

# **BIOQUANT Release Notes**

## **Life Science 2011, v11.2.60**

The following release notes cover features in the BIOQUANT Life Science 2011 for Windows 7, v.11.2.60 software since BIOQUANT Life Science 2010, v. 10.360 for Windows 7/Vista.

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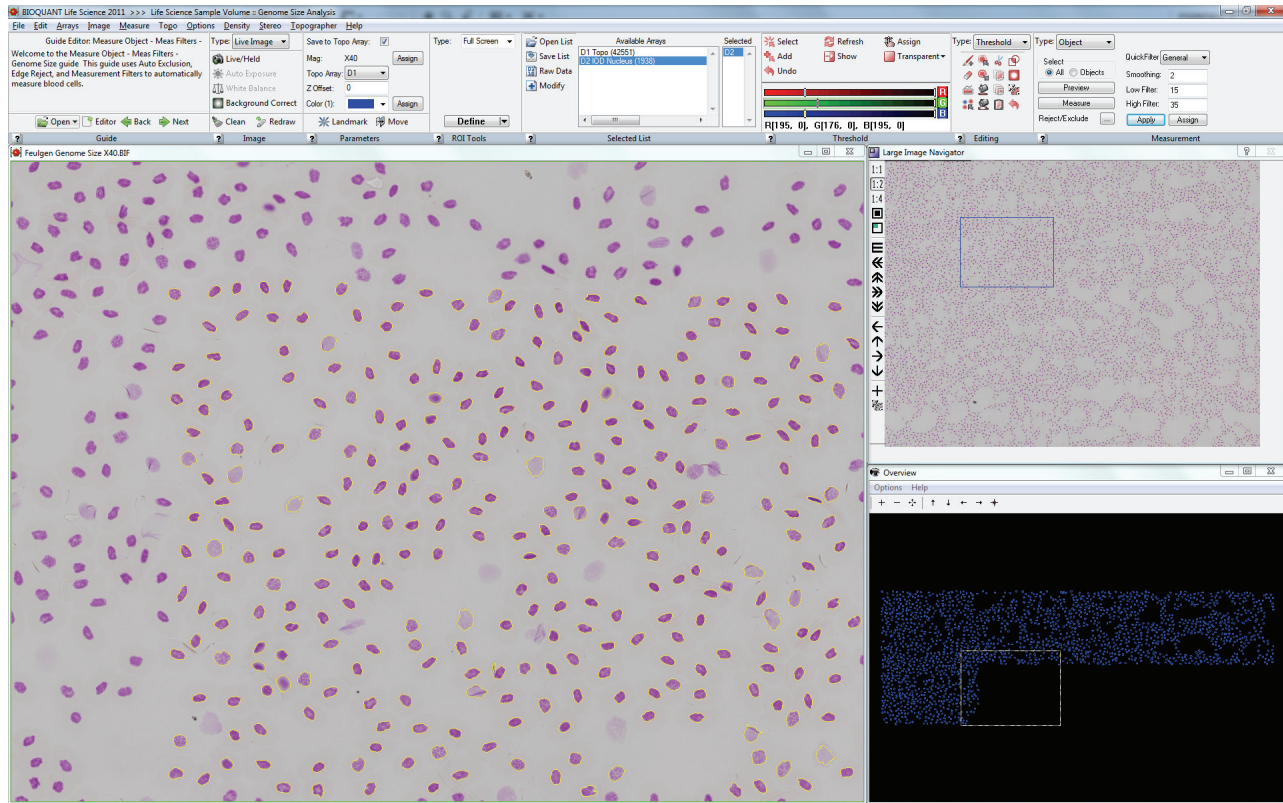
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**Life Science**  
**2011, v11.2.60**

## NEW HARDWARE REQUIREMENTS, ENHANCEMENTS, & ISSUE RESOLUTIONS

The BIOQUANT Image window now supports a live 1280 x 960 image from the QImaging Retiga Exi, QImaging MicroPublisher 5.0, and QImaging QICAM-F color digital cameras. To accommodate this large size, a desktop resolution of 1920 x 1200 is now required. To provide the fastest graphics redraw and color quality a Dell Ultrasharp 24" monitor is recommended with a nVIDIA Quadro series graphics adapter, such as the FX1700, FX1800, 2000.



