

WHAT'S NEW IN PHENOIMAGER FUSION?



PhenoImager Fusion scans both brightfield and fluorescent slides. When paired with a PhenoCycler, Fusion can also scan multi-cycle runs using the PhenoCycler assays.

Below is an overview where we've highlighted the new features of Fusion 2.0 and beyond

- Exposure Setting (new in 2.1)
- Extended Range (16-bit) data format (new in 2.2)
- Enables both 1-slide and 2-slide PhenoCycler-Fusion formats (new 2-slide format in 2.0)
- Improved Preflight Workflow (new in 2.0)
- PhenoCycler-Fusion Preflight Tissue Finding (new in 2.0)
- PhenoCycler-Fusion Run Buffer Calculator (new in Experiment Designer 2.1)



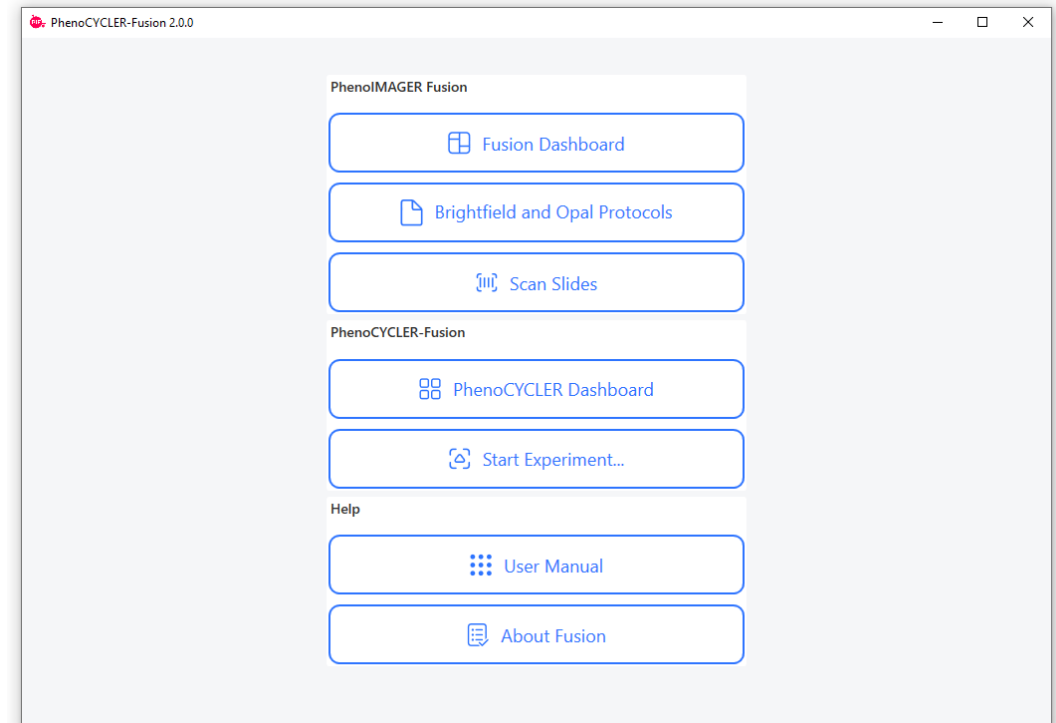
HOME SCREEN

The Phenolmager Fusion home screen is organized by task.

- The Fusion Dashboard provides the tools to confirm that your system is configured properly before scanning.
- Brightfield and Opal Protocols is a one-stop place for protocol creation and editing.
- The Scan Slides editor lets you easily set up your scans.

When paired with a PhenoCycler, additional tasks are available.

- The PhenoCycler Dashboard contains maintenance tasks related to PhenoCycler fluidics.
- Start Experiment lets you set up and run a PhenoCycler experiment



