



KEYENCE BZ-X800/BZ-X810

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# Hardware

1. **Top Panel**- for mounting specimens or changing lens
2. **Front Panel**- for installing or replacing filter cubes
3. **Power button**- turns on Keyence
4. **Power indicator**- illuminates when power is on
5. **Transmitted light unit**- the top panel houses the LED light; flip it up when mounting a specimen
6. **Stage/Sample Holder**- moves sample left, right, up and down
7. **Objective lens**- used to view the sample



1. Top Panel



2. Front Panel

3. Power Button

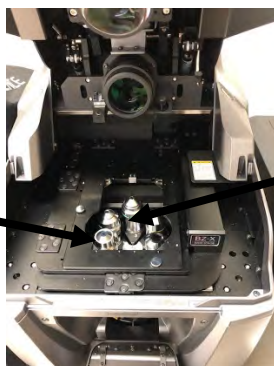


4. Power Indicator

5. Transmitted Light Unit



6. Stage/Sample Holder



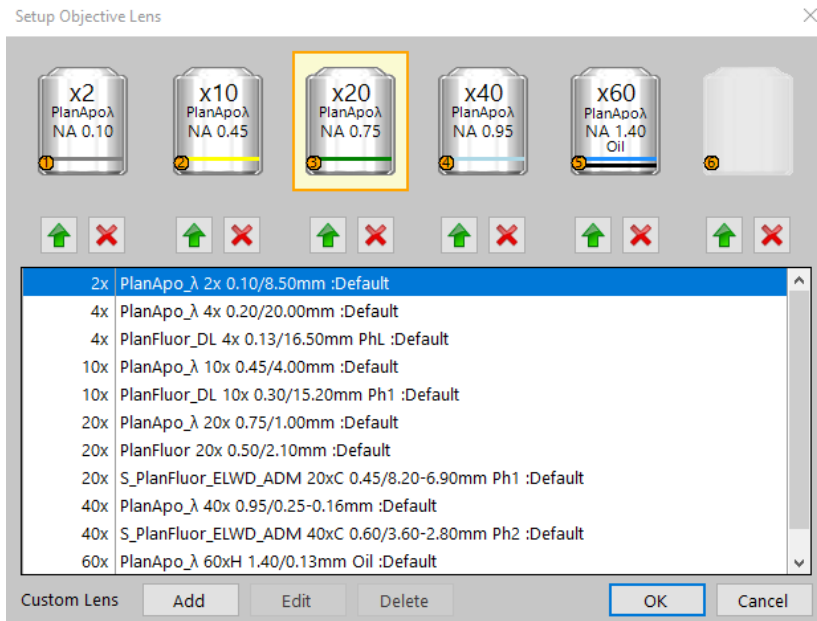
7. Objective Lens

# Starting Up

8. Turn on power switch of the controller on the back if not already on
9. Press the power button on the main unit. Power indicator should be blue.
10. Log in to the computer with gator link username and password
11. Double-click the BZ-X800 viewer icon. A menu screen with various options should pop up.

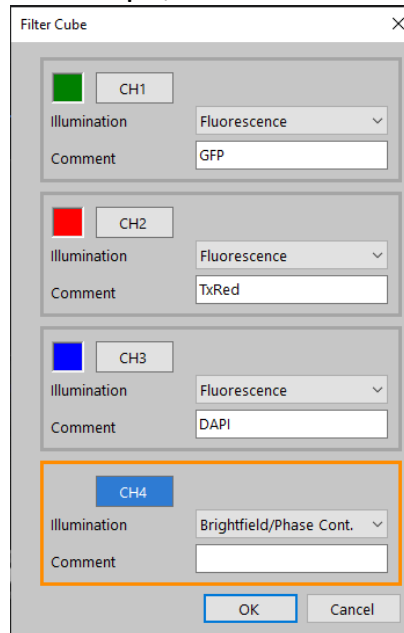


12. Click "objective lens"
13. Select the lens that are mounted in order and click ↑
14. The lens should be put in the order shown:



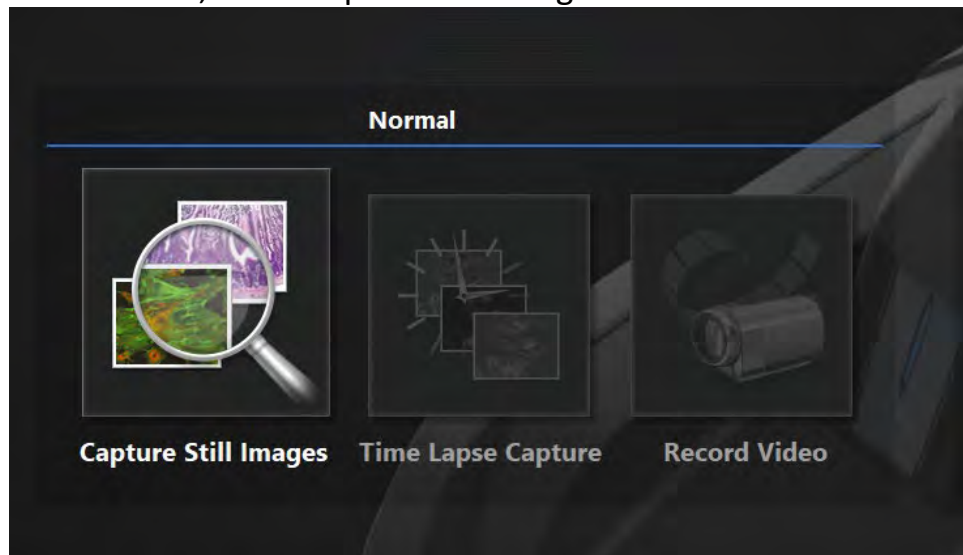
15. After the correct objective lens are put in place, click "Filter Cube"

16. Enter in the correct filter cubes in the window as they correspond to the filter cubes installed in the microscope, as shown here:

