



Carl Zeiss LSM 980 / ZEN Blue Quick Guide



開機 System on

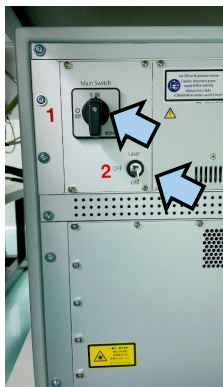


Image processing
只使用軟體，不連接硬體



1. Main Switch
2. Laser Key
3. Components
4. Computer
5. ZEN Blue

等待約三分鐘

進入軟體 ZEN



1 進入ZEN BLUE



2

→ ZEN system

Initializing Hardware...

等待約一分鐘

眼睛觀察

3

Choose the FL configuration you need

關機
System off



4. Computer

- 如果有使用活細胞培養裝置
- 關閉C02 (鋼瓶與TFT控制面板 Incubation)
- Incubator XL 降溫至30度內(降溫完成, 控制面板incubation → off)
- 加濕水瓶倒除

Home	Incubation	Therm. Switch					
	H Insert P	Inc PM	Obj Heater	H Dev Humi			
	37.5°C	32.0°C	39.0°C	33.3°C			
Control	37.5°C	35.0°C	34.6°C	34.3°C			
Automatic	Air		SensorT				
XYZ	32.5°C		35.2°C				
	34.0°C						
Incubation	CO2		O2				
Display	6.5%		2.0%				
	7.0%		1.0%				



3. Components



2. Laser Key

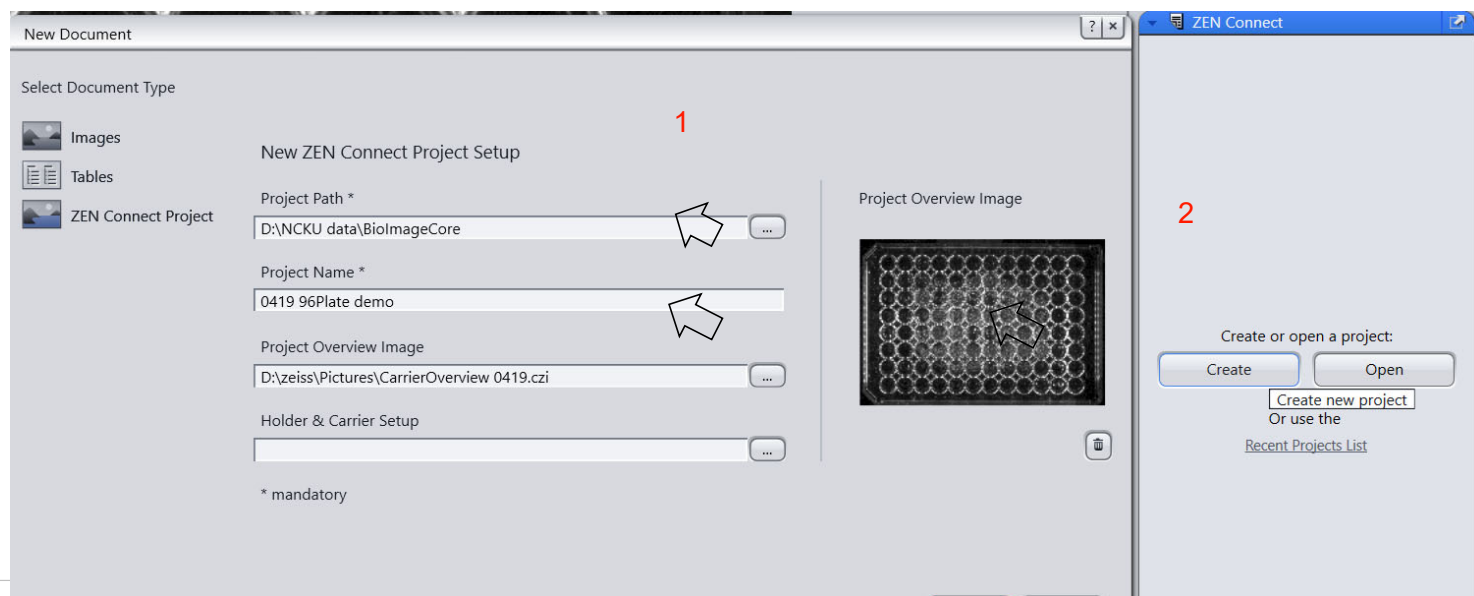
1. Main Switch

ZEN Connect (非必要) 同一Slide的檔案相互連結，自動儲存檔案座標位置



Create Project

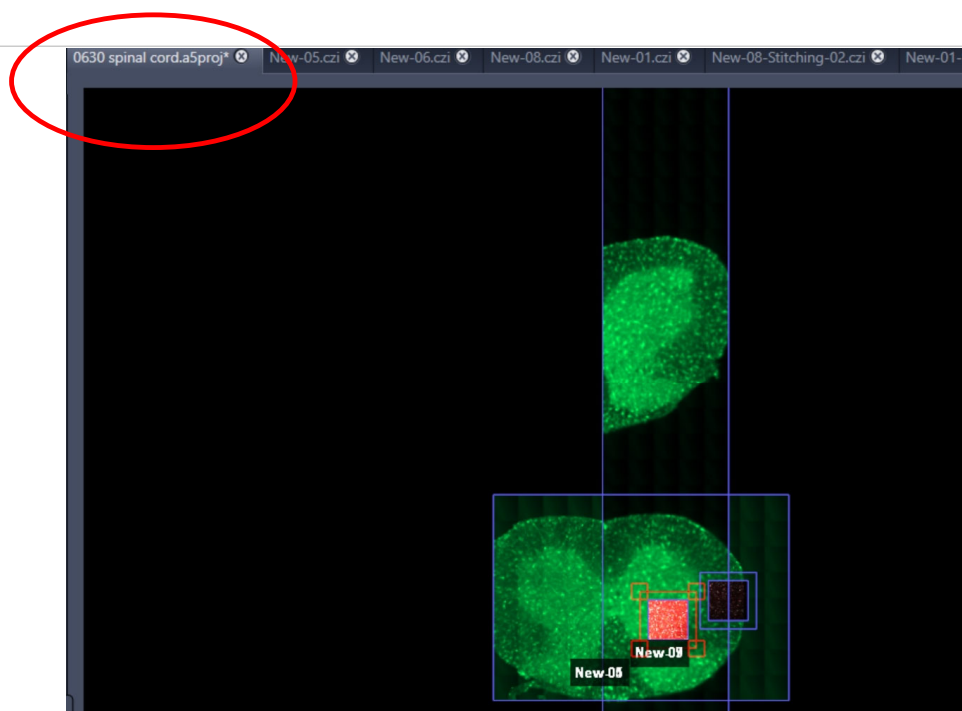
檔案管理工具，此為 非必要步驟



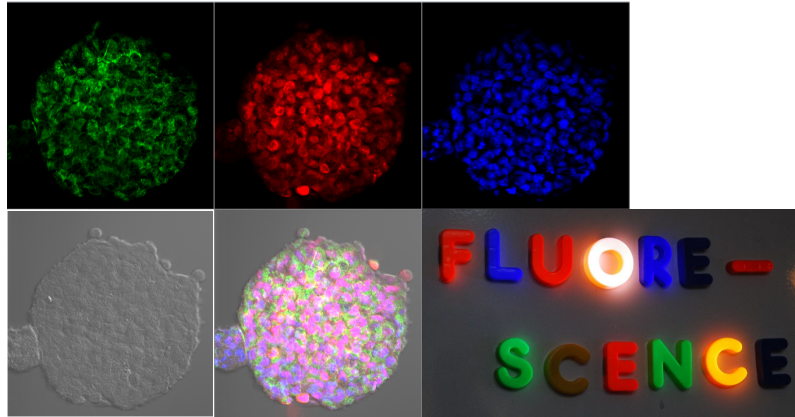
ZEN Connect 同一Slide的檔案相互連結，自動儲存檔案座標位置



- *. a5proj
- 所有該Project的檔案皆會以關聯地圖方式顯示於其中，並且Autosave
- 每次換一片slide可以新增一個project



Multichannel Image Acquisition

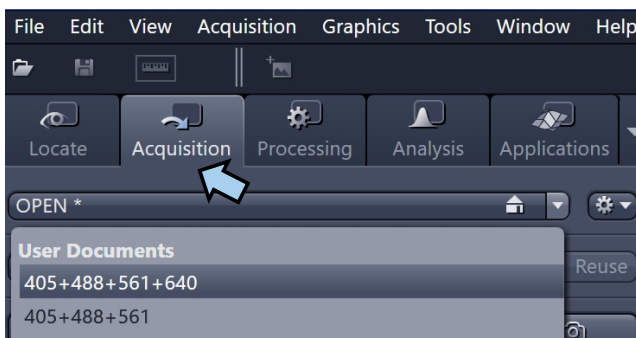


ZEISS Research Microscopy Solutions, HuaMan Hsu

Multichannel Image Acquisition 1 Load Experiment methods form Experiment Setup



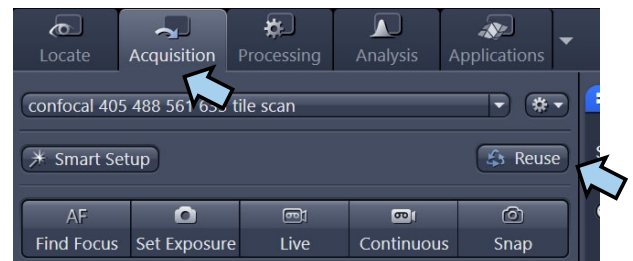
1.



Choose the Experiment you suits your need

OR

Reuse



- 開啟欲套用的檔案後，或按下 **Reuse** 系統會將舊檔案的設定 **apply** 至硬體中。
- 如果有Z 設定請取下樣品或先回到5x 物鏡
- 含有Tile等xyz設定請套用完畢後再刪除不需要的位 置

Multichannel Image Acquisition 2 各種拍照function說明



連續掃描影像連續更新，可以看到即時影像，掃描不會自動停止，用於調整焦距與laser 與gain值看見及時變化。

初學者不建議使用!!

在所停留的焦距位置，單拍一張，會執行已勾選的Channel，不執行Z、T、Tile...等設定。

執行左方所勾選的設定，Z-Sstack與Tiles, Time Series

Multichannel Image Acquisition 3 Acquisition Parameter 設定預覽速度(快)與畫素(小)



Fast adjustment for focusing, laser and detector gain:

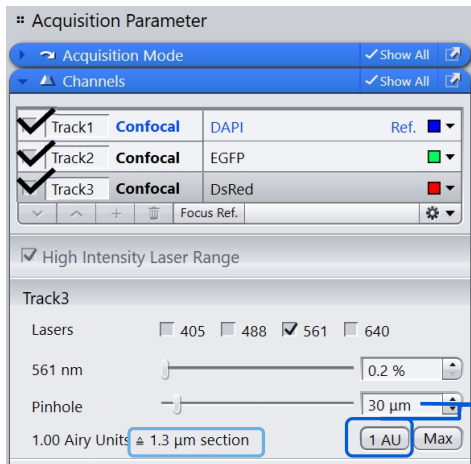
- Frame Size 256 or 512
- Scan Speed 8 or 7

Multichannel Image Acquisition 4 Acquisition Parameter Pinhole 設定



1.

2.



Optical Section
Thickness

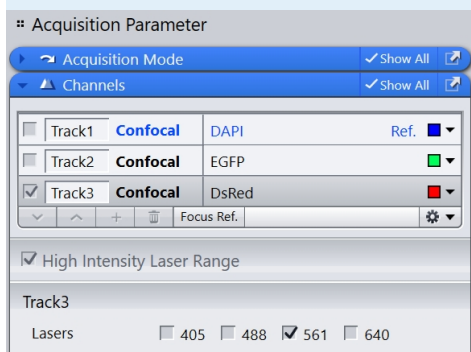
1. 所有Tracks打勾，Pinhole 所有channel 設定相同
2. 擇一Track作為運算依據，按1AU，或者依需求調整合適大小。

Multichannel Image Acquisition 5 Acquisition Parameter 為每個Track 設定Laser強度 與 感測器Master Gain



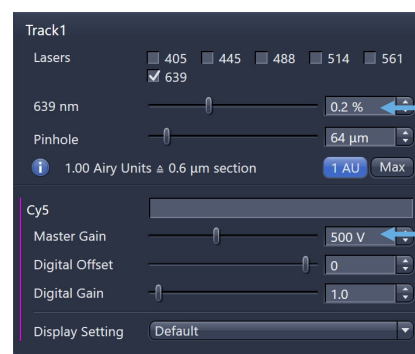
1

調整時，一次僅打勾一個Track



2

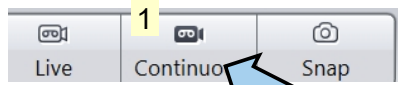
將各Track內的Laser 與Master Gain 設定完成



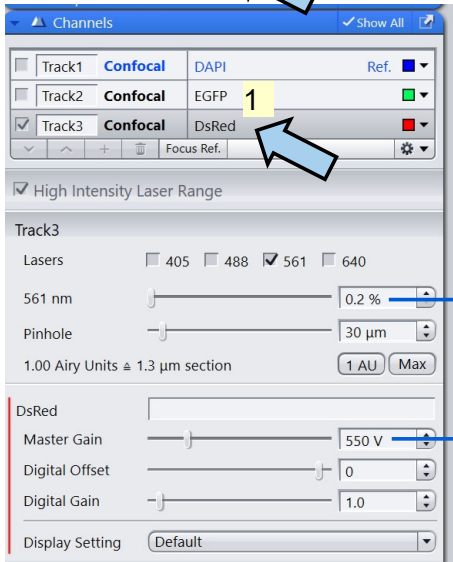
Multichannel Image Acquisition 6

Acquisition Parameter

為每個Track 設定Laser強度 與 感測器Master Gain



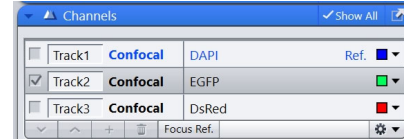
1. 對焦 · Continuous · 一次調整一個channel · Master Gain
2. Adjust Laser Intensity and Master Gain for All Channels
3. 依序調整所有Tracks(重複上步驟)的laser強度 與 Gain



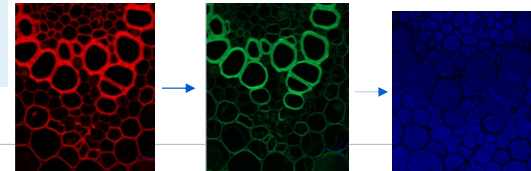
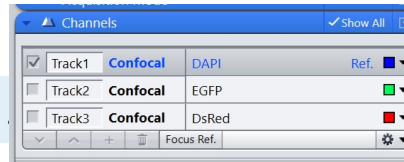
2. 調整雷射強度
- 大部份情況下10%以內即足夠應付

2. 調整Master Gain
- 一般Master Gain不超過900 · 避免過曝損傷感測器

3.



3.