### HARDWARE REQUIREMENTS

#### 1. Computer Requirements:

- a. Multi-core Intel Processor: e.g., I5 or Xeon processor
  - Dell T3500 Quad Core Intel Xeon W3530 recommended (call for us to email you a Dell item list)
- b. at least 4 GB RAM
- c. Mini-Tower Chassis with room for 1/2 length PCI board
- d. Desktop Resolution 1920 x 1200 required.
  - Dell 24" Ultrasharp monitor recommended, support for 1920x1200 resolution required.
- e. Video Graphics Adapter recommendation
  - The nVIDIA Quadro series graphics adapter, such as the FX1700, FX1800, 2000.
- f. Supported Operating Systems

#### SUPPORTED

- Recommended: Windows 7 32-bit Professional or Enterprise
- Also Supported: Windows Vista 32-bit Professional or Ultimate

#### NOT SUPPORTED

- 64-bit Windows 7, 64-bit Windows Vista
- Older Windows Versions: Windows XP, Windows 98

## 2. Camera recommendations and support:

### RECOMMENDED CAMERA

- QImaging color Retiga EXi, cooled or uncooled
- Densitometry Toolkit users: QImaging monochrome Retiga EXi, cooled or uncooled

### CAMERAS ALSO SUPPORTED

- QImaging color Micropublisher 5.0, cooled or uncooled
- QImaging color Q-ICAM, cooled or uncooled

### LEGACY SUPPORT

For existing, backward compatible support (NOT RECOMMENDED because live image size is only 640 x 480):

- Analog RGB video cameras, (NTSC or PAL) such as the Optronics DEI-750 or Sony DCX-390P.  
A special cable must be purchased from BIOQUANT for these cameras to connect to the BQ-V board.

## SYSTEM-BASED ENHANCEMENTS & ISSUE RESOLUTIONS

### 1. New: 1280x960 Image window

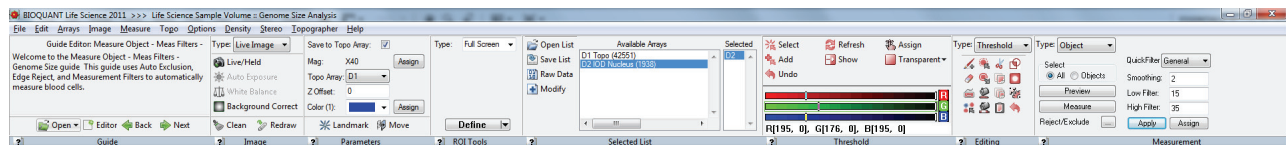
- Live images from the QImaging color Retiga EXi, Micropublisher 5.0, and QICAM are 1280 x 960.
- The Large Image Navigator Pan box size is now 1280 x 960, loading 1280 x 960 portions of the large image into the Image window.

### 2. Issue Resolution: Analog Cameras and traditional XY offset protocol are now compatible

In the Life Science 10.3.6 version, analog cameras required a more complicated XY offset procedure. In this version, Life Science 11.2.6, the XY Offset protocol is the same as that for digital cameras.

## NEW TOOLS RIBBON

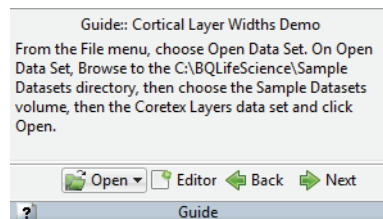
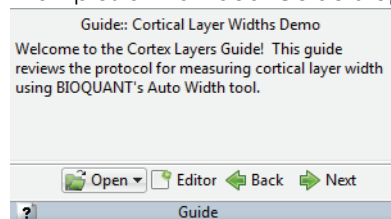
An intuitive Tools Ribbon replaces most of the dialog boxes in previous versions of BIOQUANT. The Tools ribbon is designed to be used from left to right, starting with the Guide region and ending with the Measurement region.



