Scan

PathoZoom® Manual

Index

NOTICE

The measurement functionality of the PathoZoom® SlideCloud is not approved for diagnostic purposes!

Version EN May 2019

We hope you will enjoy your PathoZoom® Scan. If you have any questions, please contact us: Smart In Media, Tel. +49 (0)221 27726978, info@smartinmedia.com

1. Introduction

Thank you for purchasing the PathoZoom® Scan scanning solution. With PathoZoom® Scan, you can quickly acquire whole slide images with your own microscope and share them through the PathoZoom® SlideCloud.

2. Computer Hardware Requirements

Because of the sophisticated algorithms used by PathoZoom® Scan, only fast computers are compatible with PathoZoom® Scan (Figure 1). The faster your computer (and more RAM), the better the performance of your scan will be.

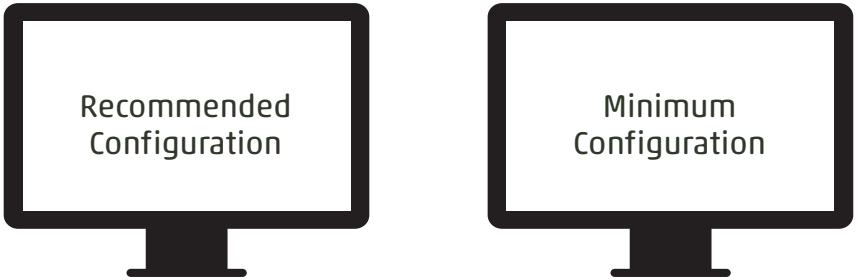
ATTENTION

This software is x64 only and will only work on 64-bit operating systems.

NOTE The processor must be an Intel processor and it must be at least of the Dual Core 3000 series (e.g. Intel i7 3770) because this was the first series with original Intel USB 3.0 chips (important for the camera).

NOTE If you have to use a portable computer, make sure it is equipped with an Intel quad-core processor (e.g. i7 6700HQ or i7 7700HQ) and 8GB RAM.

NOTE Older Quadcore i5 and i7 computers work as well if they are upgraded with a USB 3.0 add-in-card with NEC/Renesas host controller or Fresco Logic FL1100 host controller (e.g. Delock 89391 or Exsys EX11081-2).



	Recommended Configuration	Minimum Configuration
CPU	Intel Core i5 or i7 Quad Core 4000/6000/7000/8000 series	Intel Core i3 Dual Core 3000/4000/6000 series
RAM	16 GB	4 GB
DISK	512 GB solid state Drive (SSD)	500 GB standard harddrive (HDD)
Display	23" Display / 1920 x 1080 pixels (good) 27" Display / 2560 x 1440 pixels (better) 32" Display / 3840 x 2160 pixels (best)	Resolution 1600 x 1900 pixels
Operating System	Windows 10 Professional 64-bit	Win7 Home 64-bit SP1

Figure 1

3. Install Software

Thank you for purchasing the PathoZoom® Scan scanning solution. With PathoZoom® Scan, you can quickly acquire whole slide images with your own microscope and share them through the PathoZoom® SlideCloud.

Before PathoZoom® Scan can be used, a camera driver for the PathoZoom® camera has to be installed using the enclosed USB stick and an internet connection.

3.1. Preinstallation Tasks. Sharing Virtual Slides

A PathoZoom® SlideCloud account must be registered to upload and share digital slides. For this, please either register at https://www.pathozoom.com or talk to our sales representatives.

3.1.1. How to Sign Up in the PathoZoom® SlideCloud

- Enter the link https://www.pathozoom.com/ into your browser's address field.
- Click on the "Start" button in the center of the screen (Figure 2).

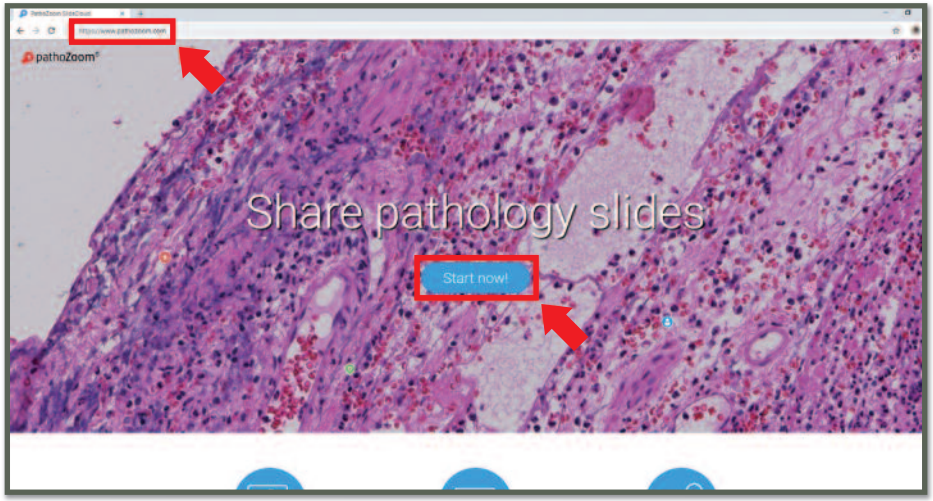


Figure 2

- Click on the "Sign Up" button, located at the top right of the window (Figure 3).

Figure 3

- A “Sign Up” window will appear. Please follow the registration steps. The registration can be also be made with a Facebook or Google account (Figure 4).

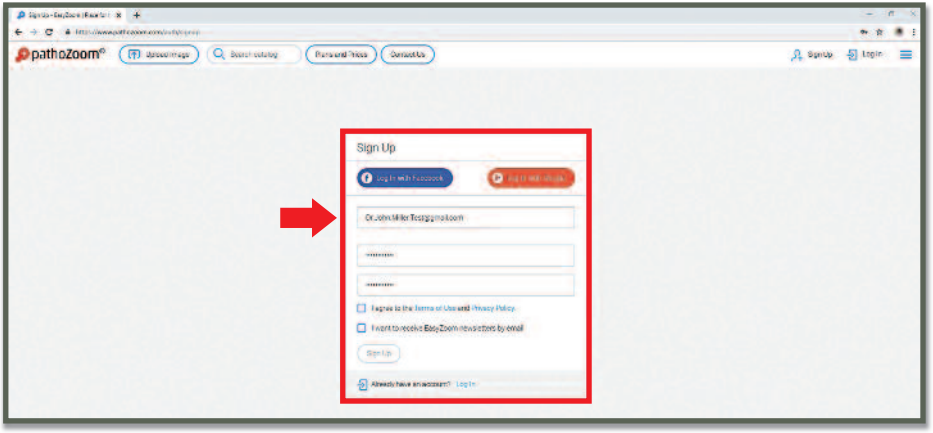


Figure 4

NOTE The password must contain at least one lowercase character, one uppercase character and has to be at least 6 characters long.

- Click on the button "I agree to the Terms of Use and Privacy Policy", located in the pop-up window.
- Click on the "Sign Up" button, located in the link in the lower left corner of the pop-up window (Figure 5).

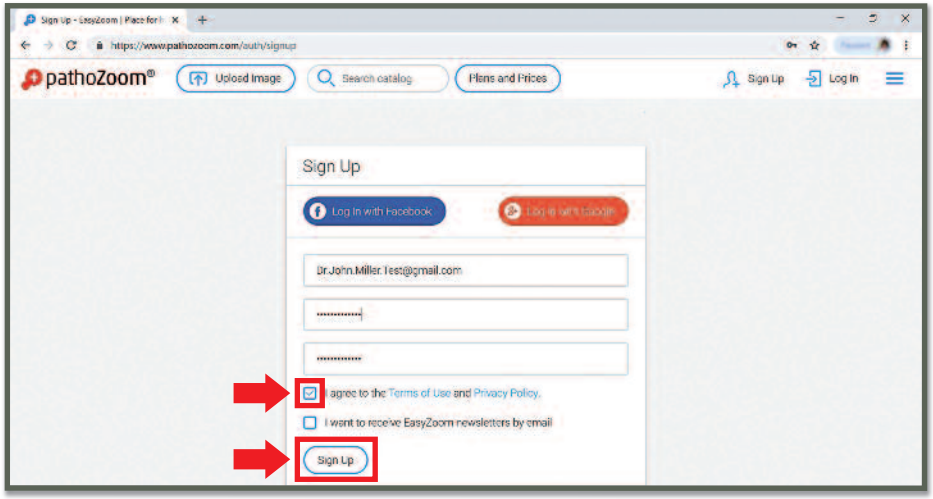


Figure 5

3.1.2. How to “Log In“ into the PathoZoom® SlideCloud

If the account is already signed up, the steps are:

- Use your browser to navigate to https://www.pathozoom.com.
- Click on the “Start” button in the center of the screen (Figure 6).

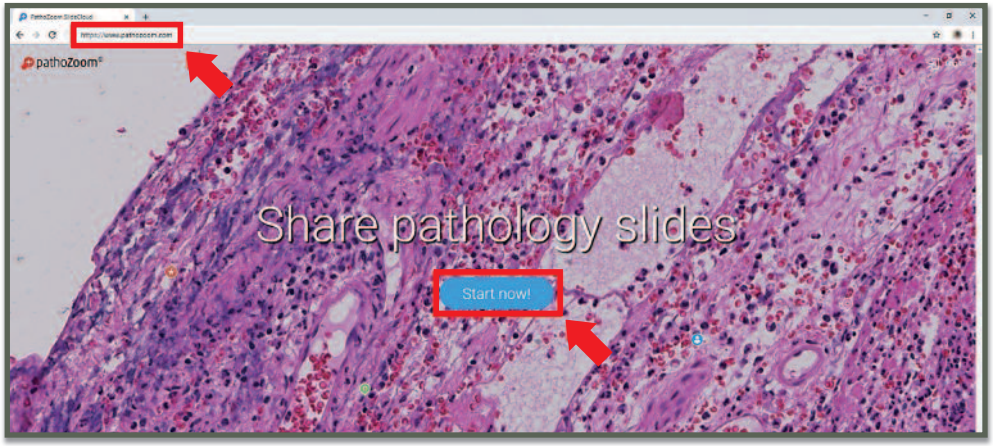


Figure 6

- Click on the "Log In" button, located at the top edge of the screen (Figure 7).

Figure 7

- A "Log In" window will appear. The email and the password must be entered. You can also login with a Facebook or Google account (Figure 8).

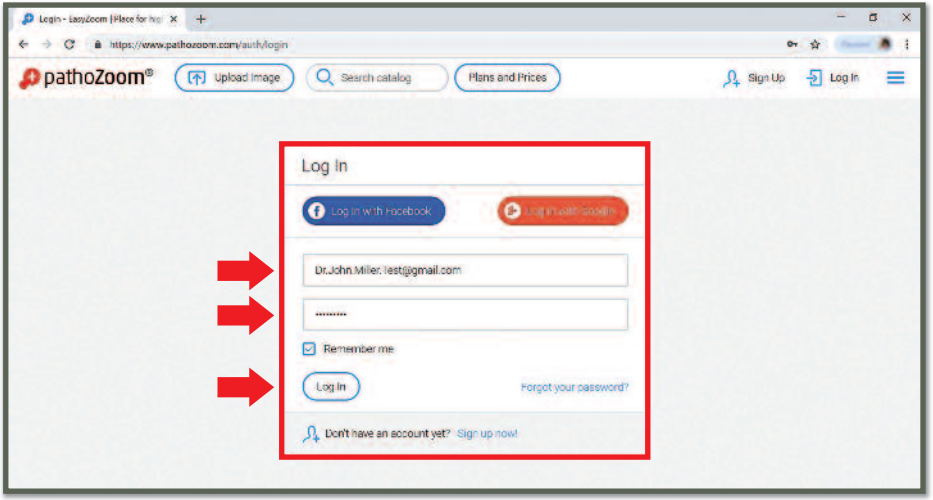


Figure 8

- Click on the "Log In" button, located in the left bottom corner of the pop-up window.

3.2. Setup Instructions

NOTICE

It is very important to prevent dust from collecting on the optical system during the process.

To operate PathoZoom® Scan, you have to follow these installation steps, when all components are in place (Figure 9).

Figure 9

3.2.1. Mount Camera

- Remove the old camera or the cover from the camera adapter (Figure 10).
- Hold the camera with the sensor always pointing towards the floor (to prevent dust from collecting on the sensor) (Figure 11).

Figure 10

Figure 11

- The camera must be attached by screwing it to the adapter (Figure 12).
- Once the camera is connected, please connect the USB cable with the camera and a USB 3.0 port of the computer (Figure 13).
- The camera's LED light will turn on.

Figure 12

Figure 13

TIP

If the trinocular head of the microscope has a light path selector, set it to send 100% of the light to the eyepieces.
As a rule, the more light, the better the scan will be.

NOTICE

If the camera is not correctly connected, an error message will appear. In the same way, a pop-up window will appear if the camera is being used by another program (e.g. PathoZoom® Live View).

- To correctly align the camera, please loosen the screw of your camera adapter (Figure 14).
- For scanning, it is really important that the camera is correctly aligned. Otherwise, when moving the microscope table e. g. from left to right, the scan line will be diagonal. In this step, try to roughly align the camera to be parallel to the stage (Figure 15). You can later improve the alignment using the live view of the software, e. g. by focusing on the border of a microscope slide and check, if it is parallel to the computer window.
- Once the camera is connected, the software PathoZoom® Scan should detect it (Figure 16).

Figure 14

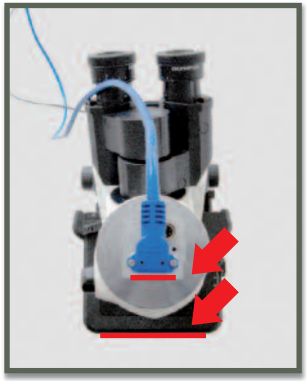


Figure 15

Figure 16

3.2.2. Install Software

Ensure that your computer meets the minimum requirements (look at section 2 "Computer Hardware Requirements").

Installation of the PathoZoom® camera drivers

- Please plug in the USB stick provided in the PathoZoom® product box. Open the Windows Explorer and open the folder "Camera Driver – install first" (Figure 17).

