CellXpress.ai

Automated Cell Culture System

Software Version 1.5

Release Notes

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November 2025

MOLECULAR DEVICES

Product manufactured by Molecular Devices, LLC., a part of Danaher Corporation.
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Contents

Chapter 1: CellXpress.ai Automated Cell Culture System

The CellXpress.ai® Automated Cell Culture System is an AI-driven cell culture innovation hub that gives your team total control and oversight on demanding cell culture feeding and passaging schedules. The CellXpress.ai system minimizes time in the lab while maintaining a 24/7 schedule for growing and scaling multiple stem cell lines, spheroids, or organoids.

About This Guide

This guide is intended for the scientist using the CellXpress.ai system. It describes the new features and issues addressed in version 1.5 of the CellXpress.ai Automated Cell Culture System Software.

The information in this guide is subject to change without notice. We recommend that you review the guide on the Molecular Devices Knowledge Base at support.moleculardevices.com for the most up-to-date information.

Product Documentation

The following guides are available on the Molecular Devices Knowledge Base at support.moleculardevices.com:

- *CellXpress.ai Pre-Installation Guide*
- *CellXpress.ai Safety Guide*
- *CellXpress.ai System User Guide*
- *CellXpress.ai Back Port Table User Guide*
- *CellXpress.ai Tumor Spheroid Application Guide*
- *CellXpress.ai Release Notes*

A hard copy of the *CellXpress.ai Safety Guide* is also included in the package with a new system.

In addition, the CellXpress.ai software includes context-sensitive Help that you can access from within the software. Just click the **Help** icon to view Help for the current page.

Tip: We recommend that you review the documentation before using the CellXpress.ai system.

Obtaining Support

Molecular Devices is a leading worldwide manufacturer and distributor of analytical instrumentation, software, and reagents. We are committed to the quality of our products and to fully supporting our customers with the highest level of technical service.

Our Support website—www.moleculardevices.com/service-support—describes the support options offered by Molecular Devices, including service plans and professional services. It also has a link to the Molecular Devices Knowledge Base, which contains documentation, technical notes, software upgrades, safety data sheets, and other resources. If you still need assistance, you can submit a request to Molecular Devices Technical Support.

Technical Support

To contact Molecular Devices Technical Support, submit a support request through the Molecular Devices Knowledge Base at support.moleculardevices.com.

You can also submit a support request by phone. For regional support contact information, go to www.moleculardevices.com/contact.

Documentation

Review the product documentation on the Molecular Devices Knowledge Base at support.moleculardevices.com. In addition, online Help is available within the CellXpress.ai software.

Training

Molecular Devices provides training on the general operation of the CellXpress.ai system at the time of installation. Contact Molecular Devices Technical Support for details on training after installation.

Chapter 2: New Features

This section describes the new features in CellXpress.ai software version 1.5.

External Device Integration (MON-3275)

You can now integrate external devices into CellXpress.ai system workflows. Drivers are available for the following devices:

- Molecular Devices ImageXpress® High-Throughput Cellular Screening Systems (MON-3276)
- Molecular Devices FLIPR® High-Throughput Cellular Screening System (MON-3286)
- BioNex Solutions HiG4 Automated Centrifuge (MON-3291)
- Brooks PreciseFlex 400 Robot (MON-3274)

For each device, you can create automations in the software. An automation consists of a series of actions to be performed on external devices and the CellXpress.ai system.

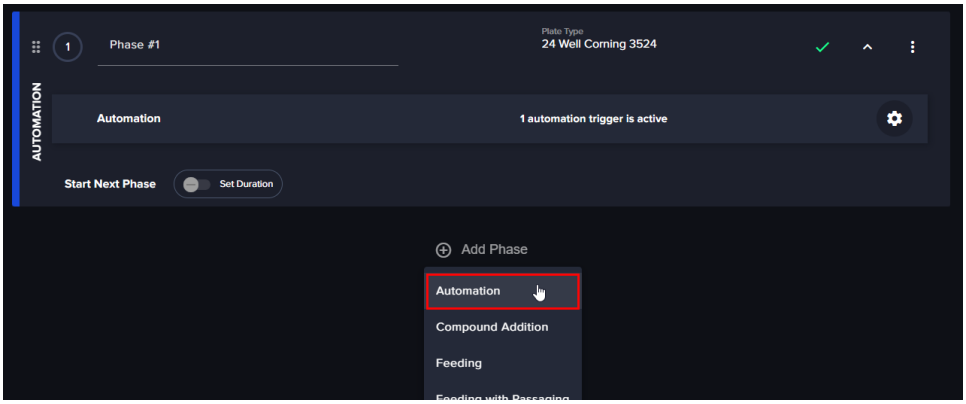
Each driver requires a valid license.

