CompuMed™

The Leaders in **Diagnostic Telemedicine.**

Scan

PathoZoom®

User Guide

Version 1.0

24/7 Technical Support

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www.CompuMedinc.com

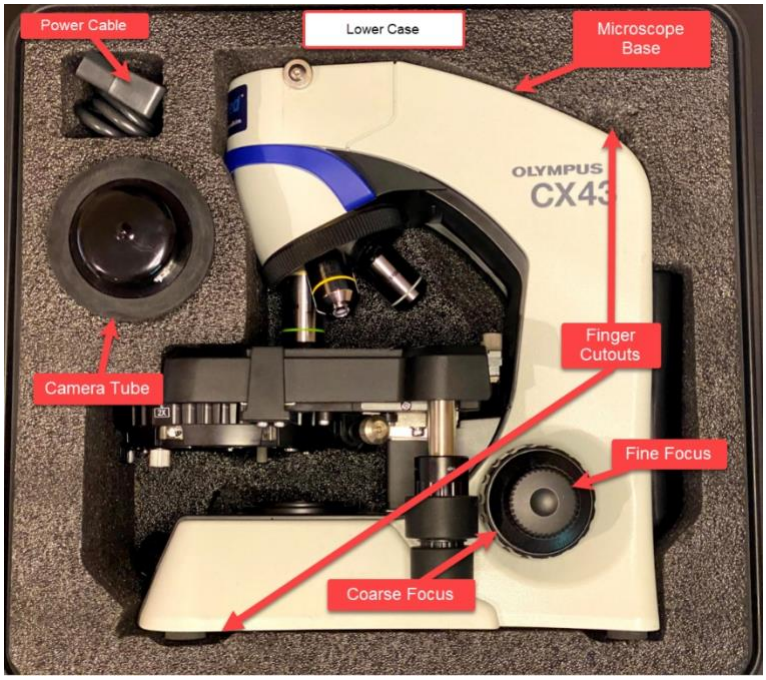
TABLE OF CONTENTS

SETUP

SCANNER CASE LAYOUT

UPPER CASE

LOWER CASE

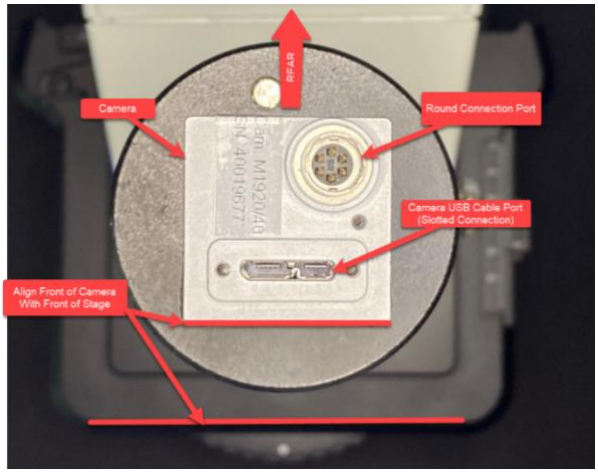


SETUP MICROSCOPE SCANNER

Take the microscope out of the carrying case using two fingers in the gaps indicated by the picture below

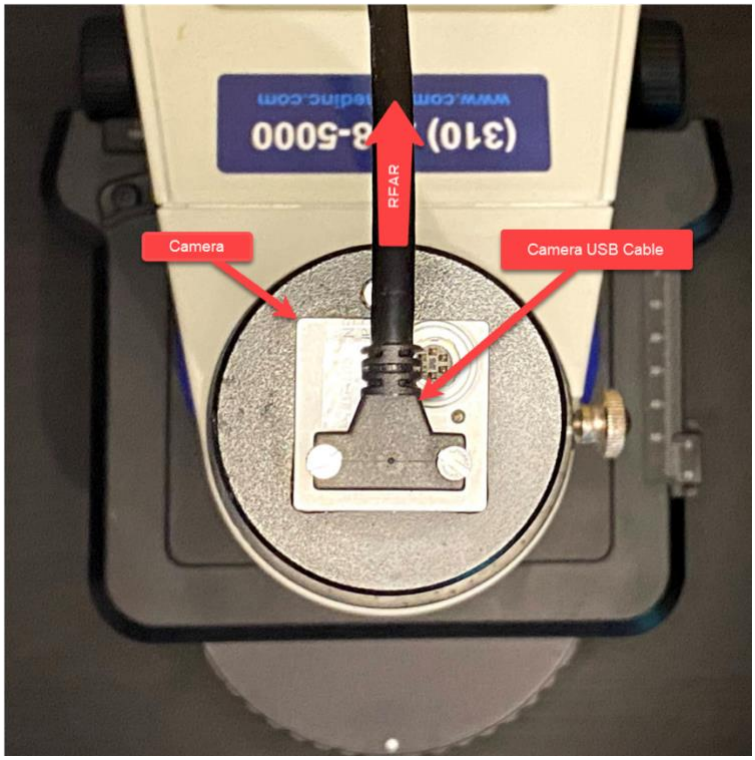
Remove the camera tube from the case and rotate so the camera is on top and the cover is facing down. Keeping the camera cover facing down, remove the cover. (this ensures that no dust settles on the optics).

Place camera tube on top of microscope, with the camera USB port (slotted connection port) to the front, parallel with the microscope deck and the round connector to the right and to the rear.

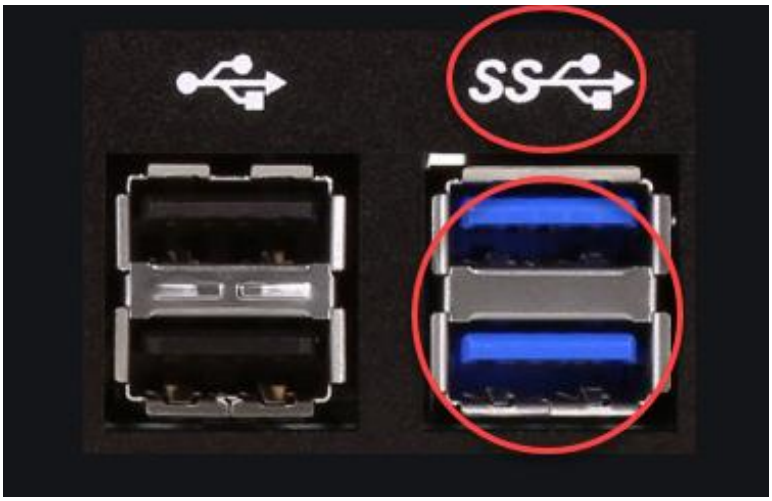


Align the front of the camera with the front of the stage (this is “coarse alignment” only). Fine adjustment to cameral tube rotation will be done later. Tighten the metal thumb screw (previous picture) to secure the camera tube.

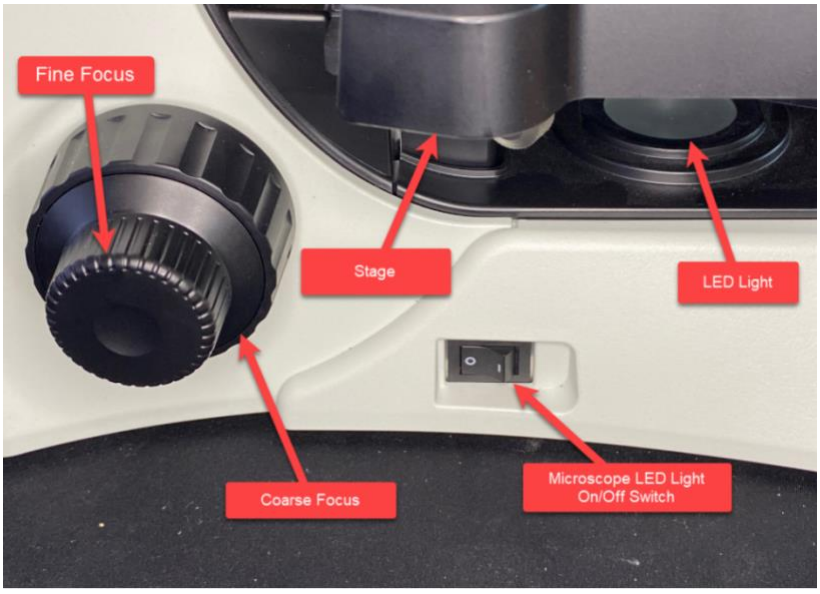
Connect camera to computer using the adapter cable in the back of the microscope and tighten the two screws to secure it in place. BE SURE the camera cable exits to the REAR of the microscope. If it does not, this means the camera tube needs to be rotated 180 degrees.



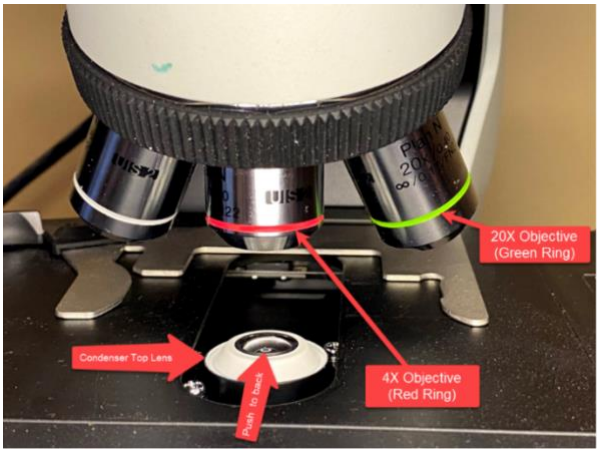
Plug the other end of the cable into a **USB 3.0** port on your computer (the inside of these ports will be blue and/or have an "SS" which stands for "SuperSpeed" USB).



Remove power cable and AC adapter from the carrying case and plug into a wall outlet. Turn on the microscope LED Light.



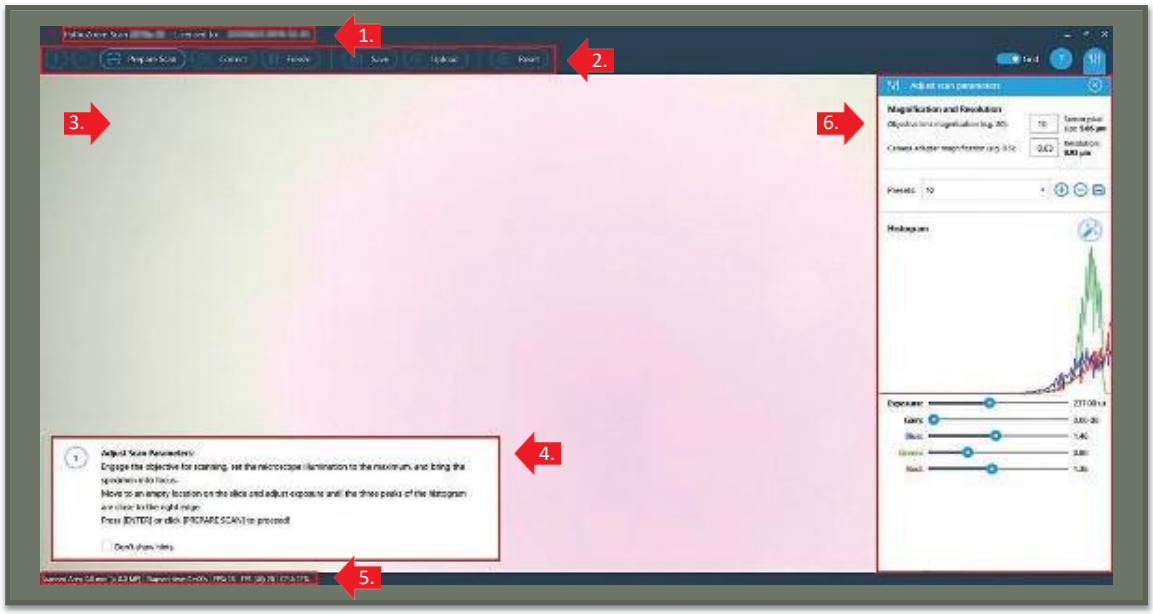
Ensure that Condenser Turret is set to BrightField (BF) and rotate the LED Brightness is turned fully clockwise to the MAX position. Ensure the Condenser top lens is pushed back full and there is light shine through.



