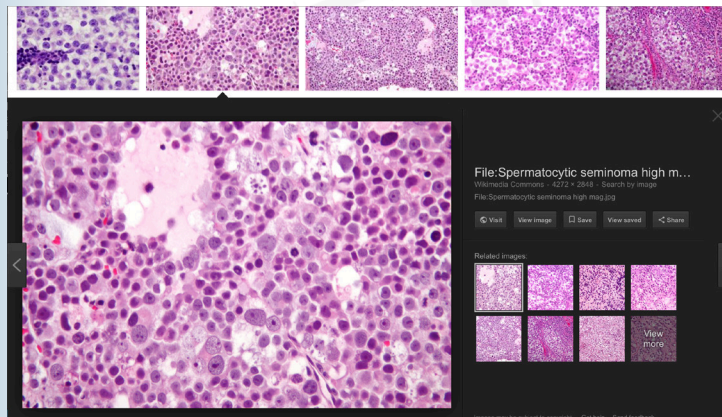


THE ACQUISITION AND USE OF WEB IMAGES FOR ABPATH EXAMINATIONS



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Introduction

When writing questions for ABPath, it is always better to include an image rather than a pure text question. Images form the basis of the practical exams. Getting good images can be difficult and sometimes you may have a great idea for a question but just don't have access to a glass slide to photograph. The purpose of this paper is to cover ways to safely appropriate images from the web.

There are two methods discussed. The first uses whole slide image repositories to find a virtual glass slide that can then be used to take a screen shot of region of interest. The second is to search the web for static images that are either in the public domain or have usage rights that only require attribution.

Suggestions and improvements to this document are always welcome.

Executive Summary

There are two ways to get images from the web to use in ABPath questions.

Option 1: Whole Slide Images

There are many websites that contain virtual slide pathology files. One of the easiest to use is PathPresenter.net. Here are the steps:

1. Log in (free account)
2. Click on Slide Library
3. Perform a search
4. Manipulate the whole slide image to find a region of interest
5. Click on the Camera icon to save the field of view to the desktop

Option 2: Google (or Bing) Image Search

The web has millions of pathology images but many are copyright protected. Google and Bing allow you to display only images that are either in the public domain or can be used without royalties (ie., free use). In the latter instance, attribution may have to be given. The instructions below are for Google.

1. Do an image search
2. Click on the *Tools* button
3. Click on the *Usage Rights* drop down menu
4. Select *Labeled for Reuse with modification*
5. Click on an image from the filtered list to enlarge it and show image info
6. Drag the image to the desktop to save it
7. Go to the image website and get the attribution requirements (if any)
8. If attribution is required, add it to the references field in the item bank

Note: In most instances, the images will be from Wikimedia/WikiCommons, Flickr, or other image-sharing site. WikiCommons will list the specific attribution required. A typical example would be: *Copyright ©Jack Jones / CC-BY-SA-3.0*

Resize and/or Reformat the Image

WDS requires images be in jpeg format and no larger than 5000 x 5000 pixels. A resolution of 72 ppi (or slightly higher, up to 180 ppi) is best. Use the *Preview* app on the Macintosh or *Paint* on a Windows PC to change the format to jpeg, if needed and to adjust the image size.

Part 1: Using Whole Slide Image Repositories

An excellent option for creating images is to use any of the whole slide image repositories on the web.

In this scenario, a virtual slide displaying the requisite diagnostic features is used for a screen capture. Some of the whole slide image viewers have image capture built in but if not, a simple screen shot of the area of interest will be almost as good.

PathPresenter is one such site and the following pages walk you through the procedure for finding a suitable virtual slide, zooming into an area of interest, and then grabbing a screen shot. Several other whole slide image repositories are listed at the end of this section.

Please keep in mind that not all these sites have been curated by experts, so some diagnoses may be erroneous.

One advantage of using a virtual slide as the basis for capturing a field of interest is that there are no copyright issues to contend with. The whole slide image files themselves may be subject to licensing but zooming into an area of interest and capturing a static image is analogous to taking a photomicrograph of a glass slide. Attribution is not required.



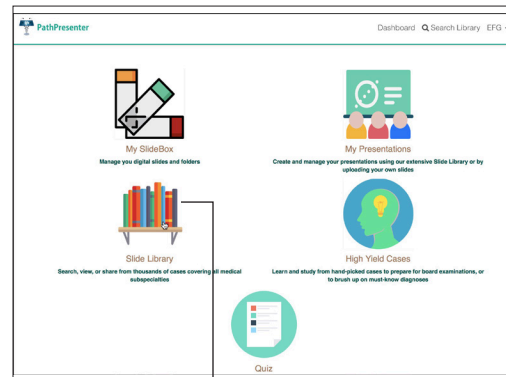
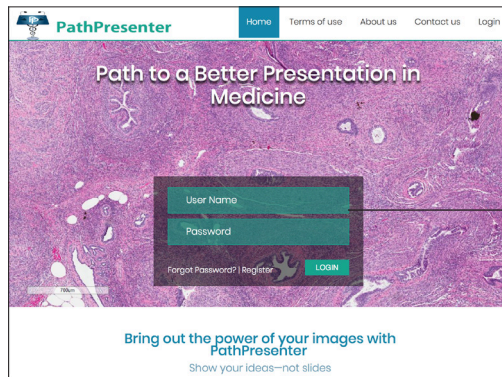
1. Capture Images from PathPresenter

This site was developed by Rajendra Singh, Associate Director of Dermatopathology at Mt. Sinai School of Medicine in New York City. It contains thousands of whole slide images from many organ systems. Most are of excellent quality but be sure to review for accuracy.

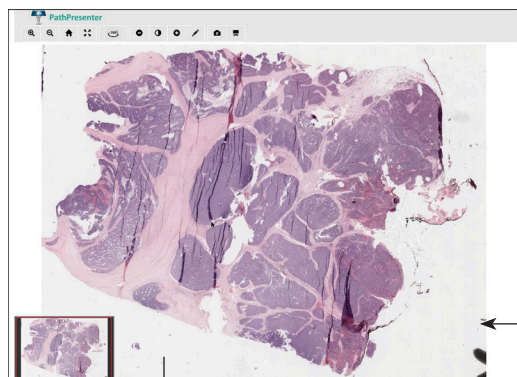
Go to **PathPresenter.net**

Create a free account if this is the first time you are accessing the site.

