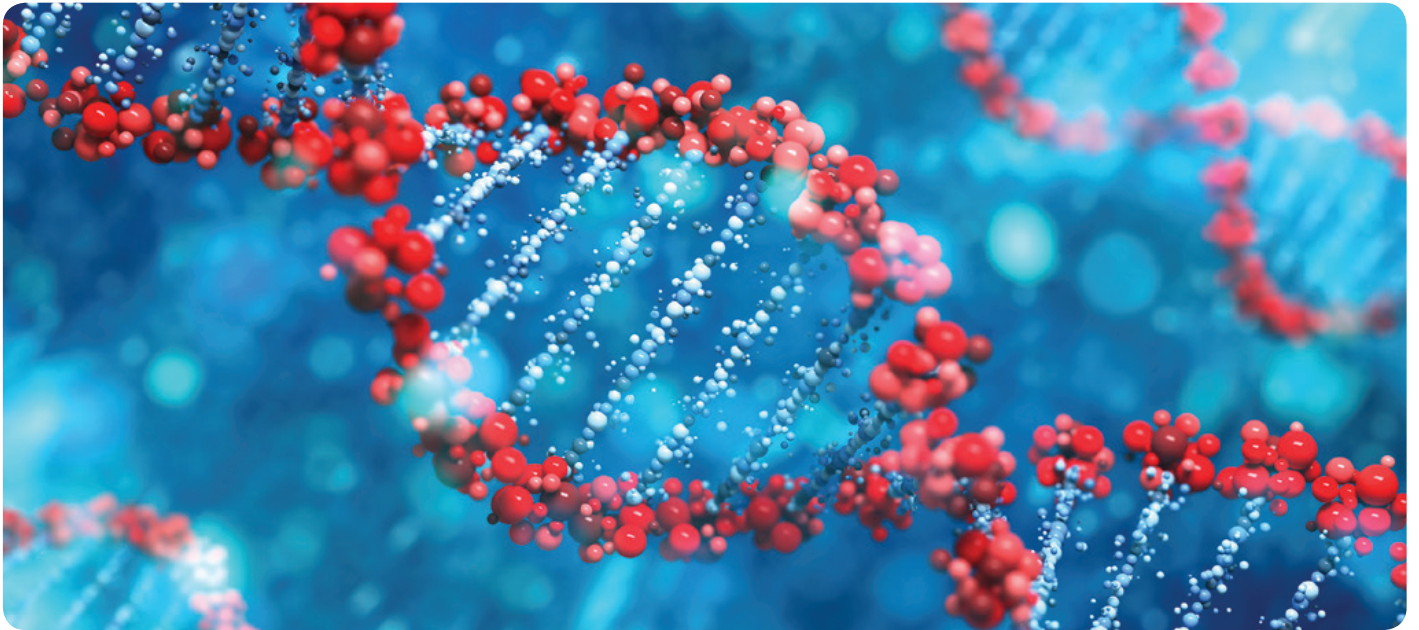


# Solutions for Molecular Diagnostics

PCR/RT-PCR Enzymes, Optimized Mixes and dNTPs



## MOLECULAR REAGENTS FOR MDX APPLICATIONS



HUMAN DIAGNOSTICS



VET HEALTH



BLOOD BANKING



GENETIC SCREENING



ENVIRONMENTAL



WATER TESTING



FOOD TESTING



DNA BARCODING

Meridian is a primary manufacturer of specialized high-quality molecular reagents and offers solutions to a wide range of industries to diagnose and treat diseases, discover new therapeutics or develop tests for environmental, food and cosmetic safety.

Products include PCR and RT-PCR enzymes, ultra-pure dNTPs and buffer systems for IVD assay development and optimization. In addition to these reagents, Meridian has also developed a range of ready-to-use solutions for molecular diagnostic manufacturers. These include enzymes and mixes formulated for lyophilization, internal quality controls to monitor extraction and co-purification of inhibitor in qPCR/RT-qPCR assays as well as a unique mix designed for direct qPCR from crude lysates.


















