mScope Universal Viewer

version 3.7

User Guide

April 15, 2011

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4. Mobile Viewer 29

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1. Introduction

This guide describes mScope viewer functionality. The mScope viewer is accessible from mScope's Clinical, Education or Research portals. The viewer enables a user to display and interact with media available in the portal.

1.1. What is Media?

In the context of the mScope Viewer, media is defined as any file containing visual information. mScope supports hundreds of media formats. Examples include:

- 2D images (e.g. .jpg, .gif, etc.)
- video (e.g. .mpeg)
- whole-slide images produced by slide scanners (e.g. Aperio, Hamamatsu, Zeiss, etc.)

Media is displayed in the mScope Portals using thumbnails

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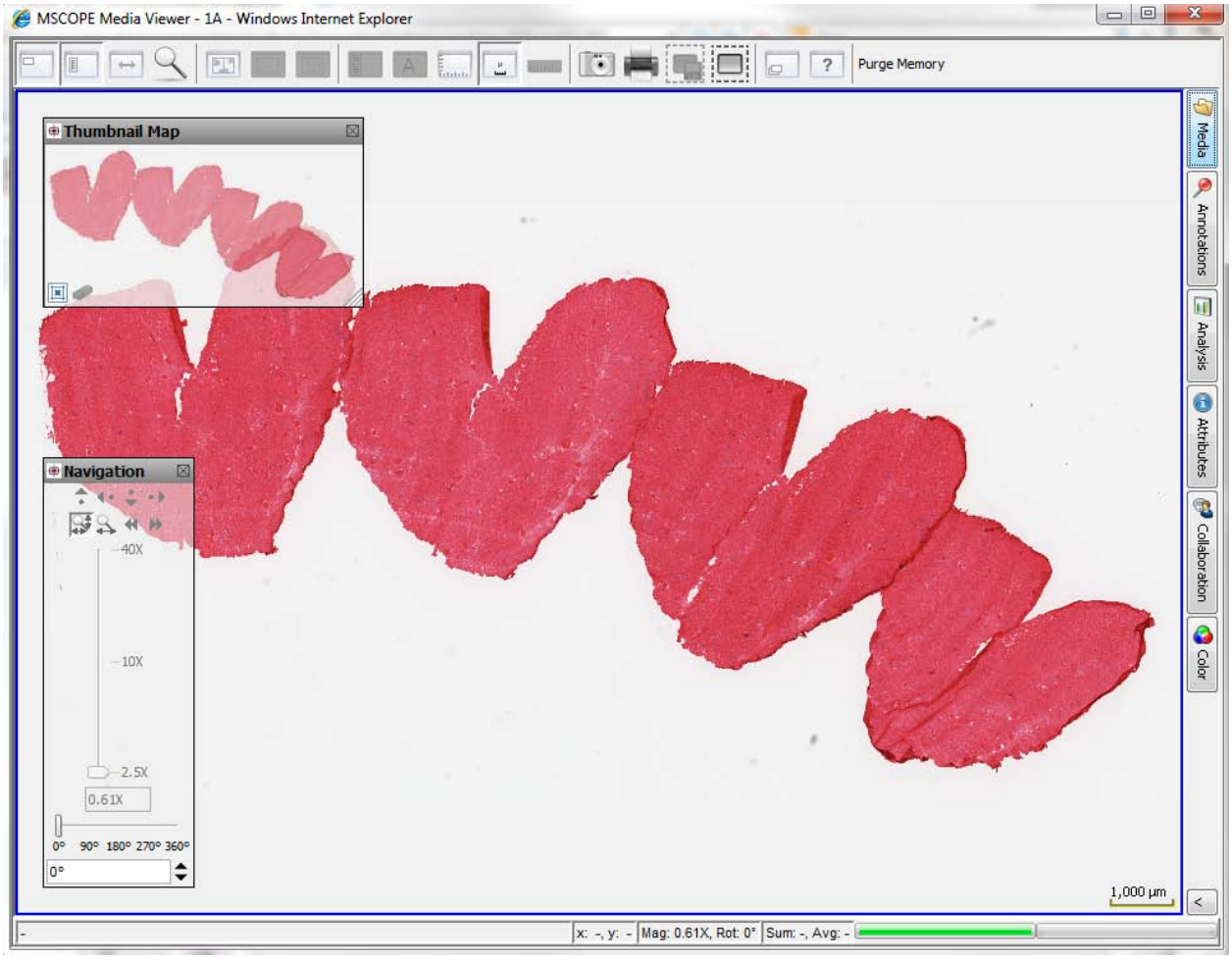
1.2 mScope Viewer Overview

The mScope Viewer is a Java applet that is launched when a user left-clicks on a media thumbnail in the portal.

In order to eliminate the requirement to download the entire media file (which in some cases is several GBs in size), it selectively and intelligently loads the data corresponding to the region within the viewing area. The mScope viewer includes tools to allow users to navigate, zoom, annotate, and export media. The mScope viewer also provides tools for remote collaboration.



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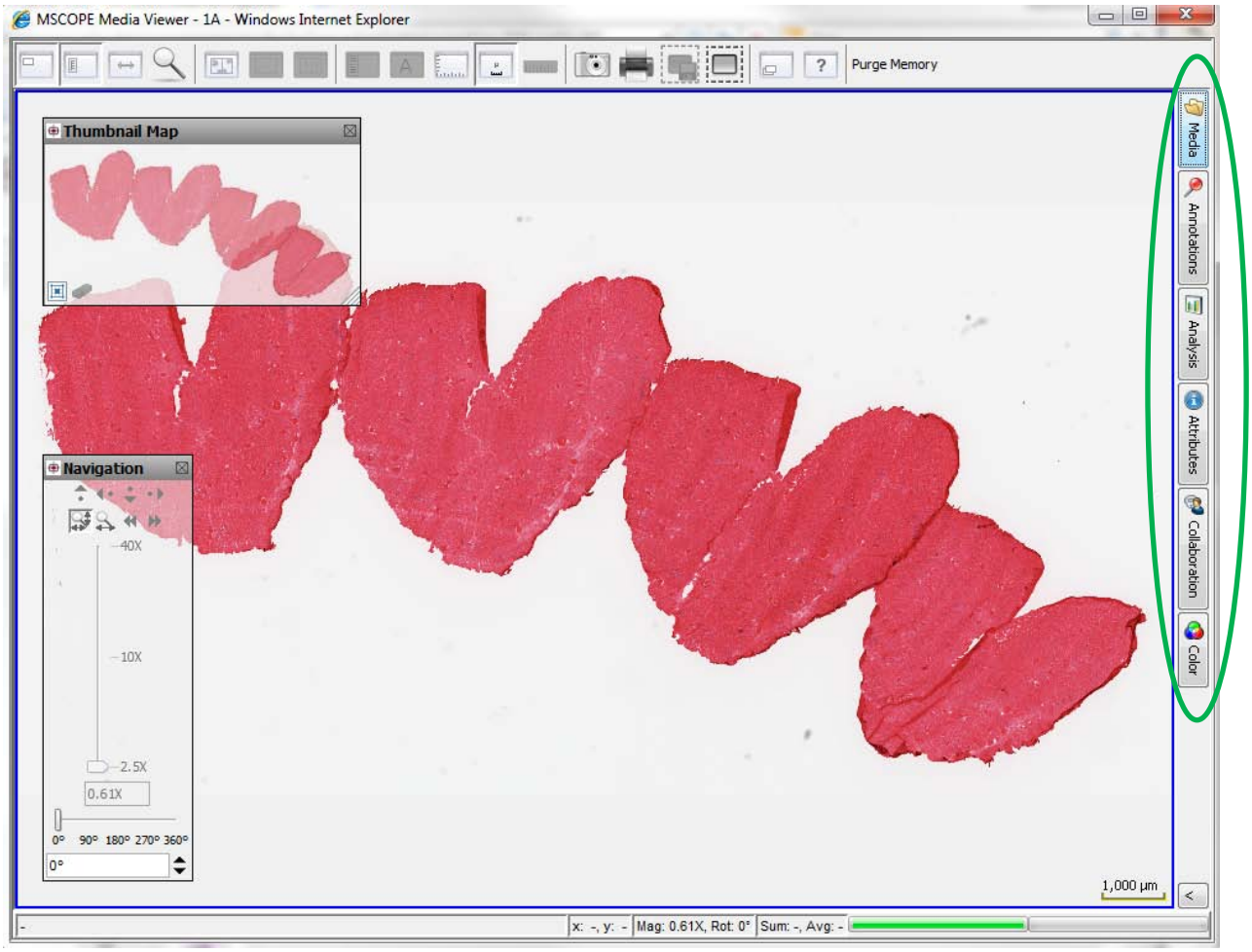
1.3 mScope Viewer tabs

Here are the different tabs available in the viewer:

- **Media:** Lists all media associated with a case. Left-click on a thumbnail to view that media.
- **Annotations:** Lists all annotations and annotation groups. Left-click on the checkbox to the left of an annotation's title to display the annotation in the main window or use the editor to update an annotation's information (according to granted permissions).
- **Analysis:** Integration with external tools.
- **Attributes:** Detailed media information, including custom mScope attributes.
- **Collaboration:** Work with other remote mScope users. Allows real-time media and annotation sharing and collaboration.
- **Color:** Non-permanent adjustments such as media contrast, gamma and brightness. Red, green and blue channels may also be adjusted.