Multichannel Image Acquisition 7

2D Image

正式拍照: 提高Frame Size 降低Scan Speed

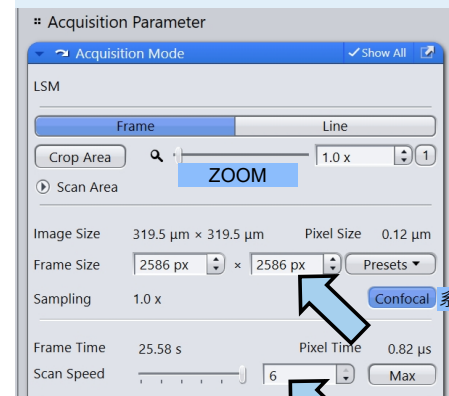
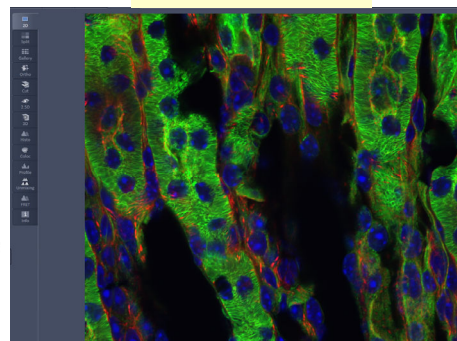
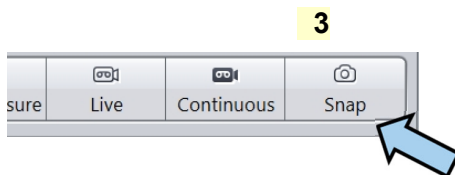


選取所有要準備要拍的track

2

- 提高Frame Size · 降低掃描速度 · 是獲得高解析影像的最後祕技!
- 1024, 2048 · speed 5~7是很安全的設定值

4 大功告成!!

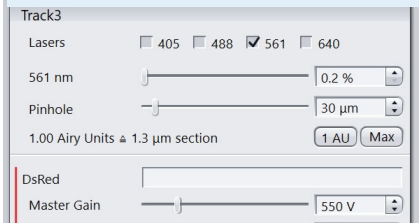


系統建議畫素

Multichannel Image Acquisition 8 3D Image - Z Stack Acquisition



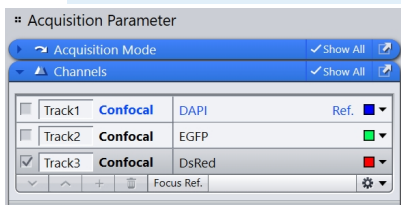
1. 當所有channel的laser 強度 與Master Gain皆已設置完畢



3. Put your hand on focus wheel and preparing for focusing

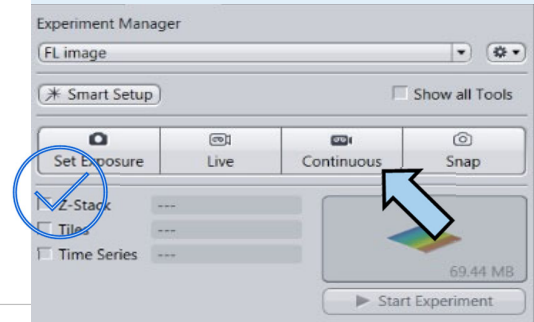


- 2 選擇一個Track



- 4

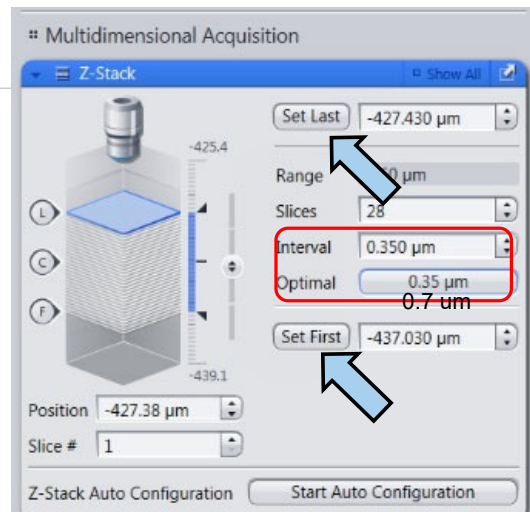
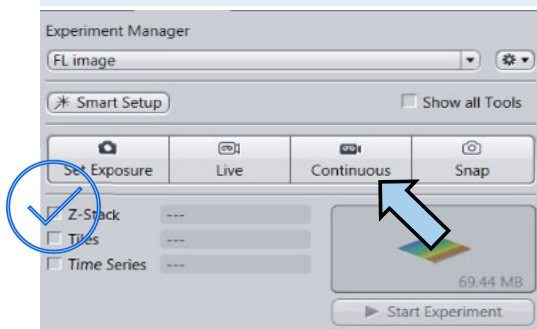
"Continuous" scanning under higher frame rate (ex: 512² @ speed 7)



Multichannel Image Acquisition 9 3D Image - Z Stack Acquisition



1. Continuous scanning under higher frame rate (ex: 512² @ speed 7)

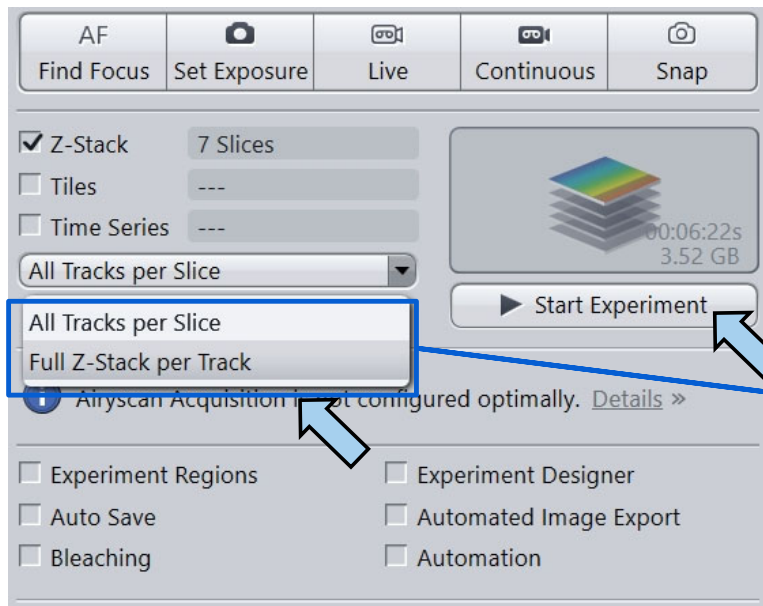


- interval可參考optimal
- 2x的optimal 0.35*2 = 0.7也很好，張數少，較省時
- 也可自訂定間隔

設訂 Z stack的上下界限

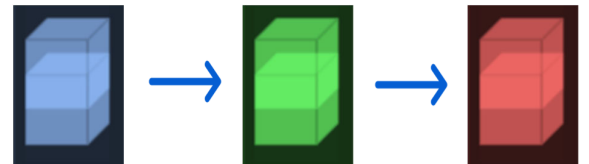
- 選擇一個Track02. > Continuous
- 搭配 Z stack視窗 > Z-stack
- 找到樣品焦距起點 > Set First
- 找到樣品焦距終點 > Set Last

Multichannel Image Acquisition 10 3D Image - Z Stack Acquisition

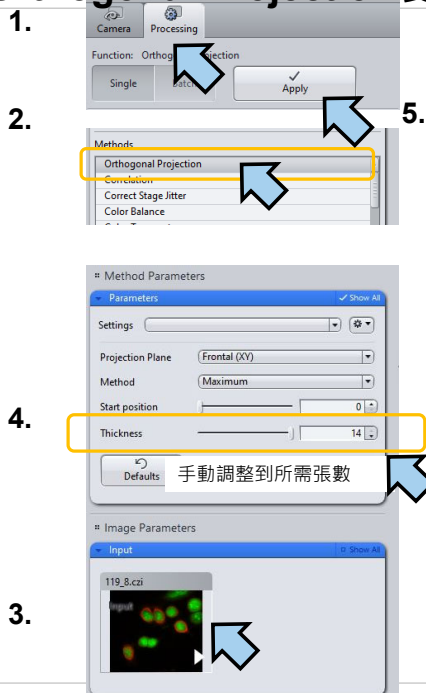


Full Z-Stack per Track:可避免硬體移動過於頻繁而降速

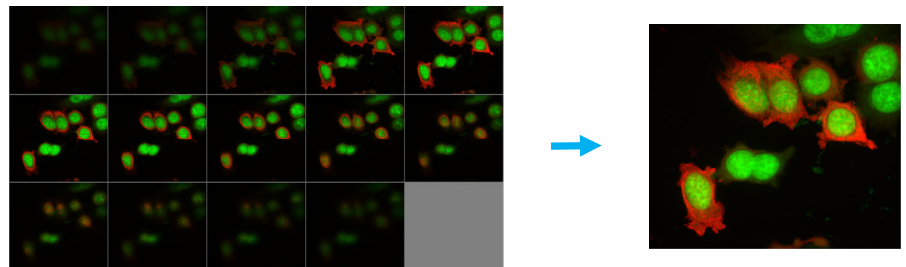
- 第一個Track的Z-Stack
- 第二個Track的Z Stack
- 第三個Track的Z Stack



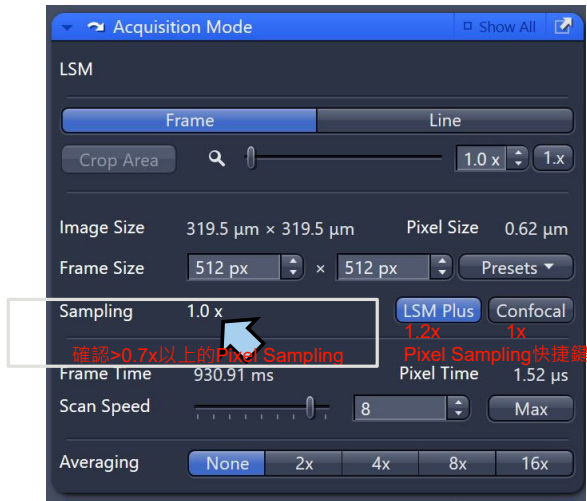
Multichannel Image Acquisition Z Stack Series Image Orthogonal Projection製造全景深影像:



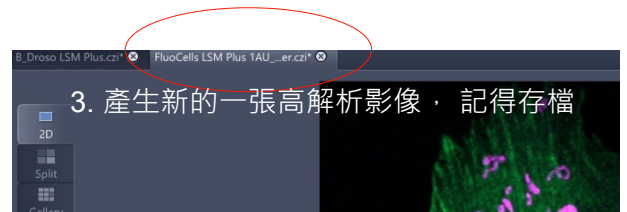
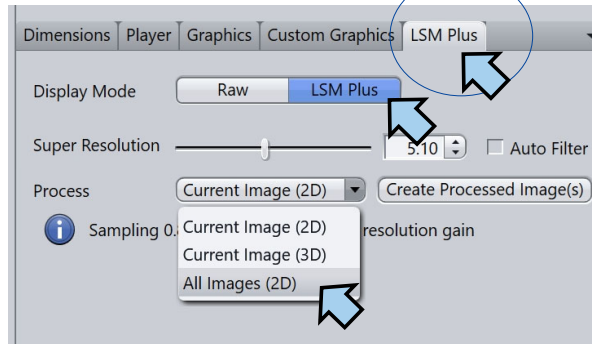
Z stack: 把多張Z section疊成一張



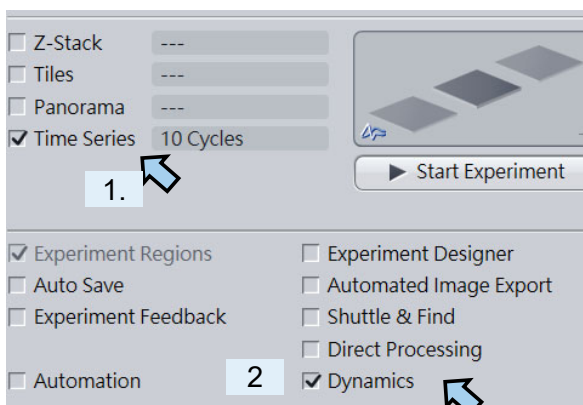
1. 掃圖設置，畫素要夠



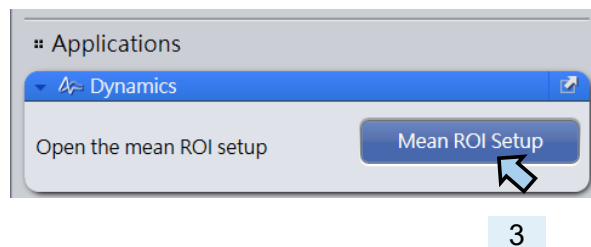
2. 執行LSM Plus運算， 拍完圖，產生新的一張高解析影像

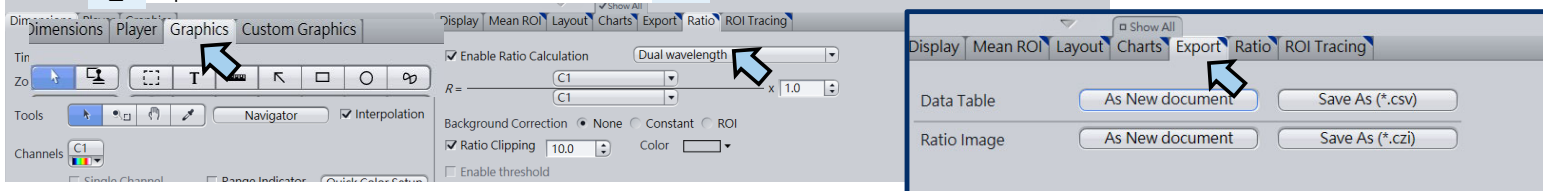
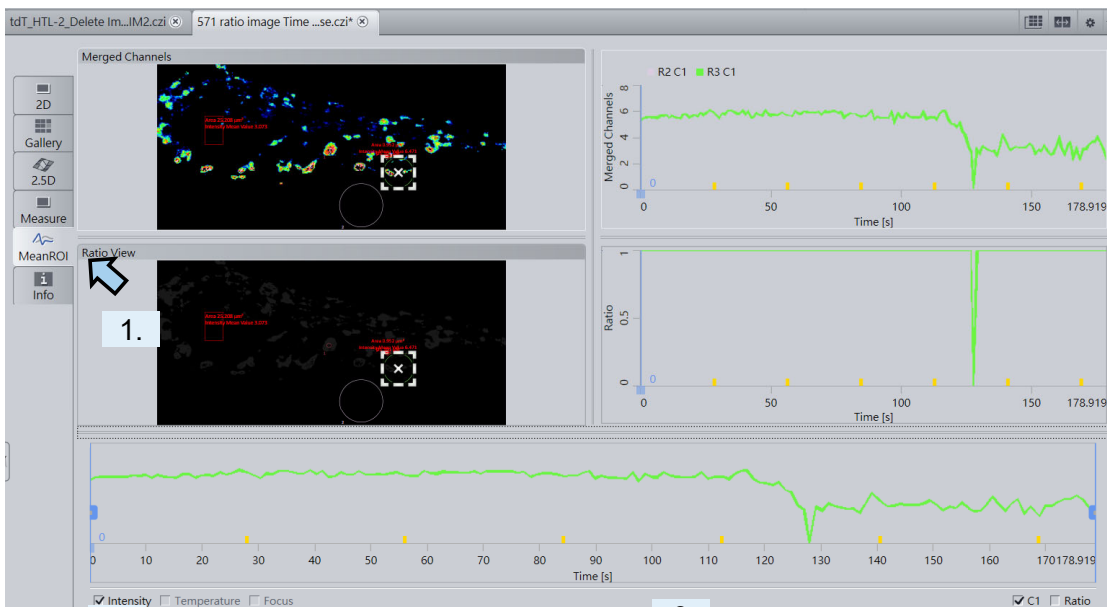