# Product Selection Chart

- Suitable
- Recommended

	Cat#	Master mix	Hot-Start	Lymphilization- Compatible	Proof-Reading	Low Residual DNA	Fast Reactions	Multiplex Reactions	Inhibitor-Rich Samples	Low Copy Template
<b>Enzymes</b>	Taq DNA Polymerase	MDX001		No			●	●	●	
	Taq HS DNA Polymerase	MDX008		Antibody			●●	●●	●●	●●
	Glycerol-Free Taq HS	MDX011		Antibody	●●		●●	●		
	Low DNA Taq HS	MDX009 & MDX010		Chemical		●●		●●		
	High-Fidelity Pfu	MDX003		No		●●				
	Glycerol-Free Bst	MDX017		No	●●		●●			●
<b>PCR</b>	Low DNA qPCR Mix	MDX030	✓	Chemical		●●		●●		●●
	Fast qPCR Mix	MDX020	✓	Antibody			●●	●●		●●
	Lyo-Ready qPCR Mix	MDX021 & MDX023	✓	Antibody	●●		●●	●●		●
	Hi-Throughput dUTP Mix	MDX031 & MDX060	✓	Antibody			●	●●		
	Inhibitor-Tolerant qPCR Mix	MDX013	✓	Antibody				●●	●●	
<b>RT-PCR</b>	Fast 1-Step RT-qPCR Mix	MDX032	✓	Antibody			●●	●●		
	Lyo-Ready 1-Step RT-qPCR Mix	MDX024	✓	Antibody	●●		●	●●		
	Lyo-Ready 1-Step RT-qPCR Virus Mix	MDX062	✓	Antibody	●●		●	●●		
	Low LOD 1-Step RT-qPCR Mix	MDX025	✓	Antibody				●●	●●	●●
	Lyo-Compatible MMLV-RT	MDX042		No	●●		●	●		
	RNase-Tolerant MMLV-RT	MDX043		No				●	●●	
	MMLV-RT	MDX044		No			●	●		













## Optimized Mixes

PRODUCT	APPLICATION	CAT NO.	VOLUME	REACTIONS
<b>qPCR (DNA Template) Hot-Start Master mixes</b>				
<b>Low DNA qPCR Mix</b> Ideal for microbial and fungal DNA detection assays		<b>MDX030</b>	5 mL	500 Rxn
			100 mL	10,000 Rxn
<b>Fast qPCR Mix</b> Suitable for fast high-multiplex qPCR assays		<b>MDX020</b>	5 mL	500 Rxn
			100 mL	10,000 Rxn
<b>Fast qPCR Mix, 5x</b> Suitable for fast high-multiplex qPCR assays (5x concentration)		<b>MDX072</b>	2 mL	500 Rxn
			40 mL	10,000 Rxn
<b>Digital PCR Mix, 5x</b> Suitable for digital PCR (dPCR) assays (5x concentration)		<b>MDX074</b>	2 mL	500 Rxn
			40 mL	10,000 Rxn
<b>Lyo-Ready qPCR Mix</b> Ready-to-use, glycerol-free qPCR master mix formulated with a specialized blend of excipients for lyophilization into beads or pellets		<b>MDX021</b>	5 mL	500 Rxn
			100 mL	10,000 Rxn
<b>Lyo-Ready qPCR Mix 2.6x</b> Ready-to-use, glycerol-free qPCR master mix formulated with a specialized blend of excipients for lyophilization into beads or pellets (2.6x concentration)		<b>MDX023</b>	8 mL	1,000 Rxn
			100 mL	12,500 Rxn
<b>Hi-throughput dUTP qPCR Mix</b> Optimized formulation for efficient dUTP incorporation to remove background PCR product contamination		<b>MDX031</b>	5 mL	500 Rxn
			100 mL	10,000 Rxn
<b>Inhibitor-Tolerant qPCR Mix</b> Designed for amplification direct from crude lysates or inhibitor-rich samples such as urine, cerebral spinal fluid (CSF), blood as well as plants		<b>MDX013</b>	5 mL	500 Rxn
			100 mL	10,000 Rxn
<b>Inhibitor Tolerant qPCR Mix, 5x</b> Designed for amplification direct from crude lysates or inhibitor-rich samples such as urine, cerebral spinal fluid (CSF), blood as well as plants (5x concentration)		<b>MDX073</b>	2 mL	500 Rxn
			40 mL	10,000 Rxn
<b>RT-qPCR (RNA Template) Hot-Start Master mixes</b>				
<b>Fast 1-Step RT-qPCR Mix</b> RT-qPCR mix formulated for fast, automated, high-throughput systems		<b>MDX032</b>	10 mL	1,000 Rxn
			100 mL	10,000 Rxn
<b>Lyo-Ready 1-Step RT-qPCR Mix</b> Ready-to-use, glycerol-free RT-qPCR master mix formulated with a specialized blend of excipients for lyophilization into beads or pellets		<b>MDX024</b>	10 mL	1,000 Rxn
			100 mL	10,000 Rxn
<b>Lyo-Ready 1-Step RT-qPCR Virus Mix</b> Ready-to-use, glycerol-free RT-qPCR master mix formulated with a specialized blend of excipients and highly suited for amplification of RNA viruses with a high secondary structure		<b>MDX062</b>	10 mL	1,000 Rxn
			100 mL	10,000 Rxn
<b>Low LOD 1-Step RT-qPCR Mix</b> Suitable for detecting RNA and DNA viruses at very low levels for applications such as blood bank or transplant viral testing		<b>MDX025</b>	10 mL	1,000 Rxn
			100 mL	10,000 Rxn
<b>Next-Generation Sequencing</b>				
<b>NGS Library Quantification</b> qPCR-based assay for the quantification of only adapter-ligated library molecules		<b>MDX039</b>	1 Kit	500 Rxn
<b>NGS Clean and Select Beads</b> Paramagnetic SPRI beads designed for clean-up and size selection of DNA fragments or NGS libraries		<b>MDX041</b>	50 mL	-
			500 mL	-