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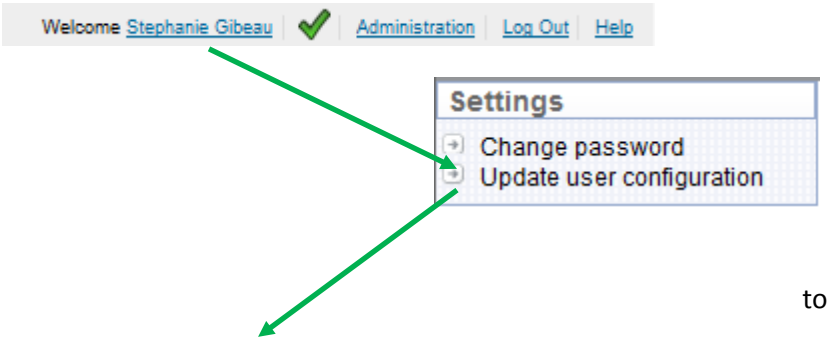
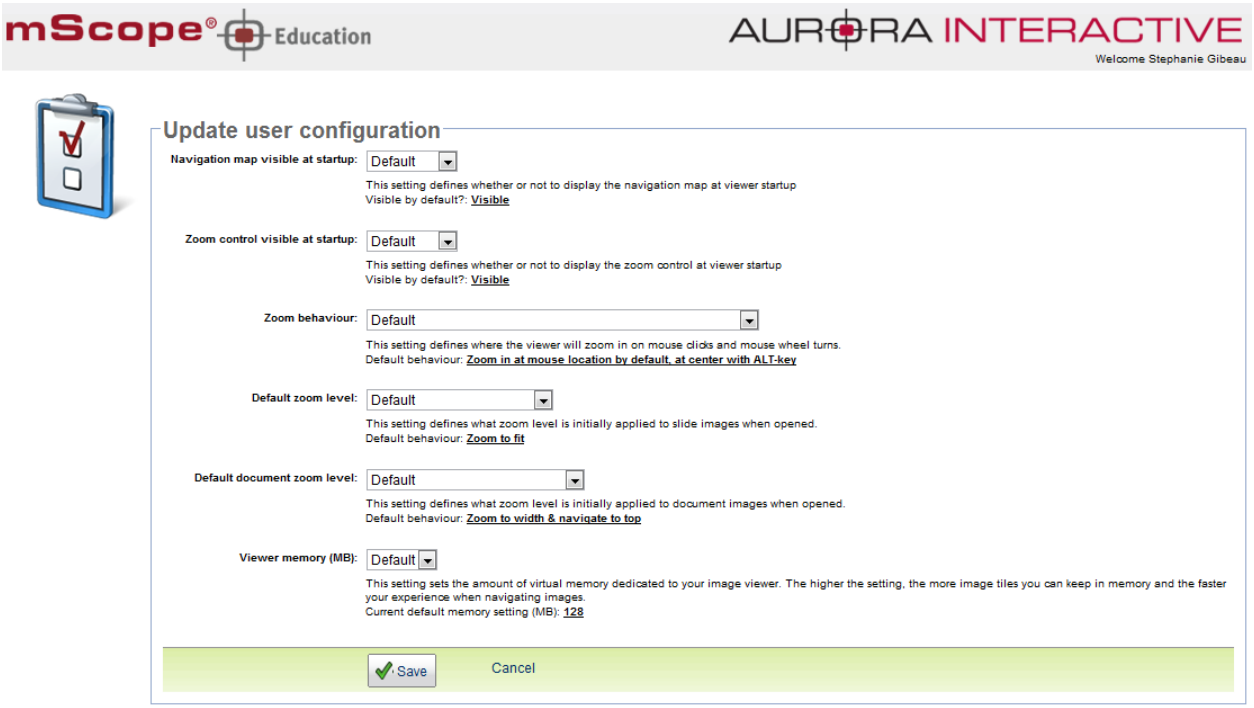
2. mScope Viewer Configuration

Once logged into the mScope portal (if available), left-click on your username in the upper right corner of your screen to access your mScope profile.



Select “Update user configuration” to update your preferences, including viewer configuration.



For more information on configuration, please refer to the appropriate mScope portal user guide (Education, Clinical or Research).

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2.1. Viewer Performance

Memory allocated to mScope by your computer may be increased in order to optimize mScope viewer performance.

The following table displays recommended memory settings based on your available RAM:

User computer's RAM memory	mScope's recommended setting
Less than 1 Go	128 Mo
Between 1Go and 3Go	256 Mo
More than 3 Go	512 Mo

WARNING: Increasing mScope's viewer's memory allocation could slow down other applications on your computer. If this occurs, simply decrease the allocation.

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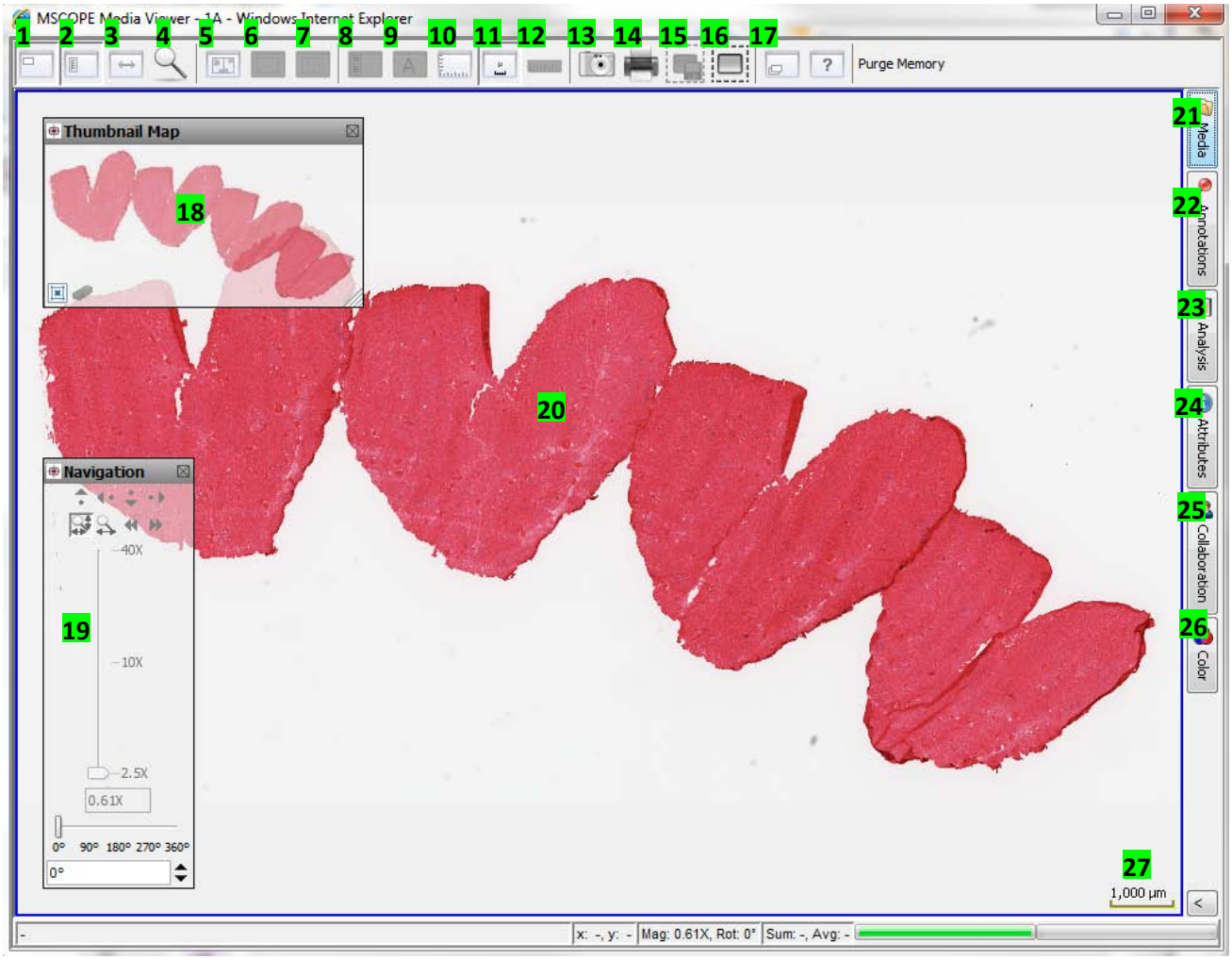
3. mScope Viewer

This section describes the components of the mScope viewer and their primary functions.