Ratio image with timelapse (離子濃度監控)(intensity change on-line ratio plot display)

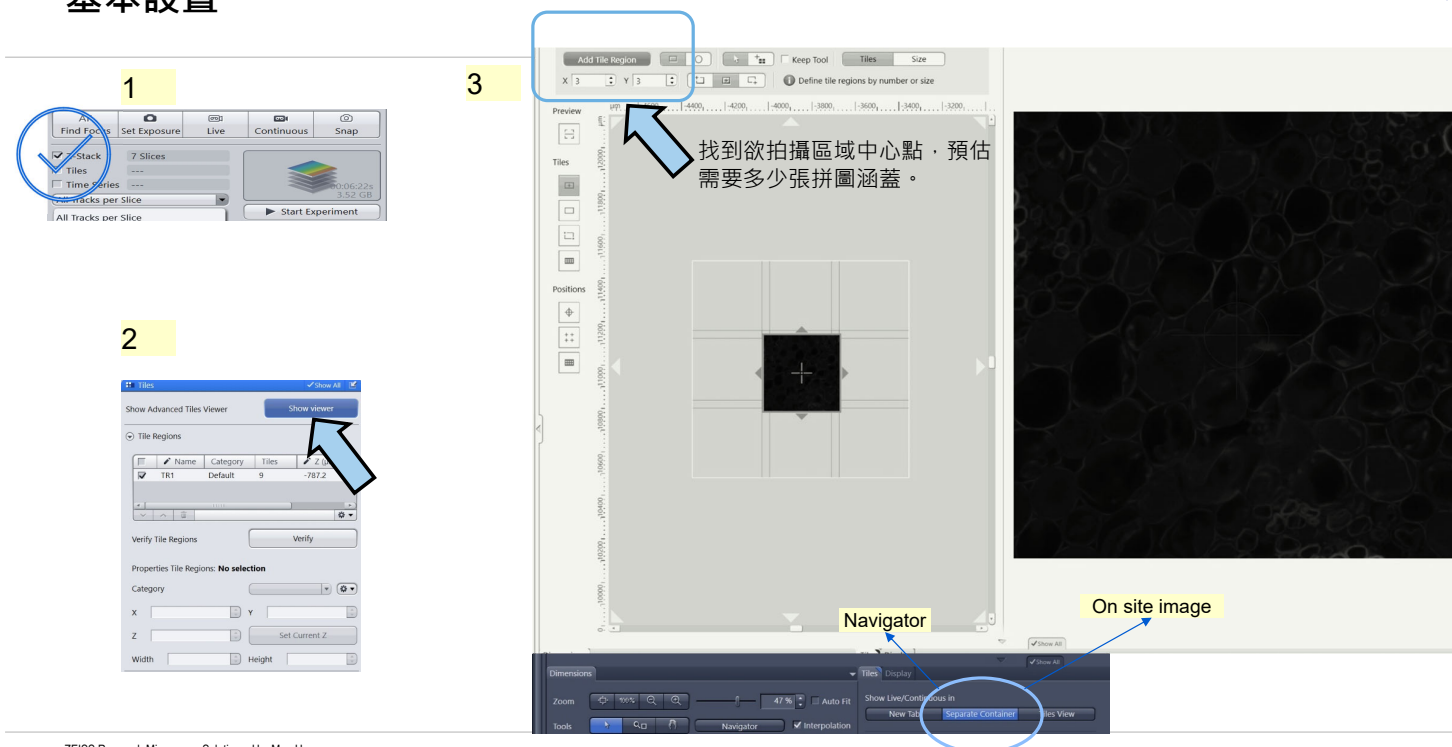


先滿足Channel 與 Time lapse 控制，Dynamics選項方會出現



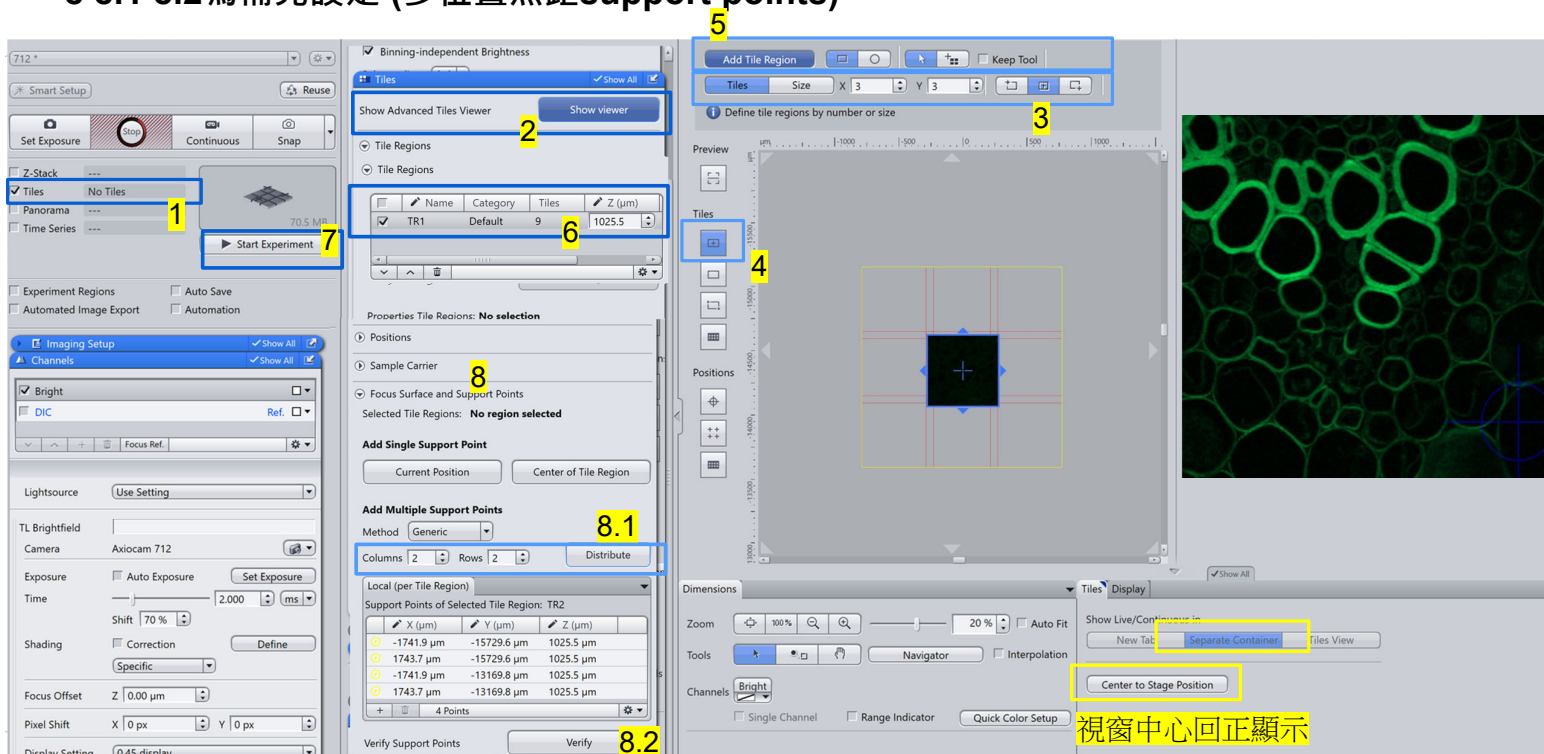


Tile Scan Imaging Setup 基本設置



Tile Scan Setup

8 8.1 8.2為補充設定 (多位置焦距support points)

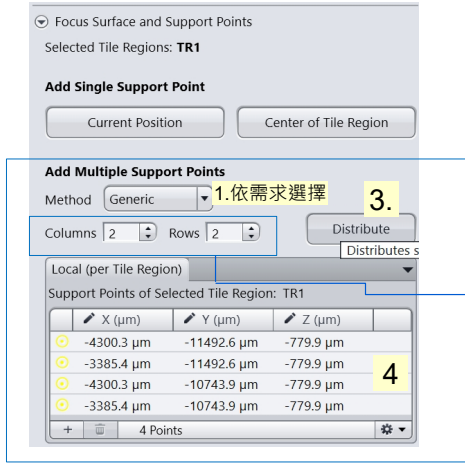


Tile Scan __ 1.

以WF方式(AxioCam702)輔助快速設定拍照區域

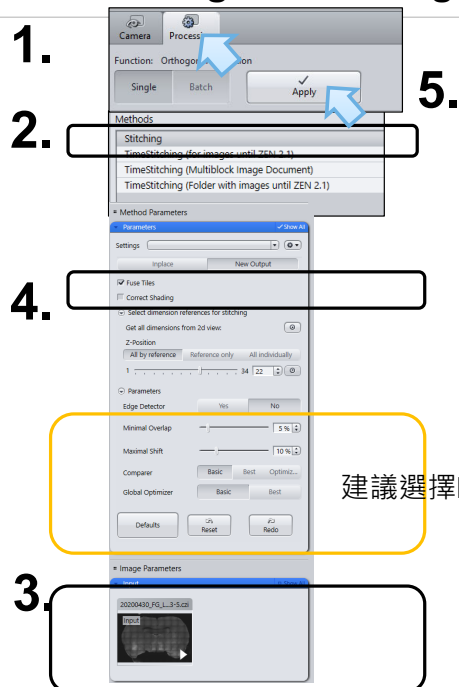


Tile Scan. 設置多位置焦點 Focus Map 多位置焦距Add support points



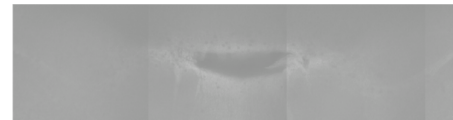
- 2.
- 依樣品狀況決定support points數量
 - 一般單純傾斜不必太多點，系統會自行計算焦點

拼圖結果融合處理 Processing → Stitching / Fuse

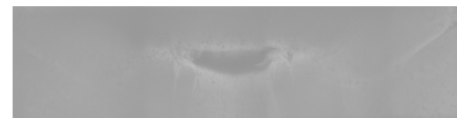


建議選擇Basic即可

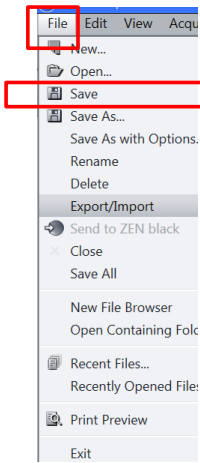
Before



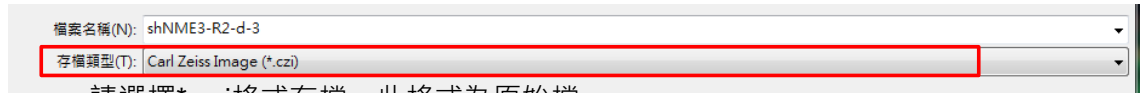
After



5



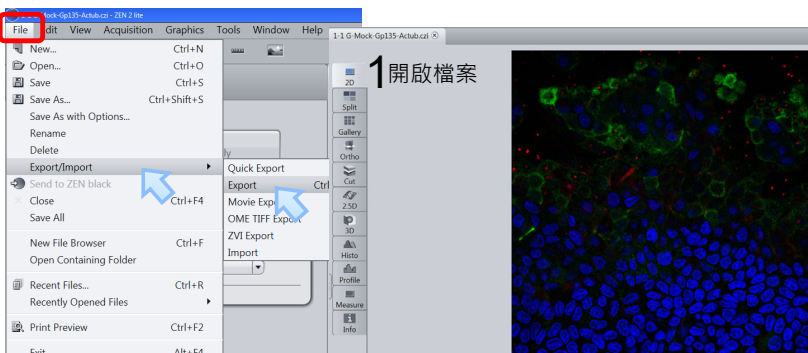
存檔



- 請選擇*.czi格式存檔，此格式為原始檔
- *.czi 日後可reuse
- 請勿直接存成tif/jpg檔，以免日後無法定量及添加尺規
- 需要純圖檔請進行圖檔輸出export或大量批次轉檔batch export，詳見下頁

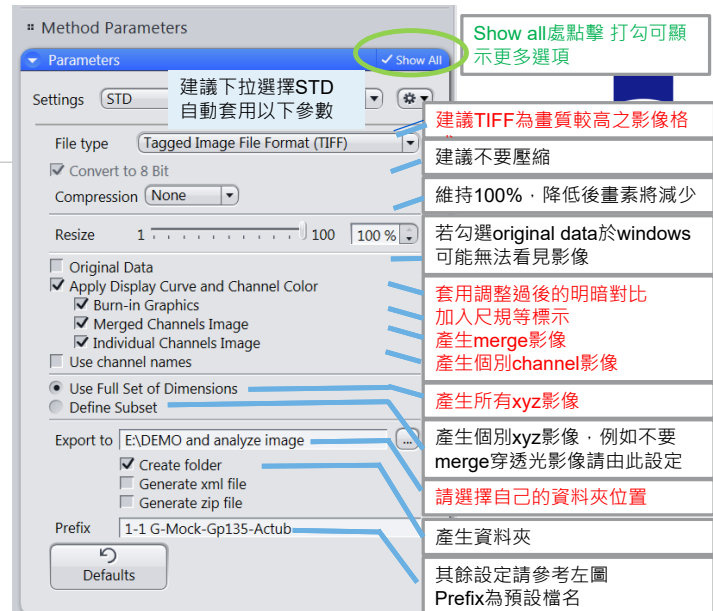
圖檔輸出export (單一檔案)

2



1開啟檔案

4



Show all處點擊 打勾可顯示更多選項

建議TIFF為畫質較高之影像格式

建議不要壓縮

維持100% · 降低後畫素將減少

若勾選original data於windows可能無法看見影像

套用調整過後的明暗對比

加入尺規等標示

產生merge影像

產生個別channel影像

產生所有xyz影像

產生個別xyz影像 · 例如不要merge穿透光影像請由此設定

請選擇自己的資料夾位置

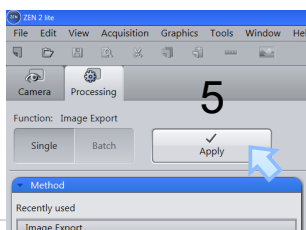
產生資料夾

其餘設定請參考左圖

Prefix為預設檔名

3

確認input 檔名是否為您所要輸出的檔案



5

大量批次轉檔batch export 1

ZEISS

1

2

3

4

5

Batch Processing

Function: Image Export

Single Batch Apply

Batch Method

Change Scaling

Attach PSF

ApoTome deconvolution

ApoTome RAW Convert

Image Export

Movie Export

ZVI Export

Image Analysis Program

Stitching

Undo Stitching

Draw Scale Bar Annotation

Extended Depth of Focus

Split Scenes (Write files)

OME TIFF-Export

Split Multiblock Image

Consistent File Name

28.08 MB Image Export

16.09 MB Image Export

24.1 MB Image Export

24.08 MB Image Export

24.09 MB Image Export

24.1 MB Image Export

24.08 MB Image Export

24.09 MB Image Export

24.08 MB Image Export

24.09 MB Image Export

24.07 MB Image Export

24.09 MB Image Export

16.07 MB Image Export

24.09 MB Image Export

16.08 MB Image Export

20.11 MB Image Export

20.11 MB Image Export

24.1 MB Image Export

20.09 MB Image Export

+

Remove

Remove All

加入你所想要轉檔的項目

Parameters

Settings STD

File type Tagged Image File Format (TIFF)

Convert to 8 Bit

Compression None

Resize 1 100

Original Data

Apply Display Curve and Channel Color

Burn-in Graphics

Merged Channels Image

Individual Channels Image

Use channel names

Use Full Set of Dimensions

Define Subset

Create folder

Generate xml file

Generate zip file

Defaults

建議下拉選擇STD
自動套用以下參數

建議TIFF為畫質較高之影像格
8bit方便瀏覽 不須特殊軟體
建議不要壓縮

維持100% · 降低後畫素將減少

若勾選 · 於windows可能無法看見影像

套用調整過後的明暗對比
加入尺規等標示
產生merge影像
產生個別channel影像

產生所有xyz影像

產生資料夾

大量批次轉檔batch export 2

ZEISS

12

7

8

10

11

Batch Processing

輸出至原檔案同一資料夾

Use Input Folder as Output Folder

Naming...