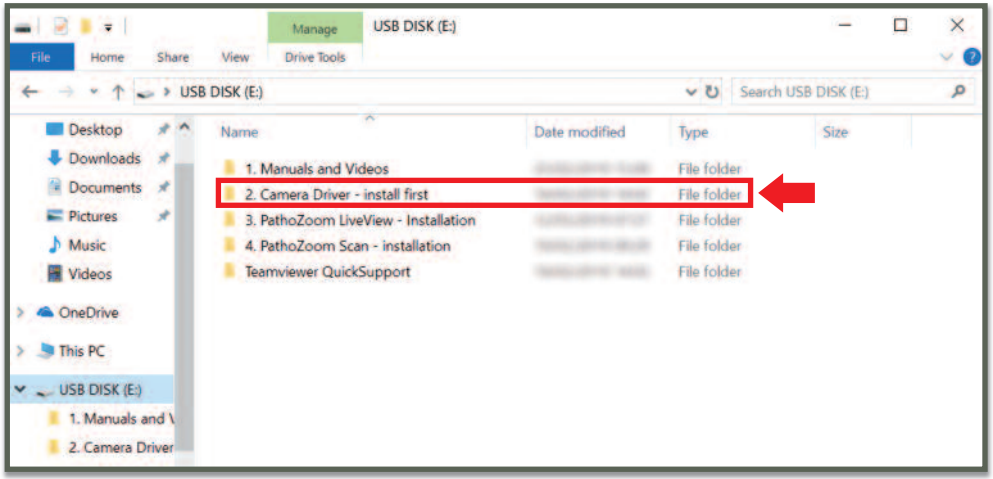


Figure 17

- Double-click the software icon to start (Figure 18).

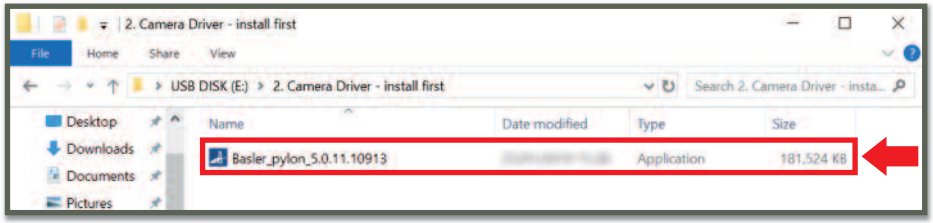


Figure 18

- A pop-up window will appear. Accept the terms in the License Agreement and click on "Next" (Figure 19).
- Please, select "Camera User" and click on "Next" (Figure 20).

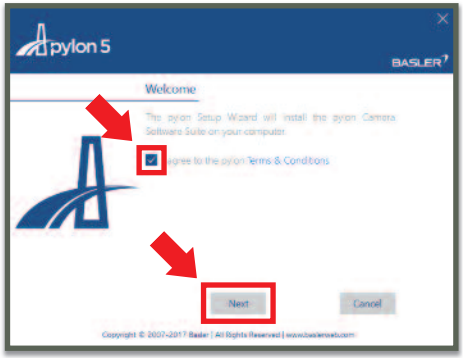


Figure 19

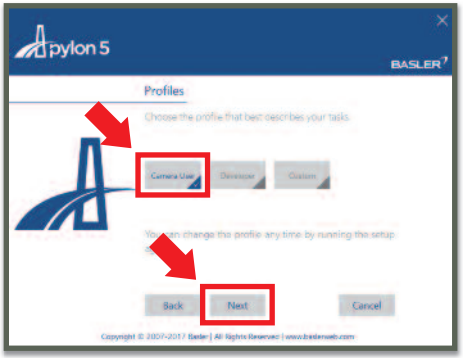


Figure 20

- Select "USB" and click on "Next" (Figure 21).

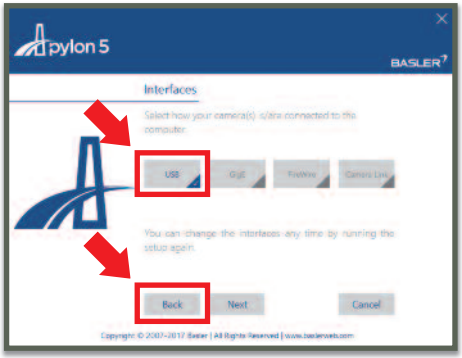


Figure 21

- We continue the process clicking successively the buttons of "Next" (Figure 22) and "Install" (Figure 23).

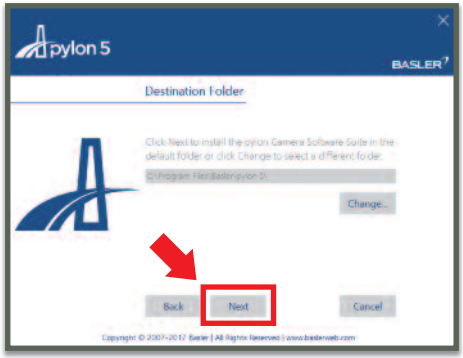


Figure 22

Figure 23

NOTICE

On Windows 10 build 1607 and newer, disable the "driver signature verification" if the camera does show an exclamation mark in the device manager after installing the driver.

- Wait until the end of the process (Figure 24) and click on the "Close" button after the program is installed (Figure 25).

Figure 24

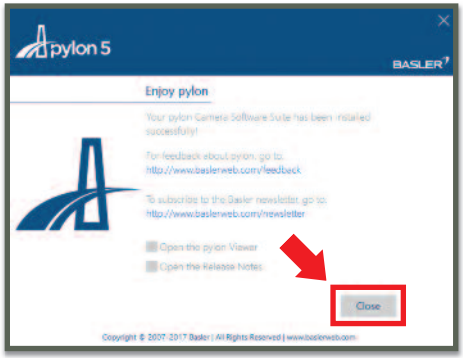


Figure 25

Installation of the PathoZoom® Scan software

- Go to the folder “PathoZoom Scan - installation“ on your USB stick (Figure 26) and double-click the file setup (Figure 27).

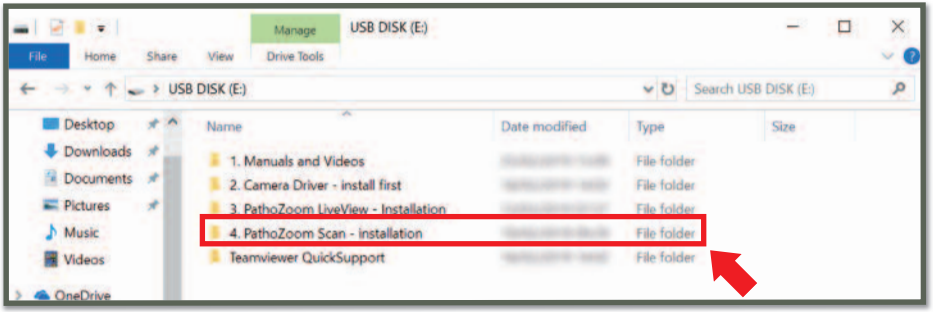


Figure 26

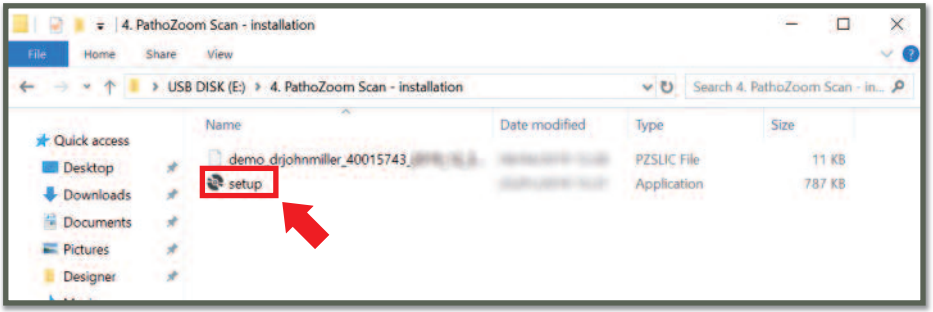


Figure 27

- Click on the "Install" button in the pop-up window (Figure 28).

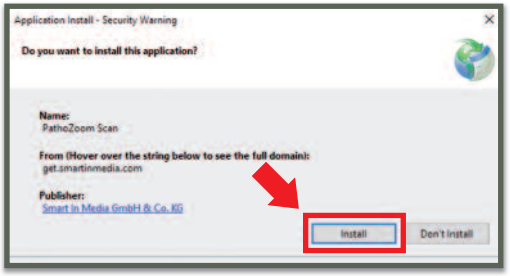


Figure 28

Another pop-up window will appear and will indicate the percentage of installation of the software (Figure 29). At the end of the process, the window will disappear and the program will have been installed.

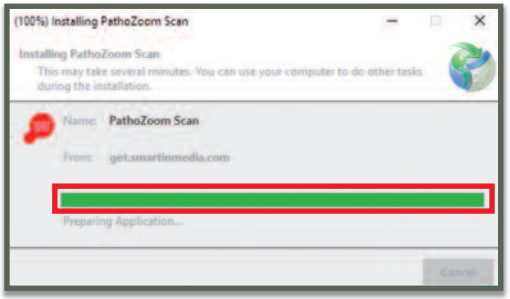


Figure 29

- A “Windows SmartScreen“ warning may occur during setup: click on “More info“ (Figure 30), then on “Run anyway“ (Figure 31) to continue the setup.

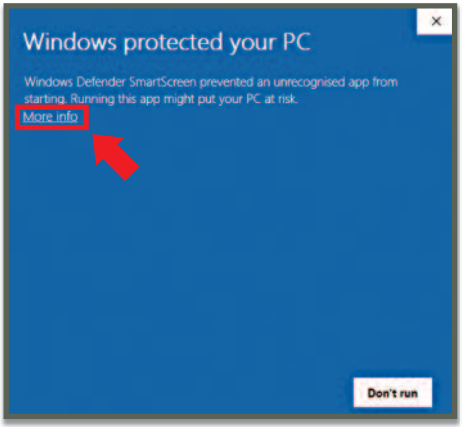


Figure 30

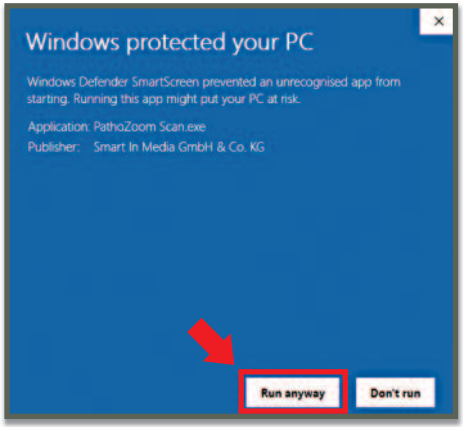


Figure 31

- If an error occurs while downloading, hit the “Retry“ button.

Once the program is installed, a shortcut icon will appear to PathoZoom® Scan on your desktop.

- To start the software, double-click on the PathoZoom® Scan icon, which has been added to the desktop (Figure 32).

Figure 32

3.2.3. Licenses

PathoZoom® Scan needs a valid license key to run, which is bound to your camera.

Register license key

- After double-clicking on the PathoZoom® Scan icon on your desktop (Figure 32), the program will automatically detect the license on the USB stick and the program's start screen will appear (Figure 33).

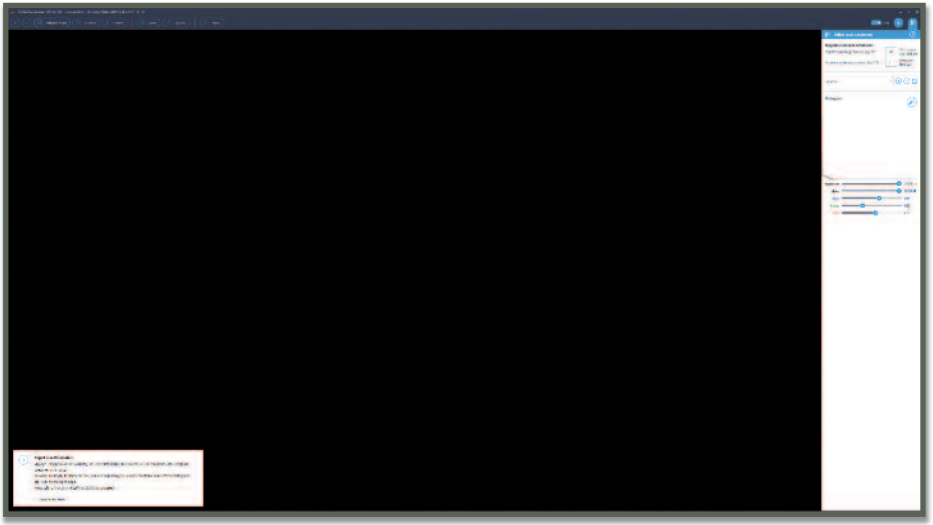


Figure 33

- If the license was not automatically detected (which will always happen in the first installation of the program), please search manually for your license file (Figure 34 or Figure 35):

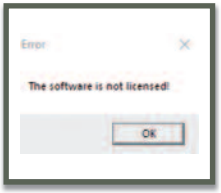


Figure 34

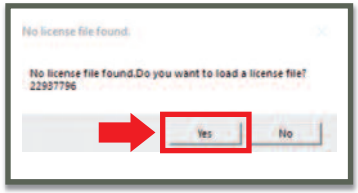


Figure 35

- A pop-up window (Figure 35) will appear. Click on the “Yes“ button.

- Search where the license is (Figure 36). Click on the license and then on the "Open" button.

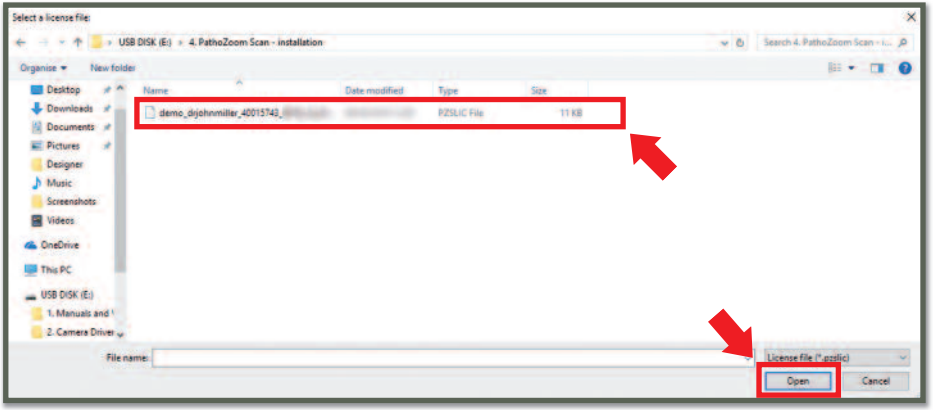


Figure 36

If the license is valid for the camera, the program will start immediately (Figure 33).

If this is not the case, please refer to the following "Replace License" section.

