



BioGX

Molecular Made Easy

SRM5 - *Citrobacter freundii*, *Citrobacter koseri*, *Salmonella* spp. Open System PCR Reagents

REF 450-073-LMP

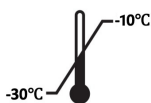


64 Reactions

Product Insert

For Research Use Only: Not for use in diagnostic procedures

For use with ABI QuantStudio™ 5, ABI 7500 Fast Dx, Bio-Rad CFX96 Touch™, Bio-Rad CFX384 Touch™, BioGX pixl.16 real-time PCR platform



RUO



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For Research Use Only

Research use only reagents are not for use in diagnostic procedures. It is the responsibility of the end user to implement for the intended use.

The Citrobacter freundii, Citrobacter koseri, Salmonella spp. real-time PCR-based detection reagent is manufactured and packaged as an open system reagent (OSR) for use with open system platforms and has to be validated by the user. Examples of open system platforms are the Applied Biosystems QuantStudio™ 5 (Design & Analysis software version 1.5.1 or later), Applied Biosystems 7500 Fast Dx (SDS software version 1.4 or later), Bio-Rad CFX96 Touch™, CFX384 Touch™ (Maestro software version 1.1 or later) or BioGX pixl.16 (For Android® based software version 1.6.9 or later) real-time PCR platforms.

PLEASE READ ENTIRE PACKAGE INSERT BEFORE PROCEEDING TO USE THE OSR.

PRODUCT OVERVIEW

The BioGX OSR has been formulated in liquid format for the multiplex real-time PCR-based detection of DNA from Citrobacter freundii (dnaK gene¹), Citrobacter koseri (fimH gene²), Salmonella spp. (ttr operon gene³) and RNaseP which serves as an endogenous extraction control. The assay format of the OSR kit is available for the ABI QuantStudio™ 5, ABI 7500 Fast Dx, Bio-Rad CFX96 Touch™, Bio-Rad CFX384 Touch™ and BioGX pixl.16 Platforms.

Note:

OSR for ABI, Bio-Rad and BioGX pixl.16 Platforms (450-073-LMP) contains all PCR primers, probes, enzymes, dNTPs, MgCl₂, buffers, and other components required for the PCR reaction. No exogenous addition of SPC is needed.

PACKAGE CONTENTS

BioGX REF: 450-073-LMP

Platform(s): ABI QuantStudio™ 5, ABI 7500 Fast Dx, Bio-Rad CFX96 Touch™, Bio-Rad CFX384 Touch™ and BioGX pixl.16

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Each 64-reaction package consists of one pouch:

The pouch contains one 1.5 mL screw cap tube containing 640 μ L of liquid master mix. Each tube is sufficient for 64 x 15 μ L PCR reactions (10 μ L PCR master mix + 5 μ L purified DNA).

