

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

Olerup SSP® HLA-B low resolution

Product number:	101.501-48/12 – including <i>Taq</i> pol. 101.501-48u/12u – without <i>Taq</i> pol.
Lot number:	32X
Expiry date:	2017-March-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 -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 32X.

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 (73V)

The format of the Product Insert and Worksheet have been changed.

The HLA-B low resolution 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. 73V**). The kit design is based on IMGT/HLA database 3.16.0.

As of lot series V, the Specificity Table is included in the lot-specific Product Insert, and the Interpretation Table is included in the Worksheet.

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101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

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
14	-	Added	3'-primer added for improved allelic resolution of the B*15:101 allele.
39	Added	Exchanged	5'-primer added for increased yield of HLA-specific PCR product of B*54 alleles, 3'-primer exchanged for improved HLA-specific amplification.
41	Added	Added	Primer pair added for improved allelic resolution of the B*08:123 and B*42 alleles.
54	-	-	Exchanged positive control primer pair for improved HLA-specific amplification.

Changes in revision R01 compared to R00:

1. Primer mix 43 may only give rise to an HLA-specific fragment of 90 bp, and not to a fragment of 500 bp. This has been corrected in the Specificity and Interpretation Tables.

Change in revision R02 compared to R01:

1. Primer mix 4 amplifies the B*15:143, 35:19, 40:170, 44:07 and 50:07 alleles, and primer mix 26 amplifies the B*37:06:01-37:06:02 alleles. Foot notes for these two primer mixes have been added to the Specificity Table.

Change in revision R03 compared to R02:

1. In primer mix 54 the size of the internal positive control band is 800 base pairs. This has been corrected in the Specificity Table.

Change in revision R04 compared to R03:

1. Primer mix 57 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes. A foot note has been added in the Specificity Table.

Change in revision R05 compared to R04:

1. For primer mix 54, a foot note has been removed in the Specificity Table.

Changes in revision R06 compared to R05:

1. Primer mix 10 amplifies the C*02:06 and C*15:42 alleles and primer mix 41 amplifies the C*15:15 allele. This has been corrected in the Specificity and Interpretation Tables.

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101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

Well **64** contains Negative Control primer pairs, 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'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

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

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

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Lot No.: **32X**

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. '32X'.

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 primer mixes 1, 3, 4, 6 to 8, 13, 14, 17, 19 to 21, 25, 26, 29, 31, 40 to 43, 45, 50, 52 to 55, 57 and 58.

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-B alleles recognized by the HLA Nomenclature Committee in April 2014^{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}.

¹HLA-B alleles listed on the IMGT/HLA web page 2014-April-14, release 3.16.0, www.ebi.ac.uk/imgt/hla.

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

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Lot No.: 32X

Lot-specific information

³It 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*15I3^h

^aB60 serologic equivalent cluster.

^bB61 serologic equivalent cluster.

^cB62 serologic equivalent cluster.

^dB63 serologic equivalent cluster.

^eB70 serologic equivalent cluster.

^fB75 serologic equivalent cluster.

^gB76 serologic equivalent cluster.

^hB77 serologic equivalent cluster.

⁴The 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*07:202, B*81:02	B*41:09, 41:29, 41:32, B*45:02-45:03
B*55:23, 55:32, B*56:18, 56:32	B*57:67, B*58:36

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101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

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 ^{4,5}
1^{6,9}	110 bp	800 bp	7, 703, 40, 41, 42, 48, 61	*07:02:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:50, 07:52, 07:54-07:59, 07:61-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:154, 07:156-07:163, 07:166-07:201N, 07:203-07:208, 07:210-07:219, 08:79, 15:138, 15:230, 15:241, 15:297, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:136, 40:158, 40:183, 40:198, 40:231, 40:279, 41:08, 42:05:01-42:05:02, 44:150, 48:05, 48:08, 48:15, C*02:23, C*04:77
2	215 bp	1070 bp	8, 44	*08:01:01-08:05, 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, 15:142, 15:180, 35:218, 44:49, 44:156, 49:25, 51:68
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, 08:21, 08:25, 13:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:57, 13:59-13:66, 13:68-13:78, 15:07:01-15:07:03, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 15:207, 35:05:01-35:05:03, 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, 40:05, 40:71, 40:174, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 44:106, 44:110, 44:135, 44:158, 44:184, 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
4^{7,8,16}	130 bp, 265 bp	800 bp	12, 13, 14, 17, 21, 35, 40, 41, 44, 45, 47, 49, 50, 60, 61, 64, 65	*13:01:01-13:04, 13:06-13:13, 13:15-13:23, 13:25-13:57, 13:59-13:78, 14:01:01-14:02:08, 14:02:10-14:04, 14:07N, 14:09, 14:11-14:12, 14:14-14:36, 14:38-14:40, 15:46, 15:53, 15:106, 15:212, 18:44:01-18:44:02, 35:46-35:47, 35:63, 35:154, 35:207, 35:217, 40:01:01-40:01:39, 40:07, 40:10:01-40:10:02, 40:14:01-40:16, 40:22N-40:23, 40:25, 40:30-40:34, 40:36, 40:38, 40:42-40:43, 40:45, 40:47-40:49, 40:51-40:55, 40:58-40:63, 40:65-40:67, 40:69, 40:72:01-40:73, 40:76-40:77, 40:79-40:81, 40:84, 40:87:01-40:88, 40:92, 40:100-40:102, 40:106, 40:108, 40:110, 40:112-40:114, 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, 40:171-40:172, 40:175, 40:178-40:179, 40:182-40:183, 40:186-40:188, 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, 40:257-40:264, 40:272-40:273, 40:277-40:282, 40:285, 41:01-41:32, 44:02:01:01-44:03:06, 44:03:08-44:03:15, 44:03:17-44:03:18, 44:03:21-44:05:04, 44:09-44:39, 44:41:01-44:43:02, 44:45-44:56N, 44:58N-44:80, 44:82, 44:84:01-44:102, 44:104-44:110, 44:112-44:129, 44:132-44:133, 44:135-44:144, 44:146-44:155, 44:157-44:193, 45:01:01-45:14, 47:01:01-47:09, 49:01:01-49:02, 49:04-49:24, 49:27-49:30, 50:01:01-50:02, 50:04-50:06, 50:08-50:20, 50:31-50:33, 50:35-50:38, 53:30, 57:45, 57:51, 57:69, C*01:30, C*12:87