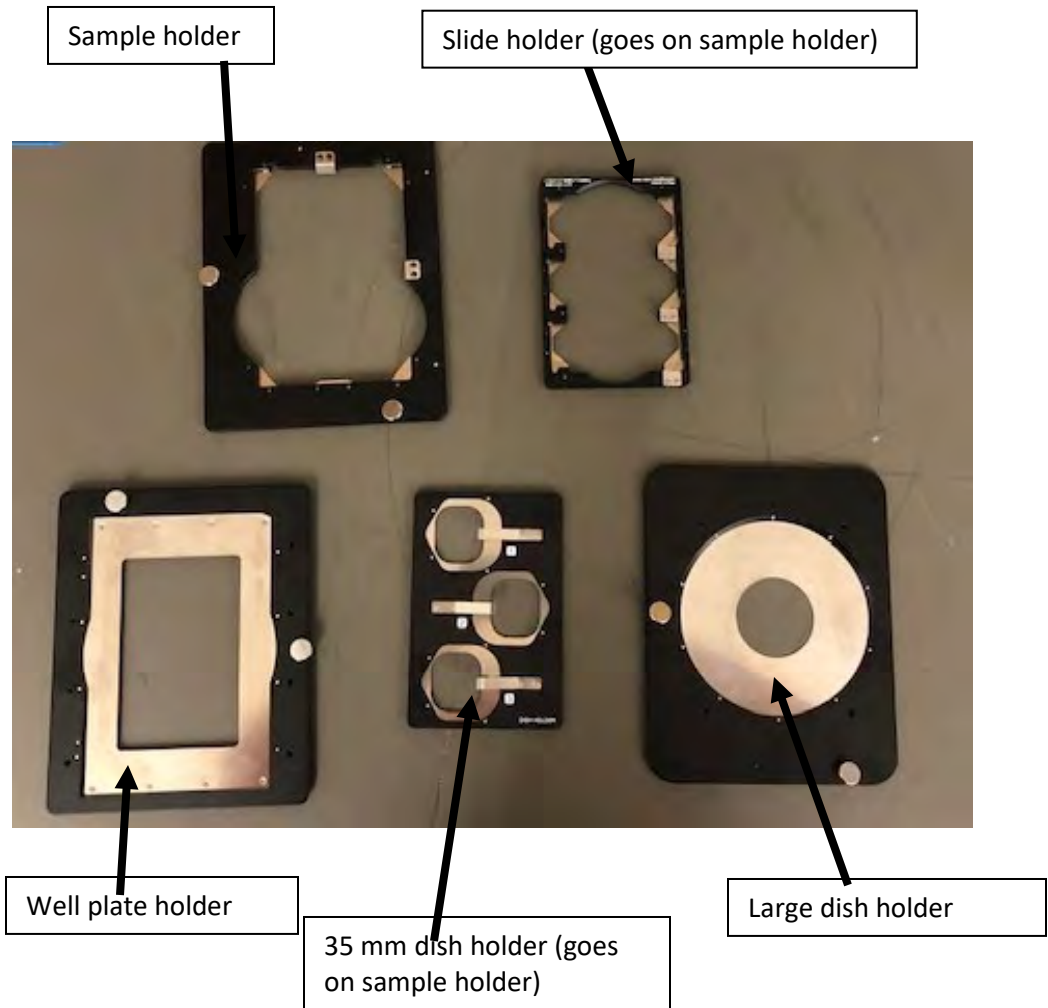


17. If you are using a plate, select "Well Plate Settings" and select the number of wells in your plate.

18. Under the Normal tab, click "Capture Still Images"



19. A window will pop asking what type of sample older you are using. Choose the correct one.

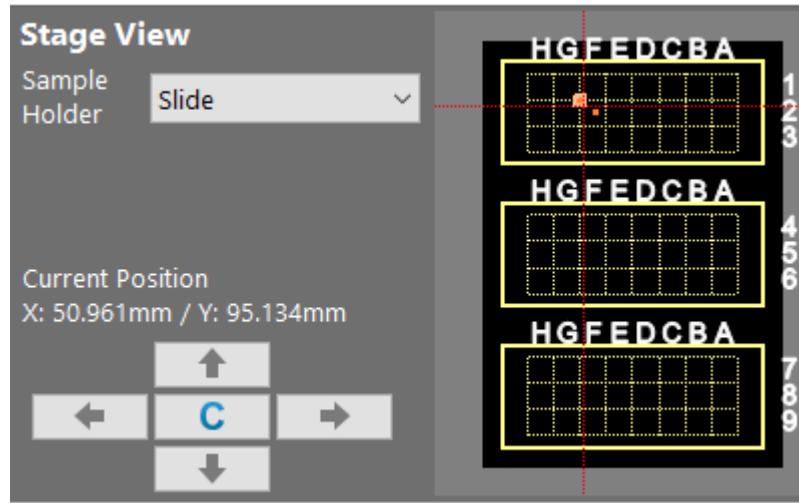


20. Choose the correct holder for your sample. Open the top panel and lift the transmitted light unit.

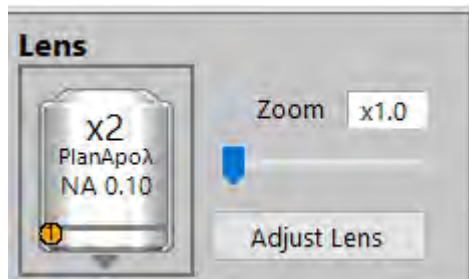
21. Place the sample holder over the objective lens. If placing one of the holders, then they need to be screwed and unscrewed into the stage.

# Getting in Focus

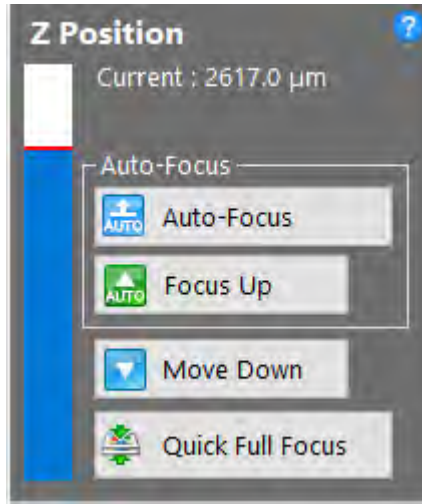
22. With the top panel still open, take note of where the sample is, then navigate to the stage view and use the control panel or click on the slides to view your sample under the objective lens. Once the sample is in view on the screen then this step is complete.



23. Under the "Lens" tab in the top right corner, click on the objective lens and select the lowest magnification lens



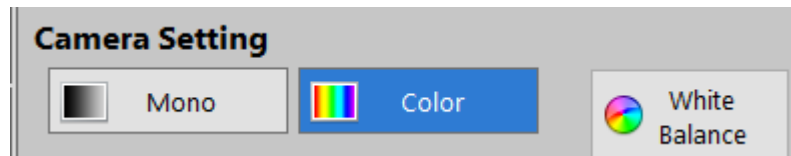
24. Under the "Z-position" tab, select "auto-focus". You can also manually focus the specimen using the mouse scroll as course adjustments and ctrl+mouse wheel is for fine adjustments.



25. Repeat steps 2-3 with each desired objective lens starting from lowest magnification to highest.

Note-The higher the magnification is, the more difficult it will be to get the image in focus. For oil immersion lens (60x), please make sure to use a drop of oil on the lens. If image is too difficult to get in focus, try adjusting the exposure and white balance.

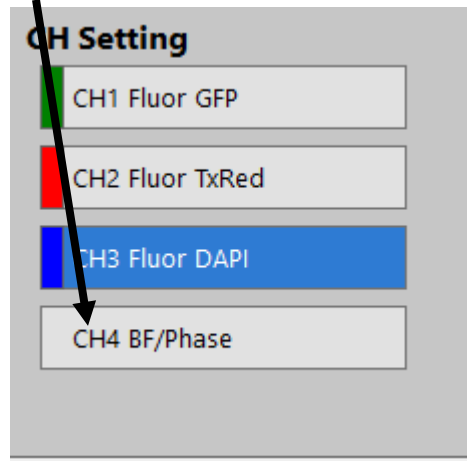
26. Click "Mono" or "Color" to switch the mode from monochrome observation or color observation.



27. Click the "White Balance" option. The degree of color is adjusted on the area specified by the square. This operation is telling the software what is white and what is not and clears out any noise in the image.