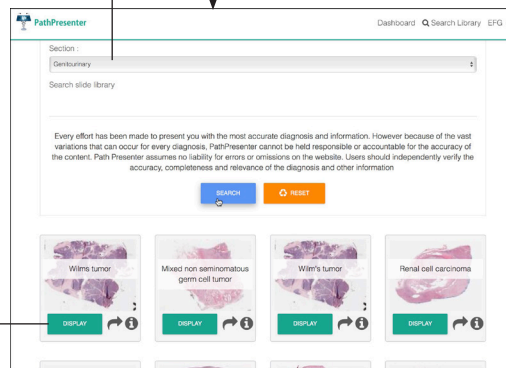
Click on **Slide Library** to search for a whole slide image.



select an organ system



Click and hold the mouse button to move around the image. Zoom in and out with the scroll wheel or use the navigation bar.



Scroll to an image you want to capture. Click the **Info icon** to see details of the case. Click the **Display** button to open the whole slide image.

Toggle the tracker thumbnail on and off

Camera tool

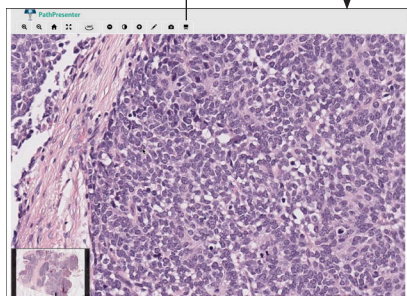
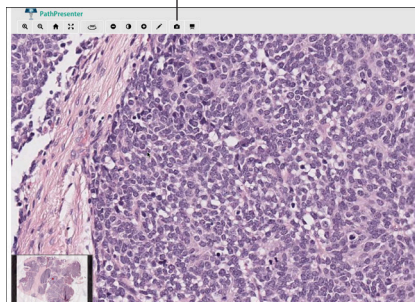
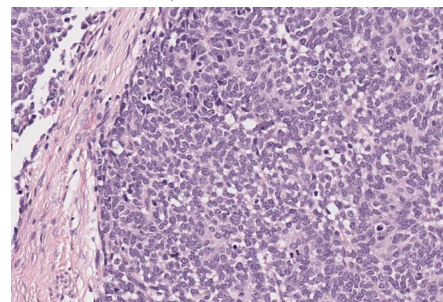


image tracker thumbnail



Find a region of interest and capture it using your computer's built in screen capture software or click on the camera icon which will save the current view to your desktop.



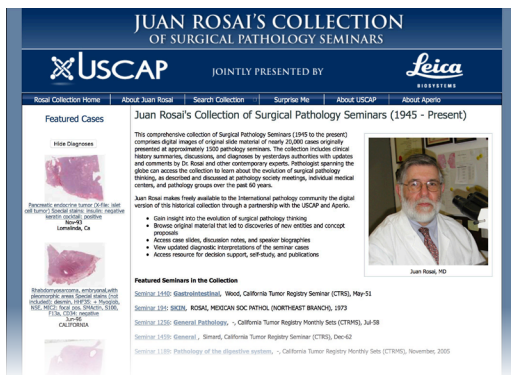
captured image

2. Other Whole Slide Image Repositories

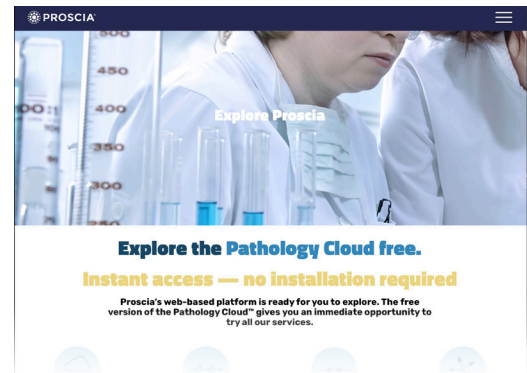
Besides PathPresenter, there are a number of very good whole slide image repositories on the web. Some are behind academic firewalls but others are freely accessible. A good starting point is found on the Digital Pathology Association's website:

<https://digitalpathologyassociation.org/whole-slide-imaging-repository>

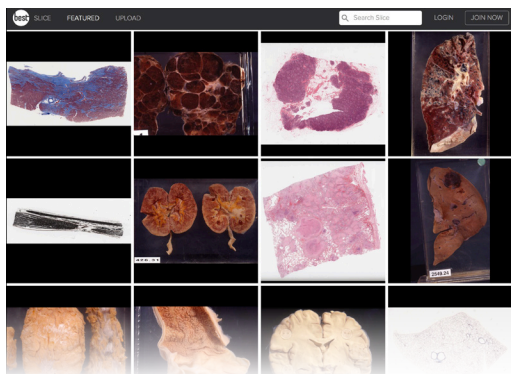
Note that creating static images from whole slide images does not require attribution because of the derivative nature of the process—it is similar to photomicroscopy of a glass slide. Attribution is only needed if a link to the whole slide image is used by ABPath.



<http://www.rosaicollection.org>



<https://proscia.com/explore>



<https://www.best.edu.au/s/featured>



<http://www.virtualpathology.leeds.ac.uk>

Part 2: Searching for Static Web Images

Introduction

Finding images on the web is not a problem but filtering those images so that only specific ones are displayed requires advanced search techniques. This section of the document discusses how to find an image that is free to use without copyright restrictions and how to properly attribute it (if required).

Image search can be done using Google or Bing but this document will focus primarily on a Google search.

Advanced Search Criteria

When you do a Google Search, you can filter your results to find images, videos, or text that you have permission to use. This is done with an Advanced Search filter called “usage rights” that lets you know when you can use, share, or modify something you find Online.

Until a few years ago, the Advanced Search filter (found under the Settings button) was the only way to apply specific search criteria to a set of images, such as size, color, type and—most importantly for this discussion—usage rights. Google added a shortcut so that it is easier to apply usage rights search criteria. This is discussed on page 10.

