IN Cell Analyzer

Acquisition Software, Version 7.1

Release Notes - Patch 2

Introduction

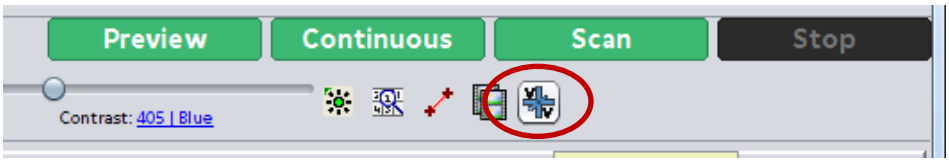
Version 7.1 of the IN Cell Analyzer software provides updates to improve support for new instrument models (the 2500*HS* and 6500*HS*). Also, two new features have been added: the *VolumeViewer* and the *FieldFinder*.

The release notes describe the primary changes between versions 7.0 and 7.1. Additional information can be found in the release notes from previous versions of software, which are included within the 7.1 installers.

Information about previously reported topics can be found in previous versions of the release notes, located in "C:\Program Files\GE Healthcare\IN Cell Analyzer XX00\manual".

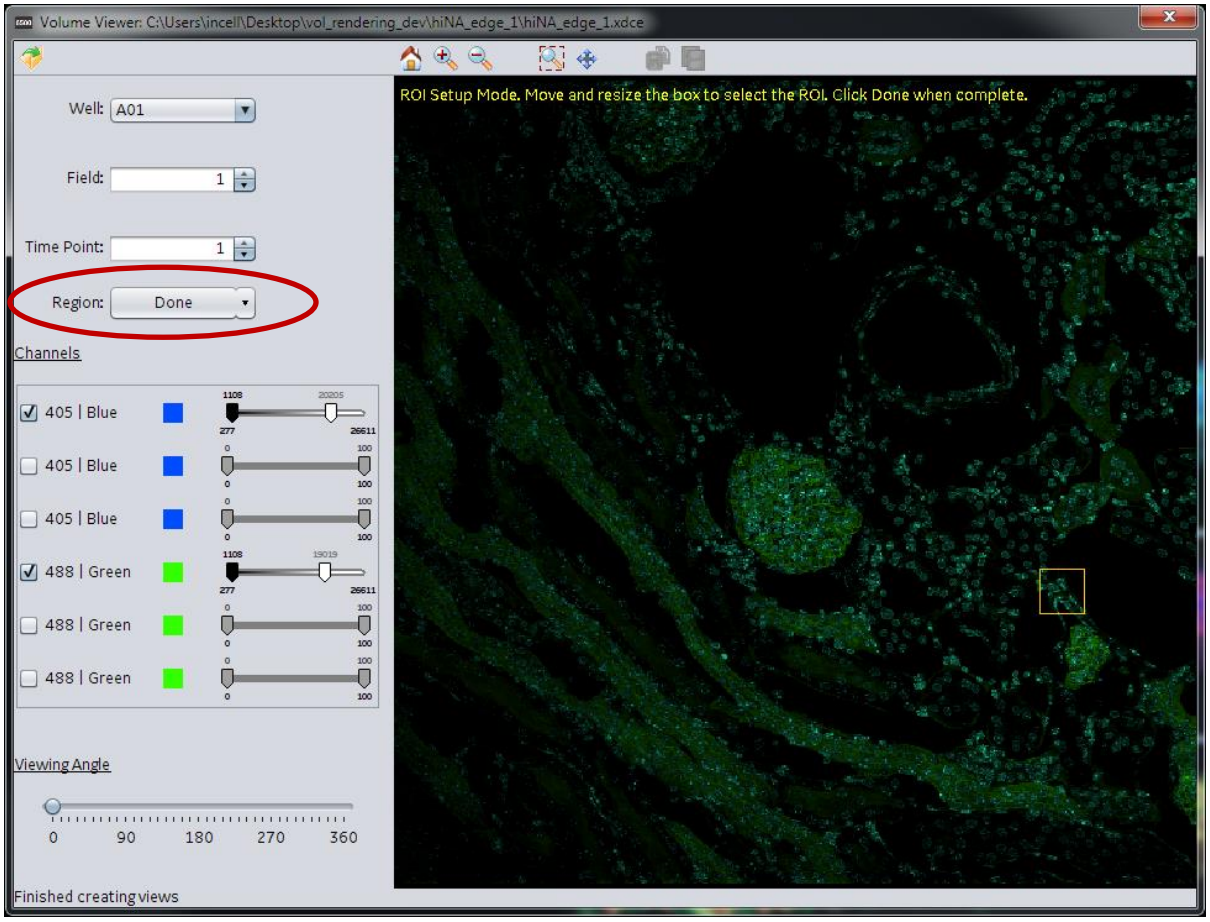
New Features

VolumeViewer for 3D Image Stacks (2036)
A basic volume viewer has been added for investigating 3D images. The *VolumeViewer* can be started from *DataReview* using the button shown below.

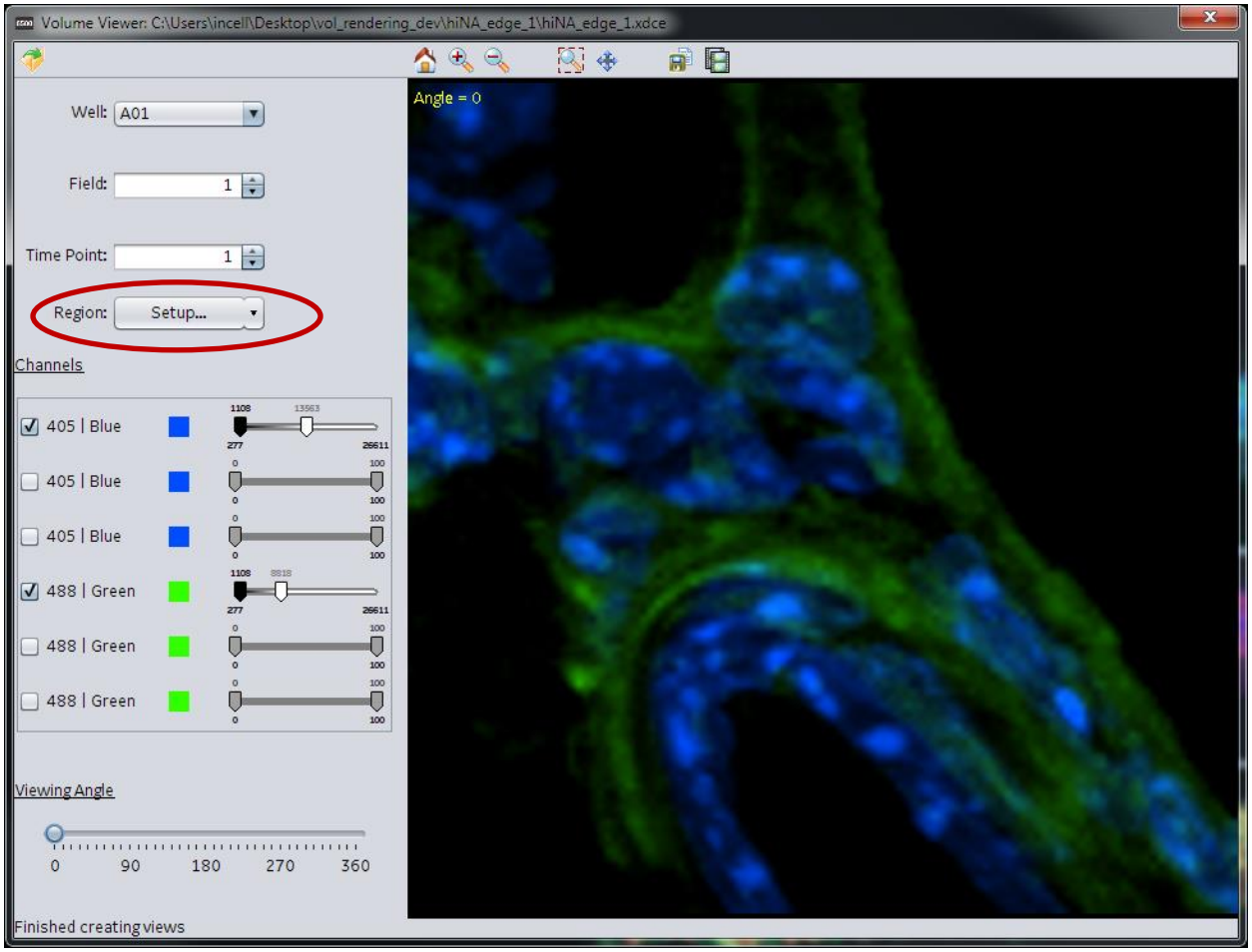


***VolumeViewer* Button - Review Mode**

Much of the tool is designed to remove unwanted objects from the display. Use the Region setup mode to limit the region in the XYZ directions. Use the contrast controls to remove background fluorescence and to enhance dim objects. Disable unneeded channels with the toggle buttons on the left side. Adjust the viewing angle to learn more about the 3D structure.

