

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

## Olerup SSP® HLA-A-B-C SSP Combi Tray

**Product number:** 101.702-24/06 – including *Taq* pol.  
101.702-24u/06u – without *Taq* pol.

**Lot number:** 3S2

**Expiry date:** 2027-08-01

**Number of tests:** 24 tests – Product No. 101.702-24/24u  
6 tests – Product No. 101.702-06/06u

**Number of wells per test:** 95+1

**Storage - pre-aliquoted primers:** dark, between -15°C and -25°C

- PCR Master Mix: between -15°C and -25°C
- Adhesive PCR seals RT

### This Product Description is only valid for Lot No. 3S2.

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-A-B-C SSP COMBI TRAY LOT (7R1)

The **HLA-A low resolution** primer set, specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP®* HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 7R1**). The kit design is based on IMGT/HLA database 3.52.0.

The **HLA-A low resolution** primer set is unchanged compared to the previous lot.

The **HLA-B low resolution** primer set, specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP®* HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 7R1**). The kit design is based on IMGT/HLA database 3.52.0.

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

Well	5'-primer	3'-primer	rationale
65	Modified	-	5'-primer modified for improved HLA-specific amplification.



0197

For *In Vitro* Diagnostic Use  
MA123 v02 SSP PI Template  
Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

The **HLA-C low resolution** primer set, specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup* SSP<sup>®</sup> HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 7R1**). The kit design is based on IMGT/HLA database 3.52.0.

The **HLA-C low resolution** primer set is unchanged compared to the previous lot.



0197

For *In Vitro* Diagnostic Use  
MA123 v02 SSP PI Template  
Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

**Lot-specific information**

Well **96** contains Negative Control primer pairs, that will amplify the majority of the Olerup SSP<sup>®</sup> HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.  
 The PCR product generated by the positive control primer pair is 200 base pairs.

Length of PCR product	105	200	105	80	75	80	85
<b>5'-primer<sup>1</sup></b>	<b>164</b>	<b>340</b>	<b>440</b>	<b>45</b>	<b>45</b>	<b>43</b>	<b>36</b>
	5'-CAC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-TTA <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-Tgg <sup>3'</sup>	5'-TAC <sup>3'</sup>
							<b>36</b>
							5'-TAT <sup>3'</sup>
<b>3'-primer<sup>2</sup></b>	<b>231</b>	<b>2<sup>nd</sup> I</b>	<b>507</b>	<b>59</b>	<b>58</b>	<b>57</b>	<b>47</b>
	5'-TgC <sup>3'</sup>	5'-AAA <sup>3'</sup>	5'-TTg <sup>3'</sup>	5'-CTC <sup>3'</sup>	5'-ggC <sup>3'</sup>	5'-CTC <sup>3'</sup>	5'-ACA <sup>3'</sup>
							<b>48</b>
							5'-gCA <sup>3'</sup>
							<b>48</b>
							5'-gCC <sup>3'</sup>
							<b>52</b>
							5'-TgT <sup>3'</sup>
<b>A*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>B*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>C*</b>	<b>+</b>	<b>+</b>	<b>+</b>				
<b>DRB1</b>				<b>+</b>	<b>+</b>		
<b>DRB3</b>				<b>+</b>	<b>+</b>		
<b>DRB5</b>				<b>+</b>			
<b>DQB1</b>					<b>+</b>		
<b>DPB1</b>						<b>+</b>	
<b>DQA1</b>							<b>+</b>

<sup>1</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>2</sup>The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2<sup>nd</sup> or 3<sup>rd</sup> exon or the 2<sup>nd</sup> 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.



**0197**

101.702-24/06 – including *Taq* polymerase  
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## PRODUCT DESCRIPTION

### HLA-A-B-C SSP Combi Tray

#### CONTENT

The primer set contains 5'- and 3'-primers for grouping the HLA-A\*01:01 to A\*80:09N alleles into the corresponding serological groups A1 to A80.

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.

The primer set contains 5'- and 3'-primers for grouping the HLA-C\*01:02 to C\*18:19 alleles into the groups C\*01:xx to C\*18:xx.

#### PLATE LAYOUT

Each test consists of 96 PCR reactions in a 96 well PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	NC

The 96 well PCR plate is marked with ‘A-B-C’ in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘7R1’.

Wells 1 to 24 – HLA-A low resolution primers.

Wells 25 to 72 – HLA-B low resolution primers.

Wells 73 to 95 – HLA-C low resolution primers.

Well 96 – 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-A alleles will be amplified by the 24 wells of the HLA-A low resolution primer set, **wells 1 to 24**, except that a few HLA-B and HLA-C alleles will be amplified by some primer mixes. For further details see Specificity Table.



0197

For *In Vitro* Diagnostic Use

MA123 v02 SSP PI Template

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101.702-24/06 – including *Taq* polymerase  
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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

Only HLA-B alleles will be amplified by the 48 wells of the HLA-B low resolution, primer set, **wells 25 to 72**, except that a few HLA-A and HLA-C alleles will be amplified by some primer mixes. For further details see Specificity Table.

Only HLA-C alleles will be amplified by the 23 wells of the HLA-C low resolution primer set, **wells 73 to 95**, except that a few HLA-A and HLA-B alleles will be amplified by some primer mixes.

For further details see Specificity Table.

## UNIQUELY IDENTIFIED ALLELES

### HLA-A

All alleles, i.e. **A\*01:01 to A\*80:09N**, recognized by the HLA Nomenclature Committee in April 2023<sup>1,2</sup> will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 24**. The HLA-A alleles will be grouped into their corresponding serological specificities<sup>3</sup>.

The HLA-A alleles will be grouped into their low-resolution groups, except that the following alleles give rise to identical amplification patterns:

A*01:26, 01:136, 01:192, 01:380:01:01-01:380:01:02, A*11:94, 11:112, 11:211, 11:290, 11:326	A*23:14:01-23:14:02, 23:104-23:105, A*24:24, 24:71, 24:315, 24:392, 24:527, 24:569
A*01:28, 01:229, 01:299, A*11:282	A*23:66, 23:99, 23:128, 24:14:01:01-24:15, 24:51-24:53, 24:57, 24:64, 24:94, 24:114, 24:138, 24:188, 24:222N, 24:228, 24:291, 24:296, 24:304, 24:316, 24:324, 24:412, 24:481, 24:515, 24:574, B*53:72, C*04:01:03
A*01:43, A*11:271	A*25:78, A*26:57, A*66:15
A*01:427, A*36:02	A*26:92, A*66:42
A*03:215, 03:225, 03:249, 03:322, 03:414, A*25:77	A*30:01:01:01-30:04:04, 30:06-30:07, 30:09:01:01-30:12:02, 30:14L-30:15, 30:17-30:20, 30:23-30:43, 30:45, 30:47-30:54, 30:56-30:88, 30:90-30:124, 30:126-30:139, 30:141-30:149, 30:151-30:162, 30:164-30:176, 30:178N-30:185, 30:187-30:209N, B*07:260, C*12:328
A*11:11, A*34:19	A*31:08, A*33:53
A*11:116, 11:140, 11:199:01-11:199:02, 11:222, A*66:23	A*31:109, A*33:125, 33:131
A*11:325, A*24:555	A*32:03:01:01-32:03:01:02, 32:38, 32:60, 32:71, 32:78, 32:80, 32:107, B*15:642
A*23:11N, A*31:29	A*34:01:01:01-34:01:07, 34:05-34:06, 34:11-34:12, 34:14, 34:16-34:18, 34:23, 34:27, A*66:40

### HLA-B

All alleles, i.e. **B\*07:02 to B\*83:01**, recognized by the HLA Nomenclature Committee in April 2023<sup>1,2</sup> will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into the groups B\*07:xx to B\*83:xx. Most HLA-B alleles will also be grouped according to their serological specificities<sup>3</sup>.

### Notes on Bw assignment

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



0197

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 MA123 v02 SSP PI Template  
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 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

	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<sup>3</sup> 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

The HLA-B alleles will be grouped into their low-resolution groups, except that the following alleles give rise to identical amplification patterns:

B*07:349, B*42:05:01-42:05:02	B*40:496, B*41:62
B*08:26:01-08:26:02, 08:50, 08:62, 08:85, 08:94, 08:242, 08:263, 08:265, 08:272, 08:299, B*42:07, 42:24, 42:26	B*53:30, B*58:111
B*13:35, 13:59, 13:71, 13:108, 13:140, 44:135, 44:158, 44:184	B*53:39, B*57:128, B*58:100
B*14:08:01-14:08:02, 14:55, 39:01:35, 39:30, 39:32-39:33, 39:47, 39:50, 39:74, 39:82, 39:102, 39:107, 39:112, 39:128, 39:136, 39:171, 39:174	B*55:04, 55:08, 55:49, 55:86, 56:01:05, 56:01:13, 56:15, 56:19N, 56:22, 56:88
B*18:29, 18:72:01-18:72:03, 18:92, 18:175, 35:01:55, 35:01:62, 35:32:01-35:32:03, 35:37, 35:53N, 35:64:01-35:64:02, 35:68:01-35:68:02, 35:99, 35:118-35:119, 35:174, 35:369, 35:409, 35:433, 35:523	B*57:67:01, B*58:36

**HLA-C**

All the HLA-C alleles, i.e. **C\*01:02 to C\*18:19**, recognized by the HLA Nomenclature Committee in April 2023<sup>1,2</sup> will be amplified by the primers in the HLA-C low resolution primer set, **wells 73 to 95**. The HLA-C alleles will be grouped into the C\*01:xx to C\*18:xx groups<sup>3</sup>.

The HLA-C alleles will be grouped into their low-resolution groups, except that the following alleles give rise to identical amplification patterns:

C*01:125, 01:218, C*14:58	C*12:02:29, 12:49, 12:123, 12:381, B*18:01:42, B*57:01:24
C*01:169:02, C*03:94	C*12:03:34:01-12:03:34:02, B*15:510, B*35:475
C*03:16, 03:536, B*46:77	C*14:06, 14:08-14:09, 14:28:01-14:28:02, 14:63, 14:105Q, 14:150, A*29:86, A*30:62, A*31:187, A*33:63, B*08:249, B*08:306, B*18:64, B*35:183, B*35:252, B*35:502, B*39:114, B*39:140, B*40:138, B*41:59
C*05:206, C*17:05	C*14:110, 14:147, B*07:239, B*14:03, B*14:112
C*12:02:14-12:02:15, 12:02:19, 12:02:30, 12:02:32, 12:02:34, 12:02:37, 12:02:40, 12:18:02, 12:85:02, 12:222, 12:224, B*67:02:01:01-67:02:01:02	



**0197**

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Lot No.: **3S2**

**Lot-specific information**

<sup>1</sup>HLA-A, HLA-B and HLA-C alleles listed on the IMGT/HLA web page 2023-April-17, release 3.52.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

<sup>2</sup>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>.

<sup>3</sup>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.



**0197**

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 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

## SPECIFICITY TABLE

### HLA-A low resolution primer set

Specificities and sizes of the PCR products of the 24 primer mixes used for HLA-A low resolution SSP typing

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	HLA-A serology <sup>3</sup>	Amplified HLA-A alleles <sup>4,5</sup>
<b>1<sup>5</sup></b>	120 bp, 145 bp, 225 bp	<b>800 bp</b>	1, 36	*01:01:01:01-01:04:01:02N, 01:06-01:33, 01:35-01:431, 03:18, 03:135, 03:395, 11:94, 11:112, 11:211, 11:226, 11:271, 11:282, 11:290, 11:326, 25:59, 26:120, 31:200, 32:156, 36:01:01:01-36:13
<b>2</b>	135 bp, 175 bp, 215 bp, 255 bp, 365 bp, 415 bp	<b>800 bp</b>	2, 203, 210, 19, 28,	*02:01:01:01-02:01:07, 02:01:09-02:01:15, 02:01:17-02:01:19, 02:01:21-02:01:81, 02:01:83-02:22:02, 02:24:01-02:35:01, 02:35:03-02:47, 02:49:01-02:77, 02:78 <sup>w</sup> , 02:79:01-02:97:02, 02:99:01-02:99:02, 02:101:01-02:128, 02:130-02:570:02, 02:572-02:643N, 02:645-02:828, 02:830:01-02:1099, 03:89:01, 30:13, 30:16, 30:22, 30:44, 30:46, <b>B*35:01:60<sup>w</sup>, B*58:01:24<sup>w</sup></b>
<b>3<sup>6</sup></b>	205 bp, 235 bp	1070 bp	1, 3, 11, 31, 32, 34, 36	*01:12, 01:19, 01:21, 01:126, 01:200, 01:244, 01:360, 01:427, 03:01:01:01-03:17:02, 03:19-03:74, 03:76-03:94, 03:96-03:134, 03:136-03:176, 03:178N-03:186, 03:188-03:193, 03:195-03:199, 03:201-03:214, 03:216-03:224, 03:226-03:248, 03:250-03:259, 03:261-03:321, 03:323N-03:342N, 03:344:01-03:346, 03:348-03:376, 03:378-03:413, 03:415-03:460, 11:03:01:01-11:03:01:02, 11:20, 11:25:01-11:25:03, 11:60, 11:130, 11:158, 11:175, 11:183, 11:209, 11:348, 11:366, 11:381, 24:92, 24:458, 24:551, 24:557, 31:03 <sup>w</sup> -31:04:02 <sup>w</sup> , 31:176 <sup>w</sup> , 31:179 <sup>w</sup> , 31:220 <sup>w</sup> , 32:04, 32:142, 33:49 <sup>w</sup> , 33:144 <sup>w</sup> , 33:179 <sup>w</sup> , 33:201 <sup>w</sup> , 34:02:01:01-34:04, 34:07-34:10N, 34:13, 34:15, 34:20-34:22, 34:24-34:26N, 34:28-34:30N, 36:02, 68:103:01-68:103:02, 74:23
<b>4</b>	190 bp	<b>800 bp</b>	1, 3, 11, 30, 36, 68	*01:01:01:01-01:01:22, 01:01:24-01:01:47, 01:01:49-01:01:64, 01:01:67-01:01:78, 01:01:80-01:04:01:02N, 01:06-01:07, 01:09:01:01-01:11N, 01:13, 01:15N <sup>w</sup> , 01:16N-01:18N, 01:20-01:29, 01:31N-01:33, 01:35-01:78, 01:80-01:98, 01:100-01:144, 01:146, 01:148, 01:150-01:158, 01:160N-01:166, 01:168-01:177, 01:179N-01:199, 01:201-01:204, 01:206-01:207, 01:209-01:213, 01:215-01:227, 01:229-01:235, 01:237-01:243, 01:245-01:266:02, 01:268-01:270, 01:272-01:278, 01:280-01:313, 01:315-01:375, 01:377-01:390, 01:392-01:395, 01:397-01:402, 01:404-01:417N, 01:419-01:426, 01:428-01:431, 02:78, 02:169, 02:829, 03:12, 03:18, 03:88, 03:135, 11:01:01:01-11:27, 11:29-11:52Q, 11:54:01-11:444, 24:555, 25:43, 25:59, 26:19, 26:72, 26:184, 26:204:01:01-26:204:01:02, 29:67, 29:156, 30:08:01-30:08:02,



**0197**

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MA123 v02 SSP PI Template  
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101.702-24/06 – including *Taq* polymerase  
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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				30:150, 32:64, 34:19, 36:04, 66:23, 68:13:01, 68:66:01-68:66:02, 68:134, 68:178, 74:19, <b>C*03:365, C*12:131</b>
<b>5</b>	160 bp, 335 bp, 505 bp	1070 bp	3, 9, 23, 24, 2403, 29, 31, 32	*01:301Q, 03:15, 03:19, 03:30, 03:152, 03:273, 03:347, 11:139, 11:325, 23:01:01:01-23:68, 23:70-23:112, 23:114-23:130, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17:01:01-24:64, 24:66-24:210, 24:212-24:470, 24:472-24:600, 25:81-25:82, 29:07, 29:49, 31:08, 31:29, 32:05, 32:79, 32:170, 33:19, 33:53, 33:187, 34:31, 68:249, <b>B*53:72, C*04:01:03</b>
<b>6<sup>7,9</sup></b>	135 bp, 200 bp	<b>800 bp</b>	9, 23, 24, 29, 80	*23:01:01:01-23:56, 23:58-23:65, 23:67-23:68, 23:70-23:98, 23:100-23:112, 23:114-23:127, 23:129-23:130, 24:24, 24:71, 24:315, 24:392, 24:527, 24:569, 29:07, 29:49, 31:29, 31:85, 32:72, 32:170, 33:187, 80:01:01:01-80:09N, <b>B*18:27</b>
<b>7<sup>12</sup></b>	175 bp, 205 bp	1070 bp	2, 3, 9, 23, 24, 2403, 26	*01:301Q, 02:17:02:01 <sup>w</sup> -02:17:04 <sup>w</sup> , 02:804, 03:347, 11:139, 23:14:01-23:14:02, 23:104-23:105, 24:02:01:01-24:11N, 24:13:01-24:13:03, 24:17:01:01-24:50, 24:54-24:56:02, 24:58-24:63, 24:66-24:91, 24:93, 24:95-24:113, 24:115-24:137, 24:139-24:187, 24:189-24:210, 24:212-24:221, 24:223-24:227, 24:229-24:290, 24:292-24:295, 24:297-24:303N, 24:305-24:315, 24:317-24:323N, 24:325-24:411, 24:413-24:457, 24:459:01-24:470, 24:472-24:480, 24:482-24:514N, 24:516-24:550, 24:552-24:554, 24:556N, 24:558-24:573, 24:575-24:600, 26:16, 30:163, 33:19, 33:119, 68:45, 68:117
<b>8</b>	165 bp, 200 bp	<b>800 bp</b>	2, 3, 10, 11, 25, 26, 28, 32, 34, 66, 68, 69	*01:51, 01:344, 01:381, 02:55, 02:527, 02:582, 02:644, 02:741, 02:815, 03:24, 03:50, 11:10, 11:183, 11:191, 11:269, 25:01:01:01-25:16, 25:18-25:33, 25:35-25:45, 25:47-25:53, 25:55-25:58, 25:60-25:70, 25:72-25:76:02, 25:78-25:80, 25:84-25:85, 26:01:01:01-26:01:47, 26:01:49-26:03:01:02, 26:03:03-26:06, 26:08:01:01-26:15, 26:17-26:18, 26:20:01-26:43:02, 26:45-26:63, 26:65-26:71N, 26:73-26:88, 26:90-26:91, 26:93-26:176, 26:178-26:183, 26:185-26:206:02N, 26:208-26:232, 29:28, 32:15, 33:51, 34:01:01:01-34:18, 34:20-34:31, 66:01:01:01-66:22, 66:24-66:41, 66:43-66:47, 68:01:01:01-68:177, 68:179-68:249, 68:251N-68:300, 69:01:01:01-69:09
<b>9<sup>5,8</sup></b>	80 bp	<b>800 bp</b>	2, 3, 25, 32	*01:298, 02:81, 02:124, 02:829, 25:01:01:01-25:45, 25:47-25:58, 25:60-25:76:02, 25:79-25:80, 25:83-25:85, 32:01:01:01-32:02, 32:04, 32:06-32:37, 32:39-32:59, 32:61-32:70, 32:72-32:77, 32:81-32:106:01:02, 32:108-32:174, <b>B*07:81, B*08:52, B*18:67, B*38:41, B*38:67, B*49:67, B*51:185, B*53:05:01-53:05:02, B*53:16, B*53:33, B*57:01:38, B*57:60</b>
<b>10<sup>5,9</sup></b>	80 bp, 200 bp, 240 bp	<b>800 bp</b>	10, 26, 43	*01:43, 01:51, 02:644, 11:17, 11:40, 11:223, 11:271, 25:59, 26:01:01:01-26:02:02, 26:04, 26:07:01-26:20:02, 26:22-26:29, 26:31-26:43:02, 26:45-26:56, 26:58-26:77, 26:79-26:91,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

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Lot No.: **3S2**

Lot-specific information

				26:93-26:110, 26:112:01-26:176, 26:178-26:226, 26:228, 26:230N-26:232, 29:105, 29:164, 33:13, 33:48, 43:01-43:03, 68:84, 68:227
<b>11<sup>5</sup></b>	80 bp, 175 bp, 500 bp	1070 bp	1, 9, 10, 11, 26, 34, 66	*01:13, 01:26, 01:28, 01:136, 01:176, 01:192, 01:229, 01:299, 01:380:01:01-01:380:01:02, 03:63, 03:88, 11:01:01:01-11:27, 11:29-11:52Q, 11:54:01-11:270, 11:272Q-11:444, 24:19, 24:44, 24:555, 26:03:01:01-26:03:01:02, 26:03:03, 26:06, 26:21, 26:78, 26:92, 26:111, 26:152, 26:177, 26:193, 26:229, 30:125, 30:140, 33:184, 34:01:01:01-34:08, 34:10N-34:31, 66:01:01:01-66:01:07, 66:04-66:11, 66:13-66:14, 66:17-66:20, 66:22-66:24, 66:27N, 66:29-66:33, 66:35-66:38, 66:40-66:42, 66:44-66:47, 68:271, 69:02, 74:30, 80:02
<b>12<sup>5</sup></b>	125 bp, 160 bp, 190 bp	<b>800 bp</b>	3, 10, 25, 26, 31, 34, 43, 66	*01:01:56, 01:361N, 02:309, 02:454, 03:01:19, 03:103:02, 11:11, 25:05-25:06, 26:09, 26:54, 26:91, 26:217, 26:229, 26:231, 31:03-31:04:02, 31:123, 34:01:01:01-34:31, 43:01-43:03, 66:02:01:01-66:03:01:03, 66:16, 66:19, 66:21, 66:25-66:26Q, 66:28N, 66:34, 66:39N-66:40, 66:43, 68:130:01, 68:294, 74:01:03
<b>13<sup>9</sup></b>	180 bp, 225 bp	1070 bp	1, 2, 3, 10, 25, 26, 34, 43, 66	*01:13, 01:176, 01:194, 02:34-02:35:03, 02:56:01-02:56:02, 02:62, 02:103, 02:135, 02:580, 02:741, 02:907, 03:01:01:01-03:01:22, 03:01:24-03:01:82, 03:01:84-03:01:93, 03:01:95-03:07:02, 03:09-03:11N, 03:13-03:31, 03:33-03:35, 03:37-03:40, 03:42-03:56:01:02, 03:58, 03:60-03:71, 03:73-03:87, 03:90-03:106, 03:109-03:110, 03:112-03:141, 03:143-03:151, 03:153-03:171, 03:174-03:175, 03:177, 03:179-03:193, 03:195-03:197:02N, 03:201-03:202, 03:204, 03:206-03:210, 03:212-03:218, 03:220-03:251, 03:253-03:259, 03:261-03:266N, 03:268-03:272, 03:274-03:329N, 03:331-03:381N, 03:383-03:397, 03:399-03:412, 03:414-03:428, 03:430-03:460, 11:116, 11:140, 11:199:01-11:199:03, 11:222, 25:01:01:01-25:05, 25:07-25:35, 25:37-25:42N, 25:44-25:49N, 25:51, 25:53-25:58, 25:60-25:64, 25:66-25:85, 26:01:01:01-26:01:78, 26:02:01 <sup>w</sup> -26:02:02 <sup>w</sup> , 26:03:01:01-26:03:01:02, 26:03:03, 26:05-26:08:03, 26:10-26:28, 26:29 <sup>w</sup> , 26:30-26:43:02, 26:45-26:48, 26:49 <sup>w</sup> , 26:50-26:74, 26:76-26:77, 26:79-26:90, 26:92-26:203, 26:206:01N-26:232, 30:55, 30:186, 31:24-31:25, 32:26:01-32:26:02, 32:152, 33:61, 33:190, 34:08, 43:01-43:03, 66:01:01:01-66:01:07, 66:04-66:09, 66:10 <sup>w</sup> , 66:11-66:15, 66:17-66:20, 66:22-66:24, 66:27N, 66:29-66:33, 66:35-66:38, 66:41-66:42, 66:44-66:47, 68:71, 69:07, 74:13, 74:37
<b>14<sup>5,9</sup></b>	80 bp, 115 bp, 200 bp, 240 bp, 460 bp	1070 bp	3, 26, 29, 31, 34, 36, 68	*01:427, 02:237, 02:309, 02:454, 02:809, 02:927, 03:01:38, 03:95, 03:123:02, 03:171, 03:231:01, 03:343, 03:428, 11:130, 26:19, 26:22, 26:198, 29:01:01:01-29:175Q, 31:03-31:04:02, 31:123, 32:42, 34:04, 36:02, 66:09, 68:19, 68:130:02



