 07:215-07:234, 07:236-07:238, 07:240-07:254, 07:256-07:335, 08:01:01:01-08:01:20, 08:01:22-08:01:24, 08:01:26-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:30N, 08:32-08:83, 08:85-08:88, 08:90-08:102, 08:104-08:106, 08:108-08:112, 08:114-08:115, 08:117-08:133, 08:135-08:168, 08:170-08:174, 08:176-08:183, 08:185-08:208, 15:297, 27:164, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 40:137, 40:160:01-40:160:02, 41:02:01:01-41:02:08, 41:04, 41:10-41:11, 41:13, 41:18-41:19, 41:23-41:24, 41:27, 41:31, 41:36, 41:38-41:43, 41:45N-41:49, 41:51-41:52, 41:55, 42:01:01-42:02:01:02, 42:05:01-42:07, 42:09-42:13, 42:15-42:25, 44:150, 44:166, 48:01:01:01-48:01:07, 48:05-48:12, 48:14-48:20, 48:22, 48:27-48:39, 48:41-48:47, 53:15, 81:01:01-81:08, **C*03:260**
49	165 bp, 190 bp	1070 bp	5, 17, 21, 35, 51, 5102, 52, 56, 62, 70, 78	*13:62, 15:01:02, 15:09:01-15:09:02, 15:243, 15:277-15:278, 15:361, 15:435, 27:153, 35:01:10, 35:04:02, 35:251, 40:26, 40:28, 44:03:40, 44:62, 49:18:01, 50:14, 51:01:01:01-51:01:03, 51:01:05-51:02:03, 51:02:05-51:09:03, 51:11N-51:12, 51:13:02-51:14, 51:16-51:23, 51:24:03-51:24:05, 51:26-51:33, 51:37-51:41N, 51:43-51:44N, 51:46, 51:48-51:61:02, 51:63:01, 51:64-51:80, 51:82-51:91, 51:92:02, 51:94-51:98N, 51:100-51:106:01, 51:107-51:130, 51:132-51:142, 51:145-51:147, 51:149N-51:156, 51:158:01-51:196, 51:198, 51:200-51:219, 51:221-51:224, 51:226-51:255, 52:01:01:01-52:01:04, 52:01:06-52:01:14, 52:01:16-52:13, 52:15-52:24, 52:25:02-52:57, 52:59-52:66, 52:68-52:82, 53:28, 56:05:01-56:06, 56:21, 57:01:32, 58:08:01-58:08:02, 78:01:01:01-78:10
50	260 bp	**800 bp**	14, 16, 18, 51, 62, 70	*14:06:01-14:06:02, 14:08:01-14:08:02, 14:55-14:56, 15:37-15:38:02, 15:185, 15:323, 15:335, 15:364, 15:368, 15:435, 18:01:01:01-18:01:15, 18:01:17-18:01:32, 18:03:01-18:09, 18:12:01-18:13, 18:15, 18:17N-18:20, 18:23N-18:26, 18:28-18:34, 18:36-18:38, 18:40-18:43, 18:45-18:55, 18:57:01-18:57:02, 18:59-18:68, 18:70-18:100, 18:102-18:104, 18:106-18:109, 18:111-18:148, 18:151-18:158, 39:32, 39:43, 39:48, 40:51, 40:113, 40:163,