With a separate license, you can also create a custom driver. Custom device drivers must follow the SiLA 2 standard. Note that only a subset of the SiLA 2 standard is supported and some features from 3rd party SiLA 2 servers might not work as expected. Contact Molecular Devices Technical Support for details. See Obtaining Support on page 5.

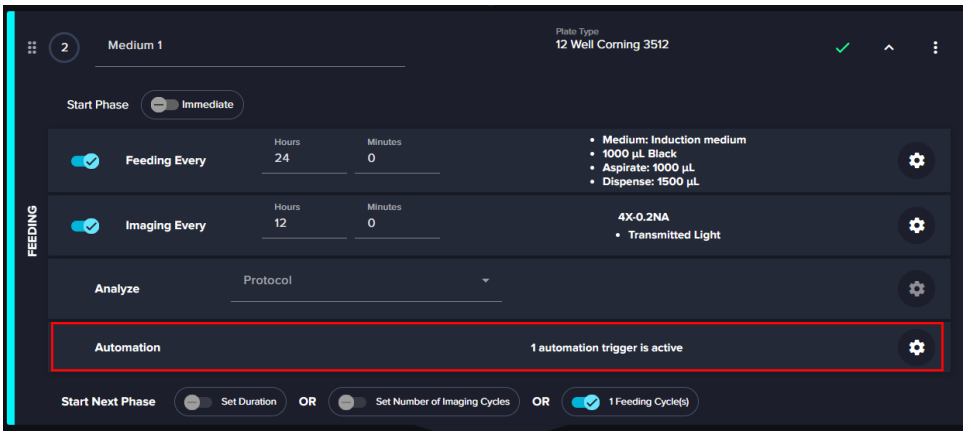
Include Automations in a Protocol (MON-3276, MON-3797)

There are several ways to include automations in a protocol:

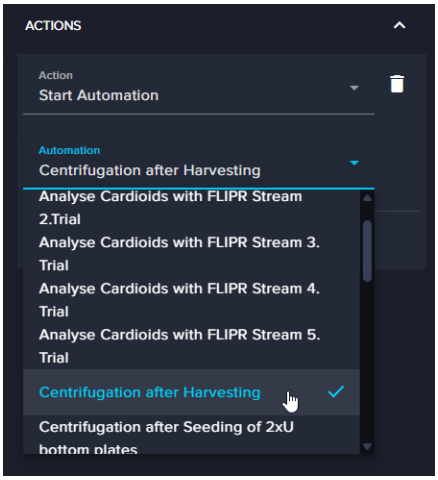
- You can add an automation workflow in an **Automation** phase.



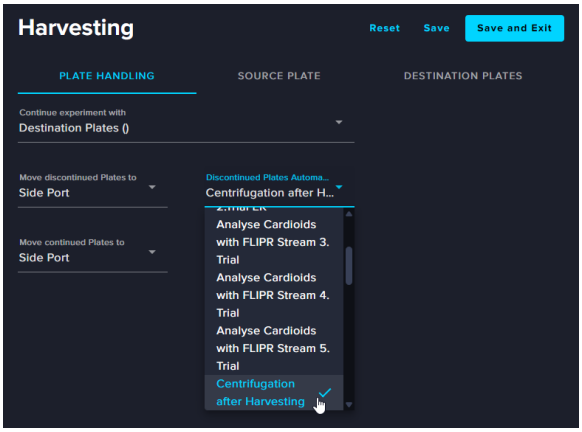
- You can an automation workflow as a step in a **Feeding**, **Seeding**, **Imaging and Analysis**, or **Harvesting** phase.



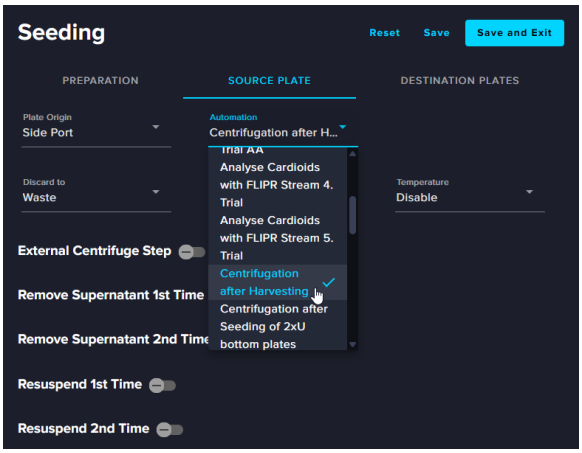
- You can trigger an automation as part of a decision rule.



