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CLASS A BETA-LACTAMASE (CTX-M-9) RESISTANCE MARKER qPCR TEST KIT USER GUIDE

CAT NO.: YSL-ABR-CTXM9-100

100 reactions
with Lyophilised MasterMix

VERSION 2.

For research use only



YOUSEQ

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INTENDED USE

This product is a qPCR test kit for the detection of the antibiotic resistance marker Class A beta-lactamase (CTX-M-9) (CTX-M-Grp9) in good quality nucleic acid samples from a variety of sources. It is designed to be used by trained users in a suitable molecular biology laboratory environment.

KIT CONTENTS

| | Cap Colour | Volume |
|---|---|---------|
| CTX-M-Grp9 specific primer/probe (FAM Probe) |  | 110 µl |
| Endogenous control primer/probe (VIC/HEX Probe) |  | 110 µl |
| ROX passive reference dye |  | 10 µl |
| DNase/RNase free water |  | 1.5 ml |
| Template resuspension buffer |  | 1.5 ml |
| Lyophilised Tetra 2X qPCR MasterMix |  | 1.1 ml* |
| MasterMix resuspension buffer |  | 1.5 ml |
| CTX-M-Grp9 positive control template |  | 500 µl* |

* Supplied lyophilised and requires resuspension before use, see resuspension step below for instructions

RESUSPENSION

Resuspend the designated kit contents with the correct reagents as per the table below. Spin or gently tap the vials to ensure all the contents are at the bottom before opening.

After adding the resuspension reagent, pulse vortex the vials to ensure each is mixed well.

| | Reagent | Volume |
|--------------------------------------|-------------------------|--------|
| Lyophilised Tetra 2X qPCR MasterMix | MasterMix resus. buffer | 1.1 ml |
| CTX-M-Grp9 positive control template | Template resus. buffer | 500 µl |



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ROX (PLATFORM DEPENDENT)

ROX is required for platforms that use ROX as a passive reference. The table below outlines the hardware platforms that require the addition of ROX.

If ROX is required, dilute the ROX supplied according to the table below, then add 5µl to the fully resuspended Tetra MasterMix.

| | Instruments | Step 1: Volume of water to add to ROX tube | Step 2: Add to MasterMix vial |
|-----------------------|--|--|-------------------------------|
| High ROX Instruments: | Applied Biosystems 7700, 7000, 7900, 7300, StepOne, StepOne Plus, and Roche capillary Lightcyclers 2.0 | No Dilution Required | 5 µl |
| Mid ROX Instruments: | Stratagene MX | 75 µl | 5 µl |
| Low ROX Instruments: | Applied Biosystems 7500 Platform, ViiA7 platforms, Quantstudio | 130 µl | 5 µl |
| All Other Machines | | Not Required | Not Required |

MATERIALS REQUIRED BUT NOT PROVIDED

DNA Extraction kit - This qPCR test kit will work well with high quality DNA derived from any extraction kit with minimal PCR inhibitors present.

qPCR instrument with minimum 2 colour detection (FAM and VIC/HEX).

Pipettes, micro centrifuge tubes and general laboratory equipment.

KIT SPECIFICITY

The YouSeq qPCR test kit for the detection of antibiotic resistance marker Class A beta-lactamase (CTX-M-9) is designed to have the broadest detection profile possible and detect resistance in all clinically relevant strains. The primers and probes have very high (>95%) homology with all reference data within the NCBI database.

If you require more specific data about the detection profile of the kit, please do not hesitate to contact our bioinformatics team : support@youseq.com



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qPCR BENCH SIDE PROTOCOL

Clean and decontaminate all work surfaces, pipettes and other equipment prior to use to remove potentially contaminating nucleic acids.

REACTION SET UP

Combine the following reagents to create a final test reaction:

| Component | Volume |
|----------------------------------|------------|
| Tetra 2X qPCR MasterMix | 10 μ l |
| CTX-M-Grp9 specific primer/probe | 1 μ l |
| Endogenous Control primer/probe | 1 μ l |
| Extracted Sample DNA | 8 μ l |
| Final Volume | 20 μ l |

NEGATIVE CONTROL

For a negative control reaction, repeat the reaction set up above replacing the sample DNA with DNase/RNase free water.



Please note: Make sure to seal the sample and negative control wells before proceeding to the positive control step.

POSITIVE CONTROL

For a positive control reaction, repeat the reaction set up above replacing the sample DNA with 8 μ l of the positive control template supplied with the kit.



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qPCR AMPLIFICATION PROTOCOL

This YouSeq kit will work with any qPCR instrument capable of detecting FAM and VIC/HEX.

Run the following PCR protocol:

| | Temperature | Time |
|-----------|-------------|------------|
| Hot Start | 95°C | 3 minutes |
| 45 cycles | 95°C | 15 seconds |
| | 60°C* | 60 seconds |

*Make sure to collect fluorogenic data through both the FAM and VIC/HEX channels during this step

INTERPRETATION OF RESULTS

When analysing Sample Cq values, YouSeq recommends checking the threshold within the run file before interpreting the data. We would suggest setting the threshold to 10% of the relevant positive control End Point Fluorescence (EPF).

Positive control

Firstly, check the positive control performance. The positive control should amplify in a Cq range of approximately 18.5 +/-2. If the Cq range is not achieved, this would be a failed test and should be repeated.

Please note: The positive control in the kit is a representative sequence associated to the designs target region and does not contain the organisms entire genome.

The positive control within the kit does not include the endogenous control sequence. Therefore, the positive control should not be expected to amplify in the endogenous control channel.