ⵔLERUP SSP®
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Lot No.: 5H1

				Lot-specific information
				51:06:01-51:06:04, 51:45, 51:62, 51:135, 51:194, 56:31, 67:06, **C*02:142, C*07:516, C*07:521:01-07:521:02, C*08:51, C*08:114**
51	390 bp	1070 bp	18, 35, 44, 51, 5102, 5103, 52, 53, 61, 78	*18:07:01-18:07:02, 18:29, 18:79, 18:136, 27:23, 35:01:01:01-35:19, 35:21-35:25, 35:27, 35:29:01-35:43:01, 35:43:03-35:62, 35:64:01-35:71, 35:74-35:75, 35:77, 35:79-35:81, 35:83-35:84, 35:86-35:94, 35:96-35:134N, 35:136-35:185, 35:187-35:225, 35:227-35:228, 35:230-35:254, 35:256-35:293, 35:295, 35:297-35:316, 35:318-35:360, 35:362-35:367, 35:369-35:396, 37:21, 37:67, 40:08, 40:13, 40:68$^?$, 40:106$^?$, 40:162$^?$, 40:220$^?$, 40:232$^?$, 44:06, 44:232, 51:01:01:01-51:06:04, 51:08:01:01-51:21, 51:23-51:24:05, 51:26-51:46, 51:48-51:127, 51:129-51:188, 51:190-51:213, 51:215-51:221, 51:223-51:235N, 51:237-51:250, 51:252-51:255, 52:06:01-52:06:03, 53:01:01:01-53:08:02, 53:10-53:16, 53:18-53:27, 53:29-53:37, 53:39, 53:41-53:52, 78:01:01:01-78:02:02, 78:04, 78:07-78:10
52	380 bp	1070 bp	5, 8, 17, 48, 51, 5102, 5103, 52, 57, 58, 59, 61	*08:03, 08:52, 08:78, 15:361, 27:102, 38:73, 40:13, 40:19, 40:109, 40:117, 40:292, 40:340, 40:394, 41:46, 48:18, 49:18:01-49:18:02, 51:01:01:01-51:01:07, 51:01:09-51:01:14, 51:01:16-51:01:39, 51:01:41-51:01:42, 51:01:44-51:12, 51:16-51:24:05, 51:26-51:36, 51:38-51:41N, 51:43-51:44N, 51:46, 51:48-51:49, 51:51-51:53, 51:55-51:61:02, 51:64-51:77, 51:79-51:84, 51:86-51:89, 51:91, 51:93-51:96, 51:98N-51:105, 51:107-51:134, 51:136-51:156, 51:158:01-51:171, 51:173Q-51:181, 51:183-51:191, 51:193-51:196, 51:198-51:213, 51:215, 51:217-51:219, 51:221-51:222, 51:224, 51:226, 51:228-51:246, 51:248-51:250, 51:252-51:255, 52:01:01:01-52:01:28, 52:01:30-52:11, 52:13, 52:15-52:19, 52:21:01-52:24, 52:27-52:38, 52:40-52:61, 52:64-52:67, 52:69-52:74, 52:76-52:82, 53:19, 56:21, 57:02:01-57:03:04, 57:05, 57:07, 57:09, 57:17, 57:39, 57:42, 57:46, 57:57, 57:63, 57:66, 57:70, 57:80, 57:82, 57:84, 57:94, 57:96, 57:101, 58:08:01-58:08:02, 58:27-58:28:02, 58:65, 59:02, **A*24:146**
53	160 bp	1070 bp	44, 51, 54	*08:101, 15:434, 41:55, 44:24, 44:181, 51:39, 54:01:01-54:01:07, 54:03-54:04, 54:06-54:38, **C*05:30, C*06:125, C*07:441:01-07:441:02, C*16:86**
54[5]	125 bp, 150 bp, 260 bp	**800 bp**	12, 17, 18, 35, 37, 40, 44, 45, 47, 49, 57, 61	*18:09, 18:54, 18:67, 18:136, 27:127, 35:45, 35:71, 35:169, 35:309, 37:06:01-37:06:02, 40:13, 40:19, 40:47, 40:96, 40:109-40:110, 40:117, 40:157, 40:188, 40:201, 40:292, 40:340, 40:394, 41:46, 44:02:01:01-44:245, 44:247-44:297, 47:01:01:02-47:01:03, 47:03-47:10, 49:01:01:01-49:02, 49:04:01-49:14, 49:16-49:20, 49:22-49:25, 49:27-49:59, 51:42, 51:112, 53:22, 53:30, 53:39, 57:07, 57:45, 57:51, 57:69, 57:93, 83:01, **A*24:02:37, C*15:25, C*16:85**
55[9]	205 bp, 235 bp	1070 bp	7, 703, 27, 35, 40, 42, 48, 60, 61, 81	*07:02:01:01-07:02:38, 07:02:40-07:06:03, 07:08:01-07:11, 07:13, 07:15-07:17, 07:19, 07:21-07:23, 07:25-07:30, 07:32-07:33:03, 07:35-07:42, 07:44N-07:59, 07:61-07:76, 07:79-07:83, 07:85:01-07:99, 07:101-07:130, 07:132-07:136:02, 07:138-07:161N, 07:164-07:192, 07:194-07:195, 07:199-07:213, 07:215-07:219, 07:221-07:222, 07:224, 07:226, 07:228:01-07:234, 07:236-07:238, 07:240-07:247, 07:249-07:254, 07:256-07:268, 07:270-07:335, 08:40, 08:53:01-08:53:02, 08:79, 08:156, 08:165, 08:171, 08:205, 13:71, 13:108, 15:421, 27:07:01-27:07:06, 27:11, 27:24, 27:32-27:34, 27:43, 27:138, 27:164, 27:180, 35:31, 35:66, 37:07, 40:02:01:01-40:03:01:02, 40:08-40:09, 40:13, 40:15-40:16, 40:18-40:19, 40:24, 40:27:01-40:27:02, 40:29, 40:31-40:32, 40:35:01-40:35:02, 40:37, 40:40, 40:45, 40:50, 40:56-40:58, 40:78, 40:80, 40:82, 40:85, 40:89-40:91, 40:94, 40:97-40:98, 40:104-40:105, 40:107, 40:111, 40:115,