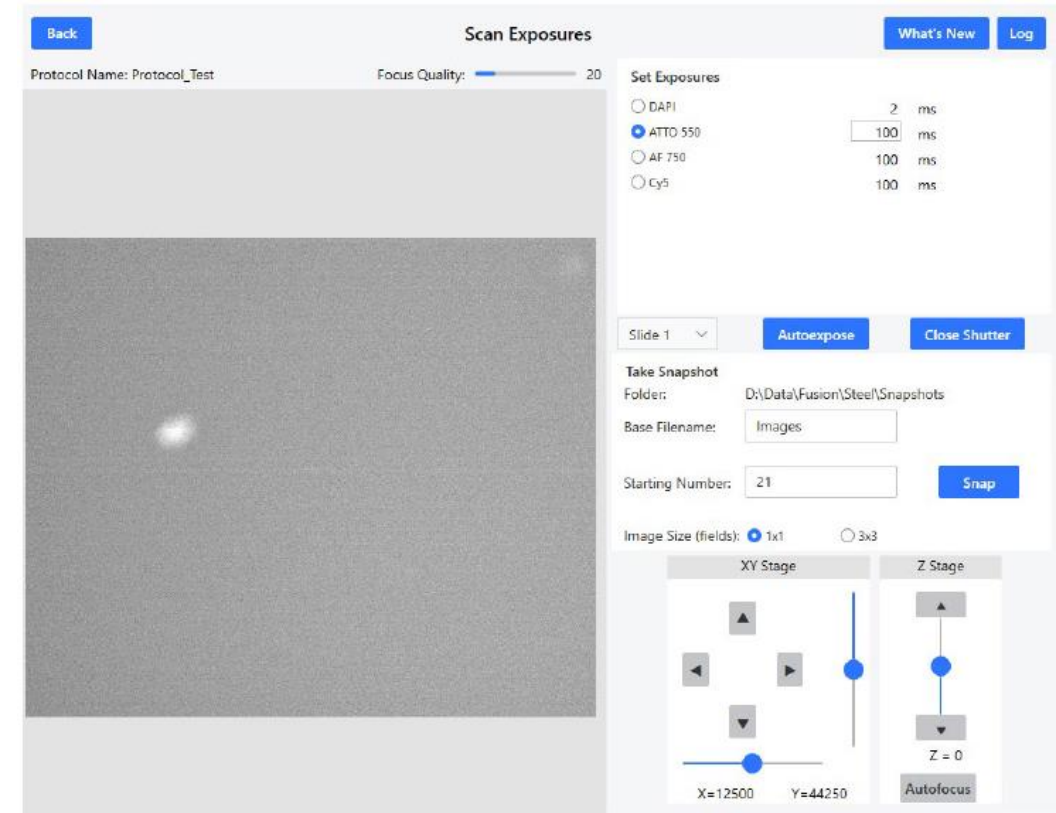
See the user manual for more details.

EXPOSURE SETTING AND SNAPSHOTS

Set exposures for fluorescent samples using the Scan Exposures editor.

- Use the live view to navigate to representative areas of the sample
- Select the band, and either autoexpose or manually enter the exposure
- When exposure are finalized, take a snapshot to see how the exposures will perform on a given area of the slide

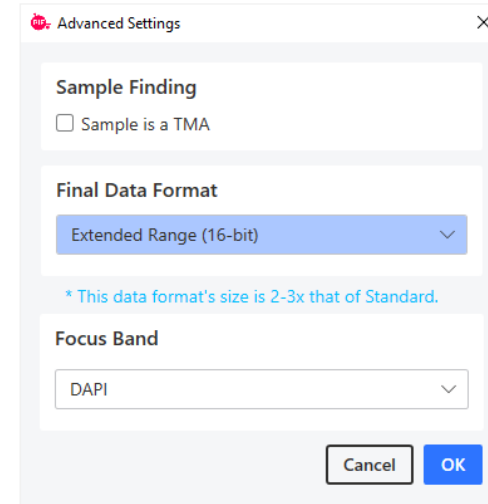
PhenoCycler-Fusion users can create fluorescent protocols with the PhenoCycler-Fusion filters and use those protocols for scanning coverslipped slides.



16-BIT DATA FORMAT

Fusion supports an Extended Range (16-bit) data format for both Phenolmager and PhenoCycler-Fusion workflows.

- For coverslipped slides, select Extended Range within the Advanced Settings when creating a protocol.
- For PhenoCycler workflows, select Extended Range for the Final Data Format after loading your experiment.