-  Human Diagnostics
-  Vet Health
-  Blood Banking
-  Genetic Screening
-  Environmental
-  Water Testing
-  Food Testing
-  DNA Barcoding

# Polymerases

PRODUCT	APPLICATION	CAT NO.	VOLUME	REACTIONS
<b>DNA Polymerases</b>				
<b>Taq DNA Polymerase</b> DNA Polymerase provided with optimized buffer system for fast PCR reactions across a range of templates. ( <i>*Enzyme only</i> )		MDX001	100 µL	500 Units
			10 mL	50,000 Units
			10 mL	50,000 Units*
<b>Taq HS DNA Polymerase</b> Antibody-mediated hot-start enzyme ideal for fast multiplex reactions. Robust performance with low-copy number targets even in the presence of PCR inhibitors. ( <i>*Enzyme only</i> )		MDX008	100 µL	500 Units
			10 mL	50,000 Units
			10 mL	50,000 Units*
<b>Glycerol-Free Taq HS 50 U/µL</b> Lyophilization-compatible, high concentration (50 U/µL), glycerol free DNA enzyme for automated high-throughput testing ( <i>provided as separate antibody, enzyme and dilution buffer</i> )		MDX011	20 µL	1,000 Units
			500 µL	25,000 Units
<b>Low DNA Taq HS 5 U/µL</b> Heat-activated, thermostable DNA polymerase suited to amplification of bacterial and fungal DNA		MDX009	100 µL	500 Units
			10 mL	50,000 Units
<b>Low DNA Taq HS 10 U/µL</b> Heat-activated, thermostable DNA polymerase suited to amplification of bacterial and fungal DNA		MDX010	50 µL	500 Units
			5 mL	50,000 Units
<b>High-Fidelity Polymerases</b>				
<b>High-Fidelity Pfu</b> 3' - 5' proofreading exonuclease activity with an error rate of 3.0 x 10 <sup>-6</sup> and generates blunt-ended amplicons up to 5 kb in length		MDX003	200 µL	500 Units
			10 mL	25,000 Units
<b>Isothermal Polymerases</b>				
<b>Glycerol-Free Bst</b> Lyophilization-compatible DNA polymerase for isothermal applications		MDX017	1 mL	NA
			20 mL	NA
<b>Reverse Transcriptase</b>				
<b>Lyo-compatible MMLV-RT</b> High-concentration MMLV-RT suitable for incorporation into lyophilized RT-PCR assays		MDX042	8 µL	1,000 Rxn
			80 µL	10,000 Rxn
<b>RNase-Tolerant MMLV-RT</b> Mixture of MMLV-RT and RNase inhibitor ideal for RT-qPCR assays		MDX043	200 µL	1,000 Rxn
			2 mL	10,000 Rxn
<b>MMLV-RT</b> MMLV-RT suitable for generating first strand cDNA of up to 9 kb		MDX044	200 µL	1,000 Rxn
			2 mL	10,000 Rxn