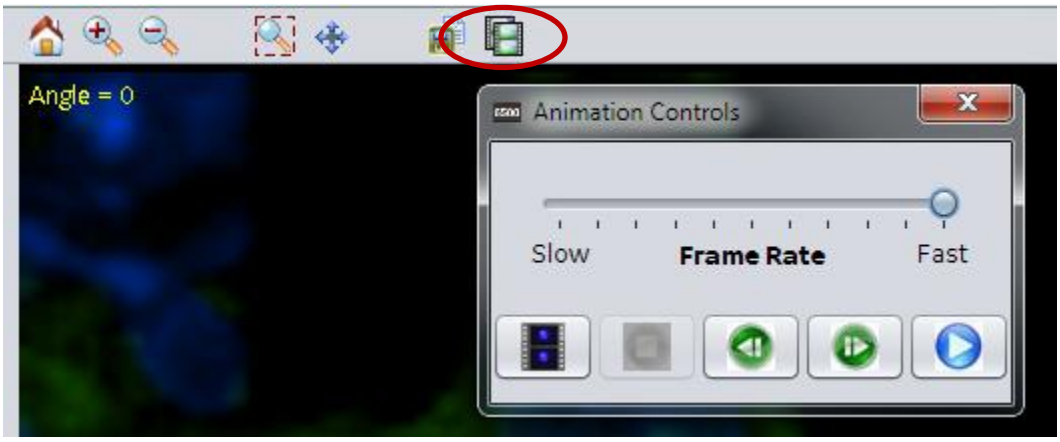


***VolumeViewer* - ROI Setup Mode - Press "Done" When Finished**



***VolumeViewer* - Interactive Viewing Controls - Press "Setup..." to Modify the Region of Interest (ROI)**

When finished adjusting the ROI and contrast settings, press the movie button to display animations and to export movie files (AVI format).

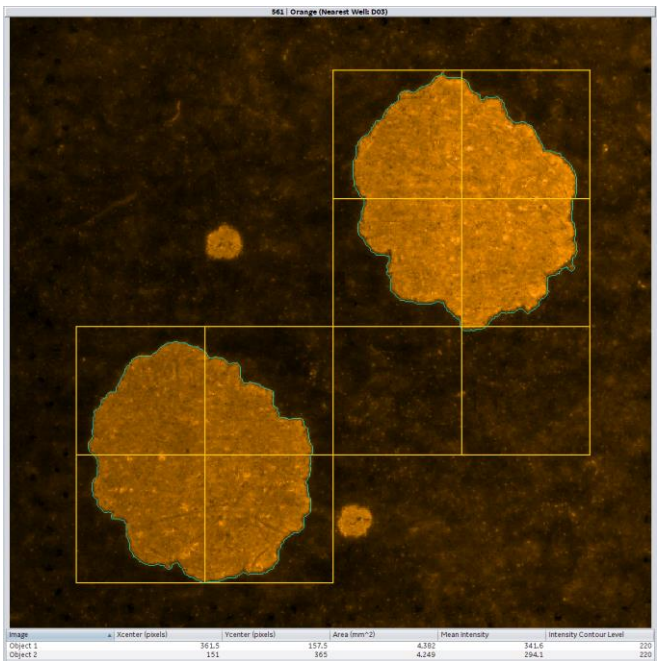


Animation and Export

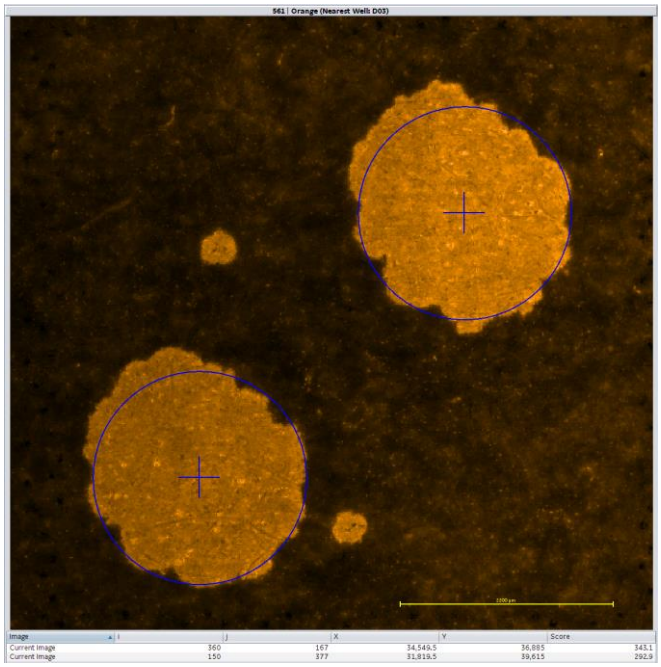
"FieldFinder" for Finding and Rescanning Regions (2217)

A new *SmartScan* capability has been added to the *ReviewScan* setup page. "*FieldFinder*" is designed to look for regions that contain objects of a minimum size and intensity. The region can then be automatically rescanned with a set of regularly spaced fields.

FieldFinder is similar to *SpheroidFinder*, except that the purpose is to find all of the fields needed to scan all of the objects within the image. *SpheroidFinder* operates differently. The *SpheroidFinder* is designed to find and rescan a single object within the image. Examples of the different methods are shown below.



***FieldFinder* Results (Yellow Panels)**

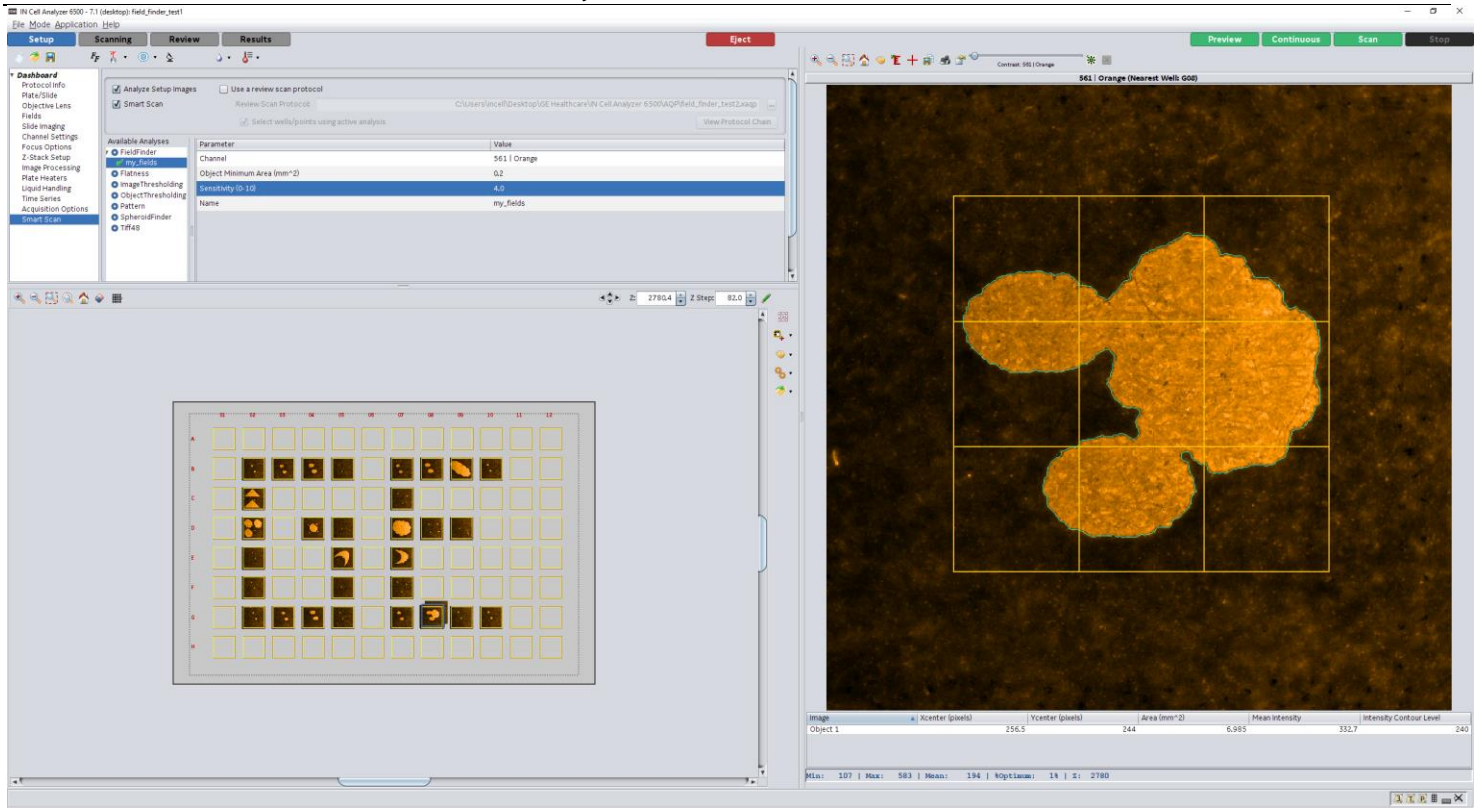


***SpheroidFinder* Results (Blue Crosses)**

Both the *FieldFinder* and *SpheroidFinder* work within a single field-of-view. In many cases, the field is acquired with a low magnification lens, which permits the largest possible area. There is currently no provision for connecting the results from adjacent fields. For example, scanning a tissue sample that is larger than a single field-of-view will not result in a regularly spaced set of fields across a microscope slide. The resulting fields will not be located in a regular grid that can be easily stitched.

