



### LIST OF FEATURES

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# TissueFAXS SLIDELOADER

**General Workflow** 





## Table of Contents

1.1.       Purpose	4
<ol> <li>Login</li></ol>	4
<ol> <li>Calibrate devices</li></ol>	4
4. Settings for preview	
5.1. Create new fluorescence acquisition template	10
5.2. Create Job	
5.3. Validate Preview	11
5.4. Tissue Detection	12
5.5. Validate Acquisition	13
6. Acquisition Settings	14
7. Reacquisition	

## 1. Introduction

### 1.1. Purpose

The purpose of this document is to give the user a concise and systematic presentation of the workflow in order to perform the preview in *TissueFAXS SL* experiments.

### 2. Login

In order to login to **TissueFAXS 200 Confocal**, please enter a username into the **User Name** field and type the proper password into the **Password** field.

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CONSUL	A ATTENTION: T OPERATING INSTRUCTIONS FOR USE TissueFAXS SL					
isclaimer:						
cryocuts, paraffin section SL" combined with eith used for acquisition of various image cytome	ader PLUS is a microscope-based cell analysis system for ons and TMAs. It consists of the software modules "Tiss her "TissueQLEST & HistoQLEST or with StrateQLEST mages in the fluorescence and brightfield mode, for per try applications, like counting the number of positi quantification of staining intensities. TissueFAXS SL Slid TissueFAXS SL 7.0 Build 5245.0107	ueFAXS "and is forming ve and				
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Password						

Figure 1 - Login Panel

## 3. Calibrate devices

#### **Calibrate Stage**

To start an image acquisition, please choose to carefully calibrate the stage when starting the application.





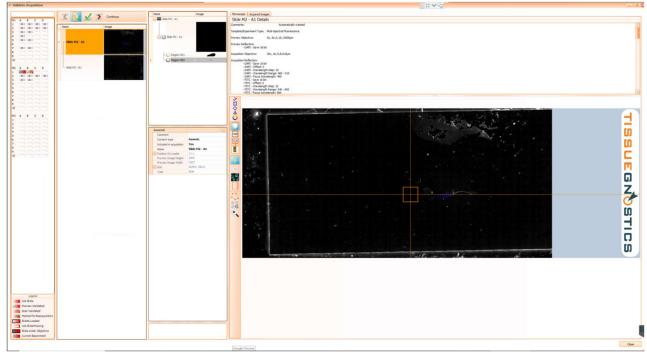
Warning	Loader Calibration
TissueFAXS needs to calibrate your stage, Please make sure that the slides are properly inserted (if any).	Please make sure that no slides are present in the gripper
Continue Skip Exit	OK Cancel

Figure 2 - Stage Calibration warning messages



## 4. Settings for preview

Before considering a job acquisition, don't forget you need a template that stores all the necessary settings for preview and acquisition (objectives, cameras, reflectors etc.)



Please create new template to store the information described below.

Figure 3 - Validate Acquisition

**Preview Settings** can be accessed by clicking on the **Preview** tab in the upper left corner of the main **TissueFAXS** window. If the **Preview** tab is not visible, you can make it visible by pressing the **View Settings** button (View Settings) from **Home** tab.





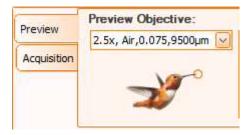


Figure 4 - Preview tab

#### Select objective for preview

Choose the desired objective from the Preview Objective dropdown list of the Preview tab.

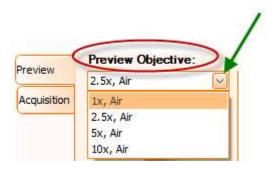


Figure 5 - Preview Objective dropdown list

#### Select channels for preview

To add or remove channels, press the **Add/Remove Channels...** button (<u>Add/Remove Channels...</u>). In the dropdown list that appears, the already selected channels will appear checked.