PATHZOOM SCAN SOFTWARE STARTUP

To start working with PathoZoom® Scan, please follow these steps:

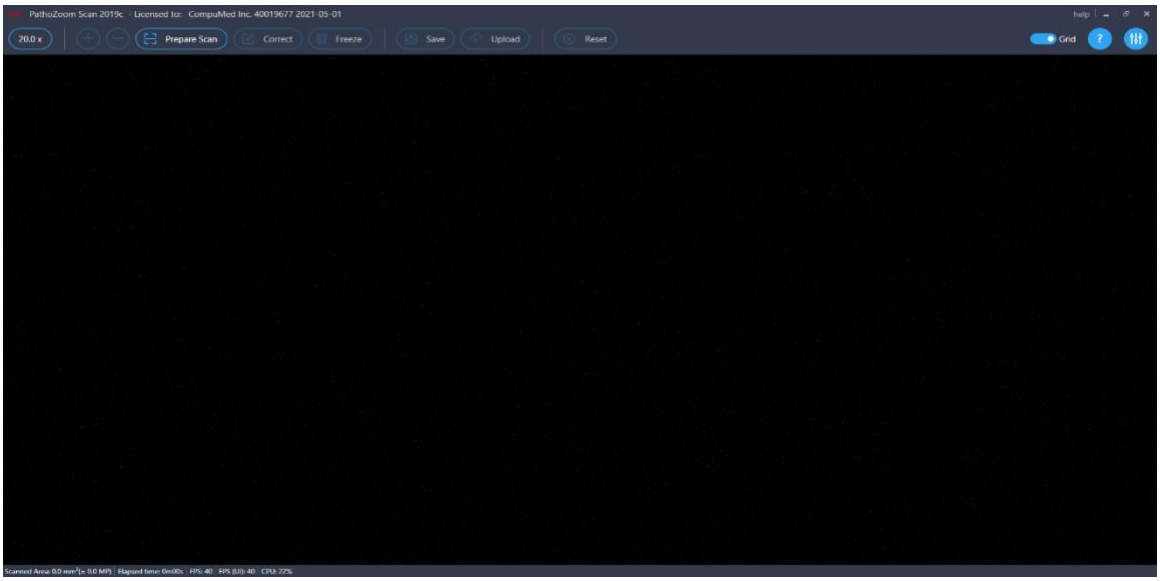
- Turn on the Set the microscope illumination to the max
- Place the microscope slide on the stage.
- Select the desired objective lens for scanning. It's usually best to start with 4x (red ring) to locate the image, then switch to the 20x (green ring) to scan.
- As soon as the program is opened the following image will be seen (it may be out of focus like the frame below.
- Locate the sample and bring it into focus using the course and fine focus.



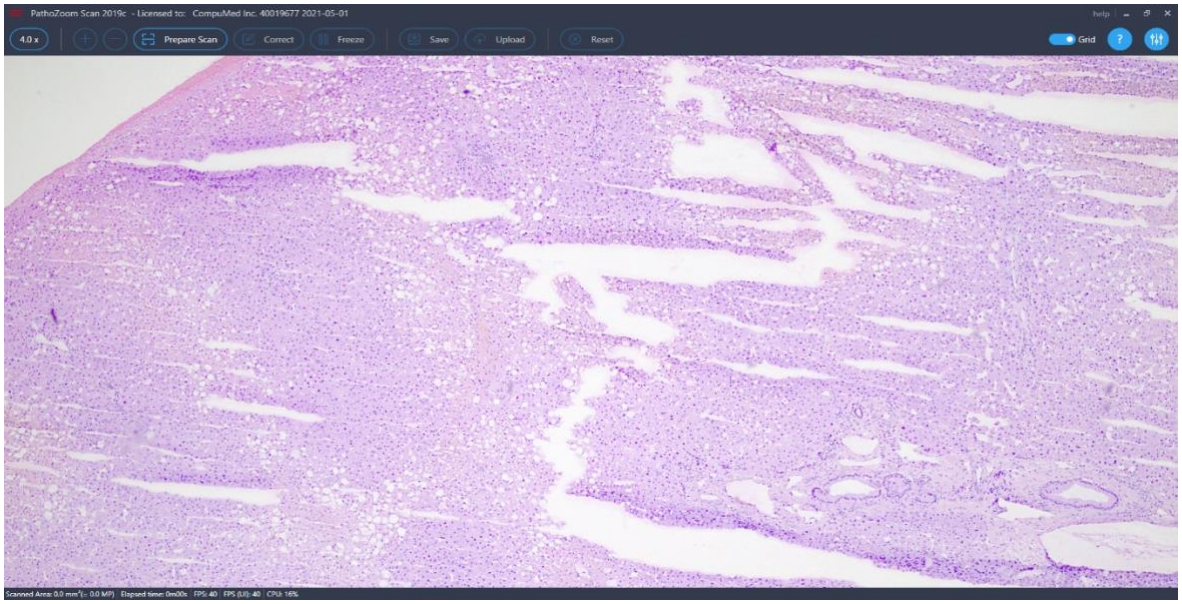
The image shows you:

1. The name of the version of PathoZoom® Scan and the license number you are using.
2. The main menu that will be used to scan, save and download the images.
3. The image view, currently out of focus, of our specimen.
4. Explanatory or help window.
5. Information of the location and scanning time, plus the frames per second, and the percentage of the CPU (central processing unit) used by the program.
6. Tools to calibrate the camera of our microscope, together with the objective lens and the camera adapter.

If you have a black screen the microscope LED is not turned on or the brightness is turned too low.

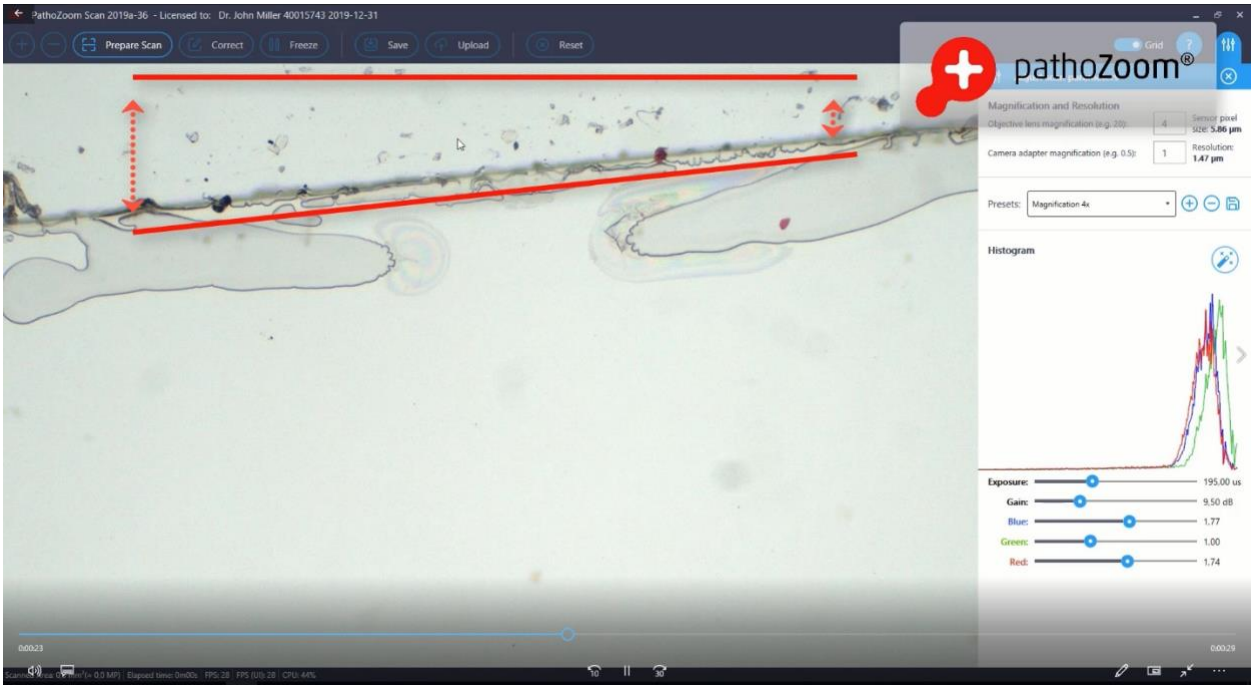


Make sure the microscope light (LED) is switched on and turn it to the brightness to maximum. You will be scanning with the 20x (green ring) but it's best to use the 4X objective (red ring) to get initial lighting and focus since it has the largest field of view and is the easiest to focus. Move the stage to locate the specimen and use the coarse and fine focus to focus on the specimen. You should then see the specimen show up in the screen in a fashion somewhat like below.



FINE ROTATION ADJUSTMENT

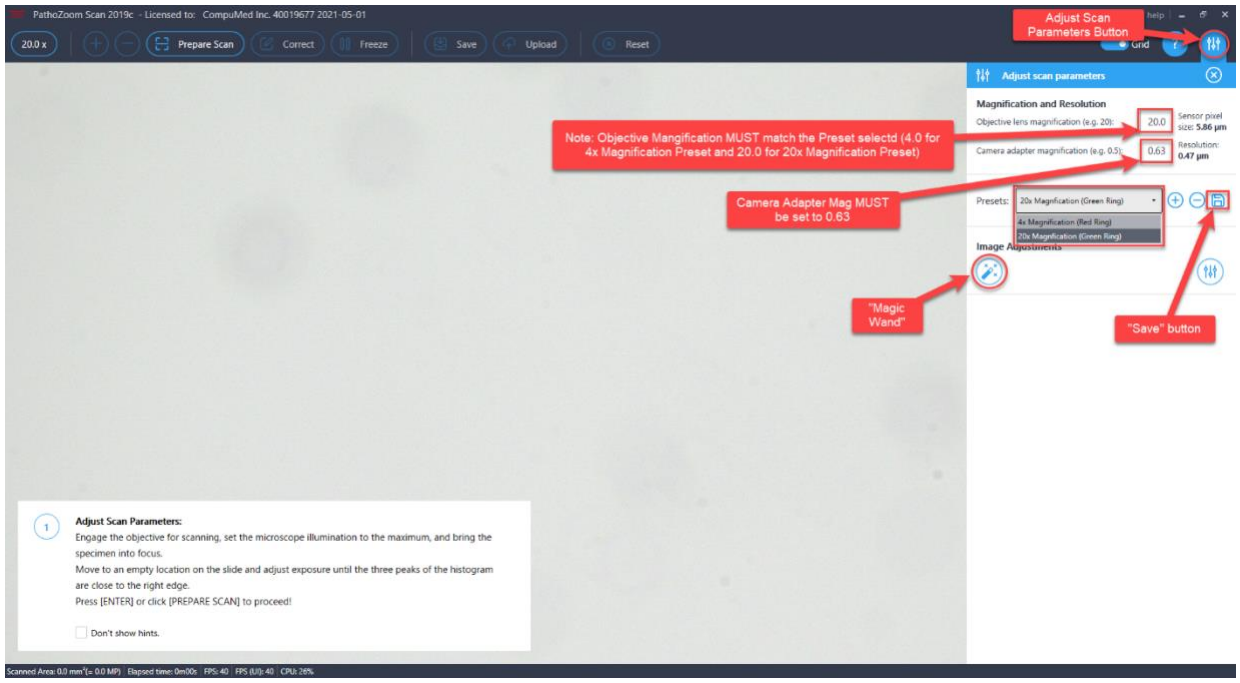
Before starting to scan it is very important to correctly align the camera with the microscope so that the scanning lines are exactly horizontal or vertical. Go the upper glass edge of your slide. See how in our case the upper line, which is the camera view frame, is not parallel to the lower line, which is the glass slide.