- In a **Harvesting** phase, you can use both continued and discontinued plates in an automation workflow.



- In a **Seeding** phase, you can use source plates coming directly from an automation workflow.



Tip: With the new options in the **Harvesting** and **Seeding** phases, you can now automate the external centrifuge steps.

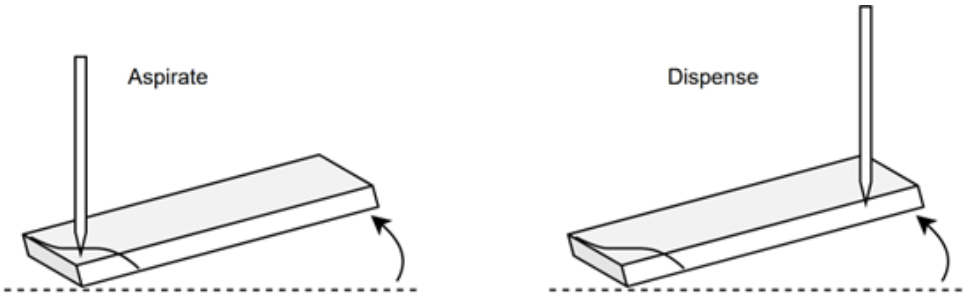
Support Added for Large Area Plates (MON-3266)

The CellXpress.ai system now supports the following large-area plates for use in most protocols:

- Corning Costar HTS Transwell Cell Culture Plate (4395), which appears in the software as **1 Well Corning 4395**.
- Thermo Scientific Nunc 4 Well Rectangular Dish (167063), which appears in the software as **4 Well Nunc 167063**.

Tilt Flow Mixing Option for Dispensing (MON-3266)

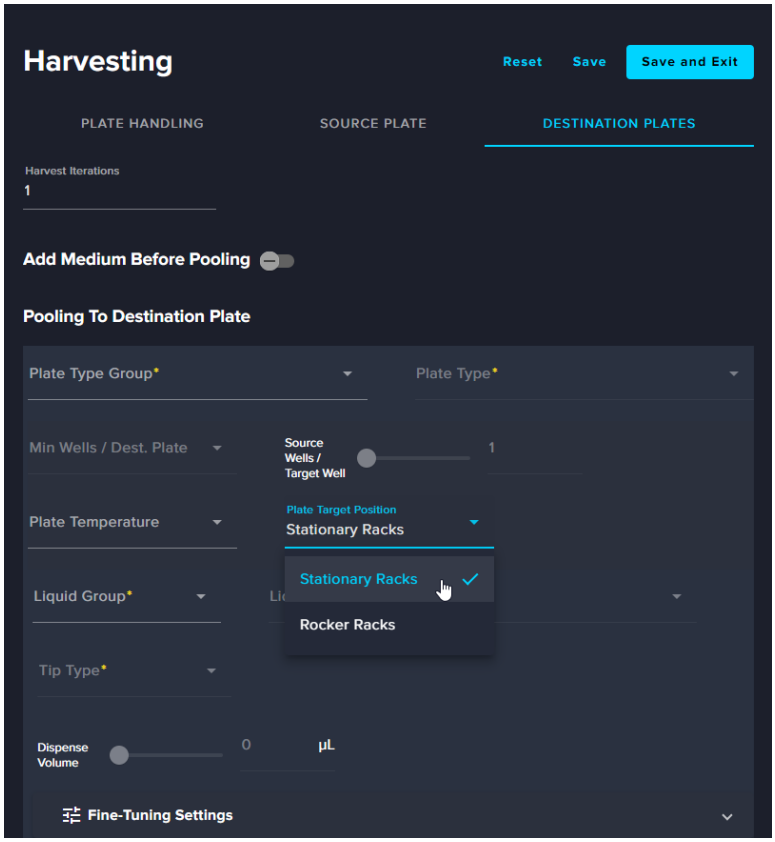
To optimize use of large area plates and allow for better sample mixing, a new **Tilt Flow Mixing** option is now included in the **Dispense** settings for media exchange steps. This option performs mixing by aspirating liquids from lower part of the well in the tilted plate (where the liquid collects) and then dispensing liquids at the higher part of the well (where there is no media).



