Tips and Tricks

- Scanning with ScanScope
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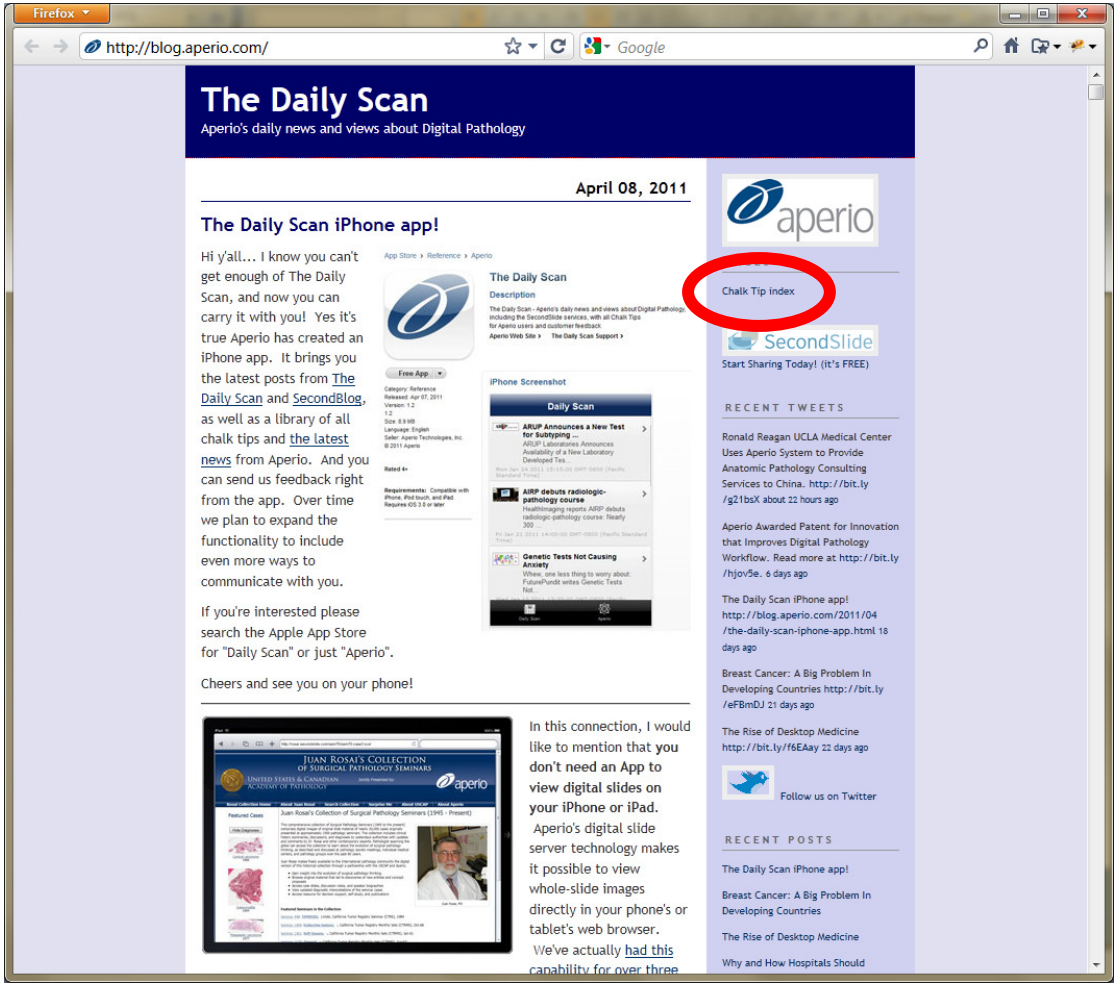
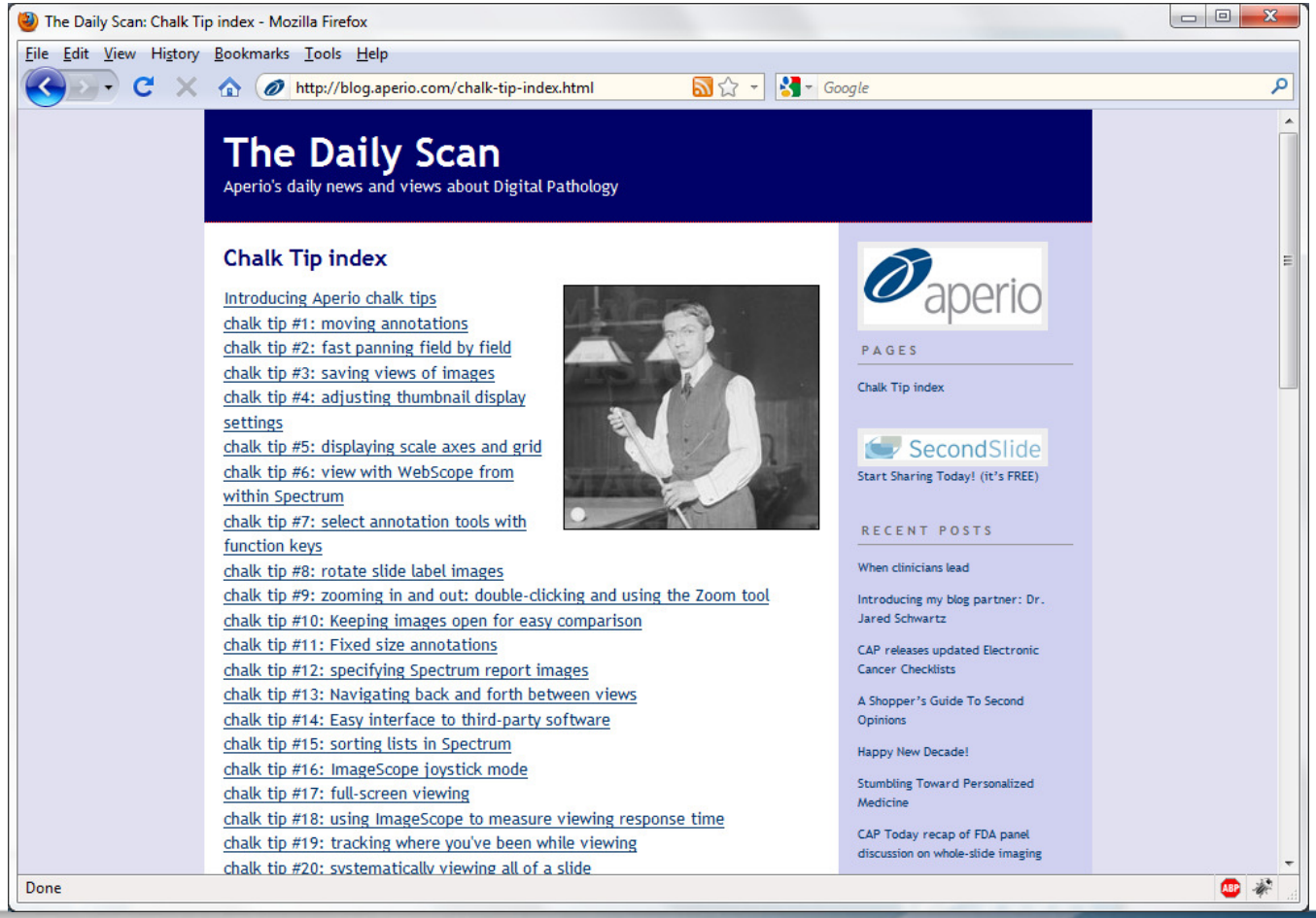
Tips and Tricks
The Daily Scan

