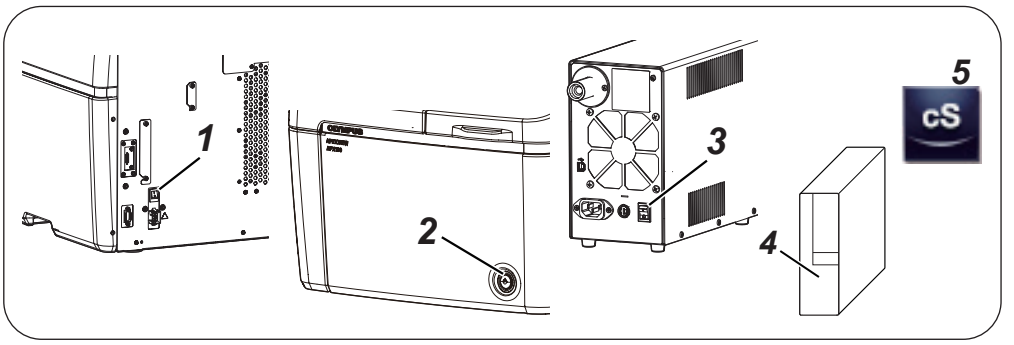
APX100 Quick Reference Guide

1. Turn ON the power



Turn ON the following items.

1. Main switch of the main unit *1,*2
2. Sub switch of the main unit *2
3. Light source for fluorescence observation
4. Controller
5. cellSens APEX

*1: Turn ON for the first time only.

*2: APX100-SU frame or APX100-HCU frame

TIP

Turn ON optional items equipped with power switch (high sensitivity camera, incubator, etc.) before starting cellSens APEX.

2. Configuration of Observation layout

Top area

Used for performing basic operations from starting observation up to acquiring images. (selection of objective, selection of observation method, start/stop of live view, snapshot, adjustment of brightness of light source, adjustment of exposure time, auto focus)

[Insert/Eject sample] button

Used for starting observation and changing samples.

[Observation] selection button

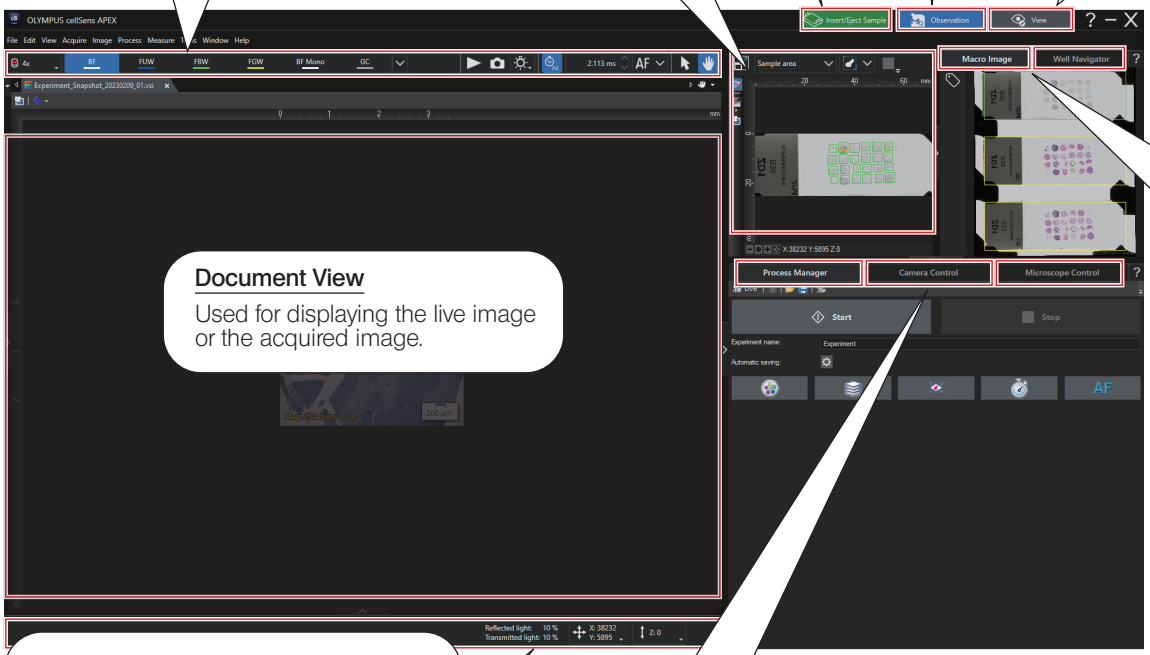
Used for displaying the layout suitable for acquiring images.

