

Myra Liquid Handler and Mic qPCR Thermal Cycler

User Guide v2

This user guide provides general instructions for using Medicinal Genomics qPCR and RT-qPCR Detection Assays with the Bio Molecular Systems Myra Liquid Handler and Mic qPCR Instrument. For more information see the Biomolecular Systems Workbench User Manual, accessible under “quick links” in the BMS workbench software.

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Overview

Medicinal Genomics has partnered with Bio Molecular Systems (BMS) to simplify, accelerate, and consolidate qPCR and RT-qPCR testing. The Myra Liquid Handling platform together with the Mic qPCR Instrument allows users to automate several processes in our workflow including creating the master mix, positive control dilutions, and qPCR setup.



Biological Safety

Handle biological material with care and in accordance with the required safety regulations. Always wear safety glasses, gloves, and a lab coat. The user must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents.

Decontamination of Instrument

Surfaces of the Myra instrument, including the deck and pipette head, can be decontaminated using a solution of sodium hypochlorite (NaOCl). A solution containing 1 g/L available chlorine will be suitable for sanitation in a general lab environment; stronger solutions (5 g/L) are recommended when dealing

with high risk situations. A UV light is also available for decontamination (see Using the UV Light in the BMS Workbench User Manual).

Equipment

- Bio-Molecular Systems Mic 4-Channel Real-Time PCR Instrument
- Base Package Includes:
 - 3 Year manufacturer warranty (includes replacement or loan unit during repair)
 - Tubes and Caps (1 Box / 960 Tubes)
 - Tubes and Caps - Racked (1 Box / 960 Tubes)
 - Capping Tool
 - Tube Clamp
 - Bluetooth Antenna
 - Power Supply
 - Rapid Capping Tool
- Bio-Molecular Systems Myra Liquid Handling System
- Base Package includes:
 - 2 year manufacturer warranty (includes replacement or loan unit during repair)
 - 50 uL Robot Tips (1 Box)
 - Multipurpose Loading Block
 - Pipette Head 50 uL
 - Power Supply
 - USB Cable
 - Waste Tub w/ Lid
 - Myra Loading Block for Mic Racks (required for integration with Mic)
 - HEPA Filter

Note: Windows PC required but not provided by Bio Molecular Systems or Medicinal Genomics

Consumables

MGC SKU	Description	Vendor Name
420243	Mic Tubes & Caps (1 Box / 960 tubes)	MIC-TUBES
420244	Mic Tubes & Racked Caps (1 Box / 960 tubes)	MIC-TUBES+RACKED CAPS
420254	Myra 50 ul Robot Tips (1 Box / 10 racks of 384)	MYRA-TIPS 384-50

Software Installation

Install the Myra Software, located on the provided USB Flash drive, onto a PC. Ensure that the PC meets the following minimum requirements:

- Windows® 10, 64-bit (English version) Operating System
- .NET Framework 4.5 or higher
- Intel i5 processor, 2.4 GHz
- 8 GB of RAM
- 1 GB free hard drive capacity
- Pointer device
- USB Drive
- Adobe® Reader® must be installed to be able to view reports in PDF format.

The BMS Workbench Software latest version can be found on the BMS website:

<https://biomolecularsystems.com/media-downloads/myra-downloads/>

Follow the instructions that appear in the Setup Wizard. If the computer is connected to a network, network policy settings may prevent you from completing this procedure. For more information, contact your system administrator. When the software has been successfully installed, the *Workbench* software icon will appear on the PC desktop.



Updating Software

Software and firmware updates are available for download at:

<https://biomolecularsystems.com/media-downloads/myra-downloads/>.

Please check the website periodically to see if new software and firmware updates are available.

Registered users will be notified via email upon release of a new software version.

Upgrading Firmware

Some new releases of software will require a firmware update. The software will notify the user of the requirement to upgrade firmware upon selection of an instrument following the software update.

Select the *Upgrade Firmware* option in the drop-down list after selecting the *Instrument icon*. The instrument will begin to flash the front LED indicator to notify the user the firmware is being updated.