blog.aperio.com



Tips and Tricks
Online "Chalk Tip Index"

http://blog.aperio.com/chalk-tip-index.html



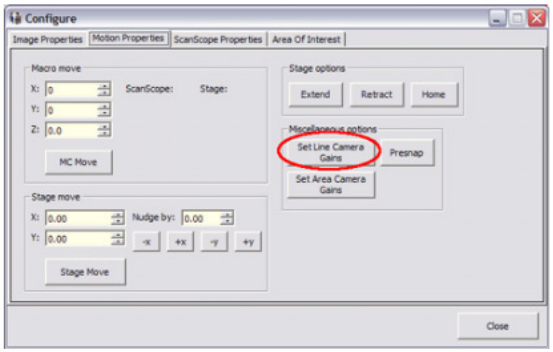
Tips and Tricks
Scanning with ScanScope

- #25: setting camera gains
- #27: scanning presnap calibration
- #28: improving focus point placement near tissue edges

Scanning with ScanScope
#25: setting camera gains

Did you know? **A wide range of scanning problems can be solved by setting the camera gains**. And this is easy to do:

1. In the ScanScope Console main window, navigate to the Start tab. Click "Manual Load".
2. Load a clean tissue slide into the slide tray (on CS systems) or onto the scanning stage (on XT systems).
3. Click "Manual Scan". The system will retract the stage and capture a macro image.
4. Navigate to the Tools menu at the top of the Console main window. Select Configure.
5. In the Configure window, click on the "Motion Properties" tab.
6. Click on "Set Line Camera Gains". The system will find the tissue on the slide and focus as if it's scanning the slide.



7. After the system finishes setting the camera gains, ensure the calibration image displayed is clean of dust/tissue and light grey in color. If the calibration image is dark or does not show correct color balance, the bulb may need to be replaced.

Simple, eh? Next time you're at a ScanScope, **please try it**.

BONUS TIP: One of the most popular scanning errors is: "Unable to obtain macro focus after 5 attempts". If you receive this error, try setting the camera gains as a way to address it.

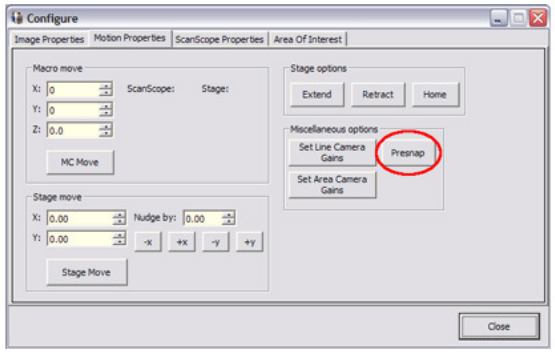
Scanning with ScanScope
#27: scanning presnap calibration

A ScanScope scanning tip: **What is a Presnap calibration and when should you do one**?

A Presnap is a "background only" image made from a clear glass slide which is subtracted out from the macro images of slides with tissue, resulting in uniform background lighting. Perform a Presnap calibration when you see the ScanScope select a scan region that is much larger (or smaller) than the tissue.

It is easy to do:

1. In the ScanScope Console main window, navigate to the Start tab. Click "Manual Load".
2. Load a clean, blank slide into the slide tray (on CS systems) or onto the scanning stage (on XT systems).
3. Click "Manual Scan". The system will retract the stage and capture a macro image.
4. Navigate to the Tools menu at the top of the Console main window. Select Configure.
5. In the Configure window, click on the "Motion Properties" tab.
6. Click on "Presnap". The system will acquire a background Presnap image.

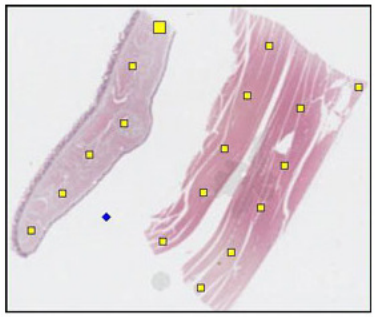


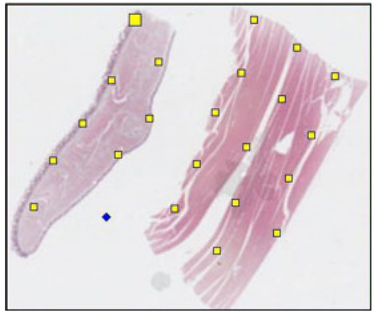
That's it! Now you can go ahead and scan slides with tissue and the tissue finding logic will work more accurately. Next time you're at a ScanScope, **please try it**.

Scanning with ScanScope
#28: improving focus at tissue edges

Greetings! - today brings another ScanScope scanning tip. You can **improve focus point placement on tissue edges** by setting the MacroFocusPointRadius parameter to a *negative* value.

The pictures at right show the difference in focus point placement on a small region of a specimen when the **MacroFocusPointRadius** parameter is changed. The picture on top has a setting of +60, you can see the focus points are away from the edges. The picture on the bottom has a setting of -60, which puts the focus points right on the edges.





If you find you want to change this value often for different kinds of slides, you can create a parameter set so you can easily toggle between values.

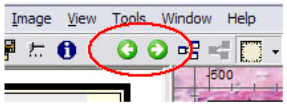
Happy scanning!

Navigation and Viewing

- #13: navigating back and forth between views
- #17: full-screen viewing
- #24: zooming while viewing slides
- #16: ImageScope joystick mode
- #23: viewing slides using a mouse
- #5: displaying scale axes and grid
- #8: rotate slide label images
- #21: rotating images while viewing
- #32: fun with the magnifier

Viewing with ImageScope and WebScope
#13: navigating back and forth between views

Did you know? **In ImageScope, you can easily move back and forward through every location you've viewed in a slide**. You might not have noticed, but on the ImageScope toolbar there are two green arrows; clicking them lets you navigate back and forth between views:

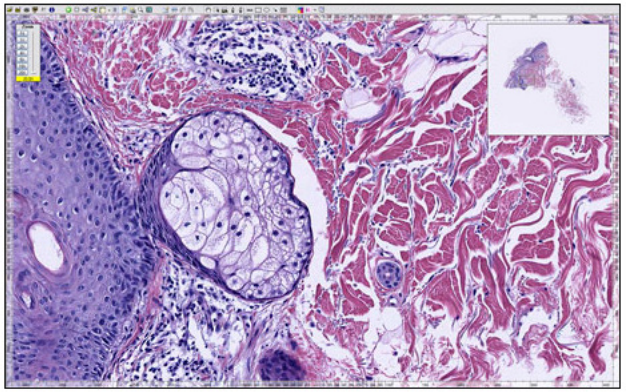


As you pan and zoom through each slide, the location and resolution of every view is recorded, so that you can page back and forth between them (just like the back and forward buttons in a web browser). This is pretty useful, please try it!