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

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Lot No.: **3S2**

Lot-specific information

<b>15<sup>5,11,12</sup></b>	90 bp, 135 bp, 205 bp	1070 bp	1, 30	*01:13, 01:28, 01:176, 01:194, 01:229, 01:299, 03:43, 03:82, 03:186, 03:395, 11:113, 11:162, 11:282, 30:01:01:01-30:04:04, 30:06-30:20, 30:22- 30:209N, 31:35, <b>B*07:260, C*12:328</b>
<b>16</b>	145 bp, 165 bp, 240 bp, 380 bp, 410 bp	1070 bp	24, 31, 32	*02:237, 02:809, 02:927, 03:95, 03:343, 11:306, 11:440, 23:11N, 24:586N, 29:14, 29:172, 31:01:02:01-31:220, 32:05, 32:79, 32:128, 33:53, 33:125, 33:131, 74:13, 74:44
<b>17<sup>12</sup></b>	140 bp, 180 bp, 240 bp, 260 bp	1070 bp	1, 3, 25, 32, 74	*01:07, 01:95, 01:289, 01:298, 03:32, 03:43, 03:82, 03:152, 03:186, 03:219, 03:273, 03:429, 23:64, 24:104, 24:243, 25:03, 25:30, 29:13, 29:39, 29:98, 30:89, 30:177, 31:21, 31:35, 32:01:01:01-32:174, 74:07, 74:33, 80:04, <b>B*15:642</b>
<b>18</b>	200 bp, 390 bp	1070 bp	24, 31, 32, 33, 68, 74	*02:243:01-02:243:03, 02:929, 24:82, 26:177, 26:207, 29:48, 29:105, 29:164, 31:08, 31:109, 32:05, 32:15, 32:79, 32:93, 33:01:01:01-33:01:18, 33:03:01:01-33:37, 33:39-33:242, 68:29, 68:250, 74:04, 74:21, 74:43
<b>19</b>	370 bp	<b>800 bp</b>	2, 19, 68, 74	*01:121, 02:65, 02:407, 02:449, 02:932, 03:246, 03:282, 11:07:02, 11:372, 68:25, 68:262, 74:01:01:01-74:44
<b>20<sup>9,12</sup></b>	210 bp, 240 bp	<b>800 bp</b>	2, 25, 28, 68	*02:34-02:35:03, 02:46, 02:48, 02:56:01-02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 02:571, 02:580, 02:651, 02:741, 02:907, 02:1050, 02:1095, 11:199:03, 25:05, 25:59, 26:54, 26:122, 26:229, 68:01:01:01-68:217, 68:219-68:257, 68:259-68:300
<b>21<sup>5</sup></b>	65 bp, 240 bp, 375 bp, 545 bp	<b>800 bp</b>	2, 23, 24, 26, 28, 32, 66, 68, 69	*02:55, 02:149:01-02:149:02, 02:243:01-02:243:03, 02:309, 02:644, 02:741, 02:815, 02:842, 02:947, 23:57, 24:82, 25:30, 26:22, 26:177, 29:80, 29:155, 31:41, 32:06, 33:22, 66:06, 66:09, 68:08:02, 68:29, 68:105:01:01-68:105:01:02, 68:157, 68:250, 68:276Q, 69:01:01:01-69:09, 74:35
<b>22<sup>5,10,12</sup></b>	85 bp, 240 bp, 400 bp	<b>800 bp</b>	2, 23, 34 36, 68	*01:427, 02:34-02:35:03, 02:46, 02:48, 02:56:01- 02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 02:571, 02:576, 02:580, 02:682, 02:741, 02:907, 02:1050, 02:1095, 03:187, 11:155, 11:199:03, 11:226, 29:174, 31:62, 34:22, 36:01:01:01-36:13, 68:11N, 68:41, 68:230, <b>B*07:439, B*35:491, B*40:359, B*55:96, B*57:65, C*04:31, C*06:137, C*07:569, C*07:990, C*07:994</b>
<b>23<sup>5,9</sup></b>	80 bp, 160 bp, 240 bp, 495 bp	<b>800 bp</b>	2, 3, 24, 26, 28, 36, 68, 80	*01:427, 02:55, 02:237, 02:671, 02:809, 02:927, 03:41, 03:63, 03:75, 03:88, 03:95, 03:177, 03:343, 03:347, 03:377, 03:382, 11:130, 24:18, 24:204, 24:213, 26:03:01:01-26:03:01:02, 26:03:03, 26:05- 26:06, 26:21, 26:30, 26:78, 26:111, 26:177, 26:227, 26:229, 33:24, 33:184, 36:02, 68:05, 68:15, 68:20, 68:109, 68:136, 68:255, 80:01:01:01-80:01:02, 80:03-80:09N, <b>C*06:187</b>
<b>24<sup>11,12</sup></b>	360 bp, 445 bp	1070 bp	10, 26, 31, 66	*02:135, 02:309, 02:454, 03:01:19, 03:103:02, 25:13, 25:46, 25:82-25:83, 26:07:01-26:07:02, 26:30, 26:65, 26:92, 31:04:01:01-31:04:02, 31:123, 34:09, 66:02:01:01-66:03:01:03, 66:12, 66:16,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

Lot-specific information

66:21, 66:25-66:26Q, 66:28N, 66:34, 66:39N,  
 66:42-66:43, 68:294, 74:01:03

<sup>1</sup>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-A 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.

<sup>2</sup>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.

<sup>3</sup>The serological reactivity of all HLA-A 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.

<sup>4</sup>For several HLA Class I alleles 1<sup>st</sup> and/or 4<sup>th</sup> 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.

<sup>5</sup>HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

<sup>6</sup>Primer mix 3 may faintly amplify the A\*30:04:01:01-30:04:03, 30:06, 30:09:01:01-30:09:01:02, 30:17, 30:29, 30:46, 30:77, 30:89-30:90, 30:99, 30:103, 30:105, 30:117, 30:139, 30:150, 30:155, 30:160 and 30:183 alleles.

<sup>7</sup>Primer mix 6 may give rise to a lower yield of A\*23 alleles than the other A low primer mixes.

<sup>8</sup>Primer mix 9 may weakly amplify the A\*34 alleles.

<sup>9</sup>Primer mixes 6, 10, 13, 14, 20 and 23 have a tendency to giving rise to primer oligomer formation.

<sup>10</sup>Primer mix 22 might faintly amplify most A\*11 alleles.

<sup>11</sup>Primer mixes 15 and 24 may give rise to a lower yield of HLA-specific PCR product than the other HLA-A low primer mixes.

<sup>12</sup>Primer mixes 7, 15, 17, 20, 22 and 24 may have tendencies of unspecific amplifications.

Abbreviations

w: might be weakly amplified.



**0197**

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Lot No.: **3S2**

Lot-specific information

## SPECIFICITY TABLE

### HLA-B low resolution primer set

Specificities and sizes of the PCR products of the 48 primer mixes used for  
HLA-B low resolution SSP typing

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	HLA-B serol. <sup>3</sup>	Amplified HLA-B alleles <sup>4</sup>
<b>25<sup>5,9</sup></b>	110 bp	<b>800 bp</b>	7, 703, 35, 40, 41, 42, 48, 61	*07:02:01:01-07:02:05, 07:02:07-07:02:84, 07:02:86-07:18:02, 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, 07:302-07:342, 07:344-07:345, 07:347-07:358, 07:360Q-07:362, 07:364-07:385, 07:387, 07:389-07:406, 07:408-07:410, 07:412-07:419, 07:421-07:441, 07:443-07:467Q, 07:469N-07:478, 08:79:01-08:79:02, 08:156, 08:187, 13:174, 15:138, 15:230, 15:241, 15:297, 35:66, 37:07, 40:15-40:16:01:02, 40:23, 40:32, 40:98, 40:128, 40:136, 40:158, 40:183, 40:198, 40:231, 40:279, 40:355, 40:466, 41:08, 42:05:01-42:05:02, 44:150, 46:87, 48:05, 48:08, 48:15, <b>C*02:23, C*03:260, C*04:77</b>
<b>26</b>	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, 08:133-08:225, 08:227, 08:229-08:238, 08:240-08:241, 08:243-08:262, 08:264, 08:266-08:271, 08:273-08:294, 08:296-08:298, 08:300Q-08:308, 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, <b>C*06:147</b>
<b>27<sup>9</sup></b>	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 50, 61, 62, 77	*07:20, 07:24, 07:60, 07:100, 07:131, 07:220, 07:223, 07:358, 07:464, 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, 13:99-13:179, 15:07:01:01-15:07:03, 15:36 <sup>w</sup> , 15:45, 15:55, 15:68, 15:89:01 <sup>w</sup> -15:89:02 <sup>w</sup> , 15:126, 15:197:02, 15:207, 15:324, 15:329, 15:331, 15:360, 15:383, 15:405, 15:431, 15:450, 15:524, 15:661, 35:05:01:01-35:05:06, 35:16-35:17:05, 35:22:01:01-35:22:01:02, 35:30:01:01-35:30:01:02, 35:51:01-35:51:02, 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, 35:416, 35:427N, 35:440, 35:459N, 35:472, 35:481, 35:498-35:499, 35:509, 35:519, 35:525, 35:541, 35:572, 35:576, 40:05:01:01-40:05:02, 40:71, 40:174, 40:496, 41:62, 44:08 <sup>w</sup> , 44:54, 44:57 <sup>w</sup> , 44:60, 44:106, 44:110, 44:135, 44:158, 44:184, 44:211, 44:213, 46:12, 51:64, 51:148, 53:14, 53:67, 55:51, 58:18, <b>C*03:05:01:01-03:05:01:03, 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, C*03:482, C*03:494, C*03:555</b>
<b>28<sup>5,6,7</sup></b>	105 bp, 140 bp, 260 bp	<b>800 bp</b>	12, 13, 14, 15, 17, 18, 21, 27, 35, 39, 40, 41, 44, 45, 47,	*07:68:01-07:68:03, 07:100, 07:218, 07:220, 07:237, 07:262:01-07:262:02, 07:424, 08:71, 08:118, 08:274, 08:296, 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, 13:102 <sup>w</sup> , 13:103N-13:105, 13:107-13:179,



**0197**

For *In Vitro* Diagnostic Use  
MA123 v02 SSP PI Template  
Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

Lot-specific information

48, 49, 50, 57, 58, 60, 61, 62, 64, 65	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, 14:57-14:95, 14:97-14:101N, 14:103-14:119, 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, 15:510, 15:559, 15:588, 15:661, 18:14, 18:44:01-18:44:02, 18:107, 27:32, 27:106, 27:138, 27:180, 27:224, 35:05:01:01-35:05:06, 35:22:01:01- 35:22:01:02, 35:46-35:47, 35:51:01-35:51:02, 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, 35:416, 35:427N, 35:440, 35:450, 35:459N, 35:472, 35:475, 35:481, 35:498-35:499, 35:509, 35:519, 35:540- 35:541, 35:572, 38:19, 39:03:01:01-39:03:02, 39:14:01:01- 39:14:01:03, 39:24:01-39:24:03, 39:29, 39:37:01:01- 39:37:01:02, 39:76, 39:79, 39:120, 39:144, 39:152, 39:182, 39:184-39:185, 40:01:01-40:01:39, 40:01:41-40:01:82, 40:07, 40:10:01:01-40:10:02, 40:14:01-40:16:01:02, 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, 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, 40:245:01-40:245:02, 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, 40:323:01-40:327, 40:329, 40:332-40:333, 40:336, 40:338N- 40:339, 40:342, 40:344, 40:346, 40:352-40:353:02, 40:355, 40:357-40:358, 40:360, 40:367-40:368, 40:370, 40:372N, 40:377, 40:379:01:01-40:383, 40:385-40:386, 40:391-40:392, 40:394-40:398, 40:400-40:404, 40:406-40:407, 40:416-40:422, 40:424, 40:426N, 40:428N, 40:431, 40:433, 40:436, 40:439, 40:443, 40:446-40:450, 40:452, 40:456, 40:461-40:463, 40:466, 40:469-40:470, 40:474-40:475:02, 40:477, 40:479- 40:480, 40:483N, 40:485-40:486, 40:490-40:491, 40:495- 40:499, 40:501-40:503, 40:506N-40:510N, 40:512-40:513, 40:516-40:517, 40:523-40:525, 40:528, 40:530, 40:538, 41:01:01:01-41:58, 41:60-41:69, 41:71-41:81, 42:10, 42:17, 44:02:01:01-44:02:31, 44:02:33-44:02:39, 44:02:41-44:02:56, 44:02:58-44:02:60, 44:02:61 <sup>w</sup> , 44:02:62-44:03:06, 44:03:08- 44:03:18, 44:03:21-44:03:30, 44:03:32-44:03:59, 44:03:61- 44:05:06, 44:07-44:48:02, 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, 44:231 <sup>w</sup> , 44:232- 44:245:02, 44:247-44:321, 44:322 <sup>w</sup> , 44:323-44:373, 44:437- 44:444, 44:446-44:524, 44:526-44:527, 44:528 <sup>w</sup> , 44:529- 44:546, 45:01:01:01-45:25, 45:27-45:30, 46:12, 46:84, 47:01:01:02-47:12, 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, 49:32-49:67,
---	---



0197

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

Lot-specific information

				49:69-49:76, 49:78-49:80, 50:01:01:01-50:02:01:02, 50:04:01-50:22, 50:31-50:33, 50:35-50:42, 50:44-50:70, 50:72N-50:79, 51:64, 51:203, 51:276, 52:106, 53:14, 53:30, 53:67, 54:38, 55:110, 56:67, 57:11, 57:45, 57:51, 57:69, 57:71, 57:88, 58:02:01:01-58:02:02, 58:06-58:07, 58:18, 58:25, 58:38, 58:43, 58:60, 58:104, 58:111, 58:132, <b>A*23:128, 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</b>
<b>29<sup>7</sup></b>	185 bp, 235 bp	<b>800 bp</b>	7, 16, 17, 27, 2708, 37, 38, 39, 3901, 3902, 64, 67	*07:02:32, 07:85:02, 07:197, 14:01:01:01-14:01:05, 14:01:07-14:01:14, 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, 14:71, 14:77-14:78, 14:80-14:83, 14:86-14:87, 14:95, 14:97, 14:102-14:105, 14:108Q, 14:112-14:113N, 14:117, 18:01:37, 18:165, 27:01-27:05:15, 27:05:17-27:05:19, 27:05:21-27:05:37, 27:05:39-27:06:02, 27:07:04, 27:08-27:10, 27:12:01:01-27:13:02, 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, 27:181-27:186, 27:188-27:212N, 27:214, 27:216-27:217, 27:220-27:232, 27:234-27:243N, 27:245-27:248, 27:250, 27:252-27:265, 37:02, 38:01:01:01-38:01:07, 38:01:09-38:01:18, 38:01:20-38:02:02:02, 38:02:04-38:03, 38:07-38:24, 38:26-38:32, 38:34N-38:83N, 38:84 <sup>w</sup> , 38:85-38:88, 38:90-38:107, 38:160-38:173Q, 39:01:01:01-39:01:01:29, 39:01:03:01-39:01:08, 39:01:10-39:01:25, 39:01:27-39:01:29, 39:01:31-39:01:37, 39:01:39-39:02:01:02, 39:03:01:01-39:03:02, 39:05:01:01-39:06:02:08, 39:06:04-39:09:05, 39:11, 39:14:01:01-39:15, 39:18, 39:19:02, 39:22, 39:24:01-39:24:02, 39:25N-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, 39:83:02, 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, 39:134-39:142N, 39:144, 39:146N-39:161N, 39:163, 39:165-39:169, 39:171-39:174, 39:176-39:177, 39:178 <sup>w</sup> , 39:179, 39:182-39:183, 39:185, 39:187-39:195, 40:02:38, 40:225:02, 40:429, 40:469, 47:04-47:05, 48:21, 48:26, 67:01:01, 67:03-67:04, 67:06-67:07
<b>30</b>	190 bp	<b>800 bp</b>	7, 14, 35, 38, 39, 44, 47, 57, 62, 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, 14:42:02-14:45, 14:48, 14:50-14:52, 14:56-14:64, 14:67-14:70Q, 14:72N-14:76N, 14:79N, 14:84-14:85N, 14:88-14:94, 14:96, 14:98-14:101N, 14:106-14:107, 14:109, 14:111, 14:114-14:116, 14:118-14:119, 15:77, 15:189:01-15:189:02, 15:233, 18:166, 27:227, 35:01:64, 35:03:17, 35:26, 35:29:03, 38:05, 38:33, 39:04, 39:129, 40:414, 40:498, 44:16, 44:37:01-44:37:03, 44:64:01-44:64:02, 44:91, 44:132, 44:150, 44:190, 44:268, 44:275, 44:290, 44:347, 49:61, 51:01:68, 51:261, 51:274, 52:26, 57:04:01-57:04:03, 58:114, <b>A*23:31, A*24:106, C*01:115, C*02:97, C*03:433, C*03:514, C*04:439, C*06:306, C*07:231, C*14:79, C*16:10</b>
<b>31</b>	290 bp	<b>1070 bp</b>	15, 22, 46, 62, 63, 71,	*15:01:01:01-15:01:03, 15:01:06-15:01:53, 15:01:55-15:02:13, 15:03:03, 15:04:01:01-15:08:02, 15:10:02, 15:11:01-15:11:03,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

			72, 75, 76, 77	15:11:05-15:15:01:02, 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, 15:73:01:01-15:73:01:02, 15:75-15:79N, 15:81-15:89:02, 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, 15:125:01-15:126, 15:128-15:129, 15:135-15:150, 15:152, 15:154-15:155, 15:157, 15:159-15:160:01:02, 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, 15:256-15:262:02N, 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, 15:476-15:486, 15:488-15:497, 15:499-15:501, 15:504:02-15:505, 15:507-15:508, 15:510, 15:512-15:514, 15:516, 15:518-15:525, 15:528N-15:529, 15:531-15:538, 15:540N-15:545, 15:547, 15:549N, 15:551-15:552, 15:554-15:558, 15:561-15:562N, 15:564-15:569, 15:572, 15:574-15:581, 15:583-15:587, 15:589-15:601, 15:603-15:606, 15:608-15:609, 15:615, 15:618-15:619, 15:621-15:627, 15:629-15:633, 15:635-15:642, 15:644-15:649, 15:651-15:653, 15:655-15:665, 46:01:01:01-46:70, 46:72-46:76, 46:78-46:88, 46:90-46:98N, 51:367, <b>C*01:73, C*03:02:23, C*05:01:28, C*06:02:93, C*07:02:30, C*08:16:02, C*14:02:27</b>
<b>32</b>	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	*07:349, 08:01:01:01-08:01:22, 08:01:24-08:01:62, 08:01:64-08:05, 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, 08:201-08:226, 08:228-08:244, 08:246-08:250, 08:252N-08:254, 08:256-08:263, 08:265-08:289, 08:292-08:308, 13:46, 13:154, 15:03:01:01-15:03:13, 15:09:01-15:10:08, 15:18:01:01-15:18:10, 15:23, 15:29:01:01-15:29:01:02, 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, 15:83:01:01-15:83:01:02, 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, 15:220:01:01-15:221, 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, 15:487N, 15:498, 15:502-15:504:02, 15:509, 15:511, 15:517, 15:525-15:527, 15:530, 15:539, 15:548, 15:553,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				15:560, 15:563, 15:570-15:571, 15:582, 15:588, 15:607, 15:610-15:612, 15:614:01:01-15:614:01:02, 15:616Q-15:617, 15:620, 15:628, 15:643, 15:650, 15:654, 27:195, 35:87, 37:12, 37:84, 38:30, 39:156, 40:12:01-40:12:02, 40:26, 40:40, 40:136, 40:231, 40:279, 40:516, 41:01:01:01-41:03:02, 41:05-41:09, 41:11-41:17, 41:19-41:48, 41:50, 41:53-41:61, 41:64-41:81, 42:01:01:01-42:02:02, 42:04-42:08, 42:10-42:15, 42:17-42:19, 42:21-42:34, 44:02:68, 44:14-44:15:01:02, 44:18:01:01-44:18:01:02, 44:20, 44:62, 44:100, 44:166, 44:213, 44:355, 45:01:01:01-45:25, 45:27-45:30, 51:08:01:01-51:08:06, 51:20, 51:36, 51:44N, 51:97, 51:141, 51:153:01-51:153:02, 51:263, 51:274-51:275, 51:342, 51:354, 51:362, 51:371, 52:19, 55:20, 55:56, 56:13, 57:09, 82:01:01:01-82:04, <b>C*03:342, C*07:46, C*07:356, C*07:546, C*12:184, C*15:99, C*16:85</b>
<b>33<sup>7,8,10</sup></b>	165 bp, 190 bp, 390 bp	1070 bp	5, 17, 21, 35, 51, 5102, 5103, 52, 56, 62, 63, 70, 78	*13:62, 15:01:02, 15:09:01-15:09:02, 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, 15:243, 15:254, 15:268, 15:273, 15:277-15:278, 15:356, 15:361-15:362, 15:396, 15:403, 15:408, 15:411, 15:423-15:424, 15:435, 15:446, 15:462, 15:500, 15:516, 15:523, 15:532, 15:550, 15:555, 15:575N, 15:602-15:603, 15:613, 15:619, 15:642, 15:644, 15:655, 18:205, 27:153, 35:01:10, 35:03:32, 35:04:02, 35:251:01, 40:26, 40:28, 44:03:40, 44:62, 44:459, 49:18:01, 50:01:21, 50:14, 51:01:01:01-51:01:03, 51:01:05-51:01:71, 51:01:73-51:02:03, 51:02:05-51:08:04, 51:08:06-51:09:03, 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, 51:226-51:294, 51:296-51:299, 51:301-51:337, 51:339-51:351, 51:353-51:358, 51:360-51:375, 51:377N-51:381, 52:01:01:01-52:01:04, 52:01:06-52:01:14, 52:01:16-52:13, 52:14:02-52:24, 52:25:02-52:57, 52:59-52:66, 52:68-52:96N, 52:98-52:113, 53:28, 56:05:01-56:06, 56:21, 57:01:32, 58:08:01-58:08:02, 78:01:01:02-78:10
<b>34</b>	180 bp	<b>800 bp</b>	13, 22, 55, 60	*07:78, 13:01:01:01-13:02:39, 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, 13:80-13:85, 13:87-13:107, 13:109-13:119, 13:121-13:126, 13:128-13:130, 13:132-13:139N, 13:141-13:145, 13:147-13:159, 13:161N-13:163, 13:165-13:173, 13:175-13:179, 40:48, 40:377, 45:10, 49:07, 50:31, 54:26, 55:09, 55:22, 55:24, 56:60, 59:09
<b>35<sup>5</sup></b>	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, 07:453, 08:04:01-08:04:02, 08:17, 08:54:01-08:54:02, 08:110, 08:285, 13:97, 14:73, 14:117, 15:03:01:01-15:03:09, 15:03:11, 15:03:13, 15:47:01-15:47:02, 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, 15:220:01:01-15:220:04, 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, 15:502, 15:511, 15:517, 15:527, 15:539, 15:560, 15:571, 15:582, 15:588, 15:610, 15:614:01:01-15:614:01:02,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				15:616Q-15:617, 15:628, 15:650, 15:654, 18:37:01-18:37:02, 18:125, 27:18, 27:29, 35:361, 35:545, 37:28, 38:03, 39:02:01:01-39:02:03, 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, 39:162, 39:164, 39:173, 39:184, 40:12:01-40:12:02, 40:46, 40:93, 40:430, 42:11, 44:10, 44:15:01:01-44:15:01:02, 44:18:01:01-44:18:01:02, 44:40, 44:44, 44:117, 44:130, 44:140, 44:156, 44:210:01-44:210:02, 44:251, 44:339-44:340, 44:355, 45:01:01:01-45:03, 45:05-45:07, 45:11-45:23, 45:25, 45:27-45:30, 48:01:01:01-48:05, 48:07-48:30, 48:32-48:40, 48:42-48:57, 49:20, 49:73, 50:02:01:01-50:02:01:02, 50:21, 50:56, 50:75, 52:16, 55:18, 55:122, 56:44, 56:74, 58:44, 82:01:01:01-82:03, <b>C*04:345, C*05:102, C*05:184, C*05:262, C*08:93, C*15:25</b>
36	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, 08:291, 13:04, 13:10, 13:26:01-13:26:02, 13:72, 13:127, 13:160, 14:56, 15:01:01:01-15:01:04, 15:01:06-15:02:11, 15:02:13-15:08:02, 15:11:01-15:16:05, 15:18:01:01-15:21:01:02, 15:23-15:29:01:02, 15:31:01:01-15:36, 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, 15:78:01:01-15:82, 15:84-15:85, 15:87-15:89:02, 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, 15:189:01-15:195, 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, 15:249-15:251:03, 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-15:484, 15:487N, 15:489-15:499, 15:501-15:502, 15:504:01-15:505, 15:507-15:515, 15:517-15:522, 15:524-15:529, 15:531, 15:533:01-15:540N, 15:542-15:545, 15:547-15:551, 15:554, 15:556-15:562N, 15:564-15:574, 15:576-15:577, 15:579-15:584N, 15:586-15:602, 15:604N-15:610, 15:612-15:618, 15:621-15:641, 15:643, 15:645, 15:647-15:654, 15:656-15:665, 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, 18:149-18:164, 18:167, 18:169-18:188, 18:190, 18:192-18:204, 18:206-18:216, 18:218-18:226, 18:228-18:231Q, 27:41, 27:107, 35:01:01:01-35:01:74, 35:05:01:01-35:05:06, 35:07-35:08:15, 35:10-35:11:03, 35:14:01-35:17:05, 35:19-35:21, 35:23-35:30:01:02, 35:32:01-35:32:03, 35:35, 35:37, 35:40N-35:43:01, 35:43:03-35:43:04, 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, 35:215:01-35:219, 35:222, 35:224-35:229, 35:232, 35:238-35:241, 35:244-35:245,