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Lot No.: 5H1

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<tr>
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<td>40:119, 40:122, 40:142N-40:145, 40:157, 40:164, 40:169, 40:173, 40:176, 40:180-40:181, 40:189, 40:200-40:203, 40:205-40:206, 40:209, 40:211, 40:214, 40:219-40:220, 40:224, 40:226, 40:229, 40:232, 40:246, 40:248, 40:254-40:255, 40:266-40:267, 40:271, 40:274, 40:276, 40:283-40:284, 40:287, 40:289-40:293, 40:296-40:297, 40:302-40:305, 40:309, 40:314, 40:320, 40:322, 40:331, 40:334-40:335, 40:337N, 40:345N, 40:347, 40:356, 40:359, 40:369, 40:371, 40:375, 40:378, 40:384, 40:390, 40:399N, 41:19, 48:01:01:01-48:01:07, 48:04:01-48:16, 48:18-48:20, 48:22, 48:24, 48:27-48:36, 48:38-48:39, 48:41-48:47, 51:81, 58:27, 81:01:01-81:08, **C*02:60, C*03:386**</td>
</tr>
<tr>
<td>**56**[14]</td>
<td>550 bp</td>
<td>1070 bp</td>
<td>7, 22, 42, 45, 56, 82</td>
<td>*07:04:01-07:04:02, 07:19, 07:25, 07:146, 08:123, 08:132, 08:146, 42:01:01-42:02:01:02, 42:04-42:10, 42:12-42:18, 42:20-42:25, 44:90, 45:06, 55:20, 55:56, 56:13, 82:01:01:01w, 82:01:01:02-82:02:02, 82:03w, 83:01</td>
</tr>
<tr>
<td>**57**[14]</td>
<td>640 bp</td>
<td>1070 bp</td>
<td>7, 8, 14, 16, 22, 27, 38, 39, 3901, 3902, 42, 55, 59, 64, 65, 67, 71, 72</td>
<td>*07:19, 07:31, 07:34, 07:43, 08:01:01:01-08:01:01:05, 08:01:02-08:01:39, 08:02-08:05, 08:07-08:10, 08:12:01-08:20:01, 08:22-08:24, 08:26:01-08:31, 08:33-08:38:01, 08:39, 08:41-08:78, 08:80-08:124, 08:126-08:132, 08:134-08:154, 08:157-08:164, 08:166-08:170, 08:172-08:174, 08:176-08:179, 08:181-08:184, 14:01:01:01-14:01:01:02, 14:01:02-14:01:06, 14:02:01:01-14:02:01:03, 14:02:02-14:02:15, 14:03-14:18, 14:20-14:26, 14:28-14:34, 14:36-14:43, 14:45, 14:47-14:54, 14:56-14:61, 15:69, 15:93, 15:186, 15:252, 15:323, 18:37:01, 18:125, 27:15, 27:28, 27:62, 27:71, 37:28, 38:01:01:01-38:01:12, 38:02:01-38:02:07, 38:03-38:05, 38:09-38:20:01, 38:21, 38:23-38:29, 38:31-38:62, 38:64, 38:66-38:70, 39:01:01:01-39:01:01:07, 39:01:03:01, 39:01:04-39:01:05, 39:01:06w, 39:01:07-39:06:05, 39:07-39:12:01:01, 39:13:01-39:14:01:01, 39:15-39:18, 39:20, 39:22-39:31:01:01, 39:34-39:37, 39:39:01-39:39:02, 39:41-39:46, 39:48-39:49, 39:51-39:68, 39:70-39:73, 39:75-39:101, 39:103-39:120, 39:122-39:134, 42:01:01-42:02:01:02, 42:04-42:25, 48:37, 55:01:01:01, 55:01:02-55:05, 55:10-55:21, 55:23, 55:25-55:34, 55:36-55:50, 55:52-55:87, 56:10, 56:12, 56:18, 56:23, 56:31-56:32, 59:01:01:01-59:03, 59:05, 59:07-59:08, 59:10N, 67:01:01-67:01:03, 67:03-67:07, **C*07:46, C*07:356, C*07:546, C*15:99**</td>
</tr>
<tr>
<td>**58**[5,9]</td>
<td>90 bp, 125 bp, 155 bp, 190 bp</td>
<td>1070 bp</td>
<td>5, 17, 45, 51, 56, 60, 61, 78</td>
<td>*07:65, 07:133, 07:206, 08:26:03, 08:155, 39:63, 39:69, 40:43, 40:50, 40:166, 41:27, 41:47, 44:90, 44:277, 45:06, 46:40:01w, 50:52, 51:20w, 51:208w, 56:05:01, 56:06, 57:01:20, 57:45, 57:51, 57:69, 58:08:01, 78:01:01:01-78:01:02, 78:03, 78:07-78:08, **A*23:01:14w**</td>
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<tr>
<td>**59**</td>
<td>460 bp</td>
<td>1070 bp</td>
<td>21, 52, 60, 62</td>
<td>*13:62, 15:01:02, 15:277-15:278, 40:01:06, 40:26, 40:28, 40:95, 44:03:40, 44:62, 49:18:01, 50:14, 52:01:01:01-52:01:04, 52:01:06-52:01:14, 52:01:16-52:05, 52:07-52:13, 52:15-52:17, 52:19-52:24, 52:25:02-52:72, 52:74-52:82, 53:28, 57:01:32, 58:08:01-58:08:02, 78:05-78:06</td>
</tr>
<tr>
<td>**60**[5]</td>
<td>105 bp</td>
<td>**800 bp**</td>
<td>18, 27, 35, 37, 49, 51, 52, 53</td>
<td>*13:58, 15:202, 15:239, 15:308, 18:01:01:01-18:03:01, 18:04:01-18:06, 18:08-18:15, 18:17N-18:28, 18:30-18:32, 18:34-18:36, 18:38-18:47, 18:49-18:65, 18:67-18:78, 18:80-18:106, 18:108-18:124, 18:126-18:135, 18:137-18:154N, 18:156-18:158, 35:20:01-35:20:02, 35:28, 35:72, 35:95, 35:226, 35:296, 37:01:01:01-37:01:05, 37:01:07-37:05, 37:07-37:20, 37:22-37:25, 37:27, 37:29-37:56, 37:58-37:59, 37:62-37:66, 37:68-37:76, 40:185, 40:209, 40:308,</td>
</tr>
</table>