EQUIPMENT AND MATERIALS REQUIRED BUT NOT PROVIDED

- Lyophilized Positive Control Template DNA Beads (10^5 copies/bead)
 - BioGX Citrobacter freundii (Part number 720-0131)
 - BioGX Citrobacter koseri (Part number 720-0221)
 - BioGX Salmonella spp. (ttr500) (Part number 720-0235)
 - BioGX RNaseP (DNA) (Part number 720-0009)
- BioGX Molecular Grade Water or equivalent
 - BioGX Rehydration Water (Part number: 800-0035-12)
- Vortex Genie 2 Vortexer (VWR catalog no. 58815-234) or equivalent
- Disposable nitrile gloves
- Applied Biosystems QuantStudio 5 (0.2 mL) consumables.
 - Thermo Fisher optical 8-tube strip (catalog no. 4316567)
 - Thermo Fisher ultra-clear optical caps, strips of 8 (catalog no. AB-0866)
 - Thermo Fisher 96-well optical clear reaction plates (catalog no. A36924)
 - Thermo Fisher 96-well qPCR plate seals (catalog no. AB-1170)
- Applied Biosystems 7500 Fast Dx (0.1 mL) consumables.
 - Thermo Fisher optical 8-tube strip (catalog no. 4358293)
 - Thermo Fisher ultra-clear optical caps, strips of 8 (catalog no. 4323032)
 - Thermo Fisher 96-well optical reaction plates (catalog no. 4346906)
 - Thermo Fisher 96-well qPCR plate seals (catalog no. 4311971)
- Bio-Rad CFX96 Touch consumables.
 - Bio-Rad 8-tube PCR strips without caps (catalog no. TLS0851)
 - Bio-Rad Optical flat 8-cap strips for PCR tubes (catalog no. TCS0803)
 - Bio-Rad 96-well plates (catalog no. HSP9655)
 - Bio-Rad 96-well plate sealing film, optical (catalog no. MSB1001)
- Bio-Rad CFX384 Touch consumables.
 - Bio-Rad 384-well plates (catalog no. HSP3905)
 - Bio-Rad 384-well plate sealing film, optical (catalog no. MSB1001)
- BioGX pixl.16 real-time PCR instrument (BioGX catalog no. 650-016-PXL-R)
- BioGX pixl.16 consumables.
 - TempAssure[®] PCR 8-Tube Strips, Att. Optical Caps (BioGX catalog no. 010-280-ETS) or
 - EasyStrip[™] Plus Tube Strip with Attached Ultra Clear Caps (Thermo Fisher catalog no. AB2005) or

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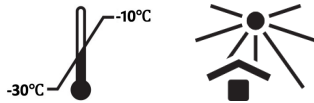
- Axygen® 0.2 mL Polypropylene PCR Tube Strips and attached Flat Cap Strips, 8 Tubes/Strip, (Corning catalog no. PCR-0208-AF-C)

WARNINGS AND PRECAUTIONS



- For research use only. Not intended for use in diagnostic procedures.
- If handling biological samples, including used Extraction Kits, treat as if capable of transmitting infectious agents in accordance with safe laboratory procedures such as those described in CLSI Document M29⁴ and in Biosafety in Microbiological and Biomedical Laboratories⁵.
- BioGX REF: 450-068-LMP has been quality control tested only with the ABI QuantStudio™ 5, ABI 7500 Fast Dx, Bio-Rad CFX96 Touch™, Bio-Rad CFX384 Touch™ and BioGX pxiL.16 real-time PCR platforms.
- Do not use the reagents if the protective pouches are open or torn upon arrival.
- Upon arrival, thaw tube and aliquot in volumes appropriate for routine use and store at -30°C to -10°C. Do not freeze-thaw after aliquots are generated.
- Do not mix reagents from different pouches and/or kits and/or lots.
- Do not use expired reagents and/or materials.
- Do not pipette by mouth.
- Do not smoke, drink, or eat in areas where samples or kits are being handled.
- Dispose of unused reagents and waste in accordance with country, federal, provincial, state, and local regulations.
- Use clean gloves when handling extraction kit components and PCR reagents and buffer tubes.

STORAGE REQUIREMENTS AND RECOMMENDATIONS



Reagents are stable at 0°C during shipment. Upon arrival, thaw tube and aliquot in volumes appropriate for routine use and store at -30°C to -10°C. Do not freeze-thaw after aliquots are generated. Reagents have been tested to demonstrate optimal performance when stored properly and consumed by the Manufacturer Recommended Use By Date. The end user may opt to extend the useful life for Research Use Only reagents upon completing their own performance validations. BioGX's guarantee of reagent integrity does not extend beyond the Manufacturer Recommended Use By Date when stored properly. Avoid exposing the reagents to direct sunlight or long-term ambient lighting.