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				35:247:01-35:250, 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, 35:380:01:01-35:380:01:02, 35:382-35:383, 35:385-35:386, 35:388-35:390N, 35:392-35:393, 35:400-35:402, 35:404-35:406, 35:408-35:409, 35:411-35:412, 35:414, 35:416-35:418, 35:421, 35:426-35:430N, 35:433, 35:437, 35:439:01:01-35:439:01:02, 35:441, 35:444-35:445, 35:447-35:449, 35:453N-35:454, 35:456N, 35:458-35:459N, 35:461N-35:462, 35:464-35:467, 35:470, 35:472-35:473, 35:475-35:476, 35:479-35:481, 35:484:01-35:485, 35:488, 35:490-35:491, 35:493-35:495, 35:497-35:500, 35:502-35:504, 35:506, 35:509, 35:512-35:520, 35:523-35:526, 35:528-35:530, 35:532-35:533, 35:536-35:538, 35:541-35:542N, 35:548-35:549, 35:551N-35:552, 35:556Q, 35:558-35:560, 35:564, 35:566, 35:570, 35:572-35:577, 37:35, 37:56, 37:94, 38:52, 38:88, 39:07, 39:43, 39:91, 39:134, 39:169, 40:03:01:01-40:03:02, 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, 40:422, 40:536N-40:537, 41:24, 41:30, 41:51, 42:09, 42:32, 44:17, 44:43:01-44:43:02, 44:144, 44:230, 44:256, 44:276, 44:308, 45:09, 46:01:01:01-46:10, 46:12-46:17, 46:19-46:60, 46:62-46:69, 46:71-46:73, 46:75-46:80, 46:82-46:98N, 48:02:01-48:02:03, 48:14, 48:23, 48:25, 49:04:01-49:05:02, 50:33, 51:37, 51:45, 51:63:01-51:63:02, 51:97, 51:216, 51:220, 51:251, 52:39, 52:97, 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, 53:43:01-53:61, 53:63-53:72, 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, 57:01:34-57:01:46, 57:06, 57:08, 57:10-57:11, 57:13-57:16, 57:18-57:27, 57:29-57:31:02, 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, 57:102-57:117, 57:119-57:123, 57:125-57:136, 57:138-57:147, 57:149-57:154, 57:156-57:167, 58:01:01:01-58:02:02, 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, 58:74-58:113, 58:115-58:123, 58:125-58:143
<b>37</b>	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, 15:518, 15:551, 15:592, 15:634, 15:649, 18:54, 18:56, 18:108, 18:132, 18:169, 18:195, 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, 37:68-37:94, 37:96-37:99, 37:101-37:107, 38:17, 44:17, 44:43:01-44:43:02, 44:144, 44:230, 44:256, 44:308, 45:09, 46:17, 53:22, 57:93, 57:119, 58:07, <b>A*23:128, A*24:174, C*02:82, C*06:165, C*07:979, C*14:61</b>
<b>38<sup>5,7,9</sup></b>	105 bp, 395 bp, 435 bp	<b>800 bp</b>	5, 7, 15, 41, 42, 62, 63, 70, 71, 75, 77	*07:04:01-07:04:02, 07:25, 07:146, 07:349, 08:187, 15:09:01-15:10:08, 15:13:01-15:13:03, 15:16:01:01-15:18:10, 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,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				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, 15:189:01-15:189:02, 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, 15:487N, 15:498, 15:500, 15:503-15:504:02, 15:509, 15:516, 15:523, 15:526, 15:530, 15:532, 15:548, 15:550, 15:555, 15:563, 15:570, 15:573, 15:575N, 15:586, 15:602-15:603, 15:607, 15:611-15:613, 15:615, 15:619-15:620, 15:623, 15:642-15:644, 15:646, 15:655, 40:136, 40:231, 40:279, 41:08, 42:05:01-42:05:02, 51:367, <b>A*25:01:20, C*01:240, C*03:542, C*07:335, C*07:1059, C*14:62</b>
<b>39<sup>5</sup></b>	115 bp, 150 bp	1070 bp	18	*08:176, 15:545, 18:01:01:01-18:15, 18:17N-18:28, 18:30-18:71, 18:73-18:91, 18:93-18:101, 18:103-18:106Q, 18:108-18:174, 18:176-18:231Q, 35:289, 35:487, 44:445, 48:28
<b>40<sup>5</sup></b>	80 bp	1070 bp	7, 27, 2708, 44, 60	*07:73, 08:88, 08:102, 15:588, 27:01-27:05:22, 27:05:24-27:21:02, 27:23-27:51, 27:53-27:66N, 27:68-27:74, 27:76-27:139, 27:141-27:188, 27:190-27:197, 27:199-27:214, 27:216-27:235, 27:237-27:238, 27:240-27:265, 38:22, 40:46, 40:93, 44:40, 44:44, 44:130, 44:210:01-44:210:02, 49:26, 49:73, 50:75
<b>41<sup>5,9</sup></b>	100 bp, 150 bp	<b>800 bp</b>	12, 13, 17, 18, 22, 27, 35, 37, 39, 44, 45, 47, 48, 51, 53, 56, 57, 58, 60, 61, 62, 70, 75, 77, 78	*07:137, 07:235, 07:359, 08:49, 08:60, 08:76, 08:129, 08:181, 08:255, 13:01:01:01-13:01:22, 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, 13:129, 13:135, 13:138, 13:141-13:142, 13:144, 13:146, 13:148, 13:161N-13:163, 13:168, 13:170-13:171, 13:173, 14:10, 14:102, 15:02:01:01-15:02:13, 15:13:01-15:13:03, 15:20-15:21:01:02, 15:25:01:01-15:25:04, 15:36, 15:44, 15:62, 15:77, 15:80, 15:85, 15:88-15:89:02, 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, 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, 15:491, 15:495, 15:505, 15:537, 15:543-15:544N, 15:557, 15:564, 15:566-15:567, 15:569, 15:574, 15:584N, 15:587, 15:589, 15:592, 15:594, 15:596N, 15:599, 15:615, 15:623, 15:625, 15:627, 15:630, 15:645-15:646, 15:648, 15:654, 15:657-15:659, 15:664, 18:22, 18:69, 18:105, 18:149-18:150, 18:204, 27:19:01:01-27:19:01:02, 27:30, 27:127, 27:150, 27:188, 35:01:01:01-35:01:54, 35:01:56-35:01:61, 35:01:63-35:04:03, 35:06-35:17:04, 35:18-35:21, 35:23-35:30:01:02, 35:33-35:36,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

				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-35:408, 35:410-35:415, 35:417-35:426, 35:428Q-35:432, 35:434-35:439:01:02, 35:441-35:458, 35:460Q-35:470, 35:473-35:474, 35:477-35:480, 35:482-35:497, 35:500-35:508N, 35:510-35:518, 35:520, 35:522, 35:524-35:533, 35:536-35:540, 35:542N-35:548, 35:550-35:571, 35:573-35:577, 37:01:01:01-37:01:07, 37:01:09, 37:01:11-37:01:31, 37:03N-37:06:02, 37:08, 37:10-37:43, 37:45-37:50, 37:52-37:80, 37:82N-37:107, 38:20:01-38:20:02, 39:42, 39:195, 40:04:01:01-40:04:02, 40:28, 40:30, 40:34, 40:64:01:01-40:64:02, 40:68, 40:99, 40:129, 40:137, 40:160:01-40:160:02, 40:343, 40:458, 40:535, 41:48, 42:13, 44:02:01:01-44:02:33, 44:02:35-44:02:57, 44:02:59-44:14, 44:16-44:17, 44:19N, 44:21-44:30, 44:32-44:40, 44:42-44:46:02, 44:48:01-44:52N, 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, 44:194:01-44:196, 44:198N-44:212, 44:214-44:229, 44:231-44:235, 44:237N-44:245:02, 44:247-44:304, 44:306N-44:338, 44:340-44:342, 44:344-44:354N, 44:356-44:373, 44:437-44:439, 44:441-44:458, 44:460-44:490, 44:492-44:505, 44:507-44:517, 44:519-44:524, 44:526-44:546, 46:33, 46:67, 48:02:01-48:02:03, 48:25, 49:61, 50:17, 51:04:01-51:04:02, 51:42, 51:46, 51:56:01-51:56:03, 51:139, 51:186, 51:227, 51:281, 51:310, 51:359, 52:88, 53:01:01:01-53:13, 53:15-53:43:02, 53:45-53:46, 53:48N-53:66, 53:68-53:72, 55:14, 56:09, 56:11-56:12, 56:60, 56:80, 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, 57:84-57:117, 57:119-57:144, 57:146-57:167, 58:01:01:01-58:01:02, 58:01:04-58:01:15, 58:01:17-58:01:45, 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, 58:62-58:103, 58:105-58:120, 58:123-58:126, 58:128N-58:131, 58:133N-58:143, 83:01, <b>C*03:102, C*03:263:01-03:263:03, C*03:317, C*03:382, C*03:514, C*15:24, C*15:126</b>
<b>42<sup>8,9</sup></b>	140 bp	1070 bp	8, 18, 22, 35, 39, 78	*07:65, 07:134, 07:400, 08:32, 08:133, 08:180, 08:239, 15:202, 15:239, 15:308, 15:376, 18:01:01:01-18:03:01:03, 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, 18:68-18:106Q, 18:108-18:124, 18:126-18:135:01:02, 18:137-18:177, 18:179-18:193, 18:196-18:231Q, 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, 35:208:01-35:209, 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, 35:362-35:449, 35:451-35:470, 35:472-35:569, 35:571-35:578, 37:05, 37:11, 37:14, 37:29, 37:37, 37:67, 39:19:01-39:19:02, 39:186, 40:185, 40:209, 40:308, 40:350, 40:365,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				45:22, 46:40:01-46:40:02, 55:130, 56:06, 56:45, 58:64, 78:01:01:02-78:10, <b>C*07:1011</b>
<b>43<sup>5,9</sup></b>	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, 15:256-15:505, 15:507-15:514, 15:516-15:545, 15:547-15:593, 15:595-15:633, 15:635-15:665, 40:12:01-40:12:02, 40:26, 40:40, 40:516, 44:02:68, 46:50, 51:367, 82:01:01:01-82:03, <b>C*03:179, C*04:345, C*06:147, C*07:1059, C*12:301, C*14:61, C*16:85</b>
<b>44<sup>9</sup></b>	210 bp	<b>800 bp</b>	27, 37	*07:27, 07:236, 07:273, 08:49, 08:126, 18:54, 18:195, 37:01:01:01-37:107, 38:17, <b>C*07:302, C*07:929, C*07:941</b>
<b>45</b>	170 bp	<b>800 bp</b>	16, 35, 38, 39, 3901, 3902, 67, 72	*08:55, 15:69, 15:186, 15:449, 15:494, 18:168, 35:35, 35:276, 35:468, 35:471, 38:01:01:01-38:09, 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, 38:71-38:105, 38:107, 38:160-38:167, 38:169, 38:171-38:173Q, 39:01:01:01-39:01:01:29, 39:01:03:01-39:01:34, 39:01:36-39:20, 39:22-39:29, 39:31:01:01-39:31:01:02, 39:35, 39:37:01:01-39:42, 39:44-39:46, 39:48-39:49, 39:51-39:73, 39:75-39:81, 39:83:01-39:101, 39:103-39:106, 39:108-39:111, 39:113-39:127, 39:129-39:135, 39:137-39:155, 39:157N-39:168, 39:170, 39:172-39:173, 39:175N-39:195, 40:184, 40:424, 50:49, 51:101, 52:71, 52:84, 55:123, 58:20, 58:84, 67:01:01-67:07, <b>C*15:51</b>
<b>46<sup>5</sup></b>	110 bp	1070 bp	38	*14:93, 14:118, 27:07:04, 38:01:01:01-38:01:07, 38:01:09-38:01:14, 38:01:16-38:02:02:02, 38:02:04-38:03, 38:05, 38:08-38:24, 38:26-38:34N, 38:36-38:80N, 38:82-38:107, 38:160-38:173Q, 44:03:59, 49:26, 51:01:68, 52:01:10, <b>A*23:01:18, A*25:01:08</b>
<b>47</b>	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, 08:226, 08:228, 08:295, 14:01:01:01-14:01:07, 14:01:09-14:20, 14:22-14:41N, 14:43-14:48, 14:50-14:56, 14:58-14:72N, 14:74-14:116, 14:118-14:119, 38:01:01:01-38:02:11, 38:04-38:05, 38:08-38:25, 38:27-38:53, 38:55Q-38:73, 38:75-38:107, 38:160-38:165N, 38:167-38:173Q, 39:01:01:01-39:01:01:29, 39:01:03:01-39:01:39, 39:03:01:01-39:07, 39:09:01:01-39:09:05, 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, 39:132-39:142N, 39:144, 39:146N-39:153, 39:155-39:161N, 39:163, 39:165-39:169, 39:171-39:174, 39:176-39:179, 39:181-39:183, 39:185, 39:187-39:188, 39:190-39:195, 40:75 <sup>?</sup> , 40:322 <sup>?</sup> , 40:517, 49:26
<b>48</b>	160 bp, 425 bp	1070 bp	7, 703, 8, 14, 15, 16, 21, 27, 39, 3901, 3902, 40, 41, 42, 45, 48, 50, 51, 54, 60, 61, 64, 65, 67, 70, 73, 81	*07:02:01:01-07:02:05, 07:02:07-07:02:66, 07:02:68-07:02:77, 07:02:79-07:02:81, 07:02:83-07:26, 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, 07:274-07:447, 07:449-07:452, 07:454-07:475, 07:477-07:478, 08:01:01:01-08:01:03, 08:01:05-08:01:69, 08:04:01-08:05, 08:07-08:35, 08:37-08:51, 08:53:01-08:77, 08:79:01-08:116, 08:118-08:125, 08:127-08:130, 08:132-08:135, 08:137-08:138, 08:140-08:228, 08:230-08:254, 08:256-08:266, 08:268-08:270Q, 08:272-08:288, 08:290-08:308, 14:01:01:01-14:01:04, 14:01:06-14:01:12, 14:02:01:01-14:02:04,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Visit [www.caredx.com](http://www.caredx.com) for  
“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

14:02:06-14:02:07, 14:02:09-14:29, 14:31-14:76N, 14:78-14:92, 14:94-14:117, 14:119, 15:68, 15:180, 15:634, 27:14, 27:81, 27:130, 35:516, 35:534, 39:01:01:01-39:01:01:29, 39:01:03:01-39:06:04, 39:06:06-39:20, 39:22-39:24:01, 39:24:03-39:103, 39:105-39:184, 39:186-39:188, 39:190-39:195, 40:01:01-40:01:04, 40:01:06-40:01:82, 40:06:01:01-40:06:04:03, 40:06:06-40:07, 40:09<sup>?</sup>, 40:14:01<sup>?</sup>-40:14:02<sup>?</sup>, 40:14:03, 40:15<sup>?</sup>, 40:16:01:01-40:16:01:02, 40:18<sup>?</sup>, 40:22N-40:23, 40:24<sup>?</sup>-40:25<sup>?</sup>, 40:27:02<sup>?</sup>, 40:28<sup>?</sup>-40:29<sup>?</sup>, 40:30-40:33, 40:34<sup>?</sup>-40:35:02<sup>?</sup>, 40:36<sup>?</sup>, 40:38, 40:42-40:44, 40:45<sup>?</sup>-40:46<sup>?</sup>, 40:48, 40:49<sup>?</sup>, 40:51-40:55, 40:56<sup>?</sup>-40:58<sup>?</sup>, 40:59-40:60, 40:61<sup>?</sup>-40:63<sup>?</sup>, 40:65<sup>?</sup>, 40:66, 40:67<sup>?</sup>-40:69<sup>?</sup>, 40:70:01-40:70:02, 40:71<sup>?</sup>, 40:72:01-40:75, 40:77, 40:79-40:80, 40:81<sup>?</sup>-40:82<sup>?</sup>, 40:83, 40:84<sup>?</sup>-40:85<sup>?</sup>, 40:86, 40:87:01<sup>?</sup>-40:88<sup>?</sup>, 40:91<sup>?</sup>-40:92<sup>?</sup>, 40:93, 40:95<sup>?</sup>, 40:96, 40:98<sup>?</sup>, 40:100<sup>?</sup>-40:101<sup>?</sup>, 40:102-40:103, 40:104<sup>?</sup>-40:108<sup>?</sup>, 40:109-40:110, 40:112<sup>?</sup>, 40:113-40:114:01:02, 40:114:02<sup>?</sup>-40:116<sup>?</sup>, 40:118N<sup>?</sup>, 40:121<sup>?</sup>, 40:123<sup>?</sup>, 40:124:01, 40:124:02<sup>?</sup>-40:125:01<sup>?</sup>, 40:125:02-40:128, 40:130:01<sup>?</sup>, 40:130:02-40:131, 40:132<sup>?</sup>-40:134<sup>?</sup>, 40:136<sup>?</sup>-40:137<sup>?</sup>, 40:138-40:140, 40:141<sup>?</sup>, 40:145<sup>?</sup>, 40:146-40:148, 40:149<sup>?</sup>, 40:150, 40:151<sup>?</sup>, 40:152-40:153, 40:154<sup>?</sup>, 40:155:01N-40:155:02N, 40:156<sup>?</sup>, 40:158<sup>?</sup>, 40:159-40:160:01, 40:160:02<sup>?</sup>, 40:161-40:162, 40:163<sup>?</sup>-40:164<sup>?</sup>, 40:165, 40:166<sup>?</sup>, 40:167-40:168, 40:169<sup>?</sup>, 40:170-40:172, 40:173<sup>?</sup>-40:176<sup>?</sup>, 40:177, 40:178<sup>?</sup>-40:180<sup>?</sup>, 40:182<sup>?</sup>, 40:183, 40:184<sup>?</sup>-40:185<sup>?</sup>, 40:186:01, 40:186:02<sup>?</sup>-40:187<sup>?</sup>, 40:189<sup>?</sup>, 40:190-40:191, 40:192<sup>?</sup>-40:200<sup>?</sup>, 40:203<sup>?</sup>-40:213<sup>?</sup>, 40:215<sup>?</sup>-40:225:01<sup>?</sup>, 40:226<sup>?</sup>-40:228<sup>?</sup>, 40:230, 40:231<sup>?</sup>-40:236<sup>?</sup>, 40:237, 40:238<sup>?</sup>-40:243<sup>?</sup>, 40:244-40:245:02, 40:246<sup>?</sup>-40:248<sup>?</sup>, 40:249-40:253, 40:256N, 40:257<sup>?</sup>, 40:258-40:265N, 40:268-40:270, 40:272-40:273, 40:274<sup>?</sup>, 40:275, 40:276<sup>?</sup>, 40:277-40:278, 40:279<sup>?</sup>-40:280<sup>?</sup>, 40:282<sup>?</sup>-40:283<sup>?</sup>, 40:285-40:286N, 40:287<sup>?</sup>-40:289<sup>?</sup>, 40:291N<sup>?</sup>, 40:293<sup>?</sup>, 40:294-40:295, 40:297<sup>?</sup>, 40:298:01-40:298:02, 40:299<sup>?</sup>-40:300<sup>?</sup>, 40:301, 40:306-40:307, 40:308<sup>?</sup>, 40:310-40:311, 40:312<sup>?</sup>, 40:313, 40:315<sup>?</sup>, 40:316-40:318, 40:319<sup>?</sup>, 40:321, 40:322<sup>?</sup>, 40:323:01-40:323:02, 40:324<sup>?</sup>-40:329<sup>?</sup>, 40:330, 40:332, 40:333<sup>?</sup>, 40:336<sup>?</sup>-40:339<sup>?</sup>, 40:340-40:342, 40:343<sup>?</sup>, 40:346, 40:348-40:350, 40:351<sup>?</sup>-40:352<sup>?</sup>, 40:354-40:355, 40:357<sup>?</sup>-40:360<sup>?</sup>, 40:361N-40:364, 40:366-40:368, 40:370, 40:372N-40:374, 40:376-40:377, 40:379:01:01-40:383, 40:385-40:389, 40:391-40:393, 40:395, 40:396<sup>?</sup>, 40:397-40:398, 40:400<sup>?</sup>, 40:401-40:404, 40:406-40:408, 40:411, 40:416-40:419, 40:421Q-40:428N, 40:430-40:431, 40:433-40:434, 40:436, 40:439, 40:443, 40:445-40:454, 40:456, 40:459-40:461, 40:463-40:464, 40:466, 40:468-40:469, 40:471, 40:473-40:480, 40:482-40:488N, 40:490-40:492, 40:494-40:499, 40:501-40:503, 40:506N-40:509Q, 40:510N<sup>?</sup>, 40:512-40:513, 40:517, 40:519-40:520, 40:523<sup>?</sup>, 40:524-40:526, 40:530<sup>?</sup>, 40:532-40:533, 40:537-40:538, 41:01:01:01-41:45N, 41:47-41:59, 41:62-41:81, 42:01:01:01-42:02:02, 42:04-42:21, 42:23-42:34, 45:01:01:01-45:01:09, 45:01:11-45:25, 45:27-45:30, 46:89, 48:01:01:01-48:17, 48:19-48:55, 48:57, 49:01:14, 50:01:01:01-50:01:17, 50:01:19-50:02:01:02, 50:04:01-50:22, 50:31-50:79, 51:01:09, 51:01:21, 51:01:25, 51:10, 51:24:02-51:24:04, 51:197, 51:217, 51:279, 51:338, 52:01:50, 52:54, 54:11,



0197

For *In Vitro* Diagnostic Use  
MA123 v02 SSP PI Template  
Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				56:20:02, 56:68, 67:01:01-67:07, 73:01:01:01-73:03, 81:02:01-81:02:02, <b>C*01:214, C*03:464, C*05:152, C*07:463, C*07:758, C*16:112</b>
<b>49<sup>11</sup></b>	180 bp	1070 bp	15, 40, 44, 48, 60, 62, 71	*15:116, 15:124, 15:352, 15:412, 15:507, 15:649, 27:125, 35:230, 35:331, 38:63, 40:01:01-40:01:06, 40:01:08-40:01:17, 40:01:19-40:01:73, 40:01:75-40:01:76, 40:01:78-40:01:82, 40:07, 40:10:01:01-40:10:02, 40:12:01-40:12:02, 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, 40:245:01-40:245:02, 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, 40:323:01-40:329, 40:332-40:333, 40:336, 40:338N-40:339, 40:344, 40:346, 40:352-40:353:02, 40:355, 40:357-40:358, 40:360, 40:365, 40:367-40:368, 40:370, 40:372N, 40:377, 40:379:01:01-40:379:01:02, 40:381:01-40:383, 40:385-40:386, 40:391-40:398, 40:400-40:402, 40:404, 40:406-40:407, 40:416-40:419, 40:421Q-40:422, 40:424, 40:426N, 40:428N, 40:430-40:431, 40:433, 40:436, 40:439, 40:443, 40:446-40:448, 40:450, 40:452, 40:456, 40:461-40:463, 40:466, 40:474-40:475:02, 40:479-40:480, 40:483N, 40:485-40:486, 40:490-40:491, 40:495, 40:497-40:499, 40:501, 40:503, 40:506N-40:510N, 40:512-40:513, 40:516-40:517, 40:523-40:525, 40:528, 40:530, 40:538, 44:31, 44:169, 44:182, 46:06, 46:43, 48:03:01:01-48:03:02, 48:17, 48:23, 48:40, 48:57, 57:59, <b>C*03:129, C*03:234, C*04:366, C*04:368, C*05:136, C*17:16:01-17:16:02</b>
<b>50<sup>9</sup></b>	130 bp, 290 bp, 465 bp	1070 bp	13, 17, 18, 21, 35, 4005, 41, 47, 50, 57, 60, 61, 62	*13:01:18, 13:02:06, 13:26:01, 13:72, 13:127, 15:16:03, 15:20, 15:34:02, 15:85, 15:194, 15:393, 15:407, 15:587, 15:599, 15:623, 15:658, 18:22, 18:48, 18:52, 18:105, 27:107, 35:46, 35:50, 35:84, 35:207, 35:231, 37:101, 40:02:01:01-40:06:31, 40:08:01:01-40:09, 40:10:02 <sup>?</sup> , 40:11:01:01-40:11:02, 40:13, 40:14:01 <sup>?</sup> -40:14:02 <sup>?</sup> , 40:15 <sup>?</sup> , 40:18-40:20:01:02, 40:24, 40:25 <sup>?</sup> , 40:26-40:29, 40:34 <sup>?</sup> , 40:35:01-40:35:03, 40:36 <sup>?</sup> , 40:37, 40:39, 40:44, 40:45 <sup>?</sup> , 40:47 <sup>?</sup> , 40:49 <sup>?</sup> , 40:50:01:01-40:50:01:02, 40:53 <sup>?</sup> , 40:56, 40:57 <sup>?</sup> -40:58 <sup>?</sup> , 40:61 <sup>?</sup> -40:63 <sup>?</sup> , 40:64:01:01-40:64:02, 40:65 <sup>?</sup> , 40:67 <sup>?</sup> , 40:68, 40:69 <sup>?</sup> , 40:70:01-40:71, 40:74-40:75, 40:78, 40:81 <sup>?</sup> , 40:82, 40:84 <sup>?</sup> , 40:85-40:86, 40:87:01 <sup>?</sup> -40:88 <sup>?</sup> , 40:89-40:91, 40:92 <sup>?</sup> , 40:94-40:99, 40:100 <sup>?</sup> -40:101 <sup>?</sup> , 40:103-40:105, 40:106 <sup>?</sup> , 40:107, 40:108 <sup>?</sup> , 40:109, 40:111, 40:112 <sup>?</sup> , 40:114:02 <sup>?</sup> , 40:115, 40:116 <sup>?</sup> , 40:118N <sup>?</sup> , 40:119-40:120, 40:121 <sup>?</sup> , 40:122, 40:123 <sup>?</sup> , 40:124:02 <sup>?</sup> -40:125:01 <sup>?</sup> , 40:127, 40:129, 40:130:01 <sup>?</sup> , 40:131, 40:132 <sup>?</sup> , 40:133Q, 40:134 <sup>?</sup> -40:136 <sup>?</sup> , 40:141 <sup>?</sup> , 40:142N-40:145, 40:148-40:149, 40:151 <sup>?</sup> ,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