Using the Myra

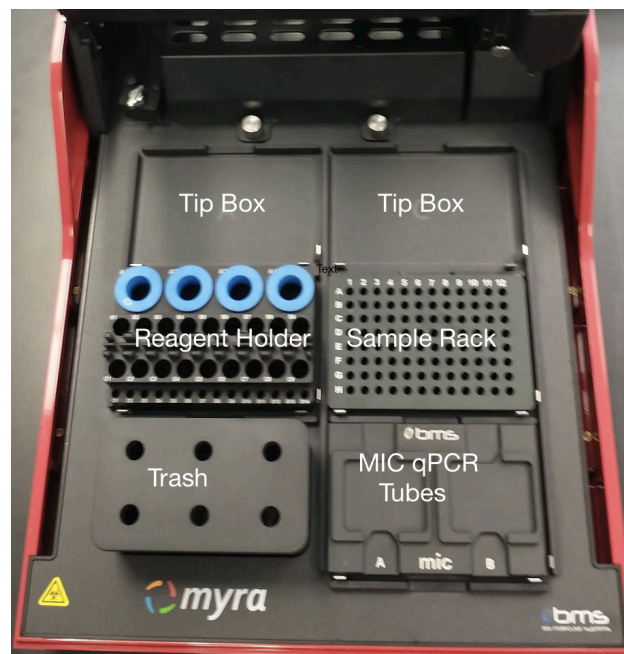


Figure 1: Labeled deck positions of the Myra.

To operate the Myra, open the Workbench software and select the appropriate run template.

For a list of available templates reach out to and MGC Applications Scientist or email MGC Support support@medicinalgenomics.com

Myra Setup for Positive Control Dilution

Note: This dilution can be prepared manually if desired

1. Select the “Positive Control Dilution” Template to run on the Myra.
2. Remove the positive control tube you wish to dilute from the freezer and allow it to thaw, then vortex and spin down the tube..
3. Place the positive control tube, nuclease free water, and empty labeled 1.5 mL tube onto the deck following the deck layout screen.

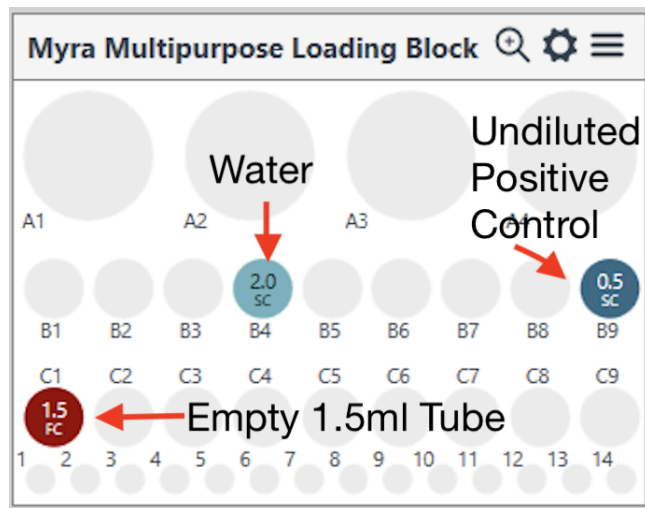


Figure 2: Deck Layout Screen for Positive Control Dilution

4. Connect to the Myra by using the icon in the upper right corner.

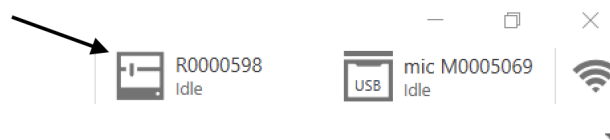
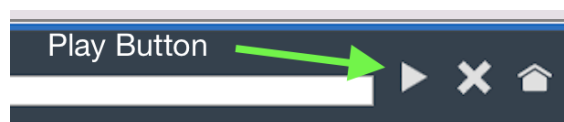


Figure 3: Connect to Myra Icon

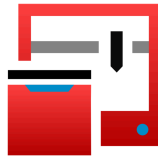
5. Run the program using the play button.



6. At the end of the program, the labeled 1.5 ml tube will contain your diluted positive control.
Store diluted positive control at -20°C for up to 1 week or use immediately.

Myra Setup for Detection Assays

1. Remove the required reagents from the freezer to thaw.
2. Open the Myra or Workbench software program by clicking the desktop shortcut.



3. Select the installed template that corresponds to the desired assay.

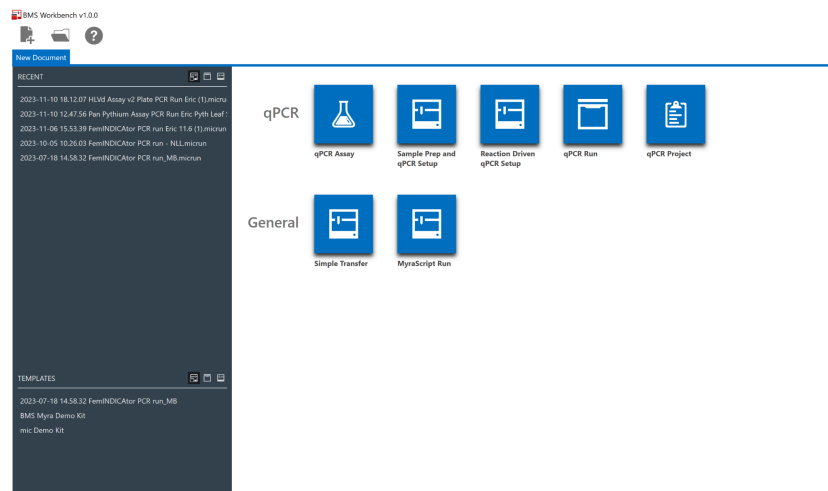


Figure 4: Template selection screen

4. Connect to the Myra by using the icon in the upper right corner.



Figure 5: Connect to Myra Icon

5. The number of reactions will default to 48 for each instrument run (46 samples and 2 controls). If the number of reactions being set up are less than 46, click on the “Reactions” tab and highlight the reactions you wish to remove. Right-click within the highlighted area, then select “Delete These Reactions”. If desired, name samples by clicking into the sample name column associated