FieldFinder Parameter Descriptions

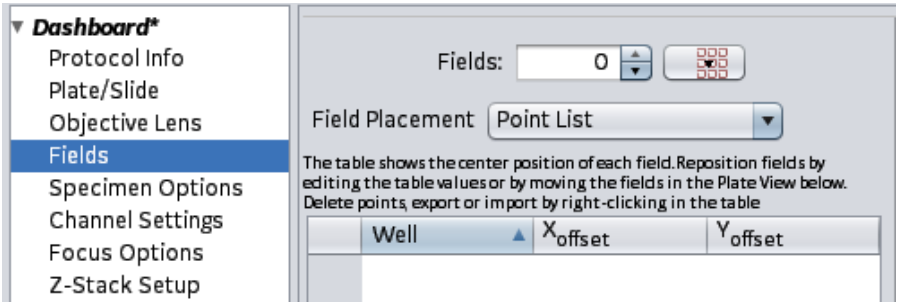
Channel	The channel that will be used for locating objects. Only one imaging channel is used for identifying boundaries.
Object Minimum Area (um^2)	The minimum allowed area of the object, Smaller objects will not be selected for rescanning. All larger objects will be rescanned.
Sensitivity (0-10)	The sensitivity setting is used to determine the intensity threshold of the objects. Intensity thresholds are calculated based on the intensity histogram of each image and the sensitivity parameter. Object boundaries are located according to the threshold. Larger sensitivity values (up to 10) will cause more objects to be identified. Smaller values (down to 0) will cause fewer objects to be identified. If necessary, a manually determined threshold can be used instead of the automatically calculated threshold. Sensitivity values above 90 will be interpreted as a simple intensity threshold rather than the normal sensitivity parameter. The automatic method is based on an intensity histogram, which may not work well for all sample types.
Name	A name that can be used to identify the type of object.



Example of Interactive Setup - Nine Fields Identified

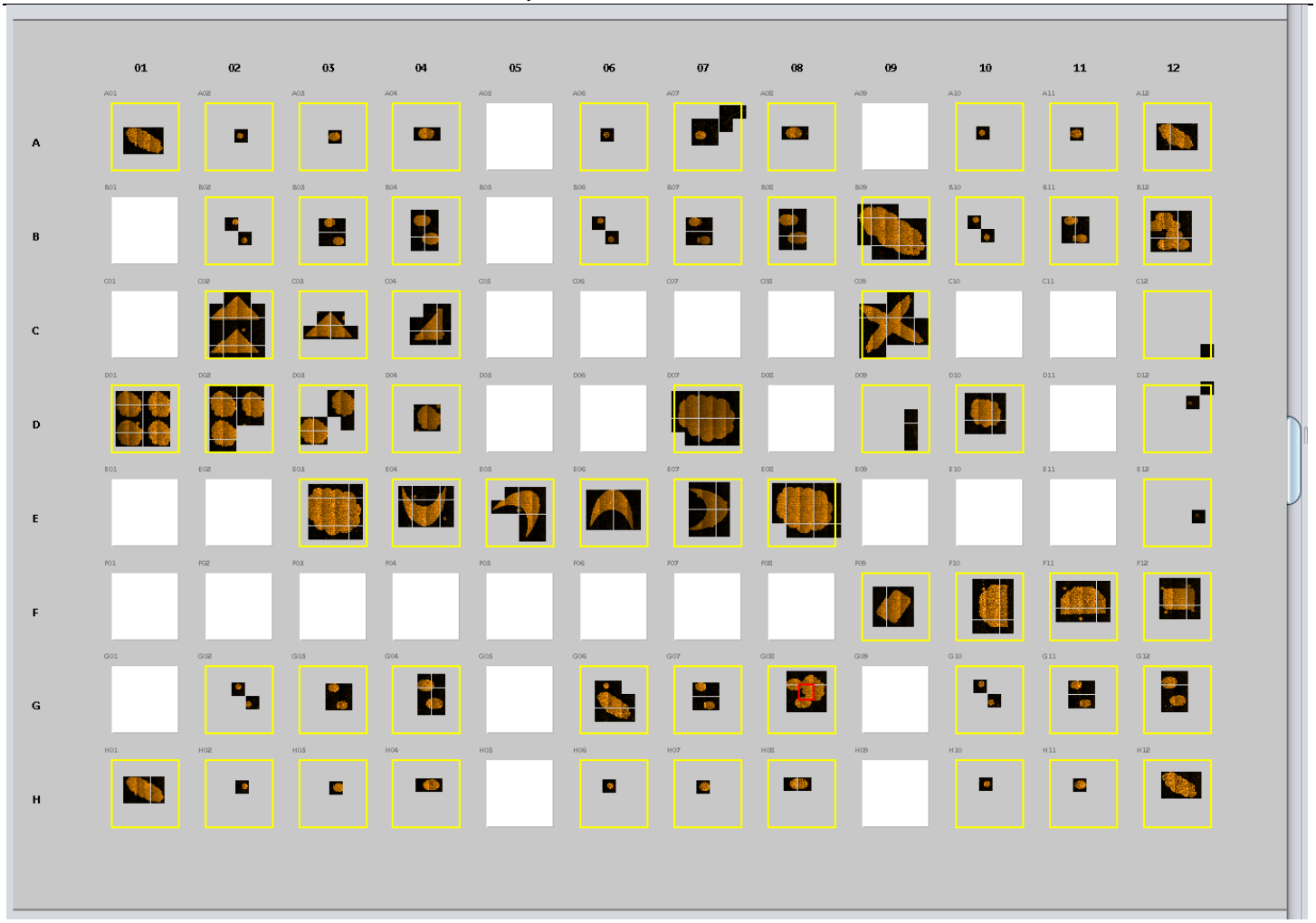
An important aspect of the new feature is the ability to define points that need to be rescanned during the follow-on review scan. Software prior to V7.0 could only rescan wells, rather than specific XY locations. *FieldFinder and SpheroidFinder* are presently the only forms of analysis that will select points for rescanning. The other analyses are designed to find and rescan wells.

The correct method of configuring a *ReviewScan* protocol for use with the *FieldFinder* is to create a "Point List" with zero fields, as shown below. Pre-defined points (and wells) will be overridden when the "Select wells/points" toggle is enabled.



Point List Setup for *ReviewScan* Protocol - Zero Fields

Binning the images acquired during the first protocol is often useful for improving performance and conserving storage space.



High Magnification *ReviewScan* Consisting of Rescanned Fields

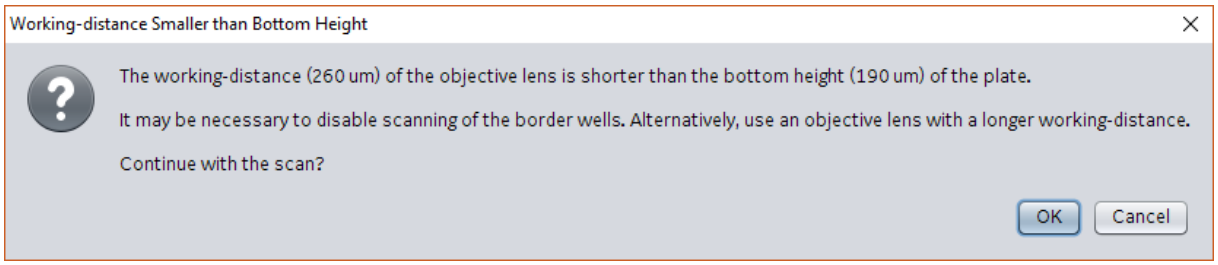
Edge Confocal Improvements for the 6500HS (2334, 2257, 2342)

The methods used to measure and remove background fluorescence have been improved since the original implementation in V7.0. Some of the changes involve the way the optimum *EdgeWidth* is determined from the confocal aperture size. The changes will be most noticeable with low magnification lenses like the 10X/0.45.

In addition, GE now supports the Nikon 40X/0.95 and 60X/0.95 Plan Apo objective lenses with Edge Confocal imaging on the 6500*HS*.

Focus Improvements

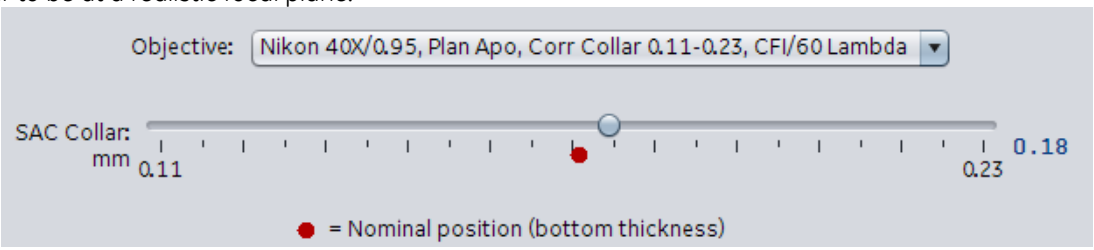
PreScan Check for Possible Collisions (2215)
Before the start of every scan, the IN Cell software will check whether the objective lens can safely acquire images at all of the selected wells. The check involves a combination of the objective lens' working distance, the plate's bottom height, and the distance between the edge of the plate and the selected wells. Due to the large number of possible shapes and sizes, it is not possible for IN Cell to know for certain whether the wells can be scanned without collision. The following warning will inform the user of a possible collision, but will not prevent operation.