Search Tips

Most people just type in a few search words to initiate a Google search but there are specific symbols or words you can add to your search terms to make the results more precise.

Google Search usually ignores punctuation that isn't part of a search operator. Specific operators that can be used are quotes, minus, plus, and asterisk, as follows:

To search for an exact match, put a word or phrase inside quotes. For example, “spermatocytic seminoma”.

To exclude words from your search, put a minus (-) in front of a word you want to leave out. For example, in a search for lymphomas, to eliminate images of Hodgkin lymphoma use: *lymphoma -Hodgkin*.

To search for wildcards or unknown words, put a * in your word or phrase where you want to leave a placeholder. For example, “largest * in the world”.

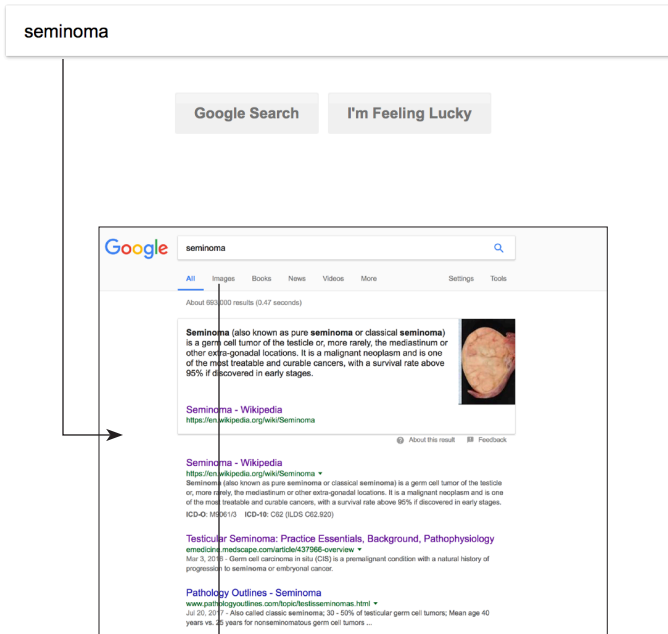
To combine searches, put “OR” between each search query. For example, *CK7 OR CK20 positive tumors*. You can also add “AND” to give a narrower search that includes multiple terms.

1. Initiate a Search

Enter the search term into the dialog box on the **Google Images page** (<https://images.google.com>), or just use Google's default search page. If you use the default search page, you will have to then click on the **Images** link in the top menu bar, just beneath the search box.

<http://www.google.com>

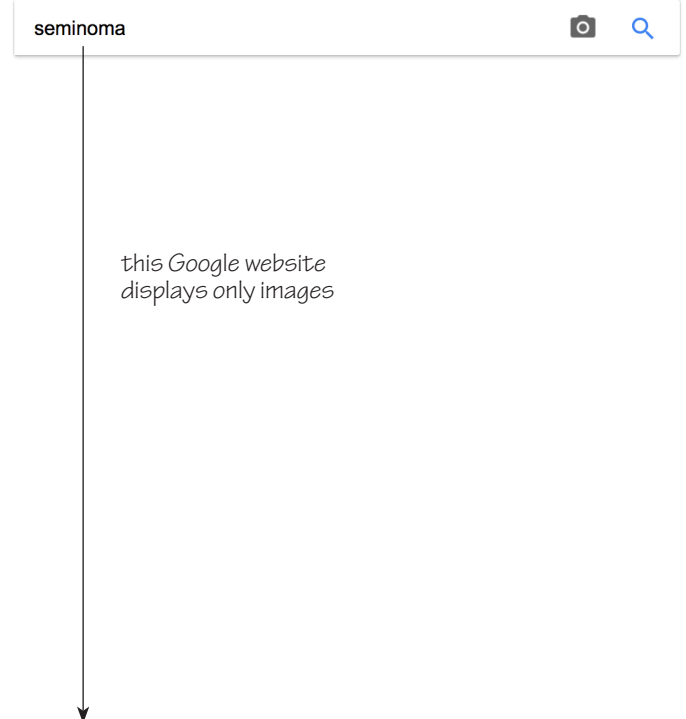
Google



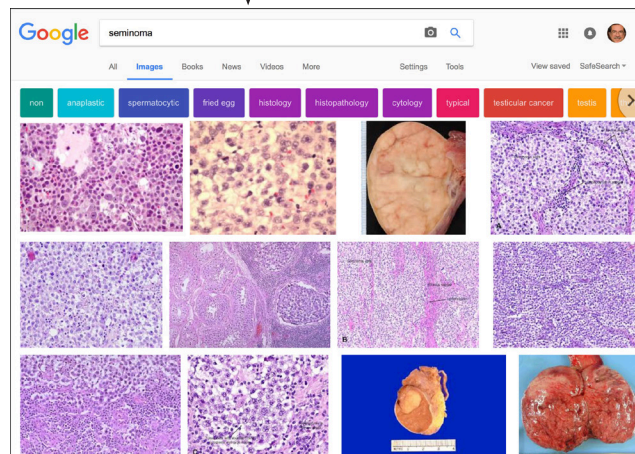
click on the **Images** button to view thumbnails after a search which starts at the Google default page

<https://images.google.com>

Google
Images



this Google website displays only images



2. Filter the Images by Usage Rights

Click on the Search tools menu and then select the drop-down menu for Usage Rights. That menu offers five choices:

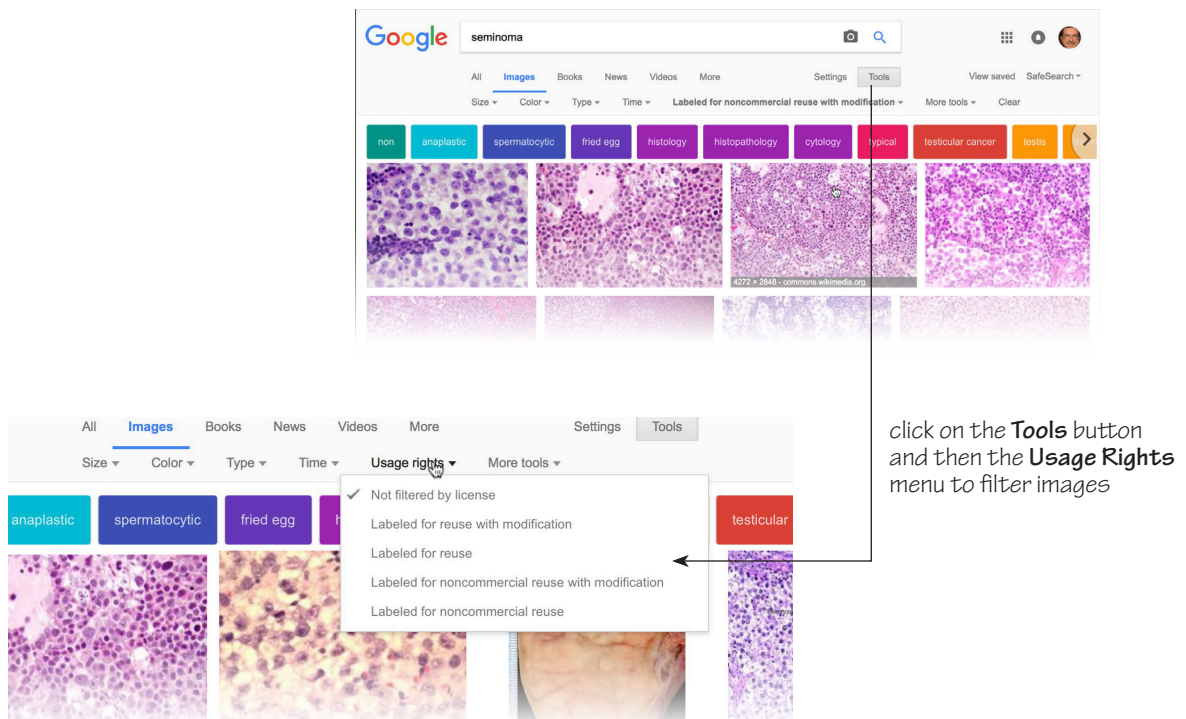
- Not filtered by license
- **Labeled for reuse with modification**
- **Labeled for reuse**
- **Labeled for non-commercial reuse with modification**
- **Labeled for non-commercial reuse**

Select an option and the page refreshes to include only those images flagged with the associated usage rights.

The images on the page are typically ones licensed by Creative Commons or GNU Free Documentation, or are items in the public domain.

The *Not filtered by license* choice displays all the images. The *Labeled for reuse* option allows you to use the image for commercial and non-commercial purposes as specified in the license. The *labeled for reuse with modification* option grants you the ability to alter the image (add annotations).

For CertLink purposes, the safest choice is to use images designated as *Labeled for reuse with modification*. This allows you to add text, arrows, or other annotations to the image.



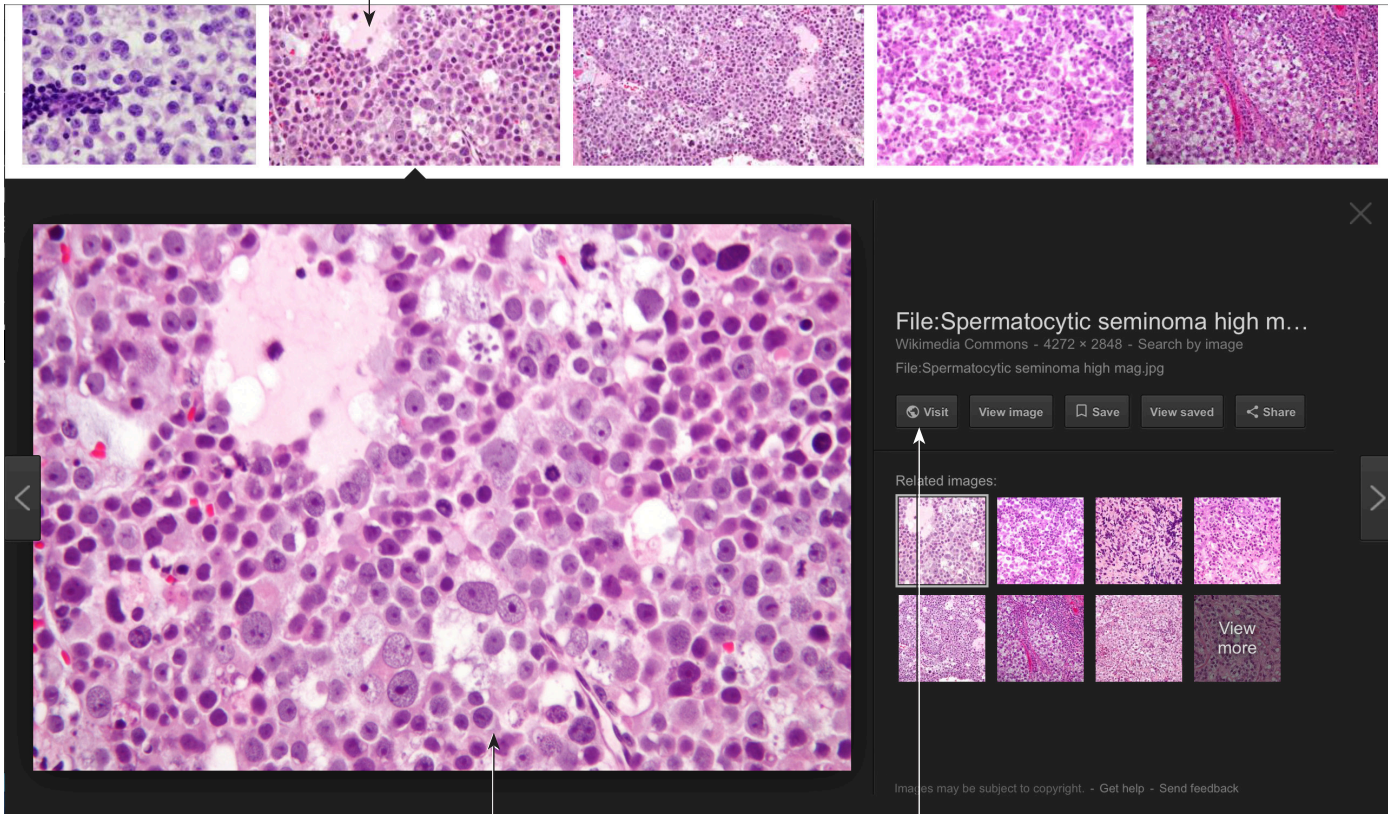
3. Select an Image and Download It

Click on an image to enlarge it. You can see specific information about the image, such as its size, type (jpg, png, tif, gif, etc.) and where the image can be found on the web.