## REGIONS:

### 1. Guide Region: The Guide is now integrated into the interface for easy protocol help.

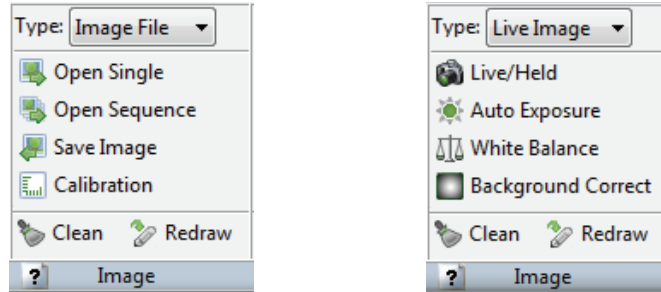
Examples of Individual Guide Steps



- The Open button contains a menu with the following options: Open and Setup Quick Guide List. Under these options is a list of guides that can be quickly loaded.
- If you installed the Sample Datasets, you can use the guides in the quick list to learn more about how to use the software. There is a guide for every measurement type in the Measurement region.
- The Editor button opens the Guide Editor where you create new guides or edit existing ones. The Guide Editor is the same as the previous Guide box.
- The Next and Back buttons sequence through the guide steps.

2. Image Region:

Image Region

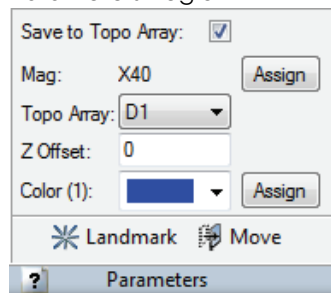


Left: Type - Image File; Right: Type - Live Image

- a. Image File Type: Choose this Type to open single images, open a sequence of images (Imaging Toolkit users), save an image, or calibrate.
  - Open Single and Open Sequence: You can now open a BIF image even if you don't own the Imaging Toolkit. BIF is the proprietary BIOQUANT format that stores calibration data in the image. Now users without the Imaging Toolkit can load tutorial BIF images from BIOQUANT. To open a BIF image if you don't have the Imaging Toolkit, switch the Files of Type drop list, located next to the File Name edit box, to say "All Files." Then double click the BIF image to open.
- b. Live Image Type: Choose this Type to go live/held, auto expose, white balance, or use background correction.
- c. Clear Overlay is now called "Clean" and is in the Image region.
- d. System Redraw is now called "Redraw" and is in the Image region.

3. Parameters Region: The Parameters Region replaces the Parameters box.

Parameters Region



- a. The Parameters region contains the following options: Save to Topo checkbox, Mag selection, Topo Array selection, Z Offset, and Measurement Color selection.
- b. NEW: The Mag and Color can now be directly assigned to the current Selected array by clicking the Assign button next to their entries.
- c. Mag: When you change the magnification, the ROI Type now changes to Full Screen.
- d. Set Landmark is now called "Landmark" and is in the Parameters region.
- e. Manual Move is now called "Move" and is in the Parameters region.

4. ROI Tools Region: The ROI Tools region replaces the ROI Tools box.

## IROI Tools Region

In this example, Rectangle is the ROI Tools Type.

- a. The ROI Types are: Full Screen, Sampling iROI, iROI Cursor, Rectangle, Irregular, Eclipse, Circle, and Topo
- b. The Define button now contains a drop list where additional options are available, depending on the ROI Type chosen. Additional options include: Move, Rotate, Mirror
- c. If Spacebar to End is available, it will show up when a compatible ROI Type is chosen. (Spacebar to End used to be called Keyboard Termination.)
- d. Save ROI and Load ROI are available on the File menu.
- e. NEW: When you click the Define button, the previous ROI no longer is visible.  
However, this also removes any measurement tracings that were in the image. To redraw the tracings when the cursor is within the Image window, tap “r” on the keyboard. Note that this will also redraw the previous ROI, although the previous ROI will disappear when the new ROI is created.
- f. NEW: You can now adjust the ROI Size using the mouse wheel.
  - Increase or decrease the height of the Region of Interest (circle or rectangle) using the mouse wheel.
  - Increase or decrease the width of the Region of Interest (rectangle) using the mouse wheel in conjunction with the Ctrl key.
- g. When you change the magnification (Mag in Parameters region), the ROI Type now changes to Full Screen.