Warning About Possible Collisions

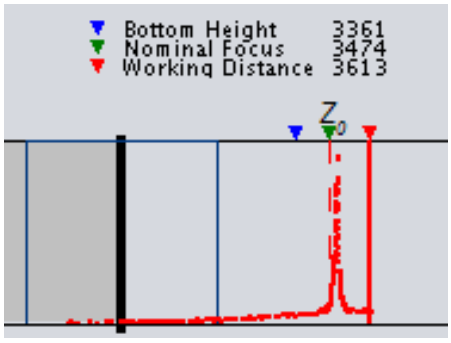
AutoFocus After Correction Collar Adjustment (2260)
Adjusting the correction collar on an objective lens will typically cause a small amount of defocus. IN Cell V7.1 will apply autofocus whenever the user adjusts the collar during an interactive session. There are two places where autofocus may be used: the *DashBoard* and the *ObjectiveLens* page of the protocol designer.

Only a short Z range is scanned during autofocus. The software assumes that the sample is nearly in focus already. For best results, focus on an object before adjusting the correction collar. Note that autofocus will be skipped if the current Z position does not appear to be at a realistic focal plane.



Autofocus Follows Interactive Control of the Automated Correction Collar

FocusFinder Limits Z Travel According to Plate Parameters and Working Distance (2282)
The *FocusFinder* will now impose a travel limit that is determined from the bottom height, the bottom thickness, and the working distance of the objective lens. The limit is intended to reduce the possibility of collisions between the objective lens and the plate bottom. To work properly, the plate settings must be approximately correct.

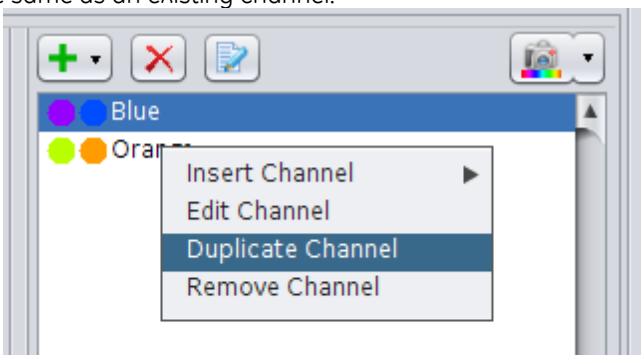


***FocusFinder* Limited by Objective Lens Working Distance**

Basic Improvements

Option for Duplicating Channels (2275)

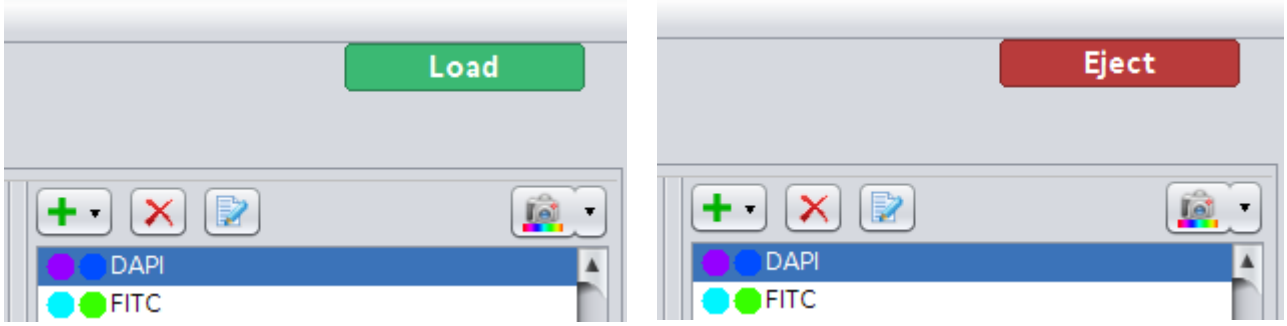
Use the right mouse button over the channel pull-down menu to duplicate the selected channel. The duplicate channel will have the same acquisition settings as the original channel. Duplication is a convenient (and reliable) method of creating a new channel that needs to be mostly the same as an existing channel.



Duplication Option in Right Mouse Menu

Improved Load/Eject Button (2130)

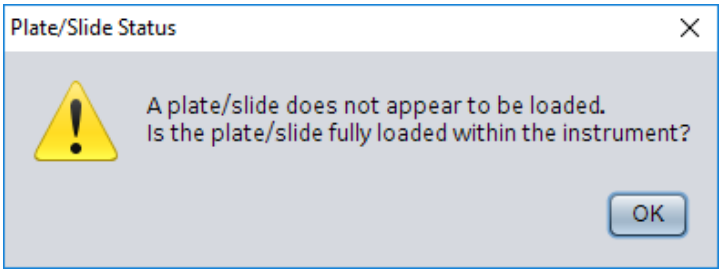
The load/eject button has been modified to match the new buttons introduced in V7.0. To improve access, the button has been moved to a central location that is available from all modes of the program. The behavior of the button has not been changed.



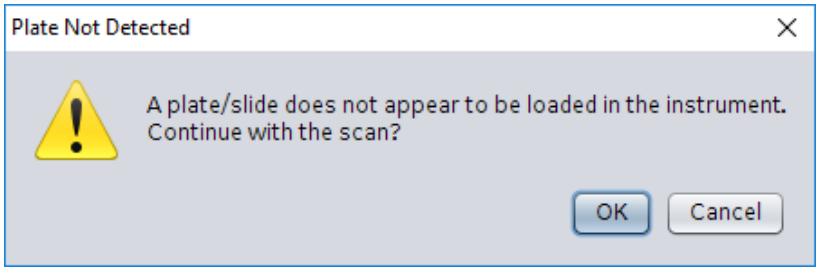
Load/Eject Button, Depending on Current State

Option to Continue Even if Plate Not Detected (2285)

Prior to V7.1 the software prevented scanning if a plate was not detected. The software will now present a warning and offer to continue. Warning messages from both versions of software are shown below.

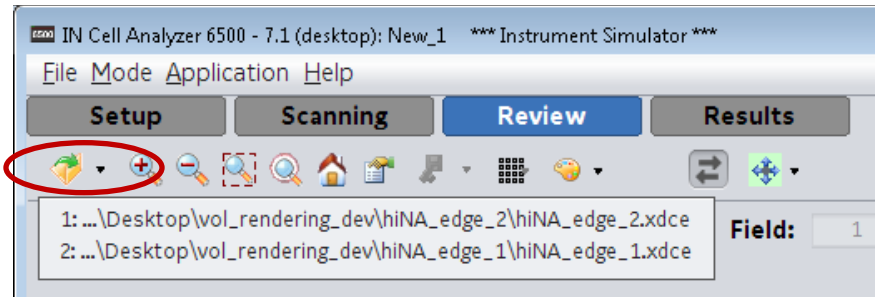


Pre-scan Warning - Scan Not Allowed - Prior to V7.1



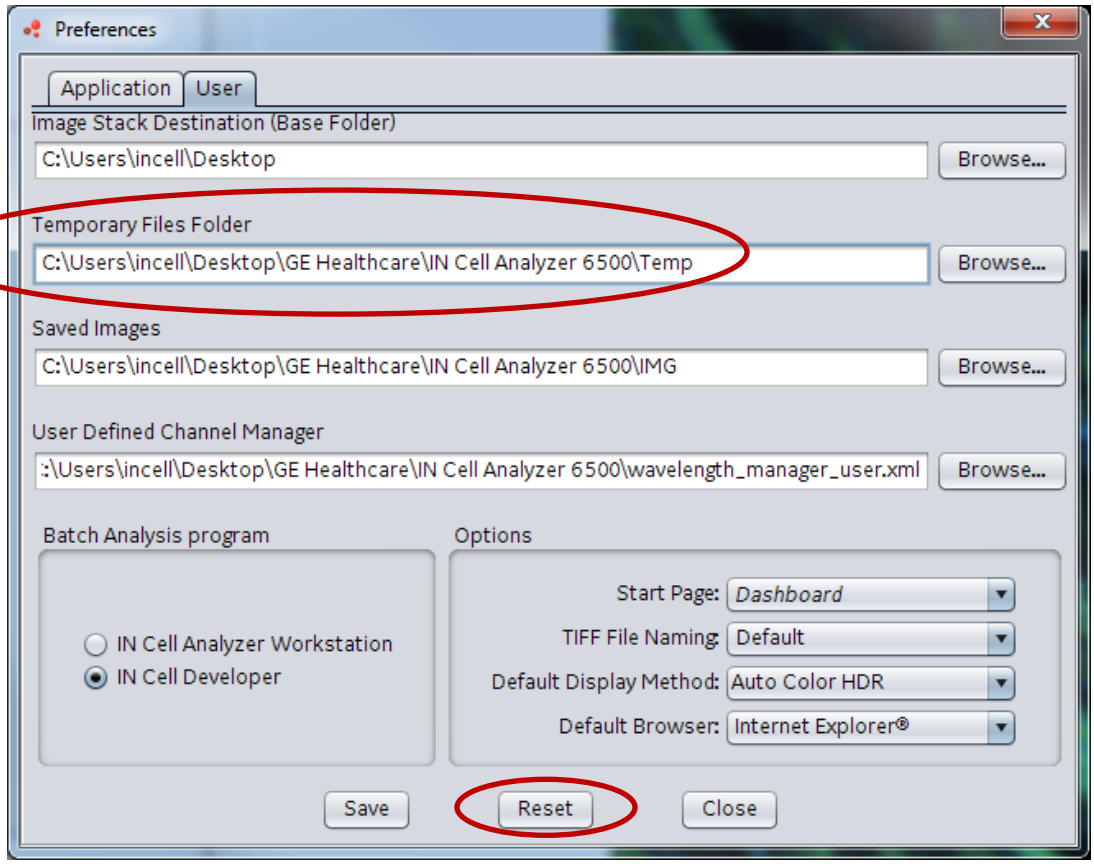
Pre-scan Warning - Option to Continue - V7.1

Recently Used XDCE Files (2171)
Recently used XDCE files are now remembered and available for reloading in *DataReview* mode.