3.1. Viewer Basics

The features of the viewer are identified on the image below and described in the table on the following page:



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ACTIONS	OBJECTS AND WORK AREAS
1. Show/Hide Thumbnail Map (18) 2. Show/Hide Navigation Window (19) 3. Mode: switch navigation mode between Default (drag left to move media left) and Microscope (drag left to move media right) 4. Show/Hide Magnifier Window 5. Enable/Disable Split Screen: allows you to display two images simultaneously 6. Orientation: dual images side by side vs. top and bottom 7. Enable/Disable synchronized navigation of dual image mode 8. Show left sidebar 9. Enable/Disable Attributes Overlay: allows persistent display of image attributes (must be configured by the administrator to be available) 10. Grid: cycles through available grid and ruler combinations 11. Show/Hide Scale 12. Clear Measurements: Removes temporary measurements from the image (only available if the original media includes metric information) 13. Snapshot: captures a selected region/layer as a .jpg to your computer 14. Print: sends the current view to the printer 15. Native ROI Export tool: creates and saves a .tif image consisting of all native tiles in the selected region 16. Create Derived Image tool: captures a region defined by the user (left-click, drag, and release) to create a new sub-image 17. Cycle through additional images (e.g. labels)	**18. Thumbnail Map**: provides an overall view of media and what area you are looking at **19. Navigation Window**: allows control of magnification and provides tools for navigating and rotating the image **20. Main Image Window**: current view area of the image **21. Media**: all media associated with a case, jump to any media by left-clicking on it **22. Annotations**: allows for creation, organization and viewing of annotations depending on your permissions **23. Analysis:** Launch integrated analysis algorithms **24. Attributes**: detailed information about the media including any assigned custom mScope attributes **25. Collaboration**: work with others viewing and annotating the image at the same time as if through the same eyepiece **26. Color**: non-persisted adjustments for brightness, contrast, gamma, red, green, and blue **27. Scale**: provides size information when available from the image

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3.2. Navigating the Image

Navigation of an image may be accomplished both by interacting directly with the image or using the navigation and magnification windows. The basic navigation controls are as follows:

Action	Directly on the Image	On the Thumbnail Map and Navigation Window
Zoom in (center)	Left mouse click	Select or enter the desired value in the Navigation Window
Zoom in (mouse cursor position)	Left mouse click with ALT-key pressed	N/A
Zoom to region	With ALT-key pressed, hold left mouse button and drag and release to define region	N/A
Zoom out	Right mouse click	Select or enter the desired value in the Navigation Window
Pan	Hold left mouse button and drag	Left click on the navigation arrows
Navigate to a precise point on the image	N/A	Left click on a specific point on the Thumbnail Map
Show/Hide help window	F1-key	N/A
Show/Hide top toolbar	F2-key	N/A
Show/Hide bottom status bar	F3-key	N/A

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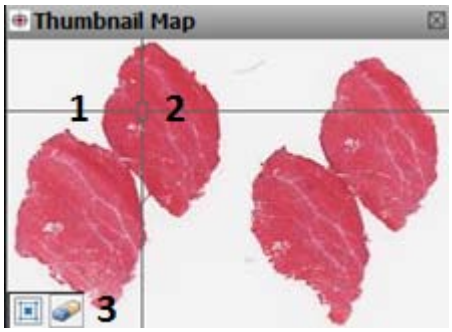
3.3. Thumbnail Map

1. Image: Thumbnail overview of complete image
2. ROI: Region of interest identifying the current view area and position
- you can drag the ROI to move the image in the main viewer
- left-clicking anywhere in the thumbnail will move the ROI to that location

3. View History: Highlights the areas viewed by the user (selecting the eraser clears the history)



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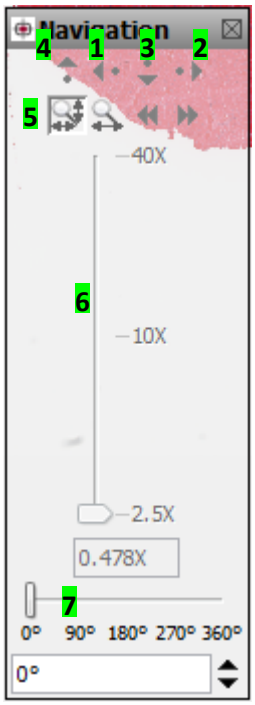
3.4. Navigation Window

1. **Move Left**: Move image to bring the image region left of the current display into view
2. **Move Right**: Move image to bring the image region right of the current display into view
3. **Move Down**: Move image to bring the image region below the current display into view
4. **Move Up**: Move image to bring the image region above the current display into view
5. **Zoom to Fit**: Fits the entire image into the main view area
6. **Magnification Slider**: Select the magnification desired
7. **Rotate**: adjust the image orientation by the provided increments or type in the desired value and scroll using the up/down arrows



3.5. Navigation Mode

mScope allows two different modes of navigation:

- "Standard": Left-click and drag the image, the movement corresponds to the drag direction
- "Microscopic": Left-click and drag the image, the movement corresponding to the opposite of the drag direction

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3.6. Grid/Ruler

mScope offers several grid/ruler options. Left-clicking on the grid icon allows a user to cycle through the options.

NOTE: Grid/ruler selections are temporary and must be enabled each time an image is opened.

3.7. Temporary Measurements

With SHIFT-key pressed, left-click and hold down the left mouse button and drag to create temporary measurements.

Left-click on the ruler in the tool bar to erase all temporary measurements.

NOTE: This tool is only available if the image includes measurement data.

3.8. Derived/Key Images

Derived/key images may be created from a region of interest using the derived image tool.

Once the tool is selected, left-click, drag and release your mouse over the desired area. Derived/key images are identified with a "*" in the mScope portal. These images are auto-flagged for inclusion in a report in the mScope Clinical portal.

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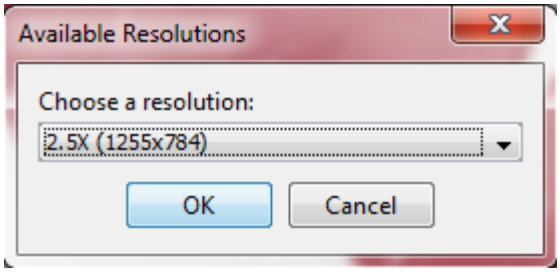
3.9. Snapshots

This tool allows a user to create a JPG image at some chosen resolution to be saved on the user's computer.

Once the tool is selected, left-click, drag and release your mouse over the desired area. The resolution and the directory in which to save the image can then be selected.

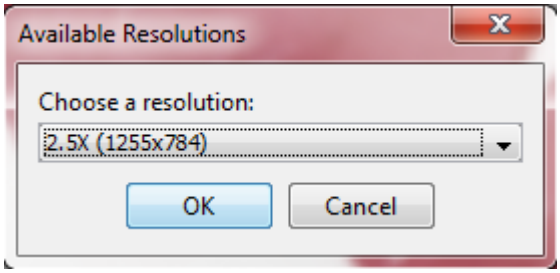


3.10. Native ROI Export Tool

mScope allows the export of a region of interest (ROI) in the images native format. The image tiles of the selected area will be exported in a pyramidal TIF format that can then be used in other applications such as Photoshop.

Once the tool is selected, left-click, drag and release your mouse over the desired area maintaining. The resolution and the directory in which to save the image can then be selected.

NOTE: Depending on the image format on which you are performing this action, you may end up with irregular image boundaries as the entire tile set is saved in the new image, including portions of the tiles that fall outside the boundaries of your chosen ROI.