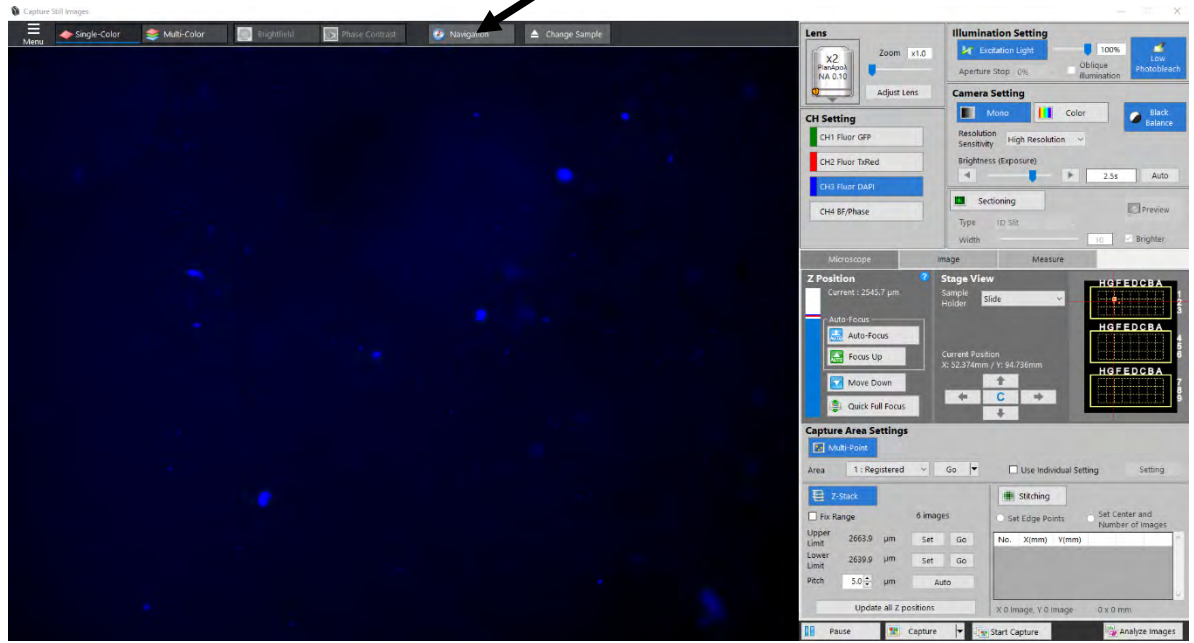
28. Click a channel button to view a fluorescence filter. If not viewing and fluorescent samples, stay in CH4.



29. If observing fluorescent samples, click "Low Photobleach" to ON. This mode is designed to pulse excitation light only at the time of image capture so that the sample is not exposed to light for prolonged periods of time.