with the sample number. Sample names can also be imported in bulk from a csv file. Sample numbers or names are not relevant to the Positive Control Dilution template.

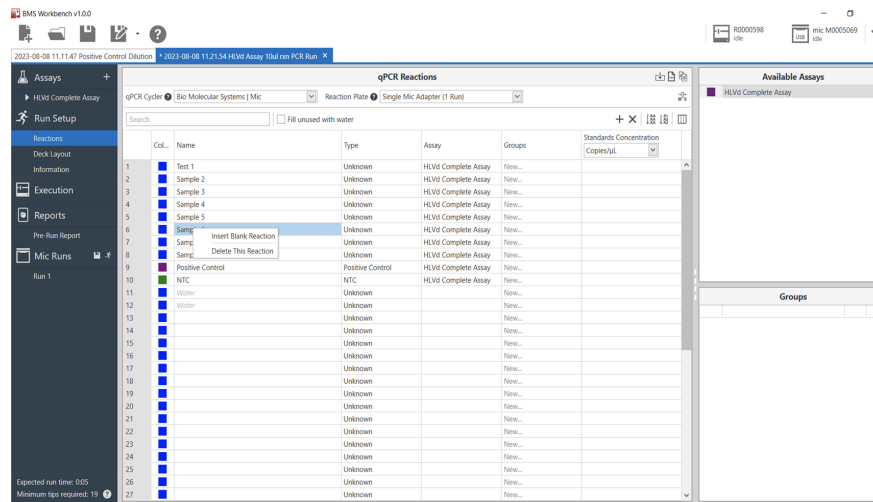
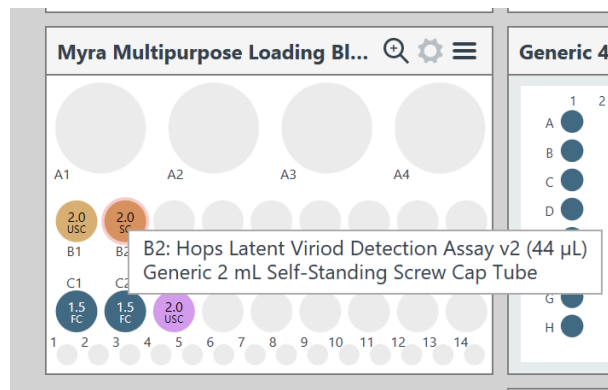


Figure 6: Reactions Tab

6. If stored at 4°C, remove the Myra Multipurpose Loading Block and transfer to the correct Myra deck location according to the Deck Layout screen. If the loading block is stored at 4°C until right before setting up a run, it will keep reagents cool while on the deck.
7. Hover over the tube positions to determine the location of each reagent tube in the multipurpose loading block. Samples will be placed just to the right of the loading block according to the deck layout. Quick lysis strip tubes will be placed every other column into the tube adapter. Samples lysed with Pure Prep will be in a 96 well PCR plate placed on a 96 well ring magnet. DNA elutions from SenSATIVAx prepped samples will be contained within a 96 well PCR plate placed on a 96 well ring magnet. MaGiC Lysis lysates will be placed onto the deck in a 96 well PCR plate.
8. Hovering over the reagent tubes will also indicate volumes of each reagent needed, based on the number of samples entered into the 'Samples' tab.

Note: Most master mixes will need additional volume over the volume indicated to account for viscosity of these reagents.



9. Once the deck setup is complete, click on the Play icon to start the instrument. A “Save As” screen will allow users to save their run with a unique name.