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Lot No.: **5H1**

Lot-specific information

				40:350, 40:365, 44:83, 44:134, 45:22, 49:03, 51:07:01-51:07:02, 51:214, 51:222, 51:251, 52:01:01:01-52:01:12, 52:01:14-52:01:34, 52:03-52:05, 52:07-52:15, 52:17-52:21:02, 52:24-52:31:02, 52:33-52:69, 52:71-52:82, 53:09, 53:17:01-53:17:02, 53:28, 53:38, 53:40, 78:05-78:06
61⁵	90 bp, 120 bp, 150 bp, 180 bp	**800 bp**	7, 35, 61, 62, 73	*07:11, 07:57, 07:75:01:01-07:75:01:02, 07:240, 07:253, 13:39, 13:67, 15:57, 15:135, 27:67, 27:75, 35:27, 35:56, 35:185, 35:203, 35:355, 37:05, 37:60, 40:37, 42:15, 44:75, 44:97, 44:254, 73:01-73:02, 78:06, 78:09-78:10, **C*05:01:28ʷ, C*06:02:39ʷ**
62	435 bp, 495 bp	1070 bp	39, 42, 55, 56, 67	*07:115, 07:214, 07:246, 07:327, 14:21, 38:26, 39:10:01, 39:16, 39:20, 39:63, 39:89, 39:96, 39:99, 39:131, 42:06, 42:20, 51:11N, 55:13, 55:58, 56:11, 56:22, 67:01:01-67:01:03, 67:03-67:07
63⁵	95 bp	1070 bp	5, 13, 15, 16, 17, 18, 21, 22, 27, 35, 38, 39, 3901, 3902, 44, 46, 48, 49, 51, 5102, 5103, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 67, 70, 71, 72, 75, 76, 78, 82	*07:68:01-07:68:03, 07:100, 07:214, 07:235, 07:237, 07:262, 08:71, 13:01:01:01-13:02:22, 13:02:24-13:04, 13:06-13:09, 13:11-13:20, 13:22:01-13:23, 13:25-13:33, 13:35-13:45, 13:47-13:50, 13:52-13:70, 13:72-13:78, 13:80-13:121, 13:123Q, 14:13, 14:23, 14:53, 14:56, 15:01:01:01-15:01:04, 15:01:06-15:01:39, 15:01:41-15:01:52, 15:03:01:01-15:05:03, 15:07:01:01-15:12:03, 15:14-15:16:03, 15:18:01:01-15:20, 15:23-15:24:02, 15:26N-15:30:01:02, 15:32:01-15:32:02, 15:34-15:35, 15:37-15:40:02, 15:42-15:43, 15:45-15:54, 15:56-15:58, 15:60-15:71, 15:73-15:76, 15:79N-15:87, 15:90-15:99, 15:101-15:105, 15:108-15:111N, 15:113-15:115, 15:117-15:120, 15:122-15:127, 15:129, 15:131-15:136, 15:138, 15:140, 15:142-15:143, 15:145-15:149N, 15:151-15:155, 15:157-15:161, 15:163-15:167, 15:169, 15:171-15:176, 15:178-15:187, 15:189-15:195, 15:197:01-15:203, 15:205-15:206, 15:209N-15:210, 15:212, 15:215, 15:217-15:229, 15:231-15:232, 15:234-15:239, 15:241-15:247, 15:249, 15:251:01-15:264, 15:266-15:270, 15:272N, 15:274-15:282, 15:284-15:286, 15:288, 15:290, 15:292-15:296, 15:298-15:300, 15:303-15:307, 15:309-15:318, 15:320-15:324, 15:326-15:327, 15:329, 15:331-15:338, 15:340, 15:343-15:344, 15:346-15:348, 15:350-15:351, 15:353-15:355, 15:359, 15:361-15:365, 15:367-15:373, 15:376-15:377Q, 15:379-15:383, 15:385-15:393, 15:397-15:398, 15:401-15:402, 15:406-15:410, 15:412-15:417, 15:419, 15:422, 15:426-15:431, 15:433-15:436, 15:439-15:445, 15:447-15:453, 15:455-15:457, 15:459-15:461, 15:464-15:467, 15:469-15:476, 18:01:01:01-18:01:03, 18:01:05-18:15, 18:17N-18:19, 18:22-18:39, 18:41-18:60, 18:62-18:102, 18:104-18:121, 18:123-18:137, 18:139-18:158, 27:27, 27:41, 27:136, 27:153, 27:168, 27:180, 35:01:01:01-35:01:49, 35:01:51-35:02:07, 35:02:09-35:08:10, 35:10-35:17:02, 35:19-35:30, 35:32:01-35:43:01, 35:43:03-35:52, 35:54-35:63, 35:65Q-35:72, 35:74-35:86, 35:89-35:113, 35:115-35:117, 35:119-35:130N, 35:132-35:163, 35:165N-35:173:02N, 35:175-35:204, 35:206-35:214, 35:216N-35:229, 35:231-35:233, 35:235-35:259, 35:262-35:320, 35:323-35:330, 35:332-35:365, 35:367-35:371, 35:373-35:374, 35:376-35:396, 37:35, 37:56, 38:01:01:01-38:21, 38:23-38:62, 38:64-38:65, 38:67-38:69, 38:71-38:79, 39:01:01:01-39:01:01:09, 39:01:03:01-39:16, 39:18-39:20, 39:22-39:67, 39:69-39:135, 39:137-39:141, 40:26, 40:28, 40:35:01-40:35:02, 40:71, 40:77, 40:87:01-40:87:02, 40:95, 40:121, 40:158, 40:184, 40:222, 40:237, 40:368, 41:24, 42:10, 42:17, 44:10, 44:14, 44:17, 44:43:01-44:43:02, 44:45, 44:51, 44:62, 44:77, 44:82, 44:107, 44:123, 44:135, 44:184, 44:213, 44:230, 44:276, 45:09, 45:14, 46:01:01-46:01:05, 46:01:07-46:05, 46:07N-46:44, 46:46-46:53, 46:55N-46:74, 48:02:01-48:02:03, 48:12, 48:14,

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Lot No.: 5H1

Lot-specific information

			48:25, 48:29, 49:04:01-49:04:02, 51:01:01:01-51:01:49, 51:01:51-51:01:64, 51:01:66-51:09:03, 51:11N-51:16, 51:19-51:23, 51:26-51:41N, 51:43-51:46, 51:48-51:80, 51:82-51:84, 51:86-51:147, 51:149N-51:171, 51:173Q-51:196, 51:198, 51:200-51:215, 51:217-51:222, 51:224-51:226, 51:228-51:253, 51:255, 52:01:01:01-52:25:02, 52:27-52:53, 52:55-52:62, 52:64-52:82, 53:01:01:01-53:01:16, 53:01:18-53:06, 53:08:01-53:52, 54:01:01-54:10, 54:12-54:14, 54:16-54:38, 55:01:01:01-55:03, 55:05, 55:07, 55:09-55:19, 55:21-55:40, 55:42-55:48, 55:50, 55:52-55:57, 55:59-55:85, 55:87-55:95, 56:01:01:01-56:01:03, 56:01:05-56:19N, 56:21-56:62, 57:01:01:01-57:01:04, 57:01:06-57:03:04, 57:06-57:12, 57:14:01-57:30, 57:33-57:40, 57:42-57:46, 57:48-57:94, 57:96-57:110, 58:01:01:01-58:01:02, 58:01:04-58:02:02, 58:04-58:26, 58:28:01-58:29, 58:31N-58:45:02, 58:47-58:60, 58:62-58:85, 58:87-58:97, 59:01:01:01-59:01:01:02, 59:03-59:10N, 67:01:01-67:02, 67:04-67:07, 78:01:01:01-78:10, 82:01:01:01-82:03, **C*14:92, C*15:126**
64[15]	-	-	**Negative Control**

[1]Alleles 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 HLA-B low resolution 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.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

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.