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Lot No.: **3S2**

Lot-specific information

				40:154 <sup>?</sup> , 40:156 <sup>?</sup> , 40:157, 40:158 <sup>?</sup> , 40:159, 40:160:02 <sup>?</sup> , 40:161-40:162, 40:163 <sup>?</sup> -40:164 <sup>?</sup> , 40:165, 40:166 <sup>?</sup> , 40:167, 40:169, 40:173-40:174, 40:175 <sup>?</sup> , 40:176, 40:178 <sup>?</sup> -40:179 <sup>?</sup> , 40:180-40:181, 40:182 <sup>?</sup> , 40:184, 40:186:02 <sup>?</sup> -40:188 <sup>?</sup> , 40:189-40:190, 40:192 <sup>?</sup> -40:199 <sup>?</sup> , 40:200-40:203, 40:204 <sup>?</sup> , 40:205-40:206, 40:207 <sup>?</sup> -40:208 <sup>?</sup> , 40:210 <sup>?</sup> , 40:211, 40:212 <sup>?</sup> -40:213 <sup>?</sup> , 40:214, 40:215 <sup>?</sup> -40:219 <sup>?</sup> , 40:220, 40:221 <sup>?</sup> -40:223 <sup>?</sup> , 40:224-40:226, 40:227 <sup>?</sup> -40:228 <sup>?</sup> , 40:229-40:230, 40:231 <sup>?</sup> , 40:232, 40:233 <sup>?</sup> -40:236 <sup>?</sup> , 40:238 <sup>?</sup> -40:242 <sup>?</sup> , 40:243-40:244, 40:246, 40:247 <sup>?</sup> , 40:248, 40:254-40:256N, 40:257 <sup>?</sup> , 40:266-40:271, 40:274-40:276, 40:279 <sup>?</sup> -40:282 <sup>?</sup> , 40:283-40:284, 40:287, 40:288 <sup>?</sup> , 40:289-40:293, 40:295-40:297, 40:298:01 <sup>?</sup> -40:300 <sup>?</sup> , 40:302-40:307, 40:308 <sup>?</sup> , 40:309, 40:311, 40:312 <sup>?</sup> , 40:313-40:314, 40:315 <sup>?</sup> , 40:317, 40:318 <sup>?</sup> -40:319 <sup>?</sup> , 40:320, 40:322, 40:324 <sup>?</sup> -40:329 <sup>?</sup> , 40:330-40:331, 40:333 <sup>?</sup> , 40:334:01-40:335, 40:336 <sup>?</sup> , 40:337N, 40:338N <sup>?</sup> -40:339 <sup>?</sup> , 40:340-40:341, 40:342 <sup>?</sup> , 40:343, 40:344 <sup>?</sup> , 40:345N, 40:347-40:351, 40:354, 40:356, 40:357 <sup>?</sup> -40:358 <sup>?</sup> , 40:359, 40:360 <sup>?</sup> , 40:361N-40:364, 40:366, 40:369, 40:371, 40:374-40:376, 40:384, 40:387-40:390, 40:396 <sup>?</sup> , 40:399N, 40:400 <sup>?</sup> , 40:405, 40:408-40:415, 40:420, 40:423, 40:425, 40:427, 40:429, 40:432, 40:434-40:435, 40:437-40:438N, 40:440-40:442, 40:444-40:445, 40:449, 40:451, 40:453-40:455, 40:458-40:460, 40:464-40:465, 40:467-40:468, 40:470-40:473, 40:476, 40:478, 40:481N-40:482, 40:484, 40:487N-40:489, 40:492-40:494, 40:500, 40:504-40:505, 40:510N <sup>?</sup> , 40:511N, 40:514N-40:515, 40:518-40:522, 40:523 <sup>?</sup> , 40:526-40:527, 40:529, 40:530 <sup>?</sup> , 40:531-40:537, 44:02:59, 44:103, 44:131, 44:139 <sup>?</sup> , 44:212, 46:01:07, 46:33, 47:01:01:02-47:01:02, 47:01:04-47:01:05, 47:02-47:03, 47:05-47:10, 57:05, 57:67:01, 58:36, <b>C*01:73, C*03:504</b>
<b>51<sup>5</sup></b>	105 bp	1070 bp	7, 8, 22, 41, 42	*07:04:01-07:04:02, 07:25, 07:146, 07:349, 08:01:01:01-08:01:24, 08:01:26-08:01:61, 08:01:63-08:05, 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, 08:206-08:254, 08:256-08:273, 08:275-08:280, 08:282-08:308, 35:87, 40:136, 40:231, 40:279, 41:01:01:01-41:08, 41:10-41:28, 41:30-41:31, 41:33-41:61, 41:63-41:79, 41:81, 42:01:01:01-42:02:02, 42:04-42:07, 42:09-42:18, 42:20-42:34, 44:166, 44:342, 55:20
<b>52<sup>8</sup></b>	325 bp	<b>800 bp</b>	7, 22, 27, 2708, 35, 42, 45, 46, 54, 55, 56, 67, 73, 78, 81, 82	*07:02:01:01-07:02:05, 07:02:07-07:02:97, 07:04:01-07:07:03, 07:09:01-07:15, 07:17-07:26, 07:28-07:31:02, 07:33:01-07:36, 07:39-07:46, 07:47 <sup>w</sup> , 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, 07:229:01-07:231N, 07:233-07:305, 07:307-07:399, 07:401-07:452, 07:454-07:478, 08:123, 08:132, 14:21, 14:57, 15:76, 15:101, 15:255, 15:509, 15:594, 27:01-27:11, 27:13:01-27:15, 27:17, 27:19:01:01-27:21:02, 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, 27:154-27:203, 27:205-27:214, 27:216-27:241, 27:243N-27:265, 35:76, 35:186, 35:229, 35:368, 35:561, 35:570, 37:60, 38:26, 40:166, 40:513, 42:01:01:01-42:02:02, 42:04-42:06, 42:08-42:10, 42:12-42:23, 42:25, 42:27-42:34, 44:90, 44:97, 44:356, 45:06,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

Lot-specific information

				46:01:01:01-46:01:41, 46:02 <sup>w</sup> , 46:03-46:40:02, 46:42-46:48, 46:50-46:98N, 54:01:01:01-54:29, 54:31-54:46, 55:01:01:01-55:05, 55:07-55:17, 55:19-55:77, 55:79-55:133, 56:01:01:01-56:16, 56:18-56:22, 56:24-56:32, 56:34-56:41, 56:43, 56:45-56:53, 56:55:01:02-56:66, 56:68-56:88, 56:90, 56:92-56:93, 67:01:01-67:07, 73:01:01:01-73:03, 81:01:01:01-81:10, 82:01:01:01-82:04, 83:01
<b>53<sup>5</sup></b>	80 bp, 115 bp, 160 bp, 195 bp, 225 bp, 260 bp	1070 bp	12, 35, 37, 44, 45, 47, 48, 57	*07:359, 08:49, 08:60, 08:76, 08:87, 08:129, 08:181, 08:213:01, 08:255, 15:578, 15:592, 27:127, 35:38, 35:45, 35:71, 35:115, 35:169, 35:260, 35:309, 35:452, 35:513N, 35:545, 37:01:01:01-37:01:07, 37:01:09, 37:01:11-37:01:31, 37:03N-37:06:02, 37:08, 37:10-37:38, 37:41-37:43, 37:45-37:50, 37:52-37:65, 37:67-37:82N, 37:84-37:93, 37:95-37:96, 37:98-37:107, 40:132, 40:178, 40:231, 40:279, 40:458, 40:523, 41:48, 42:13, 44:02:01:01-44:03:63, 44:03:65-44:14, 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-44:245:02, 44:247-44:267N, 44:269-44:274, 44:277-44:289, 44:291-44:338, 44:340-44:346, 44:348-44:354N, 44:356-44:373, 44:437-44:458, 44:460-44:524, 44:526-44:546, 48:11, 51:42, 51:274, 51:359, 53:22, 53:62, 57:07, 57:09, 57:24, 57:93, 57:119, 58:94N, 83:01, <b>C*15:25</b>
<b>54</b>	215 bp	<b>800 bp</b>	5, 8, 12, 17, 21, 22, 41, 42, 44, 45, 51, 5102, 5103, 52, 53, 56, 62	*08:09, 08:84, 08:254, 13:46, 13:154, 15:83:01:01-15:83:01:02, 41:01:01:01-41:01:08, 41:05-41:07, 41:09, 41:12, 41:14, 41:16-41:17, 41:20-41:22, 41:25-41:26, 41:28-41:30, 41:32-41:35, 41:37, 41:44, 41:50, 41:53-41:54, 41:56Q-41:57, 41:59-41:61, 41:64, 41:66-41:67, 41:70, 41:73, 41:75-41:79, 42:04, 44:06, 44:15:01:01-44:15:01:02, 44:18:01:01-44:18:01:02, 44:20, 44:100, 44:355, 45:01:01:01-45:25, 45:27-45:30, 49:03, 51:01:01:01-51:01:01:109, 51:01:03-51:01:08, 51:01:10-51:01:39, 51:01:41-51:02:01:04, 51:02:03-51:04:02, 51:06:01:01-51:06:03, 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, 51:104:01-51:115, 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, 51:227-51:237:01, 51:238-51:336, 51:338-51:340, 51:342-51:381, 52:01:02:01-52:01:02:09, 52:01:04, 52:01:09, 52:01:40, 52:01:43, 52:01:47, 52:01:49, 52:02:01, 52:03, 52:06:01-52:06:02, 52:09:01, 52:10:03, 52:11:02, 52:19, 52:21:01, 52:31:02, 52:85, 52:97, 52:102, 52:104, 52:112, 53:01:13, 53:06, 55:20, 55:56, 56:13, 57:01:20, 58:08:01, <b>A*23:01:14</b>
<b>55</b>	130 bp, 280 bp	<b>800 bp</b>	7, 17, 18, 22, 35, 37, 40, 46, 51, 53, 60, 62, 78	*07:12, 07:14:01-07:14:02, 07:18:01-07:18:02, 07:137, 07:162-07:163, 07:199, 07:225, 07:227, 07:248, 07:350, 14:10, 14:102, 15:57 <sup>w</sup> , 15:289, 15:297, 15:318, 15:579, 15:645, 15:658, 18:22, 18:69, 18:105, 18:149-18:150, 18:204, 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, 44:203:01-44:203:02, 44:275, 44:290, 46:01:01:01-46:39, 46:41N-46:46, 46:48-46:71, 46:73-46:76, 46:78-46:85, 46:87-46:98N, 48:17, 51:04:01-51:04:02, 51:46, 51:56:01-51:56:03, 51:139, 51:227, 51:281, 51:310, 52:88, 53:02, 53:06, 53:28, 57:14:01-57:14:02,



**0197**

101.702-24/06 – including *Taq* polymerase  
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Lot No.: **3S2**

Lot-specific information

				58:09, 58:76, <b>C*01:73, C*03:260, C*03:384, C*15:39, C*15:130, C*15:195</b>
<b>56<sup>5</sup></b>	90 bp, 410 bp	1070 bp	7, 15, 22, 27, 2708, 35, 47, 54, 55, 56, 78, 81, 82	*07:65, 07:197, 07:209, 07:271, 15:342, 18:165, 27:01 <sup>w</sup> , 27:02:01:01-27:21:02, 27:23-27:152, 27:154-27:214, 27:216- 27:265, 35:76, 35:186, 35:229, 35:368, 35:561, 35:570, 37:02, 37:60, 40:429, 44:90, 44:97, 44:356, 47:01:01:02-47:12, 48:26, 54:01:01:01-54:29, 54:31-54:46, 55:01:01:01-55:05, 55:07- 55:17, 55:19-55:77, 55:79-55:133, 56:01:01:01-56:16, 56:18- 56:22, 56:24-56:32, 56:34-56:41, 56:43, 56:45-56:53, 56:55:01:02-56:66, 56:69-56:88, 56:90, 56:92-56:93, 81:01:01:01-81:01:05, 81:05, 81:09-81:10, 82:01:01:01-82:04, 83:01, <b>C*04:439, C*14:79</b>
<b>57<sup>5</sup></b>	90 bp, 175 bp	1070 bp	15, 27, 35, 48, 60, 62, 75, 77, 81	*07:174, 07:202, 07:222, 07:279, 07:409 <sup>w</sup> , 08:213:01- 08:213:02, 13:36, 15:02:01:01-15:02:13, 15:08:01:01-15:08:02, 15:11:01-15:11:07, 15:13:01-15:13:03, 15:15:01:01- 15:15:01:02, 15:21:01:01-15:21:01:02, 15:31:01:01- 15:31:01:03, 15:44, 15:55, 15:76 <sup>w</sup> , 15:88-15:89:02, 15:112, 15:121, 15:139, 15:144, 15:148, 15:170, 15:189:01-15:189:02, 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, 15:384:01-15:384:02, 15:394, 15:399, 15:404, 15:418, 15:420, 15:425, 15:437- 15:438, 15:454N, 15:460, 15:479, 15:486, 15:491, 15:495, 15:505, 15:508, 15:513, 15:537, 15:557, 15:567, 15:569, 15:574, 15:592, 15:596N, 15:615, 15:622-15:623, 15:627, 15:629-15:630, 15:637, 15:646, 15:648, 15:659, 15:662, 15:664-15:665, 27:24, 35:46, 35:311, 40:31, 40:45, 40:80, 48:01:01:01-48:01:11, 48:04:01:01-48:04:02, 48:06-48:07, 48:09, 48:11, 48:15-48:16, 48:18-48:20, 48:22, 48:24, 48:27- 48:39, 48:41-48:56, 51:104:01-51:104:02, 56:39 <sup>w</sup> , 81:01:01:01- 81:10
<b>58<sup>5,9</sup></b>	55 bp, 100 bp, 145 bp, 395 bp, 430 bp	1070 bp	15, 27, 44, 48, 49, 52, 59, 60, 61, 62, 63	*15:16:01:01-15:17:07, 15:24:01-15:24:02, 15:67, 15:87, 15:143, 15:152, 15:157, 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, 15:442, 15:446, 15:500, 15:516, 15:523, 15:532, 15:546Q, 15:550, 15:555, 15:575N, 15:586, 15:602- 15:603, 15:613, 15:619, 15:642, 15:644, 15:655, 27:02:01:01- 27:02:04, 27:02:06, 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, 27:163, 27:171-27:172, 27:176N, 27:181, 27:188, 27:197, 27:203, 27:213, 27:232, 27:236, 27:245-27:246N, 27:251, 37:34, 38:25, 40:13, 40:19, 40:61, 40:109, 40:117, 40:292, 40:340, 40:394, 41:46, 41:60, 44:18:01:01-44:18:01:02, 44:25, 44:50:01, 44:50:03, 44:95, 44:355, 48:18, 49:01:01:01-49:01:24, 49:03- 49:14, 49:16-49:25, 49:27-49:69, 49:71-49:80, 51:112, 51:231, 51:310, 52:01:01:01-52:01:28, 52:01:30-52:19, 52:21:01-52:72, 52:74-52:113, 53:17:01-53:17:02, 53:28, 53:30, 53:39, 54:12, 55:103, 56:21, 56:42, 56:54, 56:65, 57:45, 57:51, 57:69, 57:128, 58:100, 58:111, 59:01:01:01-59:07, 59:09-59:12, <b>A*24:309, A*32:39</b>
<b>59<sup>5</sup></b>	120 bp, 210 bp	<b>800 bp</b>	5, 13, 15, 17, 22, 35,	*07:78, 07:84, 07:429, 13:02:38, 13:16, 13:31 <sup>w</sup> , 13:48, 13:62, 13:128, 13:131 <sup>w</sup> , 13:145 <sup>w</sup> , 13:178, 14:37,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

			45, 49, 50, 51, 5102, 5103, 52, 55, 56, 62, 63, 78	15:04:01:01 <sup>w</sup> -15:04:04 <sup>w</sup> , 15:16:01:01-15:16:05, 15:42, 15:67, 15:95, 15:137 <sup>w</sup> , 15:254, 15:293, 15:303 <sup>w</sup> , 15:310, 15:362, 15:408, 15:517, 15:531 <sup>w</sup> , 15:550, 15:602, 15:609 <sup>w</sup> , 15:613, 27:153, 35:265 <sup>w</sup> , 40:06:30, 40:95, 40:148, 40:161, 44:459, 46:32:01 <sup>w</sup> -46:32:02 <sup>w</sup> , 49:01:01:01-49:01:01:18, 49:01:03-49:10, 49:12-49:14, 49:16-49:44, 49:46, 49:48-49:60N, 49:62-49:80, 50:01:01:01-50:02:01:02, 50:04:01-50:11, 50:13-50:16, 50:18- 50:22, 50:31-50:46, 50:47 <sup>w</sup> , 50:48, 50:50, 50:52-50:65, 50:67- 50:69, 50:71-50:79, 51:01:01:01-51:03, 51:05:01:01- 51:05:01:02, 51:07:01-51:08:04, 51:08:06-51:09:03, 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, 51:158:01-51:193:02, 51:195-51:212, 51:214-51:219, 51:221-51:226, 51:228-51:280, 51:282-51:292, 51:294-51:309, 51:311-51:318N, 51:320-51:337, 51:339-51:340, 51:342- 51:351, 51:354-51:358, 51:360-51:377N, 51:379-51:381, 52:01:01:01-52:87, 52:89N-52:96N, 52:97 <sup>w</sup> , 52:98-52:113, 54:20, 54:33 <sup>w</sup> , 55:01:01:01-55:01:06, 55:01:08-55:01:29, 55:02:11, 55:03, 55:05, 55:09, 55:11, 55:15, 55:17, 55:21 <sup>w</sup> , 55:24-55:25, 55:28:01-55:29, 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, 55:97N-55:106, 55:108-55:109, 55:111, 55:113-55:116, 55:118N-55:119, 55:121-55:122, 55:124-55:127, 56:05:01- 56:06, 56:21, 56:25, 56:37, 58:08:01-58:08:02, 59:12, 78:01:01:02-78:10, <b>C*03:464, C*05:152, C*12:183<sup>w</sup>, C*14:92</b>
<b>60</b>	390 bp, 430 bp	1070 bp	5, 17, 27, 35, 44, 51, 5102, 5103, 52, 53, 57, 58, 61, 78	*15:506, 18:33, 18:67, 18:136, 18:194:01:01-18:194:01:02, 27:02:01:01-27:02:06, 27:12:01:01-27:12:01:03, 27:16, 27:30, 27:53, 27:57, 27:62, 27:65N, 27:75, 27:77, 27:83, 27:92, 27:95, 27:102, 27:119, 27:126, 27:134, 27:153, 27:157, 27:163, 27:171-27:172, 27:176N, 27:181, 27:188, 27:197, 27:203, 27:213, 27:232, 27:236, 27:242, 27:245-27:246N, 27:251, 35:26, 35:82, 35:85, 35:135, 35:294, 35:471, 37:34, 37:57, 39:189, 40:13, 40:19, 40:75 <sup>?</sup> , 40:109 <sup>?</sup> , 40:292 <sup>?</sup> , 40:322 <sup>?</sup> , 40:340 <sup>?</sup> , 44:06, 44:25, 44:50:01, 44:50:03, 44:95, 44:263, 49:62, 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, 51:79-51:340, 51:342-51:366, 51:368-51:370, 51:372-51:381, 52:01:01:01-52:01:28, 52:01:30-52:19, 52:21:01-52:89N, 52:91-52:113, 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, 53:39-53:54, 53:56-53:66, 53:68-53:72, 57:01:01:01-57:04:02, 57:05-57:11, 57:13-57:167, 58:01:01:01- 58:02:02, 58:04-58:16:02, 58:18-58:29, 58:31N-58:63, 58:65- 58:107, 58:109-58:136, 58:138-58:143, 78:03
<b>61</b>	145 bp, 210 bp	1070 bp	7, 12, 21, 27, 2708, 35, 4005, 41, 45, 46, 47, 50, 60, 61, 73	*07:133, 07:177, 08:102, 08:122, 08:155, 13:09, 13:67, 14:48, 15:46, 15:53, 15:106, 15:143, 15:183, 15:212, 15:336, 15:345, 15:511, 15:525, 15:559, 18:48, 18:80, 18:102, 18:107, 27:08, 27:12:01:01-27:12:01:03, 27:18, 27:26, 27:33, 27:40, 27:42, 27:44, 27:89, 27:153, 27:165 <sup>w</sup> , 27:204:01:01- 27:204:01:02, 27:242, 35:19, 35:47, 35:63, 35:84, 35:90, 35:150:01-35:150:02, 35:154, 35:184, 35:201, 35:217, 35:274, 35:317, 35:441, 35:450, 39:69, 40:01:01-40:11:02, 40:14:01- 40:16:01:02, 40:18, 40:20:01:01-40:20:01:02, 40:22N-40:40, 40:42-40:46, 40:48-40:75, 40:77-40:95, 40:97-40:108,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				40:111-40:116, 40:118N-40:136, 40:138-40:156, 40:158-40:187, 40:189-40:200, 40:202-40:291N, 40:293-40:339, 40:341-40:364, 40:366-40:393, 40:395-40:399N, 40:401-40:538, 41:01:01:01-41:04, 41:06-41:25, 41:27-41:45N, 41:47-41:59, 41:61-41:81, 44:09, 44:46:01-44:46:02, 44:75, 44:90, 44:129, 44:131, 44:254, 44:277, 44:356, 44:438N, 45:01:01:01-45:01:08, 45:01:10-45:15, 45:17-45:25, 45:27-45:30, 46:10, 47:02, 47:03 <sup>w</sup> , 48:41, 50:01:01:01-50:02:01:02, 50:04:01-50:22, 50:31-50:79, 56:36, 56:67, 73:01:01:01-73:03, <b>C*03:504, C*07:828</b>
62 <sup>8</sup>	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, 07:400, 07:453, 08:17, 08:38:01-08:38:02, 08:54:01-08:54:02, 08:101, 08:228, 08:285, 13:01:01:01-13:01:14, 13:01:16-13:04, 13:06, 13:08-13:23, 13:25-13:35, 13:37-13:179, 15:01:01:01-15:01:04, 15:01:06-15:01:18, 15:01:20-15:01:80, 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, 15:30:01:01-15:30:01:03, 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, 15:73:01:01-15:75, 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, 15:125:01-15:129, 15:131-15:132, 15:135-15:138, 15:140-15:142, 15:145-15:147, 15:150-15:152, 15:154-15:160:01:02, 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, 15:217-15:220:04, 15:224-15:225, 15:227-15:228, 15:231-15:237, 15:239-15:245:02Q, 15:247-15:251:03, 15:253, 15:255-15:262:02N, 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, 15:320-15:322, 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-15:478, 15:480-15:485, 15:488-15:490, 15:492-15:494, 15:496N-15:497, 15:499, 15:501-15:502, 15:507, 15:510-15:512, 15:514-15:515, 15:517-15:522, 15:524-15:525, 15:527-15:529, 15:531, 15:533:01-15:536, 15:538-15:545, 15:547, 15:549N, 15:551-15:552, 15:554, 15:556, 15:558-15:562N, 15:564-15:566, 15:568, 15:571-15:572, 15:576-15:591, 15:593-15:595, 15:597-15:601, 15:604N-15:606, 15:608-15:610, 15:614:01:01-15:614:01:02, 15:616Q-15:618, 15:621, 15:624-15:626, 15:628, 15:631-15:636, 15:638-15:641, 15:645, 15:647, 15:649-15:654, 15:656-15:658, 15:660-15:661, 15:663, 18:12:01-18:12:02, 18:178, 18:195, 27:01-27:21:02, 27:24-27:91, 27:93-27:108, 27:110-27:156, 27:158-27:214, 27:216-27:241, 27:243N-27:245, 27:247-27:265, 35:10, 35:13, 35:16, 35:28:01:01-35:28:01:03, 35:63, 35:69, 35:80, 35:207, 35:226, 35:270, 35:317-35:318, 35:361, 35:477, 35:534, 35:541, 37:01:01:01-37:07, 37:09-37:66,