## 5. Selected List Region: The Selected List region replaces the Selected List box.

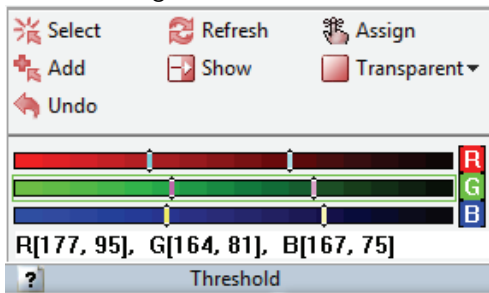
## Selected List Region

The highlighted array in the Selected list is the current array.

- a. Open List opens the Open Selected List window.
- b. Save List opens the Save Selected List window.
- c. Raw Data opens the Raw Data window. This used to be called “List Data.”
- d. Modify opens the Modify Data Set box.
- e. Additive Mode, Subtractive Mode, Increase Element: Current Array, and Increase Element: All Arrays are now only on the Measure menu.
- f. Editing the array name or comment is only available through the Modify Data Set box.
- g. Deleting all the data in the data set is only available through the Edit menu. From Edit choose Delete All Data.

## 6. Threshold Region: The Threshold Region replaces the threshold box.

Threshold Region



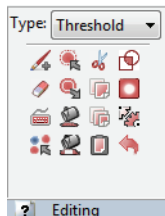
You can now change the threshold transparency using the Transparent list.

- a. Select starts the threshold range from scratch based on pixels you click in the image.
- b. Add used to be called "Adjust." It adds to the current threshold range based on pixels you click in the image.
- c. Undo undoes the last threshold command
- d. Refresh updates the threshold display in the Image window to match the threshold range in the Threshold region. Refresh overrides any threshold editing that has been performed.
- e. Show used to be called "Display Threshold." It toggles the threshold display in the Image window on and off. It also determines whether the threshold will be visible when Preview is clicked in certain Measurement types. Show retains any threshold editing that has been done.
- f. NEW: Assign assigns the current threshold range and active channels to the current Selected array in the Select List region.
- g. NEW: Transparent: the threshold transparency can be adjusted by choosing a % Transparent setting from the list. The default setting is now 70% Transparent.
- h. The threshold bars can still be adjusted manually and the channels turned on or off by clicking their buttons. The active threshold range is still displayed underneath the threshold bars.

7. Editing Region:

- a. Threshold Type: The Threshold Type replaces the threshold editing tools

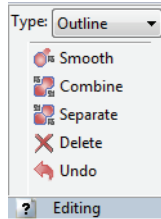
Threshold Tools



- i. Threshold Editing tools include: Draw Threshold, Erase Threshold, Spacebar to End, Keep Objects, Erode Threshold, Dilate Threshold, Fill Objects, Fill Holes, Cut, Copy, Copy All, Paste, Mask, Invert, Threshold Edit Setup, and Undo.
- ii. NEW: The Draw Threshold and Erase Threshold pen sizes can now be dynamically adjusted using the mouse wheel.
- iii. "Spacebar to End" has been added as a button. Spacebar to End used to be called "Keyboard Termination."
- iv. Threshold Edit Setup opens Editing Setup which allows you to adjust the Draw and Erase Threshold pen sizes, create preview tracings after editing, erode away from the edges, and set the number of dilate and erode sequences assigned to the Erode and Dilate buttons.
- v. On Editing Setup, Preview after Editing is now defaulted ON. When on the Object or SegAssign Measurement Type, Preview after Editing will automatically generate preview outlines when the threshold editing function has been completed.
- vi. Preview after Editing has been added for the Erode sequence, Dilate sequence, Mask, and Keep Objects. It already worked with Draw Threshold, Erase Threshold, Fill Objects, Fill Holes.

- b. Outline Type: The Outline Type replaces the Line Editing Tools.

Editing Region: Outline Type

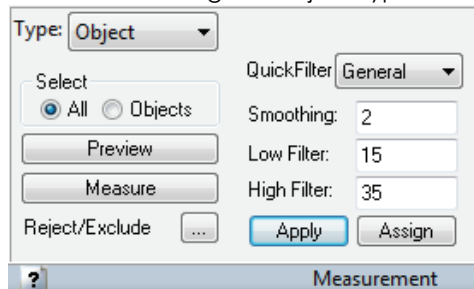


- Outline Editing tools include: Smooth, Combine, Separate, Delete, and Undo

**8. Measurement Region: The Measurement region consolidates all measurement tools into one region. Choose the measurement tool from the Type list.**

- a. Quick Filters and Smoothing show up when a supported measurement type is chosen. Quick Filters used to be called Data Point Filters.
- NEW: To assign the current Smoothing and Filter setting to the current Selected array, simply click the Assign button under Quick Filter.
- b. Spacebar to End shows up when a supported measurement type is chosen. Spacebar to End used to be called Keyboard Termination.
- c. Object Type: Generates measurements for each preview outlined cell or structure in the region of interest.