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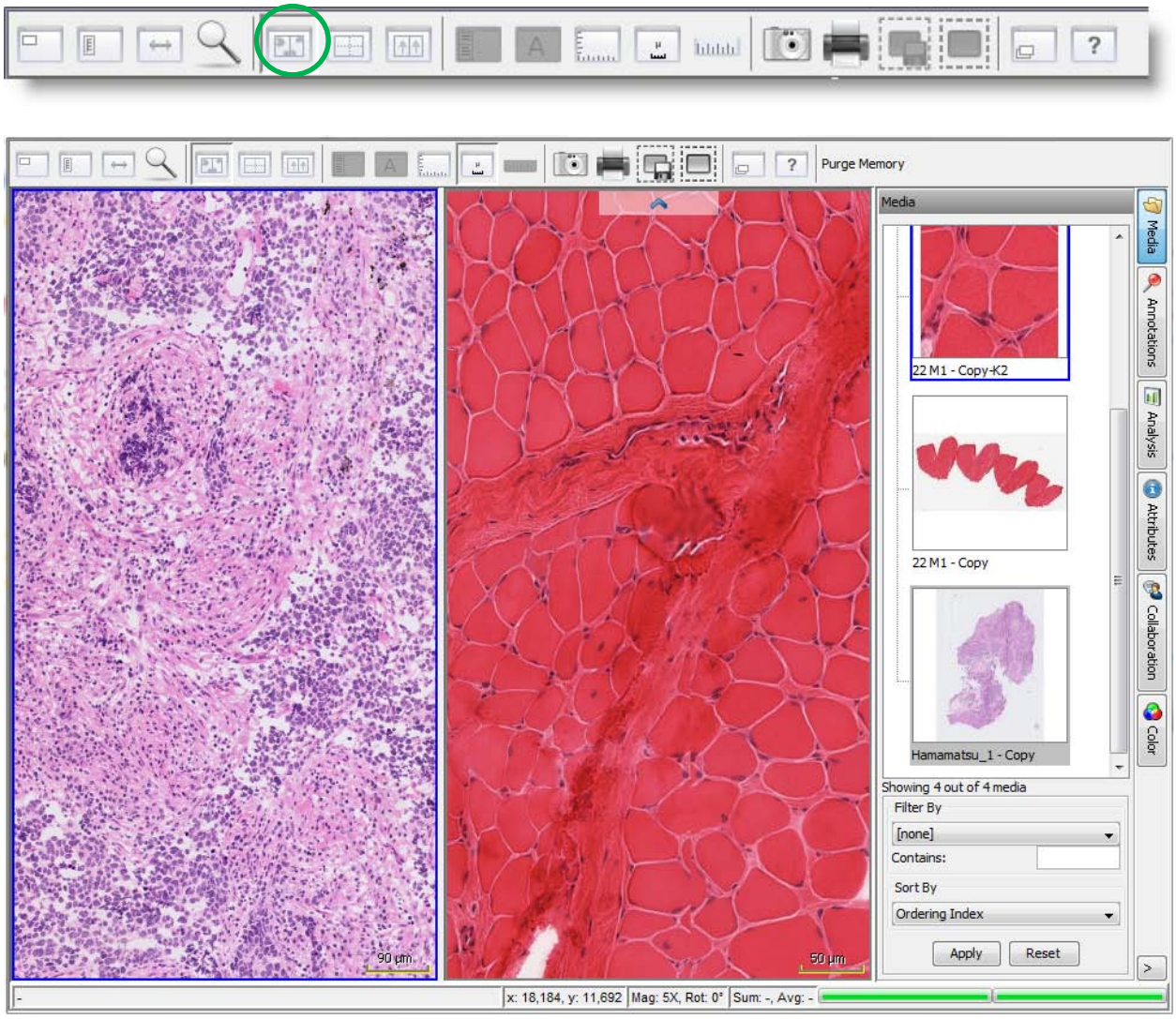
3.11. Enable/Disable Split Screen Mode

The viewer's main view area may be separated into two sections to enable dual image viewing (with independent navigation).

Vertical Separation



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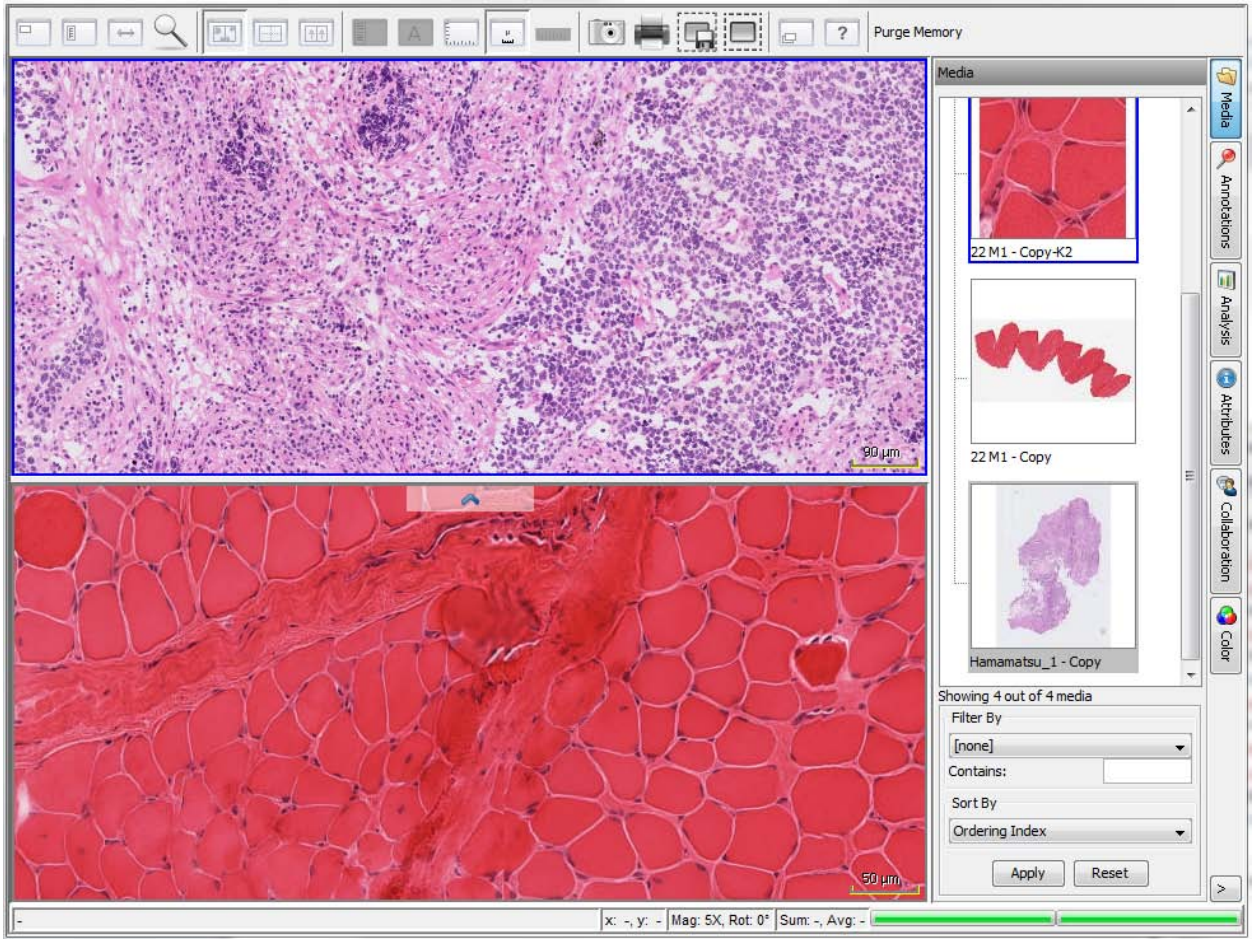
Horizontal Separation

Images are displayed side-by-side or horizontally. Left-click the Split Screen Mode icon again to return to single image viewing mode.