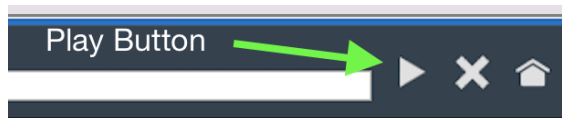


Figure 8: Play icon

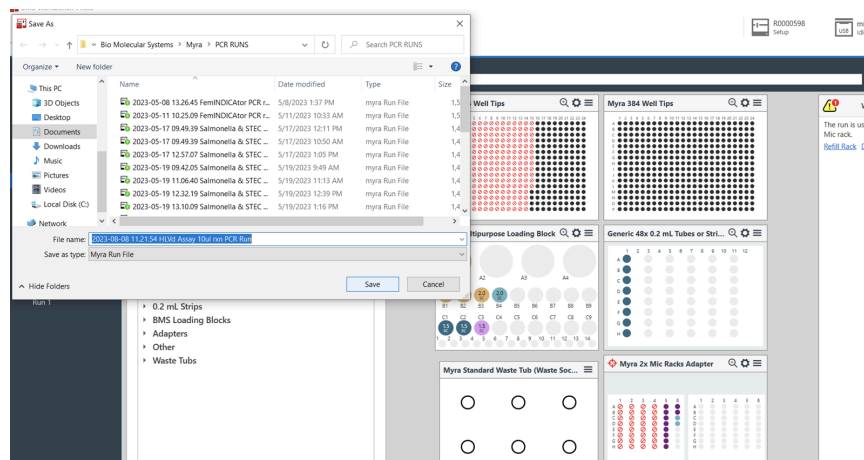


Figure 9: “Save As” screen

10. A pre-run checklist will appear. Check off the boxes as the steps are completed and click “Start” to initiate the run.

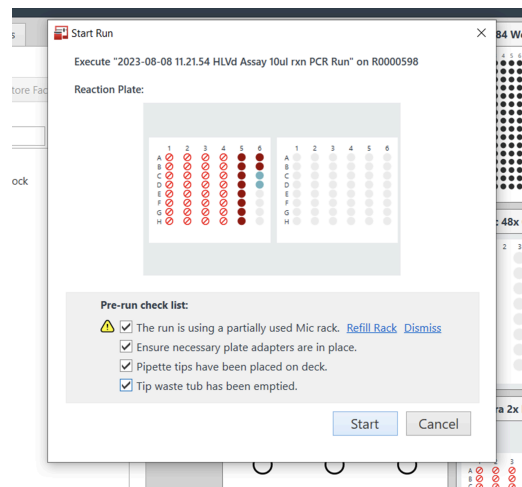


Figure 10: Pre-run checklist

11. Allow the instrument to run to completion.
12. Once the run has finished, your Mic tubes or 96 well qPCR plate will contain the Master mix and samples.

NOTE: If using the MIC thermal cycler continue on to step 15. If using a standard thermal cycler, continue to instrument loading and setup following the user guide for the assay being utilized.

13. Firmly cap the tubes using the manual capper or the Rapid Cap device.

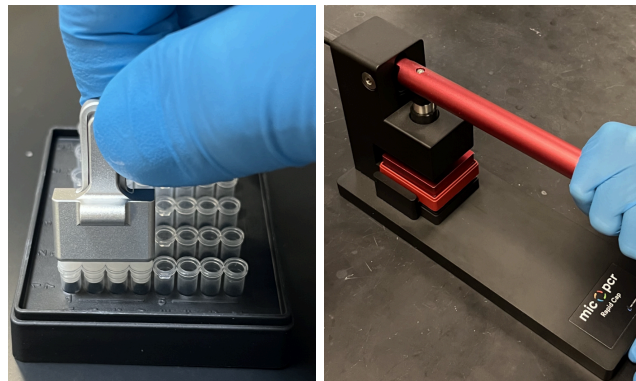


Figure 11: Capping with manual capper (left) and Rapid Cap device (right)

14. Load the Mic qPCR thermal cycler with the capped reaction tubes. Each tube is part of a strip of four, with the first tube having a small tab to ensure the strip is loaded into the instrument correctly. Start at position 1 and ensure that the small white tab on the tube caps is aiming inward

towards the rotor center. If running fewer than 46 samples (48 total reactions) ensure that *water balance Mic tubes* are loaded into all unused sample locations.

Note: Do not use old reaction tubes in the unused sample location. Not all assay reaction volumes are identical. Ensure that the proper volume of water is used in the blank tubes for each assay. Refer to the assay's corresponding Quick Guide for proper volumes.

15. Replace the magnetic clamp and close the Mic lid when all tubes are loaded.

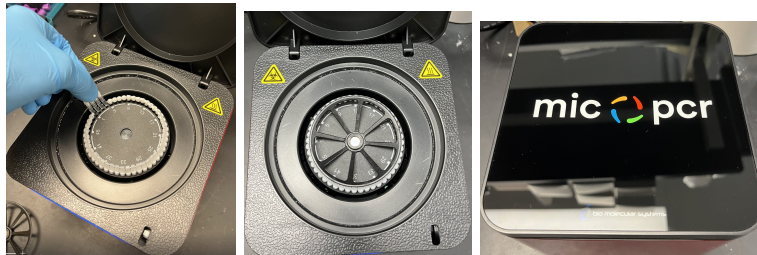


Figure 12: Loading the Mic

16. Cap the reagent tubes and sample tubes on the Myra. If another Myra run will not be performed right away, place the reagents and samples in the freezer for storage or on ice for use within the same day.
17. Click the running man figure to export the data to the Mic software.