# Navigation

30. Click on the tab on the top bar menu called "Navigation"

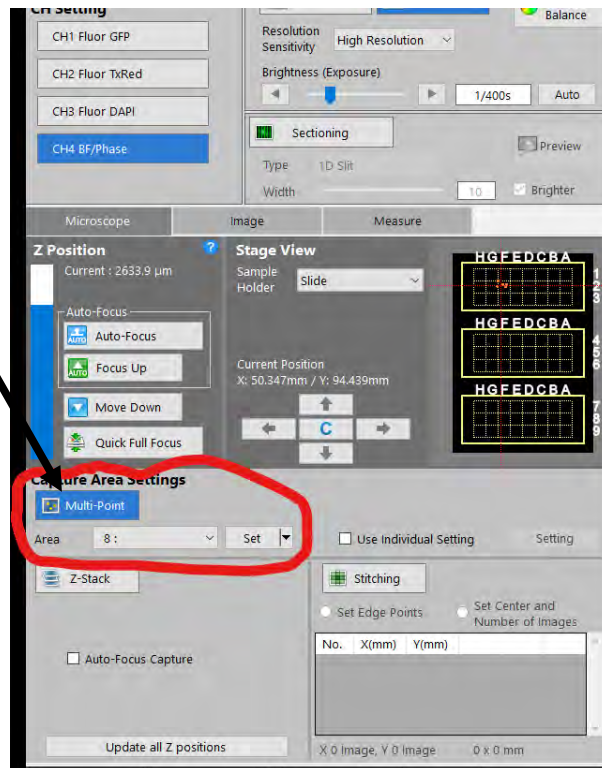


31. Follow the steps in the pop-up window.

32. When clicking the "add" button, wait until the entire sample has appeared on the window and then hit stop.

33. Turn the objective lens to a higher magnification and get the image into focus

34. Under the Camera Area Settings, set points can be placed on the image for multiple capture points.

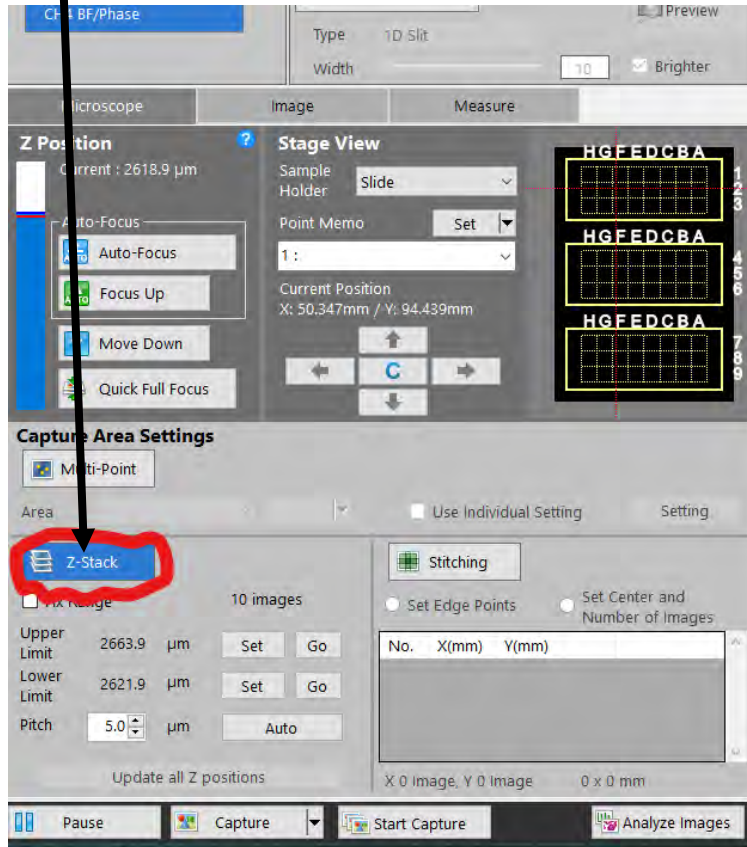


35. Then click "Start Capture" at the bottom

36. Save the images into desired folder.

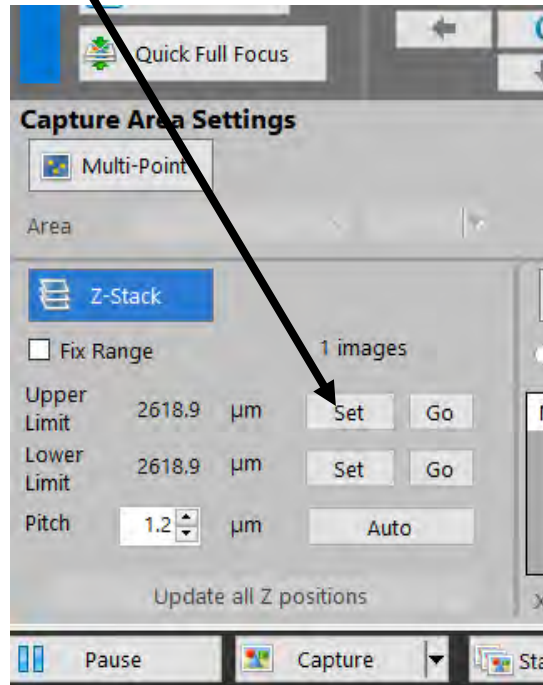
# Z-stack

37. Click "Z-stack" on the control panel



38. With image in focus, using the mouse wheel, scroll up just as the image becomes blurry.

39. Next to the upper limit, click "Set"

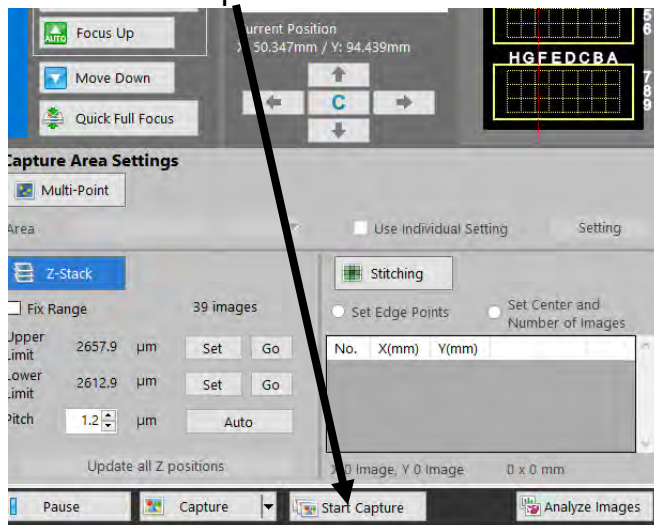


40. To set the lower limit, scroll down just as the image becomes blurry and click "Set"

41. Change the pitch to the recommended pitch values that correspond to the objective lens that is currently on the image:

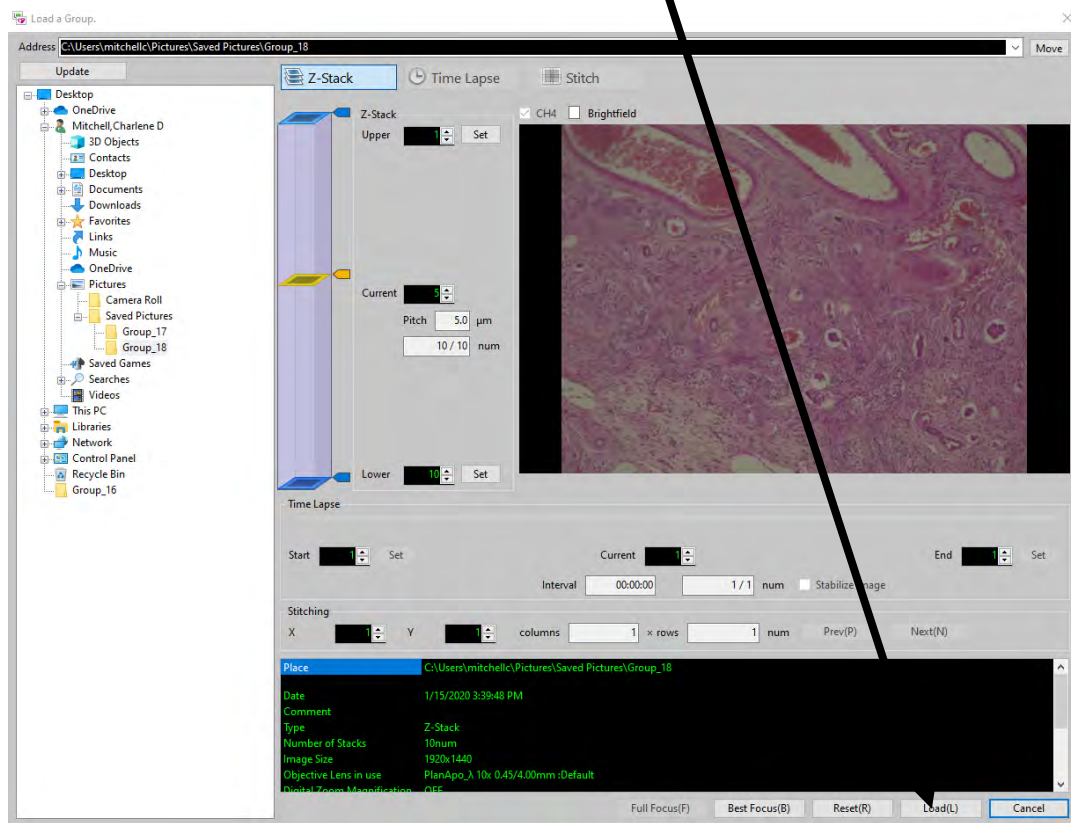
- 2x objective lens-----60 micrometer
- 4x objective lens-----20 micrometer
- 10x objective lens-----5 micrometer
- 20x objective lens -----3 micrometer
- 40x objective lens-----2 micrometer
- 60x objective lens-----1 micrometer