New Protocol Settings

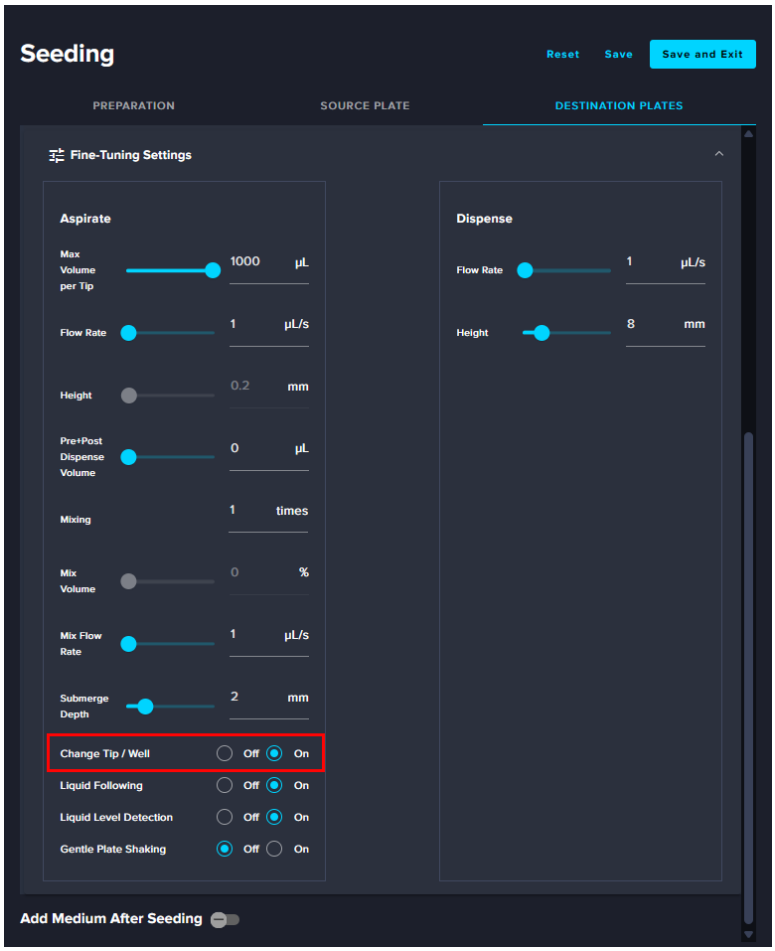
Specify Rack Type for Plates (MON-3472)

When sending a plate to the incubator, you can now specify if the plate will be loaded to a stationary rack or rocker rack. The new **Plate Target Position** dropdown setting is on the **Destination Plates** tab for **Seeding**, **Harvesting**, and **Passaging** phases.



Use Fresh Tips for Each Well (MON-3354)

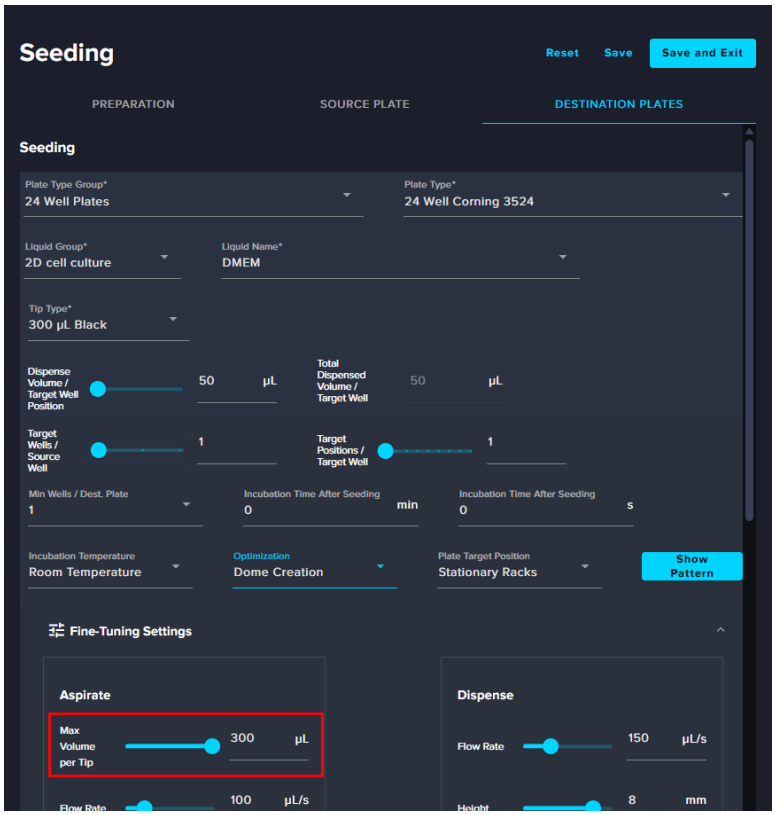
When exchanging media, you can now set the **Change Tips/Well** option to reduce the possibility of sample cross-contamination.