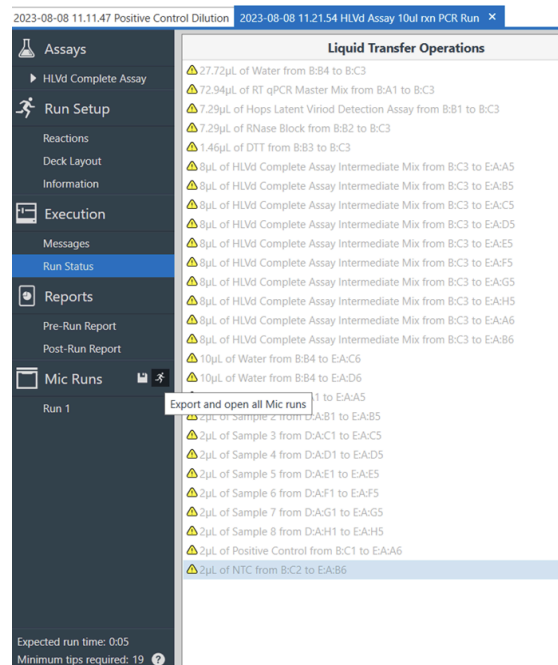


Figure 13: Exporting data to the Mic

Using the Mic qPCR Thermal Cycler

1. After exporting the Myra run to the Mic, a new tab will appear with your Mic run.

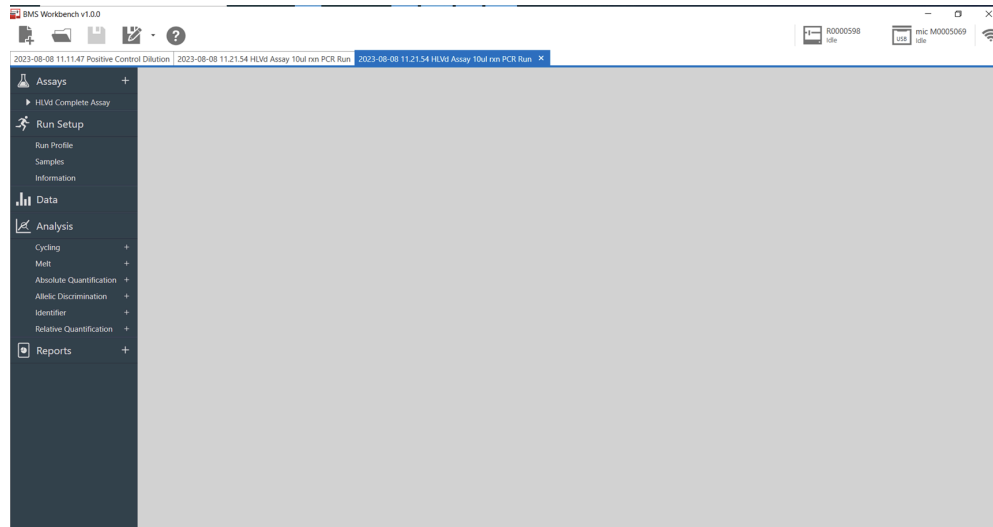


Figure 14: Selecting the Mic run tab

2. Click on the Mic icon in the upper right-hand corner, and select “Start run” from the menu that appears.

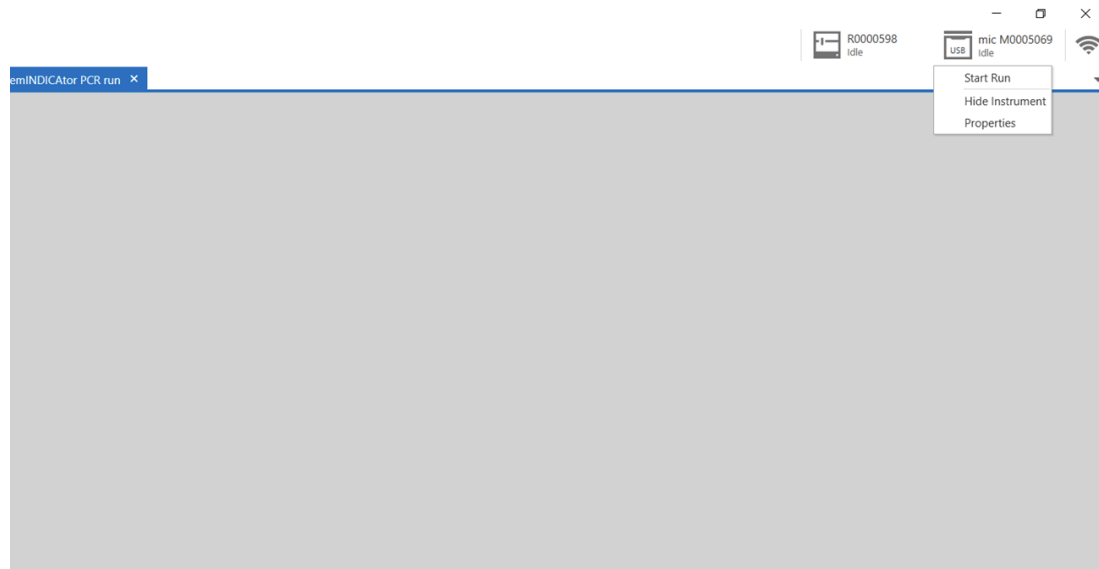


Figure 15: Starting Mic run

3. A pop-up will appear asking for the reaction volume, which will be auto-filled with the correct volume. Close the lid and the instrument will start.