- Human Diagnostics
- Vet Health
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- Food Testing
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## Components

PRODUCT	CAT NO.	VOLUME	REACTIONS
<b>Buffers</b>			
<b>NGS High-Fidelity Pfu Buffer, 10x</b> Optimized for use with High-Fidelity Pfu ( <b>MDX003</b> )	<b>MDX038</b>	5 mL	1,000 Rxn
<b>NGS End-Repair Buffer, 5x</b> Optimized for use with NGS ER Enzyme Mix ( <b>MDX040</b> )	<b>MDX035</b>	10 mL	1,000 Rxn
<b>NGS Ligase Buffer, 5x</b> Optimized for use with NGS Ligase ( <b>MDX037</b> )	<b>MDX036</b>	3 mL	1,000 Rxn
<b>Taq PCR Buffer, 5x</b> Optimized for use with Taq DNA Polymerase ( <b>MDX001</b> ) and Taq HS DNA Polymerase ( <b>MDX008</b> )	<b>MDX002</b>	2 mL	500 Rxn
<b>Tissue Extract-PCR Buffers</b> Lysis and neutralization buffer optimized for use with Taq HS DNA Polymerase ( <b>MDX008</b> ) to perform PCR direct from crude lysate	<b>MDX004</b>	1 Kit	1,000 Rxn
<b>Fast qPCR Buffer, 4x</b> Optimized for use with Taq HS DNA Polymerase ( <b>MDX008</b> )	<b>MDX033</b>	2.5 mL	500 Rxn
		50 mL	10,000 Rxn
<b>1-Step RT-qPCR Buffer, 4x</b> Optimized for use with Taq HS DNA Polymerase ( <b>MDX008</b> ) and RNase-Tolerant MMLV-RT ( <b>MDX043</b> )	<b>MDX034</b>	2.5 mL	500 Rxn
		50 mL	10,000 Rxn
<b>Lyo-Ready qPCR Buffer, 2.5x</b> Optimized for use with Glycerol-Free Taq HS ( <b>MDX011</b> ). In order to produce lyophilized, ambient-temperature stable qPCR reagents, dNTPs, MgCl <sub>2</sub> and glycerol-free Taq DNA polymerase are not included in the buffer	<b>MDX022</b>	8 mL	1,000 Rxn
		100 mL	12,500 Rxn
<b>Lyo-Ready qPCR Buffer w/o Excipients, 4x</b> Optimized for use with Glycerol-Free Taq HS ( <b>MDX011</b> )	<b>MDX061</b>	2.5 mL	500 Rxn
		100 mL	20,000 Rxn
<b>Taq Dilution Buffer</b> This Buffer provides the optimal conditions to store Meridian polymerases, conferring long-term stability at -20 °C ( <b>MDX008</b> )	<b>MDX007</b>	5 mL	-
		100 mL	-
<b>Inhibitor Tolerant PCR Buffer, 5x</b> Used with Taq HS DNA Polymerase ( <b>MDX008</b> ) for amplification direct from crude lysates or inhibitor-rich samples such as urine, cerebral spinal fluid (CSF), blood as well as plants	<b>MDX075</b>	2 mL	500 Rxn
		100 mL	20,000 Rxn
<b>General Reagents</b>			
<b>Uracil DNA Glycosylase (UDG)*</b> Enzyme that efficiently hydrolyzes uracil from ssDNA or dsDNA. Endonuclease, exonuclease, nickase and RNase-free	<b>MDX054</b>	10 mL	10,000 Units
<b>Proteinase K Solution</b> RNase and DNase free, ideal for removing endogenous nucleases when purifying native DNA or RNA	<b>MDX055</b>	25 mL	500 mg
<b>RNase Inhibitor</b> Inhibits a broad spectrum of eukaryotic RNases, including RNases A, B and C to control for contaminants in RT-PCR assays	<b>MDX056</b>	250 µL	10,000 Units
		2.5 mL	100,000 Units
<b>Taq HS Antibody</b> A mix of anti-Taq antibodies designed to inhibit Taq DNA polymerase activity at room temperature. For use in hot-start PCR	<b>MDX014</b>	20 µL	1,000 Units
		250 µL	12,500 Units