Replace License

Sometimes, it is necessary to replace an existing license file (e.g. to turn a demo camera into a fully licensed camera). The software itself only asks for replacing the license file when it has expired.
Therefore, the stored license file(s) have to be deleted manually:

- Press “Windows“ key plus “R” key simultaneously to start the “run” command line box.
- Enter this command in the text box (Figure 37):
  %localappdata%\Smartinmedia\PathoZoomScan\license

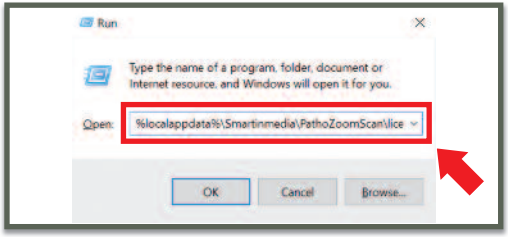


Figure 37

- An explorer window with the license file folder is shown (Figure 38).

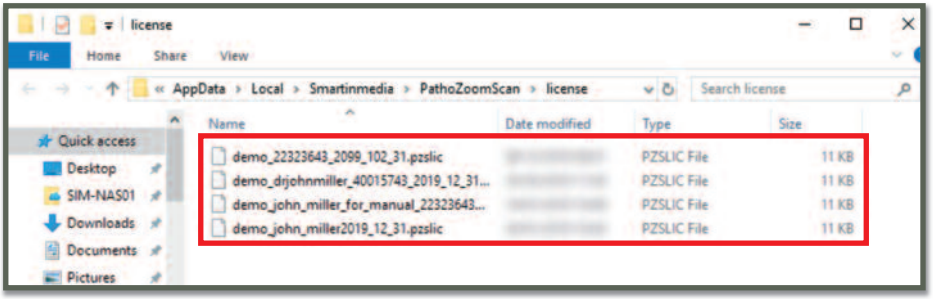


Figure 38

Probably, two license files are in that folder now.

- Delete all the licenses (or move them to the desktop to have a backup) and add the new one that is attached to this computer.
- Start PathoZoom® Scan and check if the license file is accepted (the new license information is displayed in the title bar).

4. Expert Settings

These are the expert settings. Please only use them, when you are advised by our support team.

- Press “F12“ key in the keyboard to display the advanced settings window.
- Activate “In-Camera Color Processing“ on the “Image Acquisition“ tab (Figure 39).
- Set JPEG compression on the “Output File Format“ tab to 90 (Figure 40).
  If output file size is an issue, you can later play around with this value to find the optimum, usually between 75 and 90.
- Press the “Save“ button (Figure 40).

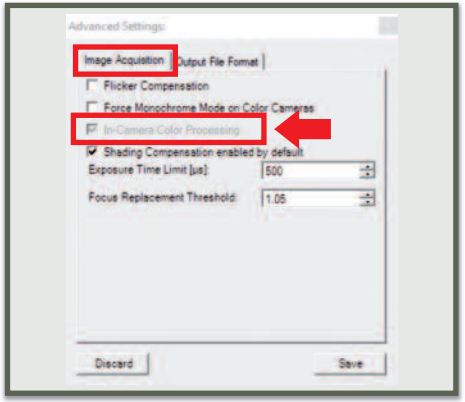


Figure 39

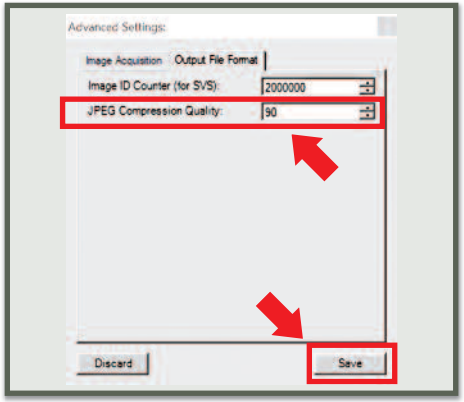


Figure 40

5. Starting PathoZoom® Scan

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

- Place the microscope slide on the stage.
- Select the desired objective lens for scanning.
- Locate the sample and bring it into focus using.
- Check if the sample can be seen on the live camera frame correctly.
- Set the microscope illumination to the max and direct as much light as possible to the camera.
  Some trinocular photo tubes allow directing different amounts of light to the camera and the eyepieces (e.g. 100%/0%, 80%/20%, 0%/100%).
- Fully open the condenser / field iris diaphragm of the microscope.
- As soon as the program is opened the following image will be seen (Figure 41).

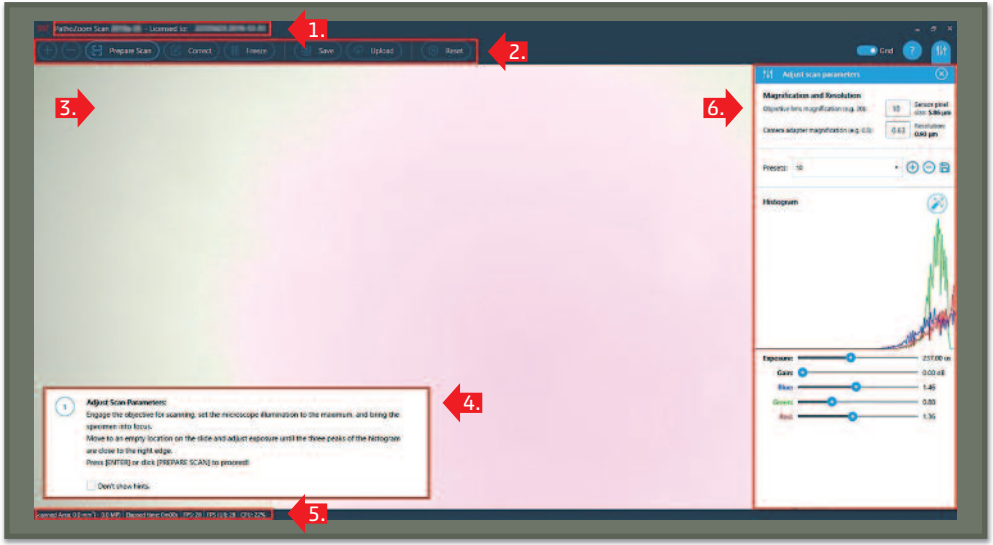


Figure 41

The image shows you:

1. The name of the version of PathoZoom® Scan and the number of the license 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.

6. Adjust Scanning Parameters: Get a Clear Image

Depending on the microscope, the adapter, and the lenses used, specific parameters in the software have to be set.

6.1. Color Calibration: Get a Clear Image

Before starting the scanning process, we must not only focus the image, but also calibrate the colors of the image.

6.1.1. Automatic Color Calibration

- Move to an empty area on the glass slide (Figure 42).

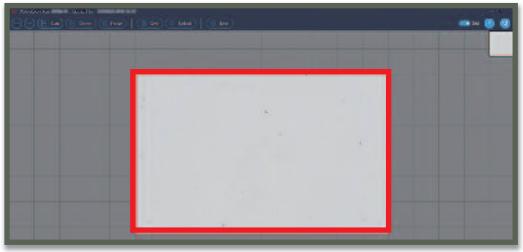


Figure 42

- Click on the icon of the magic wand, located in the right side of the window, in the histogram menu or press the “i” button (like illumination) on your keyboard (Figure 43).

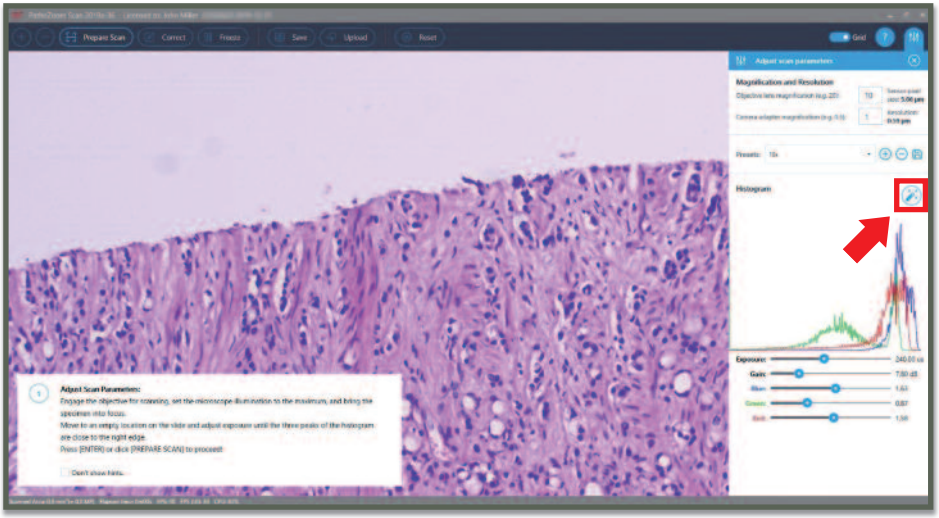


Figure 43

6.1.2. Manual Color Calibration

If the camera image is white or of just one color (pink, red, blue), reduce Gain to 0dB and then reduce Exposure (camera shutter time) until the sample can be viewed on the screen (Figure 44 und Figure 45).

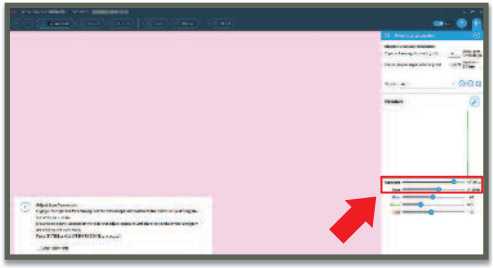


Figure 44

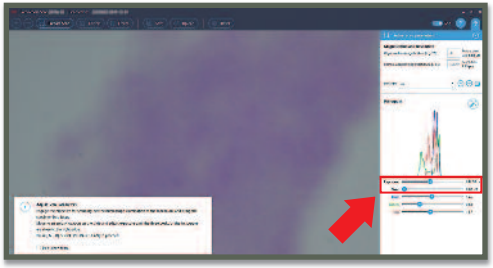


Figure 45

- Refocus the sample on the screen (focus of camera and focus of the eyepieces do not match exactly) (Figure 46).

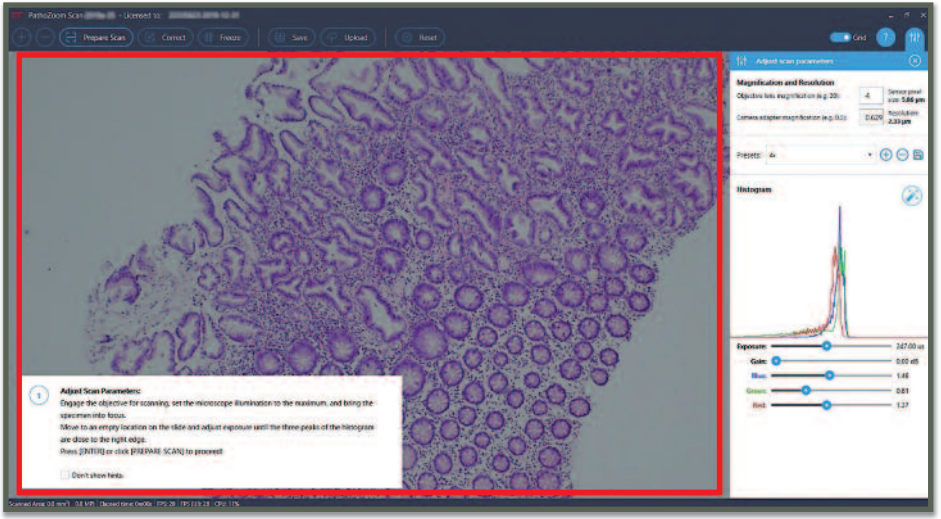


Figure 46

- Move to the edge of the sample until 90% of the camera image is empty/ white background and 10% is sampled (Figure 47). Make sure that the illumination is centered (read more information on section 7 “Align Condenser” and section 8 “Fine-Tune Camera Rotation“).

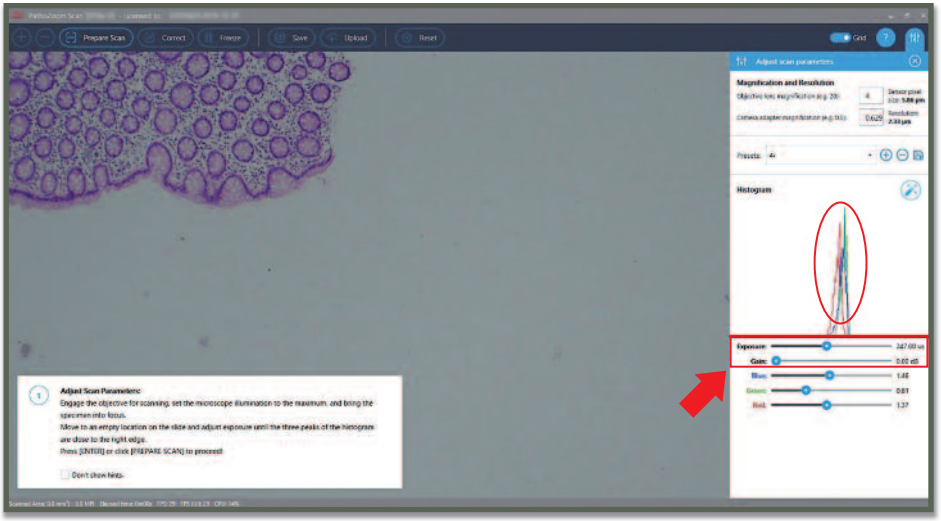


Figure 47

- Adjust Exposure and Gain until the three peaks of the histograms can be seen completely without being cut off at the right edge (Figure 48).

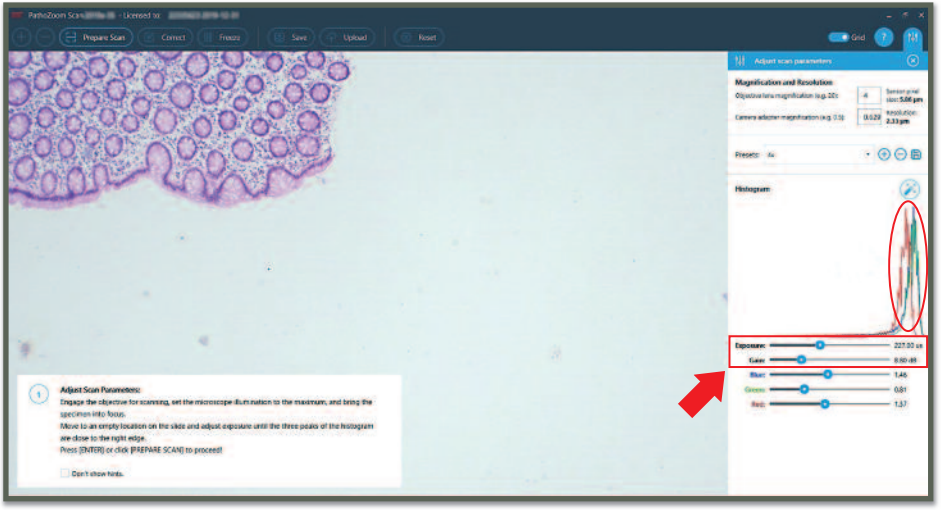


Figure 48

NOTE Higher Gain and Exposure values increase the brightness of the image.
Higher Gain values introduce more noise into the images.
Higher Exposure values introduce more motion blur into the images.
Try to keep Gain below 10 dB and Exposure below 250 micro seconds.