Recently Used XDCE Files that Can be Reloaded

Configurable Path for Temporary Files (2190, 2224)
The acquisition software creates many temporary files during normal operation, for example, the XDCE file and TIFF images before transfer to network storage. Thumbnails are also stored to and retrieved from the temporary location. In certain situations, acquisition performance can be improved by changing the location to a faster storage device, like a solid-state device ("SSD").



Configurable Path to Temporary File Storage

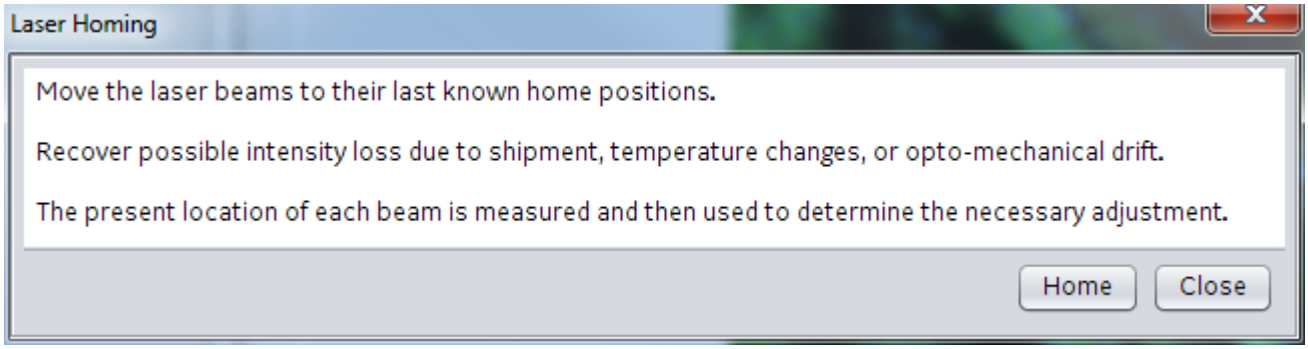
Situations that may benefit from a fast, temporary storage location:
- Transition to *DataReview* mode at the end of a scan
- 3D Deconvolution
- Advanced 2D Deconvolution
- Data transfer to network storage

The *Reset* button for restoring the default preferences is also new.

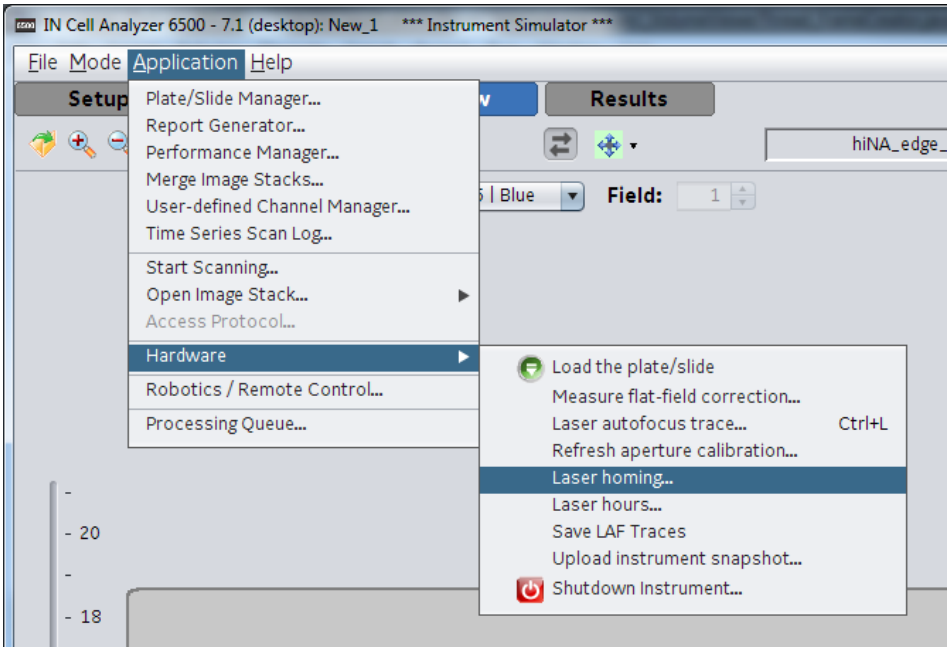
Laser Homing Procedure for the 6500HS and 6000 (2222)

Laser homing may be needed to restore the internal alignment of the lasers within the light engine. Frequent use may be required in unstable environments, for example, if the room temperature fluctuates.

Note that the homing procedure does not apply to the 405nm laser.



To access the laser homing dialog, follow the menu selections shown below.



Laser Homing Menu Selection

Plate Map Setup Improvements (1751)

Plate map setup is now more interactive. Images can be acquired from the plate while the parameters are being edited. Two new buttons (circled in red) have been added to the plate map setup tool. The buttons can be used to determine geometric values for the "Offset to A1" and the Row/Column "Spacing".

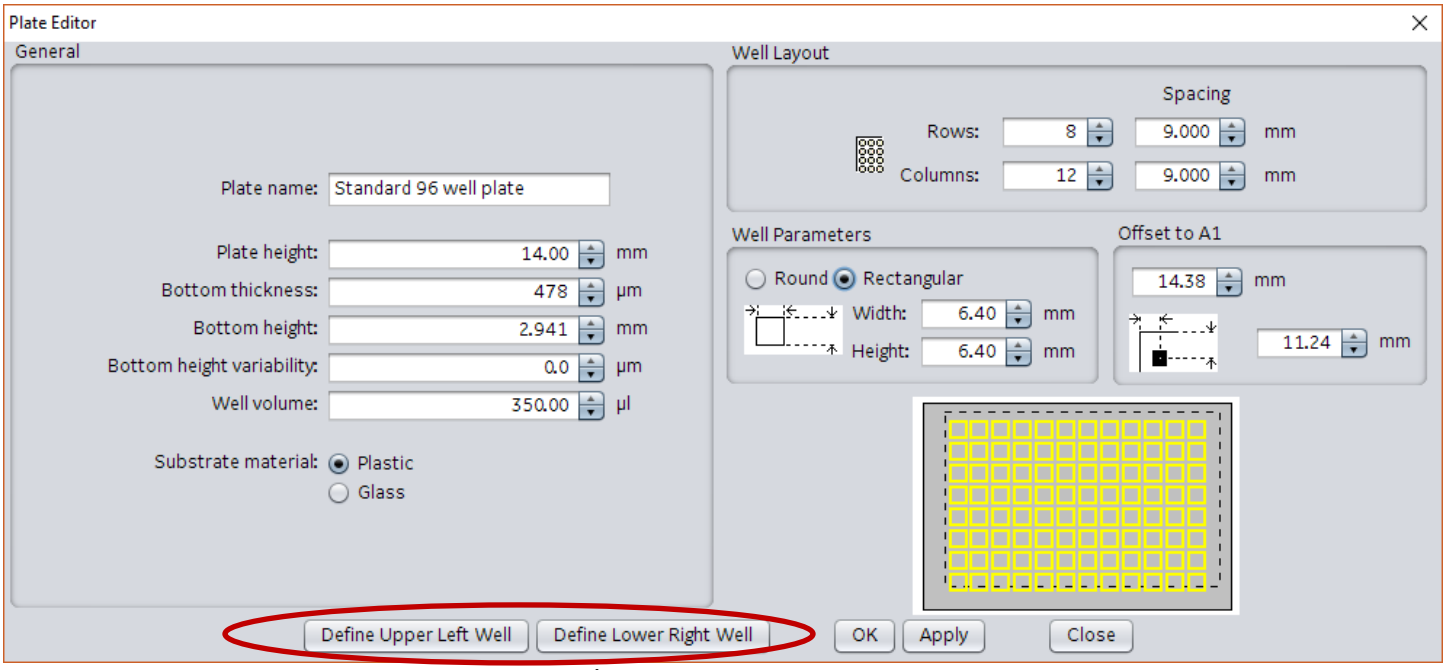


Plate Map Setup Buttons

Suggested workflow:

- Run a *PreviewScan* around the A01 region (or just acquire a few images around A01)
- Run a *PreviewScan* around the well in the lower right corner
- Edit the plate map
- Check that the number of rows and columns is correct
- Position the XY stage such that the field-of-view is centered within well A01
- Press "Define Upper Left Well" to determine the row/column offsets
- Position the XY stage such that the field-of-view is centered within the lower right well
- Select "Define Lower Right Well" to calculate the well spacing
- Press "Save"

Setup Mode Thumbnails - 2500HS & 6500HS (2262)

An option has been added to enable high resolution thumbnails (up to 512x512) in setup mode for the 2500*HS* and 6500*HS*. The default resolution is still 64x64. Be aware that thumbnails consume memory and processing time. GE recommends the normal resolution unless high resolution is needed.