\* Uracil DNA Glycosylase (MDX054) is not available in the US

## Components *continued*

PRODUCT	CAT NO.	VOLUME	REACTIONS
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### NGS Enzymes

#### NGS ER Enzyme Mix

A mix that processes both 3' and 5' overhangs generating product that is 5' phosphorylated with 3' A overhang

**MDX040**

6 mL

1,000 Rxn

#### NGS Ligase

Enzyme that catalyzes the ligation of adaptors to 3' A overhangs

**MDX037**

2 mL

1,000 Rxn

### Sequencing Grade dNTPs

Ready-to-use sequencing grade dNTPs available individually, as sets, or pre-blended dNTP mixes. Ultra-pure (>99% by HPLC) dNTPs supplied as lithium salts. Free of PCR inhibitors, DNase and RNase.

	dATP	dCTP	dGTP	dTTP	dUTP
<b>Description</b>	Sequencing grade lithium salt				
<b>Purity</b>	>99%				
<b>pH of Solution</b>	7.5				
<b>Stability</b>	24 Months				
<b>DNase, RNase Nicking Activity</b>	Negative				
<b>Appearance</b>	Clear Colorless Solution				

#### dNTP Set, 100 mM

Provided as four separate solutions at 100 mM concentration (dATP, dCTP, dGTP & dTTP)

**MDX050**

4 x 250 µL

4 x 50 mL

#### dNTP Mix, 100 mM

Supplied as a mixture (dATP, dCTP, dGTP & dTTP). Total concentration of mix is 100 mM (25 mM of each nucleotide)

**MDX051**

500 µL

50 mL

100 mL

1L

#### dUTP Mix, 50 mM

Supplied as a mixture (10 mM dATP, dCTP, dGTP and 20 mM dUTP)

**MDX058**

50 mL

#### dUTP, 100 mM

**MDX059**

50 mL

#### dATP, 100 mM

**MDX046**

50 mL

#### dCTP, 100 mM

**MDX047**

50 mL

#### dGTP, 100 mM

**MDX048**

50 mL

#### dTTP, 100 mM

**MDX049**

50 mL



## Building Blocks for Master Mixes

### PRODUCTS RECOMMENDED

Components needed to create your own master mixes.

#### Fast qPCR Mix

- Taq DNA Polymerase (*Enzyme only*), **MDX001**
- Fast qPCR Buffer, 4x, **MDX033**
- Taq HS Antibody, **MDX014**

OR

- Taq HS DNA Polymerase (*Enzyme only*), **MDX008**
- Fast qPCR Buffer, 4x, **MDX033**

#### Fast 1-Step RT-qPCR Mix

- Taq DNA Polymerase (*Enzyme only*), **MDX001**
- 1-Step qPCR Buffer, 4x, **MDX034**
- MMLV-RT, **MDX044**
- Taq HS Antibody, **MDX014**
- RNase Inhibitor, **MDX056**

OR

- Taq HS DNA Polymerase (*Enzyme only*), **MDX008**
- 1-Step qPCR Buffer, 4x, **MDX034**
- MMLV-RT, **MDX044**
- RNase Inhibitor, **MDX056**

#### Lyo-Ready qPCR Mix

- Glycerol-Free Taq HS 50U/μL, **MDX011**
- Lyo-Ready qPCR Buffer, 2.5x, **MDX022**
- dNTP and MgCl<sub>2</sub> are not included in the buffer

OR

- Glycerol-Free Taq HS 50U/μL, **MDX011**
- Lyo-Ready qPCR Buffer w/o Excipients, 4x, **MDX061**

#### Lyo-Ready 1-Step RT-qPCR Mix

- Glycerol-Free Taq HS 50U/μL, **MDX011**
- Lyo-Ready qPCR Buffer, 2.5x, **MDX022**
- Lyo-compatible MMLV-RT, **MDX042**
- RNase Inhibitor, **MDX056**

OR

- Glycerol-Free Taq HS 50U/μL, **MDX011**
- Lyo-Ready qPCR Buffer w/o Excipients, 4x, **MDX061**
- Lyo-compatible MMLV-RT, **MDX042**
- RNase Inhibitor, **MDX056**

#### Taq HS DNA Polymerase

- Taq DNA Polymerase (*Enzyme only*), **MDX001**
- Taq PCR Buffer, 5x, **MDX002**
- Taq HS Antibody, **MDX014**
- Taq Dilution Buffer, **MDX007**