42. Click "Start Capture"



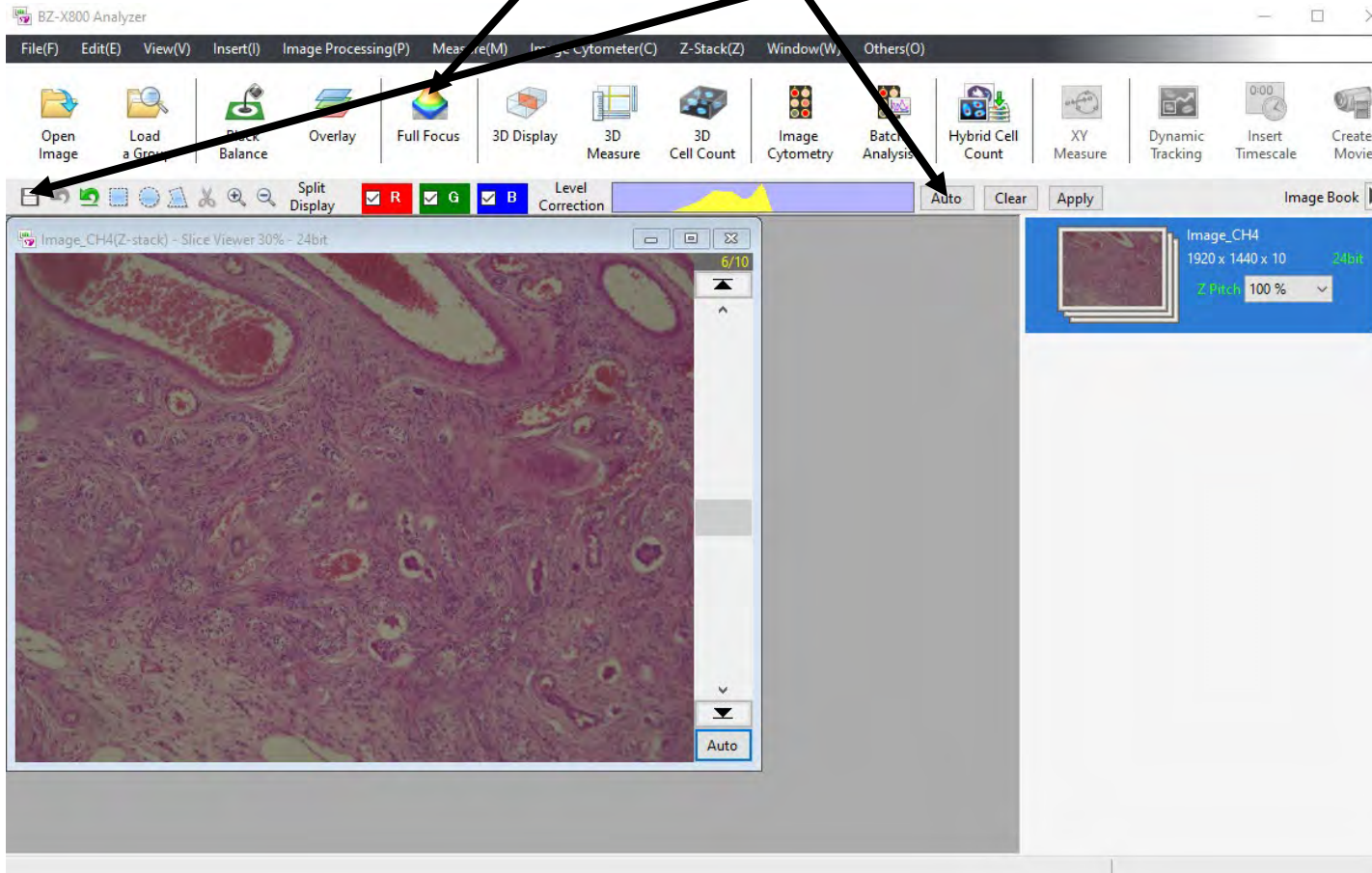
43. Chose a file to save the images, after images have been taken, click "Analyze Images"

44. Once the analyzer mode pops up, click the "load" button at the bottom of the window.





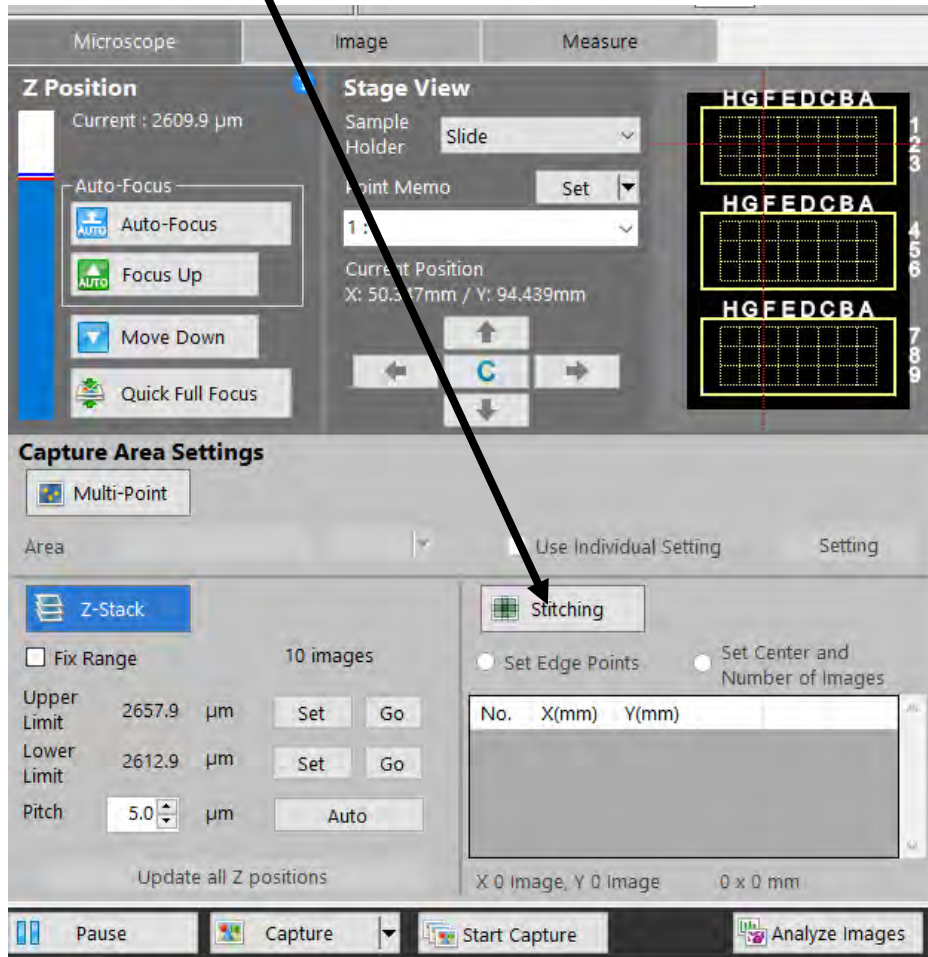
45. In the analyzer window, click "Full Focus"--> "Auto"--> "Save"



Note- this mode allows users to view one image captured at different focal points to create a precise photo.