Thumbnail Resolution Menu - Setup Mode

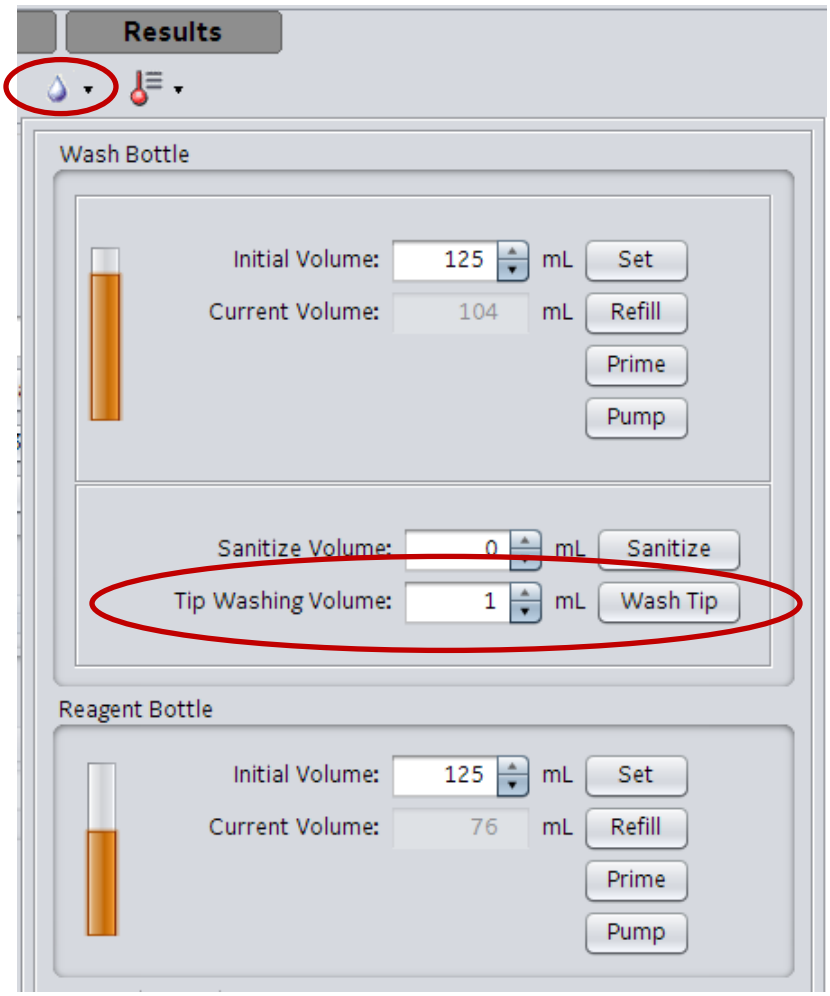
Liquid Handling Control Dialog (2089, 2226, 2225)

Several improvements have been made to the liquid handling (LH) control dialog. For instance,

- The dialog box will remain visible after using buttons like "Prime" and "Flush".

- A button for washing the tip is now available in the dialog. (Previous versions of software only offered tip washing as an event during a scan. A special acquisition protocol was needed to wash the tip.)

- the maximum allowed wash volume has been increased from 5 ml to 25 ml.

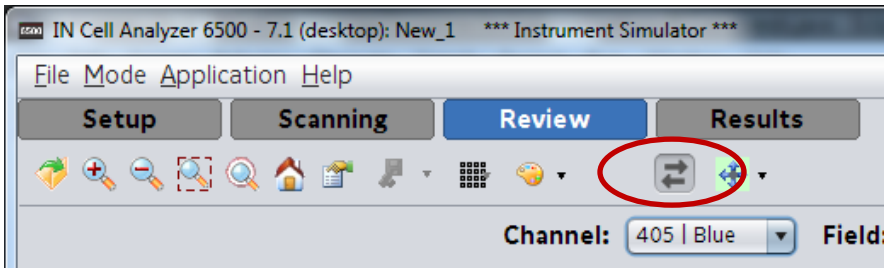


LH Controls - Tip Washing

CaptureLog Works When the Instrument is Disconnected (2271)
The tool can now be used to capture log files from the GUI even when the instrument is disconnected. The resulting ZIP file will contain log files from the GUI, but not the instrument.

Previous versions of software could also work by disabling toggle buttons for all files from the instrument.

PlateView and ImageView Synchronized by Default (1990)
The two sides of *DataReview* mode will now synchronize by default.



View Synchronization Button - Enabled by Default

AutoOffset Measurement Disabled for Brightfield Channels (2216)
Autofocus can yield unexpected results with Brightfield channels. Most users report that contrast based autofocus does not find the desired plane of focus. It is not really possible to define focus when acquiring images with light transmitting optics. Rather

than attempting to find focus, IN Cell will now set the focus offset to zero for all channels that use transmission style illumination. The manual settings are still available for cases where the user can define an appropriate offset.

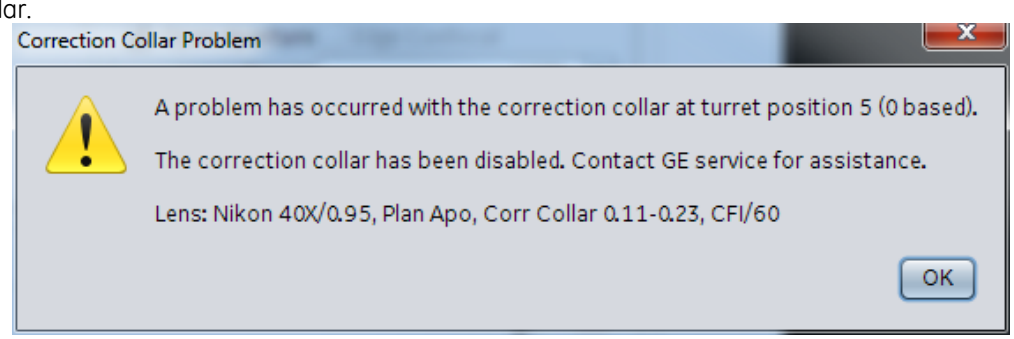
AutoOffset Not Used for Brightfield Channels

DataReview Performance Improvement (2279)

The contrast adjustment tools within *DataReview* mode have been optimized for use with large data sets. The changes will be most noticeable when working with scans that involve Z stacks or large numbers of fields per well.

Continue Running in the Event of an ASAC Encoder Error (2249)

The software will no longer shutdown in the event of an encoder error in one of the automated spherical aberration correction (ASAC) collars. Instead, the following warning will be presented and the operator will be allowed to continue without the use of the automated collar.



ASAC Disabled - Warning

Remote Control Improvements

The RC protocol document has been updated to include information about best programming practices. GE recommends determining the state of the instrument by polling (with *GetImagerStatus*) to avoid one of the common failures that can occur with remote control clients. Catching messages like *Ready* from IN Cell is not always possible, and IN Cell will typically send only one such message when transitioning between states. Clients that rely on such messages can stall if the signal is somehow missed. Requesting the state is a better approach.

Significant Fixes and Changes

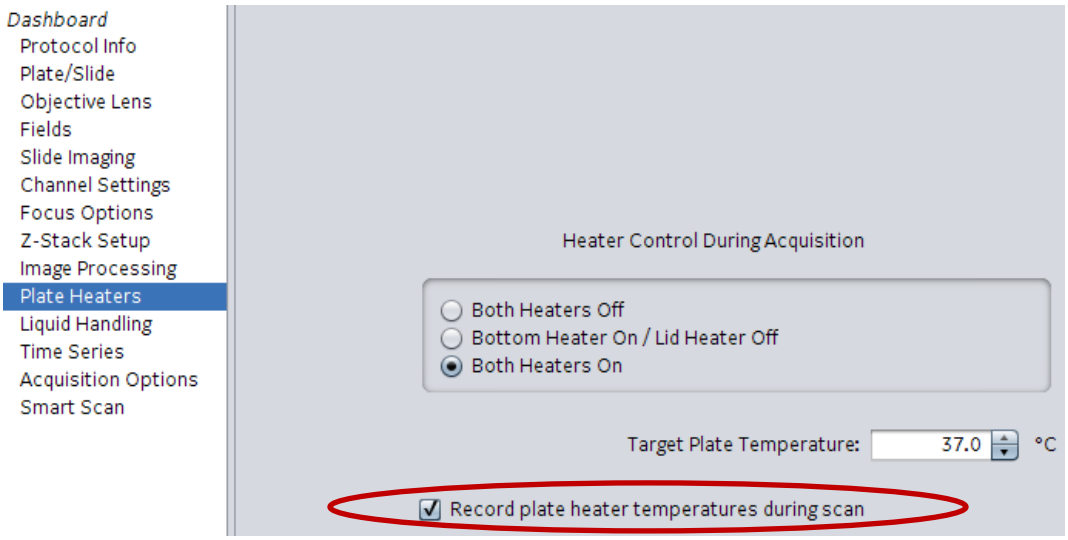
Brightfield *Channel Now Works on the "ChannelSettings" Page (2277)*
The "Brightfield" EX selection in the "Channel Settings" page was broken in V6.2 and V7.0. The work around for affected software was to select "Brightfield" from the *DashBoard* instead. V7.1 works as expected.