[2]The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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.

[3]The serological reactivity of all HLA-B alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170 and the serological grouping of the sequence-defined allele.

[4]For several HLA Class I alleles 1st and/or 4th 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.

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

[6]Primer mix 4 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes in the B*40, B*41, B*45, B*49 and B*50 alleles.

[7]Primer mixes 4, 5, 39 and 45 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes.

[8]Primer mixes 1, 19, 20, 26 and 45 have a tendency to giving rise to primer oligomer formation.

[9]Primer mixes 13, 31, 38, 42, 46, 55 and 58 may have tendencies of unspecific amplifications.

[10]Primer mix 25 might faintly amplified the C*17 alleles.

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Lot No.: 5H1

Lot-specific information

[11]Primer mix 43 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

[12]The Bw4-associated HLA-A specificities A9, A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 46.

[13]Primer mix 39 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes in the B*54 alleles.

[14]In primer mixes 56 and 57 the specific PCR products of 550 respective 640 base pairs may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low primer mixes. Optimized gel electrophoresis run time may need to be considered to ensure separation from the control band.

[15]Primer mix 64 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.

Abbreviations
'w', might be weakly amplified.
'?', nucleotide sequence information not available for the primer matching sequence.

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Rev. No.: 01   **CE**
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Lot No.: 5H1

Lot-specific information
PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec. PCR product	110	215	140	105	185	190	180	165	180	180	100	280
			235	130	235			290	225	390	195	
				260				285				
								330				
Length of int. pos. control[1]	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070
5'-primer(s)[2]	527 5'-TgA 3'	97 5'-TCg 3'	209 5'-ggC 3'	103 5'-CCg 3'	103 5'-CCT 3'	103 5'-CCg 3'	45 5'-ggA 3'	45 5'-ggA 3'	45 5'-ggA 3'	420 5'-TTA 3'	206 5'-AgA 3'	419 5'-gTC 3'
	539 5'-gCg 3'		363 5'-AgC 3'	103 5'-CCg 3'	103 5'-CCT 3'	418 5'-Agg 3'		357 5'-Tgg 3'			416 5'-CCg 3'	
	540 5'-gAC 3'		363 5'-AgC 3'	361 5'-AgT 3'	363 5'-AAT 3'			412 5'-ATA 3'			420 5'-TTA 3'	
				363 5'-AgC 3'							420 5'-TTC 3'	
3'-primer(s)[3]	605 5'-gCT 3'	272 5'-Tgg 3'	309 5'-gTg 3'	167 5'-ACA 3'	246 5'-TAT 3'	246 5'-TAT 3'	165 5'-Tgg 3'	206 5'-CCT 3'	1st I 5'-gAC 3'	559 5'-CTC 3'	256 5'-CCC 3'	3rd I 5'-TAT 3'
		272 5'-TgA 3'	312 5'-gCC 3'	193 5'-CgT 3'	246 5'-TAT 3'	572 5'-gCC 3'		538 5'-gTC 3'	266 5'-TCC 3'		272 5'-Tgg 3'	
		272 5'-TgT 3'	559 5'-CAg 3'	193 5'-CgT 3'	559 5'-CTC 3'			603 5'-gTg 3'			572 5'-gCg 3'	
				463 5'-gCT 3'								
				583 5'-gTg 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	195	105	115	80	100	140	55	210	170	110	395	160
		395	150		150		245					425
		435					390					
							415					
Length of int. pos. control[1]	1070	800	1070	1070	800	1070	1070	800	800	1070	1070	1070
5'-primer(s)[2]	142 5'-TCT 3'	45 5'-ggA 3'	161 5'-Cgg 3'	167 5'-gCT 3'	349 5'-CTT 3'	206 5'-gAC 3'	45 5'-ggA 3'	142 5'-TCT 3'	409 5'-ggC 3'	246 5'-gAA 3'	44 5'-ggC 3'	44 5'-ggC 3'
	419 5'-gTC 3'	540 5'-gAC 3'			355 5'-TCA 3'		368 5'-gTT 3'	368 5'-gTC 3'	420 5'-TTA 3'			357 5'-Tgg 3'
							557 5'-ggA 3'					
3'-primer(s)[3]	301 5'-gTC 3'	272 5'-TgC 3'	234 5'-TCT 3'	204 5'-TCT 3'	412 5'-gTT 3'	301 5'-gCT 3'	259 5'-gTT 3'	311 5'-ggg 3'	544 5'-ggT 3'	317 5'-ggA 3'	272 5'-TgC 3'	302 5'-ggC 3'
	301 5'-gTC 3'	272 5'-TgT 3'	272 5'-TgA 3'		463 5'-gCT 3'	302 5'-ggC 3'	259 5'-gTT 3'	311 5'-ggg 3'		320 5'-AgT 3'		302 5'-ggT 3'
	570 5'-CCg 3'	309 5'-ATC 3'	272 5'-Tgg 3'			311 5'-ggT 3'	266 5'-TCC 3'	538 5'-gTC 3'				477 5'-gCg 3'
	572 5'-gCg 3'	605 5'-gCT 3'				312 5'-AgT 3'	272 5'-Tgg 3'					
							292 5'-gTA 3'					
							572 5'-gCg 3'					
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