NOTE The brightness can be varied by adjusting the sub stage condensers numerical aperture (N.A.), too (Figure 49).

Figure 49

NOTICE

If your microscope is using halogen illumination, ensure to engage the light balancing filter (daylight filter). Additionally, the light source should have been switched on for at least 5 minutes (warm up time) to stabilize color and intensity of the illumination.

- Set the green gain to a value of "1".
- Then adjust red and blue gain until the red and blue peaks match the location of the green peak as close as possible (Figure 50).

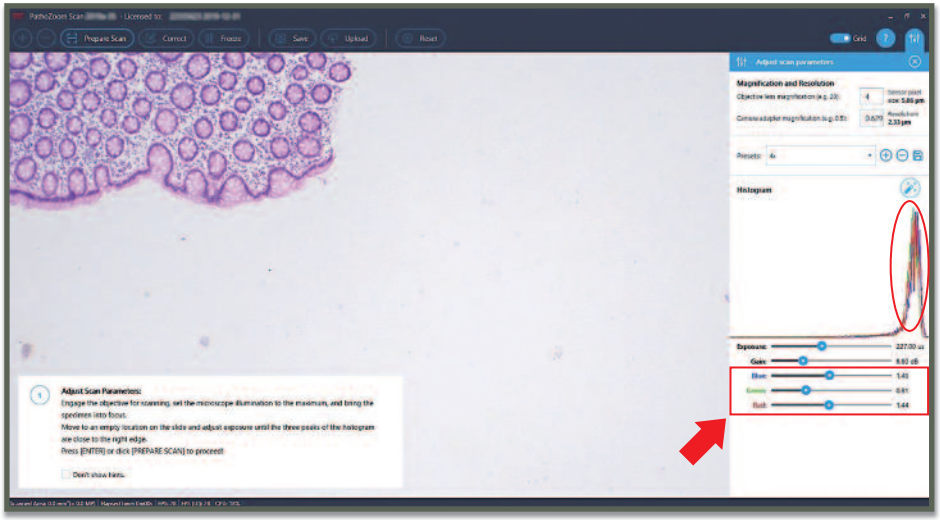


Figure 50

6.2. Presets

It is possible to save configurations for each objective lens magnification (and even for different stains).

6.2.1. Save the Presets

Adjust the scanning parameters as described in section 6.1 “Color Calibration: Get a Clear Image“.

- Press the “+“ button to add a new preset (Figure 51).
- Now the dropdown list turns into a text box.
- Enter a name for the setting.
- Press the “Enter“ or “Return“ key on the keyboard or click on the verification “✓“ button to save the setting (Figure 52).

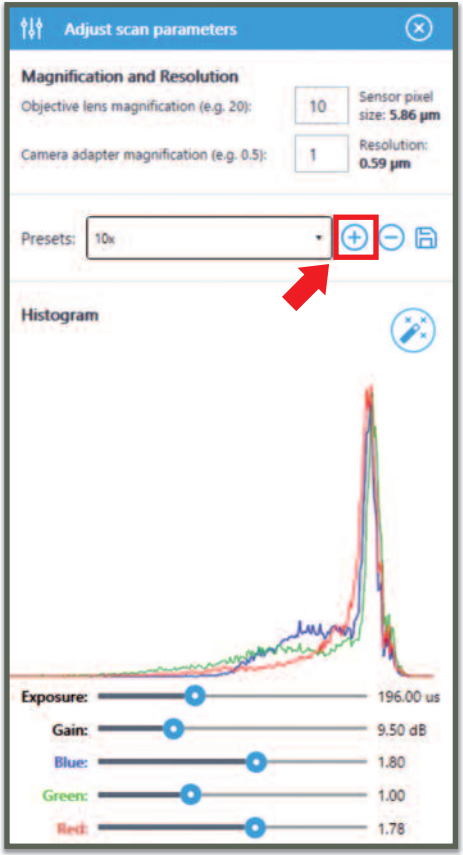


Figure 51

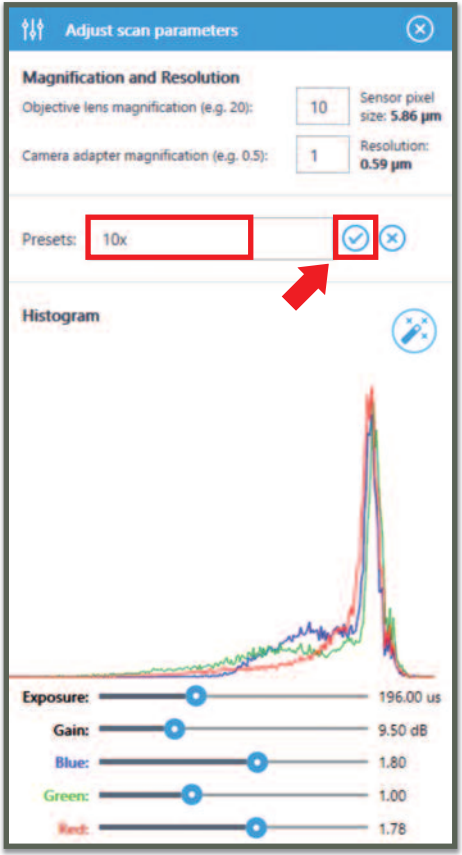


Figure 52

6.2.2. Retrieve the Presets

- Select the desired objective lens on your microscope (e.g. 10x).
- Select the corresponding preset from the list of stored settings (Figure 53).
- Check that the brightness of the image is correct.

If the image does not look as expected, please check these factors:

- The sub stage condenser aperture is set correctly.
- The brightness of the microscope is set correctly.
- The maximum of the light is sent to the camera on trinocular heads.
- Check that the halogen lamp has been warmed up for a few minutes (look at section 9.1.3. "Warm up the Halogen Illumination").

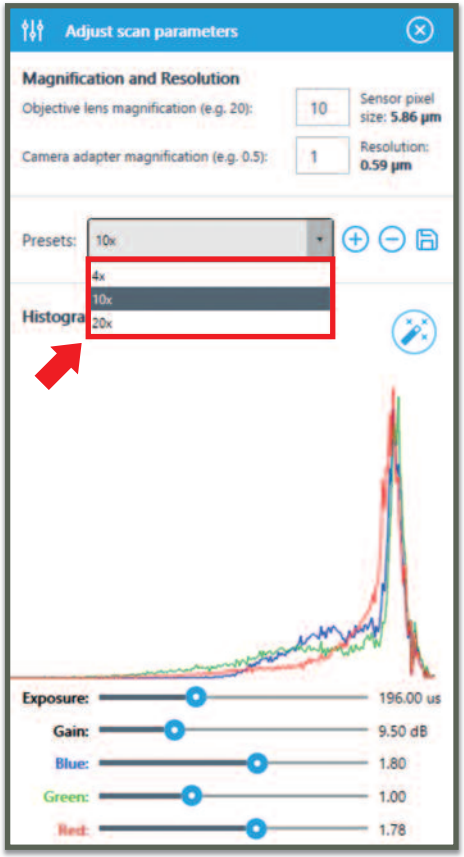


Figure 53

NOTICE

When the halogen bulb is getting old or other scanning conditions changed, existing settings should be updated.

6.2.3. Update the Presets

- Select the desired preset (Figure 53).
- Fine tune the settings (look at section 6.1 “Color Calibration: Get a Clear Image“).
- Press the “Update“ button to up date the existing preset setting (Figure 54).

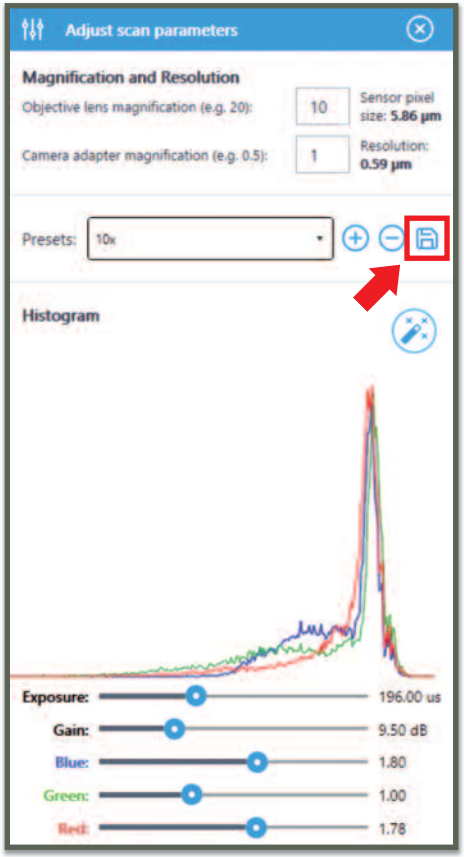


Figure 54

6.2.4. Delete Presets

- Select a preset that is not used anymore.
- Press the "-" button (Figure 55).

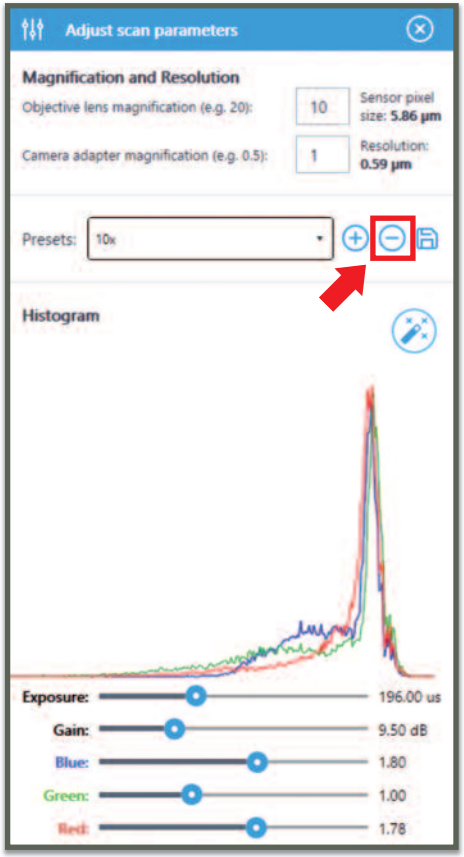


Figure 55

7. Align Condenser

To avoid unevenly illuminated samples, it is important to carefully align Koehler Illumination. The alignment of the illumination can be checked easily after starting up the software.

- After bringing the sample into focus, simply reduce the size of the field iris diaphragm until the image on the camera is reduced
- The Figure 56 shows a well-aligned illumination. The bright spot is in the center of the camera image and the edges of the field iris diaphragm are “sharp“.

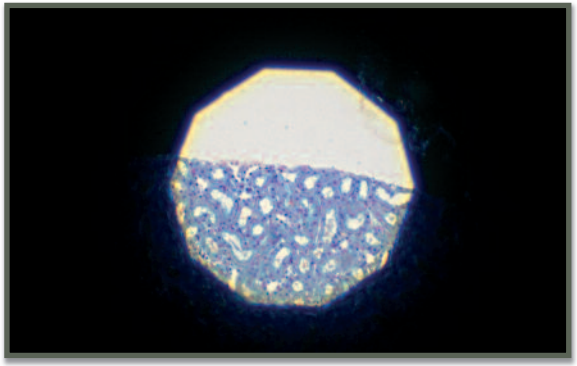


Figure 56

8. Fine-Tune Camera Rotation

Manual slide scanning works best if the camera sensor is as aligned as possible to the motion directions of the stage.

If the camera is not aligned well, when moving the specimen in X-direction, the the screen shows e.g. 95 % motion in X direction and 5% motion in Y-direction. This can be seen easily by observing the motion of the grid lines (Figure 57 and 58).

NOTES

Fine-tuning the camera rotation can save scanning time, because it allows to reduce the amount of overlap between stripes.

In theory, an overlap greater than one tile between the current row/stripe and the last row/stripe should be enough when acquiring horizontal stripes.

The vertical component of the motion results in reducing the overlap below one row of tiles. This results in stitching errors and bad image quality.

Therefore, the overlap should be at least two or three rows of tiles to ensure proper stitching of the images (Figure 59).

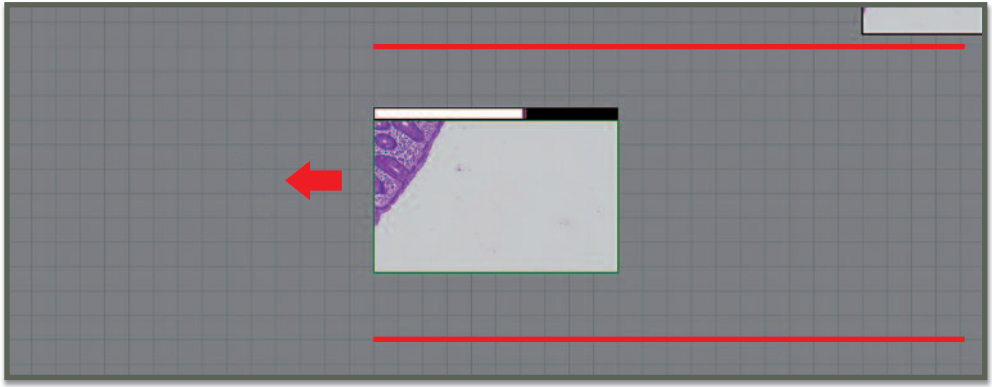


Figure 57

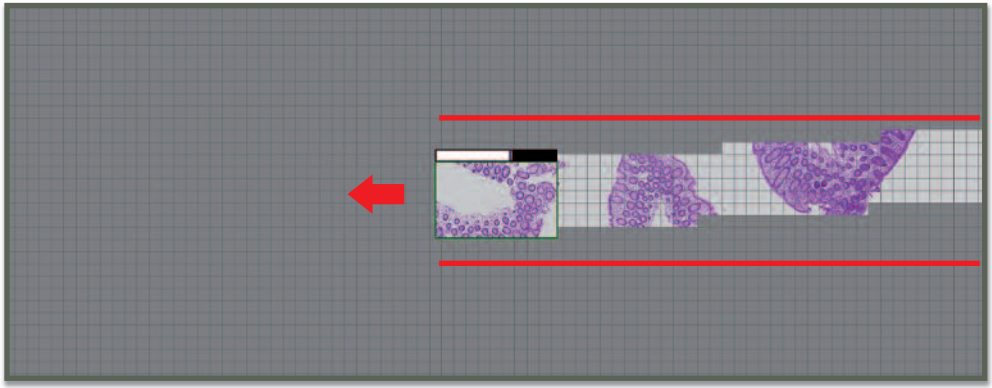


Figure 58

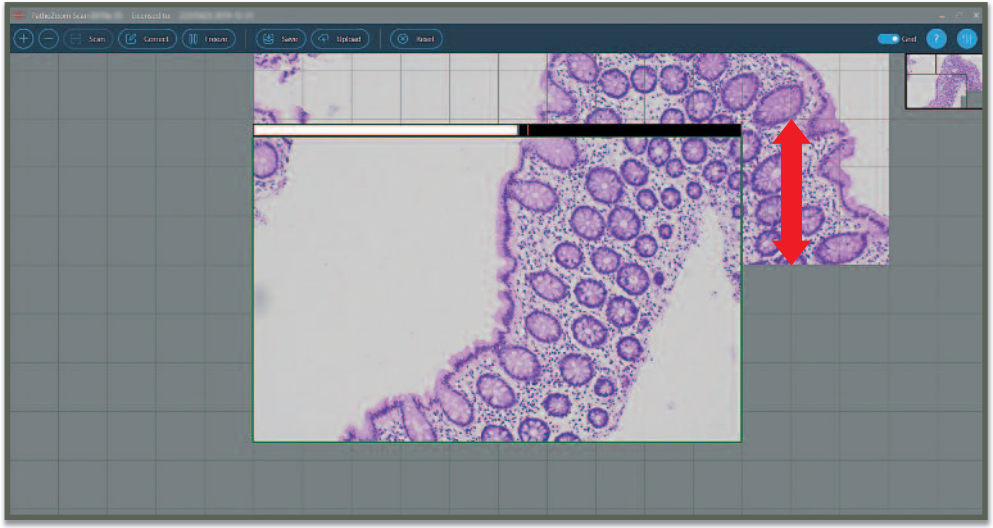


Figure 59

NOTES

Rotation of the camera will require some expertise. Note that the camera is mounted tight on the camera adapter and cannot be rotated itself.