Note: If the cover isn't closed, the program will not start.

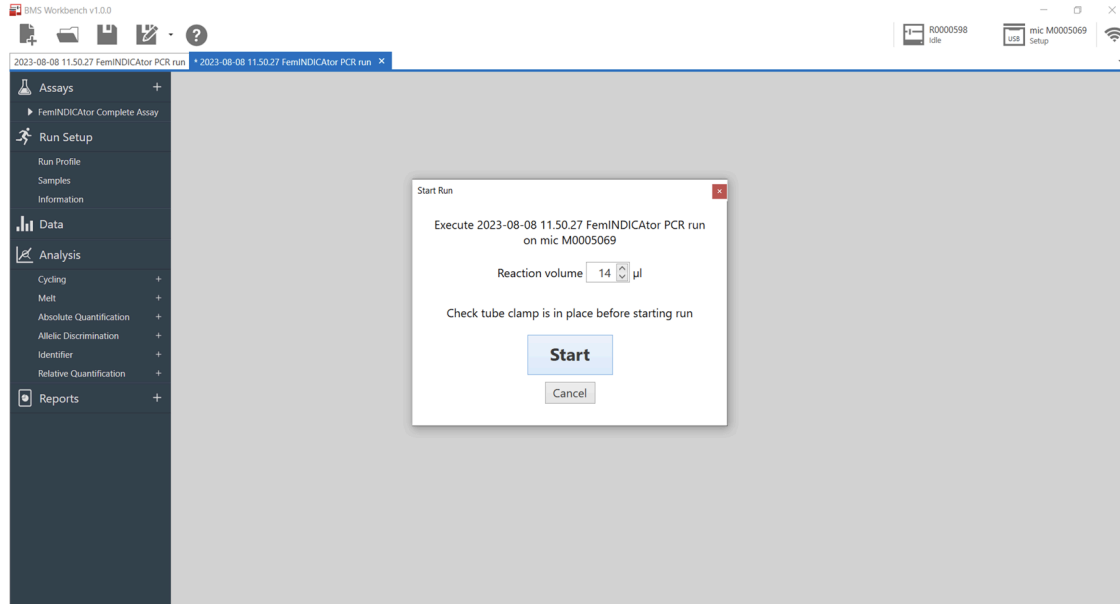


Figure 16: Pre-run pop-up screen

4. Let the Mic run to completion before analyzing the data.

Data Analysis

1. When the run has completed, click on the “+” sign next to the “Cycling” tab and select “Internal Cannabis Control”. The selection will appear under the “Cycling” tab. Next, select the assay that was run (i.e., FemINDICator, *Fusarium*, HLVd, Aspergillus, etc.).