OLERUP SSP

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec.	180	130	105	325	80	215	130	90	90	105	120	430
PCR product		290			115		280	410	175	145	210	
		465			160					395		
		570			195					430		
					225							
					260							
Length of int. pos. control[1]	1070	1070	1070	**800**	1070	**800**	**800**	1070	1070	1070	**800**	1070
5'-primer(s)[2]	355 5'-TCA 3'	72 5'-gCT 3'	540 5'-gAC 3'	1st I 5'-CAg 3'	355 5'-TCA 3'	141 5'-ATT 3'	209 5'-ggC 3'	41 5'-CTg 3'	209 5'-ggC 3'	48 5'-gCC 3'	357 5'-Tgg 3'	49 5'-CAg 3'
	363 5'-Agg 3'	103 5'-CCT 3'			418 5'-Agg 3'	357 5'-Tgg 3'	209 5'-ggg 3'	368 5'-gTT 3'	363 5'-AgC 3'	206 5'-gAA 3'		
		209 5'-ggC 3'			499 5'-TCT 3'		355 5'-TCA 3'					
3'-primer(s)[3]	499 5'-ggA 3'	193 5'-CgT 3'	603 5'-gTg 3'	282 5'-gCC 3'	538 5'-gTC 3'	309 5'-ATC 3'	299 5'-TCA 3'	282 5'-gCC 3'	259 5'-gTT 3'	272 5'-TgT 3'	435 5'-TCT 3'	309 5'-ATC 3'
		193 5'-TgT 3'	603 5'-gTg 3'		572 5'-gCA 3'	538 5'-gTC 3'	583 5'-gTg 3'	418 5'-gTC 3'	499 5'-ggA 3'	309 5'-ATC 3'	527 5'-CCT 3'	
		387 5'-TCg 3'	605 5'-gCT 3'		572 5'-gCg 3'		605 5'-gCT 3'					
					573 5'-AgT 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.	145	300	160	180	180	90	90	95	115	360	350	285
PCR product			370	210	205	240			150			
Length of int. pos. control[1]	1070	1070	1070	1070	1070	**800**	1070	1070	1070	1070	1070	**800**
5'-primer(s)[2]	206 5'-gAA 3'	1st I 5'-CAg 3'	15 5'-gCA 3'	141 5'-ATT 3'	97 5'-TCg 3'	209 5'-ggC 3'	207 5'-ACC 3'	206 5'-gAC 3'	165 5'-ACC 3'	1st I 5'-CAg 3'	1st I 5'-CAg 3'	355 5'-TCA 3'
			418 5'-Agg 3'	420 5'-TTA 3'	420 5'-TTA 3'	209 5'-ggA 3'	208 5'-CgT 3'		463 5'-TgA 3'			363 5'-AgC 3'
						362 5'-ggT 3'	209 5'-ggA 3'					
						369 5'-TAC 3'						
3'-primer(s)[3]	311 5'-ggT 3'	259 5'-CTC 3'	207 5'-TCC 3'	311 5'-ggT 3'	259 5'-gTT 3'	256 5'-CCC 3'	256 5'-CTC 3'	259 5'-gTT 3'	272 5'-TgC 3'	317 5'-ggA 3'	311 5'-ggT 3'	603 5'-gTg 3'
		259 5'-CTC 3'	226 5'-CAC 3'	559 5'-CgT 3'	559 5'-CAg 3'	259 5'-CTT 3'	256 5'-CCC 3'		538 5'-CCA 3'	320 5'-AgT 3'		605 5'-gCT 3'
		262 5'-TgC 3'	538 5'-gTC 3'			263 5'-gTT 3'	420 5'-gCT 3'					
						559 5'-CgT 3'						
Well No.	37	38	39	40	41	42	43	44	45	46	47	48

CE

0088

October 2019
Rev. No.: 01   For *In Vitro* Diagnostic Use.

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec.	165	260	390	380	160	125	205	550	640	90	460	105
PCR product	190					150	235			125		
						260				155		
										190		
Length of int.	1070	800	1070	1070	1070	800	1070	1070	1070	1070	1070	800
pos. control[1]												
5'-primer(s)[2]	435	363	49	317	106	206	363	272	206	141	256	206
	5'-AAA 3'	5'-Agg 3'	5'-CAg 3'	5'-gCT 3'	5'-CCA 3'	5'-gAA 3'	5'-AgC 3'	5'-CTA 3'	5'-AgA 3'	5'-ATT 3'	5'-ACg 3'	5'-gAC 3'
						234	363			206	272	
						5'-CAA 3'	5'-AgC 3'			5'-gAA 3'	5'-CTC 3'	
						355						
						5'-TCA 3'						
3'-primer(s)[3]	559	583	272	412	226	317	527	538	559	256	435	272
	5'-CAg 3'	5'-gTg 3'	5'-TgA 3'	5'-gTT 3'	5'-CAC 3'	5'-ggA 3'	5'-CCT 3'	5'-gTC 3'	5'-CgT 3'	5'-CCC 3'	5'-TCT 3'	5'-Tgg 3'
	583					572	559			292		
	5'-gTg 3'					5'-gCg 3'	5'-CTC 3'			5'-gTC 3'		
						572						
						5'-gTg 3'						
Well No.	49	50	51	52	53	54	55	56	57	58	59	60

Well No.	61	62	63
Length of spec.	90	435	95
PCR product	120	495	
	150		
	180		
Length of int.	800	1070	1070
pos. control[1]			
5'-primer(s)[2]	165	272	407
	5'-ACC 3'	5'-CTA 3'	5'-.gg 3'
	222	3rd I	409
	5'-CCA 3'	5'-CTT 3'	5'-ggC 3'
			409
			5'-ggC 3'
3'-primer(s)[3]	272	419	463
	5'-TgC 3'	5'-CgA 3'	5'-gCT 3'
	302	621	
	5'-ggT 3'	5'-ggg 3'	
Well No.	61	62	63

[1]The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 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.

[2]The 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.

[3]The 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.