Viewing with ImageScope and WebScope
#17: full-screen viewing

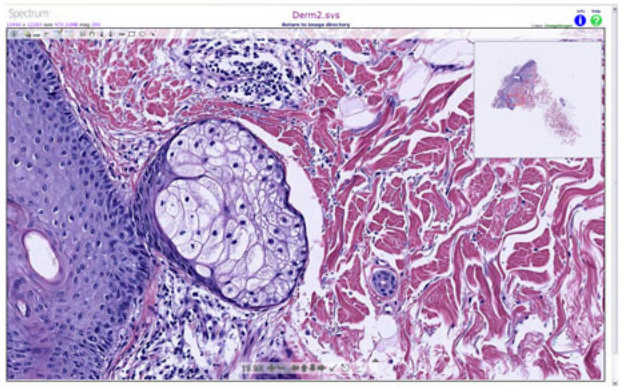
Today's chalk tip is simple but powerful: **Did you know with one key you can view digital slides full screen**? That one key is - ta da - F11.

In ImageScope, hitting F11 fills the entire screen with the currently viewed slide, leaving only a small toolbar across the top:



To exit Full Screen mode, just hit F11 again.

In WebScope, hitting F11 also fills the entire screen with the currently viewed slide, leaving only a little "trim" around the edges:



To exit Full Screen mode, just hit F11 again.

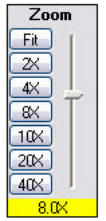
Viewing with ImageScope and WebScope
#24: zooming while viewing slides

In Chalk Tip #23, we talked about **navigating while viewing slides**. Now let's talk about different ways to zoom in and out.

Zooming in ImageScope

Mouse

- Roll the mouse wheel to zoom in and out.
- Drag the Zoom Slider (shown at right), or click on specific magnifications.
- Double-click to zoom all the way in, then zoom back out. (Chalk tip #9: zooming in and out)
- Use the Zoom Tool (Ctrl-Z). Once this tool is selected, click and drag to select a region of the image. Upon releasing the mouse, the window will be zoomed to contain the selected region. You can use the Zoom Tool in the thumbnail as well as the main image. (Chalk tip #9: zooming in and out)



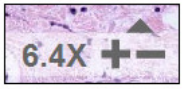
Keyboard

- Hit Ctrl-Plus to zoom in, Ctrl-Minus to zoom out.
- Ctrl-0: Fit, Ctrl-1: 100%, Ctrl-2: 50%, Ctrl-3: 25%, Ctrl-4: 20%, Ctrl-5: 10%, Ctrl-6: 5%. (same values as Zoom Slider buttons.)

Zooming in WebScope

Mouse

- Drag the zoom slider above the Toolbar (shown at right).
- Click on the Plus and Minus icons in the Toolbar.
- Double-click to zoom in.



Keyboard

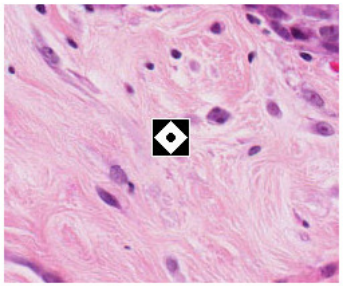
- Hit Plus to zoom in, Minus to zoom out.

There isn't one "best way" to zoom, like navigating, this is somewhat a matter of personal preference. I'm a fan of the double-click method and use Ctrl-Z to bring up the Zoom Tool a lot. But your mileage may vary, **please try these yourself!**

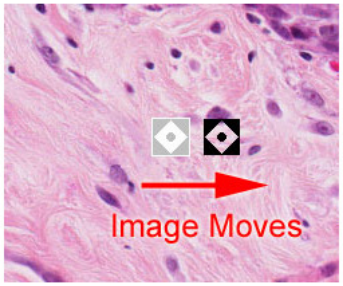
Happy zooming!

#16: ImageScope joystick mode

Did you know ImageScope **has a "joystick mode"**? Actually we call it "autopan", and it lets you use your mouse or trackpad as if it were a joystick for panning around within an image. Using it is simple; any time you have an image open, click the mouse wheel (or the center button of your trackpad). The mouse cursor will change into a little box, like this:



Now move your mouse (or brush your trackpad) in the direction you want to pan, as if it were a joystick, and the image will move in that direction:



The image will keep moving until you move your mouse (or brush your trackpad) back to the original position, *you do not have to keep moving your mouse*. You can change direction just by moving your mouse in a new direction. The further you move it, the faster the image will pan.

To exit joystick mode, just click the mouse wheel again (or the center button of your trackpad). Joystick mode is easier to use than to explain, so **please *try it***!

Viewing with ImageScope and WebScope
#23: viewing slides using a mouse

Today's tip is a little different; I want to talk about **viewing slides using a mouse**. People often say that *a mouse is the wrong tool for navigating through a digital slide*. This leads to discussions about alterative hardware devices for navigation such as joysticks, trackballs, tablets, touchscreens, etc., or more exotic devices such as 3D mice.

It might be that using a joystick, trackball, tablet, touchscreen, etc. would be better for certain users, and Aperio's ImageScope and **WebScope** viewing tools support all of these as "mouse replacements" pretty seamlessly. You can buy a third-party navigation device, plug it in, and poof! you can navigate through digital slides with it. ImageScope and WebScope leverage the common support for navigation devices provided by Windows and web browsers.

However... when people say *a mouse is the wrong tool for navigating through a slide*, what they really mean is that *dragging the image is the wrong way to navigate through a slide*. And this is undoubtedly true! Imagine trying to view a whole digital slide that way; click drag release move-back, click drag release move-back, click drag release move-back. My wrist hurts just typing those words!

Fortunately ImageScope provides many better ways to navigate, some of which were the subjects of previous Chalk Tips:

Mouse

- Move the mouse to an edge of the image; it will turn into an arrow, then click down to scroll the image.
- Drag the mouse over the thumbnail to move the current view.
- Use Autopan: your mouse becomes a joystick for panning around within an image. (chalk tip #16: ImageScope joystick mode).
- Click the Tracker's "Next Un-viewed Region" button to show the entire slide, view-by-view. (chalk tip #20: systematically viewing all of a slide).

Keyboard

- Use the Arrow keys to scroll the image.
- Hold down the Shift key while typing Arrows to move the image exactly one field. (chalk tip #2: fast panning field by field).