[View] selection button

Used for displaying the layout suitable for viewing and analyzing the acquired image.

Stage Navigator Tool Window

Used for moving the stage, etc.



Document View

Used for displaying the live image or the acquired image.

[Macro Image] Tool Window

Used for selecting the sample you want to observe that is displayed on the macro image, from samples placed on the sample holder.

[Well Navigator] Tool Window

Used for acquiring the image using the well plate.

Status area

Used for moving the stage or Z position and checking the imaging status.

[Process Manager] Tool Window

Used for multi-dimensional observation such as multicolor acquisition, stitching images.

[Camera Control] Tool Window

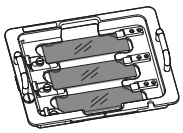
Used for making detail settings of the camera or recording the movie such as setting the exposure time.

[Microscope Control] Tool Window

Used for operating the microscope, such as adjusting the correction collar.

3. Place the sample

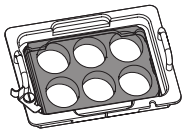
1) Place the sample on the sample holder.



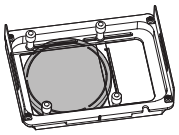
For slide glass*1

For 35 mm dish

*1: Place it with the cover glass facing down.

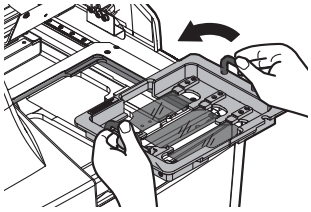


For well plate



For general purpose (Flask, non-standard slide, large dish)

2) Place the sample holder on the stage.



TIP

If the stage is not placed at front right of the main unit, click the Insert/Eject Sample button.

NOTE

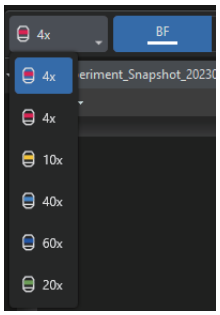
Push the sample holder downward so that the sample holder is parallel with the stage.

3) After placing the sample holder on the stage, click the Insert/Eject Sample button.

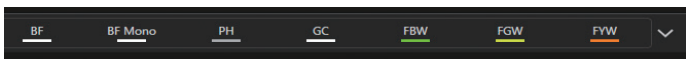
The acquired image is displayed on [Macro Image] Tool Window.

4. Select the objective / Select the observation method

1) Select the objective from the pull-down list in the top area.

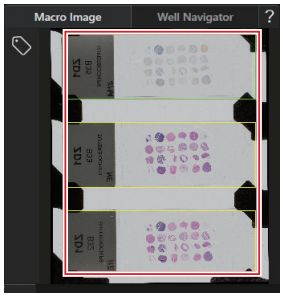


Select the observation method by clicking the observation method button in the top area.

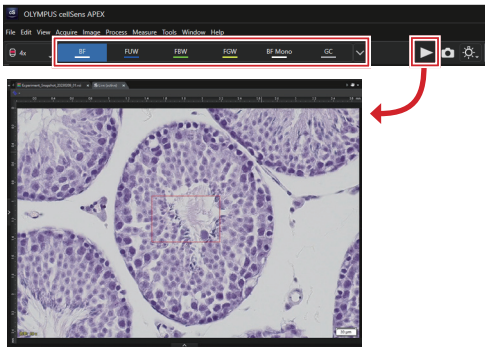


5. Acquire the live image of the sample

1) Click the sample you want to observe on the macro image in [Macro Image] Tool Window.



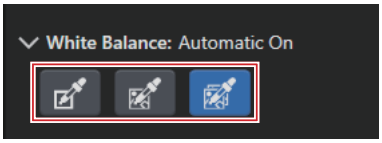
2) Select the observation method in the top area and click the ▶ button.



The live image is displayed in the document view.

TIP

To acquire the color image with brightfield observation, select the white balance type from the pull-down list of the white balance in [Camera Control] Tool Window.



[White Balance on ROI]

Adjusts the white balance so that the selected area becomes white.

[One Touch White Balance]

Adjusts the white balance of the whole image.