OR

- Taq HS DNA Polymerase (*Enzyme only*), **MDX008**
- Taq PCR Buffer, 5x, **MDX002**
- Taq Dilution Buffer, **MDX007**

#### Inhibitor Tolerant qPCR Mix

- Taq HS DNA Polymerase, **MDX008**
- Inhibitor Tolerant PCR Buffer, 5x, **MDX075**

OR

- Taq HS Antibody, **MDX014**
- Taq DNA Polymerase (*Enzyme only*), **MDX002**
- Inhibitor Tolerant PCR Buffer, 5x, **MDX075**

#### Taq DNA Polymerase

- Taq DNA Polymerase (*Enzyme only*), **MDX001**
- Taq PCR Buffer, 5x, **MDX002**
- Taq Dilution Buffer, **MDX007**

#### Tissue Extract-PCR Buffers

##### USED WITH:

- Taq HS DNA Polymerase, **MDX001**
- Inhibitor-Tolerant qPCR Mix, **MDX013**

## qPCR Extraction Controls

### Monitor extraction and co-purification of inhibitors with a single control

Meridian has developed novel extraction controls for qPCR diagnostic assays that are able to closely mimic the test sample compared with traditional spike controls. This provides the advantage of monitoring both the success of the extraction step and the presence of any co-purified inhibitors that could affect an assay result.

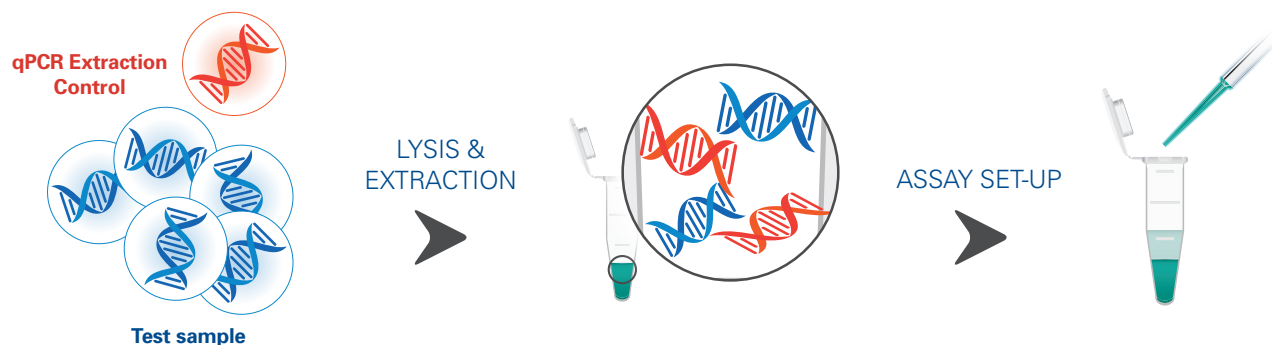
The qPCR Extraction Controls are *E. coli* cells of a known concentration containing the Internal Control DNA sequence (with no known homology to any organism, so that it does not interfere with the detection of the sample DNA). Genetic material from the test sample and the DNA extraction control are simultaneously extracted by common extraction methods with the control being as sensitive to the same inhibition and extraction failure as the test sample.

### Product Highlights

- Extraction control undergoes the same sample processing as test sample
- Can be used with a variety of sample types including inhibitor-rich samples such as blood, urine and sputum
- Confirms success of extraction step and monitors co-purification of PCR inhibitors
- Probe based designed specifically for multiplex qPCR assays
- Control DNA is unique with no homology to any organism

### Workflow

The qPCR Extraction Control is added to the lysis buffer along with the test sample before extraction to monitor poor extraction yield, PCR inhibition, incorrect pipetting or cycling parameters.



PRODUCT	CAT NO.	VOLUME	REACTIONS
<b>qPCR Extraction Controls</b> Internal control designed to closely mimic test samples. Can be used to validate the extraction step and monitor any co-purification of PCR inhibitors. Controls are available with different dyes to fit with existing protocols.			
qPCR Extraction Control RED (Quasar® 670)	MDX026	10 mL	2,000 Rxn
qPCR Extraction Control ORANGE (Cal Fluor® 560)	MDX027	10 mL	2,000 Rxn

### Ordering information:

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