To align the camera with the microscope, loosen the thumb screw and rotate the camera adapter. When both lines are parallel tighten the thumb screw on the camera adapter. Move the slide from one side to the other to make sure that the alignment is correct.

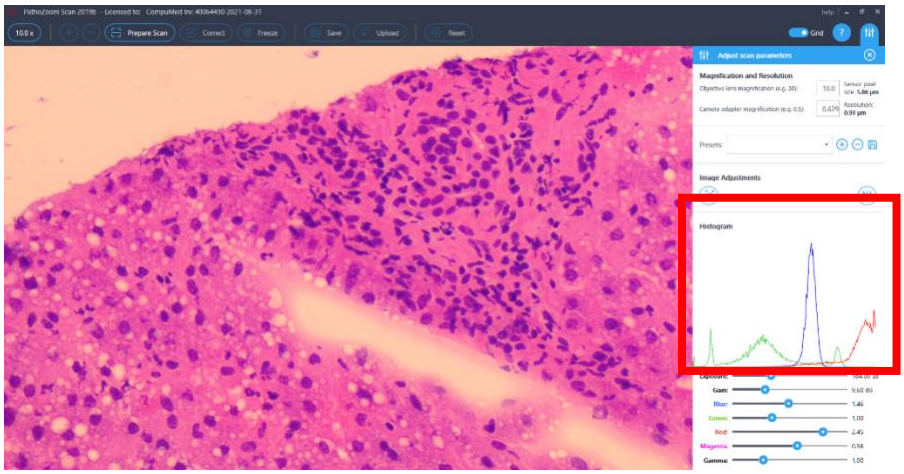
PRESET SETUP

If this is your first time setting up the software, you will need to create presets. If the presets are accidently modified, you can go through these steps again to correct them. To start, click the "Adjust Scan" button on the top right of the screen.

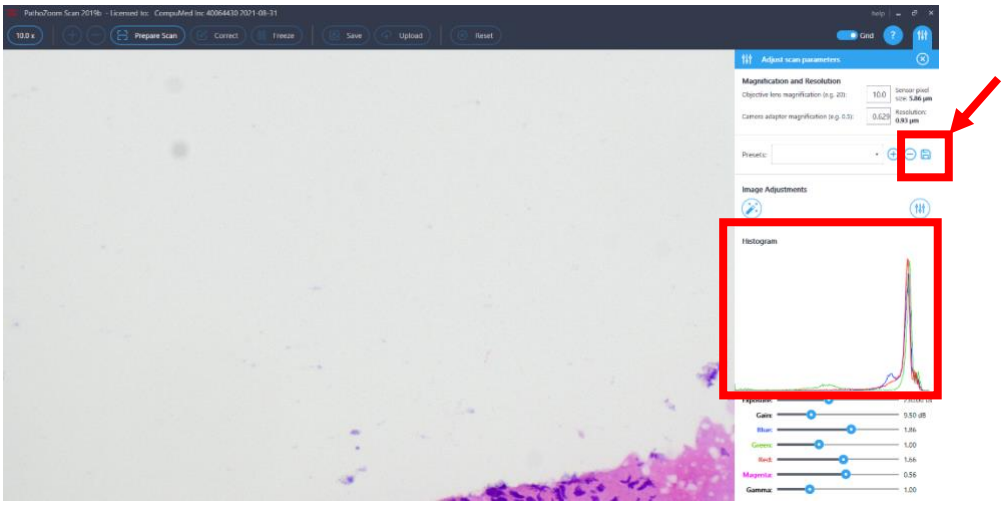


Beginning with the 4x objective engaged (red ring), enter the magnification of the objective (4.0) in the "Objective Lens Magnification" box. Next enter the magnification of the camera adapter (O.63). To save this preset, hit the "+" symbol and type "4x Magnification (Red Ring)" into the preset. Press the save button.

Now we need to perform a color balance to ensure that our sample is properly adjusted. To do this, we need to make sure that the red, green and blue lines overlap, and their peaks are visible on the histogram.



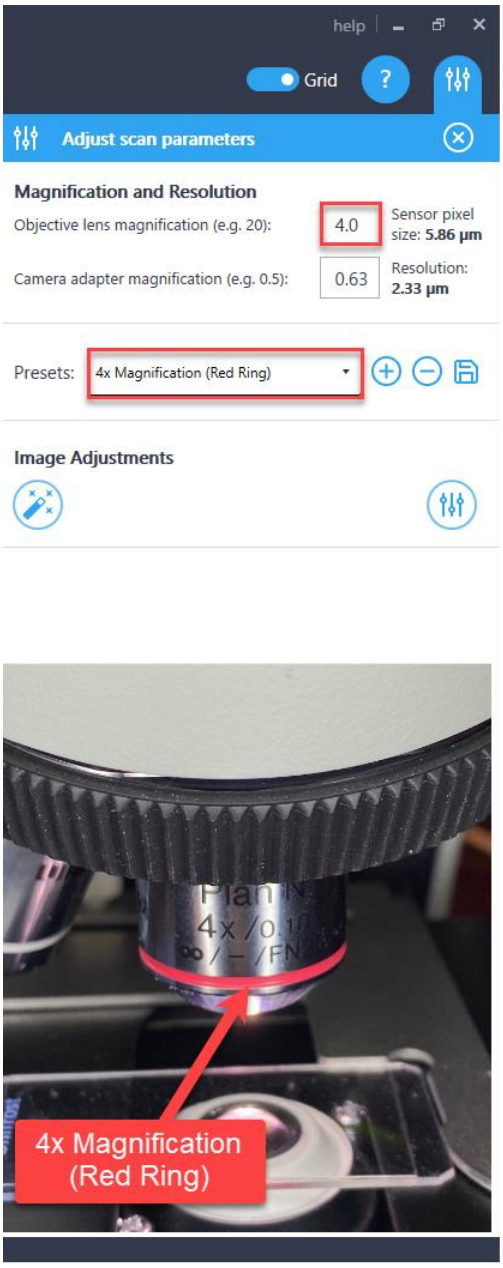
Perform the “white balance” by moving the slide to an empty (white) area of the slide that has no specimen or label. Press the “magic wand” icon and the calibration will be done automatically.

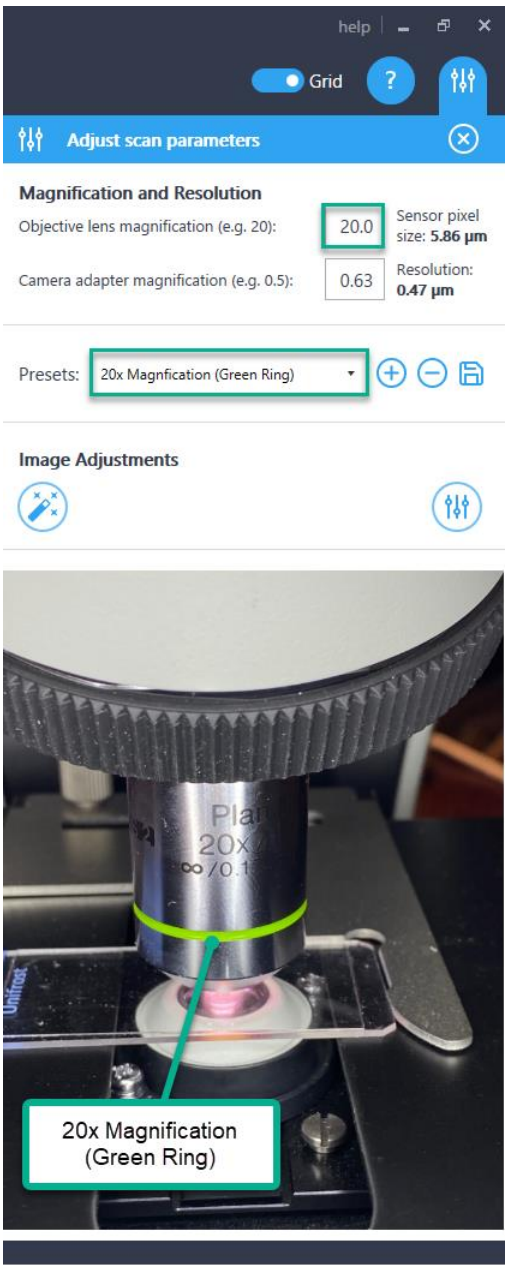


We can see that after proper calibration, the slide appears brighter and all our lines on the histogram match, giving us the best quality of scan.

Be SURE to press the “save” button again to save this white balance calibration to the preset.

Now repeat this process with the 20x Magnification (Green Ring). You now have set up the presets. Whenever you physically change Magnifications (Objectives), you will simply select the correct magnification from the dropdown. Both the physical and dropdown selections are show in the following photos.





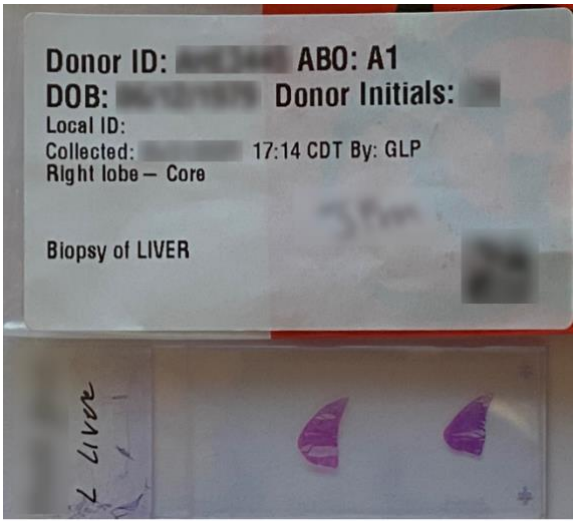
PRIOR TO SCANNING

Now that the scanner is setup, and prior to scanning your slide, it is important to take a photo of the complete slide as a minimum. We strongly suggest that a picture is taken with the TransNet label as well to capture the UNOS ID, and organ information, as well as the barcode label. If the barcode label is included, we are able to read that from the image and this can be used to ensure the scan is attached to the correct donor and organ. Taking a picture of the slide accomplishes 3 things.

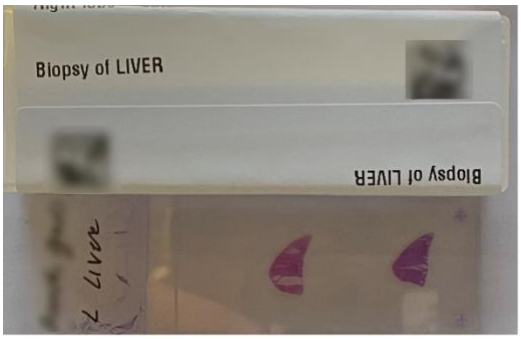
1) It gives you an overview as you are scanning. This is ESPECIALLY important when there are multiple pieces to the specimen as illustrated below.
2) It acts as a Quality Control check since the pathologist are able ensure that the digital scan includes all components of the specimen.
3) If identification (metadata) are included (like the UNOS ID etc from the Transnet label) it provides further QC so the results and slides are matched with correct Donor.

Below is a picture of the slide. This includes the specimen and the label. It is best to place the slide on a white background prior to taking an image so the specimen can be adequately seen.

The following are options for taking a picture of the slide with the Transnet labelling system. The preferred method is first, with the full label visible with the slide.



The second methods are if the label is already affixed to the slide box. In this case, if two photos are taken, this allows both the metadata and the barcode to be seen with the slide.



Note: the pictures of the slide can be uploaded to the portal using the secure file attachment tool. In this way, the picture will not remain on your personal mobile phone.

LABELLING OF SCANS

The file naming convention of the scans is very important for identification and Quality control. Please use the following to Name the files when you are uploading and/or saving scans to a drive.