[Automatic White Balance]

Adjusts the white balance automatically by identifying the white area of the live image. However, if the white area of the live image is very small, the white balance may not be adjusted properly depending on the type or brightness of the sample, and, therefore, the appropriate color tone may not be obtained.

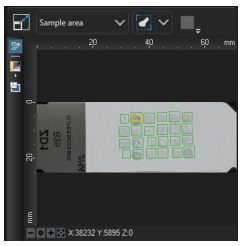
TIP

The discoloring prevention mode is available for fluorescence observation. The discoloring prevention mode is a function to acquire the still image immediately after starting the live acquisition and then to turn OFF the light source for fluorescence observation automatically until operating the microscope. The acquired still image is displayed in the document view.

6. Move the stage

Display the cursor on the image in [Stage Navigator] Tool Window and Document View and move the stage.

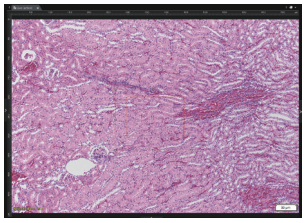
[Stage Navigator] Tool Window



1) Click on the image while the cursor on the image is displayed as .

The live image moves to the position you clicked.

Document View (live image)



1) Click the button in the top area.

2) Display the cursor on the image, and while holding down the [Ctrl] key, drag the image.

The live image moves in the drag direction.

7. Focusing

Auto focus

Click the AF button in the top area.

TIP

You can select the AF method from the pull-down list.

[Full Frame Autofocus]

Calculates the focus position using information of the entire image.

[Autofocus on Region]

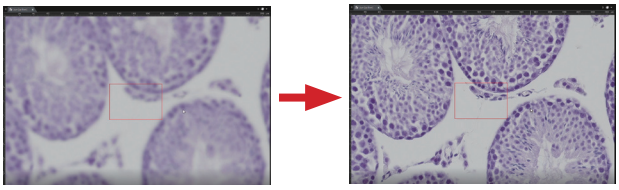
Calculates the focus position using information in the area displayed on the image.

TIP

You can set the search range for auto focus in the acquisition settings in the [Camera Control] Tool Window.

Manual focus

Display the cursor on the live image in the document view, and while holding down the [Ctrl] key of the keyboard, rotate the mouse wheel to bring the sample into focus.

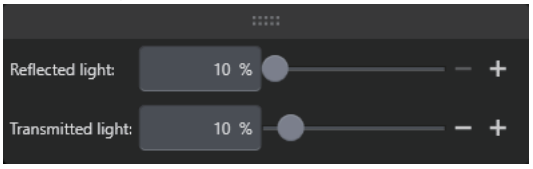


8. Adjust the brightness

Adjust the brightness as needed when the brightness of the sample is dark, etc.

Transmitted light illumination

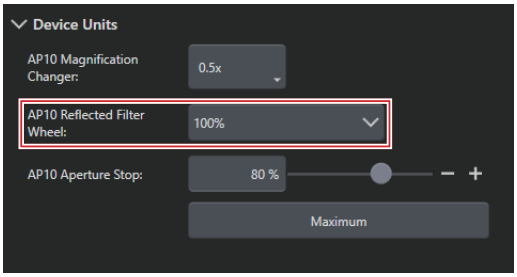
1) Click the button in the top area to set the brightness of the light source.



Reflected light illumination

2) Click the button in the top area to set the brightness of the light source.

3) From [Device Units] in the [Microscope Control] Tool Window, select the ND filter to insert in the light path.



Exposure setting

Click the button in the top area to select Auto or Manual.

9. Acquire the image

9.1. Snapshot

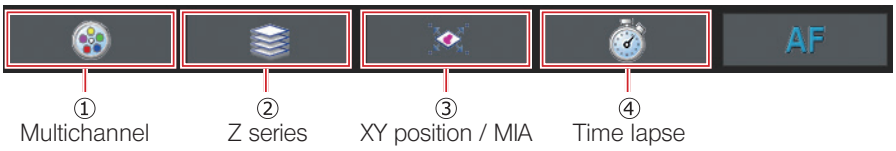
1) Click the button in the top area.

The path to save the acquired image is displayed by putting the cursor on the Snapshot button in [Camera Control] Tool Window.

To record a movie, pull down the Snapshot button to select [Start Movie]

9.2. Acquire the multichannel image

Click the following buttons in [Process Manager] Tool Window to make multidimensional observation settings.