  (the combination of Arrow keys with Shift-Arrows is incredibly efficient, and does not require a mouse. **Try it**!)
- Hit the Space Bar as a shortcut for the Tracker's "Next Un-viewed Region" button. (chalk tip #20: systematically viewing all of a slide).

Each of these ways can be combined with the Tracker so you can see where you've been. (chalk tip #19: tracking where you've been while viewing).

Viewing with ImageScope and WebScope
#23: viewing slides using a mouse (cont)

WebScope also provides better ways to navigate:

Mouse

- Click the Arrow icons in the Toolbar to scroll the image.
- Drag the mouse over the thumbnail to move the current view.

Keyboard

- Use the Arrow keys to scroll the image.
- Hold down the Shift key while typing Arrows to move the image exactly one field.

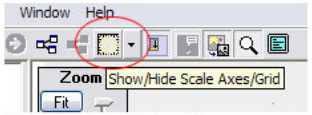
(the combination of Arrow keys with Shift-Arrows is incredibly efficient, and does not require a mouse.)

People always start by dragging the image for navigating; it is a natural thing to do (and it does work). But one or more of the techniques listed above are much more efficient for navigating. **Please try them yourself**! (Oh, and next time you hear someone comment that a mouse is the wrong tool for navigating through a slide, please suggest they try some of these other ways to navigate!)

Viewing with ImageScope and WebScope
#5: displaying scale axes and grid

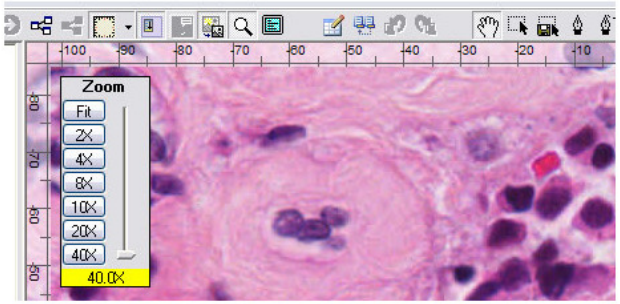
Did you know? **In ImageScope, you can display scale axes and/or a measurement grid overlaid on a digital slide image.**

To display axes, go to the ImageScope toolbar and click the show/hide scale axes button, which looks like this:



Click button to toggle axes

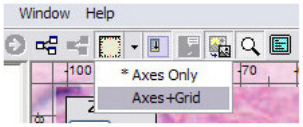
The translucent axes will be displayed around the outside of the window:



The scale of the axes is adjusted as the image is zoomed

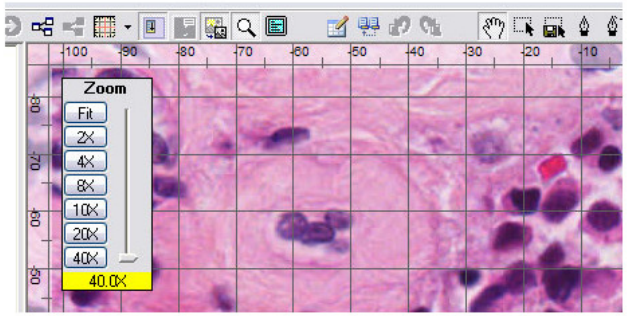
Viewing with ImageScope and WebScope
#5: displaying scale axes and grid (cont)

To display a measurement grid, select Axes+Grid from the toolbar button's drop-down menu:



Click button to toggle grid

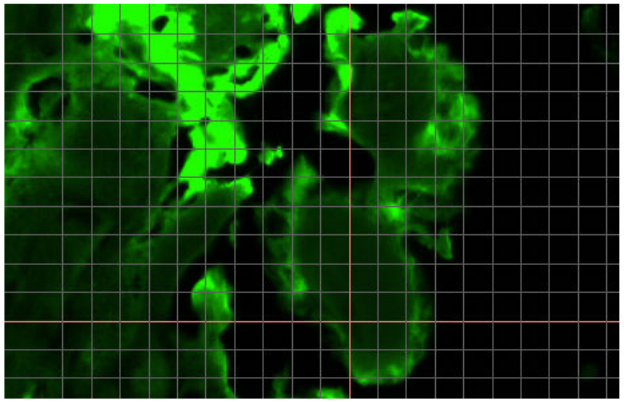
The measurement grid will be overlaid on the window:



The scale of the grid is adjusted as the image is zoomed

#5: displaying scale axes and grid (cont)

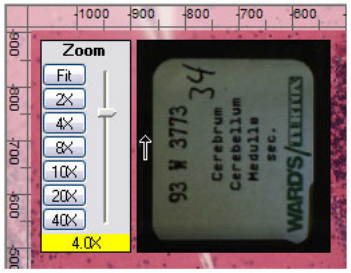
The grid also works beautifully for fluorescence images:



I find that I leave the axes enabled all the time - they're useful as well as looking cool :) - and I toggle the grid on whenever I need to estimate the size of objects on a slide.

Viewing with ImageScope and WebScope
#8: rotate slide label images

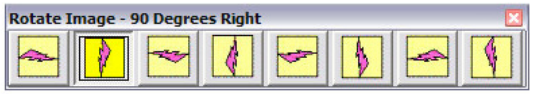
Did you know? **In ImageScope, you can rotate a slide label image by double-clicking on the edge which belongs on top.** When you position the mouse over an edge of the label, it will turn into an up arrow. Just double-click and the label will be rotated. ImageScope will remember this rotation since labels at a given site are usually oriented the same way. Try it!



Viewing with ImageScope and WebScope
#21: rotating images while viewing

Hi everyone - hope y'all had a great Fourth of July weekend, and celebrated with friends family fireworks BBQ suntan lotion etc. These "little tips" have been getting bigger, so today I'm going back to something dirt simple...

Did you know? ImageScope **lets you rotate an image while viewing it**. Just select Image | Rotate Image (or hit Ctrl-E) to display the Rotate Image toolbar:

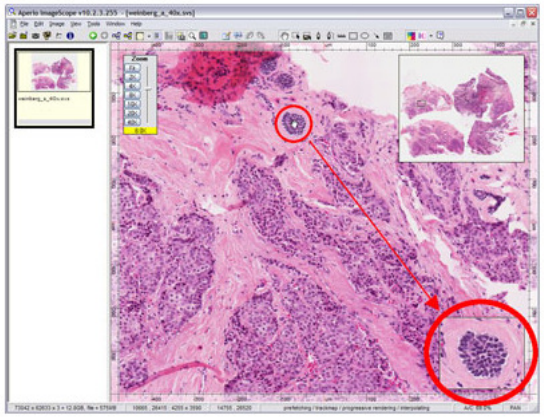


Now you can click on any of the buttons to rotate or flip the current image. That's it - ***please try it***!

Viewing with ImageScope and WebScope
#32: fun with the magnifier

For today's tip, we're going to have some **fun with the magnifier**.