Instead, the camera should be adjusted by rotating the camera adapter, which is usually fixed using a clamp with an Allen screw. Adjust the rotation in very small steps. Be careful when tightening the clamp (Figure 14).

8.1. Preferred Alignment Method

Adjust the camera rotation by aligning the stage or camera to the glass edge of a slide. Select a slide with excellent ground edges. An empty slide is also good (Figure 60).

- Remove all dust from the slide and the slide holder (Figure 61).
- Place that slide onto the stage, make sure it is aligned perfectly with the slide holder (Figure 62).
- Choose a low magnification objective (4x or 10x magnification).
- Move to the upper edge of the slide.

Figure 60

Figure 61

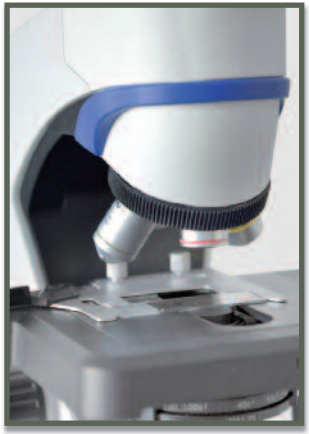


Figure 62

- Bring the glass slides ground edge into focus. The closer the edge is located to the top of the cameras field of view, the better angular errors can be seen (Figure 63).
- Align the camera to the edge of the slide by rotating the camera adapter or the stage.
- Move the slide from left to right and observe the motion of the glass slides edge.

If the glass slides edge does not move up and down significantly the camera is perfectly adjusted.

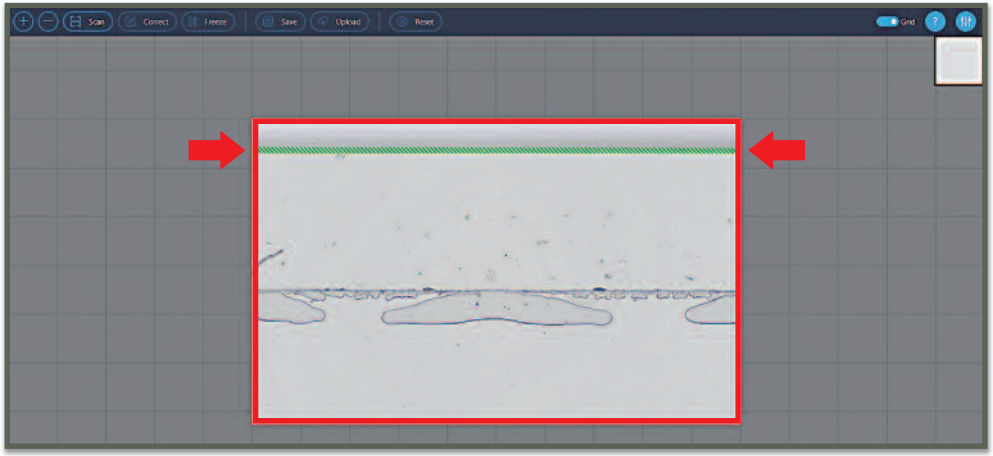


Figure 63

In the unlikely case that the slide's edge is moving up or down significantly there could be following errors (Figure 64):

- If the edge is moving up AND down while the slide is moved, the slide may be unsuitable for calibration.
- If the edge is moving up OR down while the slide is moved, the slide holder of the stage could be misaligned to the stage. This can easily happen if the slide holder is unmounted with two screws by hand. To resolve the issue, please unmount the slide holder, clean the dust from the slide holder and the stage and remount the slide holder while pushing it towards the screws to align it properly.

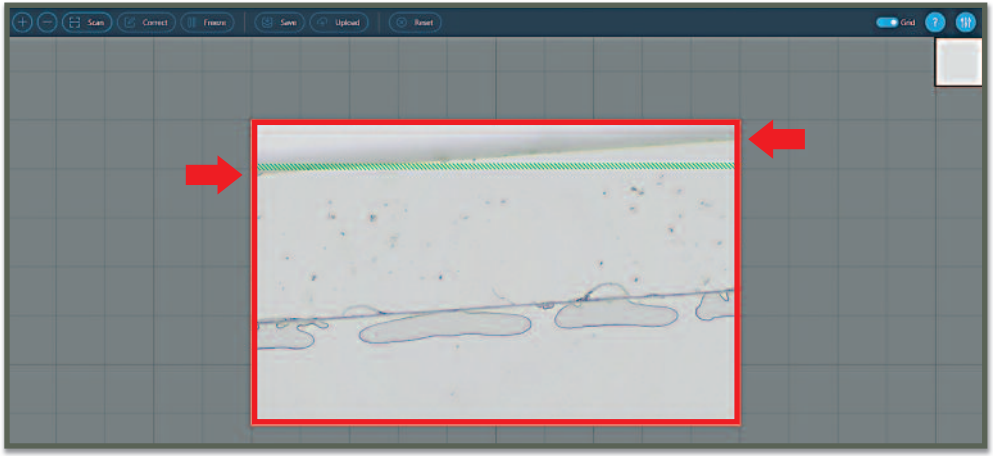


Figure 64

8.2. Alternative Aligment Method

This is also a precise method, but more difficult to perform. Use the image stitching process of the software to align the slide. Select a specimen that allows to perform a very long horizontal motion.

- Engage a high-magnification objective lens (e.g. 40x).
- Prepare as if a slide scan should be conducted (look at section 9.1 “Preparation”).
- As starting location choose the left edge of the sample (Figure 65).

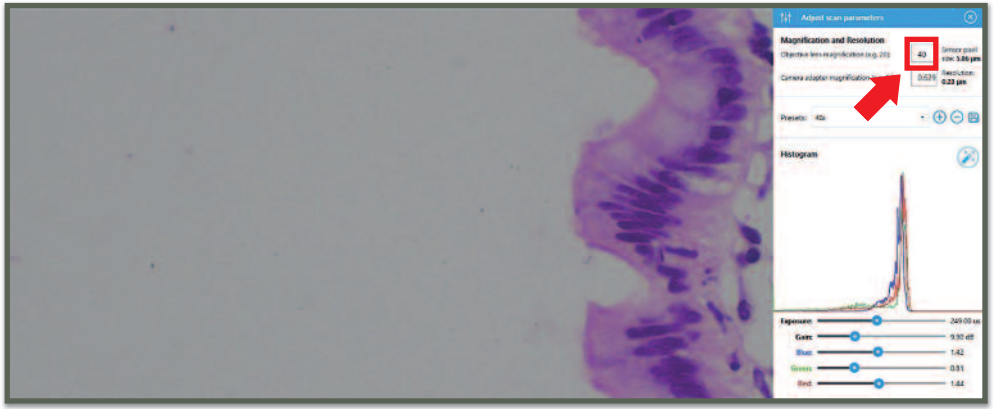


Figure 65

- Start scanning and move to the right for approximately 10 camera fields of view (Figure 66).

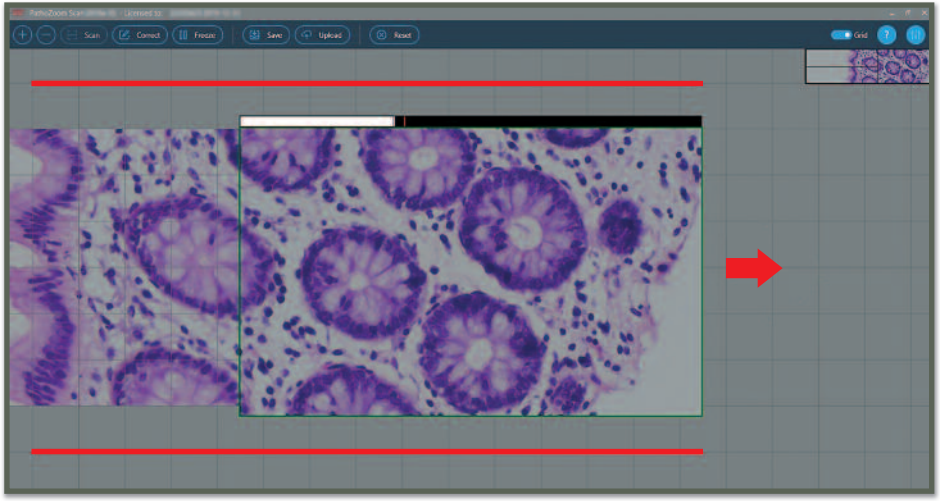


Figure 66

- Observe the motion of the horizontal grid lines (they either move up or downwards).
  > If they moved less than the size of one tile upwards or downwards, the rotation is tuned correctly (see as in Figure 67 the motion is invariable, not as in Figure 58).
  > If the horizontal lines move upwards, the camera has to be rotated clock-wise to reduce the drift.
  > If the horizontal lines move downwards, the camera has to be rotated counter-clock-wise to reduce the drift.
- Press the “Reset“ button (Figure 67), located in the upper side of the window, or hit the “F10“ button in the computer keyboard to reset the scan and repeat the procedure until the blue condition is satisfied.

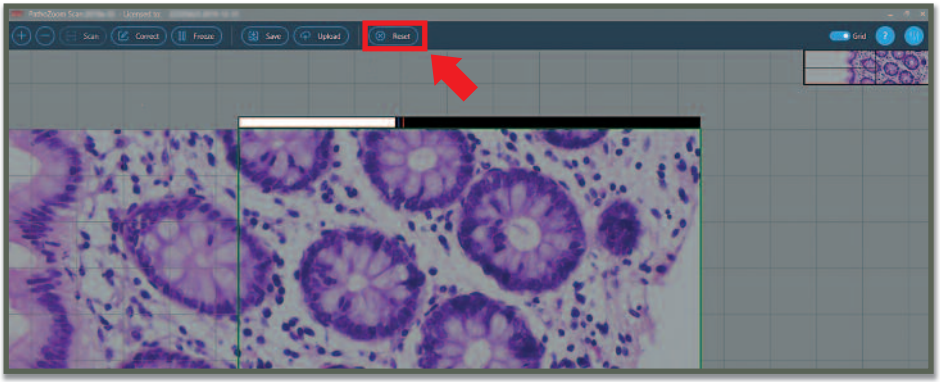


Figure 67

9. Scanning Slides

Performing the scanning of specimens, saving the images and uploading them to the cloud with help of different tools are the main functions of PathoZoom® Scan.

9.1. Preparation

9.1.1. Quality of the Specimen

For manual whole slide imaging, it is important, that the specimen is of good quality. Avoiding thickness variations of the specimen speeds up the scanning process by reducing the need to refocus while scanning.

9.1.2. Structures Scanning

Do not lose orientation while scanning a specimen:

- Look at the sample with low magnification and memorize its contour.
- When scanning in horizontal stripes from top to bottom, locate the upper most edge of the specimen and use it as a starting point (Figure 68).

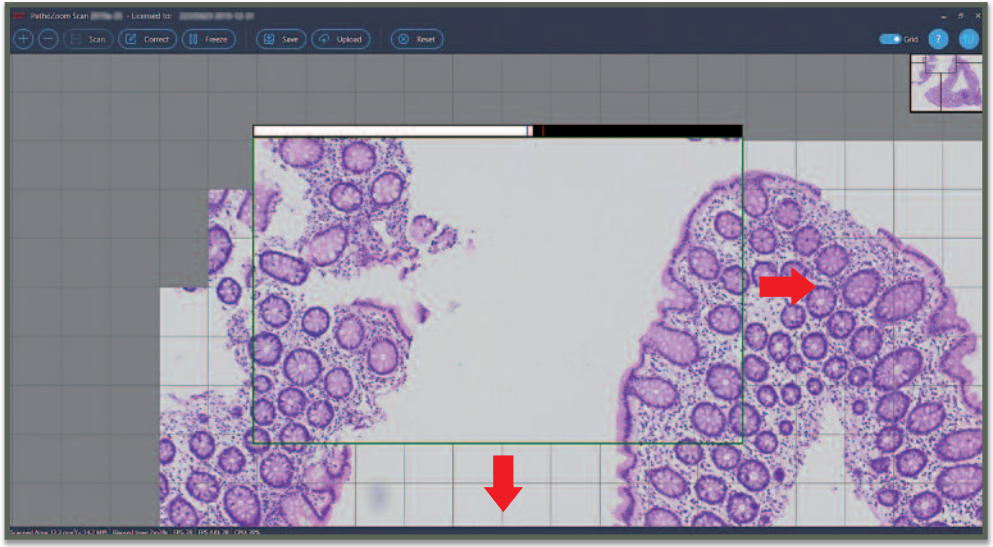


Figure 68

9.1.3. Warm up the Halogen Illumination

Warming up the illumination is a crucial step for halogen illuminations, because the color and intensity of the lamp is changing significantly in the first few minutes of operation. If the brightness and color keep changing after a few minutes, this might be a hint to replace the bulb.