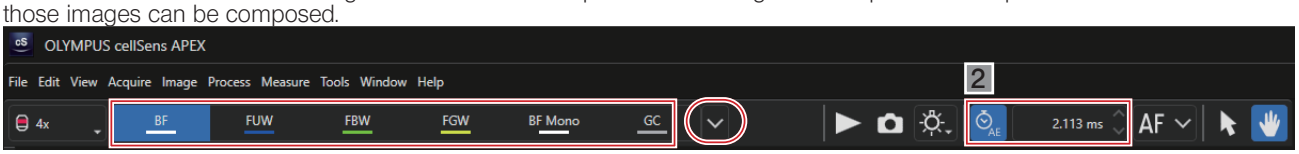


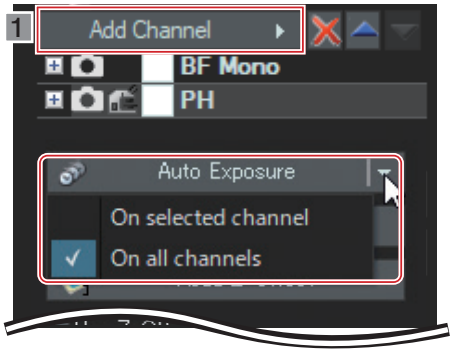
TIP

The path to save the acquired image is displayed by putting the cursor on the button in [Process Manager] Tool Window. Clicking the button in [Process Manager] Tool Window allows you to set the path to save the acquired image and the folder configuration at the save destination. See "10.1. Auto save for details".

① Multichannel

This method is useful for observing the multi-stained sample because images are acquired in multiple fluorescence observations and those images can be composed.





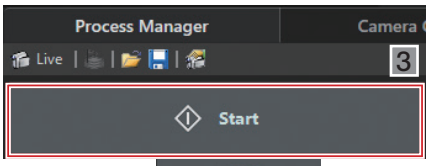
1 Add the desired observation method from the pull-down list as a channel.

2 Select the added channel, and use 1 ms to adjust the exposure time.

You can also click AE to adjust the exposure time in added channels automatically. The same adjustments are done for all the added channels.

TIP

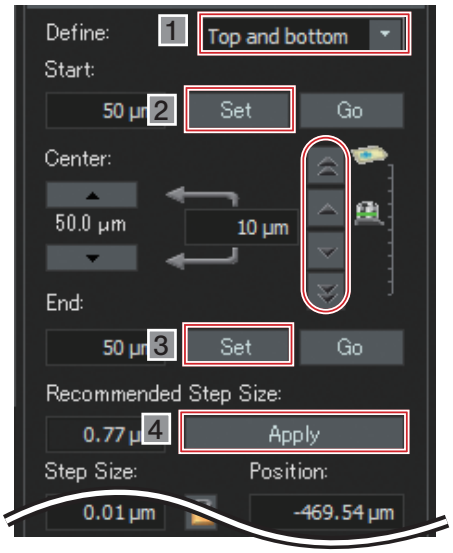
- By selecting the button in Multichannel, you can superimpose multiple channels in the live image.
- Click on the Observation Method button in the top area, select the button to batch update all the channel images.
- Pulling down [Auto exposure] and then clicking [On all channels] adjust the exposure time in all channels automatically.



3 Click the Start button.

② Z series

You can acquire multiple images with different reference positions.



1 Select [Top and bottom] from the pull-down list.

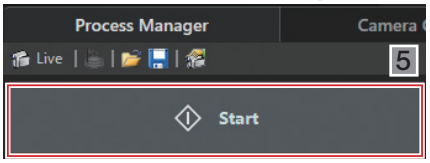
2 Use the objective movement button to move the objective to the position to start observation (upper limit), and click the Set button.

3 Use the objective movement button to move the objective to the position to end observation (lower limit), and click the Set button.

4 Click the Apply button in [Recommended Step Size].

TIP

For a [Recommended Step Size], the optimal value is calculated from the selected observation method and objective.



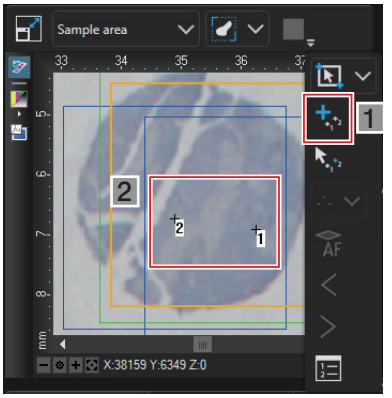
5 Click the Start button.