Preview	Preview Objective:	Preview Channels:	
	10x, Air	Name	Reflector
Acquisition			
	20	Add/Remove Channels button	List with available channels
	Check desired channels	AddiRemove Channels	-
Name	Ima TMA Fluo Mahouc		
	Slide 1 Slide 2	О ЕПС Теха	
			Done

Figure 6 - Preview Settings panel: Channel list

#### Adjust camera settings for each channel

To edit the camera settings for a channel, click the View button next to it.

You can change the names of the channels by clicking on each in the settings field.





Note	- To adjust the camera settings for any cha	annel, you must	have a camera present i	n
Note	your project. Otherwise, the View button	View	) for each channel will no	ot
	be visible.			

You can select more than one channel for the preview operation because each slide can be scanned multiple times (once for each channel in the list, that will yield the final overlay image). For each channel you may adjust the camera settings (light intensity, exposure time, colors, etc.) by pressing the **View** button next to each reflector in the list. Make your adjustments in the new window that appears and press **Save**. When all your channel settings are saved, you are ready to acquire your preview image.

It might be an option to make the preview for fluorescent experiments in darkfield illumination.

#### Adjust preview area

A region can be set as a preview area for future preview operations in the current experiment.

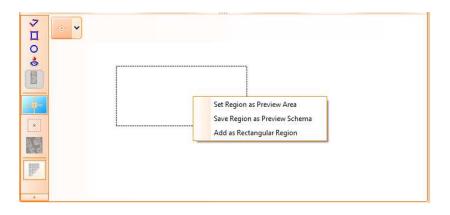


Figure 7 - Set new preview area context menu

If the preview area chosen in the experiment setup needs to be adjusted, a rectangle can be drawn on the slide, clicking the left mouse button to accept a drawn rectangle. Right-clicking within the selection will allow doing the following:

- Set region as preview area set current region as preview area for current experiment. This will affect all subsequent slides in this experiment.
- Save region as preview schema saves current region as preview area for future use and set it as preview area for current experiment. You can give a name to this preview scheme and store it (to use it again in future experiments).

#### Show Preview Info

There are two possibilities to see where the preview will be performed on the slide:

- By pressing Show preview info button ( ) from the second se
- ) from the slide editor.
- By right-clicking on the slide, then from the contextual menu choosing **Preview** → **Show preview info**.





*	Add Region Remove Selected Items Remove Acquired Images Go To This Slide Go To This Point	•		
	Acquire Slide 1 Acquire Region 004 Build Cache for Region 004 Clear Cache for Region 004			
	Select All			
	Preview	•	Preview Area	•
	Show Position on Slide		Set as Preview Focus Point	
	Export Slides Images		Reset Focus Point	
	Сору		Show Preview Info	
	Paste Compute Stitch			

Figure 8 – Show preview info

In both cases, the preview info will be displayed on the slide:

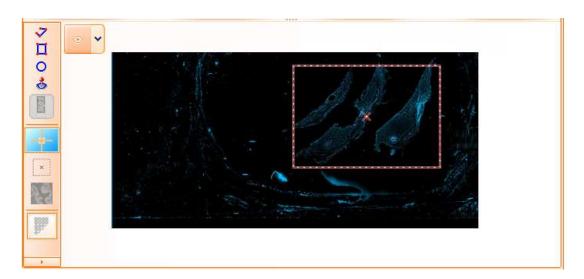


Figure 9 - Preview info on the slide

#### Set / reset focus point

To change the focus position, right-click on the slide in the desired place and then choose **Preview**  $\rightarrow$  **Set as preview focus point**. The point where the right-click was performed becomes the new preview focus point.

To reset the focus point, choose **Preview**  $\rightarrow$  **Reset Focus Point**: you will come back to the default focus position (the center of the preview area).

#### The "Preview" button

You will be ready to capture a preview image of your slide when you have set up your experiment and adjusted

your camera settings for your preview objective. To initiate preview, press the **Preview** button ( ) located within your selected slide panel.

To preview another other slides too, click on the drop-down menu of the **Preview** button for more preview options.