OLERUP SSP GENOMIC -LA TYPING

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

CELL LINE VALIDATION SHEET
HLA-B low resolution SSP kit[2]

#	IHWC cell line[1]	B*	B*	Prod. No.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					201890601	201903402	201890603	201903404	201890605	201890606	201899907	201890608	201890609	201890610	201890611	201890612	201890613	201903414	201890615	201890616
1	9001 SA	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*52:01	*73:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*52:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*15:10	*53:01		-	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-
5	9009 KAS011	*37:01			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
6	9353 SM	*39:01	*51:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
7	9020 QBL	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
8	9025 DEU	*35:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
9	9026 YAR	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*54:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*44:03			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*57:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
13	9004 JESTHOM	*27:05			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+
14	9071 OLGA	*15:01	*15:20		-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
15	9075 DKB	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*40:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*08:01	*55:01		-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-
18	9257 32367	*14:01	*56:01		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
20	9059 SLE005	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*15:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
22	9056 KOSE	*35:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*40:02	*56:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*14:02			-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*58:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
27	9191 CH1007	*07:05	*51:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*44:02	*44:03		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*44:03			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*42:01			-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
31	9019 DUCAF	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
32	9297 HAG	*41:02			-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
33	9098 MT14B	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*44:02			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*15:01	*35:01		-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
37	9065 HHKB	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*15:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
39	9315 CML	*08:01	*27:05		-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	+
40	9134 WHONP199	*13:02	*46:01		-	-	+	+	-	-	+	-	-	+	-	+	-	-	-	-
41	9055 H0301	*14:02			-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*46:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
43	9076 T7526	*46:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-
44	9057 TEM	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*42:01	*50:01		-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
46	9013 SCHU	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*51:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*35:01	*44:03		-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-

October 2019
Rev. No.: 01

CE 0088

For *In Vitro* Diagnostic Use.

ⵔLERUP SSP®
GENOMIC ·LA· TYPING

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101.501-48u/12u – without *Taq* polymerase, IFU-02 **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

CELL LINE VALIDATION SHEET
HLA-B low resolution SSP kit[2]

#	IHWC cell line[1]	B*		Well 17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Prod. No.:				201890617	201890618	201890619	201903420	201890621	201890622	201890623	201890624	201890625	201903426	201890627	201890628	201890629	201890630	201890631	201890632
1	9001 SA	*07:02		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
2	9280 LK707	*52:01	*73:01	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
3	9011 E4181324	*52:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*15:10	*53:01	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*37:01		+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
6	9353 SM	*39:01	*51:01	-	-	-	-	+	-	+	+	-	-	-	-	-	+	-	-
7	9020 QBL	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*35:01		+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*54:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
11	9051 PITOUT	*44:03		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
12	9052 DBB	*57:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004 JESTHOM	*27:05		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
14	9071 OLGA	*15:01	*15:20	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-
15	9075 DKB	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
16	9037 SWEIG007	*40:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
17	9282 CTM3953540	*08:01	*55:01	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
18	9257 32367	*14:01	*56:01	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+
19	9038 BM16	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
21	9064 AMALA	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*35:03		+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*40:02	*56:02	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	+
24	9035 JBUSH	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*14:02		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
26	9285 WT49	*58:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*07:05	*51:01	-	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-
28	9320 BEL5GB	*44:02	*44:03	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
29	9050 MOU	*44:03		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	9021 RSH	*42:01		-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
31	9019 DUCAF	*18:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*41:02		-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
33	9098 MT14B	*40:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
34	9104 DHIF	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*44:02		+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
36	9024 KT17	*15:01	*35:01	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*07:02		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
38	9099 LZL	*15:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*08:01	*27:05	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	+
40	9134 WHONP199	*13:02	*46:01	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
41	9055 H0301	*14:02		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
42	9066 TAB089	*46:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
43	9076 T7526	*46:01		-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
44	9057 TEM	*38:01		-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*42:01	*50:01	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-
46	9013 SCHU	*07:02		-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
47	9045 TUBO	*51:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
48	9303 TER-ND	*35:01	*44:03	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-

![OLERUP SSP logo]

101.501-48/12 – including *Taq* polymerase, IFU-01 Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02 **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

CELL LINE VALIDATION SHEET

HLA-B low resolution SSP kit[2]

#	IHWC cell line[1]	B*	B*	Prod. No.:	33 201890633	34 201890634	35 201890635	36 201890636	37 201890637	38 201899938	39 201899939	40 201890640	41 201899941	42 201890642	43 201890643	44 201890644	45 201890645	46 201890646	47 201890647	48 201890648
1	9001 SA	*07:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
2	9280 LK707	*52:01	*73:01		-	-	+	+	-	+	-	-	-	-	-	-	+	+	+	-
3	9011 E4181324	*52:01			-	-	+	+	-	+	-	-	-	-	-	-	-	+	-	-
4	9275 GU373	*15:10	*53:01		-	-	-	+	-	-	-	-	-	-	-	+	-	+	+	-
5	9009 KAS011	*37:01			-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
6	9353 SM	*39:01	*51:01		-	-	+	+	-	-	-	-	-	-	-	+	-	+	+	-
7	9020 QBL	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
8	9025 DEU	*35:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
9	9026 YAR	*38:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
10	9107 LKT3	*54:01			-	-	-	-	-	-	+	+	-	-	-	-	-	-	+	-
11	9051 PITOUT	*44:03			-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
12	9052 DBB	*57:01			-	-	-	+	-	-	-	-	-	+	-	-	-	-	+	-
13	9004 JESTHOM	*27:05			-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
14	9071 OLGA	*15:01	*15:20		-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	-
15	9075 DKB	*40:01			-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-
16	9037 SWEIG007	*40:02			-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-
17	9282 CTM3953540	*08:01	*55:01		-	-	+	-	-	-	-	+	-	-	-	-	-	-	+	+
18	9257 32367	*14:01	*56:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-
19	9038 BM16	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
20	9059 SLE005	*40:01			-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-
21	9064 AMALA	*15:01			-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	-
22	9056 KOSE	*35:03			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
23	9124 IHL	*40:02	*56:02		-	-	-	-	+	+	-	-	+	-	+	-	-	-	+	-
24	9035 JBUSH	*38:01			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
25	9049 IBW9	*14:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
26	9285 WT49	*58:01			-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-
27	9191 CH1007	*07:05	*51:01		-	-	+	+	-	-	-	-	-	-	-	+	-	+	+	+
28	9320 BEL5GB	*44:02	*44:03		-	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-
29	9050 MOU	*44:03			-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
30	9021 RSH	*42:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
31	9019 DUCAF	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
32	9297 HAG	*41:02			-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	+
33	9098 MT14B	*40:01			-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-
34	9104 DHIF	*38:01			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
35	9302 SSTO	*44:02			-	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-
36	9024 KT17	*15:01	*35:01		-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	-
37	9065 HHKB	*07:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
38	9099 LZL	*15:01			-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	-
39	9315 CML	*08:01	*27:05		-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	+
40	9134 WHONP199	*13:02	*46:01		-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	-
41	9055 H0301	*14:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
42	9066 TAB089	*46:01			-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
43	9076 T7526	*46:01			-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
44	9057 TEM	*38:01			-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
45	9239 SHJO	*42:01	*50:01		-	-	+	-	+	+	-	-	+	-	-	-	-	-	+	+
46	9013 SCHU	*07:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
47	9045 TUBO	*51:01			-	-	+	+	-	-	-	-	-	-	-	+	-	+	-	-
48	9303 TER-ND	*35:01	*44:03		-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	-