Runtime Settings

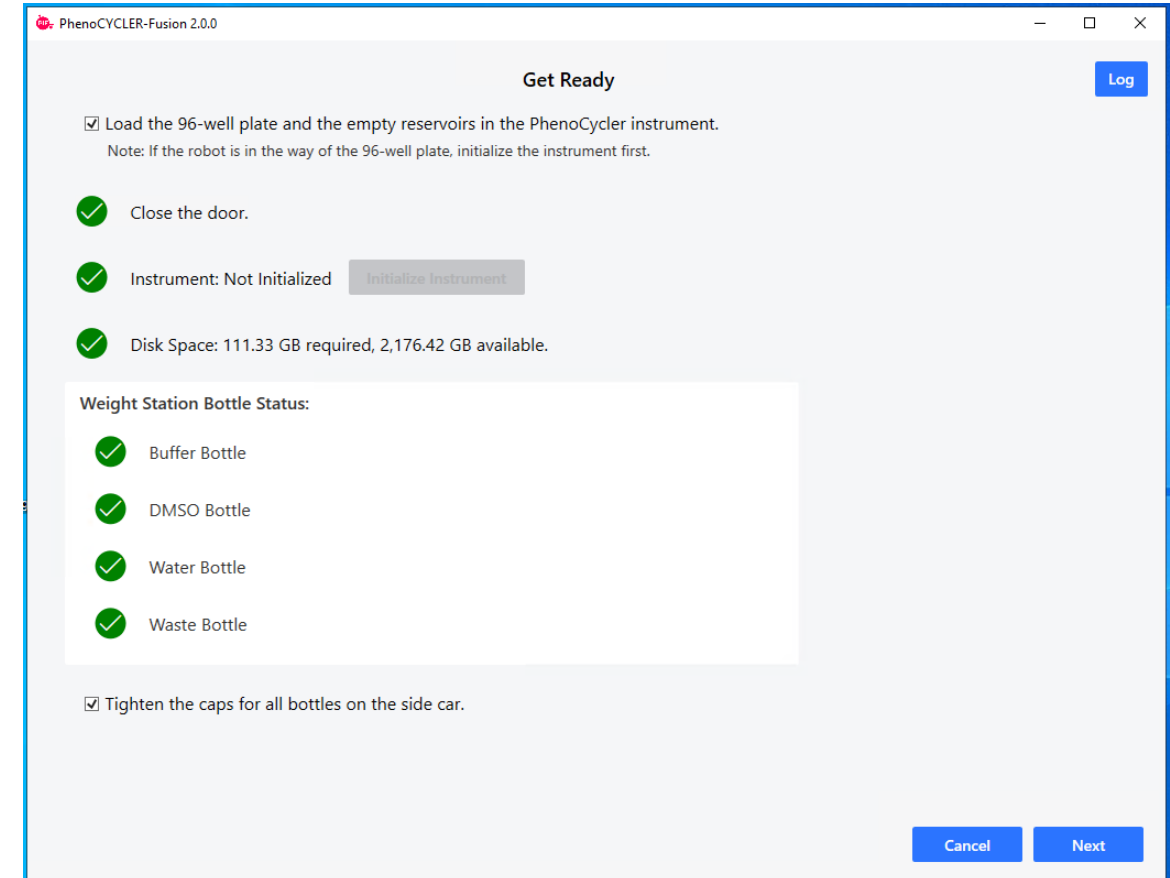
Final Data Format: Extended Range (16-bit) ▼

* This data format's size is 4-5x that of Standard.

IMPROVED PREFLIGHT WORKFLOW

For all PhenoCycler-Fusion users, the preflight routine workflow has been improved:

- There are 5 steps to walk you through the process:
 - Getting the system ready
 - Setting up the blank flow cell
 - Priming the sample flow cell
 - Confirming the tubing is free (and verifying the trays for 2.0 HW carriers)
 - Adjusting and verifying the sample area to scan
- Steps provide real time monitoring of the system to minimize effort.



The screenshot shows the 'PhenoCYCLER-Fusion 2.0.0' software window with a 'Get Ready' preflight checklist. The window has a title bar with standard OS controls and a 'Log' button in the top right. The checklist includes:

- ☒ Load the 96-well plate and the empty reservoirs in the PhenoCycler instrument.
Note: If the robot is in the way of the 96-well plate, initialize the instrument first.
- ☒ Close the door.
- ☒ Instrument: Not Initialized. A greyed-out 'Initialize Instrument' button is next to this item.
- ☒ Disk Space: 111.33 GB required, 2,176.42 GB available.