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

5 ⁸	185 bp, 235 bp	800 bp	7, 16, 17, 27, 2708, 37, 38, 3901, 3902, 39, 64, 67	*07:02:32, 07:197, 14:01:01-14:01:04, 14:07N-14:08:02, 14:10, 14:12, 14:14, 14:19, 14:26, 14:32, 14:40, 27:01-27:05:15, 27:05:17-27:05:19, 27:05:21-27:06, 27:07:04-27:10, 27:12-27:13, 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, 37:02, 38:01:01- 38:02:02, 38:02:04-38:03, 38:07-38:24, 38:26-38:32, 38:34N- 38:53, 39:01:01:01-39:01:01:03, 39:01:03-39:01:08, 39:01:10- 39:02:01, 39:03, 39:05:01-39:06:02, 39:06:04-39:09:02, 39:11, 39:14-39:15, 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, 47:04- 47:05, 48:21, 48:26, 67:01:01, 67:03-67:04
6	190 bp	800 bp	14, 35, 38, 39, 65	*07:28, 08:87, 14:02:01-14:02:02, 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, 15:77, 15:189, 15:233, 35:26, 38:05, 38:33, 39:04, 44:16, 44:37:01-44:37:02, 44:64:01- 44:64:02, 44:91, 44:132, 44:150, 44:190, 52:26, 57:04, A*23:31, A*24:106, C*07:231, C*16:10
7	290 bp	1070 bp	15, 22, 62, 63, 71, 72, 75, 76, 77, 46	*15:01:01:01-15:01:03, 15:01:06-15:02:09, 15:03:03, 15:04:01- 15:08:02, 15:10:02, 15:11:01-15:11:03, 15:11:05-15:15, 15:17:01:01-15:17:02, 15:19-15:21, 15:24:01-15:28, 15:30-15:36, 15:38:01-15:40, 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, 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- 15:320, 46:01:01-46:01:16, 46:01:18-46:57, C*01:73, C*07:02:30, C*08:16:02
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	*08:01:01-08:01:22, 08:01:24-08:05, 08:08N-08:13, 08:15-08:27, 08:29-08:36, 08:38-08:48, 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- 08:123, 13:46, 15:03:01-15:03:04, 15:09-15:10:03, 15:18:01- 15:18:06, 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, 15:197-15:198, 15:200, 15:210, 15:212, 15:220- 15:221, 15:226N, 15:229, 15:235, 15:238, 15:242-15:243, 15:252-15:253, 15:255, 15:259, 15:263, 15:266, 15:274-15:275, 15:281-15:282, 15:290, 15:292-15:294N, 15:306-15:307, 15:311- 15:314, 35:87, 37:12, 38:30, 40:12, 40:136, 40:231, 40:279, 41:01-41:03:02, 41:05-41:09, 41:11-41:17, 41:19-41:32, 42:01:01-42:02, 42:04-42:08, 42:10-42:15, 42:17-42:19, 44:14- 44:15, 44:18, 44:20, 44:62, 44:100, 44:166, 45:01:01-45:14, 51:08:01-51:08:02, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153, 52:19, 55:20, 55:56, 56:13, 57:09, 82:01-82:03, C*07:46, C*07:356

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

9	390 bp	1070 bp	63	*15:16:01-15:17:02, 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
10	180 bp	800 bp	13, 22, 55, 60	*07:78, 13:01:01-13:02:16, 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, 40:48, 45:10, 49:07, 50:31, 54:26, 55:09, 55:22, 55:24, C*02:06, C*15:42
11⁶	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, 08:17, 08:54, 08:110, 15:03:01-15:03:04, 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, 15:253, 15:259, 15:266, 15:274, 15:281-15:282, 18:37, 27:18, 27:29, 37:28, 38:03, 39:02:01-39:02:02, 39:08, 39:13:01-39:13:02, 39:23, 39:39:01-39:39:02, 39:49, 39:88, 40:12, 40:46, 40:93, 42:11, 44:10, 44:15, 44:18, 44:40, 44:44, 44:130, 44:140, 44:156, 45:01:01-45:01:02, 45:05-45:07, 45:11-45:14, 48:01:01-48:05, 48:07-48:30, 48:32-48:34, 49:20, 50:02, 52:16, 55:18, 58:44, 82:01-82:03
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, 07:11, 07:17, 07:162, 08:28, 08:35, 08:37, 08:89, 08:107, 13:04, 13:10, 13:26:01-13:26:02, 13:72, 15:01:01:01-15:01:04, 15:01:06-15:08:02, 15:11:01-15:16:03, 15:18:01-15:21, 15:23-15:29, 15:31-15:36, 15:38:01-15:40, 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, 15:197-15:207, 15:209N-15:215, 15:217-15:223, 15:225-15:228, 15:231-15:232, 15:234-15:242, 15:244-15:247, 15:249-15:251, 15:254-15:268, 15:270-15:272N, 15:274-15:286, 15:288-15:302N, 15:304N-15:311, 15:314-15:320, 18:01:01:01-18:15, 18:17N-18:25, 18:27-18:40, 18:42-18:60, 18:62-18:103, 27:41, 27:107, 35:01:01:01-35:01:41, 35:05:01-35:05:03, 35:07-35:08:07, 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, 35:45-35:54, 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, 35:173N-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, 35:252-35:254, 37:35, 38:52, 39:07, 39:43, 39:91, 40:03, 40:20, 40:38, 40:52, 40:59-40:60, 40:105, 40:158-40:159, 40:222, 40:267, 40:284, 41:24, 41:30, 42:09, 44:17, 44:43:01-44:43:02, 44:144, 45:09, 46:01:01-46:01:16, 46:01:18-46:10, 46:12-46:17, 46:19-46:57, 48:02:01-48:02:03, 48:14, 48:23, 48:25, 49:04-49:05, 50:33, 51:37, 51:45, 51:63, 51:97, 52:39, 53:01:01-53:03, 53:05-53:06, 53:08:01-53:18, 53:20-53:30, 53:32, 53:34-53:35, 54:06, 54:09, 54:14, 55:14, 55:23, 55:32, 56:03, 56:09, 56:18, 56:31-56:32, 57:01:01-57:01:18, 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, 57:67-57:69, 58:01:01-58:02, 58:04-58:07, 58:09-58:19, 58:21-58:26, 58:29, 58:31N-58:33, 58:35-58:59
13¹⁰	195 bp	1070 bp	27, 35, 37,	*15:12, 15:14, 15:19, 15:91, 15:131, 15:161, 15:270, 15:298,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

			44, 58, 76	15:304N, 18:54, 18:56, 35:45, 35:71, 37:01:01-37:09, 37:12-37:13, 37:15-37:21, 37:23-37:28, 37:30N-37:33N, 37:35-37:36, 37:38-37:49, 38:17, 44:17, 44:43:01-44:43:02, 44:144, 45:09, 46:17, 53:22, 58:07, A*24:174, C*14:61
14⁶	105 bp, 395 bp, 435 bp	1070 bp	5, 7, 15, 41, 42, 62, 63, 70, 71, 75, 77	*07:04, 07:25, 07:146, 15:09-15:10:03, 15:13:01-15:13:02, 15:16:01-15:18:06, 15:21, 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, 15:290, 15:292-15:294N, 15:306-15:307, 15:311-15:314, 40:136, 40:231, 40:279, 41:08, 42:05:01-42:05:02, C*07:335, C*14:62
15⁶	115 bp, 150 bp	1070 bp	18	*18:01:01:01-18:15, 18:17N-18:28, 18:30-18:71, 18:73-18:91, 18:93-18:101, 18:103, 48:28
16⁶	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, 27:76-27:125, 38:22, 40:46, 40:93, 44:40, 44:44, 44:130, 49:26
17	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	*08:49, 13:01:01-13:01:08, 13:06-13:07N, 13:12:01-13:13, 13:17, 13:20, 13:22:01-13:23, 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-13:78, 14:10, 15:02:01-15:02:09, 15:13:01-15:13:02, 15:20-15:21, 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, 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, 18:22, 18:69, 27:19, 27:30, 35:01:01:01-35:04:03, 35:06-35:08:07, 35:10-35:17:02, 35:19-35:21, 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, 35:61:01-35:63, 35:65Q, 35:69-35:71, 35:74, 35:76-35:78, 35:80-35:85, 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, 35:152-35:173N, 35:175-35:184, 35:186-35:198, 35:200-35:204, 35:206-35:229, 35:231, 35:233, 35:236-35:250, 35:252-35:254, 37:01:01-37:01:07, 37:01:09, 37:03N-37:06:02, 37:08, 37:10-37:11, 37:13-37:43, 37:45-37:49, 38:20, 39:42, 40:28, 44:02:01:01-44:14, 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, 46:33, 48:02:01-48:02:03, 48:25, 50:17, 51:04, 51:42, 51:46, 51:56:01-51:56:02, 51:139, 53:01:01-53:13, 53:15-53:35, 55:14, 56:09, 56:11-56:12, 57:01:01-57:01:04, 57:01:06-57:10, 57:12, 57:14-57:20, 57:22-57:30, 57:32-57:46, 57:48-57:70, 58:01:01-58:01:02, 58:01:04-58:01:15, 58:04-58:05, 58:09-58:15, 58:17N, 58:19, 58:21-58:24, 58:28-58:29, 58:31N-58:37, 58:39N-58:42, 58:44-58:45:02, 58:47-58:59, 83:01, C*03:102
18	140 bp	1070 bp	8, 18, 22, 35, 39, 78	*07:65, 07:134, 08:32, 15:202, 15:239, 15:308, 18:01:01:01-18:08, 18:10-18:15, 18:17N-18:36, 18:38-18:47, 18:50-18:53, 18:55-18:65, 18:68-18:78, 18:80-18:103, 35:01:01:01-35:18, 35:20:01-35:24:02, 35:28-35:45, 35:48, 35:50-35:55, 35:57-35:62, 35:64:01-35:72, 35:74-35:153, 35:155-35:197, 35:199-35:202, 35:204-35:206, 35:208-35:209, 35:211-35:216N, 35:218-