UNOSID-ORGANCODE-LATERALITY-OTHER

1. UNOSID (or DONOR ID) – this is the most important identifier and is in the first position
2. ORGAN CODE – This is a two-digit short form for the organ as follows
    a. Kidney – KI
    b. Liver – LI
    c. Lungs – LU
    d. Intestine – IN
    e. Pancreas – PA
3. LATERALITY – this is the indicator for left or right
    a. Left – L
    b. Right – R
    c. Left Lobe (Liver) – LL
    d. Right Lobe (Liver) – RL
4. OTHER – this is the location to put an additional identifiers such as
    a. The number of the slide if there are multiple slides
    b. If there is a slide of a tumor or cyst
    c. Etc.

Some examples are shown below:

ABCD123-KI-R-CYST

ABC1234-LI-LL

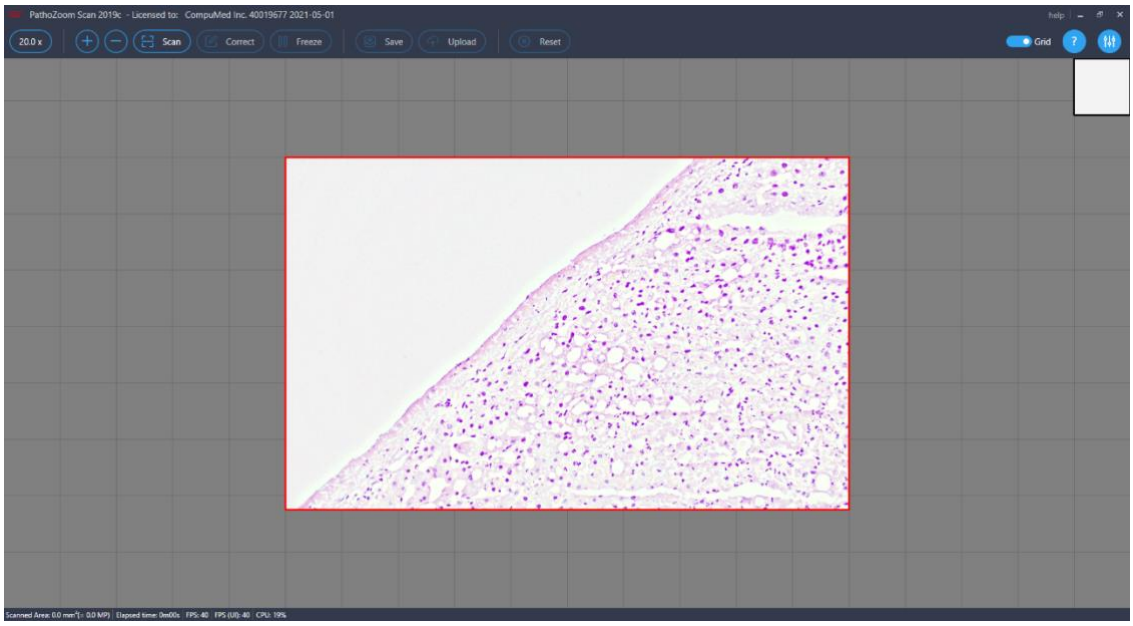
ABCD123-KI-L-1 ABCD123-KI-L-2

SCANNING

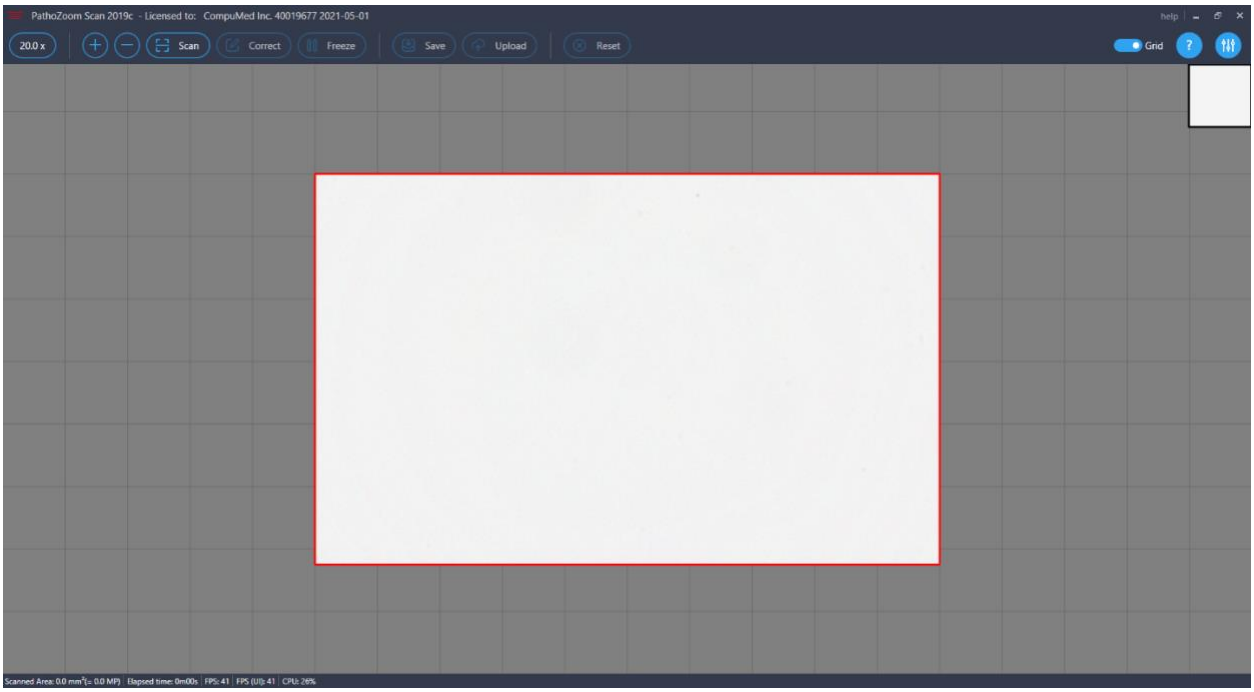
PREPARING TO SCAN

Chose the physical objective you are going to scan with (for example, 20x). Select that same objective (20x) from the preset dropdown. Move to a blank (white) area of the slide with no specimen or label visible (complete screen is white). Set the "white balance" by selecting the magic wand icon. Press the "Save" button (see illustration in Preset Setup section).

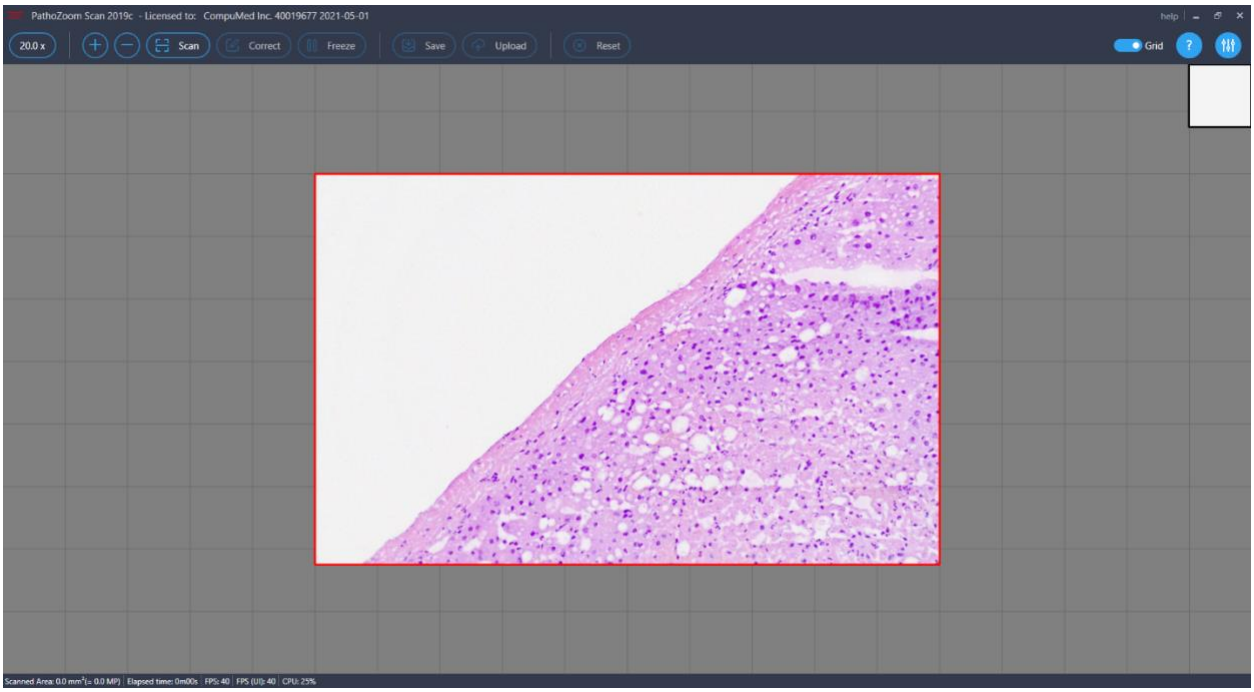
Click prepare scan. You will see that the colors on the specimen are off (typically they are too bright and appear washed out).



To rectify this, it is necessary to perform a white balance my moving to a completely empty region of the slide for at least a second and then move back to the specimen.



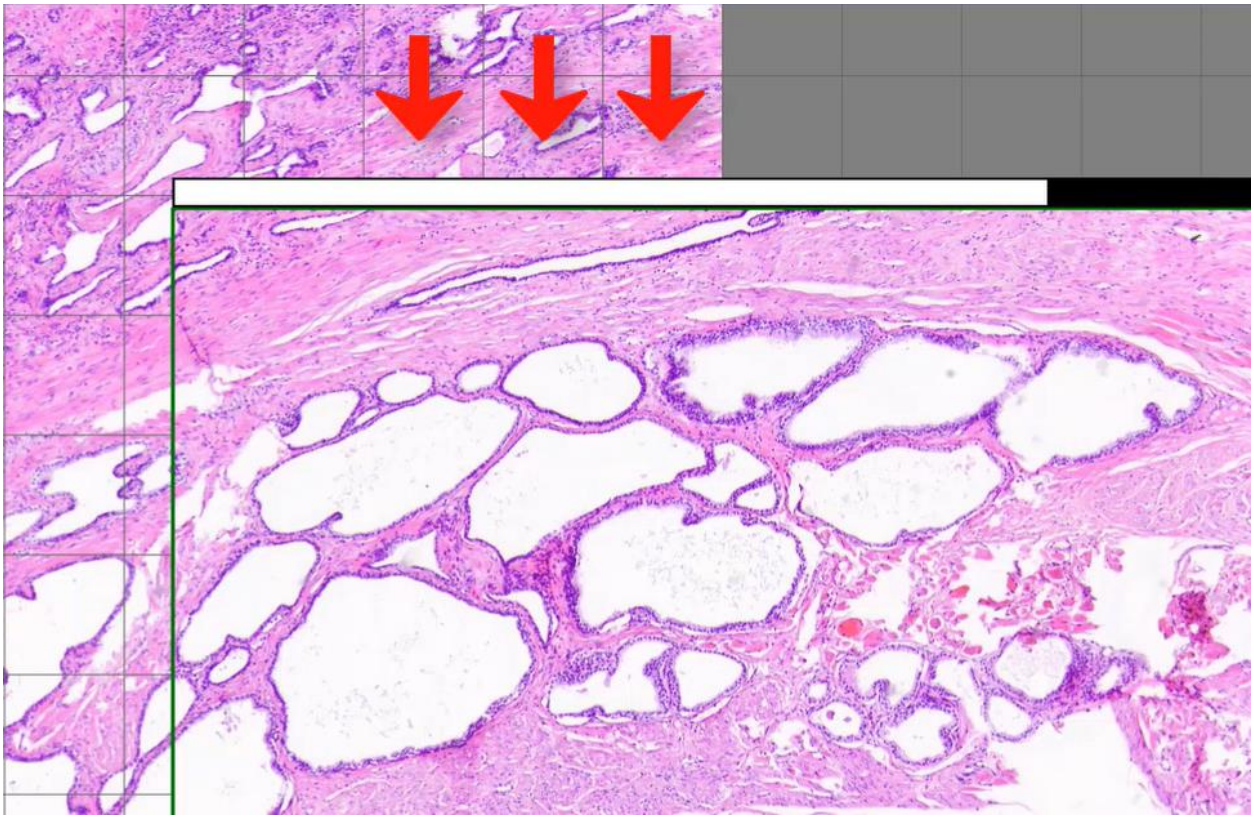
When you move the specimen back into focus you will see that the colors will now appear normal and balanced.