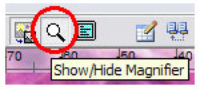
The magnifier is a cool feature of Aperio's ImageScope viewer, a small window drawn over the main window which "magnifies" a region of the image being viewed by 2X:



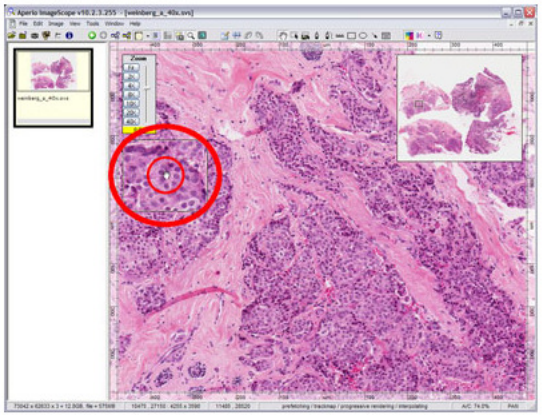
The magnifier always shows the region of the image under the mouse cursor. As you **move the mouse around over the image** the magnifier image is updated to match.

#32: fun with the magnifier (cont)

The magnifier is **toggled on/off** with the View | Magnifier command, or by clicking the toolbar icon shown at right.



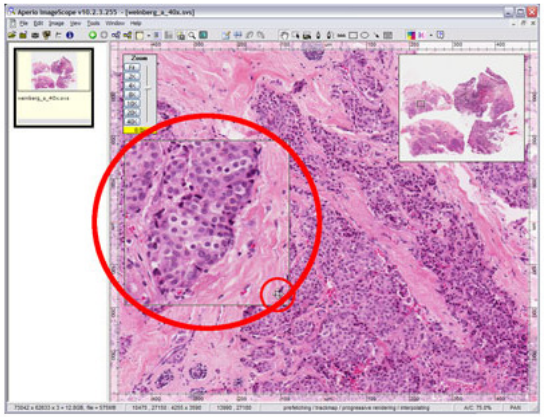
By default the magnifier is positioned at the lower right of an image, as shown above. However, **the magnifier window may be *dragged*** anywhere you like, like this:



If you try this, you'll notice that as you're dragging the magnifier, it magnifies the part of the image it is floating over. So **you can move the magnifier around over the image**, just like a magnifying glass.

Viewing with ImageScope and WebScope
#32: fun with the magnifier (cont)

Finally, **the magnifier window can be resized**. Just position the cursor over the lower right corner, and it will turn into a crosshair; then you can drag the corner to resize the magnifier:



After resizing, you can again move the cursor around over the image to magnify different parts of the image. Or you can drag the resized window over the image to magnify the part of the image it is floating over.

The magnifier is a useful and efficient way to inspect digital slides… **please try it**!

Annotations

- #1: moving annotations
- #7: select annotation tools with function keys
- #11: fixed size annotations

Viewing with ImageScope and WebScope
#1: moving annotations

Did you know: **In ImageScope, you can move any annotation by holding down the Ctrl key and dragging it.**

Viewing with ImageScope and WebScope
#7: select annotation tools with func keys

Did you know? **In ImageScope, function keys F2 - F7 select annotation drawing tools, so you don't have to move your mouse up to the toolbar!**

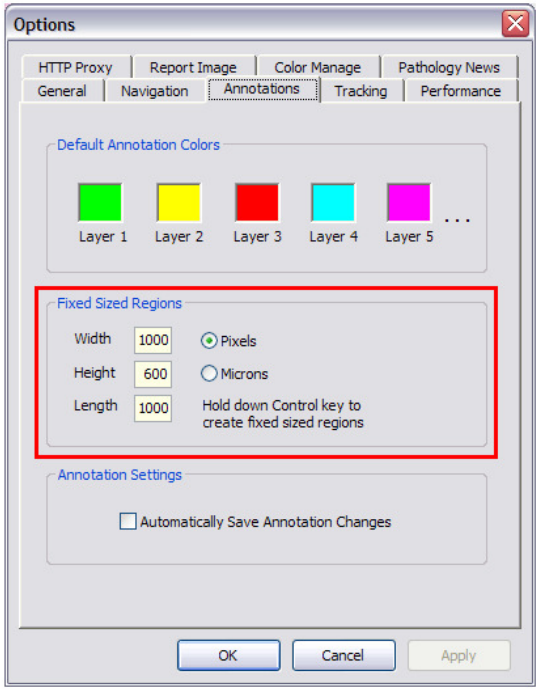
There's a positional correspondence between function keys and toolbar icons:

Makes it easy to draw an annotation, then another, then another... try it!

Viewing with ImageScope and WebScope
#11: fixed size annotations

Did you know? **In ImageScope, you can hold down the Ctrl key to create fixed-size annotations**. Select any annotation tool from the toolbar or with a function key (tip #8), then hold down the Ctrl key while clicking - a fixed-size annotation will be drawn. Hold down the mouse to drag the annotation around and position it. Try it!

You can specify the size of fixed size annotations by selecting Tools | Options | Annotations:



The Width and Height are used to determine the dimensions of rectangles and ovals, and the Length is used to determine the size of rulers and arrows. You can specify the size using pixels or microns by clicking the corresponding button. Whatever you enter will be remembered until you change it again.

Okay, so that's cool, but guess what? **You can hold down the Ctrl key to specify fixed-size zoom rectangles** (tip #9). If you select the zoom tool (toolbar or Ctrl-Z) and then hold down the Ctrl key while clicking, the zoom area will be the same fixed size.

And here's the coolest thing of all - **you can hold down the Ctrl key to specify fixed-size image extract regions**! If you select the extract tool and hold down the Ctrl key while clicking, the image extract area will be the same fixed size. Try it!

Other Cool Features

- #3: saving views of images
- #33: bookmarking digital slide views
- #26: copying an image view to the clipboard
- #19: tracking where you've been while viewing
- #20: systematically viewing all of a slide

Viewing with ImageScope and WebScope
#3: saving views of images

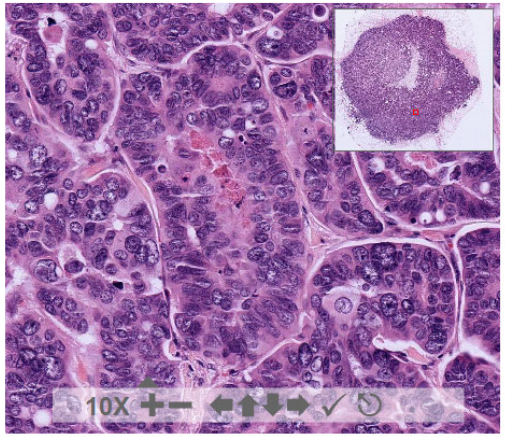
Did you know? **In ImageScope, you can save exact views of one or more images, and restore them later.**

Open one or more images and position them the way you want, by panning and zooming each to the desired view. Then select File | Save Image View(s)... and name a file to contain the views. This will create a small file of type SIS (= "ScanScope Image Set"). To restore the views later, just double-click the SIS file! The images will be opened and their views restored to exactly the positions and zoom levels you had saved. Even the window configuration (e.g. tiled vertical) is restored. Try it!