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

				35:253, 37:11, 37:37, 39:19:01-39:19:02, 40:185, 40:209, 46:40, 56:06, 78:01:01-78:05, 78:07
19^{6,9}	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, 15:23-15:40, 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, 15:256-15:320, 40:12, 46:50, 82:01-82:03, C*03:179, C*14:61
20⁹	210 bp	800 bp	27, 37	*07:27, 08:49, 18:54, 37:01:01-37:49, 38:17, C*07:302
21	170 bp	800 bp	16, 35, 38, 39, 3901, 3902, 67, 72	*08:55, 15:69, 15:186, 35:35, 38:01:01-38:02:05, 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, 39:01:01:01-39:01:01:03, 39:01:03-39:01:18, 39:02:01-39:20, 39:22-39:24:02, 39:26-39:29, 39:31, 39:35, 39:37-39:42, 39:44-39:46, 39:48-39:49, 39:51-39:73, 39:75-39:81, 39:83-39:92, 40:184, 51:101, 58:20, 67:01:01-67:05, C*15:51
22⁶	110 bp	1070 bp	38	*27:07:04, 38:01:01-38:02:02, 38:02:04-38:03, 38:05, 38:08-38:24, 38:26-38:34N, 38:36-38:53, 49:26, 52:01:10
23	395 bp	1070 bp	14, 16, 38, 39, 3901, 64, 65	*07:69, 07:85, 07:180, 08:65, 14:01:01-14:20, 14:22-14:40, 38:01:01-38:02:07, 38:04-38:05, 38:08-38:25, 38:27-38:53, 39:01:01:01-39:01:01:03, 39:01:03-39:01:19, 39:03-39:07, 39:09:01-39:09:02, 39:11-39:12, 39:14-39:15, 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, 39:90-39:92, 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	*07:02:01-07:26, 07:28-07:35, 07:37, 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, 08:01:01-08:01:28, 08:04-08:05, 08:07-08:35, 08:37-08:51, 08:53:01-08:77, 08:79-08:116, 08:118-08:123, 14:01:01-14:02:04, 14:02:06-14:02:07, 14:02:09-14:29, 14:31-14:40, 27:14, 27:81, 39:01:01:01-39:01:01:03, 39:01:03-39:20, 39:22-39:24:01, 39:25N-39:92, 40:01:01-40:01:39, 40:06:01:01-40:06:04, 40:06:06-40:07, 40:09 [?] , 40:11:01 [?] -40:11:02 [?] , 40:14:01 [?] -40:15 [?] , 40:16, 40:18 [?] , 40:21 [?] -40:22N [?] , 40:23, 40:24 [?] -40:38 [?] , 40:42 [?] -40:43 [?] , 40:44, 40:45 [?] -40:46 [?] , 40:48 [?] -40:50 [?] , 40:51, 40:52 [?] , 40:53, 40:54 [?] -40:58 [?] , 40:59-40:60, 40:61 [?] -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 [?] , 40:90 [?] -40:92 [?] , 40:93, 40:95 [?] , 40:96, 40:98 [?] -40:102 [?] , 40:103, 40:104 [?] -40:108 [?] , 40:109-40:110, 40:111 [?] -40:116 [?] , 40:118N [?] -40:121 [?] , 40:123 [?] , 40:124:01, 40:124:02 [?] -40:126 [?] , 40:127, 40:128 [?] -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 [?] -40:171 [?] , 40:172, 40:173 [?] -40:176 [?] , 40:177, 40:178 [?] -40:185 [?] , 40:186, 40:187 [?] , 40:189 [?] , 40:190, 40:191 [?] -40:200 [?] , 40:202 [?] -40:213 [?] , 40:215 [?] -40:228 [?] , 40:230, 40:231 [?] -40:243 [?] , 40:244, 40:245 [?] -40:249 [?] , 40:250-40:253, 40:256N, 40:257 [?] , 40:258-40:265N, 40:268-40:270, 40:272, 40:273 [?] -40:274 [?] , 40:275, 40:276 [?] , 40:277-40:278, 40:279 [?] -40:280 [?] , 40:282 [?] -40:283 [?] , 40:285, 41:01-41:32, 42:01:01-42:02, 42:04-42:20, 45:01:01-45:14, 48:01:01-48:17, 48:19-48:34, 50:01:01-50:02, 50:04-50:20, 50:31-50:38, 51:01:09, 51:01:21, 51:01:25, 51:10, 51:24:02-51:24:04, 54:11, 56:20:02, 67:01:01-67:05,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