Acquisition Protocol File Names Limited to 64 Characters (2273)
The acquisition protocol name is used to form the results file path. Analysis programs like IN Carta use the name more than once, which can result in very long paths. Limiting the name to 64 characters helps keep the path name less than 256 characters, which is the maximum length permitted by Microsoft Windows.

Misalignment when Displaying Channels with Unequal Image Dimensions (2174)
Images generated by 3D Deconvolution or Advanced 2D Deconvolution are smaller than images from other imaging modes. (Pixels along the borders are cropped to remove image processing artifacts.) Scans that involve a mixture of image sizes can result in misalignment when displayed in *DataReview* mode. The fix will only affect images acquired with older versions of software, on account of the changes described in item 2306.

Consistent Image Cropping when using Deconvolution Methods (2306)
Both the 3D deconvolution and Advanced 2D deconvolution techniques generate images with smaller dimensions, because border cropping is used to remove unwanted edge effects. Acquisition protocols that contained channels with a mixture of imaging methods could then contain images with different sizes. Many issues and challenges resulted from such scans. (For example, see item 2273.) Handling data sets with unequal images dimensions is unnecessarily challenging. Starting with V7.1, every channel will use the same image dimensions. Cropping will be disabled if any of the channels do not use deconvolution.

Acquisition Can Stall when Temperature Recording is Enabled (2293)
Under certain conditions, acquisition stopped when temperature recording was enabled. The problem was intermittent and did not affect all types of scans.



Temperature Recording Toggle Button

To avoid the problem with earlier versions of software, disable temperature recording.

List of Changes Between 7.0-15870 and 7.1-16402

Items listed in this table have been fixed in version 7.1, unless otherwise discussed in the comments.

ID	Brief Description	Comments
1751	Slide/Plate editor improvements for "Offset to A1" and well spacing.	The new tools facilitate plate setup.
1949	Z step size used for DIC and Phase needs improvement.	The Z step size is now calculated from the objective lens' depth-of-field. Prior versions of software used a hard-coded step size.
1990	*PlateView* and *ImageView* do not synchronize when the link button is pressed (V6.2 V&V)	The default state of the button is now "synchronize". Also, the views will resynchronize when the button is toggled from "OFF" to "ON".
2036	Volume rendering for 3D stacks in *DataReview*	*VolumeViewer* is a basic tool for 3D visualization.
2089	Add LH washing procedure to interactive LH control dialog	The LH control dialog is a good place for washing. Prior to V7.1, washing was only possible during scans.
2130	Add an Eject/Load button to the main tool bar.	The original button was not accessible from all parts of the GUI. For example, the user could not eject the plate when using *DataReview*.
2154	Image AF step sizes should be determined from depth-of-field rather than GUI config file	The step size can be calculated from the objective lens' depth-of-field. The value does not need to available in the configuration file.
2171	Need an easy method of navigating to the *BaseFolder* when opening XDCEs from *DataReview* (V7.0 V&V)	The home button is now connected to the *BaseFolder* defined in the user preferences. Also, a list of recently opened XDCE files is available.
2172	Invalid ZIP file from *CaptureLog* tool (V7.0 V&V)	The fixes for 2271 and 2270 were needed to avoid creating invalid ZIP files.
2174	3DD and 3D images don't align in single channel viewers - image dimensions are different	Images with unequal sizes are now handled better. The problem is inherently challenging, though. Not every situation will work as expected. For a related item, see #2306.
2185	Default *BaseFolder* preference setting is obscure	A one-time situation with fresh installations. The initial preference is now the user's desktop.
2190	Add the ability to change the "temp" folder path.	The temp folder is now a user preference.
2200	Add slide and plate types for 8 chamber slides (BD CultureSlides)	The offset to A01 may require customization for every site. Likewise, the effective bottom thickness will depend on whether imaging happens through the slide or the coverslip.
2205	*DataReview* problem if the objective lens listed in the XDCE file isn't available on the instrument	The issue occurred when moving XDCE files between instruments. The software is better, but still not perfect.
2210	Improve distinction between on/off states of the auto contrast button	The button color changes depending on the state.
2211	Add menu options to the linestats.py tool	Applicable to manufacturing and service.
2215	Provide a warning if attempting to scan border wells with a short working distance lens	A warning is presented when both of the following are true: - objective lens working distance is less than the bottom height - any of the selected wells are within 12mm of the edge of the plate The logic cannot be perfect, because the exact size/shape of the lenses and plates is unknown.
2216	Disable *AutoOffset* measurement for Brightfield channels	There is no single definition of "best focus" for a brightfield image. A contrast based autofocus procedure cannot find the desired focal plane without user intervention. Disabling the auto offset mechanism for Brightfield channels is the best solution. A manually determined Z offset is more reliable.
2217	*FieldFinder* feature for follow-on *ReviewScan*	See description, above.

2220	Confocal aperture spinner allows manual entry of negative (and zero) sizes	The value checking has been improved.
2221	Confocal aperture field inconsistent about checking manually entered values	The value checking has been improved.
2222	Add user accessible tool for rehoming the 6000/6500*HS* EX lasers	Rehoming can be done by 6000/6500*HS* users with a single button click. The procedure does not apply to the 405nm laser.
2223	Folder paths should not be manually editable in the user preferences	"Browse" buttons are better for setting paths.
2224	Improve the buttons provided in the preferences dialog.	Outdated buttons (removed): - "Refresh Workspaces" - "Review Configuration" New buttons: - "Reset" - "Close" (without saving) Also see: #2223, #2190
2225	Increase max allowed washing volume for acquisition protocols (5ml -> 25ml)	5 ml is not enough for all situations. There is no reason why the maximum allowed value shouldn't be larger.
2226	Liquid Handling dialog disappears after pressing buttons	The LH control panel should remain visible after using the control buttons.
2227	Move the LH needle to the "safe" position after interactive LH procedures	Moving to a "safe" position is good practice. There are no known failures associated with the previous software.
2229	Low level problem acquiring dark image for subtraction (6000/Edge1 only)	The error was mostly benign, but still needed to be fixed. Only certain 6000s were affected.
2233	Minicom ichrome configuration file needs to be updated for the 6500*HS*	Applicable to manufacturing and service. Minicom provides a method of communicating with components that are connected through RS232.
2234	Fix corner intensity calculations in the support tool "rolloff.py"	Only one of the corner values was properly measured from the image. The average result was invalid. The minimum value was probably OK.
2237	Move length error misreported as an "encoder error" in the ICS log file.	Certain types of move errors (reported in the ICS log file) were mistitled "encoder error". Only the title was wrong. The rest of the information in the report was correct. The situation was rare and did not affect most reports.
2240	Catch unhandled ICS exceptions and connect with existing error/shutdown handling	The instrument control software is better about shutting down gracefully. More types of errors are handled.
2241	*DataReview* auto contrast settings in *PlateView* don't behave as expected	The contrast settings are now reset whenever the *PlateView* display conditions change.
2245	R&D method for disabling both TRANS & EPI illumination for luminscence imaging	A hidden method of disabling all forms of illumination. Useful for instruments that do not have a "Luminescence" channel, as described in #2254. To create a channel that does not use either form of illumination: - create a Brightfield channel - name the channel "Luminescence"
2246	Remove configurable LAF Z offset parameters, type "B"	The Z offset parameters were obsolete and unused.
2247	Fix problems associated with loading acquisition protocols that use custom channel names.	In certain situations, custom channel names caused problems when loading XAQP files from storage. The Z step size shown in the GUI was not properly updated.
2249	ASAC encoder errors should not cause the acquisition program to shutdown	The instrument will present a warning if an encoder error occurs with an ASAC during operation, but the software will continue.
2250	Replace "laf_peak" configuration setting with an automatic calculation	The "laf_peak" configuration setting was too rigid and almost completely unused. An automatically determined setting will be better for most situations.
2251	Present a warning if connected to the instrument using an alternate name	The warning will help identify accidental, non-standard configurations of the workstation's network settings.