TIP

For difficult specimens with disjointed sample areas, simply take a picture of the whole slide with a smartphone first. This helps you to remember all areas that have to be scanned.

This virtual slide shows a difficult specimen (Figure 69). The disjointed areas were scanned counter-clockwise.

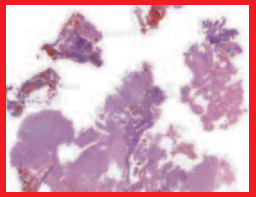


Figure 69

9.1.4. Free Resources on Your Computer

PathoZoom® Scan is hard work for the computer.

- Close all other applications before starting the PathoZoom® Scan application. This ensures that everything works smoothly.
- Attach the power supply when using a portable computer for scanning.
- After booting your computer and logging into your account, the computer is still getting ready for you in the background. It takes at least one additional minute for the computer's resources to be available.
  Running PathoZoom® Scan software too early may cause unintended behavior.

9.1.5. Help Tools

During the scanning process, several tools can be used:

GRID

PathoZoom® Scan can show a grid in the background of the scan window. This helps the user to have a better orientation while scanning. With the "Grid" switch, which is located in the upper right corner of the window, can be used at any time (Figure 70: grid activated; Figure 71: grid deactivated).

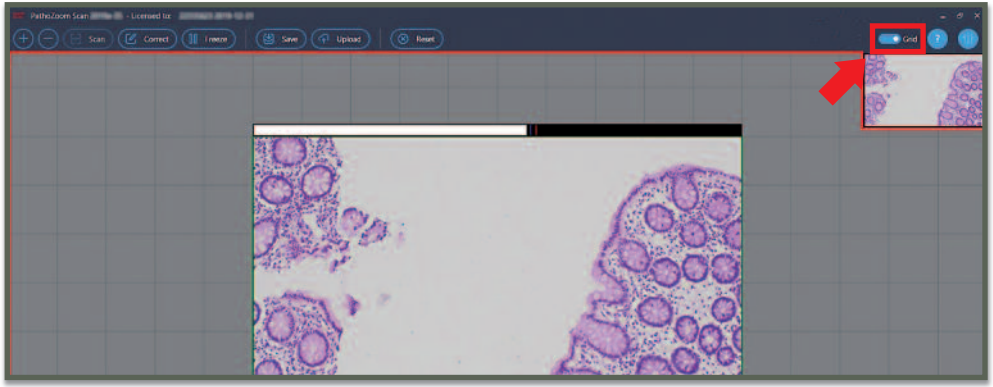


Figure 70

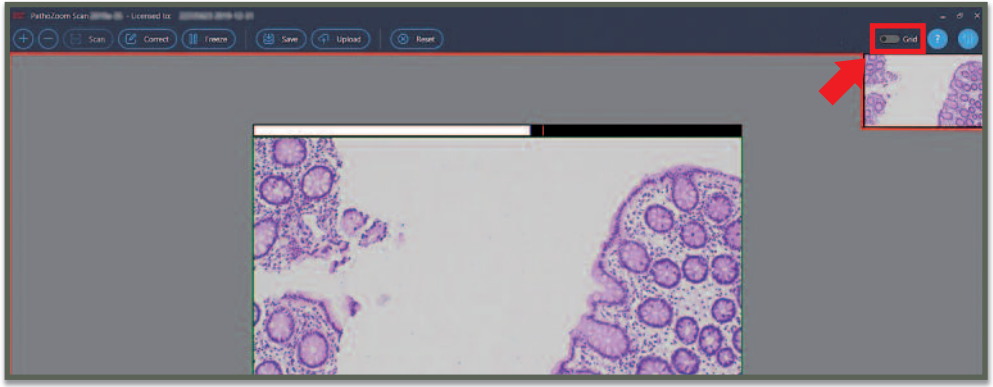


Figure 71

ZOOM +/-

The buttons “+“ and “-“, located in the upper left corner of the window, will help to increase (Figure 72) and decrease (Figure 73) the zoom, respectively. With a decreased zoom, the overview is better. On the other hand, with a higher zoom, the visual control of the live image is improving. It is always possible to change the zoom without affecting the scanning.

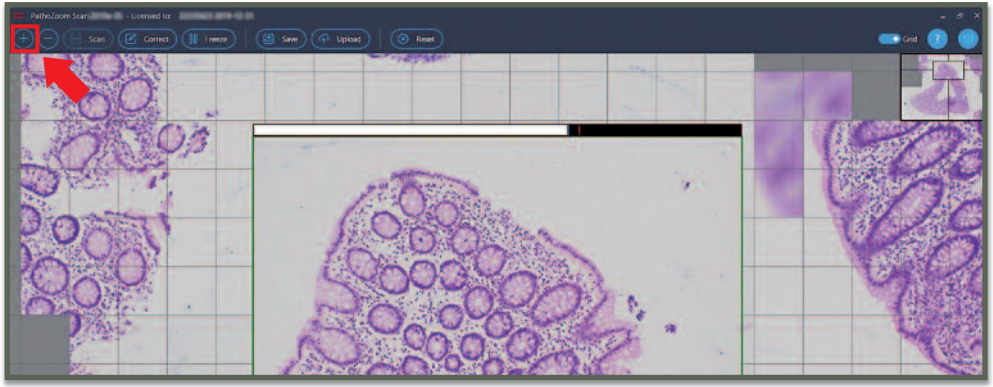


Figure 72

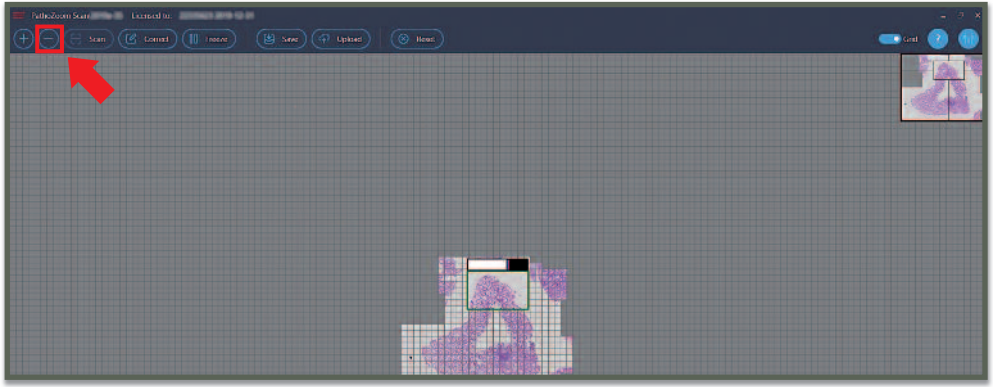


Figure 73

FOCUS BAR On the top of your live view frame, a flickering white bar is shown. This bar indicates, if the image is in focus or not. The further the bar is to the right, the better the focus (Figure 74). This provides a visual control for a better scan result.

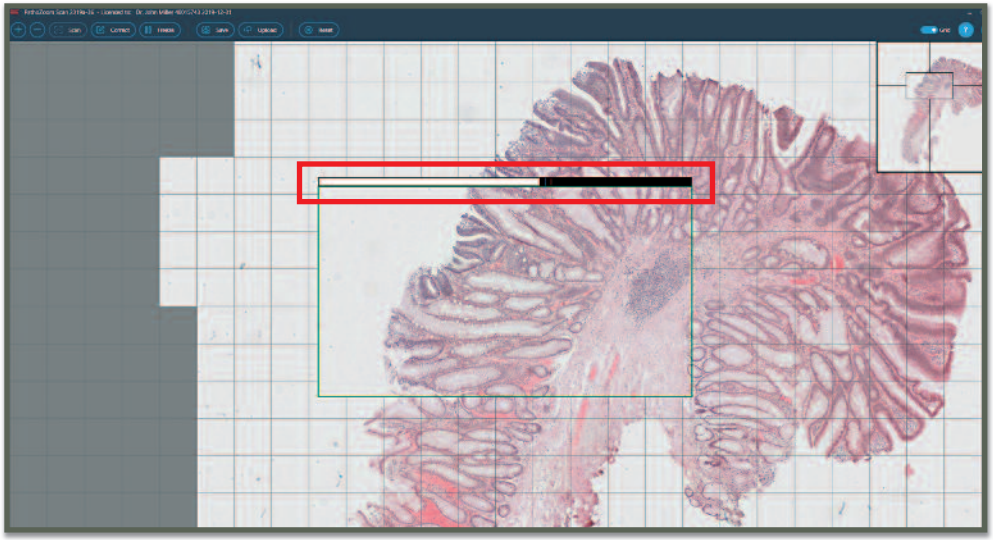


Figure 74

HINTS

By default, comments will appear in the lower left corner of the window as a help during the scanning process (Figure 75).

To deactivate these comments (Figure 76), click on the question mark icon "?" located in the upper right corner of the window or in the "help window" itself ("Don't show hints") (Figure 75).

Figure 75

NOTICE

Some comments (such as number 6 or 7) cannot be deactivated until the process has been solved.

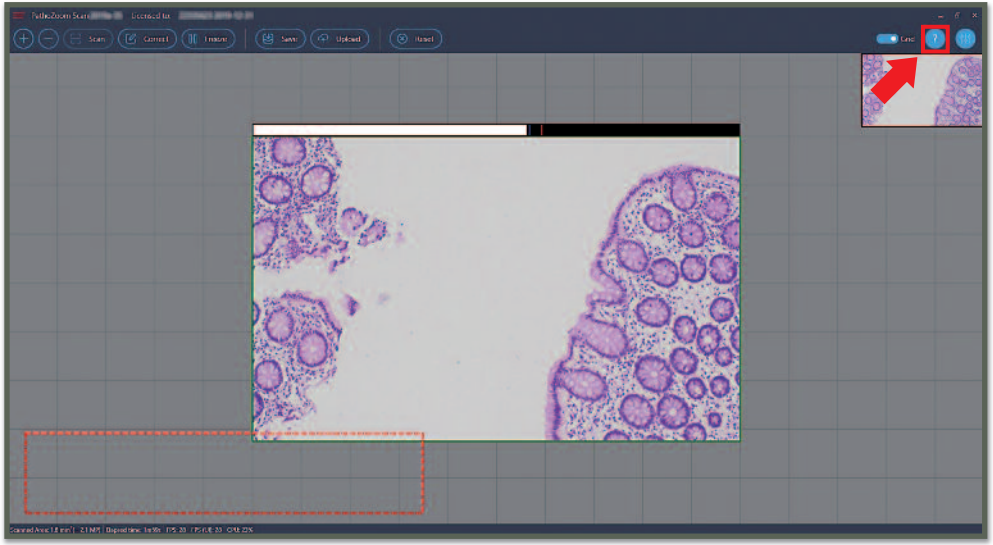


Figure 76

9.2. Basic Scanning

- Press the “Prepare Scan“ button, located on the upper left corner of the window or hit the “Enter“ button to close the scanning parameters window (Figure 77).

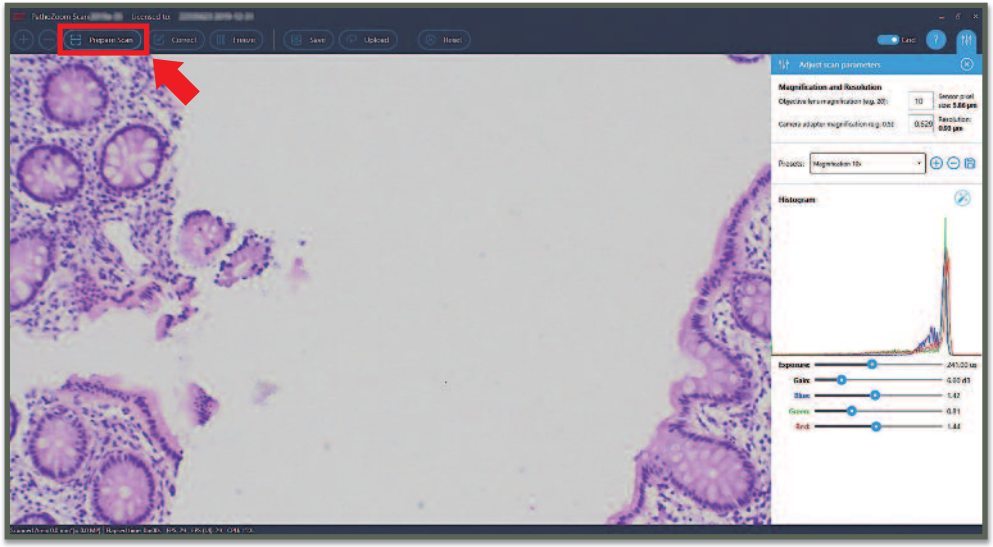


Figure 77

Now the software needs to “see” an empty part of the slide to estimate the background for shading correction (Figure 42).

When starting within a tissue, the tissue appears very bright (Figure 78) because the software initially assumes that the dark tissue is caused by shading.
The software automatically updates the shading correction instantly.

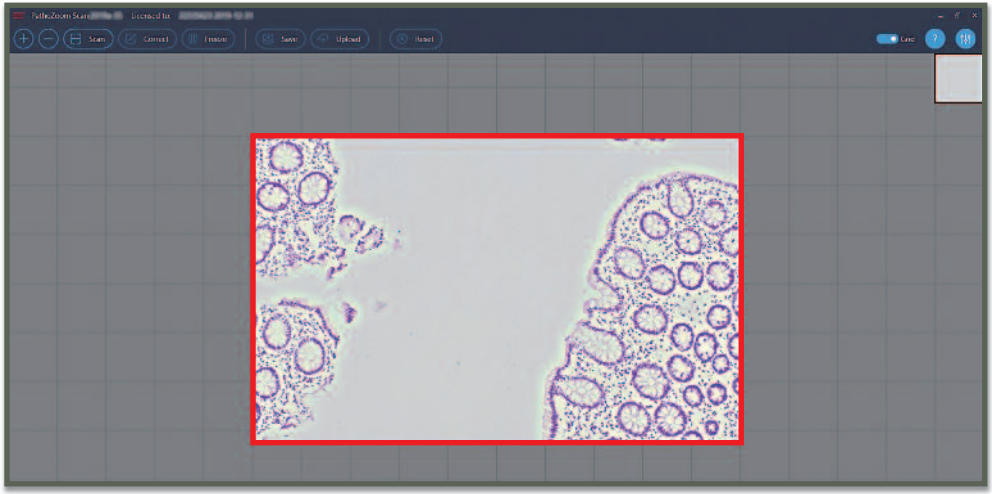


Figure 78

So, in order to get the shading correction working appropriately:

- Move the sample out of the camera's field of view for a second and move back to a position at the edge of the specimen. After moving back into the specimen, it should look evenly illuminated (Figure 79).