73:01-73:02, 81:02				
25¹¹	180 bp	1070 bp	15, 40, 44, 48, 60, 62, 71	*15:116, 15:124, 27:125, 35:230, 40:01:01-40:01:06, 40:01:08-40:01:17, 40:01:19-40:01:39, 40:07, 40:10:01-40:10:02, 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, 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, 44:31, 44:169, 44:182, 46:06, 46:43, 48:03:01-48:03:02, 48:17, 48:23, 57:59, C*03:129, C*03:234, C*17:16
26^{9,17}	290 bp, 465 bp	1070 bp	21, 4005, 41, 50, 60, 61	*13:02:06, 13:26:01, 13:72, 15:16:03, 15:20, 15:85, 15:194, 18:48, 35:46, 35:207, 40:02:01-40:06:10, 40:08, 40:09 [?] , 40:10:02 [?] -40:11:02 [?] , 40:13, 40:14:01 [?] -40:15 [?] , 40:18 [?] -40:19 [?] , 40:20, 40:22N [?] , 40:24 [?] -40:38 [?] , 40:39, 40:42 [?] -40:45 [?] , 40:47 [?] -40:50 [?] , 40:52 [?] -40:58 [?] , 40:61 [?] -40:65 [?] , 40:67 [?] -40:69 [?] , 40:70:01-40:70:02, 40:71 [?] , 40:72:02 [?] , 40:74 [?] -40:76 [?] , 40:78 [?] , 40:80 [?] -40:82 [?] , 40:84 [?] -40:88 [?] , 40:89, 40:90 [?] -40:92 [?] , 40:94, 40:95 [?] -40:96 [?] , 40:97, 40:98 [?] -40:121 [?] , 40:122, 40:123 [?] , 40:124:02 [?] -40:136 [?] , 40:141 [?] , 40:142N-40:144N, 40:145 [?] , 40:148 [?] -40:149 [?] , 40:151 [?] , 40:154 [?] , 40:156 [?] -40:169 [?] , 40:171 [?] , 40:173 [?] -40:176 [?] , 40:178 [?] -40:184 [?] , 40:187 [?] -40:208 [?] , 40:210 [?] -40:213 [?] , 40:214, 40:216N [?] -40:228 [?] , 40:229, 40:230 [?] -40:249 [?] , 40:254-40:255, 40:256N [?] -40:257 [?] , 40:266-40:271, 40:273 [?] -40:276 [?] , 40:279 [?] -40:283 [?] , 40:284, 46:01:07, 46:33, 47:01:01:01-47:09, 57:05, 57:67, 58:36, C*01:73
27⁶	105 bp	1070 bp	7, 8, 22, 41, 42	*07:04, 07:25, 07:146, 08:01:01-08:01:24, 08:01:26-08:05, 08:07-08:12:03, 08:14-08:19N, 08:21-08:24, 08:26-08:39, 08:41-08:54, 08:56:01-08:69, 08:71-08:78, 08:80-08:102, 08:104-08:112, 08:114-08:115, 08:117-08:123, 35:87, 40:136, 40:231, 40:279, 41:01-41:08, 41:10-41:28, 41:30-41:31, 42:01:01-42:02, 42:04-42:07, 42:09-42:18, 42:20, 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	*07:02:01-07:02:41, 07:04-07:07, 07:09-07:15, 07:17-07:26, 07:28-07:31, 07:33:01-07:36, 07:39-07:46, 07:47 ^w , 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, 08:123, 14:21, 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, 27:120-27:125, 35:76, 35:186, 35:229, 38:26, 40:166, 42:01:01-42:02, 42:04-42:06, 42:08-42:10, 42:12-42:20, 44:90, 44:97, 45:06, 46:01:01-46:01:16, 46:01:18, 46:02 ^w , 46:03-46:40, 46:42-46:48, 46:50-46:57, 54:01:01-54:29, 54:31-54:32, 55:01:01-55:05, 55:07-55:17, 55:19-55:64, 56:01:01-56:16, 56:18-56:22, 56:24-56:32, 56:34-56:41, 56:43, 67:01:01-67:05, 73:01-73:02, 81:01-81:07, 82:01-82:03, 83:01
29⁶	80 bp 115 bp, 160 bp,	1070 bp	12, 35, 37, 44, 47, 57	*08:49, 08:60, 08:76, 08:87, 35:38, 35:45, 35:71, 35:115, 35:169, 37:01:01-37:01:07, 37:01:09, 37:03N-37:06:02, 37:08, 37:10-37:38, 37:41-37:43, 37:45-37:49, 40:132, 40:178, 40:231,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

	195 bp, 225 bp, 260 bp			40:279, 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, 44:185-44:193, 51:42, 53:22, 57:07, 57:09, 57:24, 83:01, C*15:25
30	215 bp	800 bp	5, 8, 12, 17, 21, 22, 41, 42, 44, 45, 51, 5102, 5103, 52, 53, 56, 62	*08:09, 08:84, 13:46, 15:83, 41:01, 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, 42:04, 44:06, 44:15, 44:18, 44:20, 44:100, 45:01:01-45:14, 51:01:01, 51:01:03-51:01:08, 51:01:10-51:01:39, 51:01:41- 51:02:01, 51:02:03-51:04, 51:06:01-51:07:01, 51:08:01-51:09:01, 51:10-51:14, 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, 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-51:173Q, 52:01:02, 52:01:04, 52:01:09, 52:02:01, 52:03, 52:06:01-52:06:02, 52:09, 52:10:03, 52:19, 52:21, 52:31:02, 53:06, 55:20, 55:56, 56:13, 58:08:01, A*23:01:14
31	130 bp, 270 bp	800 bp	17, 18, 22, 35, 37, 46, 51, 53, 62, 78	*14:10, 15:57 ^w , 15:289, 15:318, 18:22, 18:69, 35:21, 35:24:01- 35:24:02, 35:81, 35:96, 35:109, 35:157, 35:188, 35:190, 35:233, 37:04:01-37:04:02, 40:28, 44:190, 46:01:01-46:01:16, 46:01:18- 46:39, 46:41N-46:46, 46:48-46:57, 51:04, 51:46, 51:56:01- 51:56:02, 51:139, 53:02, 53:06, 53:28, 57:14, 58:09, C*01:73, C*15:39
32^{6,12}	90 bp, 410 bp	1070 bp	15, 22, 27, 35, 47, 54, 55, 56, 78, 81, 82	*07:65, 27:01 ^w , 27:02:01-27:11, 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, 27:120-27:125, 35:76, 35:186, 35:229, 44:90, 44:97, 47:01:01:01-47:03, 47:06-47:09, 54:01:01-54:29, 54:31-54:32, 55:01:01-55:05, 55:07-55:17, 55:19-55:64, 56:01:01-56:16, 56:18-56:22, 56:24-56:32, 56:34-56:41, 56:43, 81:01, 82:01-82:03, 83:01
33⁶	90 bp, 175 bp	1070 bp	15, 27, 35, 48, 60, 62, 75, 77, 81	*07:174, 07:202, 13:36, 15:02:01-15:02:09, 15:08:01-15:08:02, 15:11:01-15:11:06, 15:13:01-15:13:02, 15:15, 15:21, 15:31, 15:44, 15:55, 15:76 ^w , 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, 27:24, 35:46, 40:31, 40:45, 40:80, 48:01:01-48:01:06, 48:04, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 48:24, 48:27-48:34, 56:39 ^w , 81:01-81:07
34	145 bp, 430 bp	1070 bp	44, 49, 59, 61	*40:13, 40:19, 40:109, 40:117, 44:18, 44:25, 44:50:01, 44:95, 49:01:01-49:01:06, 49:04-49:25, 49:27-49:31, 51:112, 53:30, 54:12, 56:21, 57:45, 57:51, 57:69, 59:01:01:01-59:07
35⁶	120 bp, 210 bp	800 bp	5, 13, 15, 17, 22, 35, 45, 49, 50, 51, 5102, 5103, 52, 55, 56, 62, 63, 78	*07:78, 07:84, 13:16, 13:31 ^w , 13:48, 13:62, 14:37, 15:04:01 ^w - 15:04:02 ^w , 15:16:01-15:16:03, 15:42, 15:67, 15:95, 15:137 ^w , 15:254, 15:293, 15:303 ^w , 15:310, 40:95, 40:148, 40:161, 46:32 ^w , 49:01:01, 49:01:03-49:10, 49:12-49:31, 50:01:01-50:02, 50:04- 50:11, 50:13-50:16, 50:18-50:20, 50:31-50:38, 51:01:01-51:03, 51:05, 51:07:01-51:09:02, 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, 51:65-51:80, 51:82-51:134, 51:136-51:138, 51:140-51:147, 51:149N-51:156, 51:158-51:173Q, 52:01:01:01- 52:39, 54:20, 55:01:01-55:01:06, 55:01:08-55:01:12, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21 ^w , 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, 56:05:01-56:06, 56:21, 56:25, 56:37, 58:08:01-58:08:02, 78:01:01-78:07