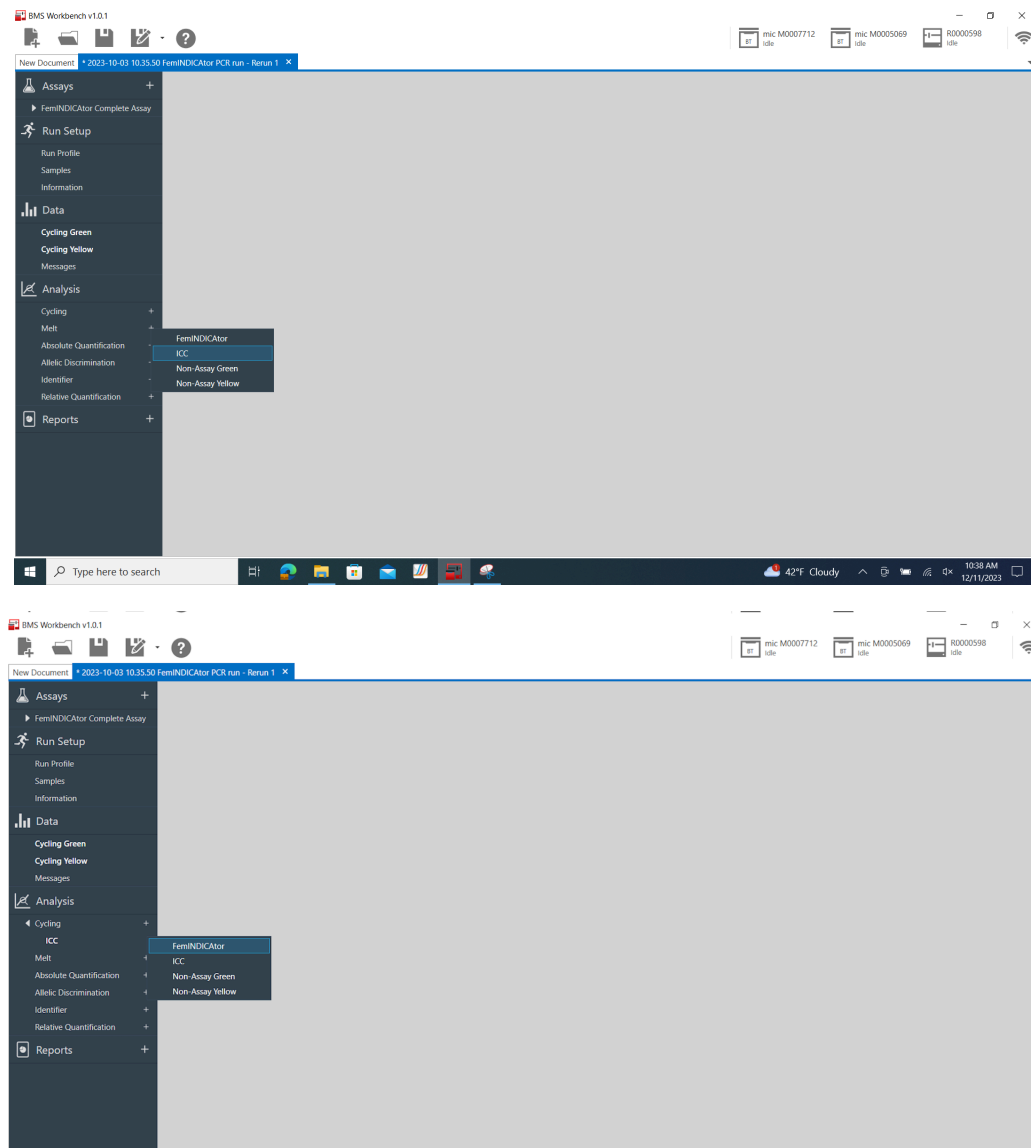


Figure 17: Select Cycling Analysis

- When these have been expanded, select the “+” sign next to the “Identifier” tab and select the available report.

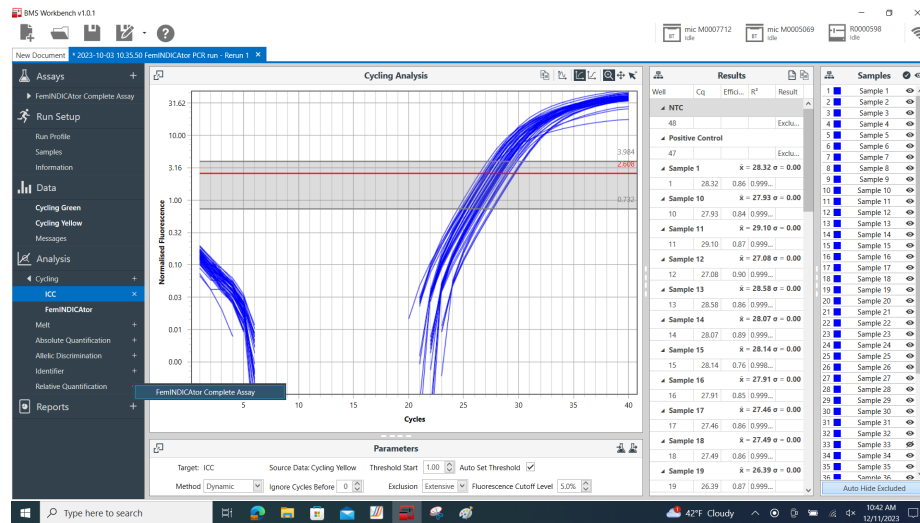


Figure 18: Select the Identifier Report

- If the automatic calls are blank, then one of the cycles is out of threshold. To fix this, find “Ignore Cycles Before” in the “Parameters” section, and increase the value one whole number at a time until a gray bar appears on the graph as seen in Figure 18. Repeat for all targets as necessary.