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				37:68-37:107, 38:03-38:04, 38:25, 39:02:01:01-39:02:03, 39:08, 39:13:01-39:13:02, 39:22-39:23, 39:49, 39:101, 39:105, 39:110, 39:162, 39:164, 39:184, 40:01:01-40:07, 40:09-40:16:01:02, 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, 40:358-40:480, 40:482-40:538, 41:01:01:01-41:81, 42:11, 44:02:01:01-44:02:21, 44:02:23-44:02:64, 44:02:66-44:03:35, 44:03:37-44:03:44, 44:03:46-44:05:06, 44:07-44:11, 44:13-44:170, 44:172-44:231, 44:233-44:245:02, 44:247-44:262, 44:264-44:355, 44:357-44:364, 44:366N-44:373, 44:437-44:524, 44:526-44:546, 45:01:01:01-45:21, 45:23-45:25, 45:27-45:30, 47:01:01:02-47:12, 48:01:01:01-48:05, 48:07-48:15, 48:17-48:38, 48:40-48:57, 49:01:01:01-49:14, 49:16-49:25, 49:27-49:62, 49:64-49:66, 49:68-49:80, 50:01:01:01-50:02:01:02, 50:04:01-50:14, 50:16-50:22, 50:31-50:79, 51:310, 52:01:01:01-52:72, 52:74-52:113, 53:17:01-53:17:02, 53:28, 53:38, 54:35, 55:18, 55:34, 55:40, 56:67, 78:05-78:06
<b>63</b> <sup>7,13,14</sup>	160 bp, 370 bp	1070 bp	22, 44, 45, 47, 54	*08:87, 08:255, 15:578, 27:127, 41:55, 44:02:01:01-44:02:79, 44:06, 44:08-44:09, 44:11-44:12, 44:16, 44:19N-44:24, 44:27:01:01-44:27:04, 44:33-44:34:02, 44:41:01-44:41:02, 44:44, 44:48:01-44:49, 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, 44:269-44:270:02, 44:273-44:274, 44:279, 44:287, 44:289, 44:291-44:293, 44:296-44:297, 44:301, 44:303N, 44:306N, 44:311-44:315, 44:320-44:322, 44:326-44:327, 44:329, 44:331, 44:334N-44:335, 44:337-44:338, 44:341N-44:344, 44:350-44:351, 44:353, 44:356-44:359, 44:361-44:363, 44:366N, 44:369, 44:371-44:372, 44:437, 44:439, 44:441-44:442, 44:445-44:446, 44:448N-44:449N, 44:451-44:453, 44:455, 44:457, 44:461-44:464:01:02, 44:467-44:468, 44:470, 44:473, 44:477-44:480Q, 44:482, 44:484, 44:492, 44:494-44:495, 44:497-44:499, 44:502-44:503, 44:505, 44:515, 44:517-44:518, 44:520-44:521, 44:523N, 44:526, 44:528, 44:532, 44:534-44:535, 44:537, 44:540, 44:543-44:544N, 51:274, 54:01:01:01-54:46, 83:01
<b>64</b>	180 bp, 210 bp, 240 bp	1070 bp	8, 13, 15, 18, 22, 35, 39, 40, 42, 51, 54, 55, 56, 59, 62, 78	*07:65, 07:206, 08:09, 08:26:03, 08:56:03, 08:84, 08:181, 13:06, 13:46, 13:53, 13:131, 14:37, 15:01:76, 15:32:02, 15:42, 15:83:01:01-15:83:01:02, 15:86, 15:224, 15:485, 18:04:01, 18:98:02, 18:125, 18:191, 35:03:27, 35:08:05, 35:42:02, 35:60, 35:185, 35:276, 39:06:01:01-39:06:08, 39:17, 39:34, 39:57, 39:62-39:64, 39:83:01-39:83:03, 39:90, 39:109, 39:127, 39:129, 39:132, 39:140-39:141, 39:154, 39:178, 39:186-39:187, 40:01:11, 40:58, 41:66, 42:04, 45:08, 46:18, 46:40:01, 49:76, 50:45, 50:49, 51:21, 51:36, 51:101, 51:143, 51:153:01-51:153:02, 51:157, 51:197, 51:280, 51:295, 51:300, 51:340,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

				51:376, 52:37, 52:71, 52:84, 54:01:01:01-54:02, 54:04-54:05N, 54:07-54:08N, 54:10-54:25, 54:27-54:32, 54:34-54:39, 54:41-54:46, 55:01:01:01-55:03, 55:05, 55:07, 55:10-55:21, 55:23, 55:25-55:48, 55:50, 55:52-55:85, 55:87-55:109, 55:111-55:133, 56:05:01, 56:06, 56:10, 56:23, 56:54, 56:66, 57:26, 59:01:01:01-59:03, 59:05-59:08, 59:10N-59:11, 78:01:01:02-78:01:02, 78:02:02-78:03, 78:07-78:10, <b>C*01:90, C*06:72, C*07:536, C*07:758, C*08:207:01, C*12:183, C*14:92, C*15:91, C*15:128</b>
<b>65</b>	180 bp, 205 bp	1070 bp	7, 12, 15, 21, 22, 44, 45, 49, 50, 56, 61, 62, 82, C <sup>w</sup> 3	*07:29, 07:186, 07:383, 08:123, 08:132, 13:03, 13:48, 13:120, 13:146, 13:164, 15:73:01:01-15:73:01:02, 15:303, 15:486, 15:552, 35:432, 35:446, 35:545, 40:71, 44:10, 44:15:01:01-44:15:01:02, 44:18:01:01-44:18:01:02, 44:140, 44:339-44:340, 44:355, 45:01:01:01-45:01:12, 45:04-45:07, 45:11-45:23, 45:24 <sup>w</sup> , 45:25, 45:27-45:28N, 45:30, 46:11, 49:01:01:01-49:01:07, 49:01:09-49:03, 49:06, 49:08-49:14, 49:16-49:17, 49:19N-49:49, 49:51-49:60N, 49:62-49:75, 49:77-49:80, 50:01:01:01-50:02:01:02, 50:04:01-50:08, 50:10-50:13, 50:15-50:19, 50:21-50:22, 50:32, 50:34-50:38, 50:40-50:44, 50:46-50:48, 50:50-50:79, 51:15, 51:62, 51:106:01-51:106:02, 51:223, 51:225, 52:25:01-52:25:02, 54:03, 54:33, 54:40, 56:01:01:01-56:01:04, 56:01:06-56:01:12, 56:01:14-56:02:03, 56:04:01:01-56:04:04, 56:07-56:08, 56:13-56:14, 56:16-56:17, 56:20:01-56:20:02, 56:24-56:30, 56:33-56:49, 56:51-56:53, 56:55:01:02-56:59, 56:61-56:65, 56:67-56:87, 56:89-56:93, 58:73, 59:04, 59:12, 82:01:01:01-82:04, <b>C*03:19, C*03:102, C*07:1059</b>
<b>66<sup>5</sup></b>	90 bp, 150 bp, 410 bp	<b>800 bp</b>	57	*15:462, 39:172, 57:01:01:01-57:01:22, 57:01:24-57:01:44, 57:01:46-57:04:01, 57:04:03-57:35, 57:37-57:88, 57:90-57:108, 57:110-57:127, 57:129-57:167, 58:36, <b>C*06:140</b>
<b>67<sup>5,9,12</sup></b>	90 bp	1070 bp	5, 13, 17, 35, 39, 49, 55, 56, 58, 60, 61, 62, 71	*07:182N, 07:424, 07:473, 13:11, 13:58, 15:18:03, 15:73:01:01-15:73:01:02, 15:86, 15:224, 15:486, 18:191, 35:60, 35:291, 35:432, 35:446, 35:545, 39:17, 40:48, 40:71, 40:377, 40:522, 45:22, 49:03, 49:47:01-49:47:02, 50:51 <sup>w</sup> , 51:15, 51:62, 51:106:02, 51:157, 51:225, 51:300, 52:25:01, 55:130, 56:02:01:01-56:02:03, 56:04:01:01-56:04:04, 56:10, 56:45, 56:51, 56:56-56:57, 56:63, 56:66, 57:120, 58:01:01:01-58:01:20, 58:01:21 <sup>w</sup> , 58:01:22-58:02:02, 58:04-58:29, 58:31N-58:35, 58:37-58:43, 58:45:01-58:99, 58:101-58:110, 58:112-58:143, 82:03, <b>A*02:339, A*02:510, C*02:06:01-02:06:02, C*02:47, C*05:132, C*06:168<sup>w</sup>, C*06:224<sup>w</sup>, C*07:536, C*07:725, C*08:207:01, C*12:03:66<sup>w</sup>, C*12:15<sup>w</sup>, C*12:208, C*15:58<sup>w</sup>, C*15:72, C*15:225</b>
<b>68<sup>5</sup></b>	95 bp	1070 bp	8, 18, 22, 35, 37, 38, 39, 44, 51, 5102, 5103, 53, 78	*07:65 <sup>w</sup> , 07:134 <sup>w</sup> , 08:32, 08:133, 08:180, 08:239, 15:308, 18:01:01:01-18:03:01:03, 18:04:01-18:11, 18:13-18:15, 18:17N-18:36, 18:38-18:47, 18:49-18:65, 18:67-18:106Q, 18:108-18:124, 18:126-18:177, 18:179-18:194:01:02, 18:196-18:231Q, 35:01:01:01-35:01:55, 35:01:57-35:08:04, 35:08:06-35:09:04, 35:11:01-35:12:04, 35:14:01-35:15:02, 35:17:01:01-35:18, 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, 35:76 <sup>w</sup> , 35:77-35:79, 35:81-35:153, 35:155-35:185, 35:187-35:190, 35:192-35:197, 35:199-35:206, 35:208:01-35:209, 35:211-35:216N, 35:218-35:225,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				35:227-35:253, 35:255-35:269, 35:272-35:273, 35:275-35:310, 35:312-35:316, 35:319-35:360, 35:362-35:449, 35:451-35:476, 35:478-35:533, 35:535-35:540, 35:542N-35:560, 35:561 <sup>w</sup> , 35:562-35:569, 35:571-35:578, 37:08, 37:67, 38:06-38:07, 39:19:01-39:19:02, 39:186, 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, 51:148-51:230:01:03, 51:232:01-51:266, 51:268-51:283, 51:285-51:309, 51:311-51:381, 53:01:01:01-53:16, 53:18-53:27, 53:29, 53:31-53:37, 53:40-53:72, 55:130 <sup>w</sup> , 56:06 <sup>w</sup> , 56:45 <sup>w</sup> , 78:01:01:02-78:04, 78:07-78:10
69 <sup>5,9</sup>	115 bp, 150 bp	1070 bp	15, 18, 22, 27, 35, 39, 46, 55, 62, 72, 73, 75, 76	*07:100, 07:428, 13:31, 13:41, 13:131, 13:145, 13:164, 15:01:01:01-15:01:04, 15:01:06-15:01:16, 15:01:18-15:01:30, 15:01:32-15:01:80, 15:04:01:01-15:04:04, 15:07:01:01-15:08:02, 15:11:01-15:12:03, 15:14-15:15:01:02, 15:19, 15:24:01-15:24:02, 15:26N-15:28, 15:30:01:01-15:30:01:03, 15:32:01-15:32:02, 15:34:01-15:35:02, 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, 15:73:01:01-15:73:01:02, 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, 15:125:01-15:126, 15:128-15:129, 15:135, 15:137, 15:140, 15:142-15:149N, 15:152, 15:154, 15:157, 15:159-15:160:01:02, 15:163-15:167, 15:169, 15:171-15:172, 15:174-15:175, 15:178, 15:180-15:184, 15:187, 15:189:01-15:193, 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, 15:251:01-15:251:03, 15:256-15:262:02N, 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, 15:450, 15:452-15:453, 15:456-15:457, 15:459, 15:461, 15:464-15:467, 15:469-15:474, 15:476-15:484, 15:486, 15:488-15:490, 15:492-15:493, 15:496N, 15:498-15:499, 15:501, 15:507, 15:510, 15:512-15:515, 15:520Q-15:522, 15:525, 15:528N-15:529, 15:531, 15:533:01-15:536, 15:538, 15:540N-15:542, 15:545, 15:547, 15:549N, 15:551, 15:554, 15:556, 15:558-15:559, 15:561-15:562N, 15:565, 15:568, 15:572, 15:576, 15:579-15:581, 15:583, 15:585-15:586, 15:590-15:591, 15:593-15:595, 15:597-15:598, 15:600-15:601, 15:604N-15:606, 15:608-15:609, 15:618, 15:621-15:622, 15:624, 15:631-15:632, 15:634-15:635, 15:637-15:641, 15:647, 15:649, 15:652-15:653, 15:656, 15:660, 15:662-15:663, 18:19, 18:164, 27:25, 27:75, 27:115, 27:161, 27:245, 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, 35:413, 35:475-35:476, 35:512, 35:549, 37:60, 37:66, 39:18, 39:36, 44:146,



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
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Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				44:275, 44:299, 46:01:01:01-46:02, 46:04-46:05, 46:07N, 46:09-46:10, 46:12, 46:14-46:17, 46:20, 46:22-46:24, 46:26-46:32:02, 46:34-46:42, 46:44, 46:46-46:53, 46:55N-46:57, 46:60-46:61, 46:63-46:82, 46:84-46:92, 46:94-46:98N, 50:47, 51:61:01-51:61:02, 51:220, 52:21:01-52:21:02, 52:97, 53:70, 54:06, 54:33, 54:40, 55:21, 56:03, 56:43, 57:147, 57:161, 58:78, 73:01:01:01-73:03, <b>A*25:66, A*26:68, A*26:100, A*26:200, A*68:56:01-68:56:02, C*02:56, C*06:20, C*12:50</b>
<b>70<sup>14</sup></b>	360 bp	1070 bp	Bw4	*07:27, 07:36, 07:38, 07:81, 07:149, 07:180, 07:219, 07:236, 07:273, 07:453, 08:02-08:03, 08:52, 08:78, 08:117, 08:126, 08:255, 08:271, 13:01:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:66, 13:68-13:179, 14:93, 14:118, 15:13:01-15:13:03, 15:16:01:01-15:17:07, 15:23-15:24:02, 15:36, 15:43, 15:67, 15:87, 15:89:01-15:89:02, 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, 15:500, 15:505, 15:516, 15:523, 15:532, 15:546Q, 15:550, 15:555, 15:575N, 15:586, 15:594, 15:602-15:603, 15:613, 15:619, 15:642, 15:644, 15:655, 18:09, 18:54, 18:67, 18:136, 18:194:01:01-18:195, 27:01-27:05:36, 27:05:38-27:07:06, 27:09-27:11, 27:13:01-27:17, 27:19:01:01-27:21:02, 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, 27:170-27:203, 27:205-27:214, 27:216-27:241, 27:243N-27:259, 27:261N-27:265, 35:36, 35:329, 35:471, 37:01:01:01-37:04:02, 37:06:01-37:10, 37:12-37:36, 37:38-37:66, 37:68-37:95, 37:97-37:107, 38:01:01:01-38:107, 38:160-38:173Q, 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, 41:60, 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, 44:132-44:245:02, 44:247-44:253, 44:255-44:276, 44:278-44:344, 44:346-44:355, 44:357-44:363, 44:365-44:373, 44:437, 44:439-44:457, 44:459-44:524, 44:526-44:546, 47:01:01:02-47:01:06, 47:03-47:12, 48:18, 48:56, 49:01:01:01-49:14, 49:16-49:20, 49:22-49:80, 51:01:01:01-51:24:05, 51:26-51:46, 51:48-51:381, 52:01:01:01-52:110N, 52:112-52:113, 53:01:01:01-53:72, 54:12, 55:90, 55:103, 55:121, 56:07, 56:21, 56:46, 56:65, 57:01:01:01-57:11, 57:13-57:167, 58:01:01:01-58:02:02, 58:04-58:29, 58:31N-58:63, 58:65-58:127, 58:129-58:143, 59:01:01:01-59:12
<b>71</b>	350 bp	1070 bp	Bw6	*07:02:01:01-07:02:05, 07:02:07-07:02:77, 07:02:79-07:26, 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, 07:274-07:452, 07:454-07:478, 08:01:01:01-08:01:69, 08:04:01-08:05, 08:07-08:51, 08:53:01-08:77, 08:79:01-08:116, 08:118-08:125, 08:127-08:130, 08:132-08:135, 08:137-08:138, 08:140-08:152, 08:154-08:156, 08:158-08:254, 08:256-08:270Q, 08:272-08:308, 13:09, 13:39, 13:67, 14:01:01:01-14:92, 14:94-14:117, 14:119, 15:01:01:01-15:01:04, 15:01:06-15:01:70, 15:01:72-15:12:03, 15:14-15:15:01:02, 15:18:01:01-15:21:01:02, 15:25:01:01-15:35:02, 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,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

				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-15:499, 15:501-15:504:02, 15:506-15:515, 15:517-15:522, 15:524-15:531, 15:533:01-15:545, 15:547-15:549N, 15:551-15:554, 15:556-15:574, 15:576-15:585, 15:587-15:593, 15:595-15:601, 15:604N-15:612, 15:614:01:01-15:618, 15:620-15:641, 15:643, 15:645-15:654, 15:656-15:665, 18:01:01:01-18:08, 18:10-18:15, 18:17N-18:53, 18:55-18:66, 18:68-18:135:01:02, 18:137-18:178, 18:180-18:193, 18:196-18:231Q, 27:08, 27:12:01:01-27:12:01:03, 27:18, 27:26, 27:33, 27:40, 27:42, 27:44, 27:89, 27:153, 27:165 <sup>w</sup> , 27:204:01:01-27:204:01:02, 27:242, 35:01:01:01-35:01:38, 35:01:40-35:02:08, 35:02:10-35:43:01, 35:43:03-35:72, 35:74-35:221, 35:223-35:247:02, 35:249-35:292, 35:294-35:328, 35:330-35:423, 35:425-35:470, 35:472-35:521, 35:523-35:524, 35:526-35:569, 35:571-35:578, 37:05, 37:11, 37:14 <sup>w</sup> , 37:37, 37:67, 39:01:01:01-39:01:01:29, 39:01:03:01-39:01:14, 39:01:16-39:20, 39:22-39:103, 39:105-39:195, 40:01:01-40:12:02, 40:14:01-40:16:01:02, 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, 40:341-40:393, 40:395-40:399N, 40:401-40:538, 41:01:01:01-41:25, 41:27-41:45N, 41:47-41:59, 41:61-41:81, 42:01:01:01-42:02:02, 42:04-42:21, 42:23-42:34, 44:09, 44:46:01-44:46:02, 44:75, 44:90, 44:129, 44:131, 44:254, 44:277, 44:356, 44:438N, 45:01:01:01-45:01:08, 45:01:10-45:15, 45:17-45:25, 45:27-45:30, 46:01:01:01-46:98N, 47:02, 47:03 <sup>w</sup> , 48:01:01:01-48:17, 48:19-48:55, 48:57, 50:01:01:01-50:02:01:02, 50:04:01-50:22, 50:31-50:79, 54:01:01:01-54:11, 54:13-54:46, 55:01:01:01-55:05, 55:07-55:89N, 55:91-55:102, 55:104-55:120, 55:122-55:133, 56:01:01:01-56:06, 56:08-56:20:02, 56:22-56:45, 56:47-56:64, 56:66-56:93, 57:12, 58:64, 67:01:01-67:07, 73:01:01:01-73:03, 78:01:01:02-78:10, 81:01:01:01-81:10, 82:01:01:01-82:04, 83:01
72	285 bp	1070 bp	7, 703, 8, 35, 40, 41, 42, 48, 53, 60, 61, 81	*07:02:01:01-07:02:05, 07:02:07-07:02:38, 07:02:40-07:02:84, 07:02:86-07:06:05, 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, 07:256-07:342, 07:344-07:358, 07:360Q-07:385, 07:387-07:428, 07:430-07:441, 07:443-07:467Q, 07:469N-07:478, 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, 08:185-08:231, 08:233-08:253, 08:256-08:273, 08:275-08:290, 08:292-08:308, 13:174, 15:297, 27:164, 35:66, 35:87, 35:530, 37:07, 40:15-40:16:01:02, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98,



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

40:137, 40:160:01-40:160:02, 41:02:01:01-41:02:11, 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, 41:58,  
 41:65, 41:68-41:69, 41:71-41:72, 41:74, 41:81, 42:01:01:01-  
 42:02:02, 42:05:01-42:07, 42:09-42:13, 42:15-42:34, 44:150,  
 44:166, 44:342, 48:01:01:01-48:01:11, 48:05-48:12, 48:14-  
 48:20, 48:22, 48:27-48:39, 48:41-48:50, 48:52, 48:54-48:56,  
 53:15, 81:01:01:01-81:10, **C\*03:260**

<sup>1</sup>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 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.

<sup>2</sup>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 25 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.

<sup>3</sup>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.

<sup>4</sup>For several HLA Class I alleles 1<sup>st</sup> and/or 4<sup>th</sup> 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.

<sup>5</sup>HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

<sup>6</sup>Primer mix 28 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes in B\*40, B\*41, B\*45, B\*49 and B\*50 alleles.

<sup>7</sup>Primer mixes 28, 29, 33, 38 and 63 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes.

<sup>8</sup>Primer mixes 33, 42, 52 and 62 may have tendencies of unspecific amplifications, most pronounced in primer mix 33.

<sup>9</sup>Primer mixes 25, 27, 38, 41, 42, 43, 44, 50, 58, 67 and 69 have a tendency to giving rise to primer oligomer formation.

<sup>10</sup>The B\*57 and B\*58 alleles might be faintly amplified by primer mix 33.

<sup>11</sup>The C\*17:01 to C\*17:04 alleles might be faintly amplified by primer mix 49.

<sup>12</sup>Primer mix 67 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

<sup>13</sup>Primer mix 63 may give rise to a lower yield of B\*54 alleles than the other B low primer mixes.

<sup>14</sup>The Bw4-associated HLA-A specificities A9, A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 70.

Abbreviations

w: might be weakly amplified.

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



**0197**

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MA123 v02 SSP PI Template

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Lot No.: **3S2**

Lot-specific information

## SPECIFICITY TABLE

### HLA-C low resolution SSP typing

Specificities and sizes of the PCR products of the 23+1 primer mixes used for HLA-C low resolution SSP typing

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	Amplified HLA class I alleles <sup>3</sup>
<b>73<sup>4</sup></b>	90 bp, 150 bp, 210 bp	<b>800 bp</b>	*01:02:01:01-01:248, 03:58, 03:86, 03:94, 03:416, 04:37, 04:71, 04:436N, 05:85, 05:107, 05:200, 05:241, 06:204, 07:316, 07:338, 07:579, 12:215, 14:45, 14:58, 15:102, 15:104, <b>B*15:539, B*39:76, B*54:18</b>
<b>74<sup>5</sup></b>	130 bp, 200 bp, 270 bp, 300 bp	<b>800 bp</b>	*01:10, 01:43, 02:02:01-02:02:03, 02:02:06-02:40:02, 02:42-02:57, 02:59-02:196, 02:198-02:220, 04:32, 04:77, 04:265, 04:357, 04:406, 04:447, 05:105, 05:200, 05:206, 06:08, 07:101, 07:148, 07:161, 07:583, 08:31, 08:185, 08:246, 08:252, 12:119, 12:198, 14:25, 15:42, 15:111, 15:201, 16:29, 16:50, 17:01:01:02-17:06, 17:08-17:16:02, 17:18-17:22, 17:24-17:32, 17:34-17:71, 18:03
<b>75<sup>12</sup></b>	250 bp, 280 bp	<b>800 bp</b>	*01:48, 01:169:02, 02:02:01-02:02:03, 02:02:06-02:40:02, 02:42-02:86, 02:88-02:106, 02:108-02:133, 02:135N-02:151, 02:153-02:166, 02:168-02:220, 03:02:01-03:02:29, 03:04:01:01-03:10, 03:14-03:17:02, 03:19, 03:23N-03:29, 03:32:01:01-03:38:02, 03:40:01-03:42:02, 03:44-03:48, 03:51, 03:54, 03:57:01-03:57:02, 03:60, 03:63-03:64:01, 03:65, 03:70-03:74, 03:77-03:78, 03:80:01-03:80:02, 03:82, 03:84, 03:87:01-03:87:02, 03:89-03:95, 03:98, 03:100-03:101, 03:104-03:111, 03:113:01-03:115:02, 03:117-03:118, 03:121N, 03:123, 03:125, 03:128-03:131, 03:134-03:140:01:02, 03:143, 03:145-03:149, 03:153-03:157, 03:159, 03:162-03:164, 03:166, 03:169Q-03:170, 03:172-03:174, 03:178-03:181, 03:183-03:184:02, 03:186:01-03:186:02, 03:190-03:191, 03:193-03:194, 03:197-03:201N, 03:208N-03:213, 03:215-03:216, 03:218-03:219, 03:221-03:222, 03:224N-03:226, 03:232-03:236, 03:238-03:240, 03:244Q-03:250, 03:252, 03:255-03:261, 03:263:01-03:266, 03:269-03:270, 03:277N-03:283, 03:286-03:287:02, 03:292-03:294, 03:296:01-03:303, 03:305-03:306, 03:309-03:311, 03:313-03:315, 03:317-03:318N, 03:322-03:323N, 03:326, 03:328-03:335, 03:337-03:338, 03:340, 03:342-03:343, 03:347-03:350, 03:353-03:355, 03:358-03:359, 03:361-03:362, 03:365-03:366N, 03:368-03:369, 03:371, 03:373, 03:376, 03:379, 03:381-03:382, 03:384-03:388, 03:390-03:394, 03:396:01N-03:397, 03:399-03:412, 03:415, 03:417, 03:419-03:420, 03:423-03:426, 03:429, 03:431, 03:434-03:435, 03:437, 03:439, 03:441-03:443, 03:445N-03:446N, 03:448Q-03:449N, 03:452-03:456, 03:458-03:459, 03:462N-03:470N, 03:473, 03:475, 03:478, 03:480:01-03:480:02, 03:482-03:489, 03:491:01-03:494, 03:496-03:502Q, 03:505, 03:508N, 03:510N-03:513, 03:518, 03:521-03:523, 03:525-03:526, 03:531N-03:532, 03:536, 03:538-03:539, 03:543-03:544, 03:546-03:549, 03:552-03:555, 03:558, 03:561-03:562, 03:564-03:566, 03:569-03:572, 03:575Q-03:577, 03:580-03:581, 03:584, 03:588-03:589, 03:591, 03:593, 03:596, 03:599-03:600, 03:602-03:605, 03:610, 03:612-03:615,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
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Lot No.: **3S2**