Click on the View Image button to enlarge the image even more. You can then drag it to your desktop to save it or you can also drag the enlarged image from the image detail page. Do not drag the thumb nail image because the resolution is too low.

Finally, click on the Visit button to go to the website that is hosting the image. Most of the images will be on the Wikimedia Commons site but some will be from Flickr or other image hosting website.

click on a thumbnail to enlarge the image



drag the image to your desktop to save it

click on the image to go to the hosting website or use the **Visit** button

visit the web page to view the licensing rights

4. Determine Image Rights and Attribution

Because you selected the image filter to show only images that can be used for both commercial and non-commercial use (*labeled for reuse with modification*), the web page displaying the image will usually indicate what the usage-rights are. In most cases, the images will have a Creative Commons license.

Other web pages may have a link to the license information. It is important to review the specifics of the license so that you do not violate the intended use.

On the Creative Commons Wikimedia page, the specific image rights are in the Licensing section.

Verify that the image is free to share and change (if you plan to add text or any other annotation).

The image may require attribution. In that case, follow the guidelines shown. In most cases, that means indicating who provided the photograph.


When used for CertLink, for example, this information can be inserted after the reference. Here is an example attribution for this seminoma image:

Image Copyright © 2011 Michael Bonert / CC-BY-SA-3.0 / via Wikimedia

or

Image Copyright © 2011 Michael Bonert (<https://commons.wikimedia.org/wiki/User:Nephron>). CC BY-SA 3.0 (<https://creativecommons.org/licenses/by-sa/3.0/legalcode>).

The next page discusses image attribution in more detail.



WIKIMEDIA COMMONS

Main page
Welcome
Community portal
Village pump
Help center

Language select
English EN
Select

Participate
Upload file
Recent changes
Latest files
Random file
Contact us

Print/export
Download as PDF

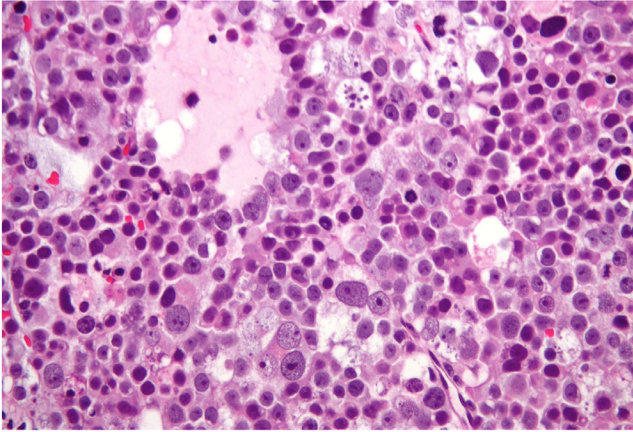
Tools
What links here
Related changes
Special pages
Permanent link
Page information
Cite this page

File
Discussion
View
Edit
History
Search Wikimedia Commons

File:Spermatocytic seminoma high mag.jpg

From Wikimedia Commons, the free media repository

File
File history
File usage on Commons
File usage on other wikis
Metadata



Size of this preview: 800 × 533 pixels. Other resolutions: 320 × 213 pixels | 640 × 427 pixels | 1,024 × 683 pixels | 1,280 × 853 pixels | 4,272 × 2,848 pixels.
Original file (4,272 × 2,848 pixels, file size: 3.75 MB, MIME type: image/jpeg); ZoomViewer: flash/no flash

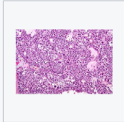
Summary [edit]

Description **English:** Micrograph of a spermatocytic seminoma. H&E stain.

Features of spermatocytic seminoma:

- Population of three cells.
 1. Small cells (6-8 μm) - with a large NC ratio.
 - Look like secondary spermatocytes.
 2. Medium cells (15-18 μm) with prominent nucleoli.
 - Filamentous chromatin (AKA *spireme chromatin*).
 3. Large cells (50-100 μm).
 - Filamentous chromatin.
- Mucoid lakes.
- Intratubular spread (not seen on this image).

Related images



Intermed. mag.

Date	
Source	Own work
Author	Nephron

Licensing [edit]

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- some licenses require that the specific license be identified when reusing (including, in some cases, stating or linking to the terms of the license)
- some licenses require that if you modify the work, your modifications must also be similarly freely licensed (i.e., you cannot be more restrictive than the original image)

The author may give specific verbiage for the attribution. If not, the simplified attribution shown below is acceptable:

Image Copyright © 2011 Michael Bonert / CC-BY-SA-3.0 / via WikiMedia

The **CC** means Creative Commons licensure (version 3.0 in this case). **BY** means give attribution. The **SA** means “share alike.” This indicates that others can remix, tweak, and build upon the author’s work even for commercial purposes, as long as they credit the author and license their new creations under the identical terms.

The *CC-BY-SA* designation is the license used by Wikipedia / WikiMedia.

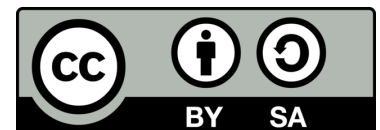
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GNU Free Documentation
logo



Creative Commons logo



License type (CC-BY-SA)

Part 3: Adjusting Images to ABPath Specifications and How to Take a Screenshot and Save it as a JPEG

Introduction: Image Size and Resolution

In the previous sections, images were captured from a whole slide image or were downloaded from the web after an image search. These images may need to be adjusted to conform to the requirements of the ABPath item database vendor, WDS.

WDS requires that all images uploaded to the item database are in jpeg format and are no larger than 5000 x 5000 pixels. When downloading an image from the web, in general it is best to err on the side of using a large image so that as much detail as possible is preserved.