SAMPLE TYPES UTILIZED FOR QUALITY CONTROL TESTING

- Urine (neat or boric acid preserved)
- Swab samples collected in Copan Universal Transport Media (UTM[®]) or Copan ESwab[™]

REAGENT OPTICAL CONFIGURATION

Table 1. Optical Channel Configuration for REF 450-073-LMP.

| Optical Channel (Fluorophore Equivalent) | Target |
|---|----------------------|
| FAM | Citrobacter koseri |
| HEX | Citrobacter freundii |
| Texas Red | Salmonella spp. |
| Cy5 | RNase P |
| Cy5.5 | Unused |

QUALITY CONTROL AND EXTRACTION TESTING PARAMETERS

ABI, Bio-Rad and BioGX pixl.16 Platforms (BioGX REF: 450-073-LMP)

As a starting point, users can import and install a PCR run file onto:

1. Applied Biosystems QuantStudio[™] 5 (Design & Analysis software version 1.5.1 or later)
2. ABI 7500 Fast Dx (SDS software version 1.4 or later)
3. Bio-Rad CFX96 Touch[™] (Maestro software version 1.1 or later)
4. Bio-Rad CFX384 Touch[™] (Maestro software version 1.1 or later)
5. BioGX pixl.16 real-time PCR platform (For Android[®] based software version 1.6.9 or later)

BioGX's most current ABI QuantStudio[™] 5, ABI 7500 Fast Dx, Bio-Rad CFX96 Touch[™], Bio-Rad CFX384 Touch[™] and BioGX pixl.16 PCR run files utilized for quality control of this product can be obtained by sending an email to TS@biogx.com. Please refer to the Applied Biosystems QuantStudio[™] 5 user manual⁶ for uploading instructions. Please refer to the ABI 7500 Fast Dx user manual⁷ for uploading instructions. Please refer to the

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Bio-Rad CFX96 Touch™ user manual⁸ for uploading instructions. Please refer to the Bio-Rad CFX384 Touch™ user manual⁸ for uploading instructions. Please refer to the BioGX pixl.16 user manual⁹ for uploading instructions.

SAMPLE VOLUMES UTILIZED DURING QUALITY CONTROL TESTING

The end user may choose to validate a different pretreatment method or volume of sample to load other than the sample processing used by BioGX for QC testing as outlined below.

Urine collection (neat urine or boric acid preserved urine)

ABI, Bio-Rad and BioGX pixl.16 Platforms (validated magnetic bead or silica column extraction kits)

Thoroughly vortex the sample prior to processing. Follow manufacturer recommendations for extraction of appropriate sample volume. Transfer 5 µL of purified nucleic acid to master mix as described in Section: *BioGX Quality Control Setup Procedure for ABI, Bio-Rad and BioGX pixl.16 Platforms*.

Swab sample (Copan Universal Transport Media (UTM[®]) or Copan ESwab™)

ABI, Bio-Rad and BioGX pixl.16 Platforms (validated magnetic bead or silica column extraction kits)

Thoroughly vortex the sample prior to processing. Follow manufacturer recommendations for extraction of appropriate sample volume. Transfer 5 µL of purified nucleic acid to master mix as described in Section: *BioGX Quality Control Setup Procedure for ABI, Bio-Rad and BioGX pixl.16 Platforms*.

BioGX QUALITY CONTROL SETUP PROCEDURE

Quality Control Setup Procedure for: ABI, Bio-Rad and BioGX pixl.16 Platforms

Assembly of PCR Reactions

1. Prepare the appropriate number of 8-tube PCR strips, 96-well or 384-well PCR plates.

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2. Thaw master mix, pipette up and down gently to thoroughly mix. **IMPORTANT:** Keep master mix in a cold block or on ice if setup can not be completed within 20 minutes. If the master mix cannot be used immediately, it can be stored for up to 12 hours at 2-8°C, protected from light.
3. Transfer 10 µL of master mix to the bottom of each empty well.
4. To each well containing 10 µL of master mix, add 5 µL of extracted sample.
5. Affix the appropriate optical caps or optical plate seals.
6. Pulse spin the sealed PCR plate or tube to mix and bring liquid to the bottom.
7. Load 8-tube PCR strips, 96-well or 384-well PCR plates into the real-time PCR platform and start the run. Avoid unnecessary delay once tubes/plates are loaded into the real-time PCR instrument.