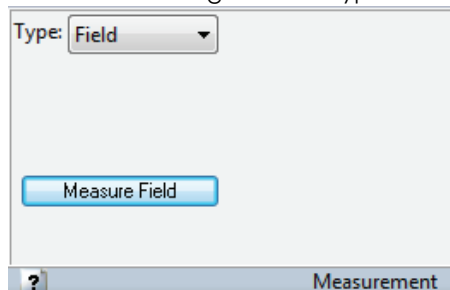
Measurement Region: Object Type



You can now assign the Quick Filter and Smoothing in the Measurement region.

- d. Field Type: Generates one measurement for all thresholded pixels in the region of interest. Used with VC Area, Density, or Pixel Count arrays.

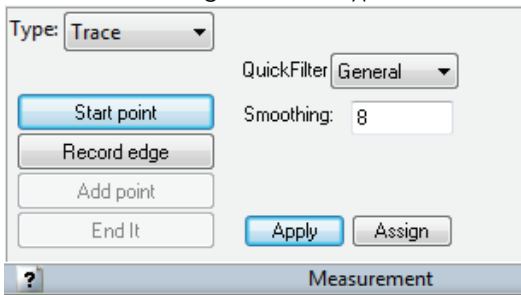
Measurement Region: Field Type



- e. Trace Type: Continues the automatic tracing of a surface over multiple field of view. Used with Area or Length arrays.



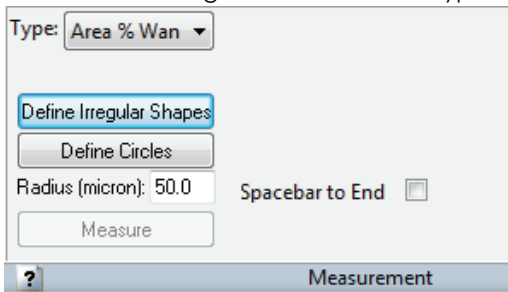
Measurement Region: Trace Type



You can now assign the Smoothing in the Measurement region.

- f. Area % Wand Type: Generates the total area and thresholded area of each user defined irregular shape or circle. Usually used with data sets based on the Simple Area % Wand template or mRNA Grain Analysis Template.

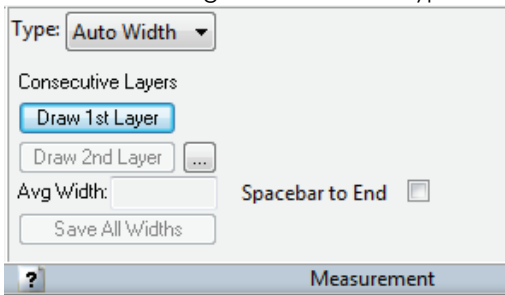
Measurement Region: Area % Wand Type



You can now adjust the circle radius using the mouse scroll wheel.

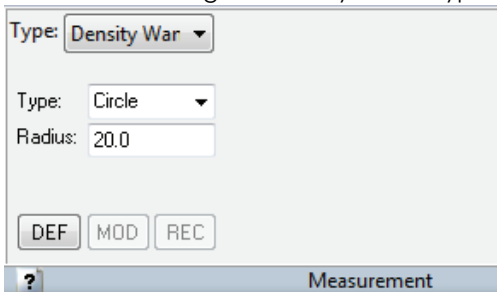
- NEW Circle: When the cursor is in the Image window, the radius can now be adjusted using the mouse scroll wheel.
- g. Auto Width Type: Generates automated width measurement between two user drawn lines or between consecutively drawn lines.

Measurement Region: Auto Width Type



- h. Density Wand Type: Generates the Average Density or Integrated Optical Density in user defined circles or rectangles. Supports either Average or Integrate Optical Density arrays.