Copy Parameters

Paste Parameters

Check All

Run Selected

Hide

Batch Method

Change Scaling

Attach PSF

ApoTome RAW Convert

Image Export

Movie Export

ZVI Export

Image Analysis Program

Stitching

Undo Stitching

Draw Scale Bar Annotation

Extended Depth of Focus

Split Scenes (Write files)

OME TIFF-Export

Split Multiblock Image

Consistent File Name

Size

Method

Output Name

Output Storage Path

E:\DEMO and analyze imag... 468.22 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 600.25 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 744.28 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 942.34 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 348.2 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 312.17 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 342.17 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 540.24 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

E:\DEMO and analyze imag... 612.26 MB Image Export E:\DEMO and analyze image\20160202 siGal8-Gp135

+

Remove

Remove All

Load List...

Save List...

按住SHIFT鍵選取剩下的檔案

7~10 將設訂好的參數貼至其餘檔案當中，若沒有做paste parameter的動作，可能會失敗!

Multi-position Time Lapse Imaging 1. Mark the positions of interests Focus Strategy_ Definite focus (適用於焦距差不多的樣品，通用法)



1.

2.

3.

4.

5. Focus Strategy → Definite Focus

(補充)Multi-position Time Lapse Imaging 1. Mark the positions of interests Import stage marks as position



4.

5.

6.

1. Stage → Marks

2.

3.

多位置長時間自動追焦 Multi-position Time Lapse Imaging 2. 適用於微小焦距差異設定



1.

4.

- 所有位置焦距設定完畢
- 按下Start Experiment後軟體會自動設Multiple Offsets

2.

3.

5.

6.

手動或自動確認焦距

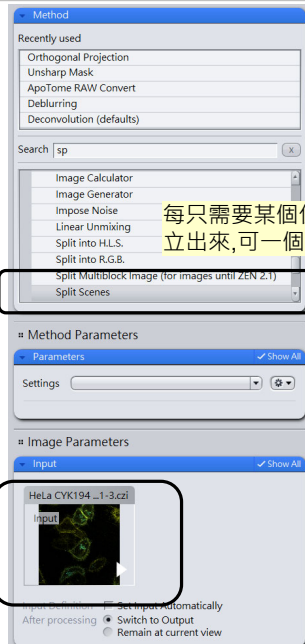
Multi-position Time Lapse Imaging 3. Options 多孔盤注意: 避免位置拍攝順序混亂



- 按照positions 順序拍攝請取消Meander!
- 否則位置拍攝順序會重新排序

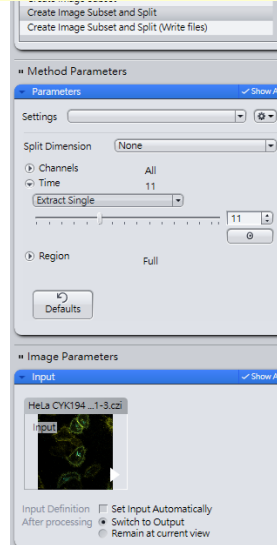
多位置拍攝長時間 依位置切割檔案

Processing → Split Scenes/ Create Subsets



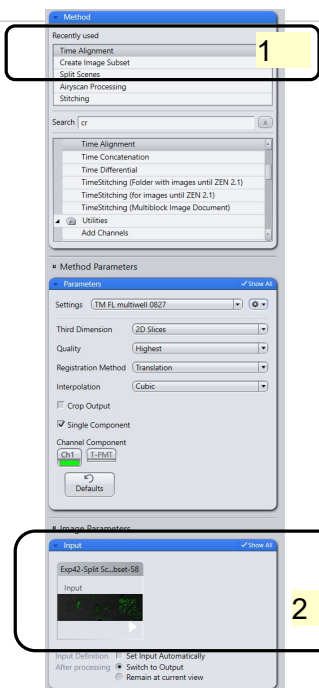
每只需要某個位置的結果獨立出來,可一個個分別存檔

只需要某個位置或時間的結果獨立出來



多位置拍攝長時間晃動問題

Processing → Time lapse Alignment



關於連續撥放影片晃動

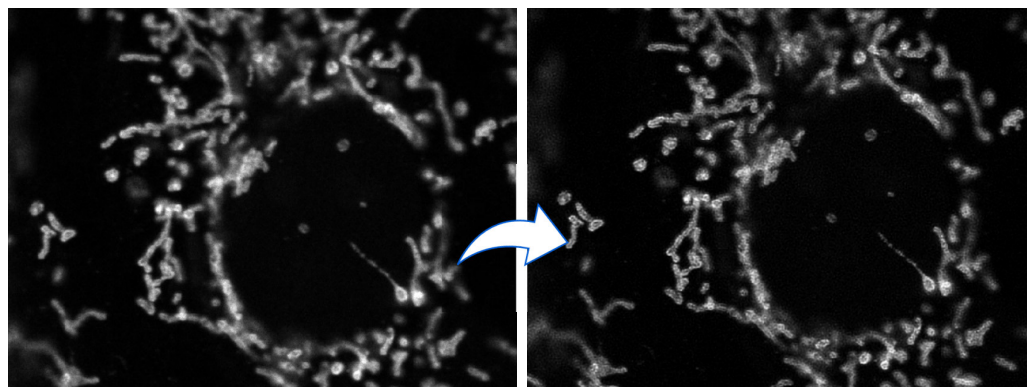
- 請放好樣品後對焦完畢，以黏土或工具固定樣品以免因載物台長時間多點移動造成樣品位移。
- 若合併多點(位置)拍攝此步驟請split scene切割完畢再執行

ZEN 3.3 Image Processing Image Clearing Option 1: 2D DCV (defaults)



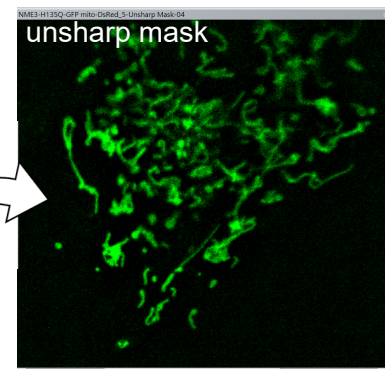
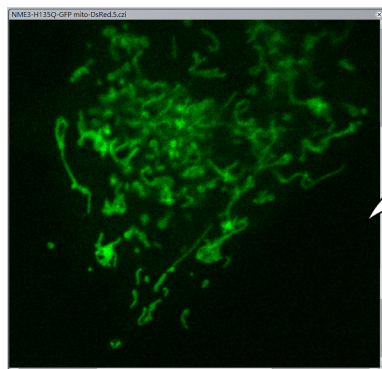
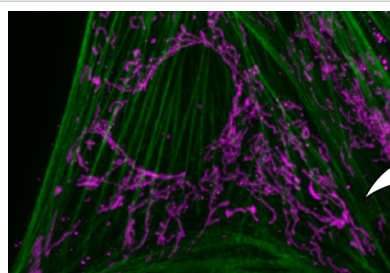
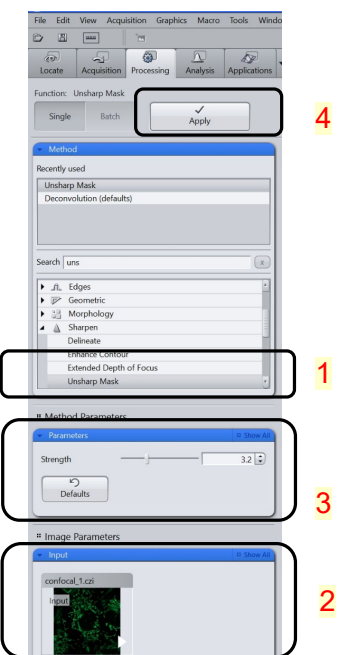
Before

After

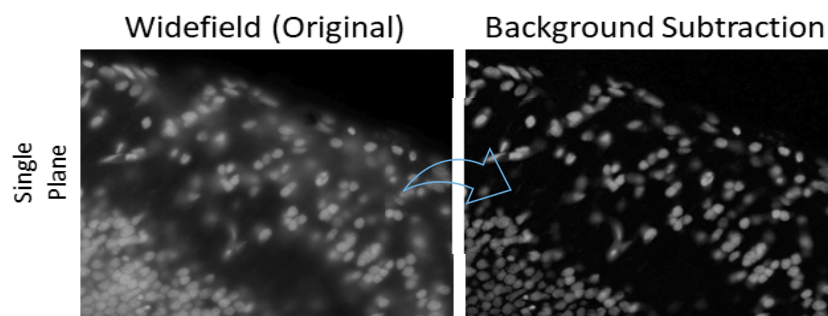
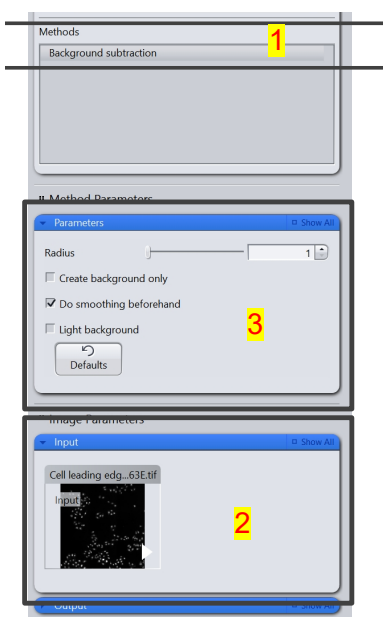


37

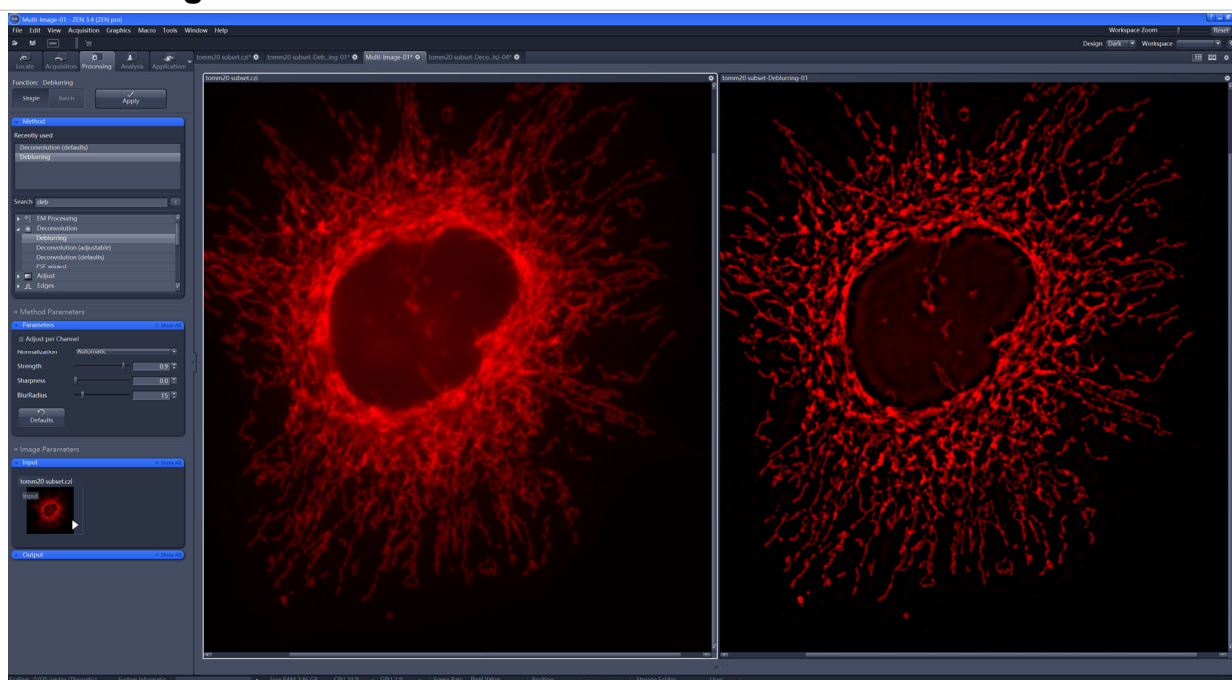
ZEN Image Processing Image Clearing Option 2: Unsharp masking



ZEN 3.3 Image Processing Image Clearing Option 3: Background subtraction

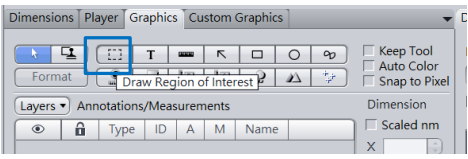


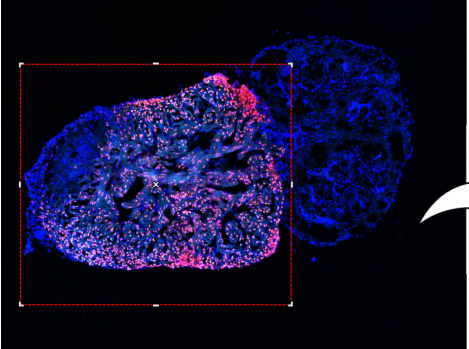
Option 4: ZEN 3.4 WF vs Deblurring/2D DCV

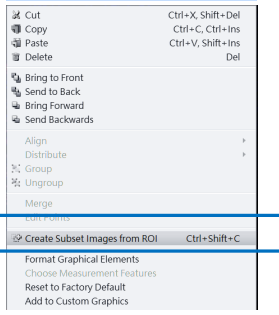


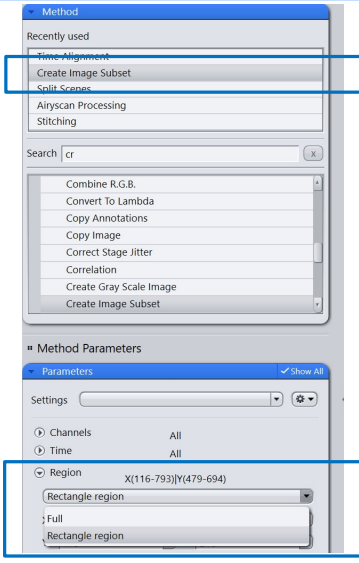
裁圖，複製選取範圍影像

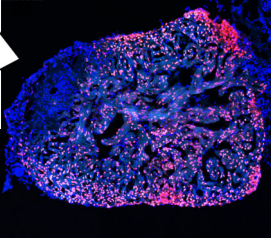


1. 