Besides pixel dimensions, images also have resolution (pixels per inch). The usual resolution for web images is 72 ppi. Such images will look fine on a computer screen but will be jagged when printed on paper— closer to 300 ppi is needed for a crisp printed image. For ABPath purposes, 72 ppi is fine or slightly larger (120 ppi).

For purposes of images used by ABPath for items, an image size no greater than 5000 x 5000 pixels and a resolution of at least 72 ppi is preferred. Note that higher resolutions images will take longer to load which may cause anxiety among our diplomates.

Image types

Regarding image type, there are 5 main formats: tiff, jpeg, png, gif, and raw. Most web graphics are jpegs and png files.

JPEG files are images that have been compressed to store a lot of information in a small-size file. A JPEG is compressed in a way that loses some of the image detail during the compression in order to make the file small (so called “lossy” compression). Each time an image is saved, a small amount of data is thrown away. Repeated compressions (saving a file multiple times) will degrade jpeg images.

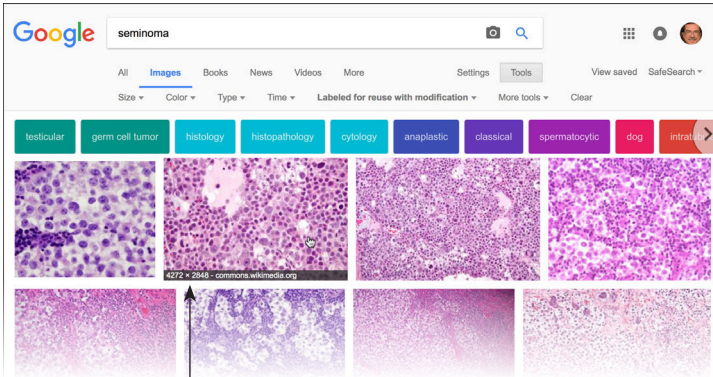
The png format is a “lossy” compression format but file sizes are larger than jpegs. The reason png files are used so widely on the web is that they can have transparency (no white background) and also they handle text much better than jpegs.

Tiff images are lossless, so repeatedly saving the image does not result in any degradation but the file size will be larger than either jpegs or png files.

There are many software programs that can perform the functions of resizing and reformatting but two especially stand out because they are free and are part of a normal software installation: Microsoft’s **Paint** and Mac OS **Preview**. The following pages explain how to use these programs.

1. Resize and Reformat the Image

WDS requires images be in the jpeg format and no larger than 5000x5000 pixels. The images you download from the web or screen capture from virtual images are quite variable in size and may need to be adjusted. Try to keep the image size close to the maximum because smaller images will be blurry or pixelated when diplomates try to zoom in for a closer look.

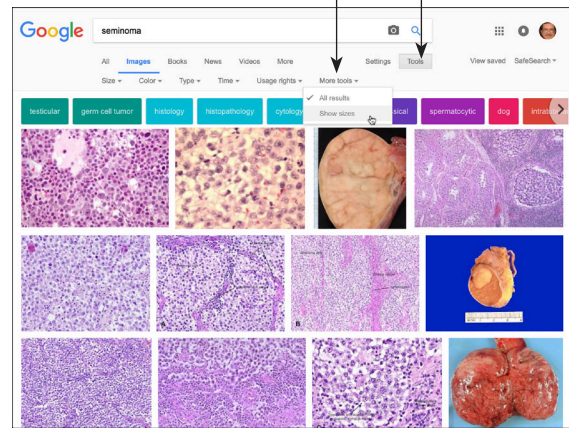


when the cursor hovers over an image, a banner at the bottom shows the image size and sometimes the web location

You can see the image size when the cursor hovers over an image, as shown on the left.

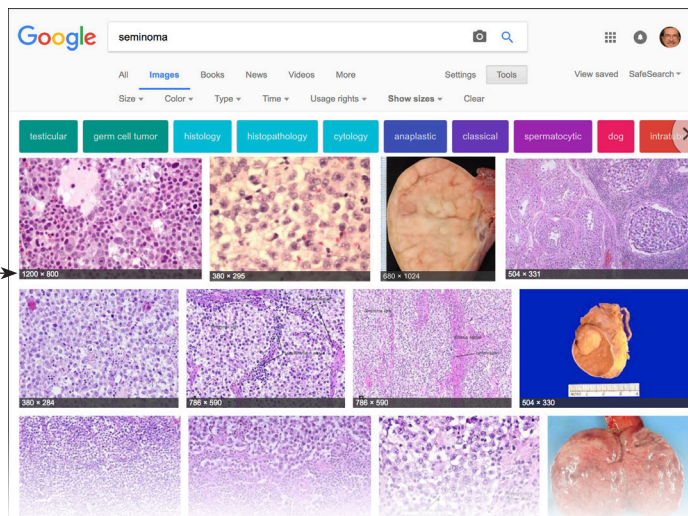
When selecting an image, give preference to larger image files. You can always down-size the image to 5000 x 5000 (see next page).

click on the **Tools** button then select **Show sizes** from the **More tools** drop down menu



An easier method is to turn on an image-size tag for all the images on the web page. Do this by clicking on the **Tools** button and then select the **Image size** option from the drop down menu beneath **Size**.

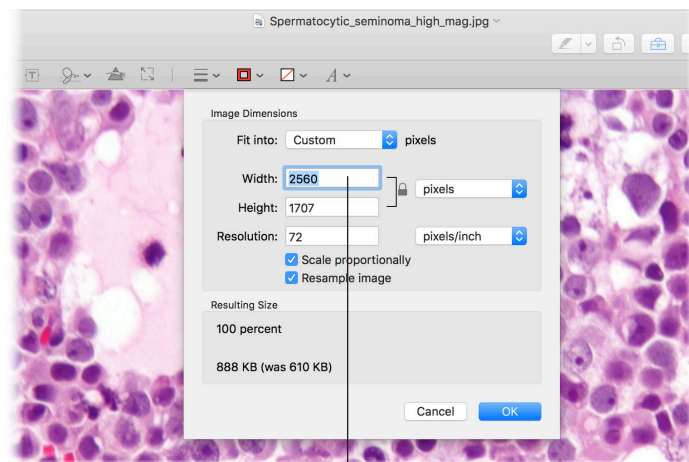
all of the images display their size in pixels



2. Software to Resize and Reformat Images

There are several software programs you can use to change the file type and to resize images.