Measurement Region: Density Wand Type





- NEW: Rectangle: The height and width can now be adjusted using the mouse scroll wheel. To adjust the height scroll the mouse wheel up or down. To adjust the width, hold down the Ctrl key on the keyboard while scrolling the mouse wheel up or down.
  - NEW Circle: The radius can now be adjusted using the mouse scroll wheel.
- i. Manual Type: Allows the user to hand draw areas, lengths, distances, counts, etc.

Measurement Region: Manual Type

- j. SegAssign Type: Allows the user to distribute segments of the structure's area or perimeter to different length arrays.

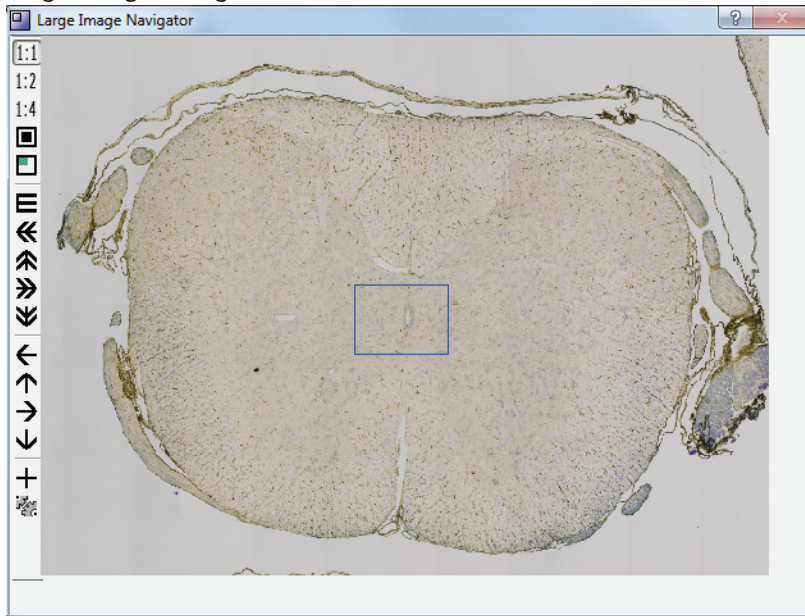
Measurement Region: SegAssign Type

- SegAssign now uses the shortest distance between two clicked points instead of going counter-clockwise.
- The "H" hot key can now be used to "hide" the tracings when clicking the two segment assignment points, allowing you to see the threshold underneath. To see the tracings again, tap the H key again.
- The Threshold Editing "Preview After Editing" now works with SegAssign.

## IMPROVED LARGE IMAGE NAVIGATOR

The Large Image Navigator has been improved in the following ways.

## Large Image Navigator



The Large Image Navigator has been improved.

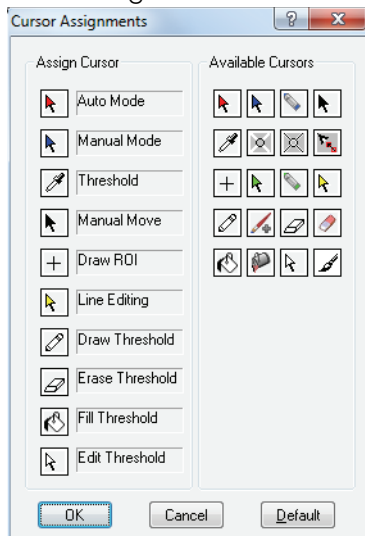
### IMPROVEMENTS

1. The image thumbnail is much larger.
2. The button bar has been moved to the vertical edge.
3. The 1:1, 1:2, 1:4 Pan Box Size options are now on the vertical toolbar.
4. **NEW:** When the zoom level is changed, the new field is centered on the location of the previous field. It used to be that the new field was the upper left corner of the Image Navigator.
5. **NEW:** When the zoom level is changed, the ROI changes to Full Screen.
6. **NEW:** The "Coarse Move Pan Box" button can now be used in a Batch Script.
7. The following items have been moved to the Navigator Setup box:
  - Coarse Move Step (% of Pan Box)
  - Fine Move Step (% of Pan Box)
  - Pan Box/Cross Color
8. On the Option menu, "Navigator Updates Redraw" now defaults to ON when you enter BIOQUANT.