TIP

You can also set the observation condition by selecting [Range] from the pull-down list.

③ -i XY position :Multi-point

You can acquire images at various positions on the sample automatically.

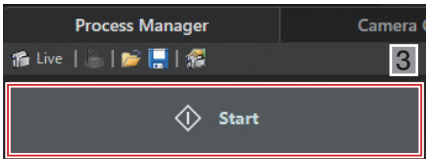


1 Click the button to make it enabled ( ) from the pull-down list .

2 Click the position you want to acquire the image on Stage Navigator Tool Window.

TIP

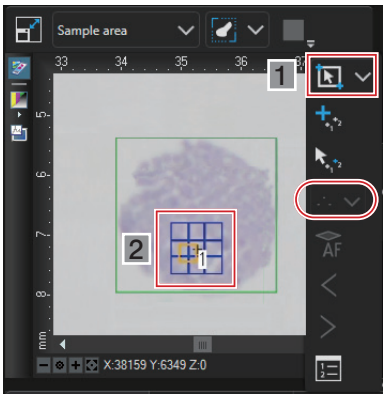
You can acquire images at a time by registering the observation positions on multiple slides or dishes placed on the sample holder.



3 Click the Start button.

③-ii MIA (Multiple Image Alignment) :Stitching

You can observe a wide range such as the entire tissue and the entire well. The areas adjacent to the field of view are acquired in conjunction with the XY stage movement, and one composite image is generated.



1 Click the button to make it enabled from the pull-down list .

When it is enabled, it becomes grayout.

2 Drag the area you want to acquire the image on Stage Navigator Tool Window.

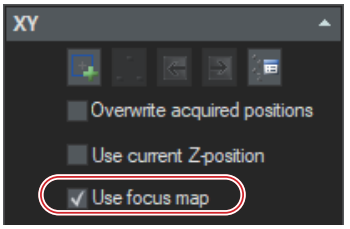
TIP

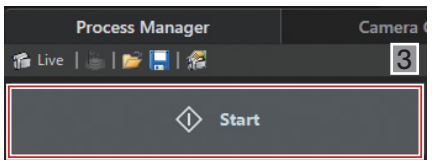
- By setting focus map, you can acquire a focused image even if the sample is tilted.

  Click the button to automatically start live mode and move to the initial reference point.

  After focusing the live image, click the button to move to the next reference point. You can create a focus map by focusing on all the reference points.

- Select [Use focus map] to apply the focus map you created.

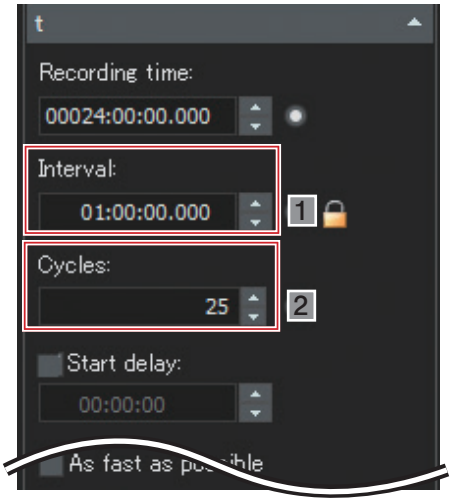




3 Click the Start button.

④ Time lapse  * Time lapse option is required.

You can observe how the sample changes over time by acquiring the image at regular intervals.



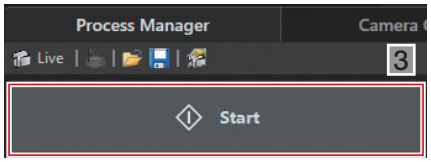
1 Input the acquisition interval in the [Interval] text box.

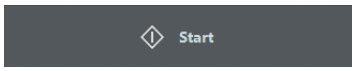
TIP

Set as “HH(hours):MM(minutes):SS.SSS(seconds)”.

For example, if you acquire the image every hour, input as “00001:00:00.000”.

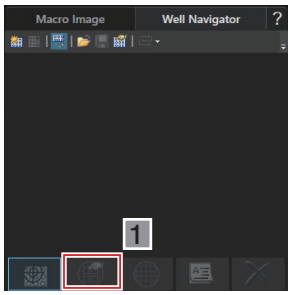
2 Input the number of images you want to acquire in the [Cycles] text box.