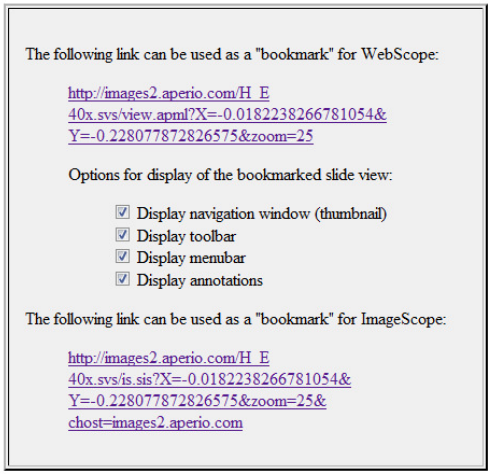
NB this is great for preparing for tumor boards and digital slide conferences.

Viewing with ImageScope and WebScope
#33: bookmarking digital slide views

Today's tip is simple and useful: did you know, **you can easily bookmark digital slide views**? Yes, indeed, any view of a digital slide can easily be saved as a URL bookmark. Here's a digital slide we can use as an example:



Position the slide to the view you want, and then click the checkmark on the toolbar. This opens a new window which has exactly the URL needed to bookmark this view, like this:


The following link can be used as a "bookmark" for WebScope:

http://images2.aperio.com/H_E 40x.svs/view.apml?X=-0.0182238266781054& Y=-0.228077872826575&zoom=25

Options for display of the bookmarked slide view:

- ☑ Display navigation window (thumbnail)
- ☑ Display toolbar
- ☑ Display menubar
- ☑ Display annotations

The following link can be used as a "bookmark" for ImageScope:

http://images2.aperio.com/H_E 40x.svs/is.sis?X=-0.0182238266781054& Y=-0.228077872826575&zoom=25& chost=images2.aperio.com

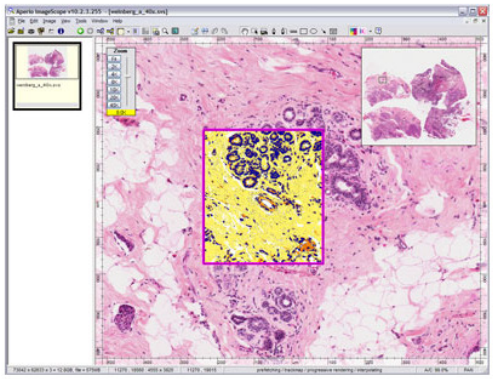
Go ahead and click the link, it works!

Viewing with ImageScope and WebScope
#26: copying a view to the clipboard

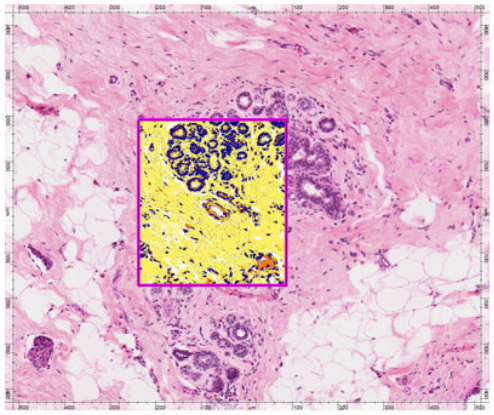
Did you know? **In ImageScope, you can easily copy the current view of an image to the clipboard with Ctrl-C**. From there you can paste it into a Word document, PowerPoint presentation, image editing software, an email, etc. (even include it in a blog post :)

The copied image view will include any visible annotations, including algorithm markup images, but will not include the ImageScope window or controls like the Zoom Slider, Thumbnail, Magnifier, etc.

Here's the whole ImageScope window:



And here's the image view, as copied to the clipboard:



Pretty cool, eh?

Viewing with ImageScope and WebScope
#19: tracking while viewing

Did you know? **ImageScope lets you track where you've been while viewing a digital slide**! This is one of the cooler features in a pretty cool application, and it demos rather well. Here's how you use it, and what it does:

1. Open a digital slide (either from within Spectrum, or a local file).

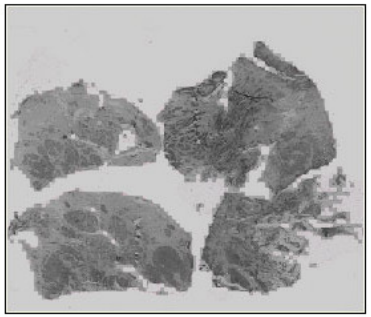
2. Select View | Tracker to enable the Tracker toolbar. It looks like this:

{**Sub-tip**: like all ImageScope tool windows, the Tracker remembers whether it is visible and where you last put it. Feel free to move it to a convenient edge or corner...}

3. Click the red Record button on the Tracker, and poof! you are now recording where you've been!

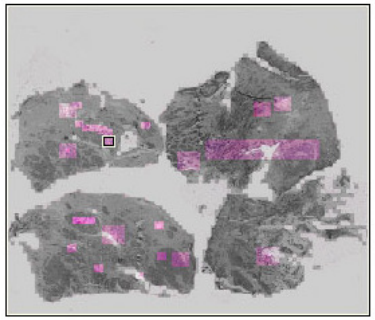
You can click the black Stop button on the Tracker to stop recording at any time.

You will notice that the thumbnail image has changed into a grayscale image, with all the tissue areas of the slide colored dark gray, and all the glass areas a lighter gray. The thumbnail is displaying a Map of all the places you've viewed on the slide. It will look something like this:



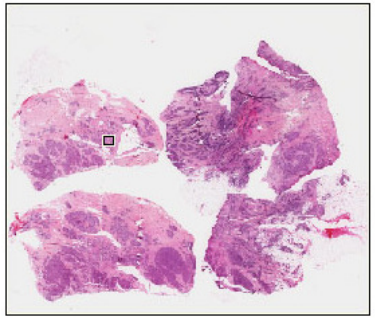
#19: tracking while viewing (cont)

As you navigate, the gray will be replaced by colored areas representing the portions of the slide which have been viewed, kind of like cleaning dirt from a window. For example, here's what the Map will look like after a little panning and zooming:



{**Sub-tip**: you can make the thumbnail bigger by dragging its lower left corner.}

Each of the colored areas represents an area of the slide which has been viewed. The intensity of the color is proportional to the zoom at which each area was viewed - the more zoomed in, the brighter the colors. You can turn off the Tracking Map by un-checking the Map checkbox to display the normal thumbnail:



There is a lot more to be said about Tracking - it is a pretty powerful feature - but that's it for today. **Please try it**, it is even easier to use than to explain :)

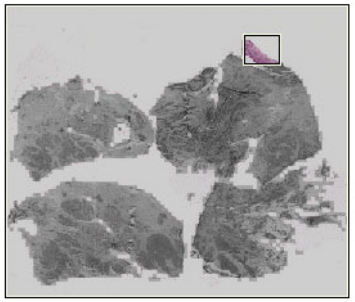
Viewing with ImageScope and WebScope
#20: systematically viewing a slide

In tip #19 we talked about tracking where you've been while viewing, but did you know? **You can use ImageScope's Tracker feature to systematically view all of a slide**. Here's how:

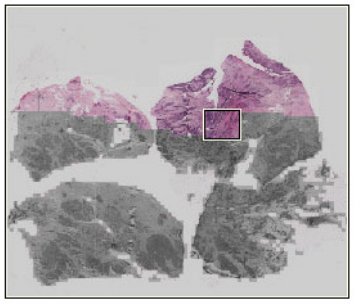
1. Open a digital slide, select View | Tracker, and click the red Record button to start Tracking. See tip #19 for details.
2. At the right side of the Tracker, there is a green arrow labeled "Next Un-viewed Region".