### NEW CURSOR ASSIGNMENTS OPTIONS

The Cursor Assignments box has new cursor options and the default cursors have changed. Cursor Assignments can be opened by clicking the Cursor Assignments option on the Options menu.

## Cursor Assignments



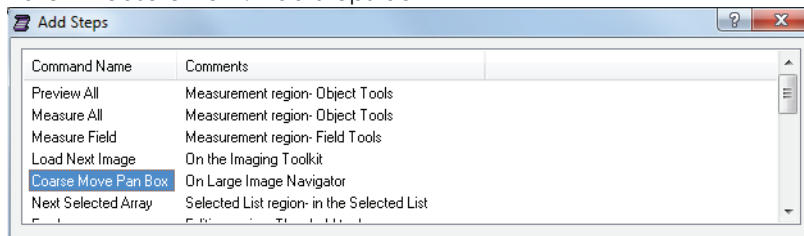
To change a cursor assignment, drag the new cursor from Available Cursors and drop it on the cursor in the Assign Cursor region.

- **New Cursor Assignments:** There are new Available Cursors and the default cursors have been modified for easier visibility during measurement.

## NEW BATCH MEASUREMENT COMMAND

The Batch Measurement dialog box has a new command. Batch Measurement can be opened by choosing Batch Measurement from the Measure menu.

Batch Measurement: Add Steps box



Coarse Move Pan Box can now be added as a Batch Step.

- **NEW:** Coarse Move Pan Box on the Large Image Navigator can now be added as a Batch command. This allows the user to automatically measure montaged images field to field.

## NEW QUICK ASSIGN FUNCTIONALITY

The “Memorize to Comment” function and “Memorize Settings box” have been replaced by individual Assign buttons/ menus next to each setting that can be assigned to an array.

### NEW FEATURES

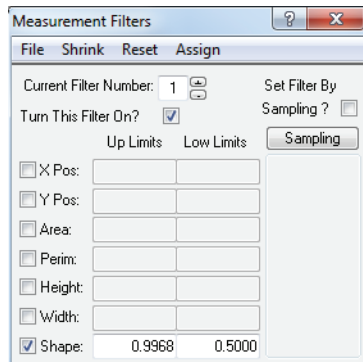
1. The “Memorize to Comment” function and “Memorize Settings box” have been replaced by individual Assign buttons/menus next to each setting that can be assigned to an array. To assign the current setting to the current Selected array, simply click the Assign button or menu next to that setting.
2. The following settings have Assign buttons: Measurement Color, Magnification, Threshold Color and Channel, Quick Filter and Smoothing
3. The following setting can be assigned through the Assign menu on the Measurement Filter box: Active Filter #.

- 4. To erase all “Settings” comments assigned to the Active array in the Selected box, from the Arrays menu, choose “Clear Assigned Comments.” Note: This only erases Settings comments. It does not erase the following array property comments:  
DG; or DR; or DB;  
IOD;  
SEG=L1, ... ,Lx;

## NEW MEASUREMENT FILTERS ASSIGN

The Measurement Filters box has changed. Measurement Filters can be opened by clicking the Measurement Filters item on the Measure menu.

Measurement Filters box



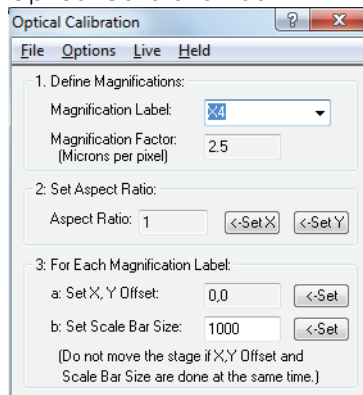
Click Assign to assign the current filter number to the Selected array.

- **NEW:** An Assign menu has been added to assign the current filter number to the active array in the Selected List.

## OPTICAL CALIBRATION CHANGES

The Optical Calibration box has changed. Optical Calibration can be opened by clicking Calibration on the Image menu or by clicking the Calibration button in the Image region under the Image File Type.

Optical Calibration box



Live and Held are now menu options.

- A “Live” and a “Held” menu have been added to the menu bar.