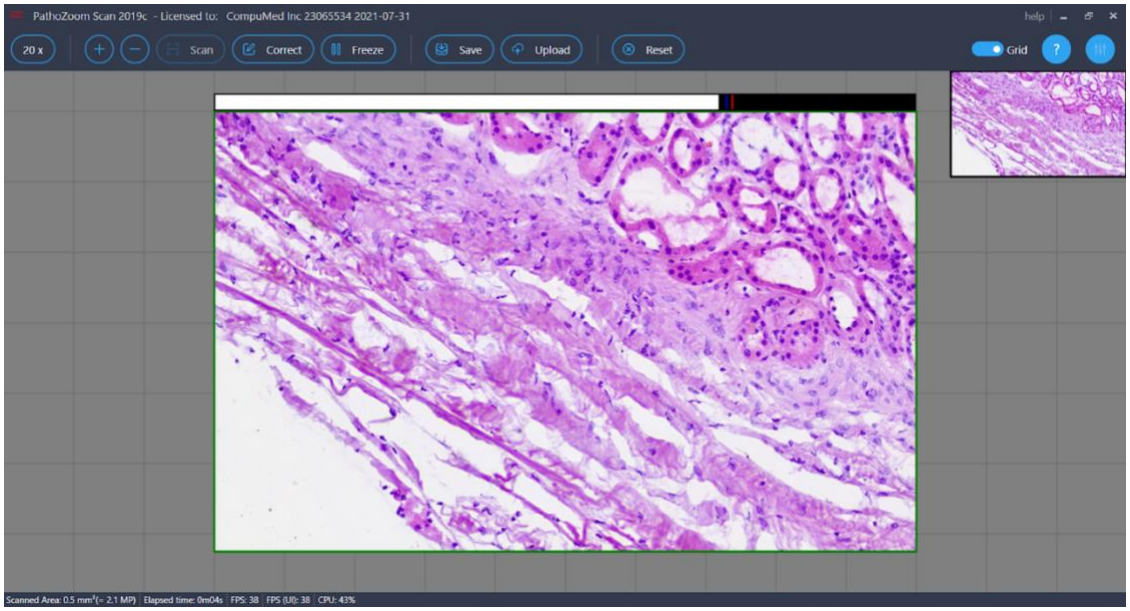
Note: It is **CRITICAL** that the white balance is set. If it does not, go back and **repeat the white balancing** and/or check your **presets**. You will not be able to get quality scans until this step is performed properly.

BEGIN TO SCAN

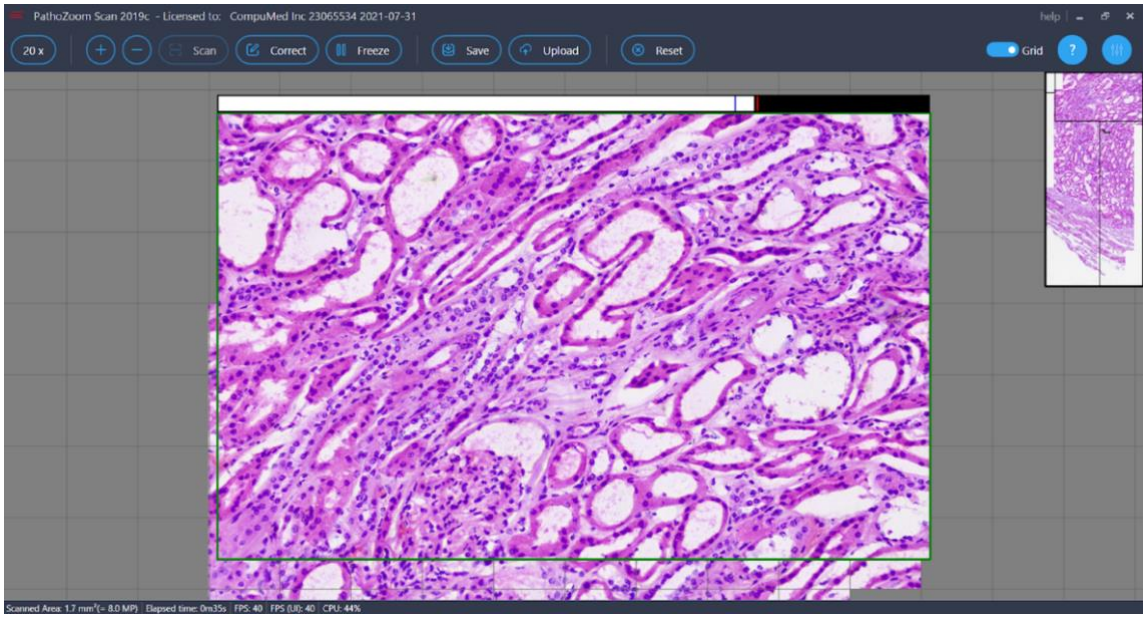
Find a good position to start scanning. Ensure that more than 50% of the image is covered by the specimen. We suggest starting in the top left corner of the specimen. Slide should look like this now. Select scan.



It is recommended to scan from the top to bottom as the camera frame is wider than high. This saves time in the scan process. When you move from the top to bottom and bottom to top try to overlap the next scan line by approximately three columns of the grid of the previous scan line. If the specimen shape is thin and wide you may need to scan left to right to be more efficient. However, it is almost always best to scan vertical, moving one direction at a time – down, right, up, right in a methodical manner.



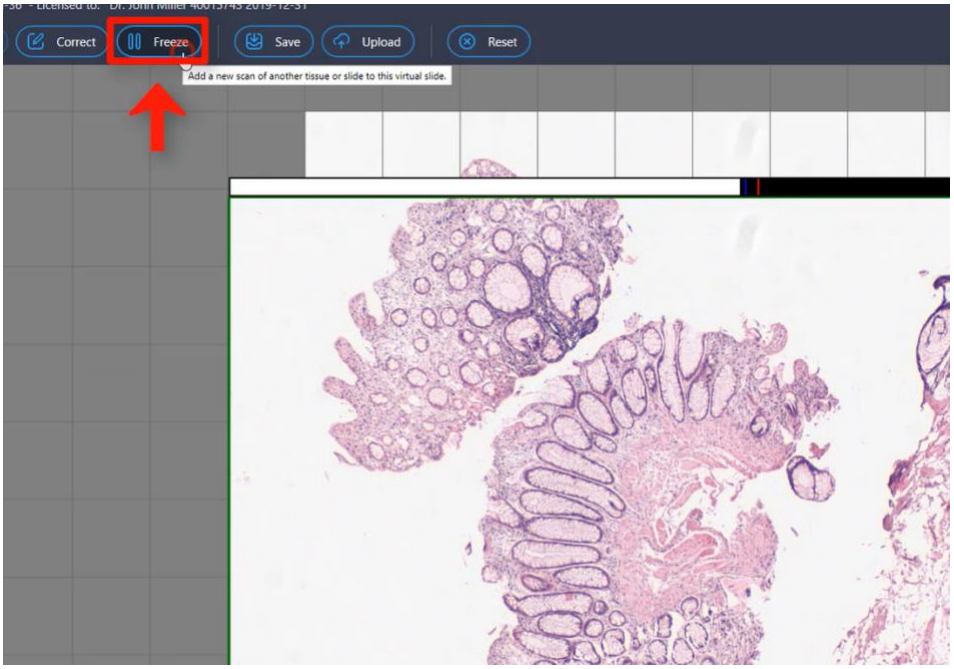
The box around biopsy will turn green and a bar at top will appear. See blue arrow. You want this white bar to be as close to the right side as it can be but must be at least above blue line. You can also watch your progress over on the right side to see how far you have gone. See green arrow. The best way to get a good scan is to go up and down as compared to going left to right.



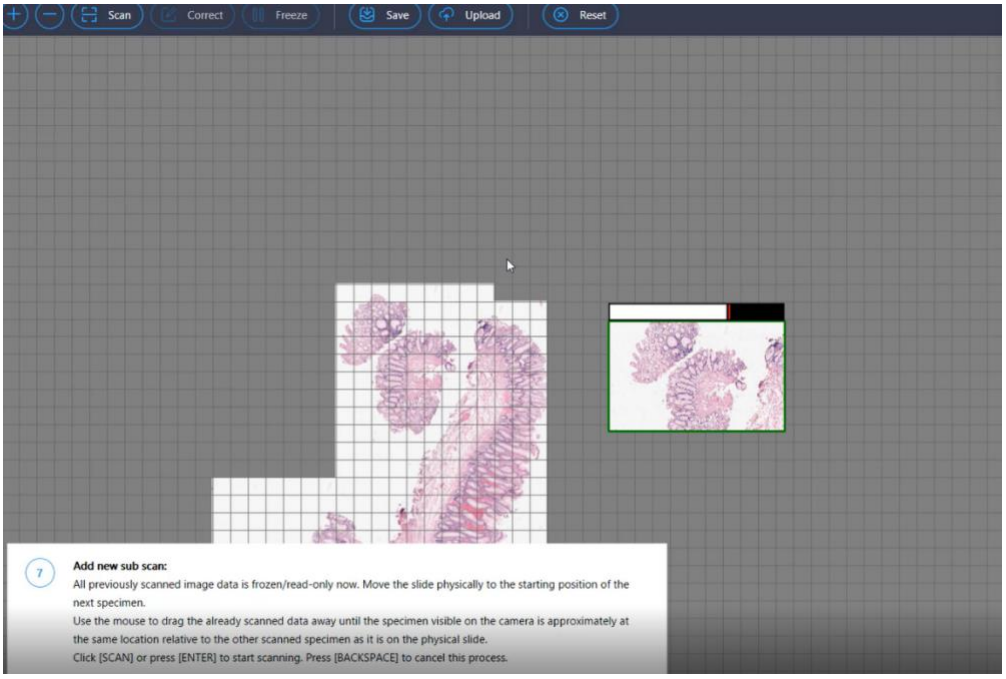
When the image is out of focus you will see that the length of the white bar decreases. Bring the image back to focus and continue scanning.

MULTIPLE SCANS

There is a very helpful feature in PathoZoom Scan to put multiple scans into one image. It may be the case, that we want to scan several samples in a single image or that the sample of our slide is scattered or separated by large areas without sample. Scan one piece of the sample, then click on the freeze button the pause the scanning.