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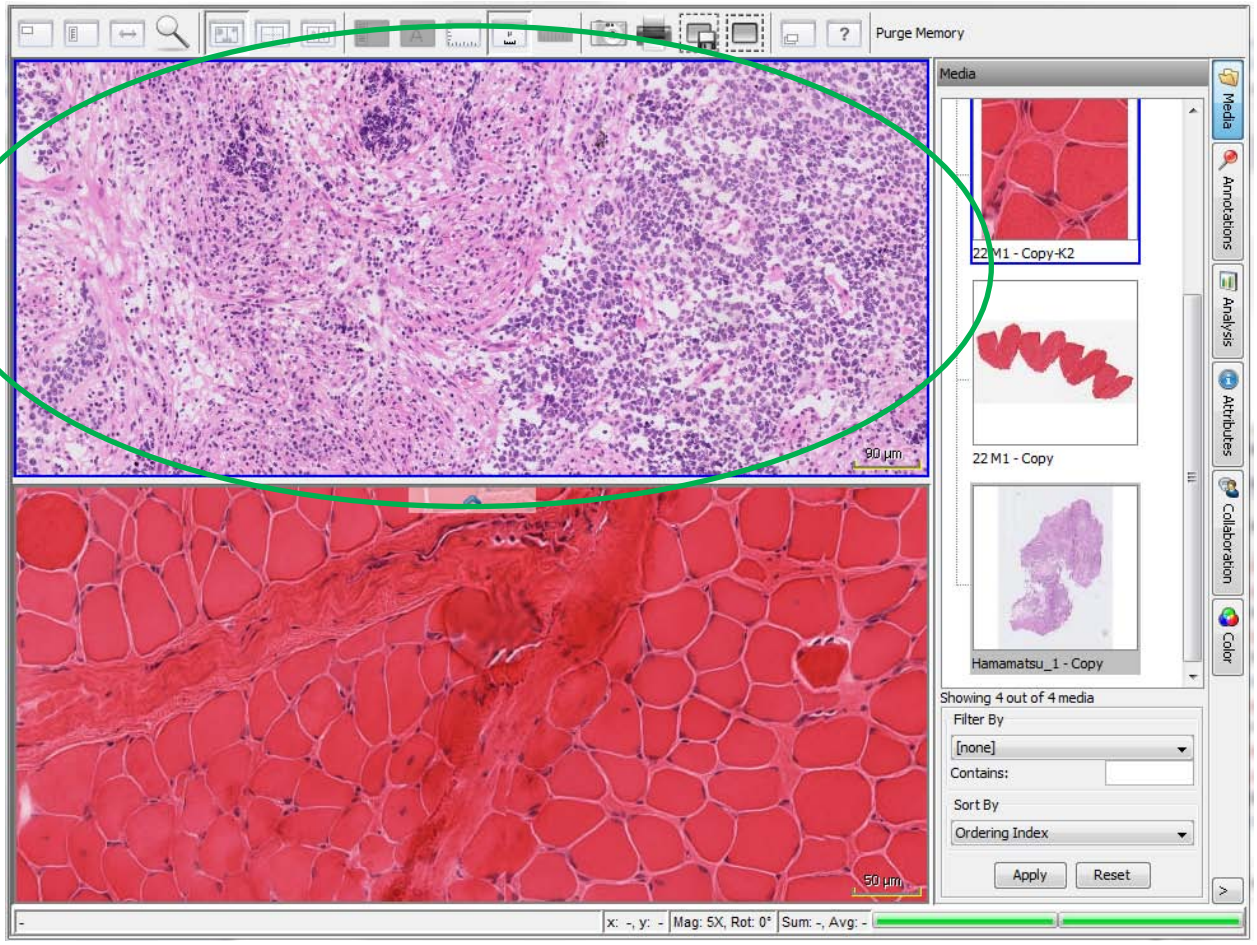
When the Split Screen image viewing mode is enabled, users may choose between viewing two instances of the same image or loading different images.

To determine which image to view in each panel:

a. Left-click on a panel (a blue frame will identify the active window)

b. Left-click on the desired media to be viewed in that panel from the media tab



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3.12. Synchronize Image Navigation in Split Screen Mode

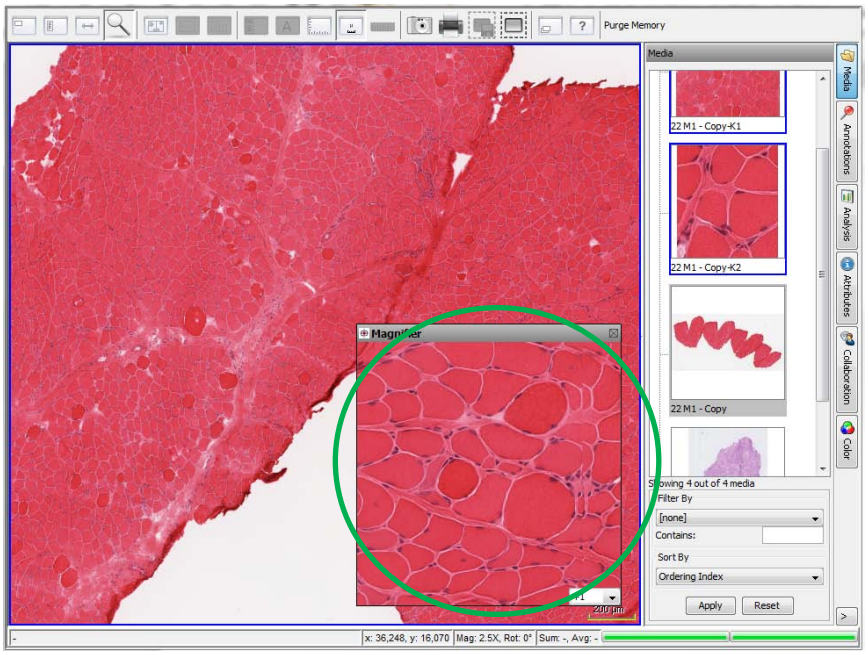
To synchronize image navigation in both panels left-click on the "Toggle Synchronized Navigation" icon. Left-click again to disable synchronized navigation.

3.13. Show/Hide Scale

To show or hide the scale displayed at the bottom right corner of the screen left-click on the "Show/Hide Scale" icon.

3.14. Magnifier Window

Left-click on the magnifier icon to display the magnifier window at the bottom right of your screen. The desired magnification level can then be selected from the drop-down menu at the bottom right.



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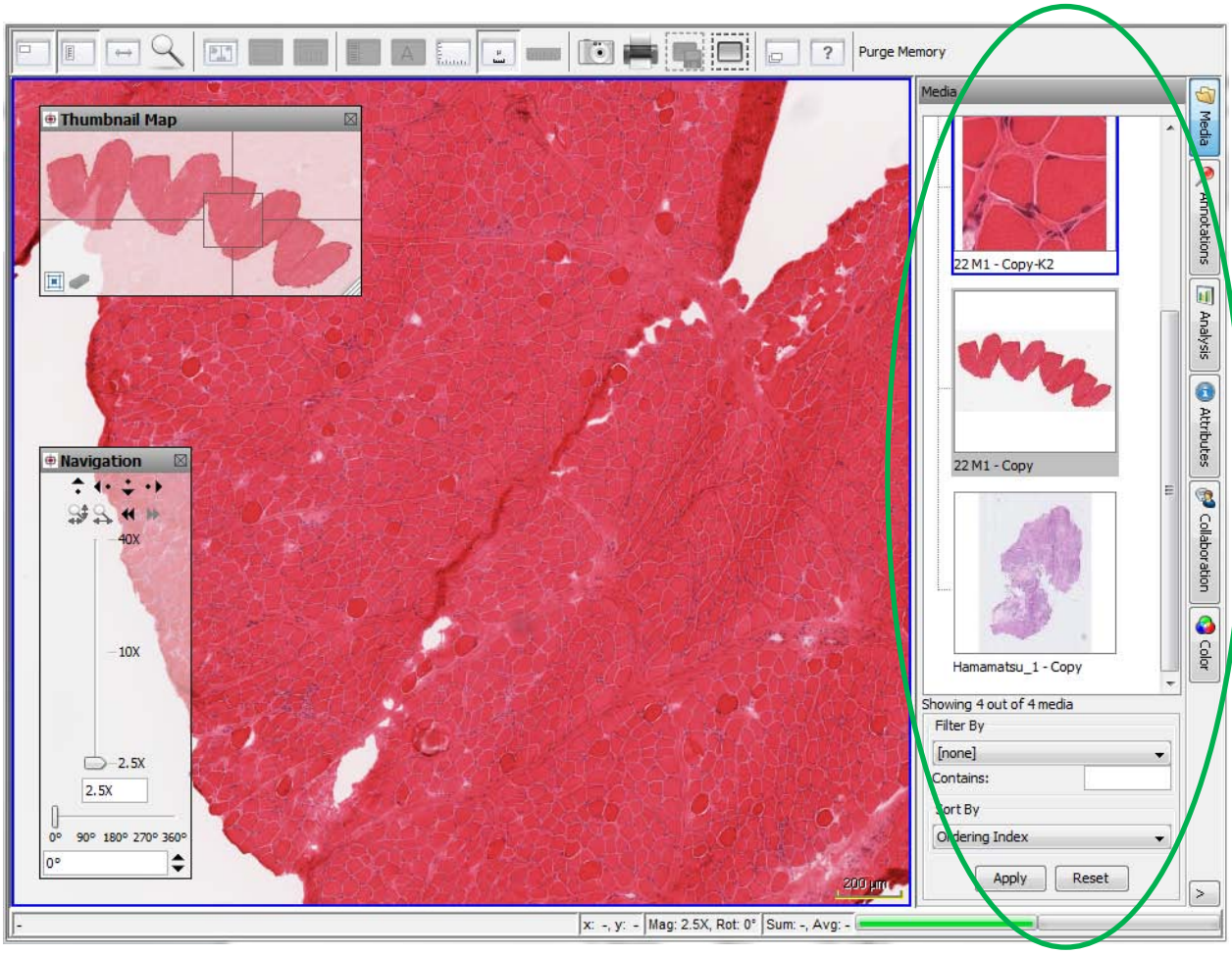
3.15. Media Tab

Thumbnails of all media associated with a case are available in the media tab. Users may quickly change from one to another by left-clicking on the appropriate thumbnail without the need to close the browser or to navigate back to the portal.