## OPTIONS MENU CHANGES

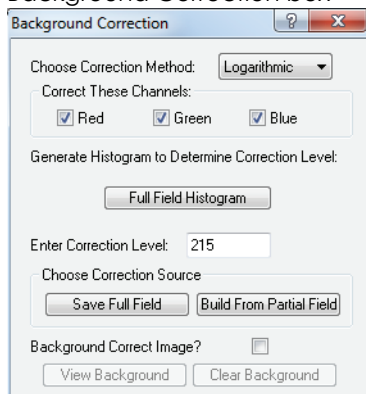
The Options menu has the following changes:

1. **Save Window Positions** now defaults to ON when you enter BIOQUANT.
2. **Navigator Updates Redraw** now defaults to ON when you enter BIOQUANT.

## BACKGROUND CORRECTION CHANGES

The Background Correction box has changed. Background Correction is found on the Image menu. In the Image region, under the Live Image Type, there is also a Background Correct button that opens Background Correction.

Background Correction box



The default Correction Method is now Logarithmic.

### CHANGES

1. **Background Correction** now defaults to Logarithmic instead of Linear.
2. If **Save to Topo Array** is checked and **Build from Partial Field** is used, the partial field region is no longer saved to the Topo array.
3. **Issue has been resolved: Background Correction and BIF image:**  
Open a BIF image. Mag changes to BIF's mag. Then use **Build Partial Field Background**. As soon as you click the **Build From Partial Field** button, the mag changes to Pixel and the normal mag drop list and the BIF mag is gone. This issue has been resolved.

## STRUT ANALYSIS CHANGES

The Strut Analysis box has changed. Strut Analysis is found on the Measure menu.

- **Strut Analysis: Draw Upper and Draw Lower** now work with normal sized cursors instead of the Draw and Erase Threshold wands. The Strut Analysis functionality has been restored.

## BIOQUANT DATA MANAGER CHANGES

The BIOQUANT Data Manager has the following change:

- **Concatenate Data:** The following are now defaulted to ON when the box is opened.
  - Export Calculation Arrays Only
  - Export First Value Only

## BIOQUANT SCAN PLUG-IN CHANGES

BIOQUANT Scan is an optional plug-in to BIOQUANT Life Science. With it you can automatically scan and create high resolution montages of up to 8 slides in a pass. The BIOQUANT Scan plug-in has the following changes:

- **The menu item “Multi-slide Auto Sequential Imaging” has been renamed “BIOQUANT Scan.”**
- **On Multi-slide Setup, the Image Size field is 1280x960 if you have a QImaging Retiga EXi digital camera, or 640x480 if you have an analog camera.**

## BIOQUANT STEREOLOGY TOOLKIT PLUG-IN CHANGES

The BIOQUANT Stereology Toolkit is an optional plug-in to BIOQUANT Life Science. It is for unbiased estimates of total cell number, cell density, cell volume, volume fraction, surface area, and length. The BIOQUANT Stereology Toolkit has the following change:

- **Auto Trace Area no longer puts your cursor in the Image window. It does switch the Measurement Type to Trace mode and the user can then do the Trace procedure as usual.**

## BIOQUANT DENSITOMETRY TOOLKIT PLUG-IN CHANGES

The BIOQUANT Densitometry Toolkit is an optional plug-in to BIOQUANT Life Science. It is for quantitative densitometry including receptor binding assays and other autoradiography methods and supports native phosphorimager files, high-resolution scanning of x-ray film, and light table image capture.

The BIOQUANT Densitometry Toolkit plug-in has the following changes:

1. **You can now click the “G” on Threshold to turn on and off the Gray threshold channel. This allows you to turn off the threshold range and use Draw Threshold to manually draw threshold.**
2. **Issue has been resolved: If the G channel is off on Threshold, then no pseudocolor appears in the image when you check “Pseudo Mode” on Pseudocolor. This issue has been resolved.**

## BIOQUANT TOPOGRAPHER PLUG-IN CHANGES

The BIOQUANT Topographer is an optional plug-in to BIOQUANT Life Science. It is for 3D modeling of cellular distribution patterns in serially sectioned tissue. For 3D modeling of long bone serial cross-sections. The BIOQUANT Topographer plug-in has the following change:

- **The Atlas Viewer, Atlas Shop, and Atlas Modelers have been redesigned to work with the 1920 x 1200 desktop.**