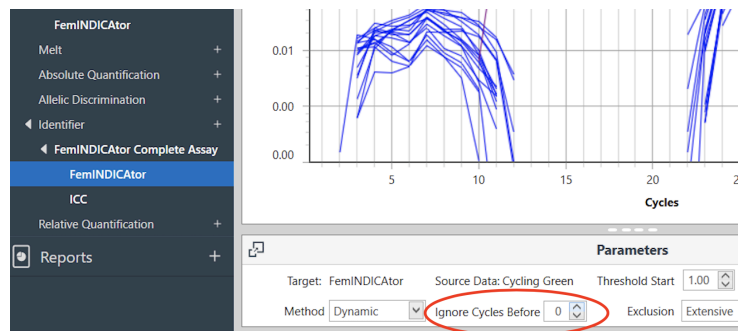


Figure 19: Adjust the Cycle Thresholds

- To review an automatic report, click the “+” sign next to the “Identifier” tab then select the relevant “Complete Assay”. This feature will call the samples tested as detect, non-detect, or inconclusive based on the qPCR data. These results will be displayed on the right side of the screen.

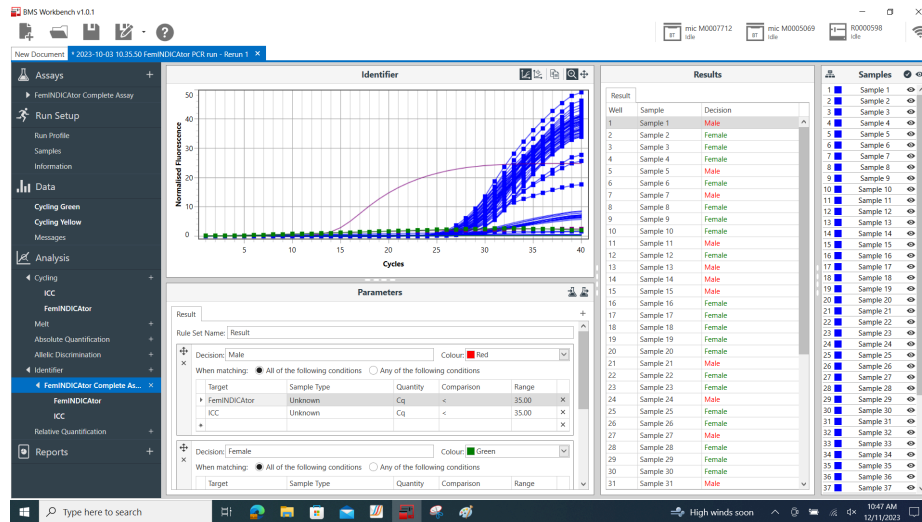


Figure 20: View the Automatic Report

- Data may be exported by selecting the “Report” tab, then clicking the Export icon.

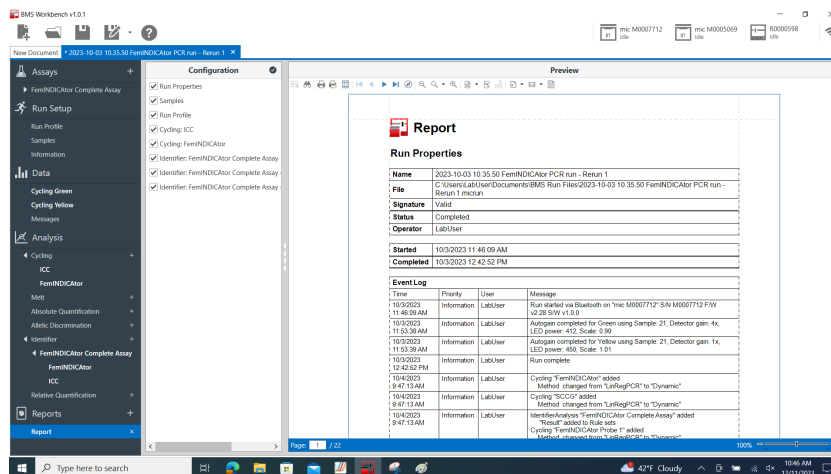


Figure 21: Export Data

REVISION HISTORY

Version	Date	Description
v1	December 2023	Platform Launch
v2	May 2025	<ul style="list-style-type: none">• Addition of Necessary Consumables Section, Biological Safety Section, and Decontamination Instructions• Added reference to BMS User Manuals

DISCLAIMER

For more information on BMS Workbench, see the Biomolecular Systems Workbench User Manual accessible under “quick links” in the BMS workbench software.

Methods designed by Medicinal Genomics for this platform were developed, and their performance characteristics determined by Medicinal Genomics Company, for laboratory use. Any deviations from this protocol are not supported by MGC. The results may vary based on laboratory conditions.

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