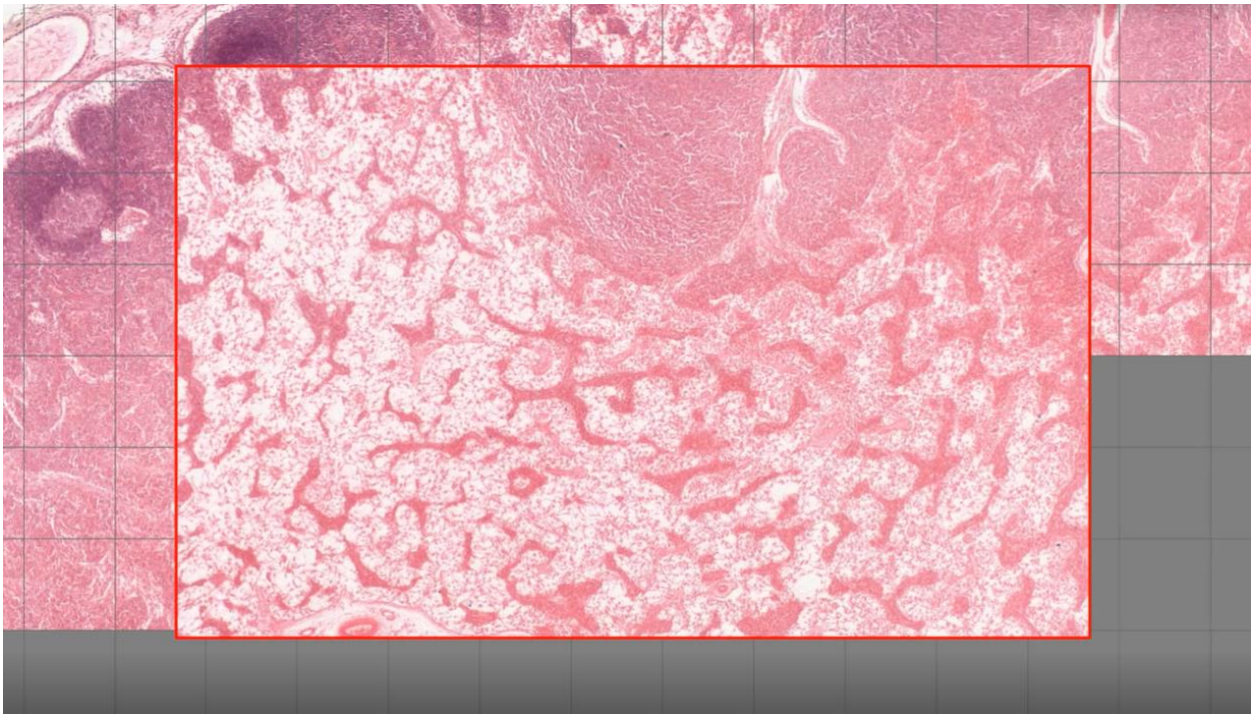


Now, we can drag the image with the mouse and place the live image to where we want to continue scanning. Please, change the slide under the microscope or remove the current slide to the desired next area and click the scan button. You can repeat this process to add multiple scans to one image.

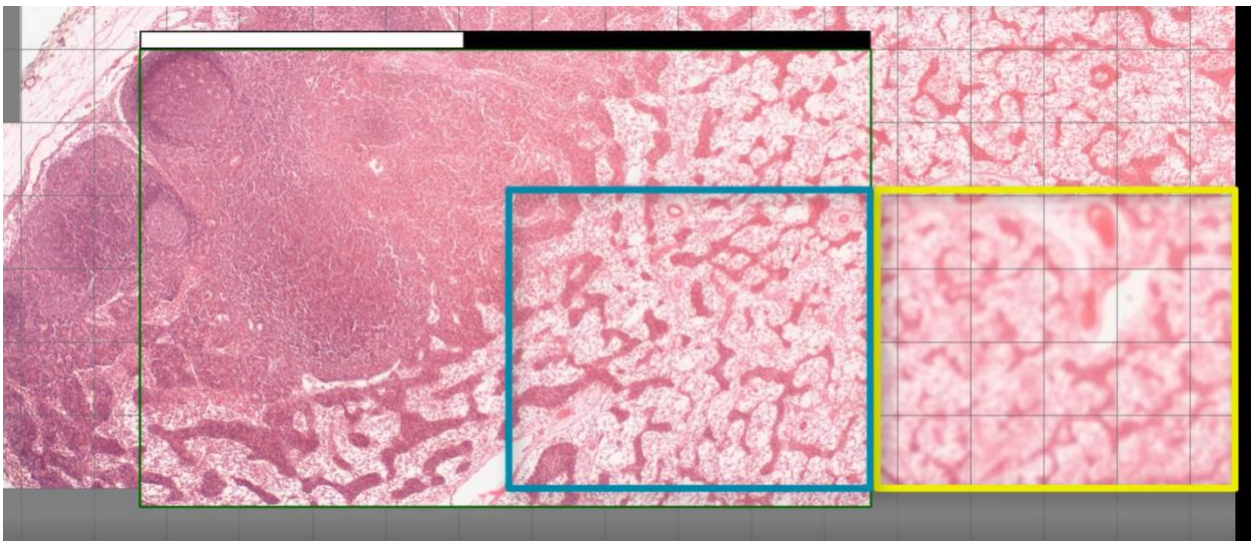


ADDITIONAL FUNCTIONS

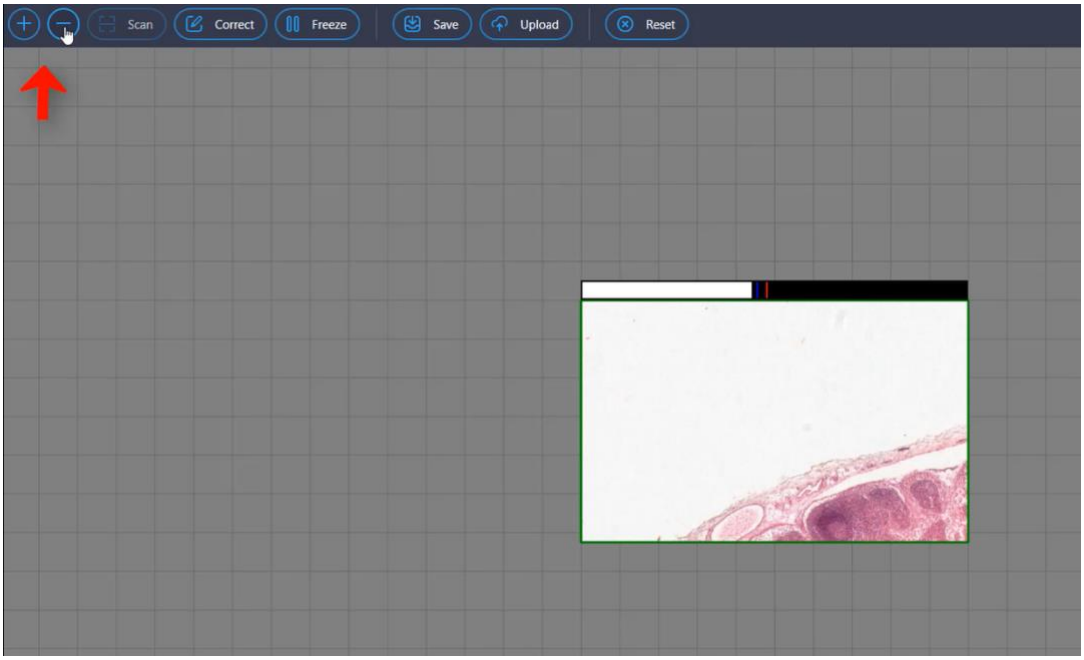
If the software gets lost, you will see a red frame around the live image in the middle. In that case, please move back to an area which you have previously scanned and the software should pick up from where you left. When the software reconnects the border of the frame will change from red to green and you can continue scanning



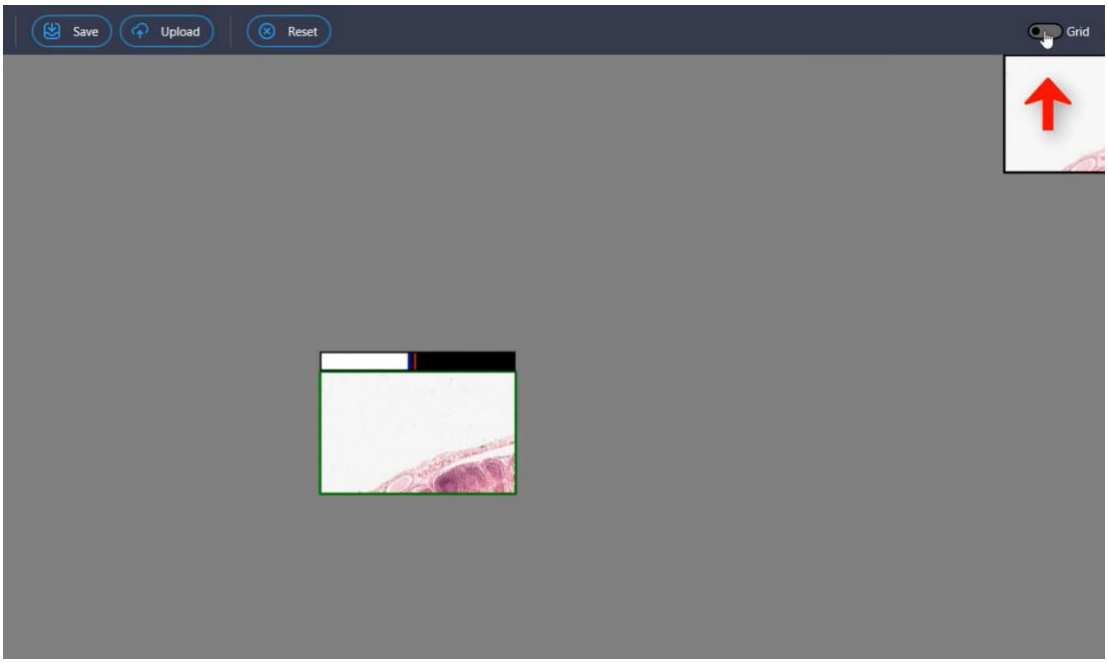
If you have accidentally scanned an area which was out of focus, you can just focus on the sample again and just rescan the same area. The software will then automatically pick up the frames with a better focus and replace the unfocused areas



There are two more useful functions of PathoZoom Scan. Especially the zoom function and the grid. While scanning you can always increase or decrease the zoom by clicking on the buttons plus (+) or minus (-) respectively

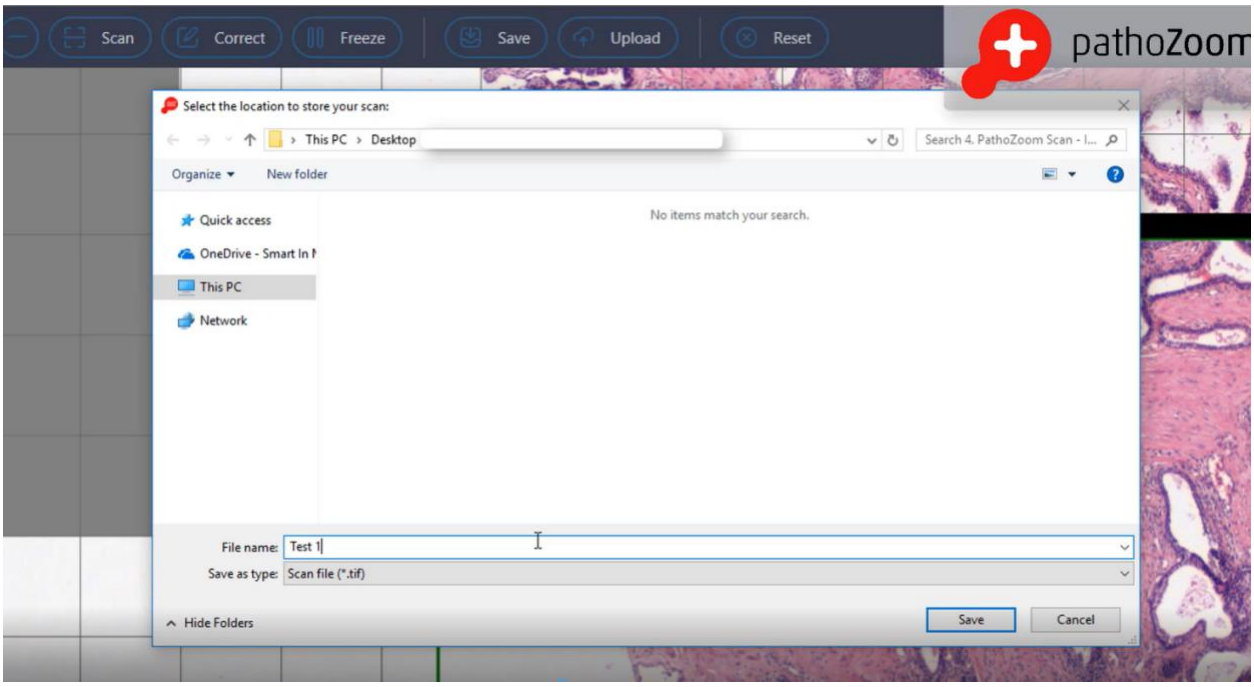


Press “Grid” to remove or add the grid lines



SAVING AND UPLOADING

SAVING A FILE



If you do not have internet connection, you can save your file locally and upload at a later time. You can save to the computer hard drive or to a removeable drive (ie. USB Drive). In order to save a scanned image, click on the save icon. Now select the select the folder where to save the image. Choose a file name and file format. We recommend the ".tif" format. If the file is for a Donor case, use the file naming method described in the "Prior to Scanning" section and repeated below.