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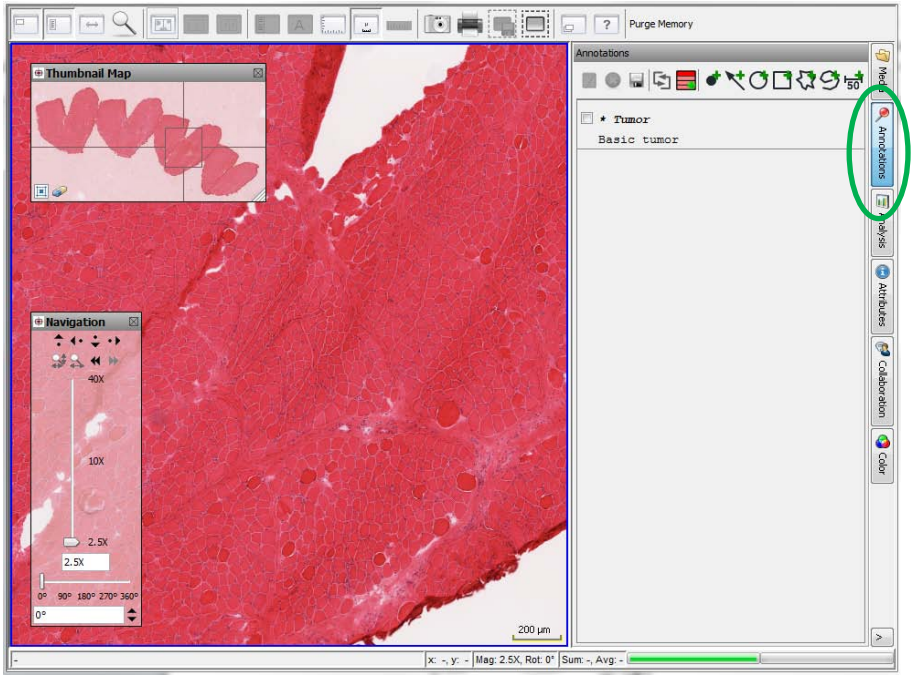
3.16. Annotation Tab

The annotation tab displays the list of all annotations and annotation groups created and saved for a media. It further allows you to create new ones and edit existing ones depending on your permissions as defined by your mScope administrator.

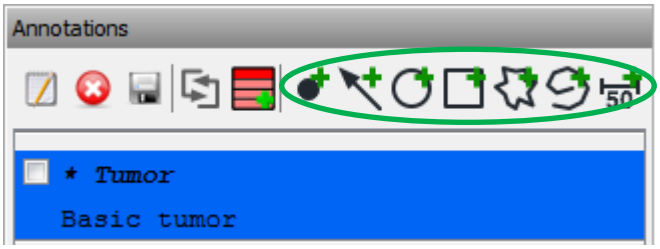
By left-clicking on the annotation's name, mScope's viewer navigates directly to the annotation's location. Toggling the check box beside the annotation name shows or hides it.



3.16.1. Create an annotation

Several annotations are available:

- Dot
- Arrow
- Ellipsis
- Rectangle
- Open polygon
- Closed polygon
- Measurement



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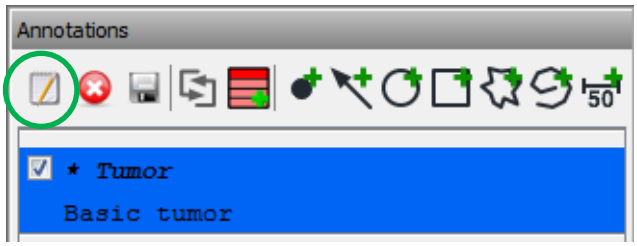
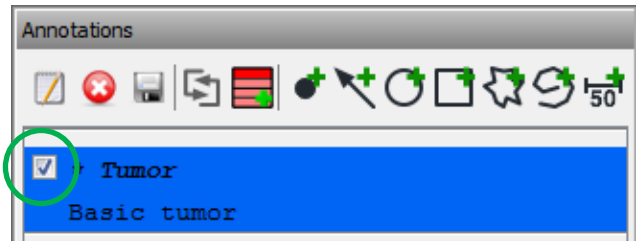
3.16.2. Modify an annotation

Left-click on an annotation's title before left-clicking on the "edit" icon to display the annotation's editor at the bottom of the tab (see Section 3.15.6).



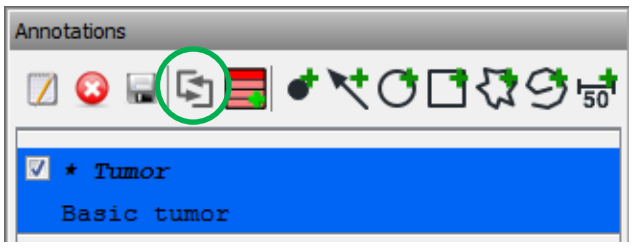
3.16.3. Show/Hide annotations

Check an annotation and/or annotation group to show/hide it. When showing multiple or groups of annotations, the viewer will automatically choose a resolution allowing the display of all annotations.



3.16.4. Order annotations

Left-click on the "double-arrow" icon to drag and drop annotations into the desired order.



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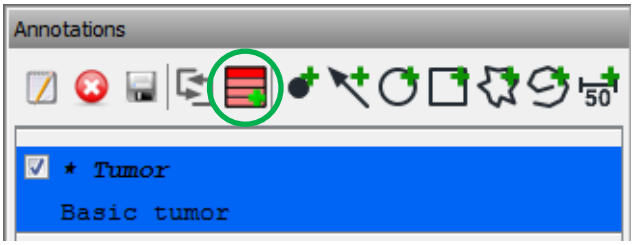
3.16.5. Create groups of annotations

Left-click on the “Add a new group” icon to organize annotations in groups.



3.16.6. Annotation Properties

1. **Title:** the text that appears in the viewer to identify the annotation
2. **Description:** detailed information about the annotation that will appear when a user's cursor hovers over the annotation in the viewer
3. **Text Position:** controls the position of the Title (1)
4. **Text Color:** controls color of the Title (1)
5. **Font:** controls the font of the Title (1)
6. **Style:** controls the style of the Title (1)
7. **Size:** controls the display size of the Title (1)
8. **Line Color:** controls the line color of the annotations
9. **Filter Color:** controls the color that is applied to everything outside a closed annotation
10. **Filter Opacity:** controls the intensity of the filter
11. **Fill Color:** controls the color that is applied to everything inside a closed annotation
12. **Filter Opacity:** controls the intensity of the fill