· · · · · · · · · · · · · · · · · · ·	Preview selected slide Preview multiple		
-			

Figure 10 - Preview options panel

#### Preview multiple slides (for 2-Slides Project)

To preview **multiple slides**, click on the drop-down menu of the **Preview** button for more preview options.

When **Preview Multiple** is chosen, the following dialog will appear:

Focus for Preview	×
What type of focus for preview oper	ation?
Autofocus	
OUse current focus position	
Do not show this dialog again.	OK Cancel

Figure 11 - Focus for Preview dialog

Select your focus method then press **OK**. In the next window, select the slides you wish to acquire.



- Autofocus method will use the method defined in **Options**  $\rightarrow$  **Focus**. If you check **Do not show this dialog again,** your current choice will be remembered for future use and you will not be prompted again. This selection can be reset from **Tools**  $\rightarrow$  **Options**  $\rightarrow$  **Remember**.

Gripper 1		
oupper 2		
	Datactica	
Verify Tissue I	Detection	

Figure 12 - Slides selection checkbox

#### **Region Overlay**

In fluorescence experiments, the **Region Overlay** button is enabled. Clicking on it yields a new window, as shown below:

adoaco inii.	ſ	Used	Name	Intensity (%)	Color	Range	Auto
			803-	100	0, 0, 2	228 - 1025	Auto
			A489	100	0, 192	228 - 1025	Auto
			Rhod	100	255, 0	228 - 1025	Auto
			A660	100	255, 2	228 - 1025	Auto

Figure 13 - Adjusting channel intensity and color

This window allows you to choose which channels to view in your acquired image. Here, you can adjust the color, light intensity, dynamic range (only for channels acquired with 16bit) for each channel. If more than one channel is selected, clicking **Apply** will yield an overlay image, which is composed of the selected channels according to the set algorithms.

When **exporting** images, you can choose the **Overlay** option from the export panels: the images will be composed from all the channels as currently specified in region viewer.

### 5. New job

### 5.1. Create new fluorescence acquisition template

To be able to create and acquire a job, you must first <u>create a template</u>. Use **New Template** button to open a wizard where you will choose <u>fluorescence</u> as experiment type, then you will select desired settings, as shown in the image below.







### 5.2. Create Job

Once you have a template, you may proceed to job creation: choose **New Job with Advanced Settings** from **New Job** button, and the **Job Acquisition Wizard** will open. Follow the steps shown below to complete job creation.



### 5.3. Validate Preview

After **TissueFAXS SL** will end the preview (only for the Preview all Scan all workflow), **Validate Preview** form fill open. If you are pleased with the automatic tissue detection you can let the application initiate the acquisition process.

If you consider the automatic tissue detection can be improved, manually adjust the parameters until you obtain desired region(s) – please see <u>Chapter 5.4</u>. Then you have to manually validate the preview for the slide(s) to start acquisition.





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Figure 14 - Job Acquisition: Validate Preview

### 5.4. Tissue Detection

In the Preview Validation phase, **TissueFAXS SL**is able to auto-detect the tissue regions on the slide. This is a great tool provided by **TissueFAXS** that can help you save time and improve the accuracy of the tissue detection.

If you take no action within a previously determined amount of time, **TissueFAXS SL**will automatically detect regions and proceed to acquisition. To avoid automatic detection, press **Stop** button or interact in any other way with the validation window.

This window will close in 56	Stop

Figure 15 - Counter for the auto-timing validation

In order to detect generic tissue samples, please make sure that the **Content Type** property of the slide is set to **Generic**.





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Figure 16 - Tissue Detection panel

By default, the detection is run on the entire preview image. If you want to refine the results, you can run the detection on a smaller area:

- select the desired area by drawing it on the displayed image
- click on Run Selection

If you want to clear regions from the selected area, press the Clear Selection button.

For the <u>2-Slide projects</u>, to access tissue detection press **Detect Tissue** button (

### 5.5. Validate Acquisition

Once the scan is done, **TissueFAXS SL** will prompt you to validate the incoming acquisition, through **Validate Acquisition** form.