A section titled 'Weight Station Bottle Status:' contains a list of bottles, each with a green checkmark:

- ☒ Buffer Bottle
- ☒ DMSO Bottle
- ☒ Water Bottle
- ☒ Waste Bottle

At the bottom of the checklist is the item:

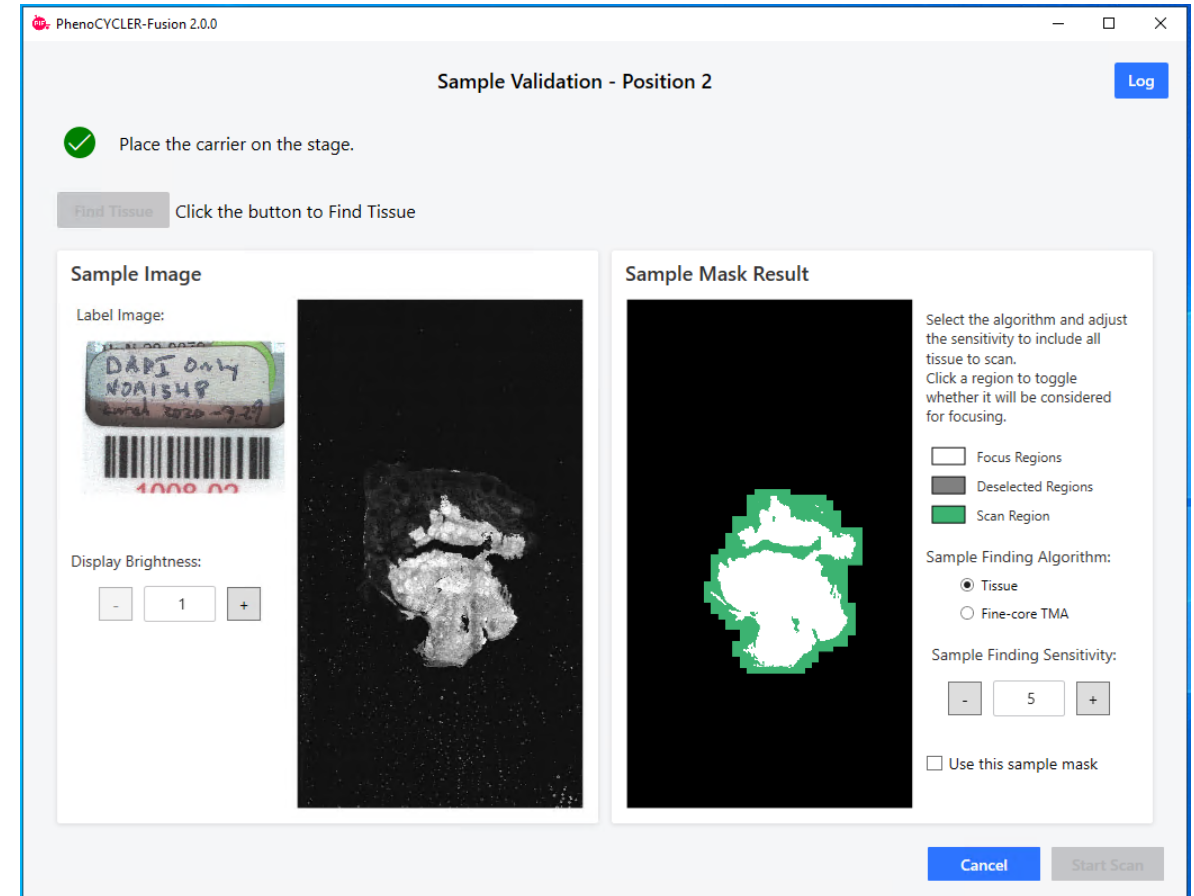
- ☒ Tighten the caps for all bottles on the side car.

At the bottom right of the window are 'Cancel' and 'Next' buttons.

PREFLIGHT TISSUE FINDING

A new preflight routine tissue finder is available to all PhenoCycler-Fusion users.

- This step in the preflight enables you to adjust and verify the tissue and scan area prior to any fluidics operations.
- You can select the best algorithm to use, either tissue sample or fine-core TMA for densely packed TMAs.
- You can adjust the sensitivity to optimize the scanning area.
- False-positive detections can be ignored.