Limit the Volume Used for Aliquoting (MON-2830)

When dispensing during the **Seeding** step of a **Passaging** or **Seeding** phase, cells can sink to the bottom of the tip, which can cause uneven distribution of cells in different wells of the destination plate (for example, organoid fragments or cells across multiple wells).

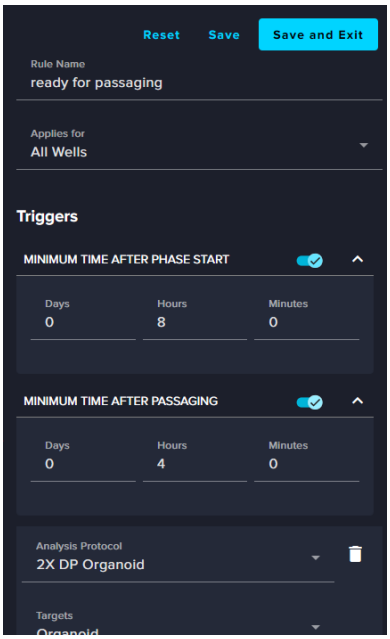
You now set the **Max Volume per Tip** field to specify the maximum volume to aspirate in the tip. Setting a lower value can reduce the time that the liquid stays in the tip during dispensing, which can help prevent cells from sinking to the bottom of the tip.



New Options for Decision Rules (MON-3287)

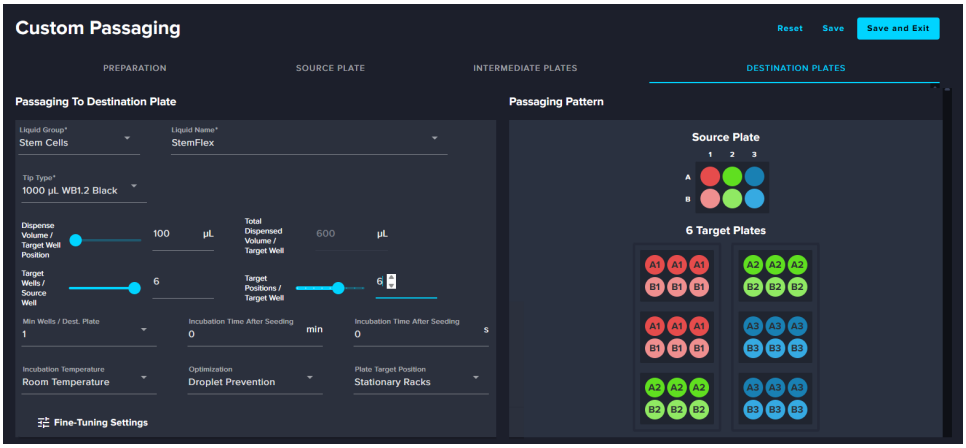
You can now delay triggering decision rules, preventing actions from being performed for a specified amount of time after the start of a phase and/or the start of passaging.

As one example, this can be useful when you want to exclude wells with a low cell confluence, but you are starting with samples seeded at a very low confluence. To avoid excluding all the wells during the following imaging cycle, the rule can be triggered after your specified amount of time, when you can expect the confluence to be higher.



Visualization of Passaging/Seeding Patterns (MON-3032)

You can visualize the seeding/passaging pattern on the **Destination Plates** tab for the **Seeding** and **Passaging** phases. The visualization shows the wells of the source plate that will be used and the destination plates that will be created.



New Data Analysis Features

Parallel Analysis in the IN Carta Software on Multiple Workstations (MON-3280)

You can analyze multiple image stacks in the IN Carta software in parallel on different external computers. This can significantly reduce the overall analysis time. Each Workstation requires a valid IN Carta software license. Contact Molecular Devices Technical Support for details on setting up the IN Carta software on an external computer. See Obtaining Support on page 5.

New Analysis Tab on Scheduler Page (MON-3281)

You can now monitor the ongoing analyses in the IN Carta software and visualize related information on the new **Analysis** tab on the **Scheduler** page. Note that completed analyses are not shown.