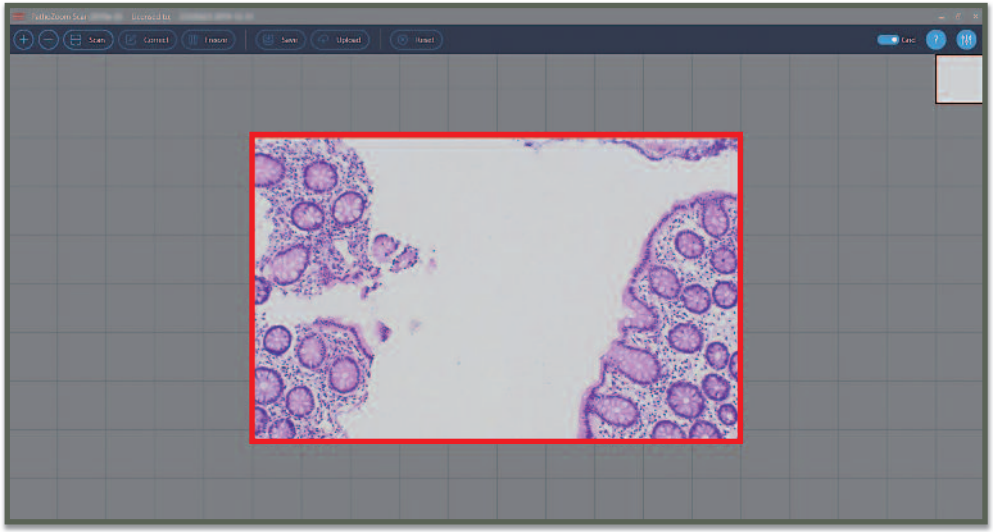


Figure 79

Sometimes, the corrected image has errors caused by diffraction patterns within the sample. In that case:

- Simply move out of the sample and reset the shading correction by pressing the magic wand icon, located in the right side of the window, in the histogram menu or press the “i“ button (like illumination) on your keyboard to disable the illumination correction and press it once more to activate the shading correction (Figure 43).
- Then, move back into the sample (Figure 80).

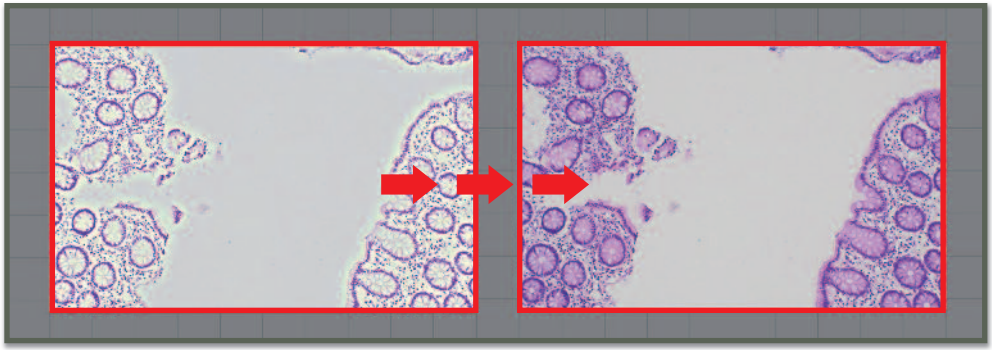


Figure 80

- Start scanning at the edge of the slide (at least 80% of the camera image should be covered by tissue).
- Press the “Scan“ button, located in the right upper corner of the window, or hit the “Enter“ button on the keyboard to start scanning (Figure 81). The border around the live camera image turns green to show that the scanning is active and working (Figure 82).

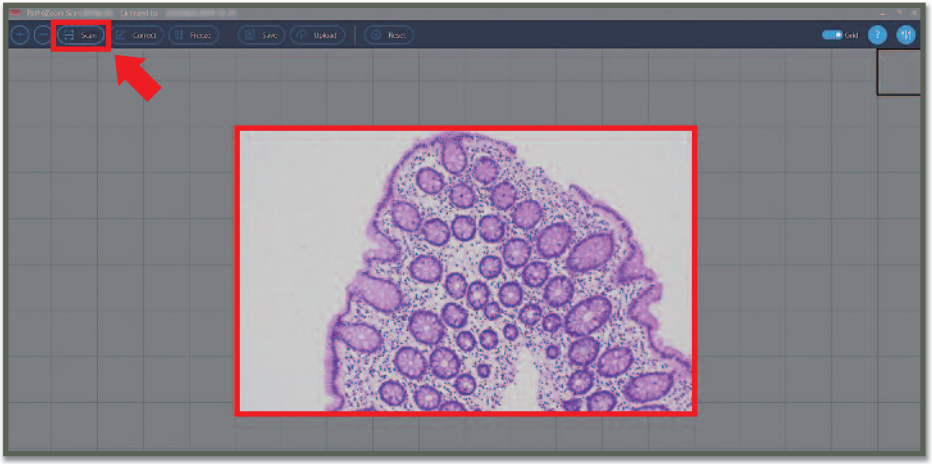


Figure 81

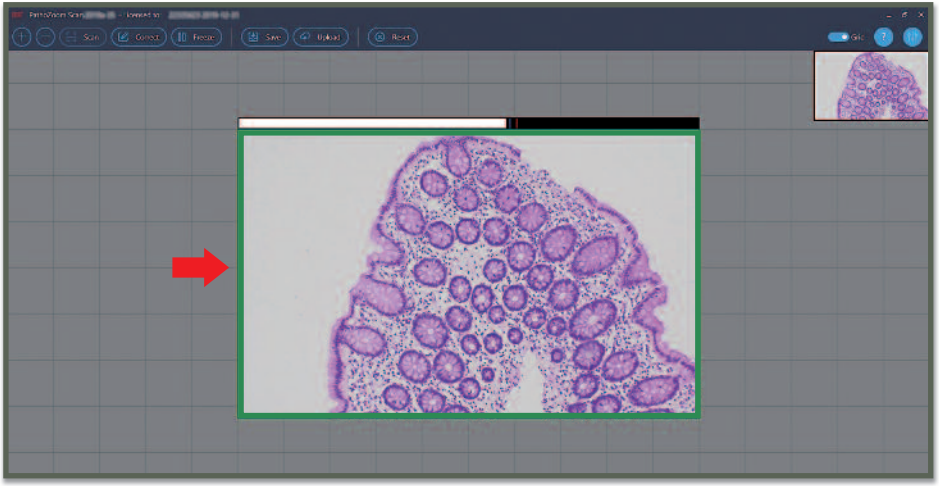


Figure 82

- Move the slide to acquire horizontal or vertical stripes. If your camera has a very wide aspect ratio (e.g. 16:10) it is recommended to scan vertical stripes. For standard aspect ratios (5:4 or 4:3), vertical and horizontal stripes are equally efficient.
- Make sure that adjacent stripes are overlapping by at least two or three rows (or columns) of the grid (Figure 59).
- With the flickering white bar at the top of your live image preview, you can see, if your image is in optimal focus. The further the bar is to the right, the better the focus.

9.2.1. Correct the Image

Occasionally, the scanned image will need to be corrected for abnormalities in the scanning process.

> In the case of a blurring within the image, this means that the microscope is out of focus. This can be easily visually tracked by a change of the flickering white bar (Figure 74). When the bar width decreases, you are out of focus. Readjust the focus of your microscope again.

> Hint: When you have scanned an area out of focus, just re-focus the microscope and go over the same area again. PathoZoom® Scan will automatically detect the better focus and replace the scanned area with the better focused images.

> If the scanner loses track (usually because you are accidentally moving into an empty area of the slide that cannot be stitched or you are moving/ accelerating the slide too fast for the camera) the border of the live camera image turns red (Figure 83). Slowly return to the last known position until the live image border turns green again (Figure 84). The scan will realign automatically.

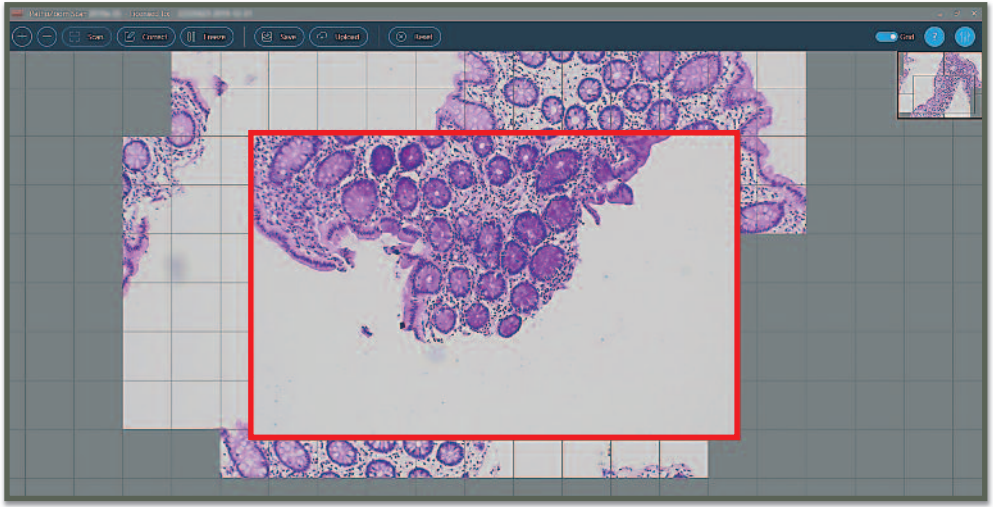


Figure 83

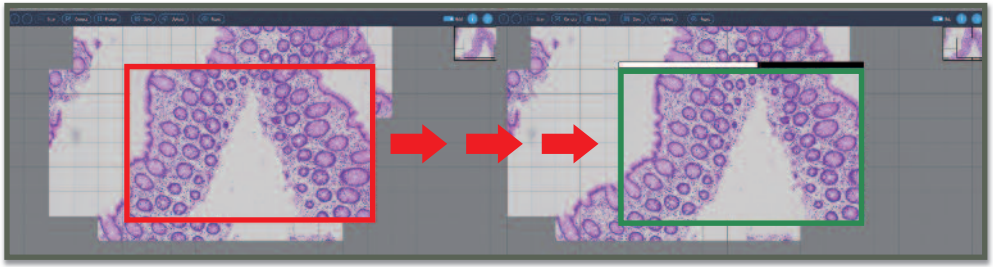


Figure 84

If that does not work, there are different solutions:

1st solution

Click on the “Correct“ button, located in the upper link border of the window, or press the “Back Space“ button on the keyboard to rewind and realign the scan and live image manually (Figure 85).

After the correction, click on the “Scan” button, located in the upper left corner of the window or press the “Enter” button of the keyboard to continue with realigning scan and live image manually.

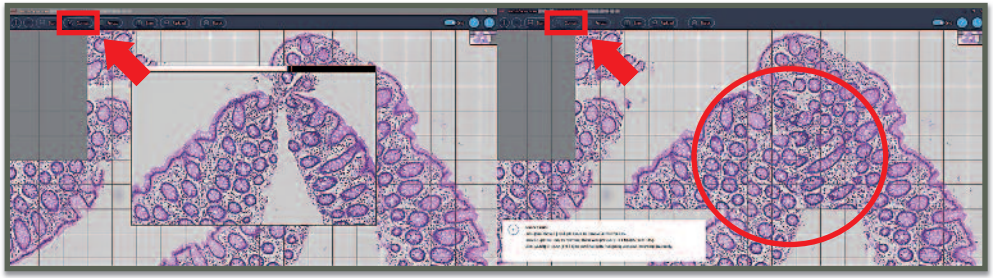


Figure 85

2nd solution

Manually realign live image and scan: Move the slide physically to an already scanned location.
Then drag the scanned image with the pressed left mouse button to match the live image until the live image border turns green.
Then, click on the “Scan“ button or press the “Enter“ button in the keyboard to continue scanning (Figure 86 and Figure 87).

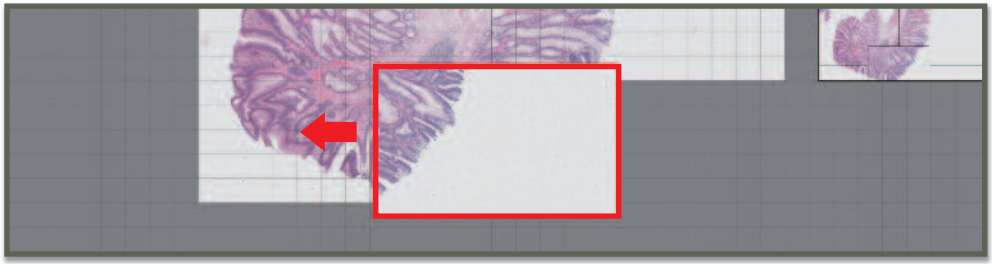


Figure 86

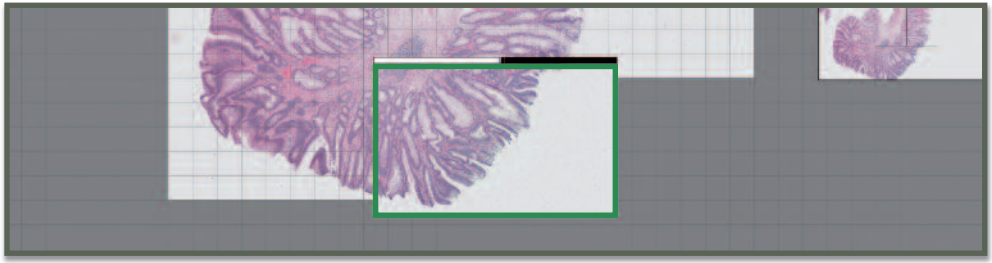


Figure 87

9.2.2. Save the Scanned Image

The scanned images can be locally saved to the computer.

- Press the "Save" button, located in the upper side of the window, or hit the "F7" button in your keyboard to save a scan slide in the computer (Figure 88).

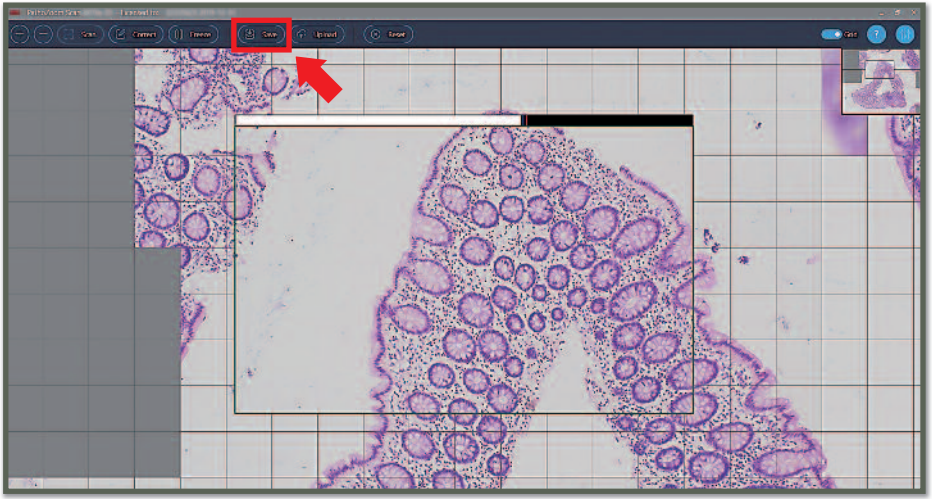


Figure 88

- A pop-up window will appear, look at the place you want to save the image. Then click on the “Save“ button (Figure 89).