2254	Add a "Luminescence" channel for 2500*HS* and 6500*HS* scanners	Instruments assembled by GE using V7.1 will be configured with a channel called "Luminescence". The channel can be used for situations where no form of illumination is needed. For maximum collection efficiency, the channel will be configured to use a quad band EM filter. For instruments that do not have a Luminescence channel, refer to item 2245.
2257	Enable Edge confocal for the 60X/0.95 and 40X/0.95 Plan Apo lenses	Edge confocal (on the 6500*HS*) is now supported by more objective lenses.
2260	Acquire a focused image after adjusting the correction collar	Conditions For AutoFocus: - follows adjustment of interactive GUI controls only (not during scanning) - small Z range autofocus (currently 3X depth-of-field) - only when the Z position is somewhat realistic
2262	Increase maximum allowed thumbnail size in acquisition view (2500*HS* and 6500*HS* only)	The thumbnail dimensions were previously limited to 64x64. Users can now select 256x256 or 512x512. The default is 64x64. Note that high resolution thumbnails will deplete memory under extreme circumstances.
2263	Disable old style plate heater page when using the new EC module	The old style environmental controls should not be accessible when using the new EC software.
2265	Limit the protocol "Name:" to 64 characters and prevent special characters.	The protocol's "Name:" field is used to create the folder names for scan data. Many problems have occurred due to invalid characters typed into the field called "Name:". Limiting the length to 64 characters will help avoid exceeding MS Windows' 256 character limit for the entire file path. Also see #2273.
2266	Problem reloading XAQP files with mismatched EX/EM channel names.	Certain GUI updates (for example the Z value) did not occur while loading XAQP files that contained non-identical EX and EM channel names. The problem is not new, however, the EX/EM channel names on older instruments were often the same. New instruments (2500*HS*/6500*HS*) use a different naming scheme, which exposed the problem.
2268	Add polychroic "CYRFR_3" to the list of supported polychroics in the 2500*HS*'s "Red" channel	The 2500*HS*'s "Red" channel is compatible with the CYFR_3 polychroic.
2269	Add status messages to the window that displays the processing queue.	A status message is now displayed at the bottom of the list of jobs in the processing queue.
2270	Set all SSH/SCP connection time-outs to a short value	The instrument should always respond within a few seconds. There is no reason to wait 5 minutes for the initial connection.
2271	Make *CaptureLog* work without a real instrument (i.e. with the Simulator)	The connection time-out with the instrument has been reduced to a sensible amount of time. *CaptureLog* will no longer hang while it's waiting for the instrument to respond. See #2270.
2272	Add a unique ID string to the *CaptureLog* ZIP file name	The workstation name is now part of the ZIP file name. Log files from different instruments will be easier to identify.
2273	Limit the XAQP file name length 64 characters (during "Save As")	Limiting the length is important, because the maximum length of a file path in MS Windows is 256 characters. Also see #2265.
2274	Update orthogonality measurement protocols and test procedure(s)	Applicable to manufacturing and service only.
2275	Add ability to duplicate acquisition channels	Use the right mouse button over the desired channel in the *DashBoard*.
2277	Brightfield EX disabled in "Channel Settings" page of protocol designer	The "Brightfield" EX selection in the "Channel Settings" page was broken in V6.2 and V7.0. The work around for affected software is to select "Brightfield" from the *DashBoard* instead.
2279	Contrast adjustment tools within *DataReview* optimized for use with large data sets (e.g. Z stacks or time series)	*DataReview* mode is now more efficient when the contrast controls are adjusted interactively.

2280	Check whether LHZ is still moving before moving LHY	
2282	Limit *FocusFinder* Z travel to (BottomHeight+ObjWorkingDistance)	The Z travel is now limited to the position where the objective lens would contact the bottom of the plate. In order for the limits to work properly, the plate's bottom height (as defined in the plate map) must be approximately correct.
2285	Provide an option for continuing with a scan even if a plate is not detected.	Certain plate types are not detected by the IN Cell plate sensor. The user can decide whether to proceed with the scan if a plate is not detected.
2286	Offer to skip automatic LAF when loading plates from the GUI	The offer is made with short working distance lenses. Otherwise, the software behaves the way it did in previous versions.
2287	Preview analysis should be disabled during *FocusFinder* activity	The preview analysis toggle within the *SmartScan* settings page should not be active while adjusting the Z position with the *FocusFinder*.
2290	Reduce minimum allowed exposure times on the 2500*HS* and 2200	New exp time minima: 2200 0.03 msecs (formerly 0.1 msecs) 2500*HS* 0.02 msecs (formerly 0.1 msecs
2293	Acquisition can stall if plate temperature recording is enabled	To work around the problem with previous versions of software, disable the toggle button titled "Record plate heater temperatures during scan".
2294	Simulator's list of ASAC values doesn't match the list of objective lenses	Corrections (for the Simulator): - the 20X/0.75 should not be listed with the lenses that have an ASAC. - the turret position of the 12606 (60X) is incorrect
2299	Movie generator changes the IN Cell program icon but never restores it.	The movie generator dialog changes the IN Cell (i.e. parent) program's icon when starting. The modified icon persists until IN Cell is restarted.
2300	Add camera temperature logging (in addition to sensor temperature)	The ICS log file contains a record of the sensor temperature, but not the camera temperature.
2305	*FocusFinder* trace does not reset with objective lens change or eject/load	The trace is now cleared when the objective lens changes or when a new plate is loaded.
2306	Make all image dimensions from a single scan the same size	Certain imaging modes will crop the image borders before saving TIFF files. Scans that contain a mixture of imaging modes may then contain images that do not share the same dimensions. Unequal dimensions creates unnecessary challenges for subsequent analysis software, including IN Carta and *DataReview* mode. For example, see #2174.
2307	Max value not enforced properly on certain spinners.	Affected spinners: LiquidHandling setup page: Wash & Aspirate events SlideImage setup page: Specimen Thickness LAF Trace Tool: Power, Min Peak Sep, # Peaks, # Exp Peaks
2315	Deselected wells not displayed properly after Plate Editor "Apply"	The *PlateView* sometimes represented all wells as "selected" after changing plate parameters and then pressing "Apply". The wells were not actually selected. Only the graphics were incorrect.
2322	Protocol "Name:" should honor the TIFF naming convention - "No Special Characters"	Spaces will be replaced by underscore "_" characters when TIFF file naming is set to "No Special Characters". Similar to #2324.
2324	Annotation fields should honor the TIFF naming convention - "No Special Characters"	Spaces will be replaced by underscore "_" characters when TIFF file naming is set to "No Special Characters". Similar to #2322.
2328	*FocusFinder* problem with objective lenses that have a large Z shift.	The initial position of the Z slider was sometimes off the left edge of the Z range displayed within the *FocusFinder*. Lenses with a very large Z shift (200+ um) were affected.
2329	Simulator startup dialog can block error messages and prevent continuation.	The startup dialog is now displayed in the upper left corner rather than the center.

2330	*FocusFinder* uses Z range from previously selected objective lens.	The minimum and maximum Z positions allowed by the *FocusFinder* were determined from the wrong Z shift. The problem was most noticeable when using lenses with large, non-zero Z shifts.
2334	Edge confocal imaging improvements.	The background reduction method has been improved. Certain artifacts that were present with V7.0 may disappear with V7.1.
2335	*FocusFinder* causes preview thumbnails to disappear	The preview thumbnails could disappear when adjusting the focal position the scroll wheel.
2336	Update the 2500*HS*/6500*HS* EX/EM wavelengths	Some of the wavelengths and bandpasses were incorrect. The errors were small, typically 1-2 nm. As of late September 2017 instruments will be shipped with the updated wavelengths. The channel settings for existing instruments will not be changed.
2342	Changing the confocal aperture size should reset the confocal *EdgeWidth* (6500*HS*).	By default, the software will update the *EdgeWidth* whenever the aperture size is changed. The optimum *EdgeWidth* is a function of the aperture size. To use a different *EdgeWidth*, modify the parameter after changing the aperture. Note that the *EdgeWidth* is not stored in the acquisition protocol.
2343	Aperture sizes update in an unpredictable way when the objective lens is changed.	Two issues were resolved. First, the software did not always update the aperture value (in AU) presented in the GUI. Second, the number of aperture rows was sometimes used to recalculate the AU value shown in the GUI. Neither behavior was appropriate for objective lens changes. The existence of two related issues caused a lot of confusion. Fully explaining the behavior of previous software is difficult.
----	Patch 1	
2364	Incorrect version of the orthogonality test script package within the installers	A test script needed for manufacturing was updated but not included within the installers. Only affects manufacturing.
2371	AutoOffset procedure needs large AF range to account for LAF focus differences	Certain 2X and 4X objective lenses have large Z shifts between the LAF focus and the objective lens focus. A larger AF range is now needed on account of the changes described in #2246.
2380	INCell acquisition GUI should not turn on/off plate heater(s) when the new EC software is in control.	Previous versions of the INCell GUI turned off/on the plater heater(s) at the start of every plate scan. This behavior should not happen when the new EC software is in control.
----	Patch 2	
2418	LAF problem when using low NA objective combined with thin bottom plates	Laser autofocus with low NA objective lenses and thin bottom plates sometimes failed. The reported error was "Did not find enough peaks". The failure was intermittent and only occurred with very smooth LAF traces that did not contain any sort of peak at the inner surface of the well bottom. The LAF procedure was looking for two peaks, but only found one (consistent with the error message). Only plate scanning was affected. Slide scanning was OK.

Notice to purchaser
IN Cell instruments are intended for research use only. The instruments are not for use in diagnostic procedures.

For local office contact information, visit:
www.gelifesciences.com/contact

GE Healthcare UK Limited
Amersham Place, Little Chalfont
Buckinghamshire, HP7 9NA, UK
www.gelifesciences.com

GE Healthcare Bio-Science AB
Björkgatan 30
751 84 Uppsala, Sweden

GE Healthcare Europe, GmbH
Munzinger Strasse 5
D79111 Freiburg, Germany

GE Healthcare Japan Corporation
Sanken Building, 3-25-1
Hyokunincho, Shinjuku-ku, Tokyo 169-0073, Japan