Negative control

In ideal circumstances, the negative control should deliver a flat line - negative result. However, it is not uncommon for background laboratory contamination to cause a very late signal. If this signal is ≥ 5 Cq values later than your sample signal then it can be considered negative and the result is viable.

If the negative control is < 5 Cq later than the signal sample, then the result is inconclusive and the test should be repeated after potential sources of contamination have been removed.

The test is valid if the following conditions are met:

| | FAM Channel |
|------------------|-------------|
| Positive Control | + |
| Negative Control | - |

Positive samples

Samples that are positive for Class A beta-lactamase (CTX-M-9) (CTX-M-Grp9) will deliver a defined "sigmoidal" amplification plot.



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INTERPRETATION OF RESULTS CONTINUED

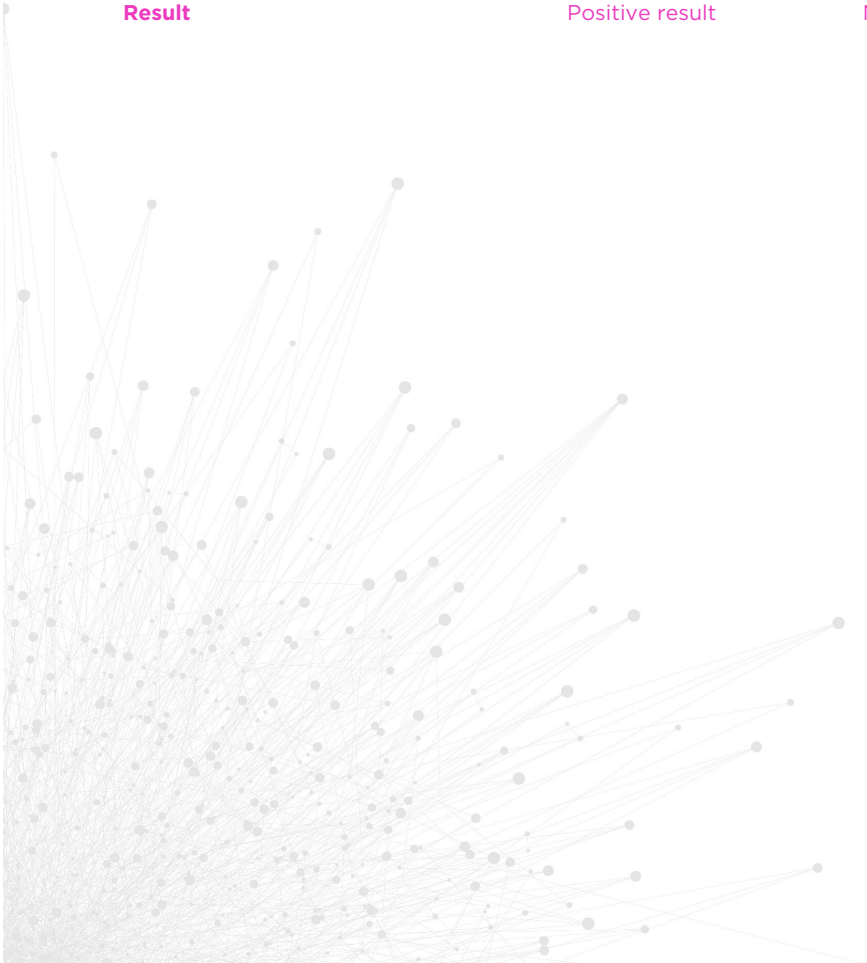
Endogenous control

If your sample delivers a strong positive result for Class A beta-lactamase (CTX-M-9) (CTX-M-Grp9) then the endogenous control is not required for data interpretation and can be ignored.

If your samples deliver a negative result, then the endogenous control is useful to interpret the result. The Cq value from the endogenous control will vary according to the amount of DNA in your sample. A late signal (Cq>28) indicates that only a small amount of host derived DNA was present in your sample. You may wish to repeat sample collection and then repeat the test in order to confirm the negative result.

Results interpretation at a glance:

| | qPCR Signal | | |
|------------------------------|-----------------|-----------------|-------------------------------|
| Sample (FAM) | ≤35 | - | - |
| Endogenous Control (VIC/HEX) | +/- | + | - |
| Positive Control | + | + | + |
| Negative Control | - | - | - |
| Result | Positive result | Negative result | Failed test. Insufficient DNA |





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PRODUCT SPECIFICATIONS

How sensitive is my kit?

The kit is suitable for the detection of Class A beta-lactamase (CTX-M-9) (CTX-M-Grp9), across a wide dynamic range from 10^6 copies to less than 100 copies of the target in the PCR reaction.

Storing your kit

Store at -20°C from arrival. The qPCR kits shelf life is outlined as an expiry date on the pouch label.

Use good quality DNA

Poor quality input nucleic acid is the biggest cause of test failure. The kit will work well with any source of good quality DNA. Good quality is defined as DNA with high integrity (not degraded) and with low levels of inhibitors present.

Regulatory status

This product has been developed for Research Use Only and is not intended for diagnostic use. It should not be used for diagnosis of disease unless specifically approved by the regulatory authorities in the country of use.

Quality Control

In accordance with the YouSeq Ltd ISO EN 13485-certified Quality Management System, each lot of Class A beta-lactamase (CTX-M-Grp9) Resistance Marker qPCR Kit is tested against predetermined specifications to ensure consistent product quality. Design of the kit met our robust bioinformatic analysis requirements resulting in a clinically relevant detection profile based on available sequence information. The kit is periodically checked against newly available sequence information to remain clinically relevant.

Technical Assistance

For customer support, please contact:

e-mail: support@youseq.com

phone: +44 (0)333 577 6697

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