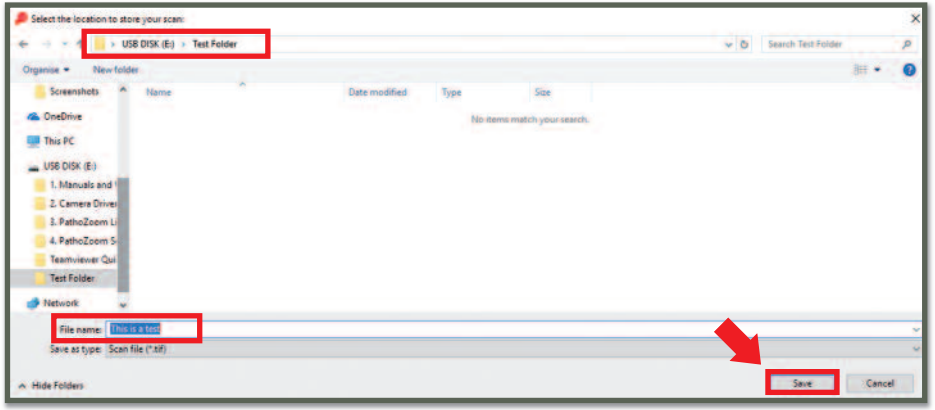


Figure 89

9.2.3. Upload the Image to the Cloud

Images can be uploaded to the PathoZoom® SlideCloud so they can be annotated, shared and accessed from anywhere with a secure internet link.

- Create a PathoZoom® SlideCloud account first (please look up section 3.1 “Preinstallation Tasks. Sharing Virtual Slides“).
- Press the “Upload“ button, located in the upper side of the window, or hit the “F8“ button in your keyboard to save it to disk and upload it to the PathoZoom® SlideCloud (Figure 90).
- A pop-up window will appear to log in to the PathoZoom® SlideCloud.

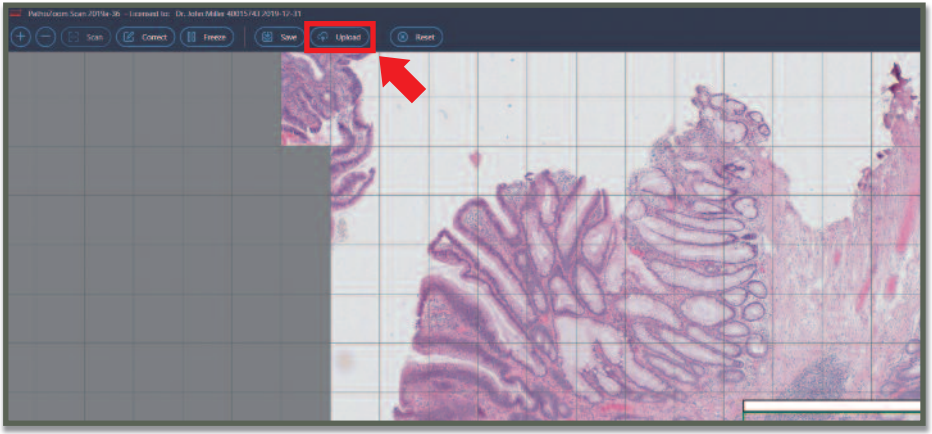


Figure 90

- After entering your login credentials correctly, the following pop-up window will appear (Figure 91).
- Optionally, you can enter, modify, and delete:
  > The “Title“, which will be the name of your slide in the PathoZoom SlideCloud.
  > An “Album“, if you have already created one or more album(s) in the PathoZoom SlideCloud.
  > The “Description“ section, with a description of the image that will also be uploaded along with the image.
  > The “Tags“ section, where labels/tags can be added.
  > The “Upload“ button, to start the upload process.
  > The “Logout“ button, to sign out.

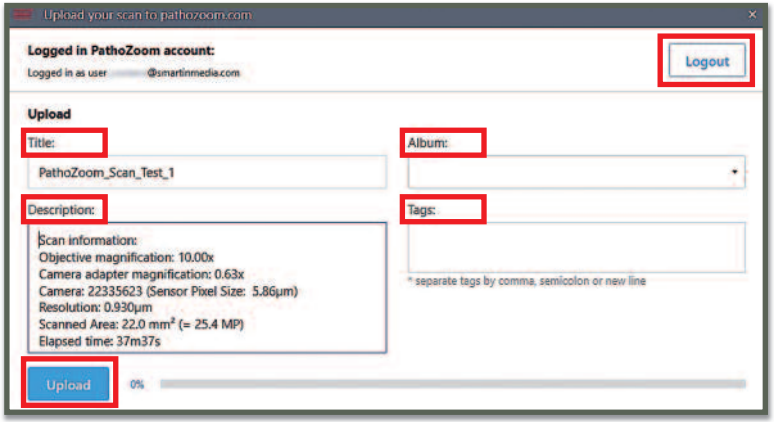


Figure 91

After uploading the scanned image, an encrypted link will appear (Figure 92), with which you can directly share or click to access the slide (Figure 93).

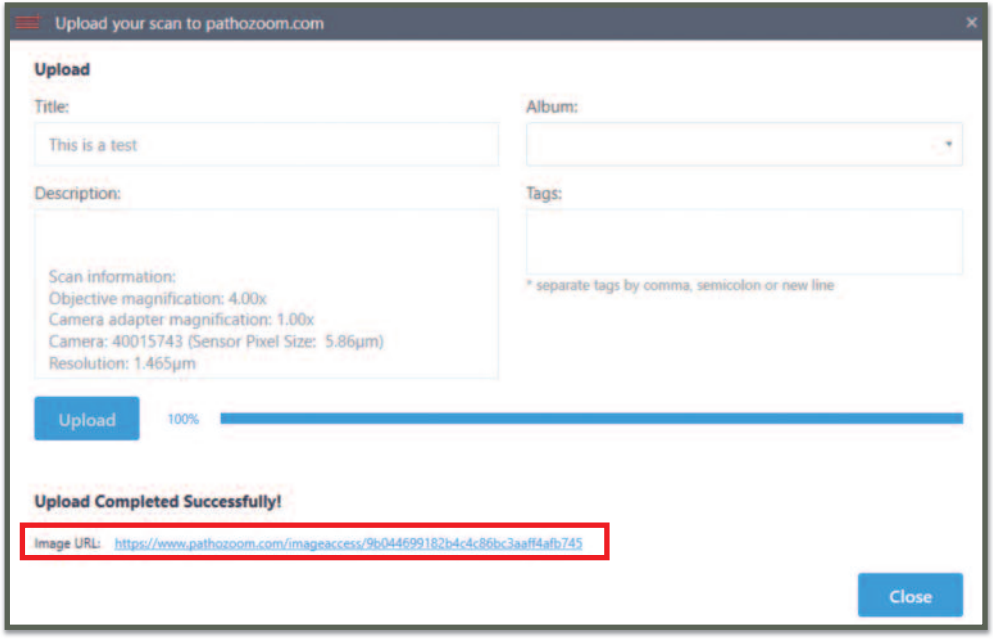


Figure 92

NOTICE

In case of entering a wrong account name or password, a pop-up window with an error message will appear.

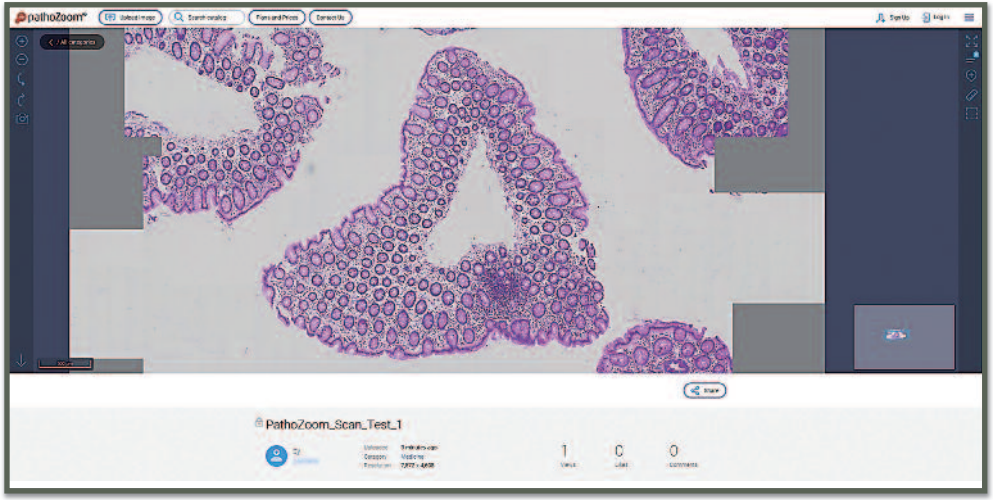


Figure 93

9.3. Scan Multiple Samples/Staining Into One Virtual Slide

Some slides contain multiple specimens that are not connected but should be scanned into one virtual slide. Also, sometimes, you want to present two or more different staining of two or more slides on one image (Figure 69). The approach of scanning multiple areas into one image can be useful in these scenarios.

9.3.1. Slides with Very Clean Empty Areas

For slides with very clean empty areas, it is often not possible to scan all areas, because the scanner loses track in empty sections (Figure 69). One solution is to scan multiple parts with pausing between scans and moving the slide as described below. Alternatively, you can use a marker and draw connecting lines between the samples on the bottom of the glass slides. The scanning software will be able to detect these marker "bridges" and scan correctly.

- Scan an image content as indicated in section 9.2. "Basic Scanning".
- Press the "Freeze" button, located in the left upper corner of the window, or hitting the "F" button in the keyboard (Figure 94).
- Move to the new starting location on the physical slide by clicking on the grid and moving the scanned slide with the left mouse button pressed.
- Press the "Scan" button on the menu or "Enter" on the keyboard to start scanning.
- Repeat the previous steps until the different parts are scanned.

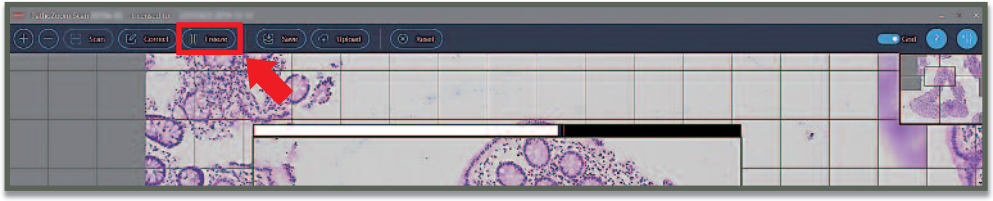


Figure 94

9.3.2. Different Slides

This function allows to arrange multiple specimens on one virtual slide, which can be useful to show different sections or different staining (Figure 95).

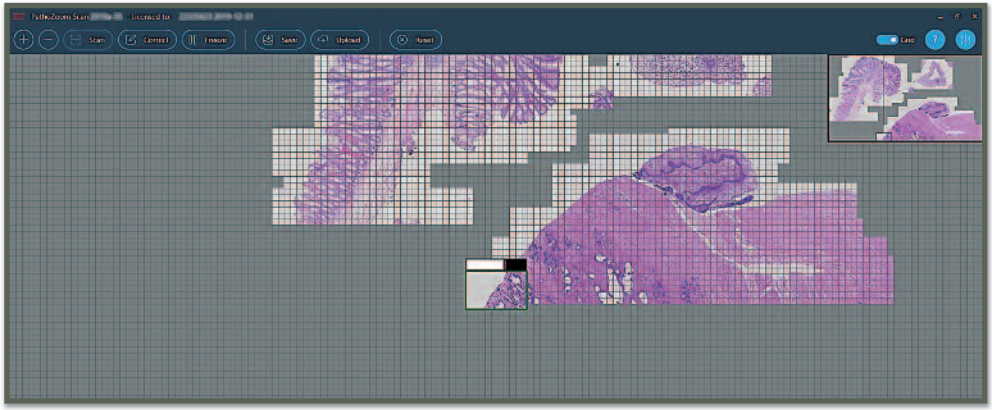


Figure 95

- Scan an image content as indicated in section 9.2. “Basic Scanning“.
- Press the “Freeze“ button, located in the left upper corner of the window, or hit the “F“ button in the keyboard (Figure 94).
- Change the physical slide and focus it on the desired area to be scanned.

- Click and hold down the left mouse button to drag the already scanned data until the specimen visible on the camera is approximately at the same location relative to the other scanned specimens as it is on the physical slide.
- Press the “Scan“ button on the menu or “Enter“ on the keyboard to start scanning.
- Repeat the previous steps until the different parts are scanned.

NOTE In both cases other locations can be freely chosen, but you should take care to avoid overlaps between the old and the new scan on the virtual slide (Figure 96). The new image will not overwrite the one that is already scanned.

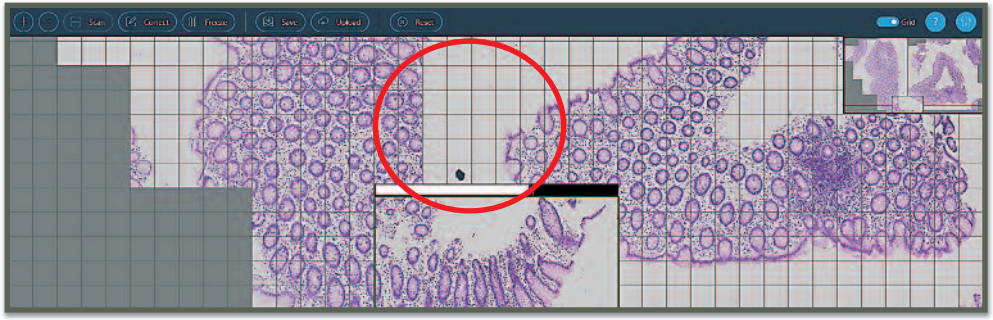


Figure 96

smart in media
intelligent software

Smart In Media GmbH & Co. KG
Dürener Straße 276
50935 Köln

T +49 (0)221 27726978
F +49 (0)221 27726979

info@smartinmedia.com
www.smartinmedia.com