Widget Improvements

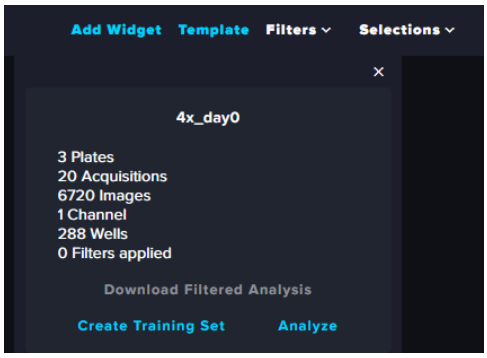
Easy Visualization of Groups and Analysis Options (MON-3284)

Click the new **Filters** button on each **Custom View** tab on the **Experiments** page to show basic information about all available groups. From here, you can do the following:

- Click **Download Filtered Analysis** to download the filtered analysis for each group.
- Click **Create Training Set** for each group to create a SINAP training set for the IN Carta software using the filtered group.
- Click **Analyze** to re-analyze the images of a specific group in the IN Carta software.

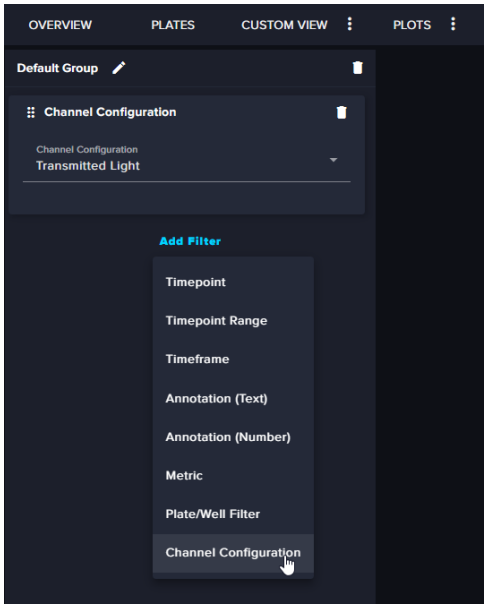
Note:

- Re-analyzing stacks overwrites old data if the same protocol is chosen.
- You cannot re-analyze an analysis that is currently running.



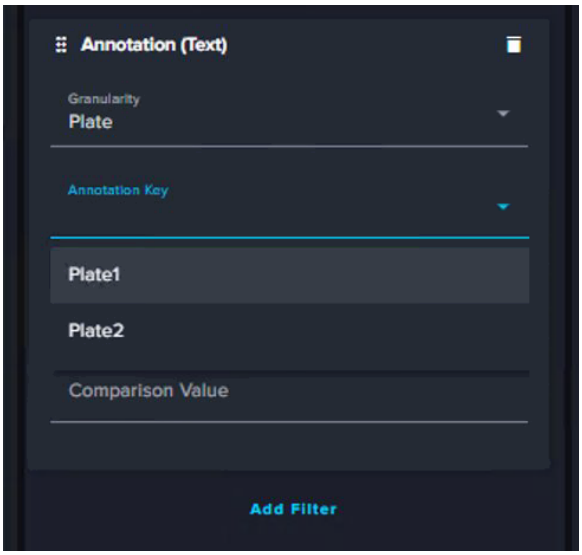
New Filter: Channel Configuration (MON-3282)

The new **Channel Configuration** filter lets you filter image stacks for a specific channel configuration.



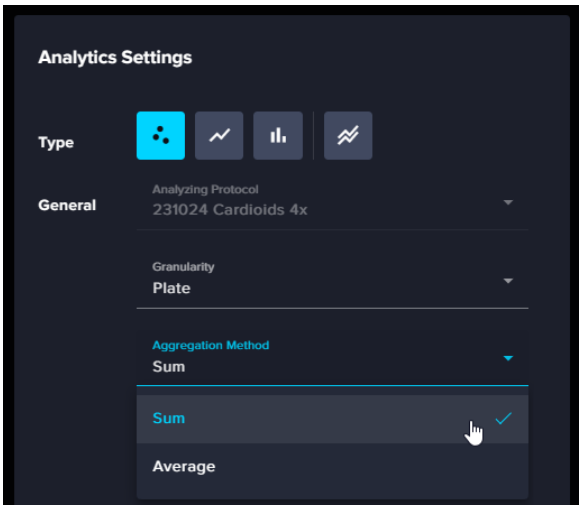
Improved filter: Annotation (MON-2489)

When filtering on well or plate annotations, you can now select the annotations from a dropdown list (instead of entering the annotations manually).



Choose the Aggregation Method for Plot Widgets (MON-3375)

You can now select the aggregation method for a **Plot** widget: either sum or average.



