

# Wave Controller 2.3 – Release Notes

Software Version: 2.3

Release Date: November 2016

## Introduction

This document provides information pertaining to software changes and new features in Wave Controller 2.3 for the Agilent Seahorse XFe96 and XFe24 Analyzers. This software release is focused on improving the overall Seahorse experience by delivering a more intuitive, straightforward interface for routine functions on the XFe Controller – designing and executing Seahorse XFe assays.

## Compatibility

Wave Controller is intended for installation on the Agilent Seahorse XFe24 and XFe96 Controller **only**. It will not operate on a PC or laptop and must not be installed on XF24 and XF96 Analyzers.

## What's New in Wave Controller 2.3?

### Improved User-Interface

#### Renamed *Wave Home Views*

Templates (formerly called 'New') displays the Seahorse default templates as well as any user-customized templates in list or icon views. Results (formerly called 'Open') displays all recently opened assay result files and bookmarked places (called *Favorites*) to access local or network directories where assay result files are stored. These naming changes more accurately represent the functionality within each section and the types of Seahorse files that are accessed in these views.

Wave 2.3	Wave 2.2	Purpose
<b>Templates</b>	New	Create, customize, import and export assay template files for a Seahorse assay.
<b>Results</b>	Open	Analysis of assay result files, quick access to favorite file directories and recently analyzed assays.
Catalog	Catalog	Save frequently used compounds, pretreatments, assay medium and cell types.
Options	Options	Configure the local Template and Catalog file directories and default Instrument Protocol options.
Help	Help	Seahorse Technical Support contact information, software version and auto-compile feature for system files.

#### Updated Buttons & Icons

A refreshed button, icon, and color palette provides a more accurate visual indication for each button in Wave. Unique *Template* icons help easily identify Seahorse default assay templates and user-customized assay templates.

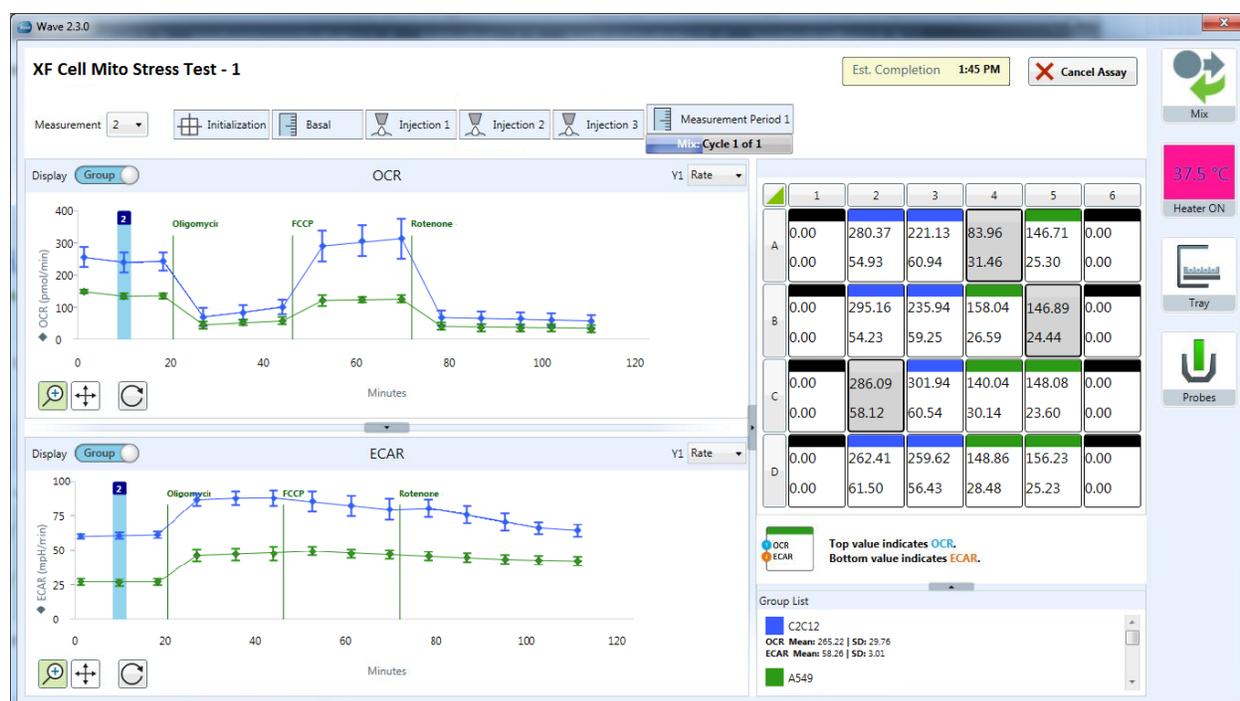
#### Quickly Locate Assay Template and Result Files using Search & Sort Feature

Use the search bar to search for and display *Templates* or *Results* based on a keyword or phrase in the file name or sort the list of *Templates* and *Results* by name (alphabetical), date (last modified date), and by the type of Agilent Seahorse XFe Analyzer (*Results* view only).