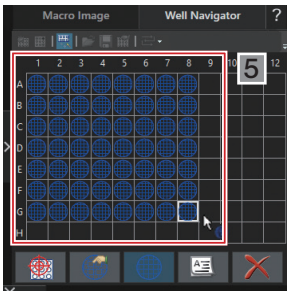


3 Click the  button.

9.3. Acquire the image of the sample on the well plate * Well Navigator option is required.

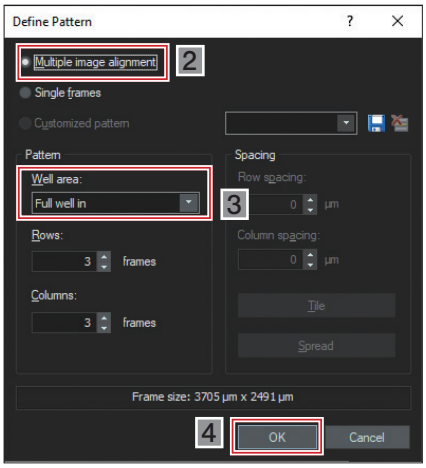
This is the procedure after the well plate is loaded to [Well Navigator] Tool Window and the calibration is completed.
The example of the 96-well plate is shown below.

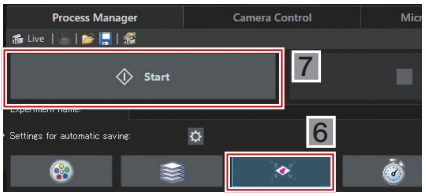




1 Click the  button.

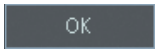
▶ The [Define Pattern] window is displayed.





2 Select [Multiple image alignment].

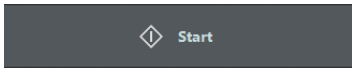
3 Select [Full well in] from the [Well area] list.

4 Click the  button.

5 After confirming that the  button is selected, use the mouse to surround “Wells” you want to acquire.

The mark of the  button is displayed in the well.

6 Click the  button in [Process Manager] Tool Window.

7 Click the  button.

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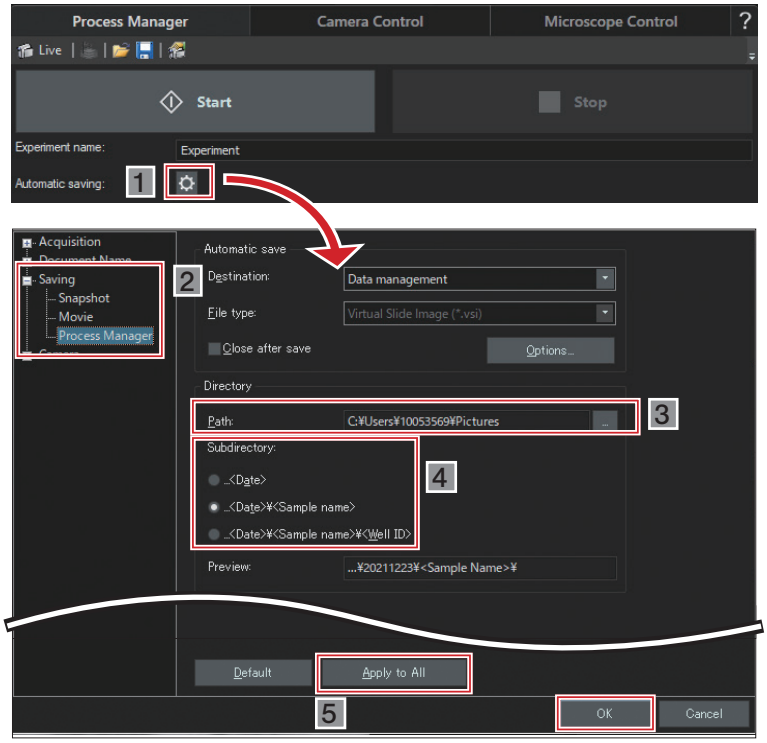
10. Save the image

10.1. Auto save

You can set the path to save the acquired image and the folder configuration at the save destination.