ASSAY PERFORMANCE

All BioGX Research Use Only products are designed to detect 20 copies or less of the target nucleic acid per reaction.

INTERPRETATION OF RESULTS

Table 2. Multiplex PCR Results Interpretation for 450-073-LMP.

| C.freundii | C.koseri | Salmonella spp. | RNase P | Interpretation |
|------------|----------|-----------------|---------|--|
| + | - | - | +/- | Citrobacter freundii POSITIVE |
| - | + | - | +/- | Citrobacter koseri POSITIVE |
| - | - | + | +/- | Salmonella spp. POSITIVE |
| - | - | - | + | Citrobacter freundii, Citrobacter koseri, Salmonella spp. NEGATIVE |
| - | - | - | - | Unresolved* |

*Failed PCR due to inhibition, reagent failure or incorrect assembly of PCR reaction.

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





REFERENCES

1. Anderson, Mark T., et al. "Citrobacter freundii fitness during bloodstream infection." *Scientific reports* 8.1 (2018): 1-14.
2. Yuan, Chao, et al. "Comparative genomic analysis of Citrobacter and key genes essential for the pathogenicity of Citrobacter koseri." *Frontiers in microbiology* 10 (2019): 2774.
3. Malorny, Burkhard, et al. "Diagnostic real-time PCR for detection of Salmonella in food." *Applied and environmental microbiology* 70.12 (2004): 7046-7052.
4. Clinical and Laboratory Standards Institute. Protection of laboratory workers from occupationally acquired infections; Approved Guideline. Document M29 (Refer to the latest edition).
5. Centers for Disease Control and Prevention and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. Choosewood L.C. and Wilson D.E. (eds) (2009). HHS Publication No. (CDC) 21-1112.
6. QuantStudio™ Design and Analysis software User Guide, ThermoFisher Scientific, Waltham, Massachusetts, USA (Refer to the latest version).
7. Applied Biosystems 7500 Fast Dx Real-Time PCR Instrument Instructions for Use (2012). Life Technologies Holdings Pte Ltd, Singapore. Publication Part Number 4406991 [Rev. E].
8. CFX96 Touch, CFX96 Touch Deep Well, CFX Connect, and CFX384 Touch Systems Instruction Manual (refer to the latest version), Bio-Rad Laboratories, Inc., Hercules, California, USA (Refer to the latest version).
9. BioGX pixl.16 Real-Time PCR Platform Instructions for Use (refer to the latest version), BioGX, Inc., Birmingham, Alabama, USA.

Please call BioGX or email info@biogx.com with any questions you may have regarding this product.

| Rev. # | Effective Date | Summary of Changes |
|--------|----------------|--|
| 06 | 20 MAR 2026 | Updated assay to liquid format, updated storage conditions and workflow |
| 05 | 03 NOV 2025 | Updated research use only text. |
| 04 | 07 MAR 2025 | Addition of product abbreviation code SRM5 (Sample-Ready Multiplex 5) |
| 03 | 12 OCT 2022 | Update of target genes for <i>C. koseri</i> to fimH gene and for <i>Salmonella</i> spp. to ttr operon and associated publications. Change of associated template control product code for <i>Salmonella</i> from 720-0064 to 720-0235. |
| 02 | 29 JUL 2022 | Addition of BioGX pixl.16 real-time PCR platform |
| 01 | 11 APR 2022 | Initial Release. |

SYMBOLS

| Symbol | Meaning | Symbol | Meaning |
|---|------------------------------|---|-----------------------------------|
|  | Catalog number |  | Contains sufficient for <n> tests |
|  | Research Use Only |  | Manufacturer |
|  | Keep Away from Sunlight |  | Temperature limitation |
|  | Consult instructions for use |  | Biological Risks |



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