Lot-specific information

			03:618N-03:621, 03:623, 03:625N-03:627, 03:629-03:631, 03:633, 04:03:01:01-04:03:11, 04:06:01-04:06:03, 04:16, 04:80, 04:107, 04:147, 04:160:01-04:160:02, 04:171, 04:190, 04:256, 04:286, 04:294, 04:299, 04:335, 04:337, 04:351:01-04:351:02, 04:357, 04:363, 04:381, 04:383, 04:393, 04:400, 04:402, 04:473, 04:489, 05:58:01-05:58:04, 05:281, 06:03:01, 06:70:01-06:70:02, 06:132:01-06:132:02, 06:305, 07:20:01-07:20:02, 07:96:01-07:96:02, 07:127:01-07:127:02, 07:263, 07:314:02, 07:390, 07:562, 07:578, 07:756, 08:01:35, 08:105, 08:239, 12:02:17, 12:03:23, 12:140:01-12:140:02, 12:239, 12:353, 14:03:01:01-14:03:05, 14:22, 14:35N, 14:38, 14:41, 14:53-14:54, 14:61, 14:70, 14:79, 14:86, 14:90, 14:112-14:113, 14:116, 14:118, 14:126, 14:141N, 15:02:01:01-15:05:07, 15:05:09-15:09:02, 15:10:02-15:10:03, 15:11, 15:13:01:01-15:13:02, 15:15-15:19, 15:21-15:62, 15:64-15:106, 15:108-15:143, 15:145N-15:207, 15:209-15:257, 16:34, 16:70, 16:121, <b>A*01:110, A*02:636, A*03:210, A*11:135, A*24:137, A*32:96, A*68:160, B*07:234, B*15:125:02, B*15:315, B*18:126, B*39:138, B*44:85:01-44:85:02, B*46:77, B*50:56, B*51:226, B*55:30, B*58:74, B*58:107</b>
<b>76<sup>4,6</sup></b>	85 bp, 170 bp, 210 bp, 275 bp	1070 bp	*01:67, 01:122, 01:131, 03:02:01-03:03:51, 03:03:53-03:04:06, 03:04:08-03:11:02, 03:13:01:01-03:15, 03:17:01-03:40:04, 03:42:01-03:57:02, 03:59-03:79, 03:80:02-03:85, 03:87:01-03:93, 03:95-03:98, 03:100-03:112, 03:114-03:150, 03:152-03:164, 03:166-03:250, 03:252-03:259, 03:261-03:266, 03:268-03:285, 03:287:01-03:292, 03:294-03:383, 03:385-03:434, 03:436-03:450, 03:452-03:511N, 03:513-03:533, 03:537-03:539, 03:541-03:589, 03:592-03:606, 03:608-03:636N, 04:201:02, 04:212, 07:133:01, 07:242, 07:330:01, 07:748, 15:218, <b>B*15:96, B*35:537, B*44:274</b>
<b>77</b>	280 bp	<b>800 bp</b>	*03:03:01:01-03:03:20, 03:03:22-03:03:50, 03:03:52-03:03:66, 03:11:01-03:11:02, 03:13:01:01-03:13:02, 03:18:02-03:18:03, 03:20N-03:22Q, 03:30-03:31, 03:43:01-03:43:02, 03:49-03:50, 03:52-03:53, 03:55-03:56, 03:58-03:59, 03:61-03:62, 03:66, 03:67 <sup>w</sup> , 03:68-03:69, 03:75-03:76, 03:79, 03:81, 03:83, 03:85-03:86, 03:88, 03:96:01-03:97, 03:102-03:103, 03:112, 03:116:01-03:116:02, 03:119:01-03:120, 03:122, 03:124, 03:126-03:127, 03:132-03:133, 03:141-03:142, 03:150-03:152, 03:158, 03:160-03:161, 03:165:01-03:165:02, 03:167-03:168, 03:171, 03:175-03:177, 03:185, 03:187-03:189N, 03:192, 03:196, 03:202-03:207, 03:214, 03:217, 03:220, 03:223, 03:227-03:230, 03:237, 03:241-03:243, 03:251, 03:253-03:254, 03:262, 03:267-03:268, 03:271-03:276, 03:284-03:285, 03:288-03:291, 03:295 <sup>w</sup> , 03:304, 03:307-03:308, 03:312, 03:316N, 03:319-03:321, 03:324-03:325, 03:327, 03:336, 03:339, 03:341, 03:345-03:346, 03:351-03:352, 03:356-03:357, 03:360, 03:363N-03:364, 03:367, 03:370, 03:372:01-03:372:02, 03:374-03:375, 03:377N-03:378, 03:380N, 03:383, 03:389, 03:395, 03:398, 03:413-03:414, 03:416, 03:418, 03:421N-03:422, 03:427-03:428, 03:430, 03:432N-03:433, 03:436, 03:438, 03:440, 03:444N, 03:447N, 03:450-03:451, 03:457, 03:460-03:461, 03:471-03:472, 03:474, 03:476-03:477, 03:479, 03:481, 03:490, 03:495, 03:503, 03:506-03:507, 03:509N, 03:514-03:517, 03:519-03:520, 03:524, 03:527-03:529, 03:533-03:535:01:02, 03:537, 03:540-03:542, 03:545, 03:550-03:551, 03:556, 03:559-03:560N, 03:563, 03:567-03:568, 03:573-03:574, 03:578-03:579, 03:582-03:583, 03:585-03:587, 03:590,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
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Lot No.: **3S2**

Lot-specific information

			03:592, 03:594-03:595, 03:597-03:598, 03:601, 03:606-03:609, 03:611, 03:616-03:617, 03:622, 03:624, 03:632, 03:634-03:636N, 15:12, 15:144
<b>78<sup>12</sup></b>	135 bp, 330 bp	<b>800 bp</b>	*02:02:01-02:02:03, 02:02:06-02:02:12, 02:02:14-02:02:25, 02:02:27-02:02:28, 02:02:30-02:02:20, 02:22-02:25Q, 02:27:01-02:38:02N, 02:40:01-02:40:02, 02:42-02:44, 02:46-02:86, 02:88-02:100, 02:101 <sup>w</sup> , 02:102-02:106, 02:108-02:133, 02:135N-02:151, 02:153-02:166, 02:168-02:188, 02:190, 02:192N-02:220, 03:231, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:27, 04:01:29-04:01:60, 04:01:62, 04:01:64, 04:01:66-04:01:150, 04:03:01:01-04:03:08, 04:03:10-04:07:01, 04:08-04:15:03, 04:17-04:20, 04:23-04:41, 04:43-04:102, 04:104-04:139, 04:141-04:195, 04:197-04:212, 04:214-04:219, 04:221-04:235, 04:237-04:303, 04:305N-04:310, 04:312-04:350N, 04:352-04:502, 05:26, 05:78:01-05:78:02, 07:01:74, 07:02:09, 07:125:01-07:125:02, 07:356, 07:531, 07:583, 07:723, 07:1010, 08:163, 08:183, 08:252, 12:269, 12:349, 15:11, 15:36, 15:118, 16:34, 16:121, 16:150
<b>79</b>	170 bp, 390 bp, 445 bp	1070 bp	*02:94, 04:129, 05:01:01:01-05:01:74, 05:03-05:244N, 05:246-05:281, 06:05, 06:67, 06:359N, 08:10, 12:21, 12:33, 15:107, 15:178, 16:40, 16:53, 16:110, 16:113, 17:05
<b>80<sup>4,12</sup></b>	125 bp, 355 bp	<b>800 bp</b>	*01:02:49, 01:90, 01:101-01:102, 01:113, 01:136, 01:145:01N, 01:146:01-01:146:02, 01:233, 02:06:01-02:06:02, 02:23, 02:36:01-02:36:02, 02:47, 02:111, 03:04:98, 04:23, 04:100, 04:108, 04:178, 04:335, 04:422, 05:01:56, 05:22:01-05:22:02, 05:132, 05:215, 05:241, 05:252, 06:02:01:01-06:02:01:94, 06:02:03-06:02:38:02, 06:02:40-06:02:71, 06:02:73-06:02:101, 06:02:103-06:16N, 06:18-06:31, 06:33-06:76:01, 06:77-06:93, 06:96-06:98, 06:100-06:132:01, 06:133-06:179, 06:181-06:235, 06:237-06:243, 06:245-06:328, 06:330-06:334, 06:336Q-06:347N, 06:349-06:363, 08:83, 08:108, 08:113, 08:207:01, 12:02:11, 12:02:35, 12:03:09, 12:03:26, 12:03:66, 12:15, 12:113, 12:208, 12:298, 12:309, 14:26, 15:02:01:01-15:03, 15:05:01:01-15:05:07, 15:05:09-15:13:02, 15:15-15:19, 15:21-15:23:02, 15:26-15:29, 15:31-15:39, 15:41-15:64, 15:67-15:75, 15:78:01-15:101, 15:103-15:189N, 15:191-15:210, 15:212-15:221, 15:223-15:235Q, 15:237-15:245, 15:247N-15:253Q, 15:255-15:257, 16:01:16, 16:20, 16:109, 16:169, 17:70, <b>B*58:02:01:01-58:02:02</b>
<b>81<sup>7</sup></b>	245 bp, 425 bp	<b>800 bp</b>	*07:01:01:01-07:01:02:14, 07:01:04-07:33N, 07:35-07:294, 07:296-07:1065, 08:252, 12:181, 12:349, 14:121
<b>82<sup>4,8,12</sup></b>	110 bp, 165 bp, 390 bp	<b>800 bp</b>	*01:43, 02:87, 03:280, 03:530, 07:101, 07:148, 07:161, 07:583, 08:01:01:01-08:01:07, 08:01:09-08:63, 08:65-08:264, 12:127, 12:203, 16:139
<b>83</b>	155 bp, 255 bp, 340 bp	1070 bp	*01:14, 01:59, 01:118, 01:186, 02:02:01-02:02:03, 02:02:06-02:40:02, 02:42-02:86, 02:88-02:220, 03:04:101, 03:07:01:01-03:07:02, 03:15, 03:45, 03:130, 03:140:01:01-03:140:01:02, 03:163, 03:231, 03:243, 03:248, 03:268, 03:297, 03:308, 03:461, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:150, 04:03:01:01-04:20, 04:23-04:502, 05:01:01:01-05:01:74, 05:03-05:128N, 05:130-05:244N, 05:246-05:281, 06:02:01:01-06:02:01:94, 06:02:03-06:02:11, 06:02:13-06:02:64, 06:02:66-06:10, 06:12-06:51, 06:53:01-06:121, 06:123, 06:125-06:146, 06:148-06:216, 06:218-06:247, 06:249-06:251, 06:253-06:279, 06:281N-06:363, 07:07, 07:09, 07:49, 07:53, 07:76:01-07:76:02,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

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Lot No.: **3S2**

Lot-specific information

			07:125:01-07:125:02, 07:210, 07:216, 07:238, 07:247, 07:315, 07:328, 07:356, 07:403, 07:406, 07:531, 07:598, 07:932, 07:1010, 08:10, 12:04:01-12:05:02, 12:09, 12:21, 12:33, 12:41, 12:54, 12:60, 12:146, 12:188, 12:194, 12:353, 12:362, 14:04, 14:12, 14:49, 14:64, 14:77, 14:90, 14:108, 14:140, 15:02:01:01-15:05:07, 15:05:09-15:05:10, 15:05:13-15:06:03, 15:08:01-15:13:02, 15:15-15:19, 15:22-15:24, 15:26-15:42, 15:44:01-15:70, 15:72-15:115N, 15:117-15:143, 15:145N-15:243Q, 15:245-15:247N, 15:249-15:257, 16:01:01:01-16:02:20, 16:06-16:09, 16:11-16:28, 16:30N-16:32, 16:34, 16:36-16:39:02, 16:41, 16:43-16:44, 16:46-16:52, 16:54, 16:56-16:60, 16:62-16:65, 16:69-16:77N, 16:79-16:81, 16:83-16:108, 16:111-16:123N, 16:125-16:148, 16:151-16:168, 16:170-16:181, 16:183-16:187, 16:189-16:198, 16:200-16:202, 16:204-16:206N, 17:01:01:02-17:21, 17:23-17:61, 17:63-17:71, 18:01:01:01-18:19, <b>A*24:174, B*57:129</b>
<b>84<sup>4,10</sup></b>	100 bp, 155 bp, 220 bp	<b>800 bp</b>	*01:02:18, 01:04, 01:21, 02:02:44, 06:02:38:01-06:02:38:02, 06:76:02, 07:940, 12:02:01-12:02:13, 12:02:16-12:02:18, 12:02:20-12:02:29, 12:02:31, 12:02:33, 12:02:35-12:02:36, 12:02:38-12:02:39, 12:02:41-12:03:01:61, 12:03:03-12:03:07, 12:03:09-12:03:15, 12:03:17-12:03:19, 12:03:21-12:03:29, 12:03:31-12:03:33, 12:03:35-12:03:83, 12:04:02:01-12:04:02:02, 12:05:01-12:08, 12:10:01-12:13:01:02, 12:14:02-12:18:01, 12:19-12:25, 12:27-12:32, 12:34-12:58, 12:60-12:85:01, 12:86-12:143, 12:145-12:180, 12:182-12:184, 12:186-12:195:02, 12:196-12:207, 12:209-12:221, 12:223, 12:225-12:232N, 12:234-12:297, 12:300-12:308, 12:310-12:384, 14:02:08, 14:02:21, 14:03:05, 16:01:17, 16:02:13, 16:15:02, <b>B*18:01:42, B*57:01:24</b>
<b>85<sup>4,10</sup></b>	120 bp, 250 bp	<b>800 bp</b>	*01:21, 01:215, 02:12, 02:49, 02:55:01-02:55:02, 02:115, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:150, 04:03:01:01-04:03:08, 04:03:10-04:07:01, 04:08-04:09N, 04:12-04:20, 04:23-04:35:02, 04:37-04:54:02, 04:56-04:152, 04:154-04:168, 04:170N-04:191N, 04:193, 04:195-04:209, 04:211-04:213, 04:216-04:226, 04:228-04:248, 04:250-04:277, 04:279N <sup>w</sup> , 04:280-04:298, 04:300N-04:346, 04:348-04:413, 04:415-04:502, 05:42, 05:46:01:01-05:46:01:02, 05:112, 06:02:72, 06:76:02, 06:335, 07:01:74, 07:02:09, 07:125:01-07:125:02, 07:356, 07:531, 07:583, 07:723, 08:05, 08:21, 08:25, 08:137, 12:02:01-12:02:10, 12:02:12-12:02:27, 12:02:28 <sup>w</sup> , 12:02:30-12:03:03, 12:03:05-12:03:08, 12:03:10-12:03:12, 12:03:13 <sup>w</sup> , 12:03:14-12:03:23, 12:03:24 <sup>w</sup> , 12:03:25-12:03:33, 12:03:35-12:03:83, 12:04:02:01-12:04:03, 12:06-12:08, 12:10:01-12:16:01, 12:17-12:20, 12:22-12:32, 12:34-12:48, 12:50-12:97, 12:99:01-12:122, 12:124-12:187, 12:189-12:194, 12:195:02, 12:196-12:298, 12:300, 12:302-12:380, 12:382-12:383, 14:90, 15:03, 15:16:01-15:16:02, 15:25, 15:75, 16:01:01:01-16:02:20, 16:06-16:28, 16:30N-16:32, 16:34, 16:36-16:39:02, 16:41, 16:43-16:47, 16:49:01-16:52, 16:54, 16:56-16:60, 16:62-16:65, 16:67, 16:69-16:77N, 16:79-16:81, 16:83-16:87, 16:89N-16:90, 16:92-16:102, 16:104-16:108, 16:111-16:123N, 16:125-16:139, 16:141-16:148, 16:151-16:181, 16:183-16:198, 16:200-16:202, 16:204-16:206N, 17:01:04, <b>B*35:570, B*67:02:01:01-67:02:01:02</b>
<b>86<sup>13</sup></b>	160 bp, 210 bp	<b>800 bp</b>	*01:04, 01:09:01-01:09:02, 01:160, 01:244, 02:05:01-02:05:03, 02:17, 04:42:01-04:42:02, 04:220, 04:360, 04:477, 04:496, 06:02:01:01-06:02:01:94, 06:02:03-06:02:15, 06:02:17-06:02:42,



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Lot No.: **3S2**

Lot-specific information

			06:02:44-06:03:02, 06:07-06:13, 06:15-06:34:02, 06:36-06:39, 06:41-06:71, 06:73-06:78, 06:80, 06:82-06:100, 06:102:01-06:122, 06:124-06:126, 06:128N-06:135, 06:137-06:142, 06:145-06:152N, 06:154-06:196, 06:198-06:202, 06:205-06:263N, 06:265-06:270, 06:272-06:303, 06:305-06:316N, 06:318-06:357N, 06:359N-06:363, 07:31:01-07:31:02, 07:125:01-07:125:02, 07:177, 07:356, 07:514:01-07:514:02, 07:531, 07:1010, 12:03:01:01-12:03:46, 12:03:48-12:07, 12:11-12:13:01:02, 12:15, 12:19, 12:23, 12:25-12:26, 12:28-12:29, 12:31:01-12:35, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50-12:55, 12:57:01-12:63, 12:65-12:66, 12:70-12:71, 12:75-12:79, 12:81-12:82, 12:87-12:95, 12:97-12:102, 12:107-12:111, 12:113, 12:115-12:116, 12:119-12:122, 12:125, 12:129, 12:131, 12:133, 12:135, 12:138-12:141, 12:143-12:144, 12:147, 12:149-12:150, 12:152, 12:154, 12:156-12:160, 12:163, 12:165, 12:167, 12:170-12:174, 12:176, 12:178, 12:180, 12:182, 12:184-12:187, 12:189-12:192, 12:194-12:195:03, 12:197, 12:199, 12:201-12:203, 12:205-12:206, 12:209-12:211, 12:213, 12:215-12:216, 12:218, 12:220, 12:223, 12:225, 12:227, 12:229-12:230, 12:232N, 12:235, 12:237-12:238, 12:242, 12:244-12:246, 12:248-12:249, 12:253-12:254, 12:256-12:257, 12:259-12:260:02, 12:262, 12:264-12:267, 12:269, 12:271-12:274:01N, 12:276-12:278, 12:282-12:284, 12:286, 12:288-12:293, 12:295N, 12:297, 12:300-12:302, 12:305-12:306, 12:310-12:314, 12:316-12:326, 12:328, 12:330Q-12:334, 12:337, 12:339-12:343N, 12:345N-12:350, 12:352-12:358, 12:360-12:361, 12:364-12:370, 12:372-12:380, 12:382, 12:384, 14:15-14:16, 14:87, 16:04:01:01-16:04:01:03, 16:04:03-16:04:05, 16:29, 16:33, 16:35, 16:42, 16:48, 16:55, 16:61, 16:66, 16:78, 16:82, 16:91, 16:109, 16:124, 16:149-16:150, 16:182, 16:203, <b>B*15:510, B*35:475, B*46:84</b>
<b>87<sup>12</sup></b>	130 bp, 255 bp, 555 bp	1070 bp	*01:02:68, 01:02:71, 01:168-01:169:02, 02:02:01-02:02:03, 02:02:06-02:13, 02:15-02:26:03, 02:28-02:40:02, 02:42-02:64, 02:66-02:86, 02:88-02:106, 02:108-02:114, 02:116-02:130, 02:132-02:163, 02:165N-02:186, 02:188-02:220, 03:07:01:01-03:07:02, 03:10, 03:15, 03:29, 03:45, 03:58, 03:86, 03:94, 03:163, 03:209, 03:268, 03:297, 03:302, 03:450, 03:461, 04:03:01:01-04:03:11, 04:06:01-04:06:03, 04:16, 04:37, 04:80, 04:103:01-04:103:02, 04:107, 04:147, 04:160:01-04:160:02, 04:171, 04:190, 04:256, 04:286, 04:294, 04:299, 04:335, 04:337, 04:351:01-04:351:02, 04:357, 04:363, 04:381, 04:393, 04:400, 04:402, 04:489, 05:01:01:01-05:01:74, 05:03-05:19, 05:21-05:42, 05:44:01-05:77, 05:79-05:112, 05:114-05:155, 05:157-05:199, 05:201, 05:203-05:244N, 05:246-05:281, 06:03:01-06:03:02, 06:76:01-06:76:02, 06:132:01-06:132:02, 08:10, 12:04:01-12:05:02, 12:09, 12:21, 12:33, 12:41, 12:60, 12:72, 12:135, 12:146, 12:154, 12:178, 12:353, 14:45, 15:02:01:01-15:05:07, 15:05:09-15:06:03, 15:08:01-15:13:02, 15:15-15:19, 15:21-15:22, 15:24, 15:26-15:35, 15:37-15:42, 15:44:01-15:62, 15:64-15:84Q, 15:86-15:137, 15:139-15:143, 15:145N-15:157, 15:159-15:161, 15:163-15:180, 15:182-15:257, 16:02:01:01-16:02:20, 16:09, 16:12, 16:18-16:19, 16:25, 16:37, 16:46-16:48, 16:60, 16:63, 16:69-16:70, 16:74, 16:77N, 16:84, 16:88-16:91, 16:99, 16:101-16:104, 16:107-16:108, 16:115, 16:120-16:121, 16:123N, 16:132N-16:133, 16:136, 16:140, 16:143-16:145, 16:153, 16:155-16:156, 16:163, 16:166-16:167, 16:176, 16:179, 16:181, 16:184,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

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Lot No.: **3S2**

Lot-specific information

			16:194-16:195N, 16:202, 17:01:01:02-17:19, 17:21, 17:23-17:71, 18:09, <b>B*15:277, B*15:430, B*35:222, B*35:525, B*35:570, B*42:22, B*46:84, B*47:01:06, B*54:38</b>
<b>88<sup>11,12</sup></b>	160 bp, 260 bp, 445 bp	1070 bp	*01:67, 01:122, 01:125, 01:177, 01:218, 03:155, 03:231, 03:351, 03:557, 04:11, 04:29, 04:36, 04:55, 04:114, 04:172, 06:359N, 07:64, 07:293, 07:402, 07:519, 08:74, 08:95, 08:163, 08:183, 08:251, 12:55, 12:269, 14:02:01:01-14:11, 14:13-14:48, 14:50-14:107, 14:109, 14:111-14:146, 14:148N-14:151, 16:40, 16:53, 16:110, 16:113, 16:150, 16:170, <b>A*29:86, A*30:62, A*31:187, A*33:63, B*08:249, B*08:306, B*18:64, B*35:183, B*35:252, B*35:502, B*39:114, B*39:140, B*40:138, B*41:59</b>
<b>89<sup>4,9</sup></b>	110 bp, 325 bp	<b>800 bp</b>	*01:90, 01:101-01:102, 01:113, 01:116, 02:06:01-02:06:02, 02:23, 02:36:01-02:36:02, 02:68, 03:81, 03:175, 03:199, 03:245, 03:317, 03:388, 04:108, 04:112, 04:169, 04:178, 04:422, 05:36, 05:132, 05:215, 05:238, 06:89, 06:224, 07:01:74, 07:123:01-07:123:02, 07:173, 07:294, 07:626, 07:725, 07:775, 07:850, 08:113, 12:08, 12:15, 12:81, 12:113, 12:188, 12:208, 12:282, 12:287, 12:309, 14:92, 15:02:01:01-15:05:07, 15:05:09-15:13:02, 15:15-15:19, 15:21-15:24, 15:26-15:257, 16:20, 16:64, 16:70, 16:87, 16:109, 16:169
<b>90<sup>11,14</sup></b>	180 bp, 210 bp, 240 bp	1070 bp	*01:160, 02:13, 02:18, 02:33, 02:49, 02:75, 02:115, 02:180, 03:03:64, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:22, 04:01:24-04:01:73, 04:01:74 <sup>w</sup> , 04:01:75-04:01:150, 04:03:01:01-04:03:08, 04:03:10-04:07:01, 04:08-04:10, 04:12-04:20, 04:23-04:32, 04:34-04:106, 04:108-04:115N, 04:117-04:129, 04:131-04:166:01, 04:166:03-04:168, 04:170N-04:171, 04:173N-04:230, 04:232-04:282, 04:284-04:413, 04:415-04:502, 05:17, 05:25, 05:42, 05:55, 05:68, 05:76, 05:79, 05:115, 05:134, 05:143, 06:02:72, 06:05, 06:31, 06:76:02, 06:118, 07:01:74, 07:02:09, 07:31:01-07:31:02, 07:125:02, 07:154, 07:177, 07:514:01-07:514:02, 07:583, 08:01:01:01-08:01:07, 08:01:09-08:01:17, 08:01:19-08:01:35, 08:03:01:01-08:03:05, 08:06, 08:08:01-08:11, 08:14, 08:16:01-08:16:02, 08:20-08:22:02, 08:24, 08:26N, 08:28, 08:36N, 08:38, 08:40-08:42, 08:44, 08:46-08:47, 08:50, 08:56-08:61, 08:65, 08:72:01-08:72:02, 08:78-08:89N, 08:91, 08:95-08:99, 08:101-08:102, 08:105-08:106, 08:109, 08:117-08:119, 08:121N-08:122, 08:124, 08:127N-08:131, 08:133, 08:135-08:137, 08:141Q, 08:143-08:145, 08:147-08:149, 08:153-08:155, 08:157, 08:162-08:164, 08:168, 08:173N-08:176, 08:178, 08:186-08:190, 08:192-08:194, 08:196-08:197, 08:199, 08:203-08:205, 08:208N-08:210, 08:212, 08:217, 08:219-08:221, 08:228, 08:232, 08:234-08:236N, 08:241, 08:244, 08:249-08:255, 08:259, 08:261, 12:14:01-12:14:02, 12:28, 12:58, 12:132, 12:135, 12:146, 12:169, 12:176, 12:181, 12:252, 12:287, 12:325, 12:333, 12:371, 14:10, 14:15, 14:17, 14:87, 14:116, 15:12, 15:25, 15:31, 15:62, 15:65, 15:75, 15:144, 15:169, 16:01:01:01-16:02:20, 16:04:01:01-16:04:01:03, 16:04:03-16:04:05, 16:06-16:39:02, 16:41-16:42, 16:44-16:52, 16:54-16:109, 16:111-16:112, 16:114-16:139, 16:141-16:198, 16:200-16:206N, <b>B*35:570</b>
<b>91<sup>10</sup></b>	225 bp, 250 bp, 290 bp	<b>800 bp</b>	*01:60, 02:40:01-02:40:02, 02:180, 04:58, 04:160:01-04:160:02, 04:368, 04:447, 04:480, 05:23, 05:62, 05:134, 05:143, 05:146, 05:151, 05:163, 05:206, 06:118, 08:07, 08:47, 08:104, 08:142, 08:185, 08:188, 12:14:01-12:14:02, 12:92, 12:176, 12:371, 14:17, 15:25, 15:65, 15:201, 17:01:01:02-17:71