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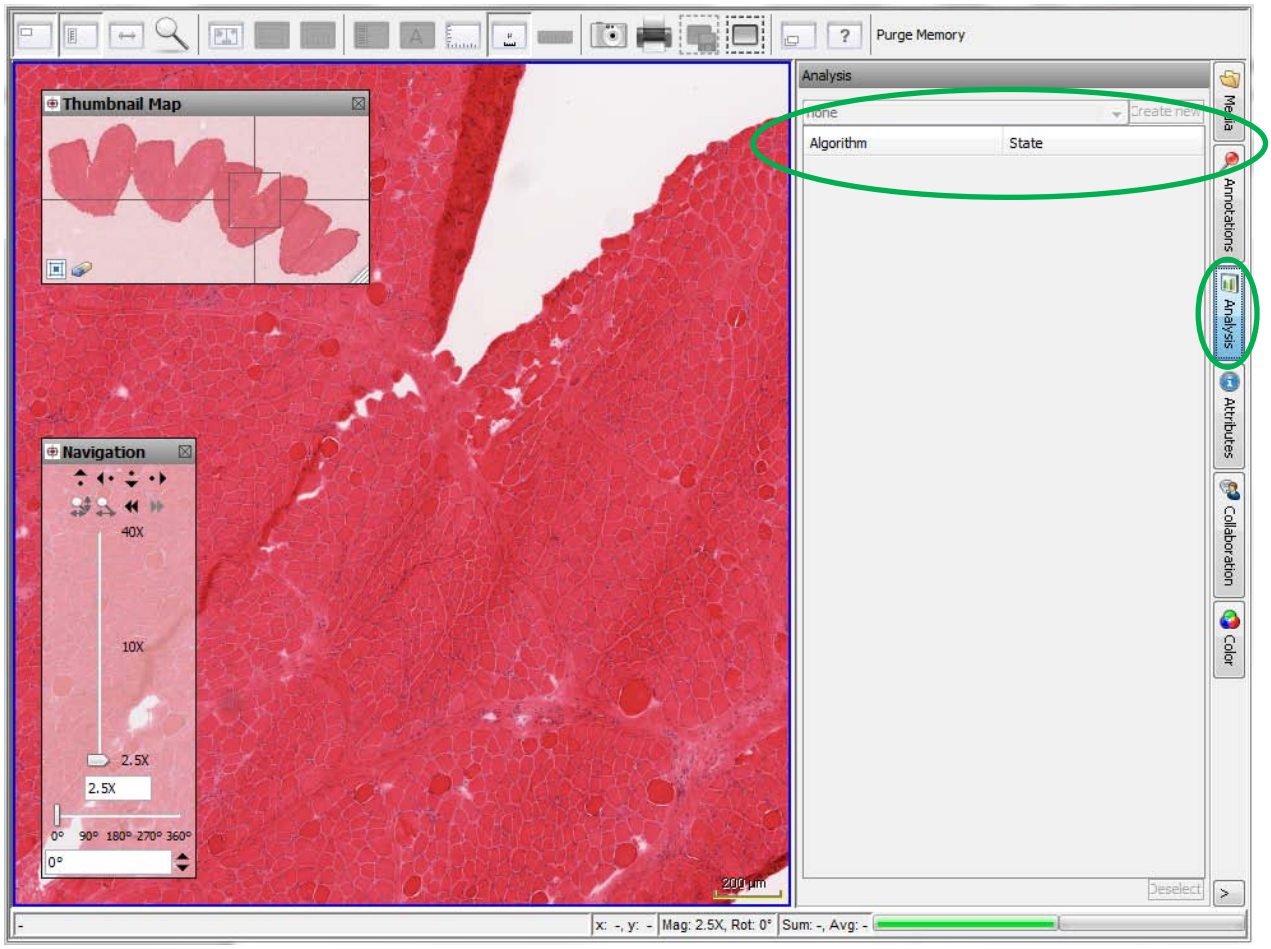
3.17. Analysis Tab

The analysis tab allows you to launch integrated analysis algorithms on images from the viewer. It also controls the display of analysis results.

To activate this functionality, please contact the Aurora Interactive support team at support@aurorainteractive.com . Algorithms may be integrated whether they come from a third party vendor or they are created personally using tools such as Matlab.



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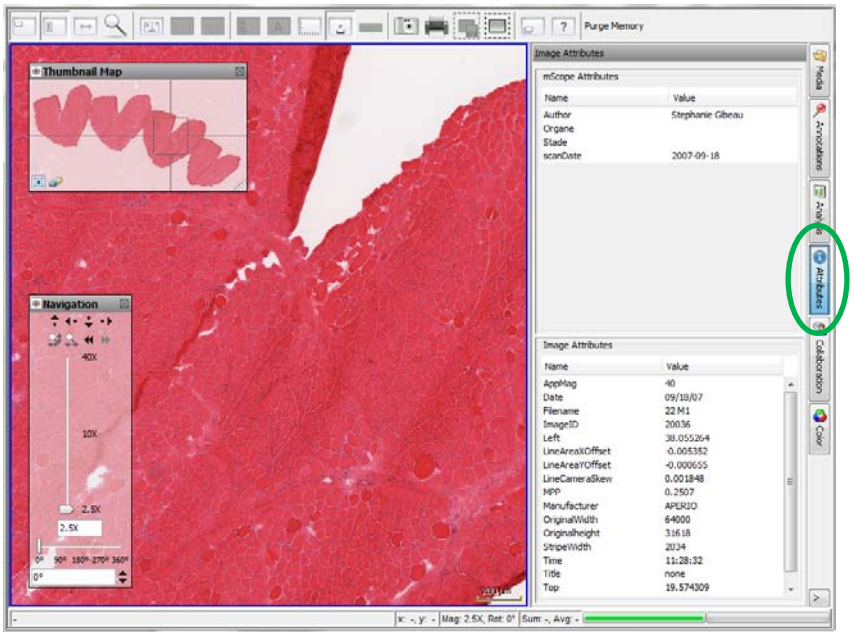
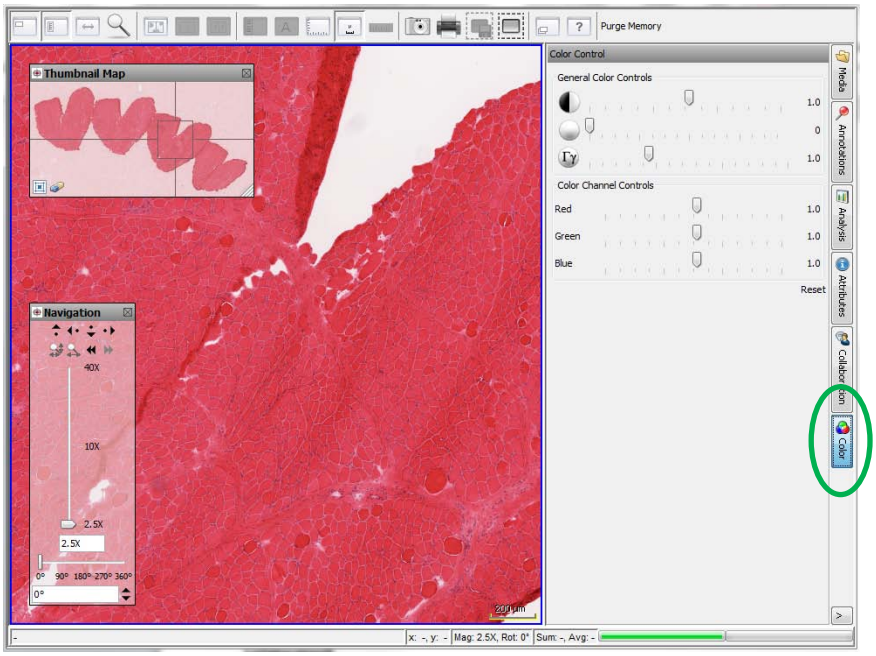
3.18. Attributes Tab

The Attributes tab provides detailed information about the media, including any assigned mScope attributes.



3.19. Color Tab

The Color tab provides non-persisted adjustments for brightness, contrast and gamma as well Red, Green, and Blue.