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

36	430 bp	1070 bp	5, 17, 27, 44, 51, 5102, 5103, 52, 53, 57, 58, 61	*18:67, 27:02:01-27:02:02, 27:30, 27:53, 27:57, 27:62, 27:65N, 27:75, 27:77, 27:83, 27:95, 27:102, 27:119, 37:34, 40:13, 40:19, 40:109, 40:117, 44:06, 44:25, 44:50:01, 44:95, 51:01:01-51:01:39, 51:01:41-51:24:05, 51:26-51:46, 51:48-51:53, 51:55-51:77, 51:79-51:173Q, 52:01:01:01-52:19, 52:21-52:39, 53:01:01-53:02, 53:04-53:08:02, 53:10, 53:14-53:30, 53:32-53:35, 57:01:01-57:11, 57:13-57:70, 58:01:01-58:02, 58:04-58:16:02, 58:18-58:29, 58:31N-58:59
37	145 bp	1070 bp	12, 21, 35, 40, 4005, 41, 45, 47, 50, 60, 61	*07:133, 15:46, 15:53, 15:106, 15:143, 15:212, 18:48, 35:19, 35:47, 35:63, 35:154, 35:217, 39:69, 40:01:01-40:11:02, 40:14:01-40:16, 40:18, 40:20, 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, 40:186-40:187, 40:189-40:200, 40:202-40:207, 40:210-40:264, 40:266-40:285, 41:01-41:04, 41:05 [?] , 41:06-41:25, 41:27-41:32, 44:09, 44:46, 44:75, 44:90, 44:129, 44:131, 45:01:01-45:14, 47:02, 47:03 ^w , 50:01:01-50:02, 50:04-50:05, 50:07-50:20, 50:31-50:38
38	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, 08:54, 08:101, 13:01:01-13:04, 13:06, 13:08-13:23, 13:25-13:35, 13:37-13:78, 15:01:01:01-15:01:04, 15:01:06-15:01:18, 15:01:20-15:01:35, 15:03:01-15:07:03, 15:12, 15:14, 15:19-15:20, 15:24:01-15:27:03, 15:30, 15:32:01-15:36, 15:38:01-15:40, 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, 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, 15:309-15:310, 15:315-15:318, 15:320, 18:12, 27:01-27:21, 27:24-27:91, 27:93-27:108, 27:110-27:125, 35:10, 35:13, 35:16, 35:28, 35:63, 35:69, 35:80, 35:207, 35:226, 37:01:01-37:07, 37:09-37:49, 38:03-38:04, 38:25, 39:02:01-39:02:02, 39:08, 39:13:01-39:13:02, 39:22-39:23, 39:49, 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, 40:233-40:285, 41:01-41:32, 42:11, 44:02:01:01-44:02:21, 44:02:23-44:05:04, 44:07-44:11, 44:13-44:170, 44:172-44:193, 45:01:01-45:14, 47:01:01:01-47:09, 48:01:01-48:05, 48:07-48:15, 48:17-48:34, 49:01:01-49:25, 49:27-49:31, 50:01:01-50:02, 50:04-50:14, 50:16-50:20, 50:31-50:38, 52:01:01:01-52:39, 53:17:01-53:17:02, 53:28, 55:18, 55:34, 55:40, 78:05-78:06
39^{8,13}	160 bp, 370 bp	1070 bp	22, 44, 45, 47, 54	*08:87, 44:02:01:01-44:02:30, 44:06, 44:08-44:09, 44:11-44:12, 44:16, 44:19N-44:24, 44:27:01-44:27:02, 44:33-44:34:02, 44:41:01-44:41:02, 44:44, 44:48-44:49, 44:52N-44:53, 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,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

				44:190-44:191, 54:01:01-54:32, 83:01
40	180 bp, 210 bp	1070 bp	13, 15, 18, 35, 39, 40, 54, 55, 56, 59, 78	*07:65, 07:206, 13:06, 13:53, 14:37, 15:32:02, 15:42, 15:86, 15:224, 18:04, 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, 51:157, 54:01:01-54:02, 54:05N, 54:07-54:08N, 54:10, 54:12-54:13, 54:16-54:25, 54:27- 54:32, 55:01:01-55:03, 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, 55:59-55:64, 56:05:01, 56:06, 56:10, 56:23, 59:01:01-59:01:01:02, 59:05-59:08, 78:01:01- 78:01:02, 78:02:02-78:03, 78:07, C*01:90, C*15:02:04
41	180 bp, 205 bp	1070 bp	7, 12, 15, 21, 22, 44, 45, 49, 50, 56, 61, 62, 82	*07:29, 07:186, 08:123, 13:03, 13:48, 15:73, 15:303, 40:71, 44:10, 44:15, 44:18, 44:140, 45:01:01-45:01:02, 45:04-45:07, 45:11-45:14, 46:11, 49:01:01-49:03, 49:06, 49:08-49:17, 49:19N- 49:31, 50:01:01-50:02, 50:04-50:08, 50:10-50:13, 50:15-50:19, 50:32, 50:34-50:38, 51:15, 51:62, 51:106, 52:25, 54:03, 56:01:01- 56:01:04, 56:01:06-56:02, 56:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20:01-56:20:02, 56:24-56:30, 56:33-56:43, 59:04, 82:01-82:03, C*03:19, C*03:102, C*15:15
42⁶	90 bp, 240 bp	800 bp	57	*55:14, 57:01:01-57:44, 57:46-57:50, 57:52-57:68, 57:70, 58:36, C*06:72
43^{6,12}	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, 51:62, 56:02, 56:04, 56:10, 58:01:01-58:01:13, 58:01:15-58:02, 58:04-58:29, 58:31N-58:35, 58:37-58:43, 58:45:01-58:59, C*02:06^w, 02:47^w
44⁶	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65 ^w , 07:134 ^w , 08:32, 15:308, 18:01:01:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:65, 18:67-18:103, 35:01:01:01-35:08:04, 35:08:06-35:09:03, 35:11:01-35:12:03, 35:14:01-35:15, 35:17:01-35:18, 35:20:01-35:24:02, 35:27, 35:29:01-35:45, 35:48, 35:50-35:62, 35:64:01-35:68:02, 35:70- 35:72, 35:74-35:75, 35:76 ^w , 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, 37:08, 38:06-38:07, 39:19:01-39:19:02, 44:06, 51:01:01-51:24:05, 51:26-51:46, 51:48-51:103, 51:105-51:111, 51:113-51:117, 51:119-51:146, 51:148-51:173Q, 53:01:01-53:16, 53:18-53:27, 53:29, 53:31-53:35, 56:06 ^w , 78:01:01-78:04, 78:07
45^{6,8,9}	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, 15:01:32-15:01:35, 15:04:01-15:04:02, 15:07:01-15:08:02, 15:11:01-15:12, 15:14-15:15, 15:19, 15:24:01-15:24:02, 15:26N-15:28, 15:30, 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, 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, 18:19, 27:25, 27:75, 27:115, 35:14:01-35:14:02,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