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
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Lot No.: **3S2**

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<b>92</b>	215 bp, 420 bp	<b>800 bp</b>	*01:02:01:01-01:20, 01:22-01:248, 03:58, 03:86, 03:94, 04:37, 04:230, 04:263, 04:397, 04:432, 04:442, 05:16, 05:85, 05:107, 05:241, 06:05-06:06:01:02, 06:17, 06:31, 06:79N, 06:204, 06:271, 07:07, 07:09, 07:39-07:40, 07:49, 07:76:01-07:76:02, 07:177, 07:210, 07:238, 07:247, 07:315, 07:328, 07:335, 07:403, 07:406, 07:563, 07:598, 07:975, 07:993:01-07:993:02, 07:1059, 08:12:01:01-08:12:01:02, 08:252, 12:09, 12:24, 12:176, 12:333, 14:02:01:01-14:05, 14:07N, 14:10-14:14, 14:17-14:27, 14:29-14:52, 14:55-14:62, 14:64-14:76, 14:78-14:86, 14:88-14:89, 14:91, 14:93N-14:104, 14:106-14:149, 14:151, 15:102, 16:04:01:01-16:04:01:03, 16:04:03-16:04:05, 16:29, 16:33, 16:42, 16:53, 16:55, 16:61, 16:66, 16:68, 16:78, 16:82, 16:88, 16:91, 16:109, 16:124, 16:149-16:150, 16:182, 16:203, 18:01:01:01-18:19, <b>B*07:239, B*14:03, B*14:112, B*58:02:02</b>
<b>93</b>	325 bp, 380 bp	1070 bp	*01:03:01-01:03:03, 01:24, 01:34, 01:49:01-01:50, 01:55, 01:78, 01:131, 01:176, 02:22, 02:62, 02:118, 02:197, 03:03:01:01-03:04:102, 03:06:01:01-03:11:02, 03:14, 03:18:01-03:24, 03:26:01-03:26:02, 03:28-03:32:01:02, 03:34, 03:37:01-03:59, 03:61-03:70, 03:72-03:83, 03:85, 03:87:01-03:88, 03:90-03:93, 03:96:01-03:96:02, 03:98, 03:100-03:107, 03:109, 03:111-03:120, 03:122-03:131, 03:133-03:134, 03:136-03:138, 03:140:01:01-03:145, 03:147-03:153, 03:155-03:166, 03:168, 03:170-03:176, 03:179-03:189N, 03:191-03:193, 03:195-03:196, 03:202-03:215, 03:217-03:220, 03:223, 03:227-03:237, 03:239-03:244Q, 03:246-03:247, 03:250-03:257, 03:259-03:261, 03:262?, 03:263:01-03:263:03, 03:265N-03:270, 03:272-03:291, 03:293-03:295, 03:297, 03:303-03:314, 03:316N-03:325, 03:327-03:328, 03:331, 03:333-03:334, 03:336-03:337, 03:339-03:348, 03:351-03:364, 03:366N-03:370, 03:372:01-03:372:02, 03:374-03:385, 03:387-03:390, 03:392N-03:401, 03:404:01:01-03:405, 03:408-03:410, 03:413-03:424N, 03:426-03:428, 03:430, 03:432N-03:448Q, 03:450-03:451, 03:453-03:463N, 03:465-03:467, 03:469-03:472, 03:476-03:481, 03:483-03:488, 03:490-03:492, 03:495-03:496, 03:498-03:504, 03:506-03:531N, 03:533-03:535:01:02, 03:537-03:543, 03:545-03:546, 03:548, 03:550-03:554, 03:556-03:560N, 03:562-03:574, 03:576-03:583, 03:585-03:588, 03:590-03:595, 03:597-03:607, 03:609, 03:611, 03:616-03:617, 03:620-03:622, 03:624, 03:627-03:636N, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:15, 04:01:17-04:01:150, 04:03:01:01-04:20, 04:24-04:53, 04:55-04:71, 04:73-04:107, 04:109-04:334, 04:336-04:340, 04:342-04:359, 04:361-04:366, 04:368-04:438, 04:440-04:476, 04:478-04:495, 04:497-04:502, 05:01:01:01-05:01:50, 05:01:52-05:01:57, 05:01:59-05:01:74, 05:03, 05:05:01-05:21, 05:23-05:102, 05:104-05:106:02, 05:108-05:122, 05:124-05:131, 05:133-05:134, 05:136-05:146, 05:148-05:190, 05:192-05:206, 05:208N-05:214, 05:216:01:01-05:237, 05:239N-05:240, 05:242-05:244N, 05:246-05:251N, 05:253N-05:271N, 05:273-05:281, 06:09:01-06:09:02, 06:14, 06:35, 06:72, 06:143-06:144, 07:10, 07:28, 07:41, 07:43:01-07:43:02, 07:184, 07:196, 07:367, 07:536, 07:568, 07:857, 07:892, 07:987, 07:1028, 08:01:01:01-08:01:07, 08:01:09-08:02:37, 08:02:39-08:08:02, 08:10, 08:12:01:01-08:47, 08:49-08:63, 08:65-08:82, 08:84-08:107, 08:109-08:112, 08:114-08:151, 08:153-08:204, 08:206-08:264, 12:31:01-12:31:02, 12:44, 12:144, 12:233, 12:309, 12:344, 14:54, 15:02:01:01-15:02:51, 15:02:53-15:02:54, 15:02:56-15:05:07, 15:05:09-15:05:17,



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

			15:05:19-15:13:02, 15:15-15:19, 15:21, 15:23:01-15:36, 15:38-15:54, 15:56-15:57, 15:59-15:64, 15:66-15:71, 15:73-15:101, 15:103-15:124, 15:126-15:148, 15:150-15:189N, 15:191-15:224, 15:226-15:257, 16:45, 17:01:01:02-17:69, 18:01:01:01-18:13, 18:15-18:19, <b>B*73:01:01:01<sup>w</sup>-73:03<sup>w</sup></b>
<b>94<sup>12</sup></b>	135 bp	<b>800 bp</b>	*01:169:02, 01:177, 01:246, 02:02:13, 02:02:29, 02:02:38, 02:02:53, 03:02:01-03:02:09, 03:02:11-03:03:20, 03:03:22-03:03:50, 03:03:52-03:03:63, 03:03:65-03:04:14, 03:04:16-03:04:24, 03:04:27-03:11:02, 03:13:01:01-03:17:02, 03:18:02-03:38:02, 03:40:01-03:64:01, 03:65-03:66, 03:67 <sup>w</sup> , 03:68-03:98, 03:100-03:117, 03:119:01-03:136, 03:138-03:143, 03:146-03:155, 03:157-03:165:02, 03:167-03:169Q, 03:171, 03:173-03:181, 03:183-03:194, 03:196-03:230, 03:232-03:247, 03:249-03:263:03, 03:265N-03:277N, 03:278 <sup>w</sup> , 03:279-03:294, 03:295 <sup>w</sup> , 03:296:01-03:323N, 03:325-03:341, 03:343, 03:345-03:453, 03:455-03:458, 03:460-03:478, 03:480:01-03:503, 03:505-03:529, 03:531N-03:565, 03:566 <sup>w</sup> , 03:567-03:600, 03:602-03:609, 03:611-03:627, 03:629-03:633, 03:635N-03:636N, 04:03:09, 04:07:02, 04:32, 04:77, 04:265, 04:447, 06:03:01, 06:132:01-06:132:02, 07:64, 07:96:01-07:96:02, 07:314:02, 07:402, 07:578, 07:756, 14:25, 15:02:10, 15:02:17, 15:43, 18:03, <b>B*13:13:02, B*40:01:49-40:01:50, B*46:77</b>
<b>95<sup>12</sup></b>	160 bp, 230 bp	1070 bp	*01:215, 04:14, 04:42:01-04:42:02, 04:68, 04:220, 05:112, 06:02:01:01-06:02:01:94, 06:02:03-06:02:108, 06:04:01-06:75, 06:78-06:131, 06:133-06:363, 07:01:01:01-07:01:02:14, 07:01:04-07:01:40, 07:01:41 <sup>w</sup> , 07:01:42-07:01:92, 07:01:94-07:02:07, 07:02:09-07:02:28, 07:02:30-07:02:40, 07:02:41 <sup>w</sup> , 07:02:42-07:02:90, 07:02:92-07:25, 07:27:01-07:32N, 07:35-07:38:02, 07:41-07:63, 07:65-07:91, 07:93:01-07:95, 07:97-07:138, 07:140:01-07:151, 07:153-07:155, 07:157-07:176, 07:178-07:209, 07:211-07:222, 07:223 <sup>w</sup> , 07:224-07:237, 07:239-07:245, 07:247-07:266, 07:268-07:294, 07:297-07:313, 07:315-07:316, 07:318-07:321, 07:323-07:334, 07:336-07:350N, 07:352-07:401, 07:403-07:404, 07:405:02-07:414, 07:415 <sup>w</sup> -07:416 <sup>w</sup> , 07:417-07:448, 07:450:01-07:492, 07:494Q-07:516, 07:518-07:577, 07:579-07:582Q, 07:584-07:713Q, 07:715:01-07:722, 07:725-07:755, 07:757-07:820N, 07:822-07:844, 07:846:01-07:869, 07:871-07:890, 07:892-07:893, 07:895-07:935, 07:937-07:969, 07:971-07:974Q, 07:976-07:988, 07:990-07:992, 07:994-07:1044N, 07:1045 <sup>w</sup> , 07:1046-07:1055, 07:1057-07:1058, 07:1060, 07:1062N-07:1065, 12:16:01-12:16:02, 12:147, 12:195:01-12:195:03, 12:217, 14:90, 15:75, 16:01:01:01-16:02:20, 16:06-16:28, 16:30N-16:32, 16:34, 16:36-16:39:02, 16:41, 16:43-16:47, 16:49:01-16:52, 16:54, 16:56-16:60, 16:62-16:65, 16:67, 16:69-16:77N, 16:79-16:81, 16:83-16:87, 16:89N-16:90, 16:92-16:102, 16:104-16:108, 16:111-16:123N, 16:125-16:139, 16:141-16:148, 16:151-16:181, 16:183-16:198, 16:200-16:202, 16:204-16:206N, 17:20, 18:01:01:01-18:08, 18:10-18:16, 18:18-18:19, <b>A*24:64, A*24:96, A*24:106, A*24:174, B*08:16, B*08:123, B*08:145, B*44:347, B*44:527, B*50:76, B*57:129</b>
<b>96<sup>5</sup></b>	-	-	<b>Negative control</b>



**0197**

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**Lot-specific information**

<sup>1</sup>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-C 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.

<sup>2</sup>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 73 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.

<sup>3</sup>For several HLA Class I alleles 1<sup>st</sup> and/or 4<sup>th</sup> 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.

<sup>4</sup>HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

<sup>5</sup>Primer mix 74 will for most C\*02 alleles give rise to two specific PCR fragments.

<sup>6</sup>Primer mix 76 will for most C\*03 alleles give rise to two specific PCR fragments.

<sup>7</sup>Primer mix 81 will for most C\*07 alleles give rise to two specific PCR fragments.

<sup>8</sup>Primer mix 82 will for most C\*08 alleles give rise to multiple specific PCR fragments.

<sup>9</sup>Primer mix 89 will for most C\*15 alleles give rise to two specific PCR fragments.

<sup>10</sup>Primer mixes 84, 85 and 91 may have tendencies of unspecific amplifications.

<sup>11</sup>Primer mixes 88 and 90 have a tendency to giving rise to primer oligomer formation.

<sup>12</sup>Primer mixes 75, 78, 80, 82, 87, 88, 94 and 95 may give rise to a lower yield of HLA-specific PCR fragments than the other HLA-C low resolution primer mixes.

<sup>13</sup>Primer mix 86 might faintly amplify most C\*01 and the C\*14 alleles.

<sup>14</sup>In primer mix 90 the positive control band may be weaker than for other HLA-C low resolution primer mixes.

<sup>15</sup>Primer mix 96 contains a negative control, which will amplify the majority of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 200 base pairs.

Abbreviations

w: might be weakly amplified.

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



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Lot No.: **3S2**

Lot-specific information

### HLA-A LOW PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	120	135	205	190	160	135	175	165	80	80	80	125
PCR product	145	175	235		335	200	205	200		200	175	160
	225	215			505					240	500	190
		255										
		365										
		415										
Length of int.	800	800	1070	800	1070	800	1070	800	800	800	1070	800
pos. control <sup>1</sup>												
5'-primer(s) <sup>2</sup>	98	48	359	98	144	176	98	98	257	98	301	103
	5'-CTT 3'	5'-gCT 3'	5'-gCA 3'	5'-CTA 3'	5'-gCC 3'	5'-gCA 3'	5'-CTC 3'	5'-CTA 3'	5'-Cgg 3'	5'-CTA 3'	5'-Cgg 3'	5'-CCT 3'
	103	78	363	413	317	368	368	102	259	261	302	415
	5'-CCT 3'	5'-TCT 3'	5'-ATA 3'	5'-CCg 3'	5'-gCT 3'	5'-gTT 3'	5'-gTT 3'	5'-ACA 3'	5'-AgA 3'	5'-AAC 3'	5'-ggA 3'	5'-ggT 3'
	123	106	363					413	261		385	423
	5'-AgT 3'	5'-CCA 3'	5'-ATA 3'					5'-CCg 3'	5'-AAC 3'		5'-ggC 3'	5'-gCT 3'
	363	144							266			
	5'-ATA 3'	5'-gCA 3'							5'-ACg 3'			
	363											
	5'-ATg 3'											
3'-primer(s) <sup>3</sup>	203	240	527	256	265	270	259	259	302	256	341	257
	5'-TCT 3'	5'-ggA 3'	5'-CCA 3'	5'-CTg 3'	5'-CCC 3'	5'-ACA 3'	5'-gTT 3'	5'-gTT 3'	5'-ggC 3'	5'-CCA 3'	5'-CgT 3'	5'-gCA 3'
	545	292	527	559	368	521	502	259	303	299	521	506
	5'-AgA 3'	5'-gTg 3'	5'-CCT 3'	5'-CCg 3'	5'-CAA 3'	5'-ggg 3'	5'-CTT 3'	5'-gTT 3'	5'-AgA 3'	5'-TCg 3'	5'-ggg 3'	5'-TgT 3'
			527			526	539	538		300		538
			5'-CCT 3'			5'-CCg 3'	5'-TCT 3'	5'-CCA 3'		5'-TTT 3'		5'-CCg 3'
			555			534				308		559
			5'-CCA 3'			5'-CgT 3'				5'-TCT 3'		5'-CTC 3'
			555									559
			5'-gCA 3'									5'-CgT 3'
												559
												5'-CgC 3'
												563
												5'-CgA 3'
Well No.	1	2	3	4	5	6	7	8	9	10	11	12



0197

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot-specific information

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec. PCR product	180	80	90	145	140	200	370	210	65	85	80	360
	225	115	135	165	180	390		240	240	240	160	445
		200	205	240	240				375	400	240	
		240		380	260				545		495	
		460		410								
Length of int. pos. control <sup>1</sup>	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
5'-primer(s) <sup>2</sup>	98	98	203	41	98	41	302	78	28	47	176	257
	5'-CTT 3'	5'-CAC 3'	5'-gAA 3'	5'-CTT 3'	5'-CTT 3'	5'-CTT 3'	5'-ggA 3'	5'-TCT 3'	5'-TCg 3'	5'-g.T 3'	5'-gCA 3'	5'-Cgg 3'
	414	219	362	160	180	98	302	106	261	78	261	341
	5'-CAg 3'	5'-gCA 3'	5'-ggT 3'	5'-ACg 3'	5'-TTT 3'	5'-CAC 3'	5'-ggA 3'	5'-CCA 3'	5'-AAC 3'	5'-TCT 3'	5'-AAC 3'	5'-ggC 3'
	423	238	363	355	203		317	2 <sup>nd</sup> I	502	521	341	
	5'-gCT 3'	5'-AgA 3'	5'-ATA 3'	5'-CCg 3'	5'-gAA 3'		5'-gCg 3'	5'-CCT 3'	5'-CCC 3'	5'-ggT 3'	5'-ggA 3'	
		355	363		418			2 <sup>nd</sup> I		527	355	
		5'-CCg 3'	5'-ATA 3'		5'-AgC 3'			5'-ggC 3'		5'-TgC 3'	5'-CCC 3'	
		489	363								362	
		5'-gCA 3'	5'-ATA 3'								5'-gAg 3'	
			369								362	
			5'-TAC 3'								5'-gAg 3'	
3'-primer(s) <sup>3</sup>	282	180	299	238	290	256	397	265	97	265	292	418
	5'-gAC 3'	5'-TCA 3'	5'-CCA 3'	5'-CCT 3'	5'-CAA 3'	5'-CCC 3'	5'-gAg 3'	5'-CCC 3'	5'-ggT 3'	5'-CCC 3'	5'-gTg 3'	5'-gTC 3'
	282	257	411	238	299	259		282	355	282	292	
	5'-gAC 3'	5'-gCA 3'	5'-TCA 3'	5'-CCT 3'	5'-TCT 3'	5'-gTT 3'		5'-gAC 3'	5'-gAC 3'	5'-gAC 3'	5'-gTT 3'	
	559	418	526	243	317	261		282	524	282	299	
	5'-CCC 3'	5'-gTC 3'	5'-CCA 3'	5'-TCA 3'	5'-ggA 3'	5'-gTg 3'		5'-gAC 3'	5'-CAT 3'	5'-gAC 3'	5'-TCT 3'	
	560	555		265	555	265		502		570	555	
	5'-ACC 3'	5'-CCA 3'		5'-CCC 3'	5'-CCA 3'	5'-CCC 3'		5'-CTT 3'		5'-CAC 3'	5'-CCA 3'	
				282		265		506				
				5'-gAC 3'		5'-CCC 3'		5'-TgT 3'				
				555		265						
				5'-CCA 3'		5'-CCA 3'						
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

<sup>1</sup>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.

<sup>2</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.



0197

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Lot No.: **3S2**

Lot-specific information

### HLA-B LOW PRIMER SPECIFICATION

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec. PCR product	110	215	140	105	185	190	290	165	165	180	100	280
			235	140	235			225	190		195	
				260				285	390			
								330				
Length of int. pos. control <sup>1</sup>	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070
5'-primer(s) <sup>2</sup>	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'
	539		363	103	103	418		357	435		412	
	5'-gCg 3'		5'-AgC 3'	5'-CCg 3'	5'-CCT 3'	5'-Agg 3'		5'-Tgg 3'	5'-AAA 3'		5'-ATA 3'	
	540		363	361	363			412			416	
	5'-gAC 3'		5'-AgC 3'	5'-AgT 3'	5'-AAT 3'			5'-ATA 3'			5'-CCg 3'	
				363							420	
				5'-AgC 3'							5'-TTA 3'	
											420	
											5'-TTC 3'	
3'-primer(s) <sup>3</sup>	605	272	309	167	246	246	165	206	266	559	256	3 <sup>rd</sup> I
	5'-gCT 3'	5'-Tgg 3'	5'-gTg 3'	5'-ACA 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	559		272	
		5'-TgA 3'	5'-gCC 3'	5'-CgT 3'	5'-TAT 3'	5'-gCC 3'		5'-gTC 3'	5'-CAg 3'		5'-Tgg 3'	
		272	559	193	559			603	583		572	
		5'-TgT 3'	5'-CAg 3'	5'-CgT 3'	5'-CTC 3'			5'-gTg 3'	5'-gTg 3'		5'-gCg 3'	
				463								
				5'-gCT 3'								
				583								
				5'-gTg 3'								
Well No.	25	26	27	28	29	30	31	32	33	34	35	36



0197

101.702-24/06 – including *Taq* polymerase  
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Well No.	37	38	39	40	41	42	43	44	45	46	47	48
Length of spec. PCR product	195	105 395	115 150	80	100 150	140	55 245	210	170	110	395	160 425
		435					390 415					
Length of int. pos. control <sup>1</sup>	1070	<b>800</b>	1070	1070	<b>800</b>	1070	1070	<b>800</b>	<b>800</b>	1070	1070	1070
5'-primer(s) <sup>2</sup>	142	45	161	167	349	206	45	142	407	246	44	44
	5'-TCT 3'	5'-ggA 3'	5'-Cgg 3'	5'-gCT 3'	5'-CTT 3'	5'-gAC 3'	5'-ggA 3'	5'-TCT 3'	5'-gg 3'	5'-gAA 3'	5'-ggC 3'	5'-ggC 3'
	419	540			355		368	368	409			357
	5'-gTC 3'	5'-gAC 3'			5'-TCA 3'		5'-gTT 3'	5'-gTC 3'	5'-ggC 3'			5'-Tgg 3'
							557		409			
							5'-ggA 3'		5'-ggC 3'			
									420			
									5'-TTA 3'			
3'-primer(s) <sup>3</sup>	301	272	234	204	412	301	259	311	544	317	272	302
	5'-gTC 3'	5'-TgC 3'	5'-TCT 3'	5'-TCT 3'	5'-gTT 3'	5'-gCT 3'	5'-gTT 3'	5'-ggg 3'	5'-ggT 3'	5'-ggA 3'	5'-TgC 3'	5'-ggC 3'
	301	272	272		463	302	259	311		320		302
	5'-gTC 3'	5'-TgT 3'	5'-TgA 3'		5'-gCT 3'	5'-ggC 3'	5'-gTT 3'	5'-ggg 3'		5'-AgT 3'		5'-ggT 3'
	570	309	272			311	266	538				477
	5'-CCg 3'	5'-ATC 3'	5'-Tgg 3'			5'-ggT 3'	5'-TCC 3'	5'-gTC 3'				5'-gCg 3'
	572	605				312	272					
	5'-gCg 3'	5'-gCT 3'				5'-AgT 3'	5'-Tgg 3'					
							292					
							5'-gTA 3'					
							572					
							5'-gCg 3'					
Well No.	37	38	39	40	41	42	43	44	45	46	47	48

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec. PCR product	180	130	105	325	80	215	130	90	90	55	120	390
		290			115		280	410	175	100	210	430
		465			160					145		
					195					395		
					225					430		
					260							
Length of int. pos. control <sup>1</sup>	1070	1070	1070	<b>800</b>	1070	<b>800</b>	<b>800</b>	1070	1070	1070	<b>800</b>	1070
5'-primer(s) <sup>2</sup>	355	72	540	1 <sup>st</sup> 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	103			418	357	209	363	363	206		
	5'-Agg 3'	5'-CCT 3'			5'-Agg 3'	5'-Tgg 3'	5'-ggg 3'	5'-AAT 3'	5'-AgC 3'	5'-gAA 3'		
		209			499		355	368		259		
		5'-ggC 3'			5'-TCT 3'		5'-TCA 3'	5'-gTT 3'		5'-ggg 3'		
3'-primer(s) <sup>3</sup>	499	193	603	282	538	309	299	282	259	272	435	272
	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'-TgT 3'	5'-TCT 3'	5'-TgC 3'
		193	603		572	538	583	418	499	309	527	309
		5'-TgT 3'	5'-gTg 3'		5'-gCA 3'	5'-gTC 3'	5'-gTg 3'	5'-gTC 3'	5'-ggA 3'	5'-ATC 3'	5'-CCT 3'	5'-ATC 3'
		387	605		572		605					
		5'-TCg 3'	5'-gCT 3'		5'-gCg 3'		5'-gCT 3'					
					573							
					5'-AgT 3'							
Well No.	49	50	51	52	53	54	55	56	57	58	59	60



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

Well No.	61	62	63	64	65	66	67	68	69	70	71	72
Length of spec.	145	300	160	180	180	90	90	95	115	360	350	285
PCR product	210		370	210	205	150			150			
				240		410						
Length of int. control <sup>1</sup>	1070	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	1070
Primer(s) <sup>2</sup>	142	1 <sup>st</sup> I	15	141	97	15	207	206	165	1 <sup>st</sup> I	1 <sup>st</sup> I	355
	5'-TCA 3'	5'-CAG 3'	5'-gCA 3'	5'-ATT 3'	5'-TCg 3'	5'-gCA 3'	5'-ACC 3'	5'-gAC 3'	5'-ACC 3'	5'-CAG 3'	5'-CAG 3'	5'-TCA 3'
	206		418	362	420	209	208		463			363
	5'-gAA 3'		5'-Agg 3'	5'-gAC 3'	5'-TTA 3'	5'-ggC 3'	5'-CgT 3'		5'-TgA 3'			5'-AgC 3'
				362		209	209					
				5'-ggT 3'		5'-ggA 3'	5'-ggA 3'					
				420		449	369					
				5'-TTA 3'		5'-CCC 3'	5'-TAC 3'					
							369					
							5'-TAT 3'					
Primer(s) <sup>3</sup>	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'-CCC 3'	5'-gTT 3'	5'-TgC 3'	5'-ggA 3'	5'-ggT 3'	5'-gTg 3'
		259	226	559	559	259	256		538	320		605
		5'-CTC 3'	5'-CAC 3'	5'-CgT 3'	5'-CAg 3'	5'-CTT 3'	5'-CTC 3'		5'-CCA 3'	5'-AgT 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.	61	62	63	64	65	66	67	68	69	70	71	72

<sup>1</sup>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 25 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.