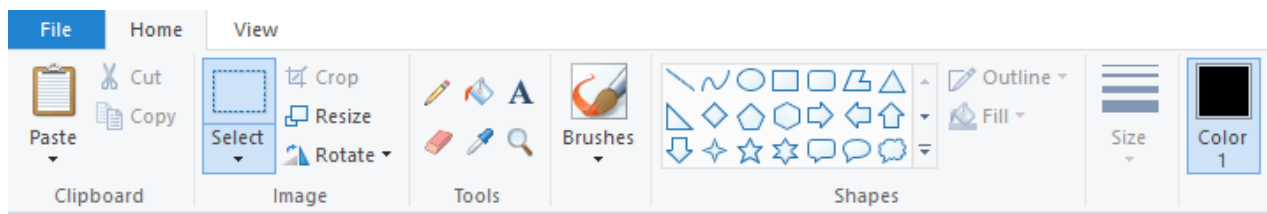
On the Mac, the **Preview** program comes already installed. Open the image and then select the *Tools menu > Adjust size*. Change dimension labels to pixels and type 5000 into the largest of the two numbers either for height or width. Resolution can be 72 pixels per inch or higher. (72 ppi is a good resolution for images displayed on a computer screen. Higher resolutions are needed if you want to print the image). Be sure to check the *Scale proportionally* and *Resample image* boxes.



type in 5000 as the maximum pixel dimension



On the Microsoft Windows platform, the **Paint** program comes already installed. In the toolbar, select the *Home* tab and then the *Resize* tool which is located just to the right of the *Select* option.



To convert images to a different file format (such as png to jpg), use the **Export** function in Preview or the **Save as...** function in Microsoft Paint.

Here is a link to a page that discusses other free software programs than can change the image size and file type:

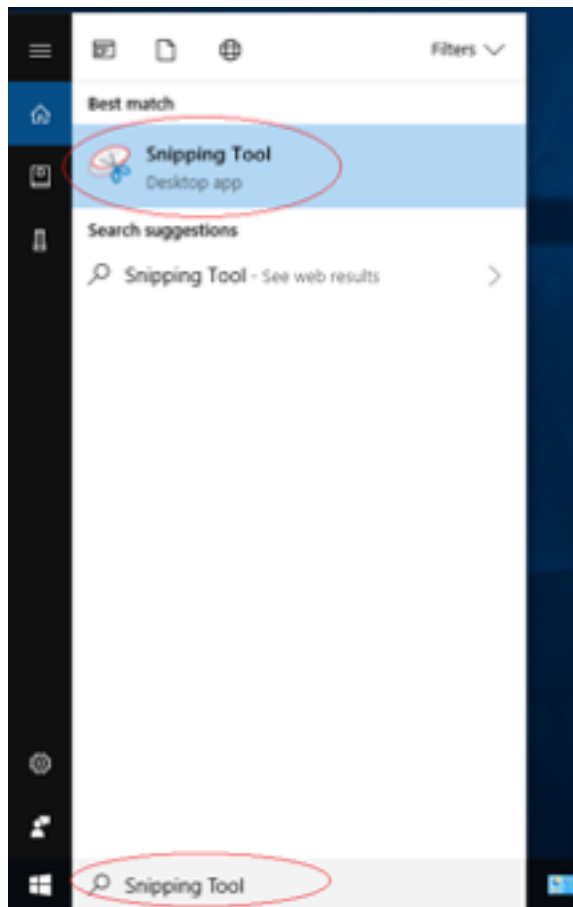
<https://www.digitaltrends.com/computing/how-to-resize-an-image/>

3. How to Capture a Screenshot and Save it as a JPEG

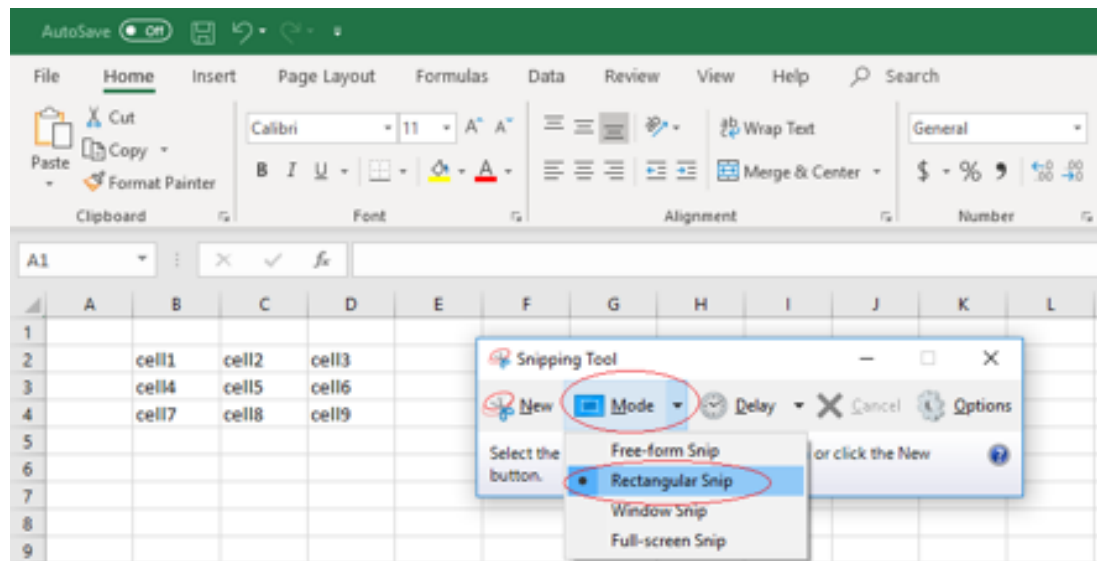
Some questions may require capturing a set of cells from an Excel spreadsheet, a chart, or part of a PDF. The following explains how to do a screen capture using the Windows 10 and the Macintosh OS.