2. Draw an area and mouse right click 

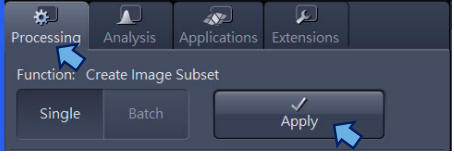
3. Create Subset Images from ROI 

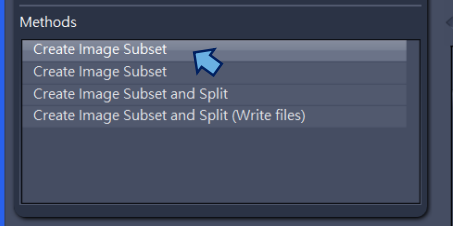
3. 或者 Processing → Create Image Subset 

4. 獲得裁切範圍於新視 

裁切，分割 channel, time, region, scene 片段資料 create image subset



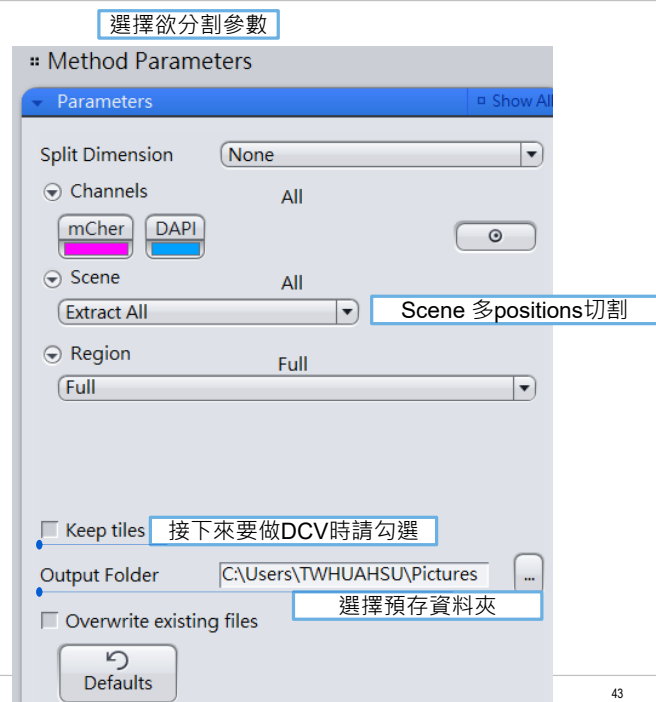
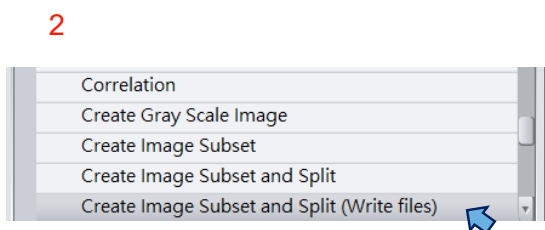
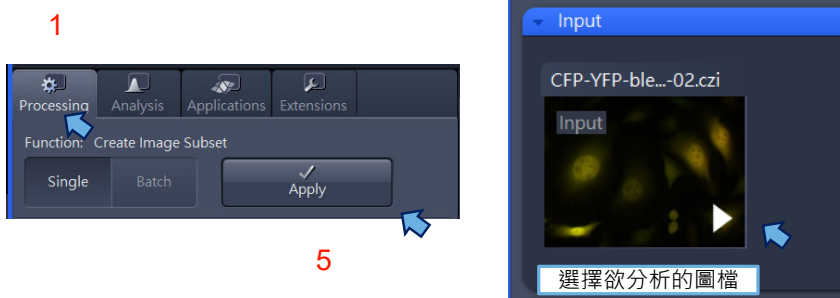
1. 

2. 

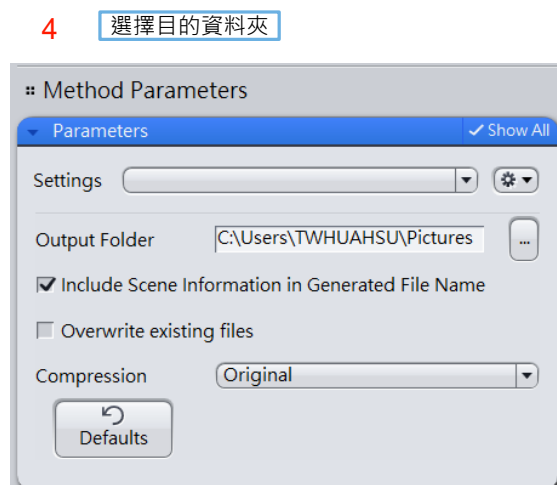
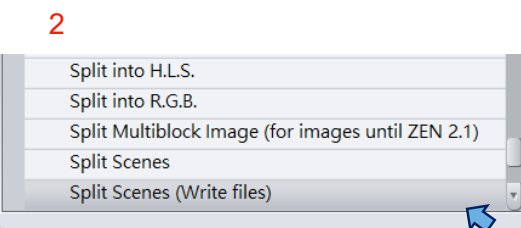
3. 

4. 

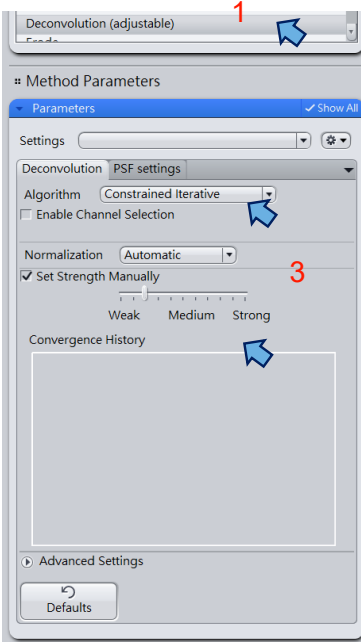
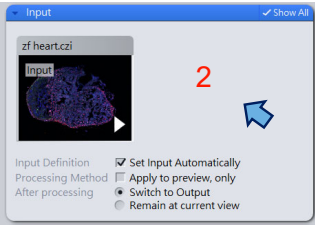
裁切結果自動存檔， 分割 channel , time , region, scene 片段資料 create image subset



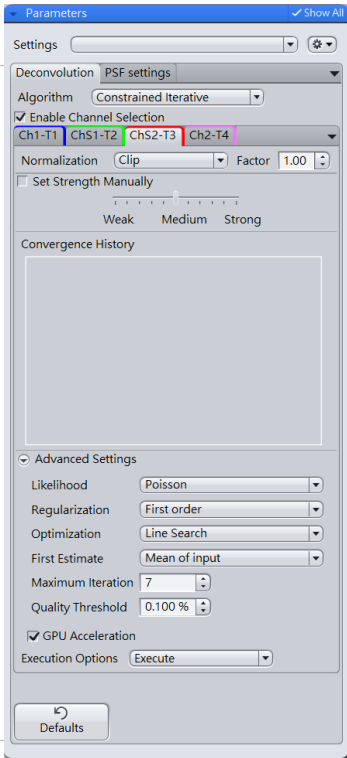
Scene分離，每個位置一個單獨檔案 Split Scenes (Write files)



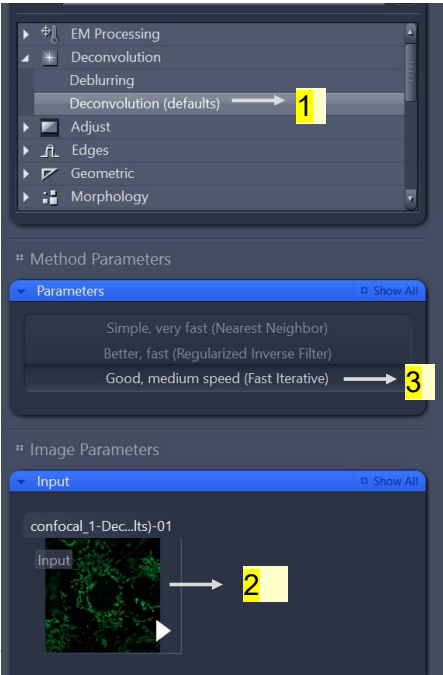
Deconvolution (adjustable)



進階選項

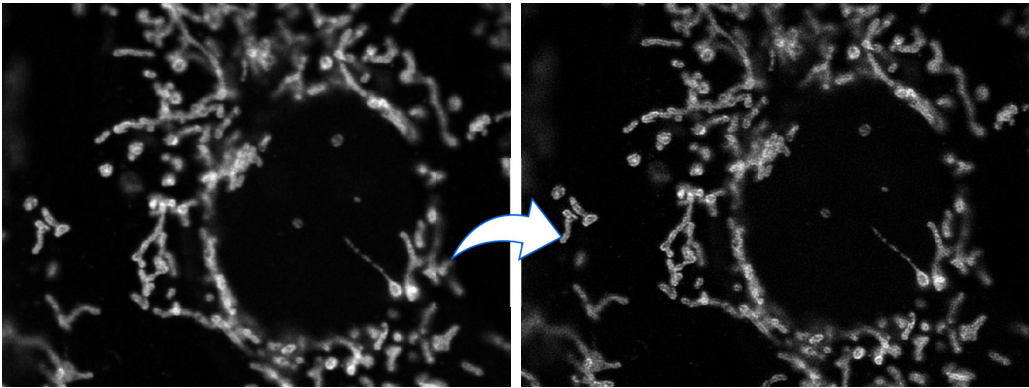


ZEN 3.3 Image Processing Image Clearing Option 1: 2D DCV (defaults)

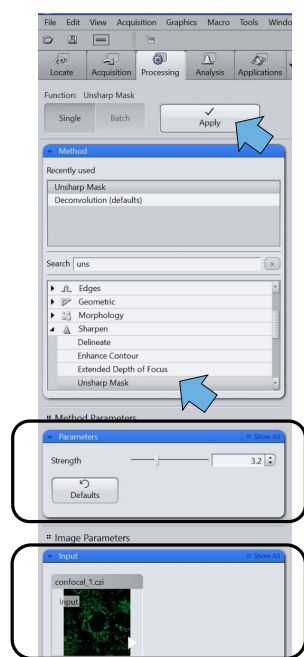


Before

After



ZEN Image Processing Image Clearing Option 2: Unsharp masking

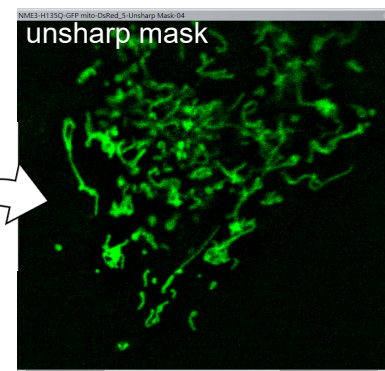
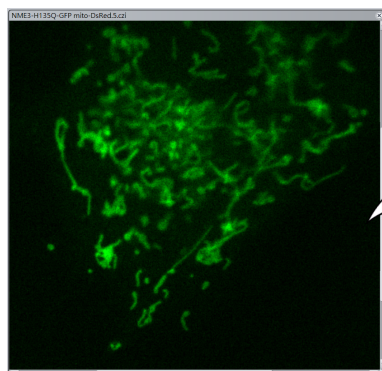
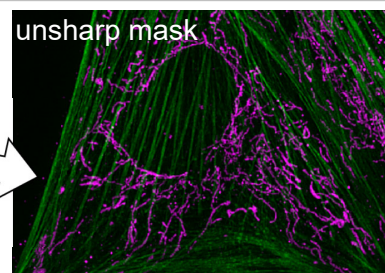
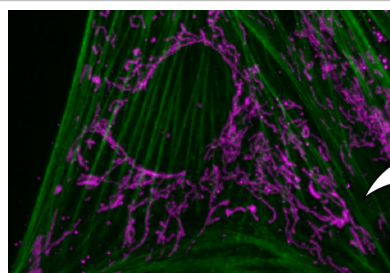


4

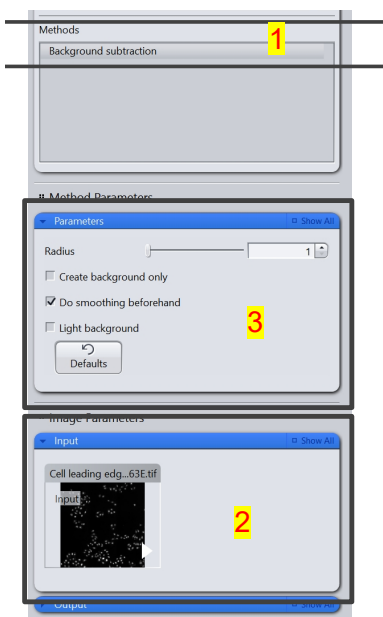
1

3

2



ZEN 3.3 Image Processing Image Clearing Option 3: Background subtraction



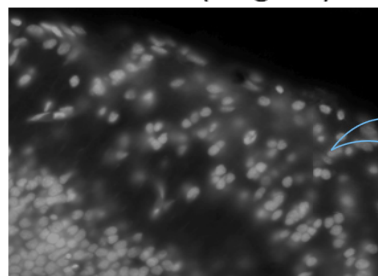
1

2

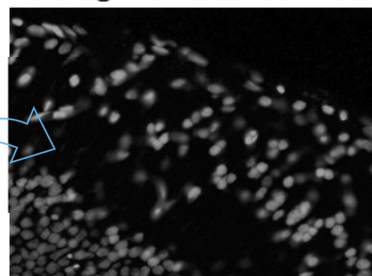
3

Single
Plane

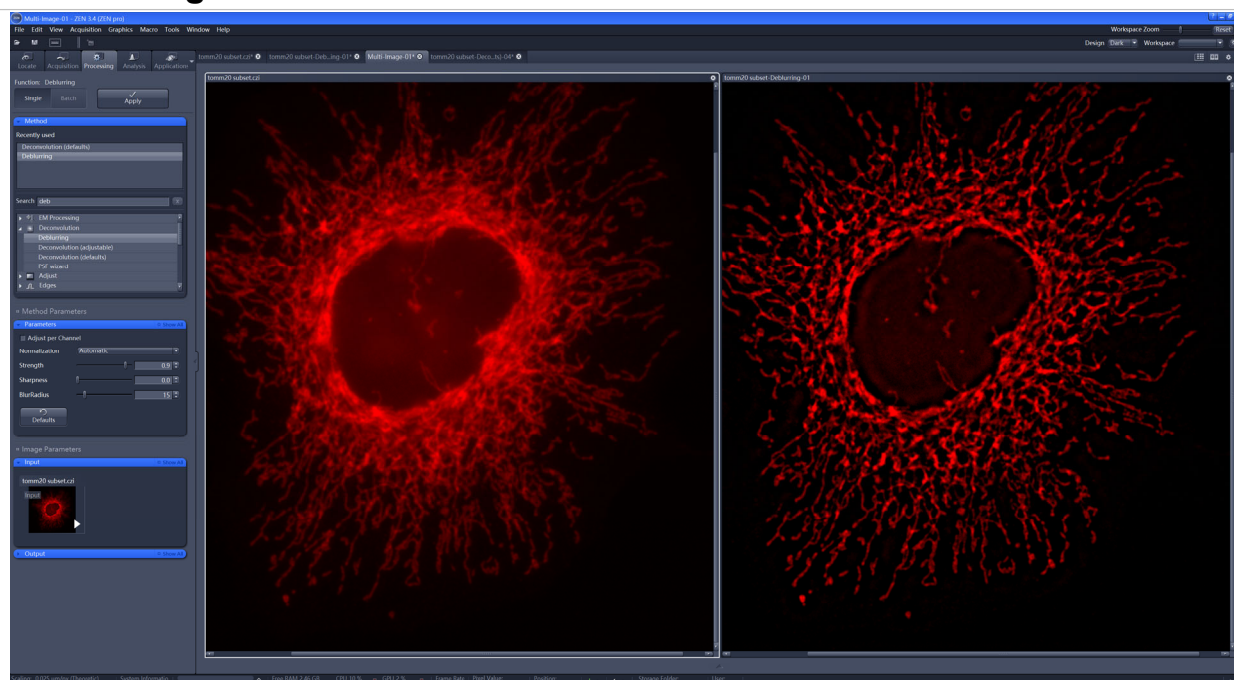
Widefield (Original)



Background Subtraction



Option 4: ZEN 3.4 WF vs Deblurring/2D DCV



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49

裁圖，複製選取範圍影像



1.