<sup>2</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

### HLA-C LOW PRIMER SPECIFICATION

Well No.	73	74	75	76	77	78	79	80	81	82	83	84
Length of spec.	90	130	250	85	280	135	170	125	245	110	155	100
PCR product	150	200	280	170		330	390	355	425	165	255	155
	210	270		210			445			390	340	220
		300		275								
Length of int.	800	800	800	1070	800	800	1070	800	800	800	1070	800
pos. control <sup>1</sup>												
5'-primer(s) <sup>2</sup>	89	47	105	98	105	47	1 <sup>st</sup> I	28	47	1 <sup>st</sup> I	1 <sup>st</sup> I	361
	5'-gAA 3'	5'-Agg 3'	5'-gCT 3'	5'-CTT 3'	5'-gCT 3'	5'-Agg 3'	5'-CgA 3'	5'-TCA 3'	5'-Agg 3'	5'-CgA 3'	5'-CgA 3'	5'-AgT 3'
	89	89	134	355		112	176	2 <sup>nd</sup> I	648	176	419	419
	5'-gAA 3'	5'-gAA 3'	5'-CCA 3'	5'-TCA 3'		5'-CCT 3'	5'-gCA 3'	5'-CCA 3'	5'-CAC 3'	5'-gCA 3'	5'-gTC 3'	5'-gTC 3'
	89	2 <sup>nd</sup> I		419		118	527			527		
	5'-gAA 3'	5'-CCA 3'		5'-gTC 3'		5'-CCA 3'	5'-TgA 3'			5'-TAC 3'		
	98	703		459								
	5'-CTT 3'	5'-CTA 3'		5'-gAT 3'								
	368											
	5'-gTg 3'											
3'-primer(s) <sup>3</sup>	142	176	343	142	343	201	302	213	302	302	118	474
	5'-TgA 3'	5'-ACT 3'	5'-C 3'	5'-TgA 3'	5'-T 3'	5'-CTT 3'	5'-ggT 3'	5'-Cgg 3'	5'-ggC 3'	5'-ggC 3'	5'-gCT 3'	5'-gCA 3'
	201	559	343	589		218	307	409	853	595	218	477
	5'-CTT 3'	5'-CTC 3'	5'-g 3'	5'-CTT 3'		5'-gCT 3'	5'-CCA 3'	5'-ATg 3'	5'-CAT 3'	5'-CCC 3'	5'-gCT 3'	5'-gCA 3'
	201	861					3 <sup>rd</sup> I	412			302	538
	5'-CTC 3'	5'-TCg 3'					5'-gCA 3'	5'-gTC 3'			5'-ggT 3'	5'-gCA 3'
	538							420			304	
	5'-CCg 3'							5'-gCT 3'			5'-CAA 3'	
											539	
											5'-TCT 3'	
Well No.	73	74	75	76	77	78	79	80	81	82	83	84



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

Well No.	85	86	87	88	89	90	91	92	93	94	95
Length of spec.	120	160	130	160	110	180	225	215	325	135	160
PCR product	250	210	255	260	325	210	250	420	380		230
			555	445		240	290				
Length of int.	800	800	1070	1070	800	1070	800	800	1070	800	1070
pos. control <sup>1</sup>											
5'-primer(s) <sup>2</sup>	201	97	98	85	201	201	2 <sup>nd</sup> I	47	355	105	97
	5'-CCA 3'	5'-TCg 3'	5'-CTA 3'	5'-CCg 3'	5'-CCA 3'	5'-CCA 3'	5'-CCA 3'	5'-Agg 3'	5'-TCA 3'	5'-gCT 3'	5'-TCg 3'
	218	361	368	98	409	2 <sup>nd</sup> I		117	412	112	97
	5'-ggA 3'	5'-AgT 3'	5'-gTg 3'	5'-CTC 3'	5'-ggC 3'	5'-CCA 3'		5'-CCT 3'	5'-ATA 3'	5'-CCT 3'	5'-TTg 3'
	2 <sup>nd</sup> I			98		361		361		459	361
	5'-CCA 3'			5'-CTT 3'		5'-AgT 3'		5'-AgT 3'		5'-gAT 3'	5'-AgT 3'
				98							418
				5'-CAC 3'							5'-Agg 3'
				194							419
				5'-CgT 3'							5'-gTC 3'
				527							419
				5'-TgA 3'							5'-gTT 3'
3'-primer(s) <sup>3</sup>	289	218	312	311	270	341	512	289	3 <sup>rd</sup> I	201	213
	5'-AgC 3'	5'-gCT 3'	5'-AgT 3'	5'-ggT 3'	5'-TAg 3'	5'-CgT 3'	5'-CCA 3'	5'-AgT 3'	5'-CTC 3'	5'-CTC 3'	5'-Cgg 3'
	289	527	312	317	3 <sup>rd</sup> I	343	538	302		559	289
	5'-AgC 3'	5'-CCg 3'	5'-AgT 3'	5'-CgT 3'	5'-CTC 3'	5'-T 3'	5'-gTC 3'	5'-ggT 3'		5'-CTC 3'	5'-AgC 3'
	291	538	361	3 <sup>rd</sup> I		343	580	527			289
	5'-TCg 3'	5'-CCA 3'	5'-CCA 3'	5'-gCA 3'		5'-g 3'	5'-TCC 3'	5'-CCg 3'			5'-AgC 3'
	539	538	459			527		538			539
	5'-TCT 3'	5'-gCA 3'	5'-AgA 3'			5'-CCg 3'		5'-CCg 3'			5'-TCT 3'
						527		540			
						5'-CCg 3'		5'-CTT 3'			
						527					
						5'-CCg 3'					
						527					
						5'-CCg 3'					
						530					
						5'-CCA 3'					
Well No.	85	86	87	88	89	90	91	92	93	94	95

<sup>1</sup>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 73 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.

<sup>2</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.



0197

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET																													
HLA-A low resolution primer set <sup>2</sup>																													
					Prod. No.:	Well																							
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16								
						202135301	202348602	202135303	202348604	202348605	202348606	202348607	202348608	202348609	202348610	202348611	202348612	202348613	202348614	202348615	202348616								
	IHWC cell line <sup>1</sup>	A*	A*																										
1	9001 SA	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2	9280 LK707	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	9011 E4181324	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	9275 GU373	*30:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
5	9009 KAS011	*01:01		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	9353 SM	*02:01	*26:03	-	+	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	
7	9020 QBL	*26:01		-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	
8	9025 DEU	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
9	9026 YAR	*26:01		-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	
10	9107 LKT3	*24:02		-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051 PITOUT	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
12	9052 DBB	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	9004 JESTHOM	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	9071 OLGA	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
15	9075 DKB	*24:02		-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	9037 SWEIG007	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
17	9282 CTM3953540	*03:01	*80:01	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	
18	9257 32367	*33:03	*74:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19	9038 BM16	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	9059 SLE005	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21	9064 AMALA	*02:17		-	+	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22	9056 KOSE	*02:01		-	+	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	9124 IHL	*02:01	*34:01	-	+	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH	*32:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	9049 IBW9	*33:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	9285 WT49	*02:05		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	9191 CH1007	*24:10	*29:01	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	
28	9320 BEL5GB	*02:01	*29:02	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	
29	9050 MOU	*29:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	
30	9021 RSH	*30:01	*68:02	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
31	9019 DUCAF	*30:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
32	9297 HAG	*02:01		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
33	9098 MT14B	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
34	9104 DHIF	*31:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
35	9302 SSTO	*32:01		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	9024 KT17	*02:06	*11:01	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
37	9065 HHKB	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
38	9099 LZL	*02:17		-	+	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
39	9315 CML	*01:01	*03:01	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
40	9134 WHONP199	*02:07	*30:01	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
41	9055 H0301	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
42	9066 TAB089	*02:07		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	9076 T7526	*02:06	*02:07	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
44	9057 TEM	*66:01		-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	
45	9239 SHJO	*23:01	*24:02	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
46	9013 SCHU	*03:01		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
47	9045 TUBO	*02:16	*03:01	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
48	9303 TER-ND	*02:01	*11:01	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	



0197

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET													
HLA-A low resolution primer set <sup>2</sup>													
					Prod. No.:	Well							
						17	18	19	20	21	22	23	24
						202353017	202348618	202348619	202348620	202348621	202348622	202355623	202348624
	IHWC cell line <sup>1</sup>	A*	A*										
1	9001 SA	*24:02				-	-	-	-	-	-	-	-
2	9280 LK707	*02:01				-	-	-	-	-	-	-	-
3	9011 E4181324	*01:01				-	-	-	-	-	-	-	-
4	9275 GU373	*30:01				-	-	-	-	-	-	-	-
5	9009 KAS011	*01:01				-	-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03			-	-	-	-	-	-	+	-
7	9020 QBL	*26:01				-	-	-	-	-	-	-	-
8	9025 DEU	*31:01				-	-	-	-	-	-	-	-
9	9026 YAR	*26:01				-	-	-	-	-	-	-	-
10	9107 LKT3	*24:02				-	-	-	-	-	-	-	-
11	9051 PITOUT	*29:02				-	-	-	-	-	-	-	-
12	9052 DBB	*02:01				-	-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01				-	-	-	-	-	-	-	-
14	9071 OLGA	*31:01				-	-	-	-	-	-	-	-
15	9075 DKB	*24:02				-	-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02				-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:01	*80:01			-	-	-	-	-	-	+	-
18	9257 32367	*33:03	*74:01			-	+	+	-	-	-	-	-
19	9038 BM16	*02:01				-	-	-	-	-	-	-	-
20	9059 SLE005	*02:01				-	-	-	-	-	-	-	-
21	9064 AMALA	*02:17				-	-	-	-	-	-	-	-
22	9056 KOSE	*02:01				-	-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01			-	-	-	-	-	-	-	-
24	9035 JBUSH	*32:01				+	-	-	-	-	-	-	-
25	9049 IBW9	*33:01				-	+	-	-	-	-	-	-
26	9285 WT49	*02:05				-	-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01			-	-	-	-	-	-	-	-
28	9320 BEL5GB	*02:01	*29:02			-	-	-	-	-	-	-	-
29	9050 MOU	*29:02				-	-	-	-	-	-	-	-
30	9021 RSH	*30:01	*68:02			-	-	-	+	-	-	-	-
31	9019 DUCAF	*30:02				-	-	-	-	-	-	-	-
32	9297 HAG	*02:01				-	-	-	-	-	-	-	-
33	9098 MT14B	*31:01				-	-	-	-	-	-	-	-
34	9104 DHIF	*31:01				-	-	-	-	-	-	-	-
35	9302 SSTO	*32:01				+	-	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01			-	-	-	-	-	-	-	-
37	9065 HHKB	*03:01				-	-	-	-	-	-	-	-
38	9099 LZL	*02:17				-	-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01			-	-	-	-	-	-	-	-
40	9134 WHONP199	*02:07	*30:01			-	-	-	-	-	-	-	-
41	9055 H0301	*03:01				-	-	-	-	-	-	-	-
42	9066 TAB089	*02:07				-	-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07			-	-	-	-	-	-	-	-
44	9057 TEM	*66:01				-	-	-	-	-	-	-	-
45	9239 SHJO	*23:01	*24:02			-	-	-	-	-	-	-	-
46	9013 SCHU	*03:01				-	-	-	-	-	-	-	-
47	9045 TUBO	*02:16	*03:01			-	-	-	-	-	-	-	-
48	9303 TER-ND	*02:01	*11:01			-	-	-	-	-	-	-	-



0197

**101.702-24/06 – including *Taq* polymerase**  
**101.702-24u/06u – without *Taq* polymerase**

Visit [www.caredx.com](http://www.caredx.com) for  
**“Instructions for Use” (IFU)**

**Lot No.: 3S2**

**Lot-specific information**

<sup>1</sup>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.

<sup>2</sup>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.

One or more 5'- and 3'-primers in primer solutions 4, 5, 7, 8, 12, 14 to 17 and 20 to 23 were tested by separately adding one or more 3'-primers, and one or more 5'-primers, respectively.

One or more 5'-primers in primer solutions 1, 2, 9, 13 and 24 were tested by separately adding one or two 3'-primers. One or more 3'-primers in primer solutions 3, 6, 10 and 18 were tested by separately adding one or two 5'-primers. In primer solutions 2, 3, 9, 11, 12, 15, 20 and 22 one or two 5'-primers were not possible to be tested, and in primer solutions 3, 6, 8, 9, 10, 12, 13, 16 and 18 one or two 3'-primers were not possible to be tested.



**0197**

For *In Vitro* Diagnostic Use  
 MA123 v02 SSP PI Template  
 Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-B low resolution SSP kit <sup>2</sup>																				
				Well																
				25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
				Prod. No.:	202354101	202354102	202354103	202354104	202354105	202354106	202354107	202354808	202240909	202354110	202354111	202354112	202354113	202354114	202354115	202354116
	IHWC cell line <sup>1</sup>		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 OLG A		*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	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	



0197

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-B low resolution SSP kit <sup>2</sup>																				
				Well																
				41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
				Prod. No.:	202354117	202354118	202354119	202354120	202354121	202354122	202354123	202354124	202354125	202354126	202354127	202354128	202354129	202354130	202354131	202354132
	IHWC cell line <sup>1</sup>		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	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-



0197

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-B low resolution SSP kit <sup>2</sup>																				
				Well																
				57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	
				Prod. No.:	202354133	202354134	202354135	202354136	202354137	202354138	202354139	202354140	202355741	202354142	202354143	202354144	202354145	202354146	202354147	202354148
	IHWC cell line <sup>1</sup>		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	-	-	-	-	-	+	-	-	-	-	+	-	-	+	+	-



0197

101.702-24/06 – including *Taq* polymerase  
 101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
 “Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

<sup>1</sup>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.

<sup>2</sup>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.

One or more 5'-primers and 3'-primers in primer solutions 27, 30, 35, 38, 43, 53, 55, 64, 65 and 66 were tested by separately adding one or two additional 3'-primers, and one or two additional 5'-primers respectively. One or more 3'-primers in primer solutions 26, 28, 32, 37, 39, 42, 58 and 60 were tested by separately adding one, two or three additional 5'-primers. One or more 5'-primers in primer solutions 25, 45, 49, 50, 67 and 72 were tested by separately adding one or two additional 3'-primers.

In primer mixes 35, 41, 45, 55, 66 and 67 one or two 5'-primers were not possible to be tested, and in primer mixes 27, 46, 51, 53, 62, 63, 66 and 70 one or two 3'-primers were not possible to be tested.



**0197**

For *In Vitro* Diagnostic Use

MA123 v02 SSP PI Template

Date: September 2023, Rev. No: 00

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-C low resolution SSP primer set <sup>2</sup>																				
				Well																
				73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	
				Prod. No.:	202128801	202128802	202133903	202128804	202128805	202128806	202128807	202128808	202128809	202128810	202128811	202128812	202128813	202128814	202133915	202128816
IHWC cell line <sup>1</sup>			C*																	
1	9001	SA	*07:02	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
2	9280	LK707	*07:01	*15:05	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	
3	9011	E4181324	*12:02		-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	
4	9275	GU373	*03:04	*04:01	-	-	+	+	-	+	-	-	-	-	+	-	+	-	-	
5	9009	KAS011	*06:02		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
6	9353	SM	*03:04	*07:02	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	
7	9020	QBL	*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
8	9007	DEM	*04:01		-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	
9	9026	YAR	*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
10	9107	LKT3	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051	PITOUT	*16:01		-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	
12	9052	DBB	*06:02		-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
13	9004	JESTHOM	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	9071	OLGA	*01:02	*03:04	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
15	9075	DKB	*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
16	9037	SWEIG007	*02:02		-	+	+	-	-	+	-	-	-	-	+	-	-	-	+	
17	9282	CTM3953540	*03:03	*07:01	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	
18	9257	32367	*01:02	*07:05	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
20	9059	SLE005	*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
21	9064	AMALA	*03:03		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	
22	9056	KOSE	*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
23	9124	IHL	*01:02	*15:02	+	-	+	-	-	-	-	+	-	-	+	-	-	-	+	
24	9035	JBUSH	*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
25	9049	IBW9	*08:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
26	9285	WT49	*07:01		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
27	9191	CH1007	*07:04	*15:05	-	-	+	-	-	-	-	-	+	-	-	+	-	-	+	
28	9320	BEL5GB	*05:01	*16:01	-	-	-	-	-	-	+	-	-	-	+	-	+	-	+	
29	9050	MOU	*16:01		-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	
30	9021	RSH	*17:01		-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	
31	9019	DUCAF	*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
32	9297	HAG	*17:01	*17:03	-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	
33	9098	MT14B	*03:04		-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	
34	9104	DHIF	*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
35	9302	SSTO	*05:01		-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	
36	9024	KT17	*03:03	*04:01	-	-	-	+	+	+	-	-	-	-	+	-	+	-	-	
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
38	9099	LZL	*03:03		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	
39	9315	CML	*02:02	*07:01	-	+	+	-	-	+	-	-	+	-	+	-	-	-	+	
40	9134	WHONP199	*01:02	*06:02	+	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
41	9055	H0301	*08:02		-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
42	9066	TAB089	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	9076	T7526	*01:02	*08:01	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
44	9057	TEM	*12:03		-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	
45	9239	SHJO	*06:02	*17:01	-	+	-	-	-	-	-	+	-	-	+	-	-	+	+	
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
47	9045	TUBO	*07:04	*15:02	-	-	+	-	-	-	-	+	+	-	+	-	-	-	+	
48	9303	TER-ND	*04:01	*16:01	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-	



0197

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

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Lot No.: **3S2**

Lot-specific information

CELL LINE VALIDATION SHEET											
HLA-C low resolution SSP primer set <sup>2</sup>											
				Well							
				89	90	91	92	93	94	95	
				Prod. No.:	202128817	202128818	202133919	202133920	202128821	202128822	202133923
	IHWC cell line <sup>1</sup>	C*									
1	9001 SA	*07:02		-	-	-	-	-	-	-	+
2	9280 LK707	*07:01	*15:05	+	-	-	-	+	-	-	+
3	9011 E4181324	*12:02		-	-	-	-	-	-	-	-
4	9275 GU373	*03:04	*04:01	-	+	-	-	+	+	-	-
5	9009 KAS011	*06:02		-	-	-	-	-	-	-	+
6	9353 SM	*03:04	*07:02	-	-	-	-	+	+	+	+
7	9020 QBL	*05:01		-	-	-	-	+	-	-	-
8	9007 DEM	*04:01		-	+	-	-	+	-	-	-
9	9026 YAR	*12:03		-	-	-	-	-	-	-	-
10	9107 LKT3	*01:02		-	-	-	+	-	-	-	-
11	9051 PITOUT	*16:01		-	+	-	-	-	-	-	+
12	9052 DBB	*06:02		-	-	-	-	-	-	-	+
13	9004 JESTHOM	*01:02		-	-	-	+	-	-	-	-
14	9071 OLGA	*01:02	*03:04	-	-	-	+	+	+	-	-
15	9075 DKB	*03:04		-	-	-	-	+	+	-	-
16	9037 SWEIG007	*02:02		-	-	-	-	-	-	-	-
17	9282 CTM3953540	*03:03	*07:01	-	-	-	-	+	+	+	+
18	9257 32367	*01:02	*07:05	-	-	-	+	-	-	-	+
19	9038 BM16	*07:01		-	-	-	-	-	-	-	+
20	9059 SLE005	*03:04		-	-	-	-	+	+	-	-
21	9064 AMALA	*03:03		-	-	-	-	+	+	-	-
22	9056 KOSE	*12:03		-	-	-	-	-	-	-	-
23	9124 IHL	*01:02	*15:02	+	-	-	+	+	-	-	-
24	9035 JBUSH	*12:03		-	-	-	-	-	-	-	-
25	9049 IBW9	*08:02		-	-	-	-	+	-	-	-
26	9285 WT49	*07:01		-	-	-	-	-	-	-	+
27	9191 CH1007	*07:04	*15:05	+	-	-	-	+	-	-	+
28	9320 BEL5GB	*05:01	*16:01	-	+	-	-	+	-	-	+
29	9050 MOU	*16:01		-	+	-	-	-	-	-	+
30	9021 RSH	*17:01		-	-	+	-	+	-	-	-
31	9019 DUCAF	*05:01		-	-	-	-	+	-	-	-
32	9297 HAG	*17:01	*17:03	-	-	+	-	+	-	-	-
33	9098 MT14B	*03:04		-	-	-	-	+	+	-	-
34	9104 DHIF	*12:03		-	-	-	-	-	-	-	-
35	9302 SSTO	*05:01		-	-	-	-	+	-	-	-
36	9024 KT17	*03:03	*04:01	-	+	-	-	+	+	-	-
37	9065 HHKB	*07:02		-	-	-	-	-	-	-	+
38	9099 LZL	*03:03		-	-	-	-	+	+	-	-
39	9315 CML	*02:02	*07:01	-	-	-	-	-	-	-	+
40	9134 WHONP199	*01:02	*06:02	-	-	-	+	-	-	-	+
41	9055 H0301	*08:02		-	-	-	-	+	-	-	-
42	9066 TAB089	*01:02		-	-	-	+	-	-	-	-
43	9076 T7526	*01:02	*08:01	-	+	-	+	+	-	-	-
44	9057 TEM	*12:03		-	-	-	-	-	-	-	-
45	9239 SHJO	*06:02	*17:01	-	-	+	-	+	-	-	+
46	9013 SCHU	*07:02		-	-	-	-	-	-	-	+
47	9045 TUBO	*07:04	*15:02	+	-	-	-	+	-	-	+
48	9303 TER-ND	*04:01	*16:01	-	+	-	-	+	-	-	+



0197

For *In Vitro* Diagnostic Use  
MA123 v02 SSP PI Template  
Date: September 2023, Rev. No: 00

**101.702-24/06 – including *Taq* polymerase**  
**101.702-24u/06u – without *Taq* polymerase**

Visit [www.caredx.com](http://www.caredx.com) for  
**“Instructions for Use” (IFU)**

**Lot No.: 3S2**

**Lot-specific information**

<sup>1</sup>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.

<sup>2</sup>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.

One or more 5'-primers and 3'-primers in primer solutions 73, 74, 76, 79, 86 to 88, 92 and 94 were tested by separately adding one, two or three additional 3'-primers, and one or two additional 5'-primers respectively. One or more 3'-primers in primer solutions 80, 83, 90 and 91 were tested by separately adding one or two additional 5'-primers. One or more 5'-primers in primer solutions 78, 85 and 95 were tested by separately adding one, two or three additional 3'-primers.

In primer solutions 73, 88 and 95 one or more 5'-primers were not possible to be tested, and in primer solutions 75, 79, 83 to 88, 90 and 92 one or more 3'-primer00s were not possible to be tested.



**0197**

101.702-24/06 – including *Taq* polymerase  
101.702-24u/06u – without *Taq* polymerase

Visit [www.caredx.com](http://www.caredx.com) for  
“Instructions for Use” (IFU)

Lot No.: **3S2**

Lot-specific information

## ADDRESSES:

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For information on CareDx distributors worldwide, contact **CareDx AB**.



**0197**

For *In Vitro* Diagnostic Use

MA123 v02 SSP PI Template

Date: September 2023, Rev. No: 00