This new option is available for the following plot types:

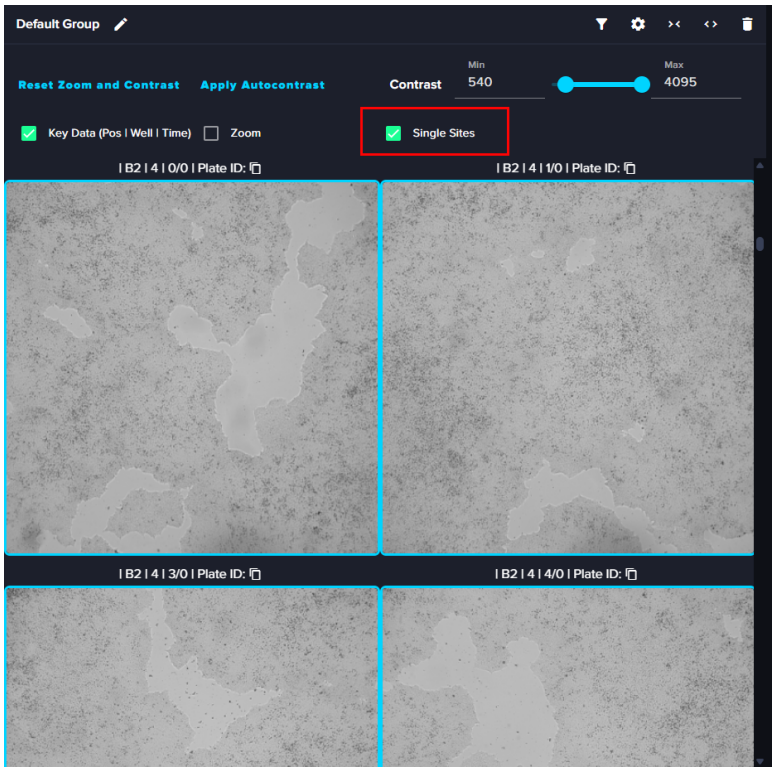
- **Scatter** (when granularity is set to **Plate**)
- **Line/Scatter** (when the granularity is set to **Plate**)
- **Stacked Lines Diagram**

Note: This option is not available for the **Histogram** plot type.

Thumbnail Widget Improvements (MON-3358)

When you add a **Thumbnail** widget, all channels are now selected by default. You can turn off channels as needed.

In addition, a new **Single Sites** option enables you to display single fields of view.



Error Handling: Continue on Error (MON-3089)

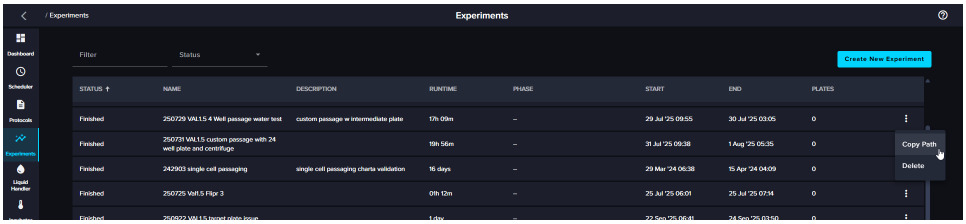
For several error conditions, the system now gives you the option to fix the issue and continue the workflow (instead of ending the workflow), including when the system detects one of the following:

- No liquid in the liquid container.
- No liquid in the bulk media trough (that is, the containers connected to the bulk media chiller bottles).
- Consumable amounts in the plate storage area are not correct.
- A plate at the barcode position (position 5 in the lid storage area), when it was expected to have been moved to the side port.
- An unexpected object at the side port.
- A plate lid is not found.
- A plate is not detected in the lift when it was expected to have been moved there.

Other Improvements

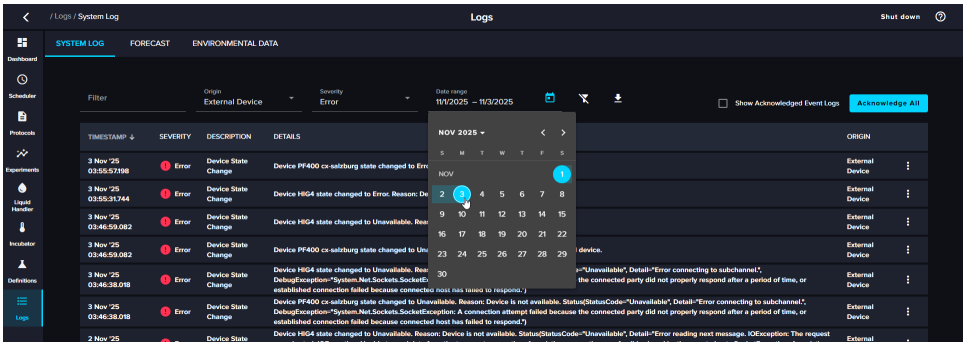
Copy Experiment File Path to the Clipboard (MON-3424)

You can now copy the experiment file path to the clipboard on the **Experiments** page. This is useful if you want to directly access the raw images for an experiment.