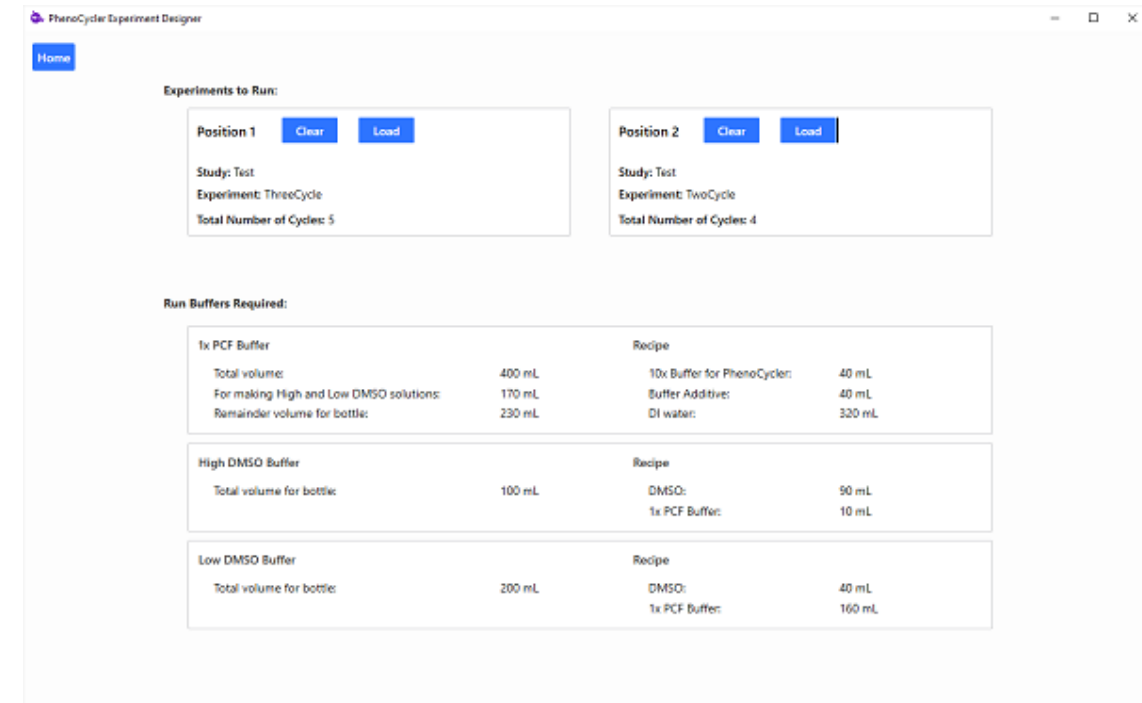


RUN BUFFER CALCULATOR: NEW FEATURE IN THE EXPERIMENT DESIGNER

The Run Buffer Calculator is available in version 2.1 of the Experiment Designer.

This enables users with PhenoCycler-Fusion 2.0 (2-slide carriers) to determine the amounts of run buffers required for a particular set of experiments (1 slide or 2 slides) within a single PhenoCycler run.

- Load experiments to determine the amount of buffer to make prior to your run.
- The calculator will also tell you if experiments are incompatible due to size or well conflicts.



The screenshot displays the 'PhenoCycler Experiment Designer' software interface. It features a 'Home' button in the top left. The main area is divided into two sections: 'Experiments to Run' and 'Run Buffers Required'.

Experiments to Run: This section contains two panels, 'Position 1' and 'Position 2', each with 'Clear' and 'Load' buttons. Below these buttons, the following information is displayed:

- Position 1:** Study: Test, Experiment: ThreeCycle, Total Number of Cycles: 5
- Position 2:** Study: Test, Experiment: TwoCycle, Total Number of Cycles: 4

Run Buffers Required: This section displays the calculated buffer requirements for the loaded experiments, organized into three rows:

Buffer Type	Recipe
1x PCF Buffer Total volume: 400 mL For making High and Low DMSO solutions: 170 mL Remainder volume for bottle: 230 mL	Recipe 10x Buffer for PhenoCycler: 40 mL Buffer Additive: 40 mL DI water: 320 mL
High DMSO Buffer Total volume for bottle: 100 mL	Recipe DMSO: 90 mL 1x PCF Buffer: 10 mL
Low DMSO Buffer Total volume for bottle: 200 mL	Recipe DMSO: 40 mL 1x PCF Buffer: 160 mL