1 Click the [Automatic saving:] button in [Process Manager] Tool Window.

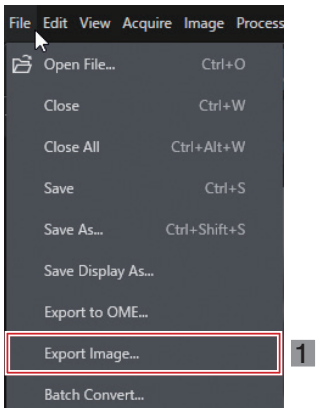
2 Click the method to acquire the image in [Saving].

3 Click the ... button to set the path to save the image.

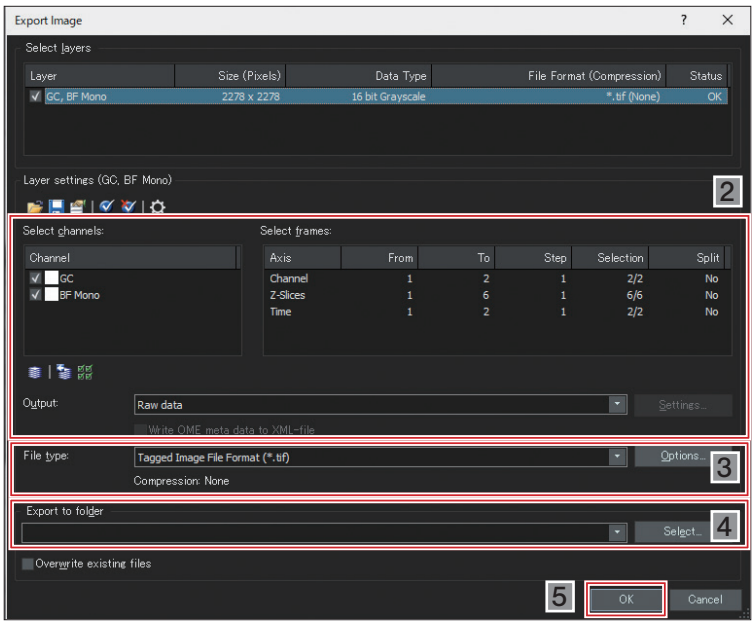
4 Use the radio button to select the folder configuration of the path you set.

5 Click the Apply to All button and click the OK button.

10.2. Export



1 Click [File] › [Export image...].



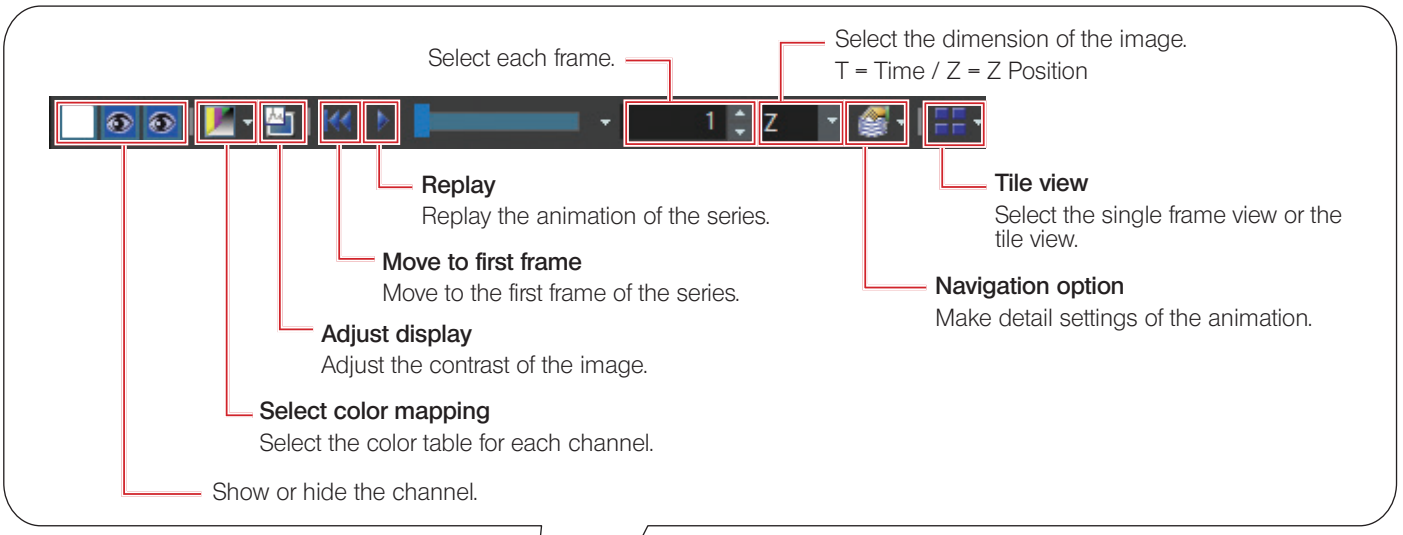
2 Select [Channel] and [Output] according to the status of the acquired image.