2. Draw an area and mouse right click

3. Create Subset Images from ROI

4. 獲得裁切範圍於新視

3. 或者
Processing → Create Image Subset

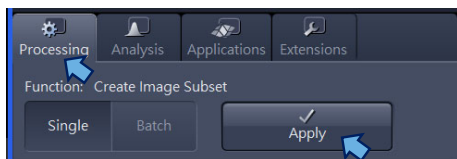
ZEISS Research Microscopy Solutions, HuaMan Hsu

50

裁切・分割 channel , time , region, scene 片段資料 create image subset



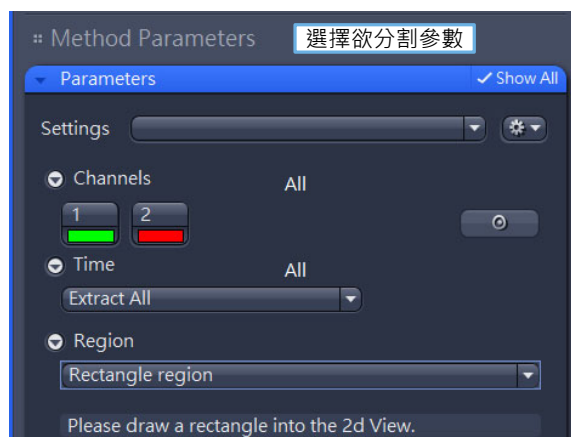
1



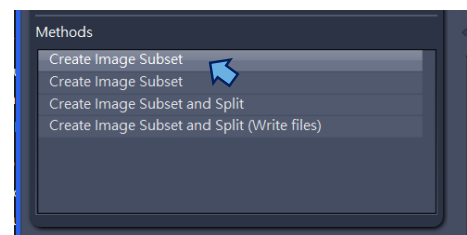
3



4



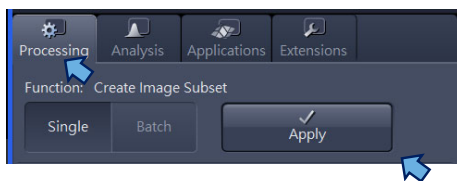
2



裁切結果自動存檔， 分割 channel , time , region, scene 片段資料 create image subset



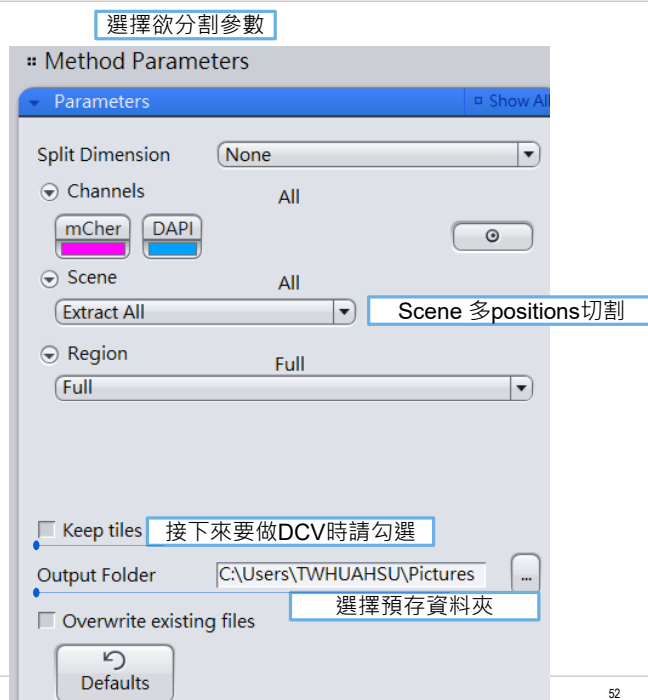
1



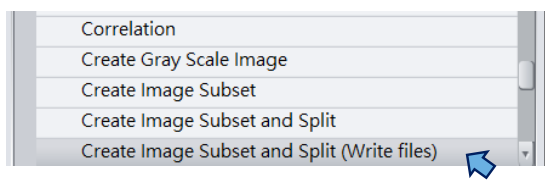
3



4



2



Scene分離，每個位置一個單獨檔案 Split Scenes (Write files)



1

Processing Analysis Applications Extensions

Function: Create Image Subset

Single Batch **Apply**

2

Split into H.L.S.
Split into R.G.B.
Split Multiblock Image (for images until ZEN 2.1)
Split Scenes
Split Scenes (Write files)

3

Input

CFP-YFP-ble...-02.czi

Input

選擇欲分析的圖檔

4

選擇目的資料夾

Method Parameters

Parameters Show All

Settings

Output Folder C:\Users\TWHUAHSU\Pictures

☒ Include Scene Information in Generated File Name

☐ Overwrite existing files

Compression Original

Defaults

5

Add Scale Bar加入尺規



1

2D
Split
Gallery
Ortho
Cut
2.5D
3D

2

Dimension Graphics

Customize

3

scale bar會自動出現

4

於scale bar按右鍵可更改大小
顏色粗細等格式

Format Graphical Elements

Format graphical elements

☒ Zoom with Image

Line 3.41 Solid

Begin style Flat

End style Flat

Text Calibri, 26pt Horizontal Align Center

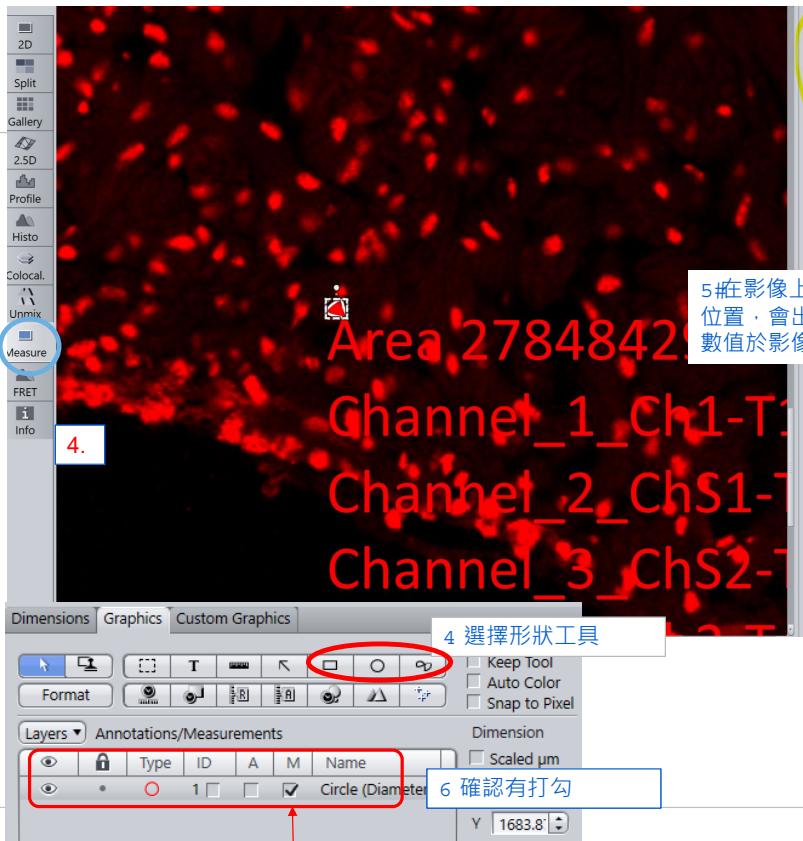
Fill

Opacity

更改線的颜色樣式

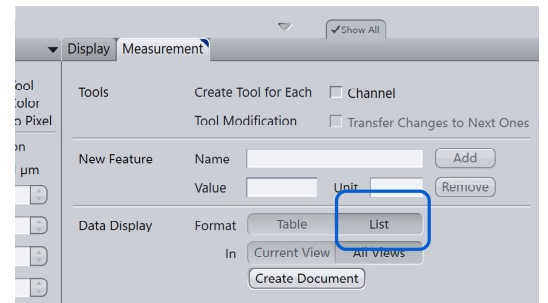
更改字的颜色大小

量測area & intensity

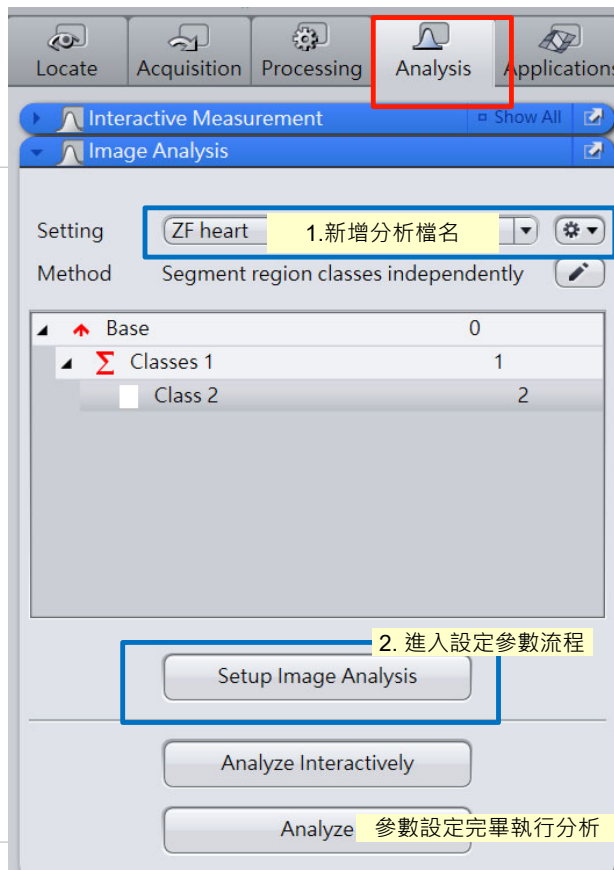


7. 圖表位於右方視窗

	Name	Feature	Value	Unit
1	Circle (Diameter)	Area	1,146,259.648	µm²
2	Circle (Diameter)	Channel_3_mPlum.Intensity Mean Value	8,855.551	
3	Circle (Diameter)	Channel_2_EGFP.Intensity Mean Value	5,622.191	
4	Circle (Diameter)	Channel_1_DAPI.Intensity Mean Value	3,224.520	
5	Circle (Diameter)	Diameter	1,208.082	µm
6	Circle (Diameter)	Channel_4_Cy5.Intensity Mean Value	808.316	

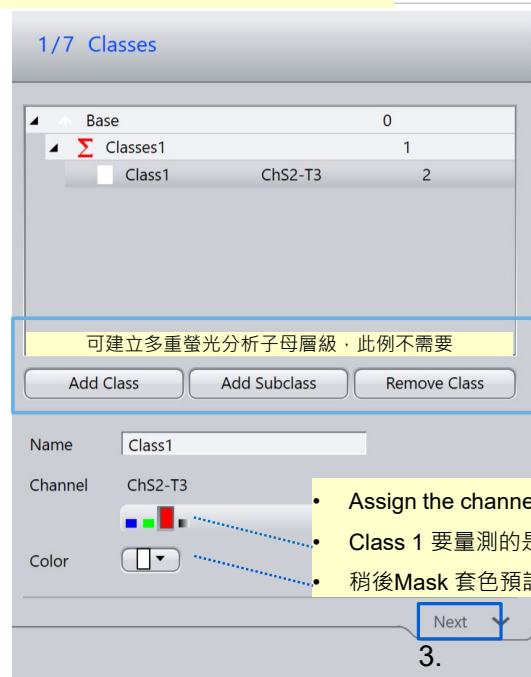


55



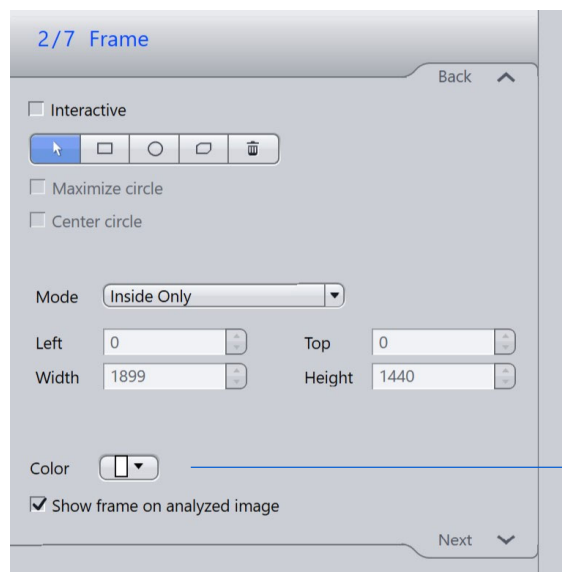
自動量測 Image Analysis Module 1.