Just keep clicking this button and ImageScope will show you the entire slide, view-by-view.

Each time you click the green arrow, ImageScope will take you to the next un-viewed region of the slide, starting at the top of the tissue area and navigating through the slide in a Z-pattern (pretty much the way you would read a book, going across each row and then down to the next one).

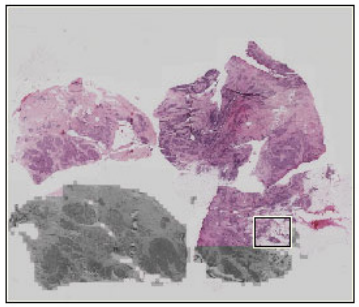


As you view regions, the thumbnail will be updated to show you where you've been and the location of your current view.

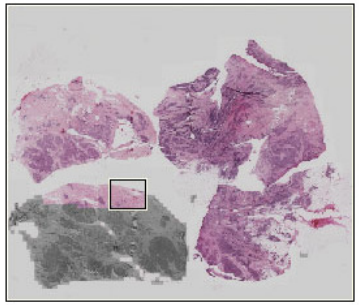


Viewing with ImageScope and WebScope
#20: systematically viewing a slide (cont)

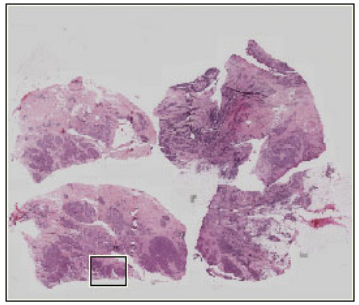
The Tracker will skip "glass" areas and each view slightly overlaps the adjoining views, so you won't miss anything.



If the sample has multiple parts, each section of tissue is navigated completely before moving on to the next section.

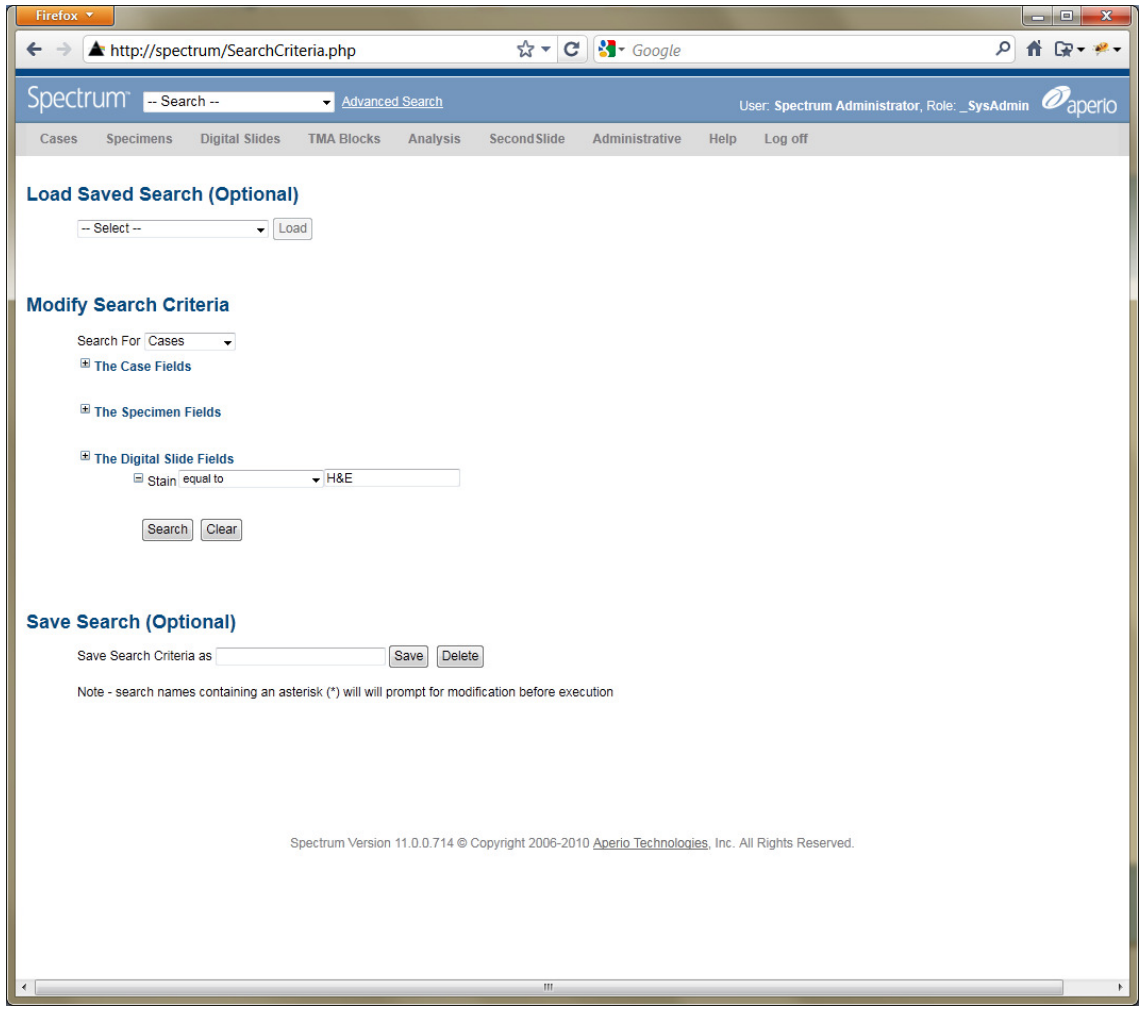


When all regions of the slide have been viewed, ImageScope will reward you with a little beep. You're done :)