- If the user marked some slides to be reacquired, TissueFAXS will not start the process automatically, the user must manually choose to reacquire.



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Figure 17 - Job Acquisition: Validate Acquisition

## 6. Acquisition Settings

Acquisition settings can be accessed by clicking on the **Acquisition** tab in the upper left corner of the main **TissueFAXS** window. If the **Acquisition** tab is not visible, you can make it visible by pressing the **Settings** button from the application's toolbar.



Figure 18 - Acquisition tab



- Acquisition settings are similar to the preview settings, except for the fact that they act when acquiring regions.

- The list of objectives which may be used for acquisition is not limited (as for the preview).
- An important difference is that you can select the channel for auto focus in the acquisition workflow.

#### **Focus Channel**

The **Focus Channel** is the channel for which **TissueFAXS** will perform the auto focus in fluorescence experiments. The focus for **Focus Channel** will be memorized by the application and then used in acquiring the other channels.





The default **Focus Channel** in **TissueFAXS** fluorescence experiments is DAPI. If DAPI is absent from the experiment, **TissueFAXS** will automatically set as **Focus Channel** the first channel listed in the **Acquisition Channel** section.

#### Channels

For Fluorescence Experiments, choose the desired reflectors (including transmission).



- After choosing the reflectors, you must readjust the camera settings for each reflector.

- The name of the channel is editable.

#### **Objective Lens**

Select the desired objective from Acquisition  $\rightarrow$  Acquisition Objective.



- After choosing the acquisition objective, you must readjust the camera settings for each combination of acquisition objective and acquisition channel.

#### **Camera Settings**

TissueFAXS 200 supports the following cameras for Fluorescent imaging:

- PCO USB cameras
- Hamamatsu Orca Flash 4
- Andor Zyla

To edit camera settings press **View** button.

You may also want to use settings from **camera profiles** (if you have previously created any) instead of making new settings for the camera.

Additionally, **TissueFAXS** stores TL lamp intensity value (for Transmission) and attenuator settings value (for Fluorescence channels) per channel.

#### **Camera Profile**

A Camera Profile represents a set of camera related settings that you can save for further use, in order make

available different combinations of settings for the acquisition process. Press Camera Profile button (Camera Profile...) to access the options:



Figure 19 - Profile Options menu

• **Save**: the current camera settings can be saved in order to make them available for further use. You must specify a name and a short description for each profile. A default name is already generated. It contains the camera name and type, the objective magnification and the reflector selected on microscope; you can also add your own information to the already existing name.

If "**Save as default channel profile**" is checked then all new experiments that will have 20x as acquisition objective will automatically load this profile for acquisition.

If pressed, Acquire Correction Image button will acquire the correction image for the acquired images.



Note



- Acquire Correction Image button is only available for Transmission channel.

- **Load**: an existing camera profile can be loaded for a camera. You must select any profile you want from the existing list.
- **Delete**: if an existing camera profile is no longer needed, it can be deleted by selecting it and then pressing the **Delete** button.

### 7. Reacquisition

**TissueFAXS SL** comes with a **Reacquire Job** option which allows the user to select desired slides for reacquisition.

To proceed to reacquisition, add new regions or flag FOVs from existing regions to desired slides, then mark the slides for reacquisition (1) by accessing slide's contextual menu or the scan validation window, then press

**Reacquire Job** button ( *IV*). The following types of reacquisition are available:

- Entire Job: reacquires entire job.
- Only Marked Slides reacquires slides you have previously selected for reacquisition.

• Entire Job with New settings - TissueFAXS supports restarting jobs with validated previews using different acquisition settings. This is useful in case you need to change acquisition settings after canceling job acquisition or checking acquisition results in Validate Acquisition phase.

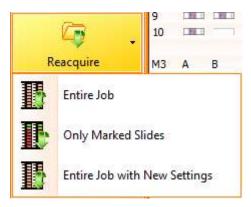


Figure 20 - Reacquire Job options

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