				35:43:01-35:44, 35:62, 35:67, 35:79, 35:86, 35:102, 35:117, 35:135, 35:163, 35:185, 35:213, 39:18, 39:36, 44:146, 46:01:01-46:01:16, 46:01:18-46:02, 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, 51:61:01-51:61:02, 52:21, 54:06, 55:21, 56:03, 56:43, 73:01-73:02, A*26:68, A*26:100, A*68:56, C*02:56, C*06:20, C*12:50
46¹⁴	360 bp	1070 bp	Bw4	
47	350 bp	1070 bp	Bw6	
48	285 bp	800 bp	7, 703, 8, 35, 40, 41, 42, 48, 60, 61, 81	*07:02:01-07:02:38, 07:02:40-07:06, 07:08-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61-07:76, 07:79-07:83, 07:85-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:164, 07:166-07:192, 07:194-07:195, 07:199-07:213, 07:215-07:219, 08:01:01-08:01:20, 08:01:22-08:01:24, 08:01:26-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:83, 08:85-08:88, 08:90-08:102, 08:104-08:106, 08:108-08:112, 08:114-08:115, 08:117-08:123, 15:297, 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, 41:02:01-41:02:05, 41:04, 41:10-41:11, 41:13, 41:18-41:19, 41:23-41:24, 41:27, 41:31, 42:01:01-42:02, 42:05:01-42:07, 42:09-42:13, 42:15-42:20, 44:150, 44:166, 48:01:01-48:01:06, 48:05-48:12, 48:14-48:20, 48:22, 48:27-48:34, 53:15, 81:01-81:07
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, 15:243, 15:277-15:278, 35:01:10, 35:04:02, 35:251, 40:26, 40:28, 44:62, 49:18, 50:14, 51:01:01-51:01:03, 51:01:05-51:02:03, 51:02:05-51:09:02, 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, 51:63-51:80, 51:82-51:91, 51:94-51:98N, 51:100-51:130, 51:132-51:142, 51:145-51:147, 51:149N-51:156, 51:158-51:173Q, 52:01:01:01-52:01:04, 52:01:06-52:01:14, 52:01:16-52:13, 52:15-52:24, 52:26-52:39, 53:28, 56:05:01-56:06, 56:21, 58:08:01-58:08:02, 78:01:01-78:07
50	260 bp	800 bp	14, 16, 18, 51, 62, 70	*14:06:01-14:06:02, 14:08:01-14:08:02, 15:37-15:38:02, 15:185, 18:01:01:01-18:01:15, 18:01:17-18:01:20, 18:03-18:09, 18:12-18:13, 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, 18:59-18:68, 18:70-18:100, 18:102-18:103, 39:32, 39:43, 39:48, 40:51, 40:113, 40:163, 51:06:01-51:06:02, 51:45, 51:62, 51:135, 56:31, C*08:51
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, 27:23, 35:01:01:01-35:19, 35:21-35:25, 35:27, 35:29:01-35:62, 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, 37:21, 40:08, 40:13, 40:68?, 40:106?, 40:162?, 40:220?, 40:232?, 44:06, 51:01:01-51:06:02, 51:08:01-51:21, 51:23-51:24:05, 51:26-51:46, 51:48-51:127, 51:129-51:173Q, 52:06:01-52:06:02, 53:01:01-53:08:02, 53:10-53:16, 53:18-53:27, 53:29-53:35, 78:01:01-78:02:02, 78:04, 78:07
52	380 bp	1070 bp	5, 8, 17, 48, 51, 5102, 5103, 52, 57, 58, 59, 61	*08:03, 08:52, 08:78, 27:102, 40:13, 40:19, 40:109, 40:117, 48:18, 49:18, 51:01:01-51:01:07, 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,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

				51:136-51:156, 51:158-51:171, 51:173Q, 52:01:01:01-52:11, 52:13, 52:15-52:19, 52:21-52:24, 52:27-52:38, 53:19, 56:21, 57:02:01-57:03:02, 57:05, 57:07, 57:09, 57:17, 57:39, 57:42, 57:46, 57:57, 57:63, 57:66, 57:70, 58:08:01-58:08:02, 58:27-58:28, 59:02, A*24:146
53	160 bp	1070 bp	44, 51, 54	*08:101, 44:24, 44:181, 51:39, 54:01:01-54:01:05, 54:03-54:04, 54:06-54:32, C*05:30, C*06:125
54⁶	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, 35:45, 35:71, 35:169, 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, 44:02:01:01-44:193, 47:01:01:01-47:01:02, 47:03-47:09, 49:01:01-49:02, 49:04-49:20, 49:22-49:25, 49:27-49:31, 51:42, 51:112, 53:22, 53:30, 57:07, 57:45, 57:51, 57:69, 83:01, A*24:02:37, C*15:25
55	235 bp	1070 bp	7, 703, 27, 35, 40, 48, 60, 61, 81	*07:02:01-07:02:38, 07:02:40-07:06, 07:08-07:11, 07:13, 07:15-07:17, 07:21-07:23, 07:25-07:30, 07:32-07:33:03, 07:35-07:42, 07:44-07:59, 07:61-07:76, 07:79-07:83, 07:85-07:99, 07:101-07:130, 07:132-07:136, 07:138-07:161N, 07:164-07:192, 07:194-07:195, 07:199-07:213, 07:215-07:219, 08:40, 08:79, 13:71, 27:07:01-27:07:04, 27:11, 27:24, 27:32-27:34, 27:43, 35:31, 35:66, 37:07, 40:02:01-40:03, 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, 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, 41:19, 48:01:01-48:01:06, 48:04-48:16, 48:18-48:20, 48:22, 48:24, 48:27-48:34, 51:81, 58:27, 81:01-81:07, C*02:60
56	550 bp	1070 bp	7, 22, 42, 45, 56, 82	*07:04, 07:19, 07:25, 07:146, 08:123, 42:01:01-42:02, 42:04-42:10, 42:12-42:18, 42:20, 44:90, 45:06, 55:20, 55:56, 56:13, 82:01 ^w , 82:02, 82:03 ^w , 83:01
57⁸	640 bp	1070 bp	7, 8, 14, 16, 22, 27, 38, 39, 3901, 3902, 42, 55, 59, 64, 65, 67, 71, 72	*07:19, 07:31, 07:34, 07:43, 08:01:01-08:05, 08:07-08:10, 08:12:01-08:20, 08:22-08:24, 08:26-08:31, 08:33-08:39, 08:41-08:78, 08:80-08:123, 14:01:01-14:06:02, 14:08:01-14:18, 14:20-14:26, 14:28-14:34, 14:36-14:40, 15:69, 15:93, 15:186, 15:252, 18:37, 27:15, 27:28, 27:62, 27:71, 37:28, 38:01:01-38:05, 38:09-38:21, 38:23-38:29, 38:31-38:53, 39:01:01:01-39:01:01:03, 39:01:03-39:01:05, 39:01:07-39:18, 39:20, 39:22-39:31, 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, 39:75-39:92, 42:01:01-42:02, 42:04-42:20, 55:01:01-55:05, 55:10-55:21, 55:23, 55:25-55:34, 55:36-55:50, 55:52-55:64, 56:10, 56:12, 56:18, 56:23, 56:31-56:32, 59:01:01:01-59:03, 59:05, 59:07-59:08, 67:01:01-67:01:03, 67:03-67:05, C*07:46, C*07:356
58⁶	90 bp, 125 bp, 155 bp, 190 bp	1070 bp	5, 17, 45, 51, 56, 60, 61, 78	*07:65, 07:133, 07:206, 39:63, 39:69, 40:43, 40:50, 40:166, 41:27, 44:90, 45:06, 46:40 ^w , 51:20 ^w , 56:05:01, 56:06, 57:45, 57:51, 57:69, 58:08:01, 78:01:01-78:01:02, 78:03, 78:07, A*23:01:14^w
59	460 bp	1070 bp	21, 52, 60, 62	*13:62, 15:01:02, 15:277-15:278, 40:01:06, 40:26, 40:28, 40:95, 44:62, 49:18, 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, 52:26-