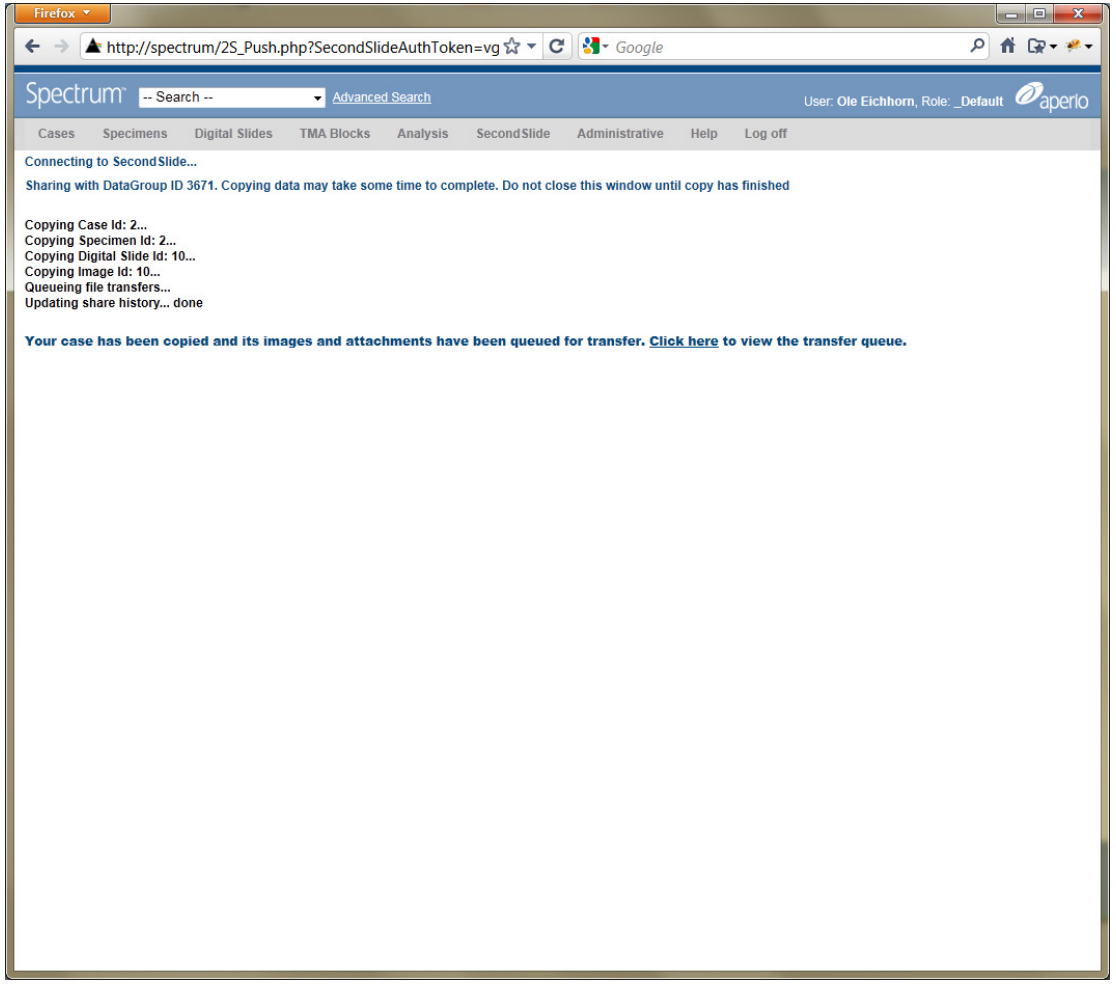


Spectrum R11
Search

Spectrum R11
Search



SecondSlide
Sharing a case



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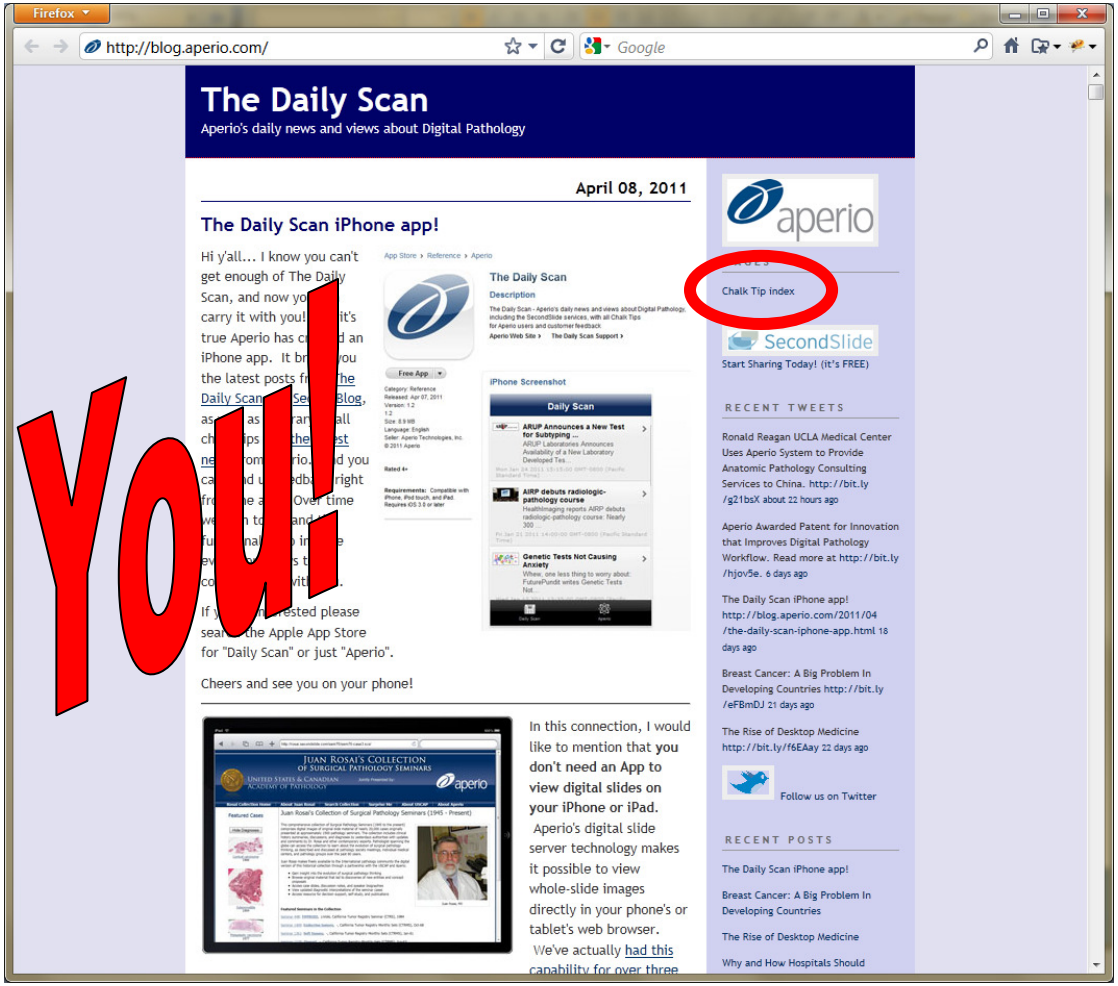

Thank You!