Simply enter the "UNOS ID – Organ – Orientation – additional identification" under "Title"

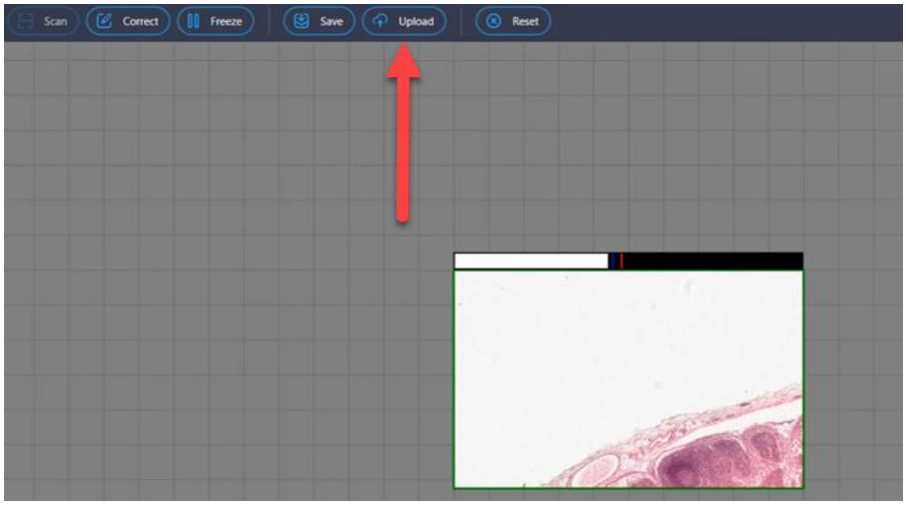
EX1: ABCD123-KI-R

EX2: ABCD123-KI-R-Cyst

EX3: ABCD123-LI-R-Lobe

Remember the location that the file is saved as you will need to access this location when you choose to upload to CompuMed's image cloud.

UPLOADING A FILE DIRECTLY FROM PATHOZOOM SCAN



To upload a scan while in Path Zoom Scan, click the “Upload” button as indicated by the red arrow above. A new window will now open, where we can enter information about the slide to later identify.

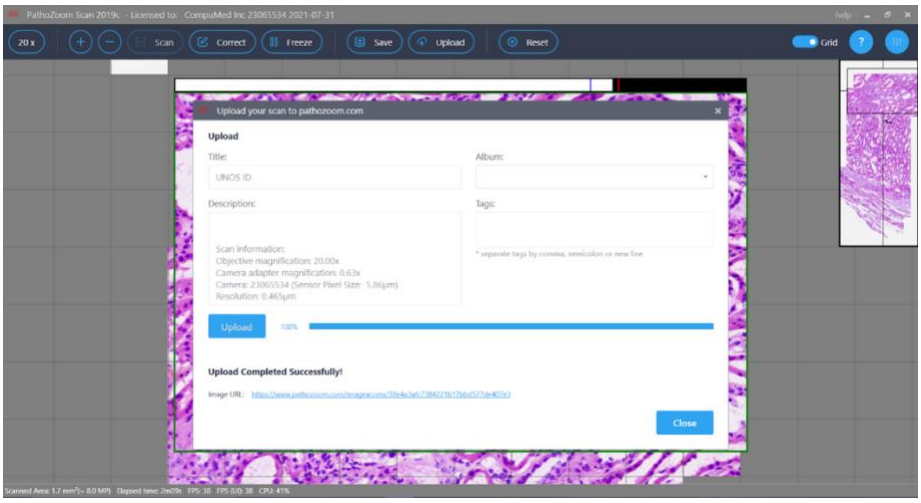
As before, enter the “UNOS ID – Organ – Orientation – additional identification” under “Title”

EX1: ABCD123-KI-R

EX2: ABCD123-KI-R-Cyst

EX3: ABCD123-LI-R-Lobe

Click on the blue “Upload” and wait until the image has completed uploading. The speed of the upload depends on the size of the scanned area and upload your internet speed.

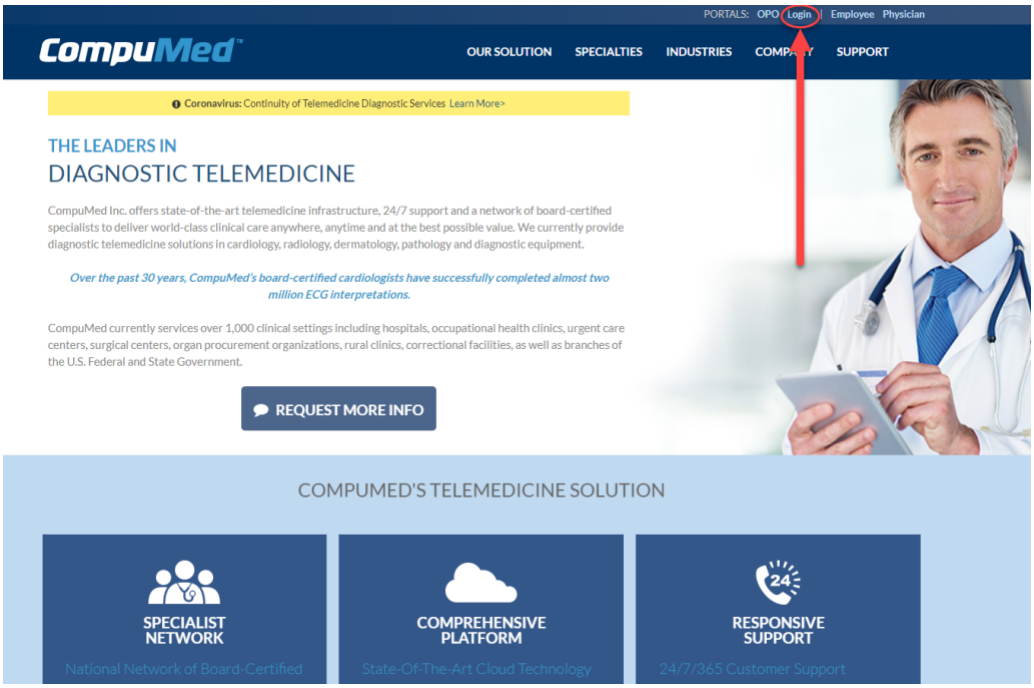


NOTE: DO NOT USE THE “IMAGE URL” IN THE UPLOAD TOOL AS THIS IS A LINK TO THE IMAGE VIEWER ONLY, YOU CANNOT REQUEST AN OVERREAD FROM THIS LOCATION.

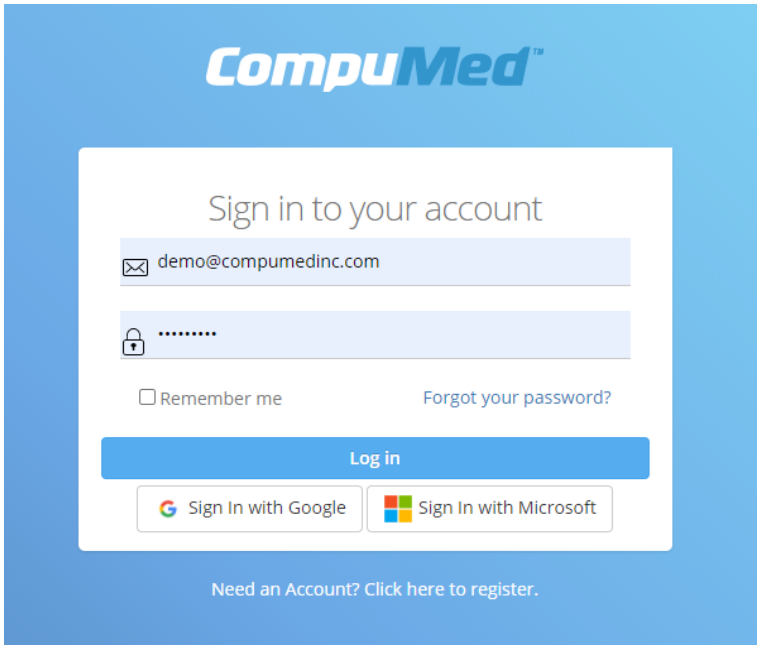
INSTEAD you MUST login to the **CompuMed PORTAL** at https://compumedinc.com/ (see section below)

PORTAL PATHOLOGY FUNCTIONS

Navigate to https://compumedinc.com/ and click “Login” in the top right corner

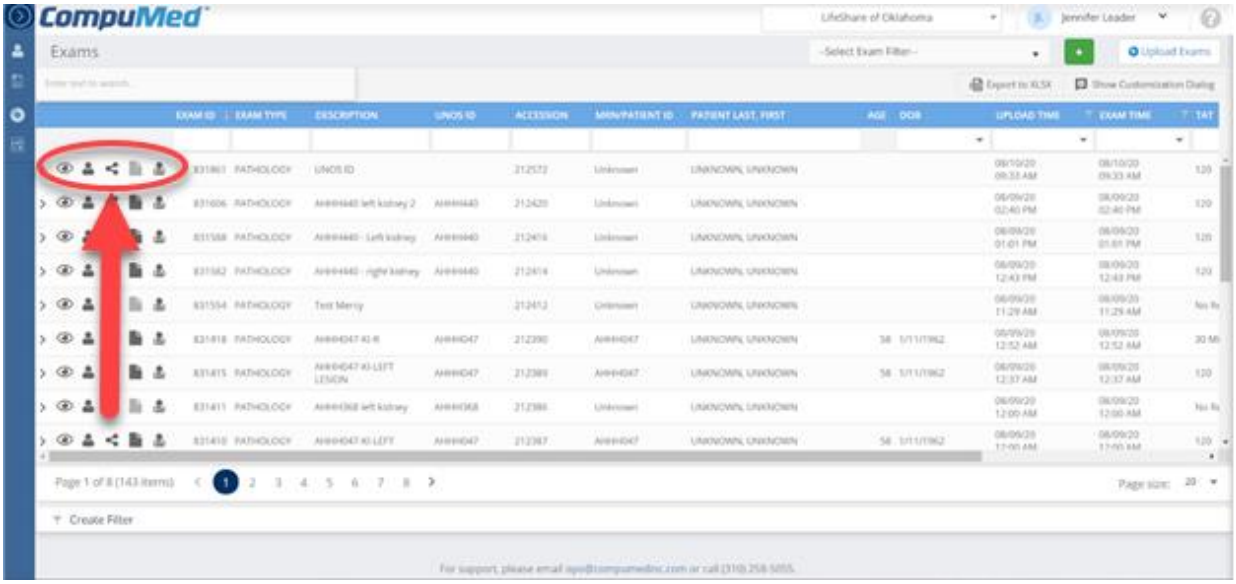


Sign in with your account to access the portal page. (Ask your administrator if you have questions about which account to login to)



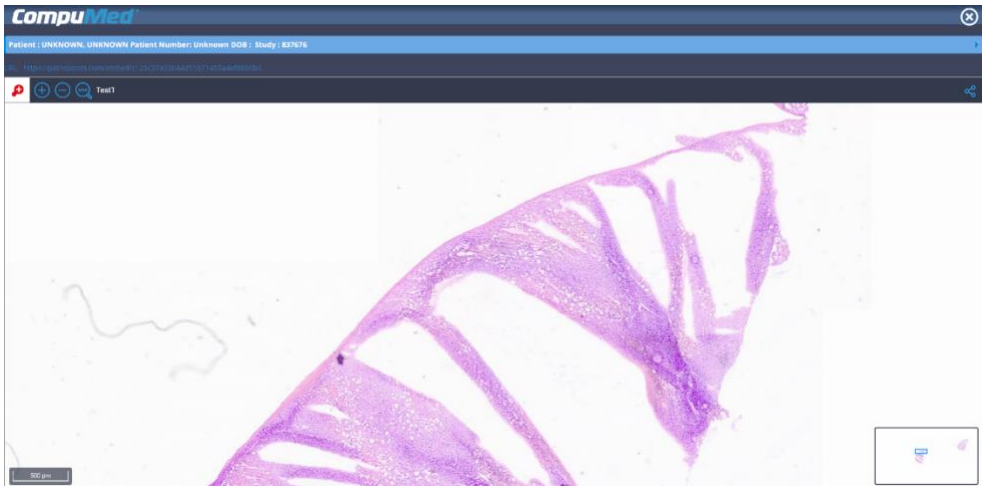
ICON LOCATIONS

From the red arrow, we can see several icons that carry most of the functions in the portal.