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

				52:39, 53:28, 58:08:01-58:08:02, 78:05-78:06
60⁶	105 bp	800 bp	18, 27, 35, 37, 49, 51, 52, 53	*13:58, 15:202, 15:239, 15:308, 18:01:01:01-18:06, 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, 18:80-18:103, 35:20:01-35:20:02, 35:28, 35:72, 35:95, 35:226, 37:01:01-37:01:05, 37:01:07-37:05, 37:07- 37:20, 37:22-37:25, 37:27, 37:29-37:49, 40:185, 40:209, 44:83, 44:134, 49:03, 51:07:01-51:07:02, 52:01:01:01-52:01:12, 52:01:14-52:01:20, 52:03-52:05, 52:07-52:15, 52:17-52:21, 52:24-52:31:02, 52:33-52:39, 53:09, 53:17:01-53:17:02, 53:28, 78:05-78:06
61⁶	90 bp, 120 bp, 150 bp, 180 bp	800 bp	7, 35, 61, 62, 73	*07:11, 07:57, 07:75, 13:39, 13:67, 15:57, 15:135, 27:67, 27:75, 35:27, 35:56, 35:185, 35:203, 37:05, 40:37, 42:15, 44:75, 44:97, 73:01-73:02, 78:06
62	435 bp, 495 bp	1070 bp	39, 42, 55, 56, 67	*07:115, 07:214, 14:21, 38:26, 39:10:01, 39:16, 39:20, 39:63, 39:89, 42:06, 42:20, 51:11N, 55:13, 55:58, 56:11, 56:22, 67:01:01-67:01:03, 67:03-67:05
63^{6,8}	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, 08:71, 13:01:01-13:04, 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, 14:13, 14:23, 15:01:01:01-15:01:04, 15:01:06-15:01:35, 15:03:01-15:05:02, 15:07:01-15:12, 15:14-15:16:03, 15:18:01-15:20, 15:23-15:24:02, 15:26N-15:30, 15:32:01-15:32:02, 15:34-15:35, 15:37-15:40, 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, 15:197-15:203, 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, 15:251-15:264, 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, 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, 27:27, 27:41, 35:01:01:01-35:08:07, 35:10-35:17:02, 35:19-35:30, 35:32:01- 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- 35:173N, 35:175-35:204, 35:206-35:214, 35:216N-35:229, 35:231-35:233, 35:235-35:254, 37:35, 38:01:01-38:21, 38:23- 38:53, 39:01:01:01-39:01:01:03, 39:01:03-39:16, 39:18-39:20, 39:22-39:67, 39:69-39:92, 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, 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, 45:09, 45:14, 46:01:01-46:01:05, 46:01:07-46:01:16, 46:01:18-46:05, 46:07N-46:44, 46:46-46:53, 46:55N-46:57, 48:02:01-48:02:03, 48:12, 48:14, 48:25, 48:29, 49:04, 51:01:01-51:09:02, 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, 52:01:01:01-52:25, 52:27-52:39, 53:01:01-53:06, 53:08:01-53:35, 54:01:01-54:10, 54:12-54:14, 54:16-54:32, 55:01:01-55:03, 55:05, 55:07, 55:09-55:19, 55:21- 55:40, 55:42-55:48, 55:50, 55:52-55:57, 55:59-55:64, 56:01:01- 56:01:03, 56:01:05-56:19N, 56:21-56:43, 57:01:01-57:01:04, 57:01:06-57:03:02, 57:06-57:12, 57:14-57:30, 57:33-57:40,

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

		57:42-57:46, 57:48-57:70, 58:01:01-58:01:02, 58:01:04-58:02, 58:04-58:26, 58:28-58:29, 58:31N-58:45:02, 58:47-58:59, 59:01:01:01-59:01:01:02, 59:03-59:08, 67:01:01-67:02, 67:04-67:05, 78:01:01-78:07, 82:01-82:03
64 ¹⁵	-	Negative Control

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of 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 inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 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.

³The 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.

⁴For 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.

⁵Only 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 primer mixes 1, 3, 4, 6 to 8, 13, 14, 17, 19 to 21, 25, 26, 29, 31, 40 to 43, 45, 50, 52 to 55, 57 and 58.

⁶HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁷Primer 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.

⁸Primer mixes 4, 5, 39, 45, 57 and 63 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes.

⁹Primer mixes 1, 19, 20, 26 and 45 have a tendency to giving rise to primer oligomer formation.

¹⁰Primer mix 13 may have tendencies of unspecific amplifications.

¹¹The C*17:01 to C*17:04 alleles might be faintly amplified by primer mix 25.

¹²Primer mixes 32 and 43 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

¹³Primer 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.

¹⁴The Bw4-associated HLA-A specificities A9, A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 46.

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: 32X

Lot-specific information

¹⁵Primer mix 64 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by control primer pairs. PCR product sizes range from 75 to 200 base pairs. The PCR product generated by the control primer pair is 430 base pairs.

¹⁶Primer mix 4 amplifies the B*15:143, 35:19, 40:170, 44:07 and 50:07 alleles in addition to the alleles specified in the table.

¹⁷Primer mix 26 amplifies the B*37:06:01-37:06:02 alleles in addition to the alleles specified in the table.

‘w’, might be weakly amplified.