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

CELL LINE VALIDATION SHEET
HLA-B low resolution SSP kit[2]

#	IHWC cell line[1]	B*		Prod. No.:	49 201903449	50 201903450	51 201903451	52 201903452	53 201903453	54 201903454	55 201903455	56 201903456	57 201903457A	58 201903458	59 201903459	60 201903460	61 201903461	62 201903462	63 201903463
1	9001 SA	*07:02			-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
2	9280 LK707	*52:01	*73:01		+	-	-	+	-	-	-	-	-	-	+	+	+	-	+
3	9011 E4181324	*52:01			+	-	-	+	-	-	-	-	-	-	+	+	-	-	+
4	9275 GU373	*15:10	*53:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
5	9009 KAS011	*37:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
6	9353 SM	*39:01	*51:01		+	-	+	+	-	-	-	-	+	-	-	-	-	-	+
7	9020 QBL	*18:01			-	+	-	-	-	-	-	-	-	-	-	+	-	-	+
8	9025 DEU	*35:01			-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
9	9026 YAR	*38:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
10	9107 LKT3	*54:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	+
11	9051 PITOUT	*44:03			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
12	9052 DBB	*57:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
13	9004 JESTHOM	*27:05			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*15:01	*15:20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
15	9075 DKB	*40:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*40:02			-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*08:01	*55:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
18	9257 32367	*14:01	*56:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
19	9038 BM16	*18:01			-	+	-	-	-	-	-	-	-	-	-	+	-	-	+
20	9059 SLE005	*40:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*15:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
22	9056 KOSE	*35:03			-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
23	9124 IHL	*40:02	*56:02		-	-	-	-	-	-	+	-	-	-	-	-	-	-	+
24	9035 JBUSH	*38:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
25	9049 IBW9	*14:02			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
26	9285 WT49	*58:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
27	9191 CH1007	*07:05	*51:01		+	-	+	+	-	-	+	-	-	-	-	-	-	-	+
28	9320 BEL5GB	*44:02	*44:03		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
29	9050 MOU	*44:03			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
30	9021 RSH	*42:01			-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
31	9019 DUCAF	*18:01			-	+	-	-	-	-	-	-	-	-	-	+	-	-	+
32	9297 HAG	*41:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*40:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*38:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
35	9302 SSTO	*44:02			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
36	9024 KT17	*15:01	*35:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
37	9065 HHKB	*07:02			-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
38	9099 LZL	*15:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
39	9315 CML	*08:01	*27:05		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
40	9134 WHONP199	*13:02	*46:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
41	9055 H0301	*14:02			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
42	9066 TAB089	*46:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
43	9076 T7526	*46:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
44	9057 TEM	*38:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
45	9239 SHJO	*42:01	*50:01		-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
46	9013 SCHU	*07:02			-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
47	9045 TUBO	*51:01			+	-	+	+	-	-	-	-	-	-	-	-	-	-	+
48	9303 TER-ND	*35:01	*44:03		-	-	+	-	-	+	-	-	-	-	-	-	-	-	+

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For *In Vitro* Diagnostic Use.

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

[1]The 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.

[2]The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

Additional 5'-primers and 3'-primers in primer solutions 3, 6, 11, 14, 19, 29, 31, 40, 41 and 58 were tested by separately adding one or two additional 3'-primers, respectively one or two additional 5'-primers.

Additional 3'-primers in primer solutions 2, 4, 8, 13, 15, 18 and 34 were tested by separately adding one or two additional 5'-primers.

Additional 5'-primers in primer solutions 1, 21, 25, 26, 48, 54, 59 and 61 were tested by separately adding one or two additional 3'-primers.

In primer solutions 11, 17, 31, 42, 43 and 63 one or two 5'-primers were not possible to test, and in primer solutions 3, 9, 22, 27, 29, 38, 39, 42, 46, 54 and 55 one or two 3'-primers were not possible to test.

October 2019 $C\epsilon$ For *In Vitro* Diagnostic Use.
Rev. No.: 01   **0088**

101.501-48/12 – including *Taq* **polymerase,** IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* **polymerase,** IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

Lot-specific information

101.501-48/12 – including *Taq* polymerase, IFU-01   Visit https://labproducts.caredx.com for
101.501-48u/12u – without *Taq* polymerase, IFU-02   **"Instructions for Use" (IFU)**

Lot No.: 5H1

<div align="center">

Lot-specific information

</div>

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