## NEW Dual-Rate Assay Runtime View

Both OCR and ECAR kinetic graphs are now displayed when running an XFe assay – rate measurement data will update in real-time on both graphs. Each kinetic graph has independent graph controls to modify the rate data displayed – use the toggle switch to display data in *Group* or *Well* mode or use the drop-down menu to show *Level* data. The plate map displays both rate measurements (OCR and ECAR) in each well as indicated by the legend pictured below the plate map in the image below. Use the slider bars to resize or hide the plate map, group list, or a kinetic graph during runtime

NOTE: Access to **Wave Home** or any open assay template or result files is disabled while running an assay on the XFe Controller. Transfer any result files to a personal computer or laptop with Wave Desktop 2.3 *before* starting an assay, or wait until the assay is finished.



## Robust Performance Enhancements

The physical memory and resource utilization footprint of Wave Controller 2.3 has been reduced by approximately 50%, which dramatically improves software stability and reliability while running XFe assays and limits the likelihood of a software crash during an assay.

Best practices for the XFe Controller:

- Restart the XFe Controller at least once per week.
- Prior to starting an XFe assay, save and close any open assay template and result files.
- Do not insert or eject USB flash drives during an assay.
- Reduce the amount of 'analysis' performed while running an assay – if you don't need to modify the runtime data, then don't!

## Seahorse XF Report Generator Integration

Export assay result data directly to the Seahorse XF Report Generators to instantly create a simple analytical *Summary Report* for the exported file. Data manipulations made in Wave Controller 2.3 will persist to the parameter calculations in each Report Generator, such as assay wells that have been turned OFF (ie. outliers) and rate data that has been normalized. Report Generators installed with Wave Controller 2.3 are:

- Seahorse XF Cell Energy Phenotype Test
- Seahorse XF Cell Mito Stress Test
- Seahorse XF Glycolysis Stress Test
- Seahorse XF Mito Fuel Flex Test

**Please note:** Installing third-party software programs on the XFe Controller, such as MS Excel or GraphPad Prism, is not supported and may void the instrument warranty. Transfer assay result files and any files exported from Wave Controller 2.3 (to MS Excel, GraphPad Prism, and Report Generators) to a personal computer or laptop for data analysis.

## Export Modified Rate Data

Use the **Export** button on the *Quick View*, *Overview* and *OCR vs. ECAR* analysis views to export assay result data to Microsoft Excel, GraphPad Prism, and the Report Generators. Assay result data that has been normalized, displayed as a percent of baseline, or has excluded assay wells now reflects these modifications in the exported file.

## Creating and Customizing Seahorse Assays

### Default Seahorse Assay Templates

Wave Controller 2.3 automatically installs a selection of default assay templates for the Agilent Seahorse XFe Analyzers, noted by a blue Seahorse icon (pictured right). The Seahorse default assay template files are locked from editing but provide a great starting point when creating *user-customized* assay templates.

The list of Seahorse default assay templates installed are:

- Seahorse XF Cell Energy Phenotype Test
- Seahorse XF Cell Mito Stress Test (with and without *Acute Injection*)
- Seahorse XF Glycolysis Stress Test (with and without *Acute Injection*)
- Seahorse XF Mito Fuel Flex Test (*Dependency* and *Flexibility*)

### Automated Template Import

Double-clicking an assay template file on a USB Flash Drive or network location will automatically import the file to Wave Controller 2.3 if it has not been imported previously.

## Other New Features

### Modify Assay Result Files

Making changes to an assay result file is now quicker and easier. Click **Modify** to display editable tabs for the *Group Definitions*, *Plate Map*, *Injection Names* and *General Information* in a single view.



Blank



Seahorse Standard  
Assay Template



User Customized  
Template

### Normalization Scale Factor

Recalculate and scale normalized rate data to a specific value based on the normalization unit and new *normalization scale factor*. Click Normalize (on any analysis view) to add normalization data or enter a custom normalization scale factor to apply to the XF data. See the Wave User Guide for more information.

$$\text{Normalized Rate (well)} = \left[ \frac{\text{Rate (well)}}{\text{Normalization Value}} \right] * \text{Normalization Scale Factor}$$

### Pre-Populated Catalog

Choose from a selection of Seahorse compounds and reagents, medium, and cell types in the **Catalog**. The complete Seahorse **Catalog** is installed by default when upgrading to Wave Controller 2.3 and will not overwrite any existing entries. Use the **Catalog** to save time when modifying an assay template or result file by quickly adding frequently-used *Group Definitions*, such as *Assay Media* or *Cell Types*.