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

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	110	215	140	130	185	190	290	165	390	180	100	280
PCR product			235	265	235			225			195	
								285				
								330				
Length of int.	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070
pos. control ¹												
5'-primer(s) ²	527	97	209	103	103	103	45	45	45	420	206	419
	5'-TgA 3'	5'-TCg 3'	5'-ggC 3'	5'-CCg 3'	5'-CCT 3'	5'-CCg 3'	5'-ggA 3'	5'-ggA 3'	5'-ggA 3'	5'-TTA 3'	5'-AgA 3'	5'-gTC 3'
	540		363	103	103	418		357			420	
	5'-gAC 3'		5'-AgC 3'	5'-CCg 3'	5'-CCT 3'	5'-Agg 3'		5'-Tgg 3'			5'-TTA 3'	
			363	361	363			412				
			5'-AgC 3'	5'-AgT 3'	5'-AAT 3'			5'-ATA 3'				
3'-primer(s) ³	605	272	309	193	246	246	165	206	266	559	256	3 rd I
	5'-gCT 3'	5'-Tgg 3'	5'-gTg 3'	5'-CgT 3'	5'-TAT 3'	5'-TAT 3'	5'-Tgg 3'	5'-CCT 3'	5'-TCC 3'	5'-CTC 3'	5'-CCC 3'	5'-TAT 3'
		272	312	193	246	572		538			272	
		5'-TgA 3'	5'-gCC 3'	5'-CgT 3'	5'-TAT 3'	5'-gCC 3'		5'-gTC 3'			5'-Tgg 3'	
			559	583	559			603			572	
			5'-CAg 3'	5'-gTg 3'	5'-CTC 3'			5'-gTg 3'			5'-gCg 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.	195	105	115	80	150	140	55	210	170	110	395	160
PCR product		395	150				245					425
		435					390					
							415					
Length of int.	1070	1070	1070	1070	800	1070	1070	800	800	1070	1070	1070
pos. control ¹												
5'-primer(s) ²	142	45	161	167	355	206	45	142	409	246	44	44
	5'-TCT 3'	5'-ggA 3'	5'-Cgg 3'	5'-gCT 3'	5'-TCA 3'	5'-gAC 3'	5'-ggA 3'	5'-TCT 3'	5'-ggC 3'	5'-gAA 3'	5'-ggC 3'	5'-ggC 3'
	419	540					368	368	420			357
	5'-gTC 3'	5'-gAC 3'					5'-gTT 3'	5'-gTC 3'	5'-TTA 3'			5'-Tgg 3'
							557					
							5'-ggA 3'					
3'-primer(s) ³	301	272	234	204	463	302	259	311	544	317	272	302
	5'-gTC 3'	5'-TgC 3'	5'-TCT 3'	5'-TCT 3'	5'-gCT 3'	5'-ggC 3'	5'-gTT 3'	5'-ggg 3'	5'-ggT 3'	5'-ggA 3'	5'-TgC 3'	5'-ggC 3'
	301	272	272			312	259	311				302
	5'-gTC 3'	5'-TgT 3'	5'-TgA 3'			5'-AgT 3'	5'-gTT 3'	5'-ggg 3'				5'-ggT 3'
	570	309	272				266	538				477
	5'-CCg 3'	5'-ATC 3'	5'-Tgg 3'				5'-TCC 3'	5'-gTC 3'				5'-gCg 3'
	572	605					272					
	5'-gCg 3'	5'-gCT 3'					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

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec.	180	290	105	325	80	215	130	90	90	145	120	430
PCR product		465			115		270	410	175	430	210	
					160							
					195							
					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	72	540	1 st I	355	141	209	41	209	48	357	49
	5'-TCA 3'	5'-gCT 3'	5'-gAC 3'	5'-CAg 3'	5'-TCA 3'	5'-ATT 3'	5'-ggC 3'	5'-CTg 3'	5'-ggC 3'	5'-gCC 3'	5'-Tgg 3'	5'-CAg 3'
	363	209			418	357	209	368	363	206		
	5'-Agg 3'	5'-ggC 3'			5'-Agg 3'	5'-Tgg 3'	5'-ggg 3'	5'-gTT 3'	5'-AgC 3'	5'-gAA 3'		
					499		355					
					5'-TCT 3'		5'-TCA 3'					
3'-primer(s) ³	499	193	603	282	538	309	299	282	259	309	435	309
	5'-ggA 3'	5'-CgT 3'	5'-gTg 3'	5'-gCC 3'	5'-gTC 3'	5'-ATC 3'	5'-TCA 3'	5'-gCC 3'	5'-gTT 3'	5'-ATC 3'	5'-TCT 3'	5'-ATC 3'
		193	605		572	538	583	418	499		527	
		5'-TgT 3'	5'-gCT 3'		5'-gCg 3'	5'-gTC 3'	5'-gTg 3'	5'-gTC 3'	5'-ggA 3'		5'-CCT 3'	
		387			573							
		5'-TCg 3'			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	1 st I	15	141	97	209	208	206	165	1 st I	1 st I	355
	5'-gAA 3'	5'-CAg 3'	5'-gCA 3'	5'-ATT 3'	5'-TCg 3'	5'-ggC 3'	5'-CgT 3'	5'-gAC 3'	5'-ACC 3'	5'-CAg 3'	5'-CAg 3'	5'-TCA 3'
			418	420	420	209	209		463			363
			5'-Agg 3'	5'-TTA 3'	5'-TTA 3'	5'-ggA 3'	5'-ggA 3'		5'-TgA 3'			5'-AgC 3'
						362	369					
						5'-ggT 3'	5'-TAC 3'					
3'-primer(s) ³	311	259	207	311	259	256	256	259	272	317	311	603
	5'-ggT 3'	5'-CTC 3'	5'-TCC 3'	5'-ggT 3'	5'-gTT 3'	5'-CCC 3'	5'-CTC 3'	5'-gTT 3'	5'-TgC 3'	5'-ggA 3'	5'-ggT 3'	5'-gTg 3'
		259	226	559	559	259	256		538			605
		5'-CTC 3'	5'-CAC 3'	5'-CgT 3'	5'-CAg 3'	5'-CTT 3'	5'-CCC 3'		5'-CCA 3'			5'-gCT 3'
		262	538			263	420					
		5'-TgC 3'	5'-gTC 3'			5'-gTT 3'	5'-gCT 3'					
						559						
						5'-CgT 3'						
Well No.	37	38	39	40	41	42	43	44	45	46	47	48

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

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	235	550	640	90	460	105
PCR product	190					150				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	559	538	559	256	435	272
	5'-CAg 3'	5'-gTg 3'	5'-TgA 3'	5'-gTT 3'	5'-CAC 3'	5'-ggA 3'	5'-CTC 3'	5'-gTC 3'	5'-CgT 3'	5'-CCC 3'	5'-TCT 3'	5'-Tgg 3'
	583					572				292		
	5'-gTg 3'					5'-gCg 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	3 rd 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

¹The 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.

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: 32X

Lot-specific information

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

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

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Lot-specific information

[illegible]

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

CELL LINE VALIDATION SHEET					Well															
HLA-B low resolution SSP kit ²																				
					Well															
					17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
					201329817	201329818	201329819	201329820	201329821	201329822	201329823	201329824	201329825	201329826	201329827	201329828	201329829	201329830	201329831	201329832
Prod. No.:																				
IHCW cell line ¹					B*															
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
101.501-48u/12u – without *Taq* polymerase, IFU-02

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Lot No.: **32X**

Lot-specific information

CELL LINE VALIDATION SHEET																					
HLA-B low resolution SSP kit ²																					
						Well															
						33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
					Prod. No.:	201329833	201329834	201329835	201329836	201329837	201329838	201440039	201329840	201441541	201329842	201329843	201329844	201329845	201329846	201329847	201434948
	IHCW cell line ¹			B*																	
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
101.501-48u/12u – without *Taq* polymerase, IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: 32X

Lot-specific information

Additional 3'-primers in primer solutions 2, 3, 6, 8, 11, 13 to 15, 18, 19, 29, 31, 40, 41 and 58 were tested by separately adding additional 5'-primers.

Additional 5'-primers in primer solutions 1, 3, 6, 14, 19, 21, 25, 29, 31, 40, 41, 48, 54, 58, 59 and 61 were tested by separately adding additional 3'-primers.

In primer solutions 31, 42, 43 and 63 one 5'-primer was not possible to test and in primer solutions 3, 29, 38, 39, 42, 54 and 61 one 3'-primer was not possible to test.

101.501-48/12 – including *Taq* polymerase, IFU-01
101.501-48u/12u – without *Taq* polymerase, IFU-02

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101.501-48u/12u – without *Taq* polymerase, IFU-02

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“Instructions for Use” (IFU)

Lot No.: **32X**

Lot-specific information

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