Export Log for Date Range (MON-2973)

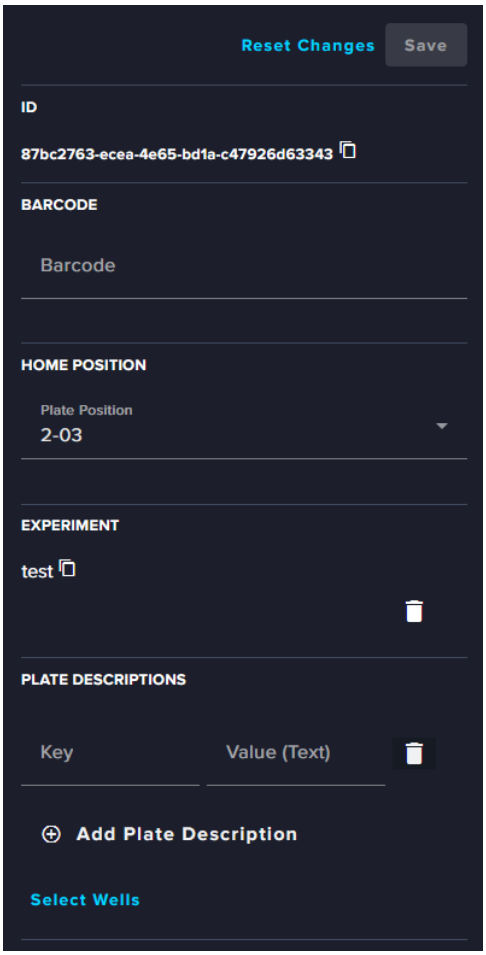
You can now specify a date range to filter system log entries on the **Logs** page. Click **Download** to download system log entries for that specific range.



Manage Plate in an Experiment (MON-3225)

A new pane on the **Experiments** page lets you easily manage the plates in an experiment, including the following:

- **Home Position**: Change the position of the plate in the incubator or remove the plate from the incubator (and the experiment).
- **Experiment**: Copy the experiment name to the clipboard or remove the plate from the experiment.
- **Plate Descriptions**: Add annotations (key/value) to the plate.
- **Select Wells**: Select the active wells for the plate.



Chapter 3: Issues Addressed

This section describes the issues addressed in CellXpress.ai software version 1.5.

All Channels Now in Focus in Multi-Channel Acquisitions (MON-3921)

The software now applies more accurate Z-offset for acquisitions with multiple channels to provide more consistent focus.

Droplet Formation Reduced After Dispensing to Liquid Waste (MON-3717)

Improvements to liquid class definitions reduce droplet formation below the tips after dispensing to liquid waste. This lowers the chance of falling droplets, which can contaminate the liquid handler worktable.

Email Server Authentication No Longer Prevents System Notifications (MON-3707)

Email notifications from the CellXpress.ai system are now delivered as expected when using an email server that requires username / password authentication.

System Successfully Acquires a Large Number of Images (MON-3833)

With sufficient storage space, the system can now acquire many images per plate. For example, an acquisition that includes many sites, wells, channels, and Z-stacks can produce up to 30,000 images, and the experiment runs as expected.

Additional Mixing Prevented Mixing with Low Liquid Levels (MON-3804)

The system now performs mixing as expected with low liquid levels. Previously, low liquid levels could trigger an error that resulted in repeated mixing.

Incorrect Harvesting Settings No Longer Result in Experiment Failures (MON-3361)

In a **Harvesting** phase, the software no longer allows values in the **Minimum Source Wells / Target Well** field that could cause an experiment to fail.

Cell Journey Showing Images with Failed Analysis (MON-3157)

The software now shows all acquired images in a **Cell Journey** widget, regardless of whether image analysis succeeded.

Software Prevents Unsupported Image Tiling Settings (MON-3903)

The software now prevents image imaging tiling settings that will result in tiled images that exceed the maximum allowed size.

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