### One-step System File Collection

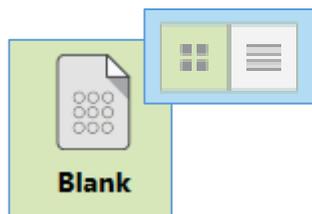
Save and send *System Files* to Seahorse Technical Support from the *Help* view by pressing the **Send System Files** button. The two options are:

- **Save** – Choose a location to save the *System Files* zipped folder on the XFe Controller. Once saved, transfer the *System Files* to a PC and attach to an email for Seahorse Technical Support.
- **Send** – Create a new email and attach the *System Files* folder to send to Seahorse Technical Support directly from the XFe Controller.

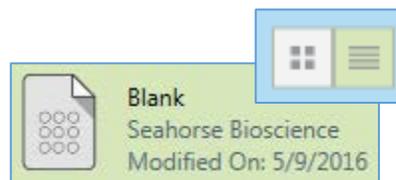
*Please Note: Internet access is required on the XFe Controller for this feature.*

### List and Icon View for Assay Templates

Assay templates on the *Templates* view can be displayed in two formats: List and Icon. The *Icon* view is the default setting and displays information about the template under *Template Details*. The *List* view displays the template icon, name, author and date modified for each template in the list.



Icon view for assay templates.



List view for assay templates.

## Additional Information

### Existing Seahorse Files & Upgrading to Wave 2.3

Upgrading the XFe Controller to Wave Controller 2.3 will **NOT** overwrite or delete any previously customized assay template or result files – all Seahorse files will be preserved after the update.

### XF PhenoGram Analysis View

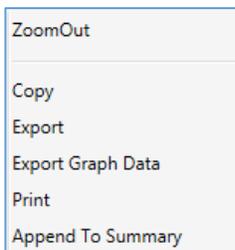
The XF PhenoGram analysis view has been removed from the list of available analysis views after clicking **Add View**.

### Save as...Assay Design File Removed

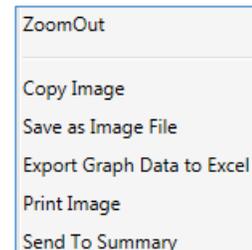
Saving assay design files has been removed – double-clicking an existing assay design file can be opened in Wave Controller 2.3 and saved as an assay template file.

### Renamed Right-click Graph Options

Right-click on a kinetic graph or scatter plot in Wave to display renamed data export options that better represent the functionality for each option. The right-click export options for Wave 2.2 and Wave 2.3 is pictured right.



Wave 2.2 | Right-click export options.



Wave 2.3 | Right-click export options.

## Fixed Bug List

### Editing & Saving Assay Templates

After modifying a custom assay template click **Save** to overwrite the existing template content with the new changes. To keep the original template file, click **Save as Template** (down arrow next to **Save** button) or create a duplicate of the template from the *Template* view, then open and modify the duplicate template.

### Adding Details to Template and Result Files

Typing in Wave Controller 2.3 while modifying an assay template or result file has been dramatically improved. Single-clicking in a text field correctly position the mouse cursor and no longer highlights the text in that field.

### Renaming Assay Result Files in Windows

Renaming an assay result file will apply the new file name in Wave Controller 2.3 as well as the default file name when exporting data to Microsoft Excel, GraphPad Prism, and the Report Generator.

## Known Issues

### Save Prompt and Closing Assay Results, Templates, and Wave Controller

Closing an assay result, assay template file tab or exiting Wave Controller 2.3 will always prompt the user to save their work, even if all changes have been saved. Close any open assay result and template files to avoid the save prompt displayed before closing Wave Controller.

### Adjusting View Scaling in an Assay Result File

Size and scale adjustments to a graph or plate map on an analysis view using the arrows or border lines is *not* saved and will be reset to the default scaling view when reopening the assay result file.

### File Names with 150+ Characters

Assay result or assay template file names with more than 150 characters are not supported – Wave will display an error message after pressing **Save**. Rename the file with less than 150 characters to save the file.

If any software bugs not listed above are encountered, please contact Seahorse Technical Support at:

[seahorse.support@agilent.com](mailto:seahorse.support@agilent.com)

For research use only.