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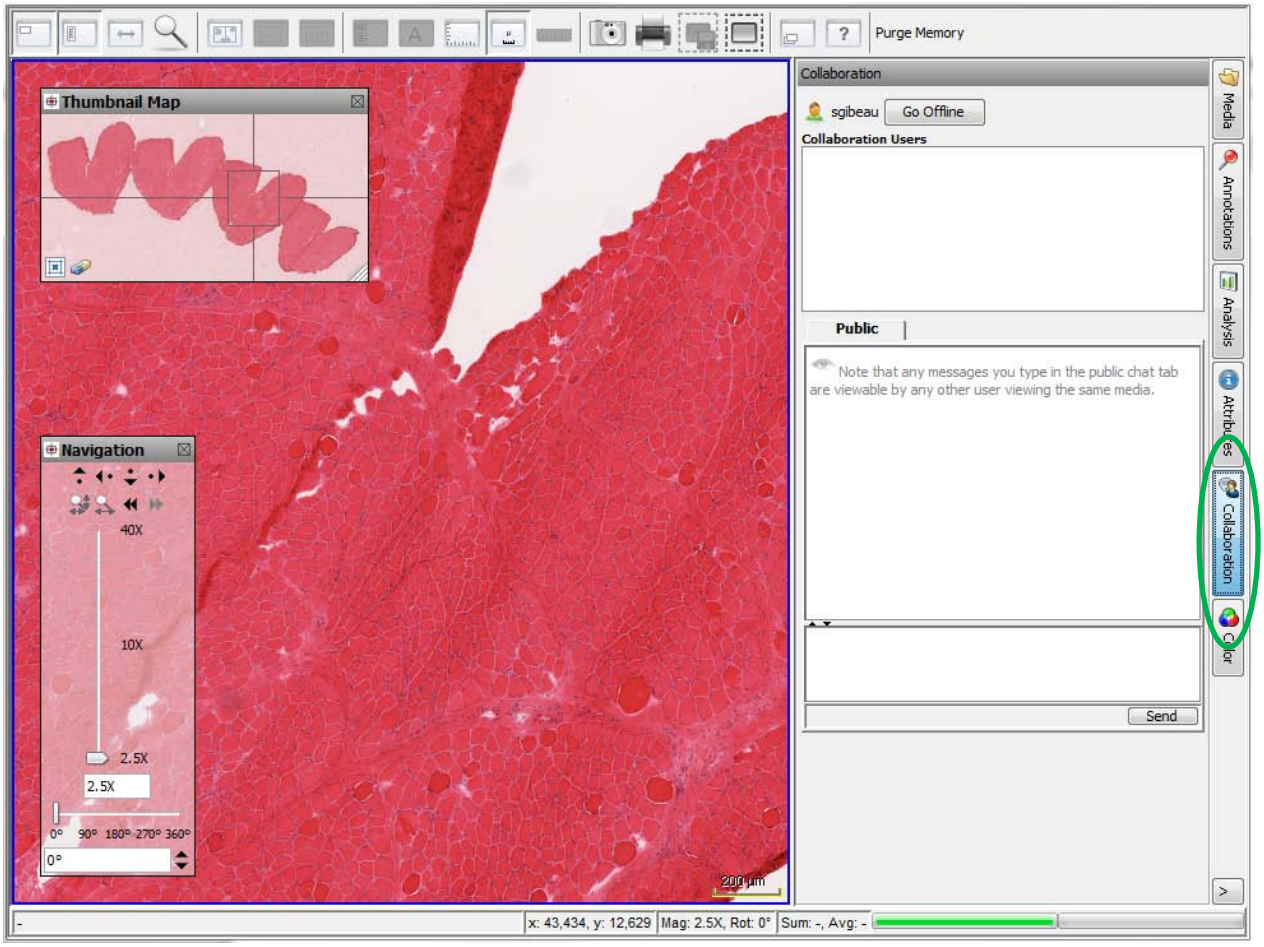
3.20. Collaboration Tab

Collaboration enables multiple users to synchronize the viewing of an image.

A collaboration session is led by a host. All actions taken by the host such as navigating the image and adding annotations are visible to the participants in real time. Participants may be located anywhere provided they have Web access. Other participants may be subsequently made the host depending on the options chosen for the collaboration (see below).

The collaboration tab lists the number of users currently viewing the image. Selecting the button shows you who these people are.



NOTE: An image may reside in multiple locations. For example, if two users have included the same image in cases in their shared documents they will not see each other when looking at the image since the images they are viewing are in separate cases.

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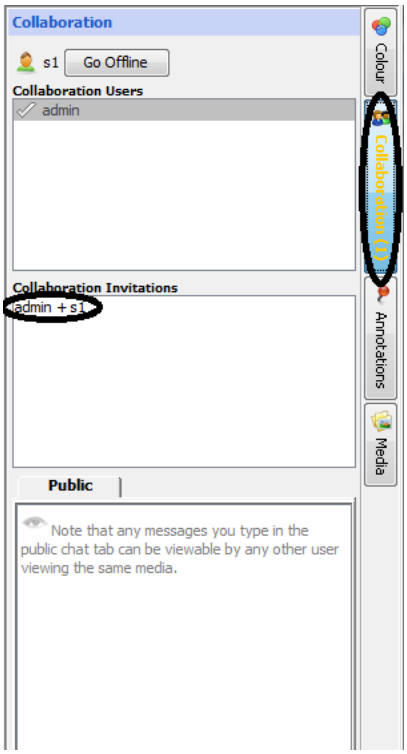
3.20.1. Initiating a Collaboration

To start a collaboration session open the collaboration tab and invite the users you want to join by double left-clicking on their names.

You will be given the chance to name the session and to select a flexible or fixed hosting style. If the flexible hosting style is selected users will have the option to assume control of the session as opposed to fixed which locks the initiator as the host (unless the initiator chooses to pass control).

3.20.2. Accept a collaboration invitation

The Collaboration tab of the guest's viewer will change color indicating a pending collaboration request. Opening the tab they will see the invitation in the list. To join the collaboration they simply double left-click this invitation.



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3.20.3. Passing Control and Exiting

Once the session has begun, it may be possible for users to assume control of the presentation and become the host. This will depend on the type of collaboration initiated as discussed in Section 3.19.1).

This is done by selecting the button "Take Control". Leaving the collaboration is done by selecting the "Disconnect" button or closing the viewer.

mScope provides a chat window so you can communicate in public or in private with other collaborators if you do not have a phone or VOIP software.

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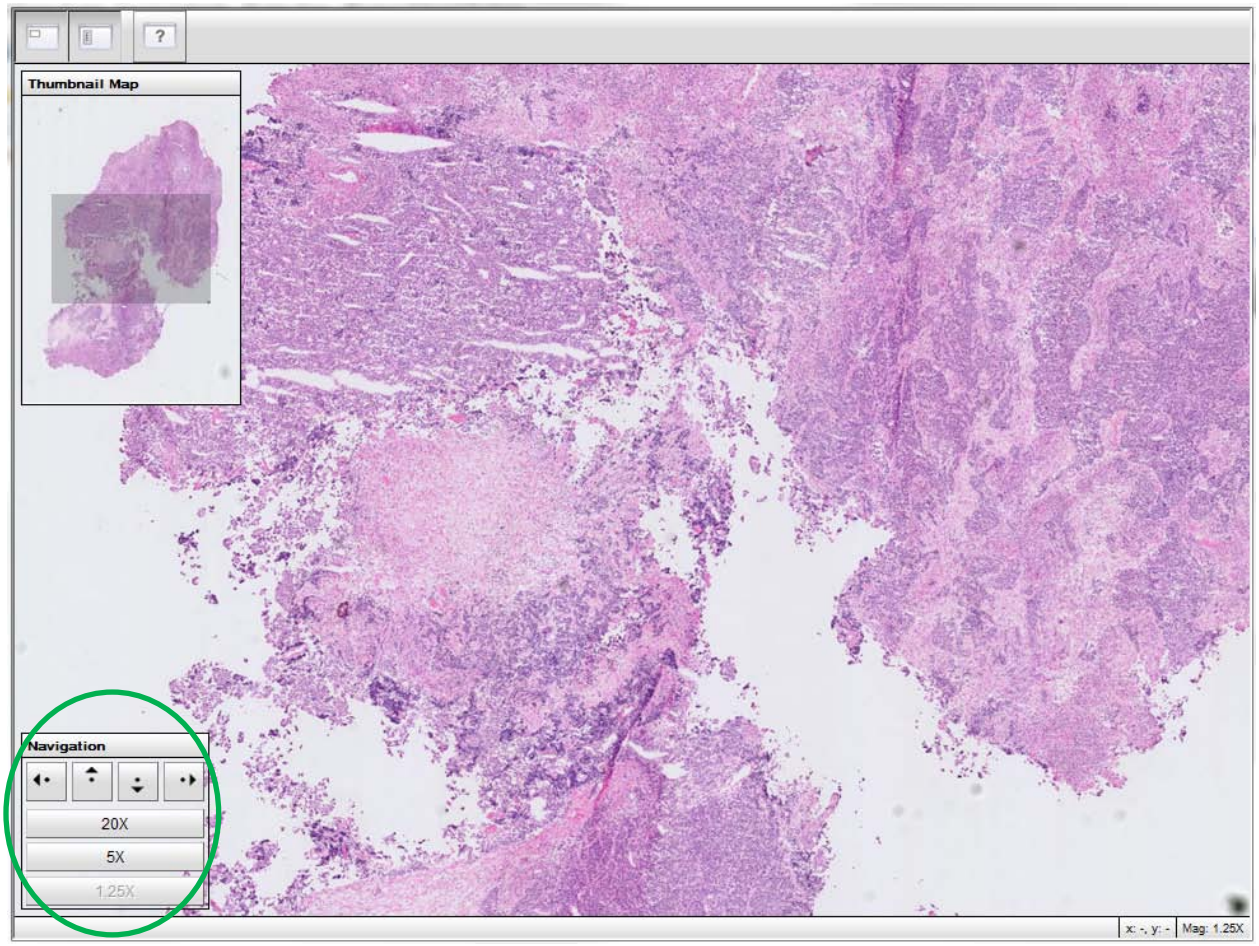
4. Mobile Viewer

New

mScope provides two viewing modes: either a full version or a "mobile" version. The mobile version allows for the viewing of media on a mobile device.

In the case of a mobile version, navigation through the image must be performed using the controls displayed in the navigation box, located in the lower left corner of the screen.



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