3 Select the [File type].

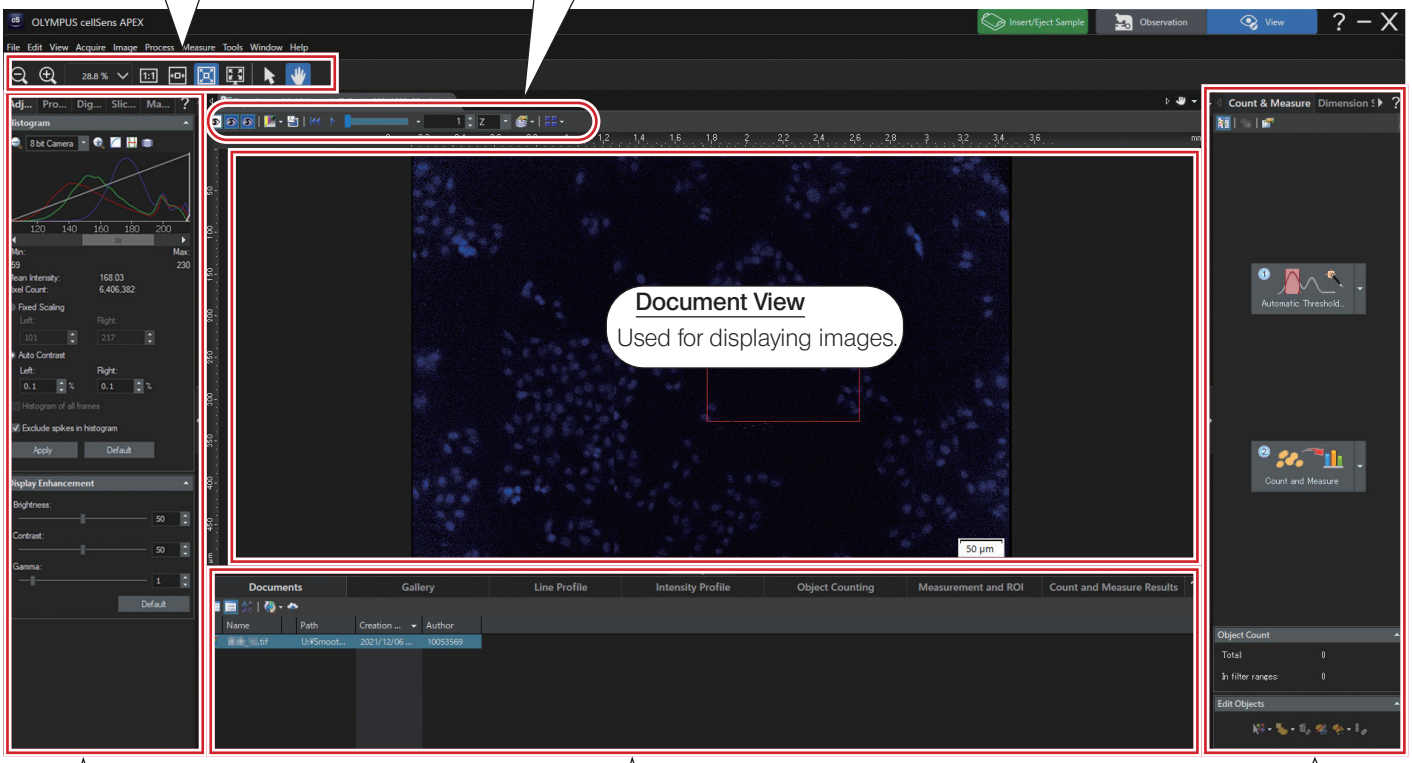
4 Set the path to save the image in the [Export to folder].

5 Click the OK button.

11. Configuration of View Layout



Top area
Used for changing the size of the image displayed in the document view.



[Adjust Display] Tool Window
Used for adjusting the image.

[Document] Tool Window
Used for displaying the list of images.

[Count&Measure] Tool Window
Used for making measurements. (Optional)