Windows 10

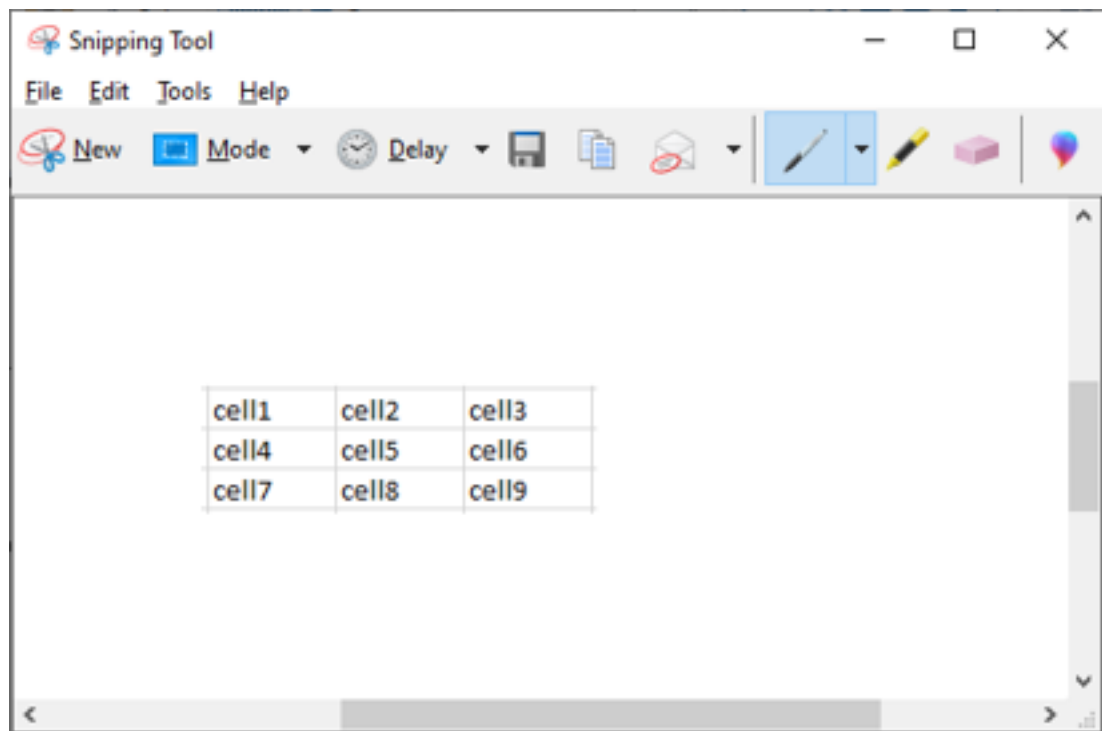
1. Open the Spreadsheet or PDF file from which you would like to make an image.
2. In the Windows search box type *Snipping Tool* and click the Snipping Tool option.
3. In the Snipping Tool Window, click the Mode option and select Rectangular Snip.
4. Draw a rectangle around the area; an image should open displaying the highlighted area.
5. Click File and Save As to save the image.
6. Adjust the image to conform to the ABPath optimum size (maximum of 1500 pixels). See page 15.



Open the Snipping Tool (you may need to search for it).



Click the **Mode** option and select from the drop down menu. For cells in a spreadsheet, the **Rectangular Snip** would be the best option. Otherwise, capture the entire window or the entire screen, as needed.



If you select the rectangular snip, draw a rectangle around the area you wish to capture. An image should open displaying the highlighted area.

Click **File** and **Save As** to save the selected region as an image. Adjust the size as needed (see page 15).

Macintosh OS

Screen captures on the Macintosh OS use a separate application which is accessed using command keys. There are different steps depending on which version of the Mac OS you are using.

Screenshot controls in macOS Mojave, Catalina or later operating systems are provided by the *Screen-shot* app, which is in the Utilities folder of your Applications folder. Earlier operating systems such as El Capitan use the *Grab* app.

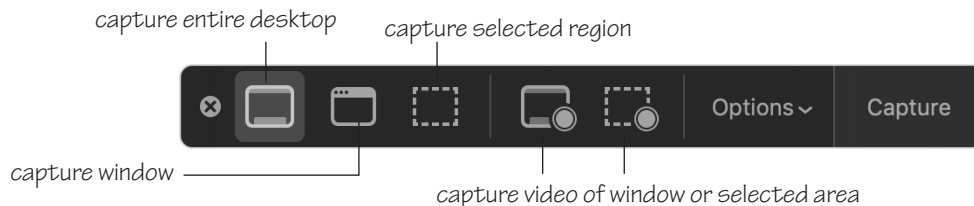
By default, screenshots are saved with the name *Screen Shot date and time.png*.

You can open screenshot files with Preview or another app that can edit and view images. All these apps can export to a different format, such as JPEG, PDF, or TIFF. The ABPath requires all images to be in **JPEG** format.

Here are the steps applicable to all MacOS versions:

1. Open the Spreadsheet or PDF file from which you would like to make an image.
2. To capture the **entire screen**, press *Command-Shift-3*. The screen shot will be automatically saved as a PNG file on your desktop.
3. To capture a **window**, press *Command-Shift-4* and then the spacebar. The cursor changes to a camera icon. Click on the window and the image will save to the desktop. By default, the image will have a shadow. To exclude the window's shadow from the screenshot, press and hold the Option key while you click on the Window.
4. To capture a **portion of the screen**, press *Command-Shift-4*. A crosshair cursor will appear, and you can click and drag an area you want to capture. To move the entire selection, press and hold the Space bar while dragging. Click on the escape key to cancel the capture. Release the mouse button and the screen shot will be automatically saved as a PNG file on your desktop.
5. Double click on the image file to open it. In most cases, the file will open in **Preview**, which is the default application.
6. Select File > Export. In the Export dialog box, choose JPEG as the file type and export to your preferred location (desktop, in side a folder, etc.).

If you are using Mojave and later, the above steps work but you can also press *Shift-Command-5* to see the onscreen capture controls as shown below.



The icons allow you to capture the entire screen, the window (with its shadow), or a selected area. The other icons are for capturing video.

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