以量測前頁影像內的紅色細胞核數目為例



56

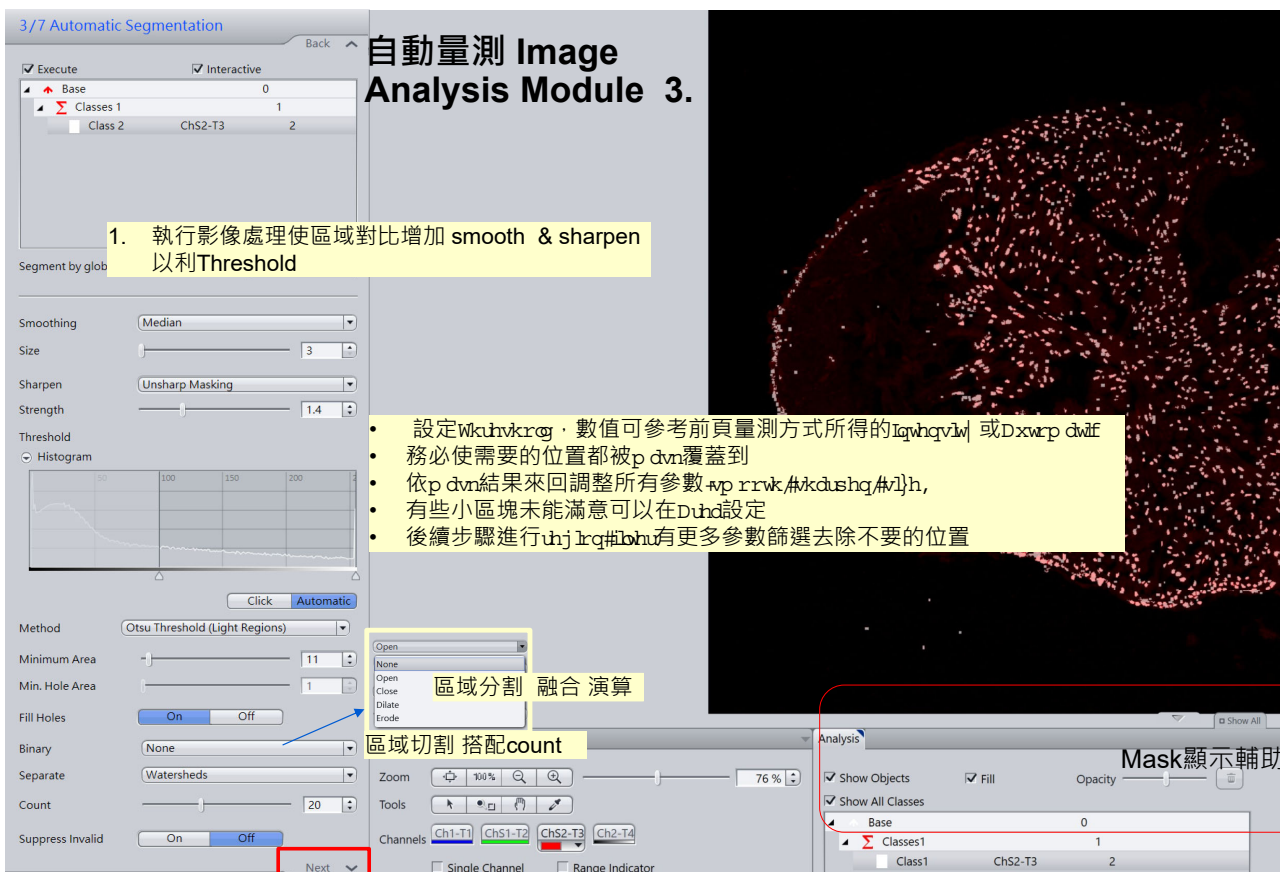
自動量測 Image Analysis Module 2. 圈選分析範圍，可略過



- 圖檔不大請略過此頁步驟
- 可針對要分析的位置框選位置
- 整面要量測請略過此步驟

- 量測區域外框顏色

自動量測 Image Analysis Module 3.



1. 執行影像處理使區域對比增加 smooth & sharpen 以利 Threshold

- 設定 watershed，數值可參考前頁量測方式所得的 I_{avg} 或 D_{avg}
- 務必使需要的位置都被 p_{dwn} 覆蓋到
- 依 p_{dwn} 結果來回調整所有參數 p_{rrrk} / wk_{dushq} / n_jh ,
- 有些小區塊未能滿意可以在 D_{dnd} 設定
- 後續步驟進行 uhj_{lrq} 有更多參數篩選去除不要的位置

區域分割 融合 演算

區域切割 搭配 count

Mask顯示輔助

自動量測 Image Analysis Module 4.

若仍有不需計算的位置，此步驟可進一步篩出需要的位置，依需求加入各式range filter



4/7 Region Filter

Back

☒ Execute ☒ Interactive

Base 0

Classes 1 1

Class 2 ChS2-T3 2

Define region filters for segmented object

Edit Copy to All

Name	Minimum	Maximum	And
Area	100000.0	95000000	And
Fibrelength	1.000	0.000	And
Intensity Me	3.000	255.000	And
Perimeter	3000.000	1000.000	

Undo Redo Reset

Next

n Filter Editor

Selected Features for Condition

Name	And
Area	And
Fibrelength	And
Intensity Mean Value of channel 'Ch2-T4	And
Perimeter	

Search Features

Icon	Name
	Image Index Z
	Index
	Intensity Maximum of channel 'Ch1-T1'
	Intensity Maximum of channel 'Ch2-T4'
	Intensity Maximum of channel 'ChS1-T2'
	Intensity Maximum of channel 'ChS2-T3'
	Intensity Mean Value of channel 'Ch1-T1'
	Intensity Mean Value of channel 'Ch2-T4'
	Intensity Mean Value of channel 'ChS1-T2'
	Intensity Mean Value of channel 'ChS2-T3'
	Intensity Minimum of channel 'Ch1-T1'
	Intensity Minimum of channel 'Ch2-T4'
	Intensity Minimum of channel 'ChS1-T2'
	Intensity Minimum of channel 'ChS2-T3'
	Intensity Range of channel 'Ch1-T1'
	Intensity Range of channel 'Ch2-T4'

自動量測 Image Analysis Module 5.

互動式調整量測區域 增加 減少 或 切割 縫合
批次處理需求請略過此步



5/7 Interactive Segmentation

Back

☒ Interactive

Base 0

Classes 1 1

Class 2 ChS2-T3 2

Edit Regions

Remove Remove All

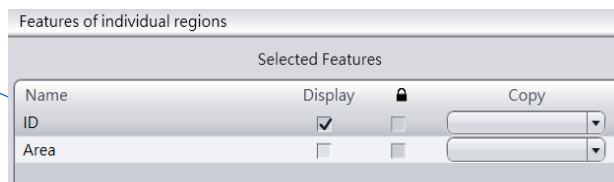
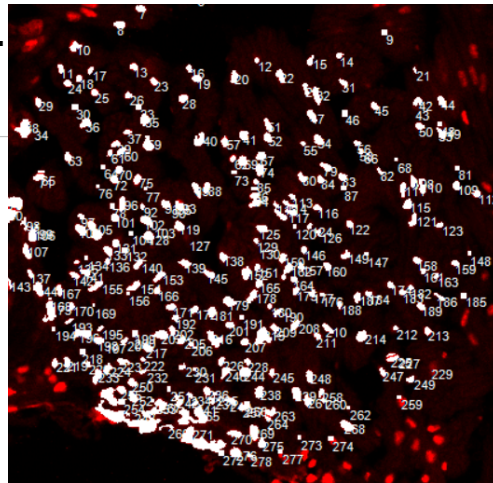
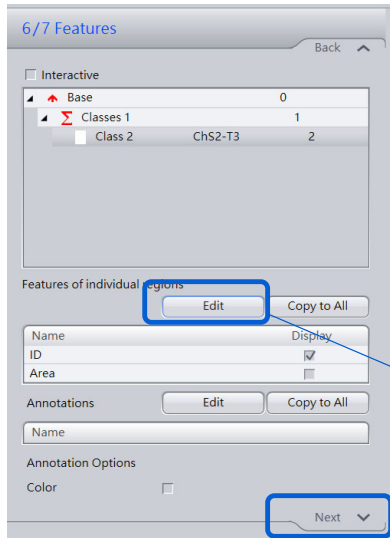
Region Growing

Post Processing

- 手動增加/刪除區域
- 手動切割/接合區域
- 若要進行自動大量圖檔批次分析，請避免使用此步驟

- 此例上述步驟已滿足需求，略過不再進行調整

自動量測 Image Analysis Module 6. Features 顯示設定



- 圖上若不需要顯示量測結果不要勾Display
- 量測結果顯示設定，如果密密麻麻的mask 請避免使用，以免影響觀察量測區域

自動量測 Image Analysis Module 7. 參數設定完畢，結果預覽

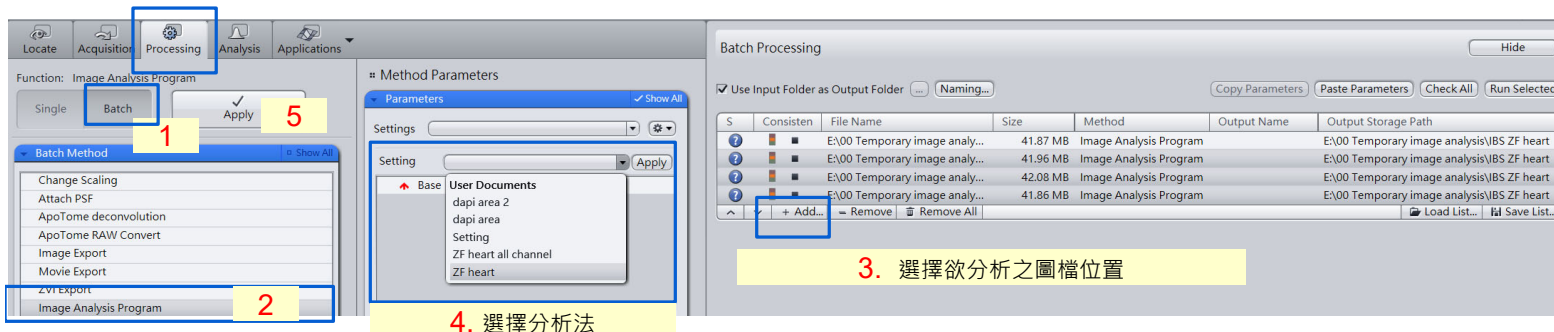


10	11	12,408,144.002
11	12	16,544,192.003
12	13	19,990,898.670
13	14	15,854,850.670
14	15	18,612,216.003
15	16	15,854,850.670
16	17	39,981,797.341
17	18	51,700,600.010
18	19	23,437,605.338
19	20	31,709,701.339
20	21	15,854,850.670
21	22	26,194,970.672
22	23	22,748,264.004
23	24	37,913,773.340
24	25	17,922,874.670
25	26	13,097,485.336
26	27	32,399,042.673
27	28	24,816,288.005
28	29	22,748,264.004
29	30	113,051,978.688
30	31	26,194,970.672
31	32	12,408,144.002

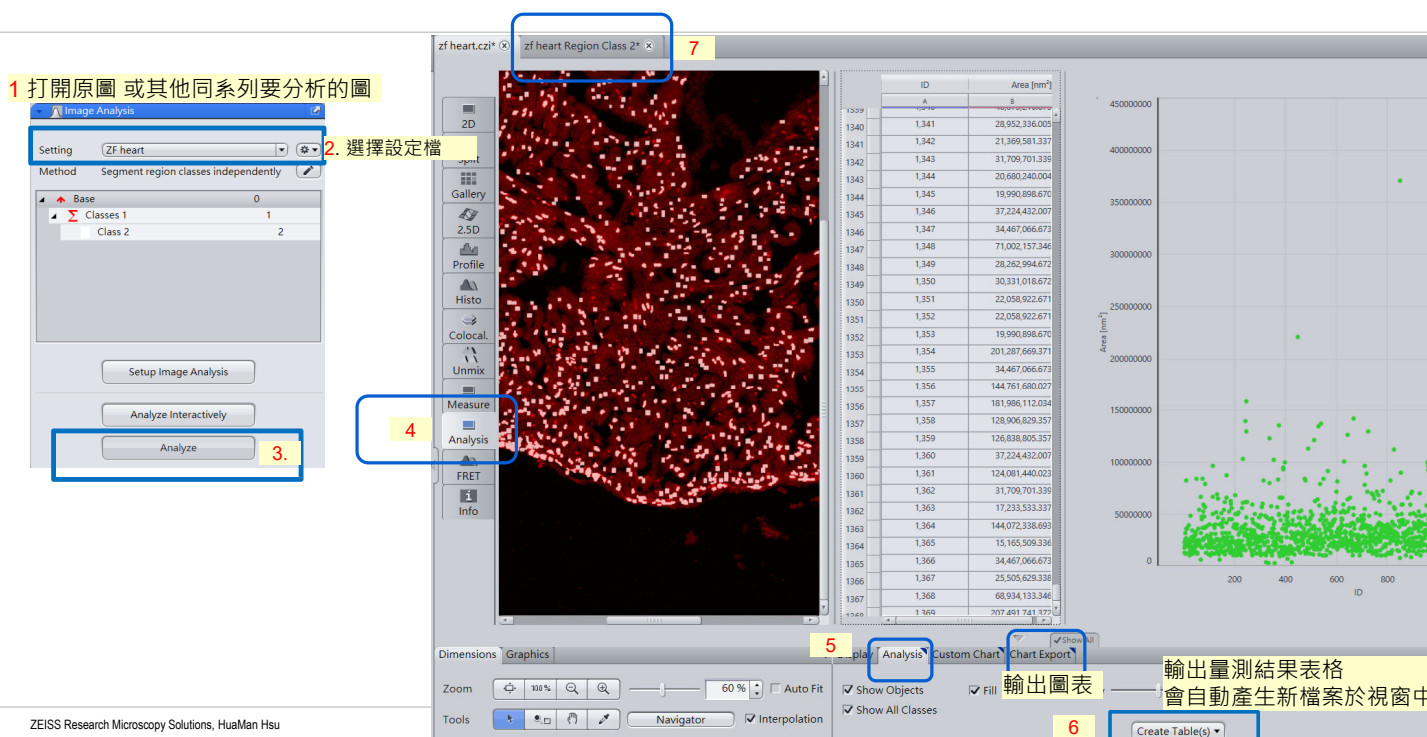
按下，儲存以上各步驟分析設定

- 結果預覽
- 此時尚無法輸出結果

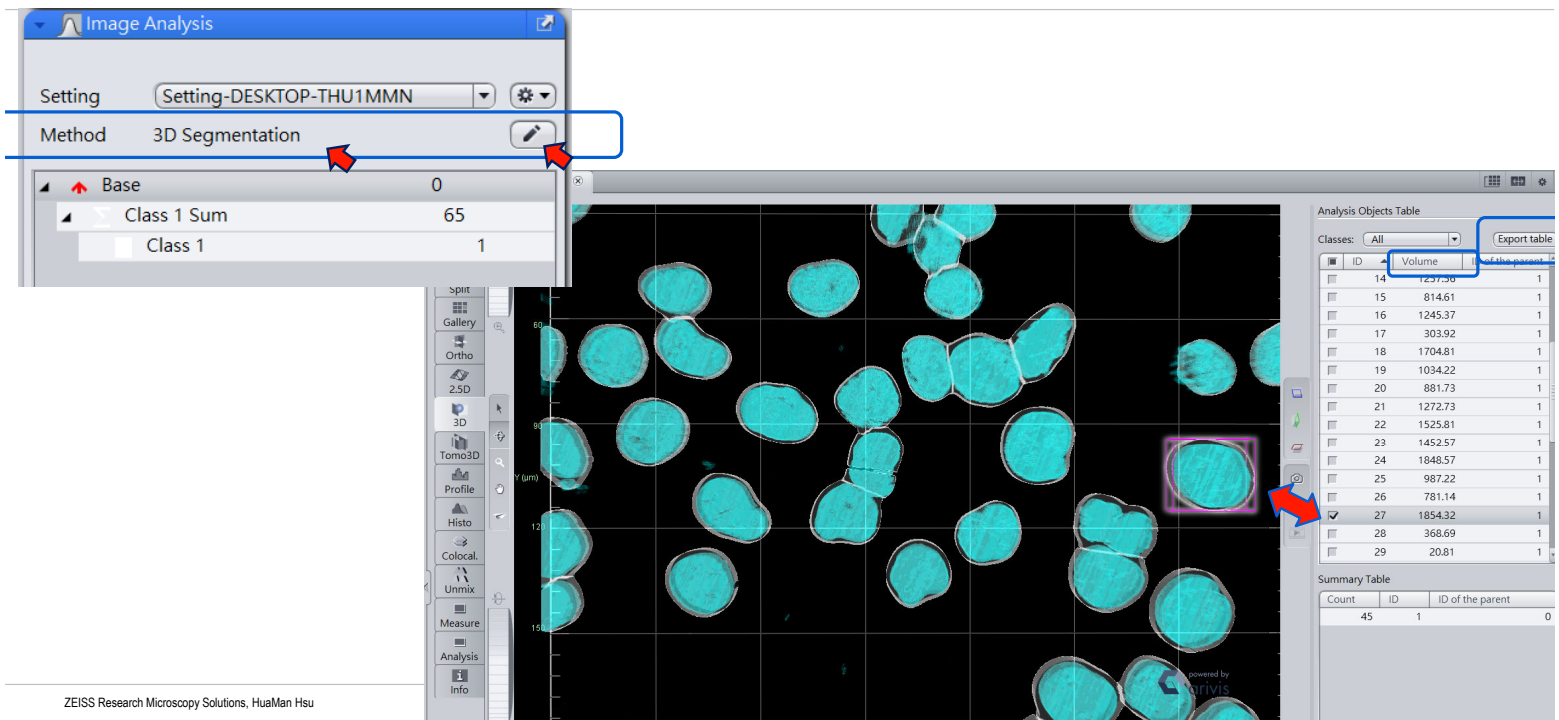
自動量測 Image Analysis Module 8. 大量分析Batch Analyze