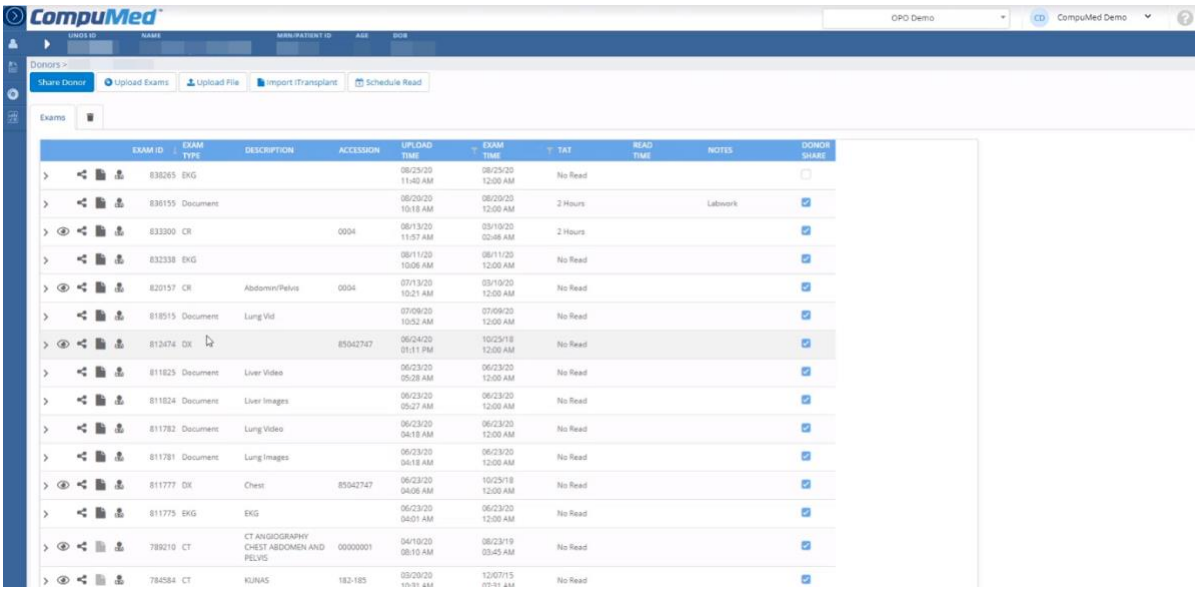
VIEWING A STUDY

View Exam Images: This icon is used to review images. A separate tab will open with a viewer that you can use to view all images in the study.



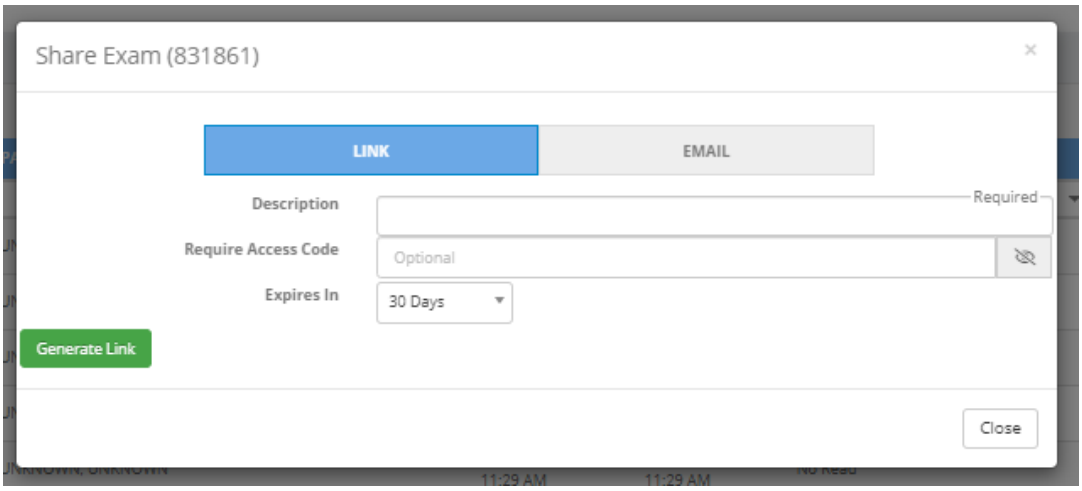
We can also view our studies by navigating to a case's profile. This can be done with the human icon:

Manage Chart: This icon is used to open a case's record of scans. This is where you can view a specific donor records, including previous scans and patient information.



SHARING A STUDY

Share: This icon shares the images from a specific study. Clicking the button will open the window below



The Description can be filled out with the title of the exam

(UNOS ID – Organ – Orientation – additional identification" under "Title"

Access Code is not recommended, as minor typos can restrict access to images.

Recommended expiration length is 30 days for sharing, but it can be changed in the dropdown menu from 1 day to 1 year.

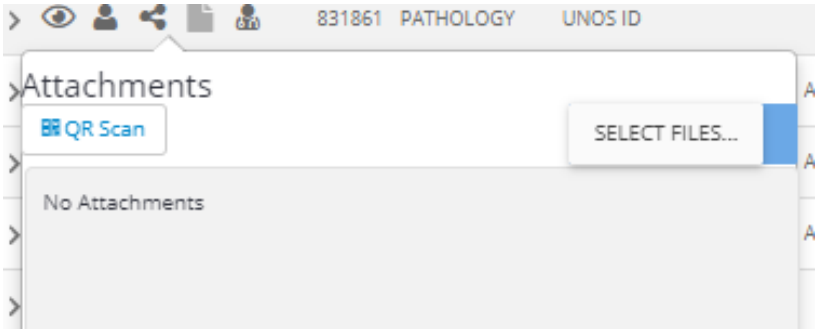
After all information is filled out, click "generate link". This will bring up a new window shown below

ATTACHING FILES TO A STUDY

The new window contains a classic URL link that can be copied and emailed to whoever needs a copy of the images. (Different organizations may input this link into other websites, so be aware of your protocol for images)

The QR code can be shared similarly to the link, by either email or texted to coordinators

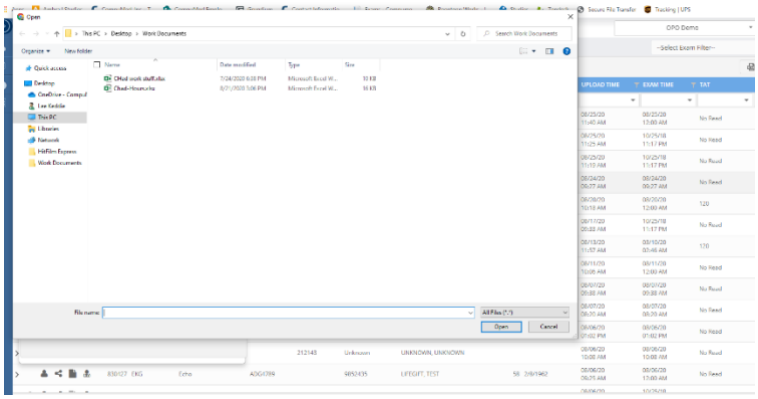
Attachments: This is where you can upload additional files that pertain to the study. Clicking the button will open the window below.



This window has two options, the “QR Scan” button and the “Select files button” these are both methods of uploading attachments to the portal

“QR Scan” will opens QR code that can be scanned with a mobile phone to upload images from your mobile device.

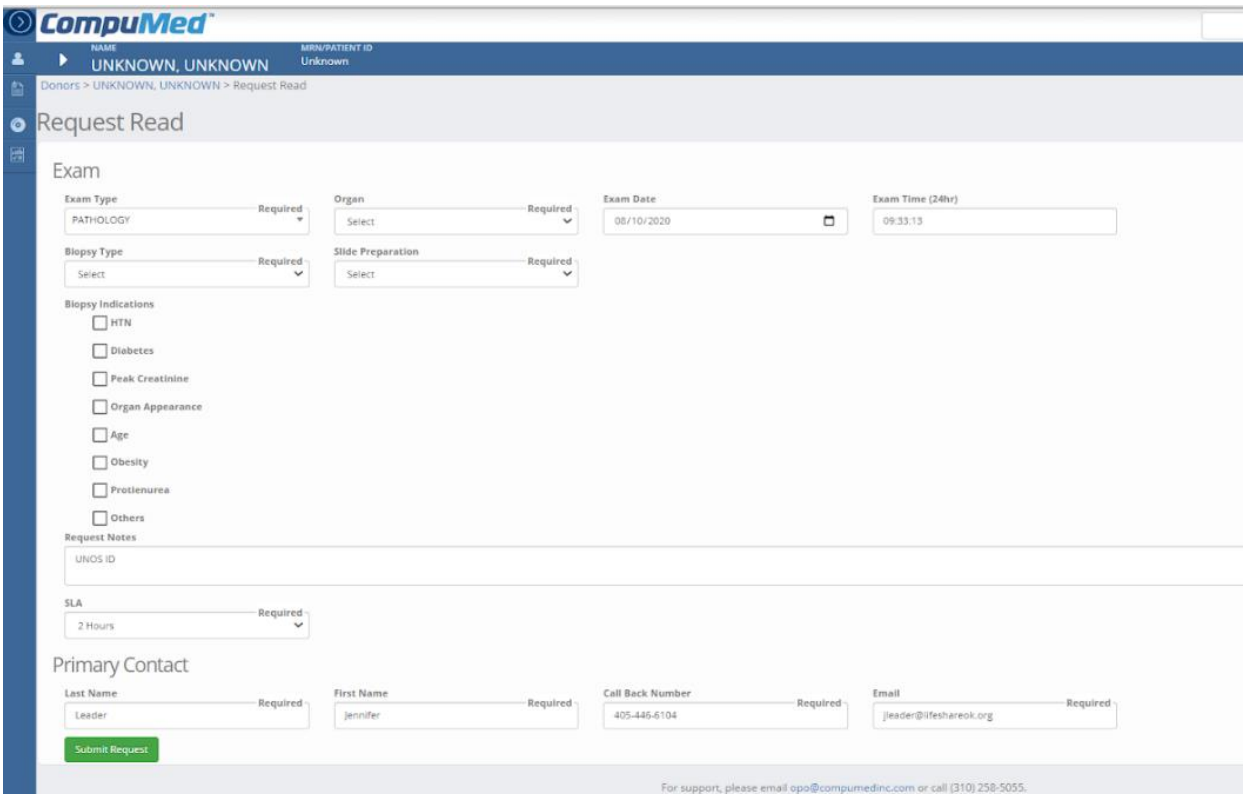
“Select files” will bring up a file explorer to upload documents from the computer you are using



A copy of the doctor’s final report will also be uploaded here

REQUESTING A READ

The doctor icon allows us to request an overread for a specific study. Clicking this icon will take us to the page below



Fill out all relevant information for the study, including additional request notes and the primary contact of whoever is to receive the results of the study.

After all information has been added, click “Submit Request” to send the study to the specialist.