自動量測 Image Analysis Module 9. Analyze the Image and Export the Data

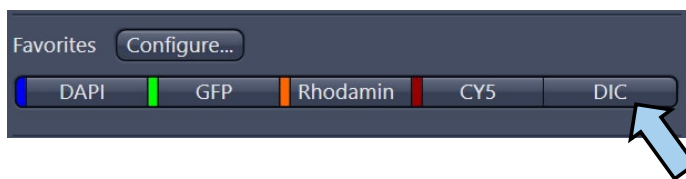
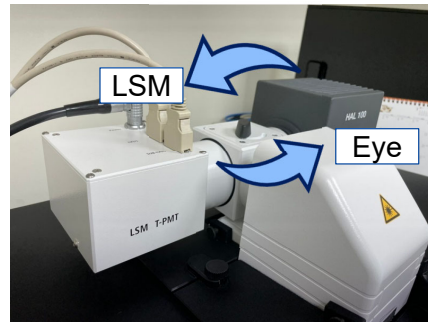
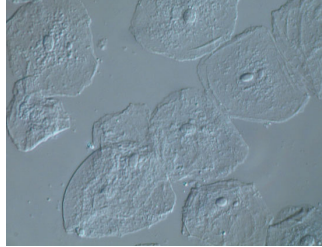


ZEN 3.5
3D Image Analysis



Bright Field /
DIC Observation

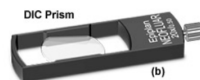
加拍穿透光 Bright Field / DIC Observation



Turn the T-PMT Rotary Switches to

- Right for eye observation
- Left for confocal imaging

Bright Field / DIC Observation Microscope setting for DIC



DIC prism可能會造成訊號誤差，AiryScan時建議拔出



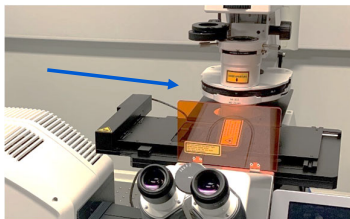
1. Focus the sample with objective
2. Adjust the condenser height by condenser focus knob (標記線對齊).
3. Check the condenser center position by closing the field diaphragm and reopen it after focusing the condenser.
4. Choose the DIC filter position (螢光濾片轉盤)
5. Swing the polarizer holder in
6. Choose condenser turret position for DIC(油鏡:轉到 DICIII)
7. Adjust aperture diaphragm (油鏡:全開)
8. Insert the objective DIC prism and adjust the knob

拍圖補充: DIC 影像



拍攝DIC影像

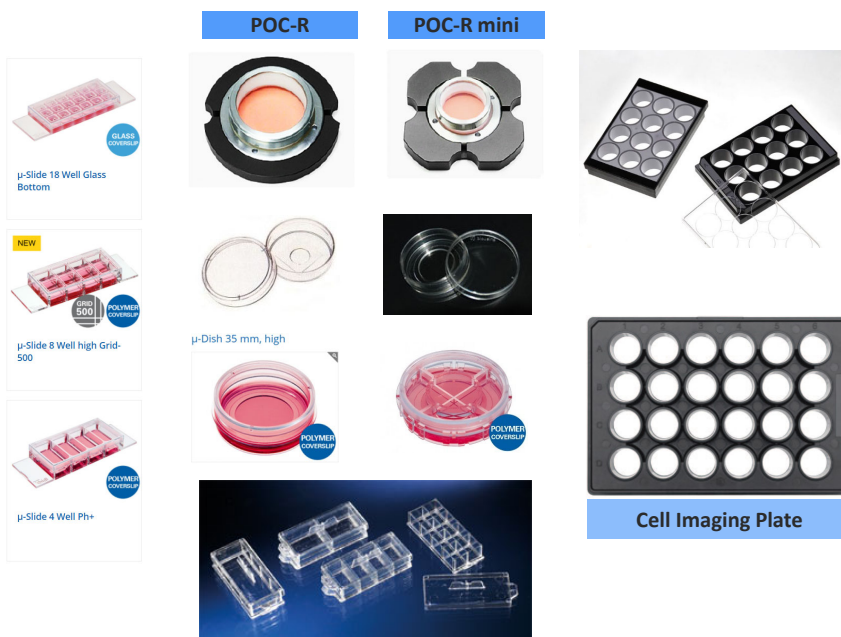
1. 如果講求完美效果聚光鏡校正要先做好! (設置請參考前頁)
2. 將螢光設定好最後再開啟T-PMT(或ESID)
3. 可選取任一個Track合併拍攝穿透光或者增加track單獨拍攝
4. 確認一下聚光鏡轉盤位置是否在DICII (10x& 20x) 或DICIII (40x以上) (見下圖) 。



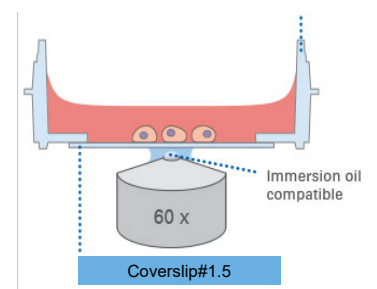
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Recommend Single/Multi-well Chamber Types for Living Cell Application



- **#1.5 cover glass/ polymer bottom dish/plate/slide for inverted microscope with high N.A objectives.**
- Thickness **no** 1 ½ 0.17mm ±0.005mm
- 需設定多孔盤Templet 請找徐小姐



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4. Computer

- 如果有使用活細胞培養裝置
- 關閉C02 (鋼瓶與TFT控制面板 Incubation)
- **Incubator XL 降溫至30度內(降溫完成, 控制面板incubation → off)**
- 加濕水瓶倒除

Home	Incubation	Therm. Switch		
	H Insert P	Inc PM	Obj Heater	H Dev Humi
	37.5°C	32.0°C	39.0°C	33.3°C
Control	37.5°C	35.0°C	34.6°C	34.3°C
Automatic	Air			SensorT
	32.5°C			35.2°C
XYZ	34.0°C			
Incubation				
	C02	O2		
Display	6.5%	2.0%		
	7.0%	1.0%		



3. Components

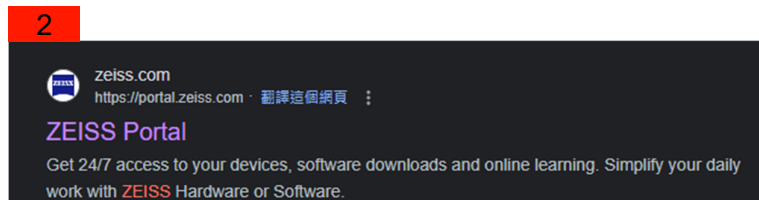


2. Laser Key

1. Main Switch

ZEN blue/lite Download

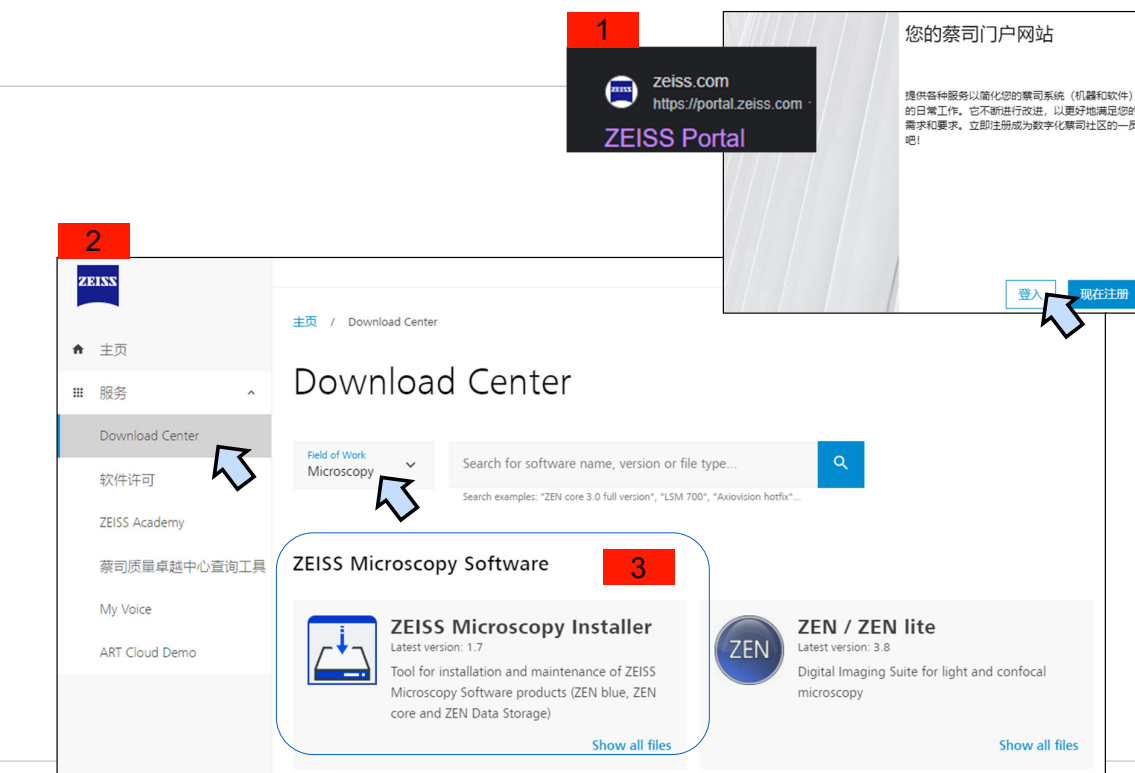
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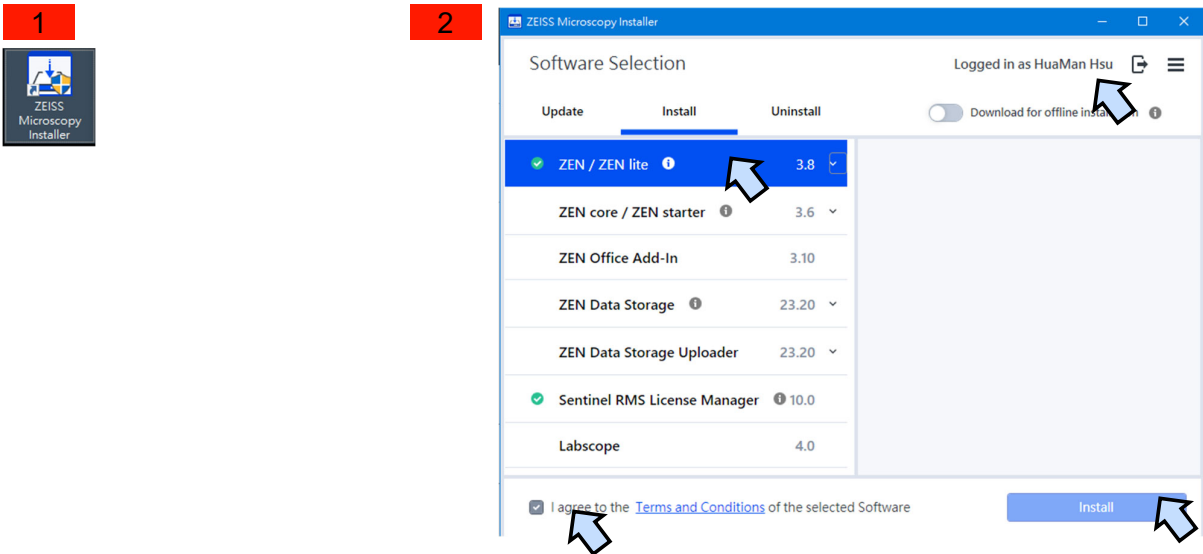
4

信箱收註冊確認信，沒有收到請製垃圾桶中找尋

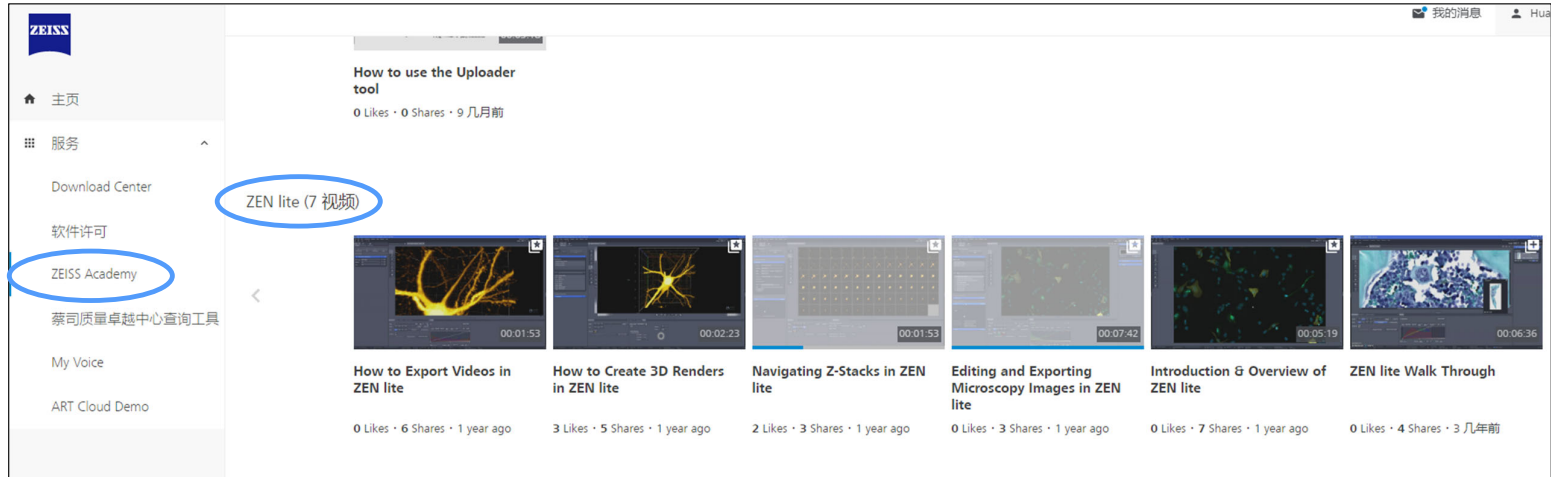
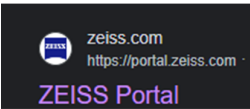
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ZEN lite使用教學視頻





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