# Image Stitch

46. Click "Stitching" on the control panel.

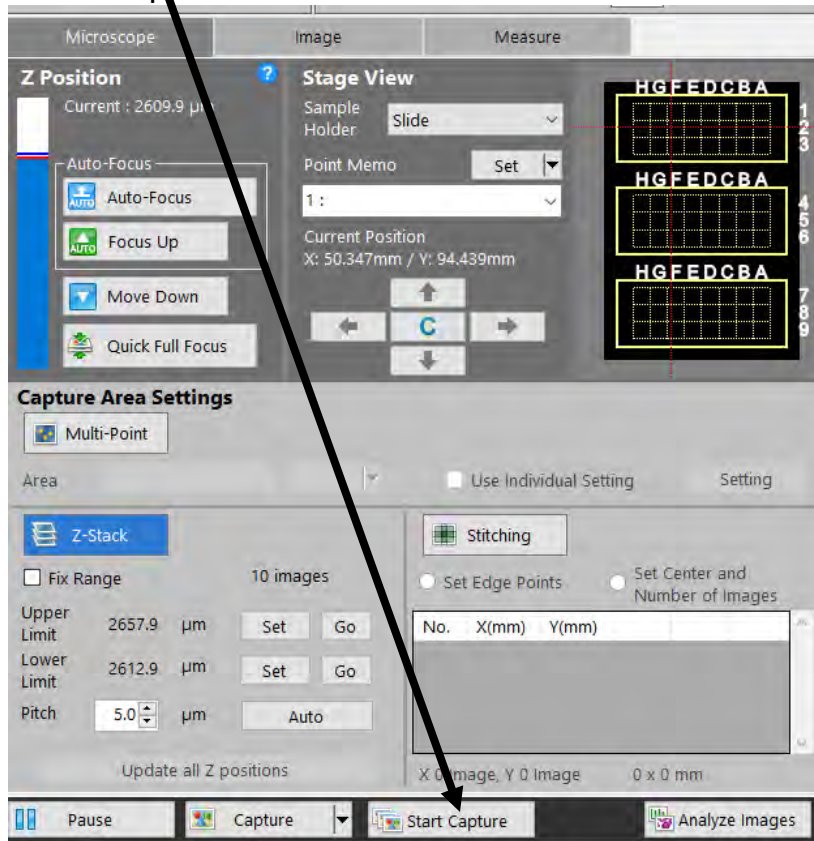


47. **Method 1**- Click "Set Edge Points". Set points around the sample in order to view the entire sample under a certain magnification. (This is easier to perform when Navigation mode is on.)

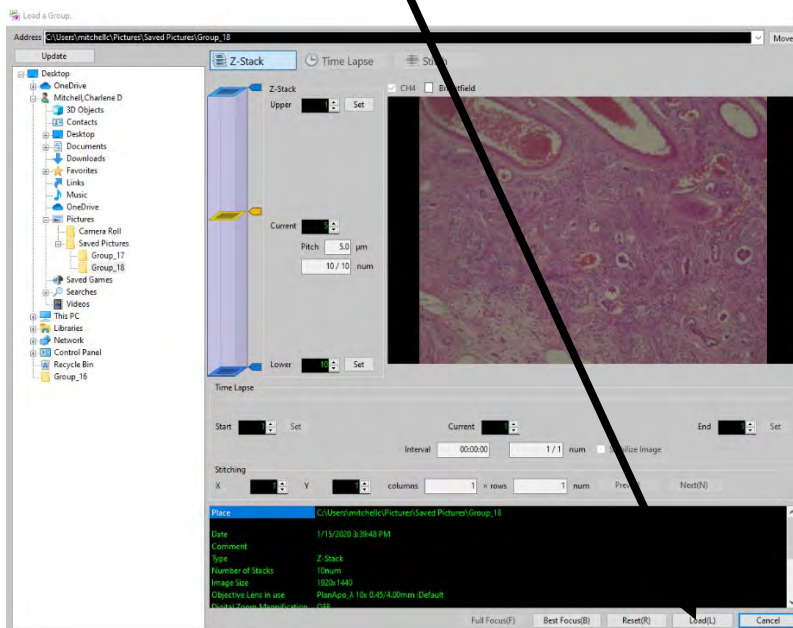
48. **Method 2**- Click "Set Center and Number of Images". Increase the square size to increase the field of view or the image.



49. Click "Start Capture" at the bottom of the screen.

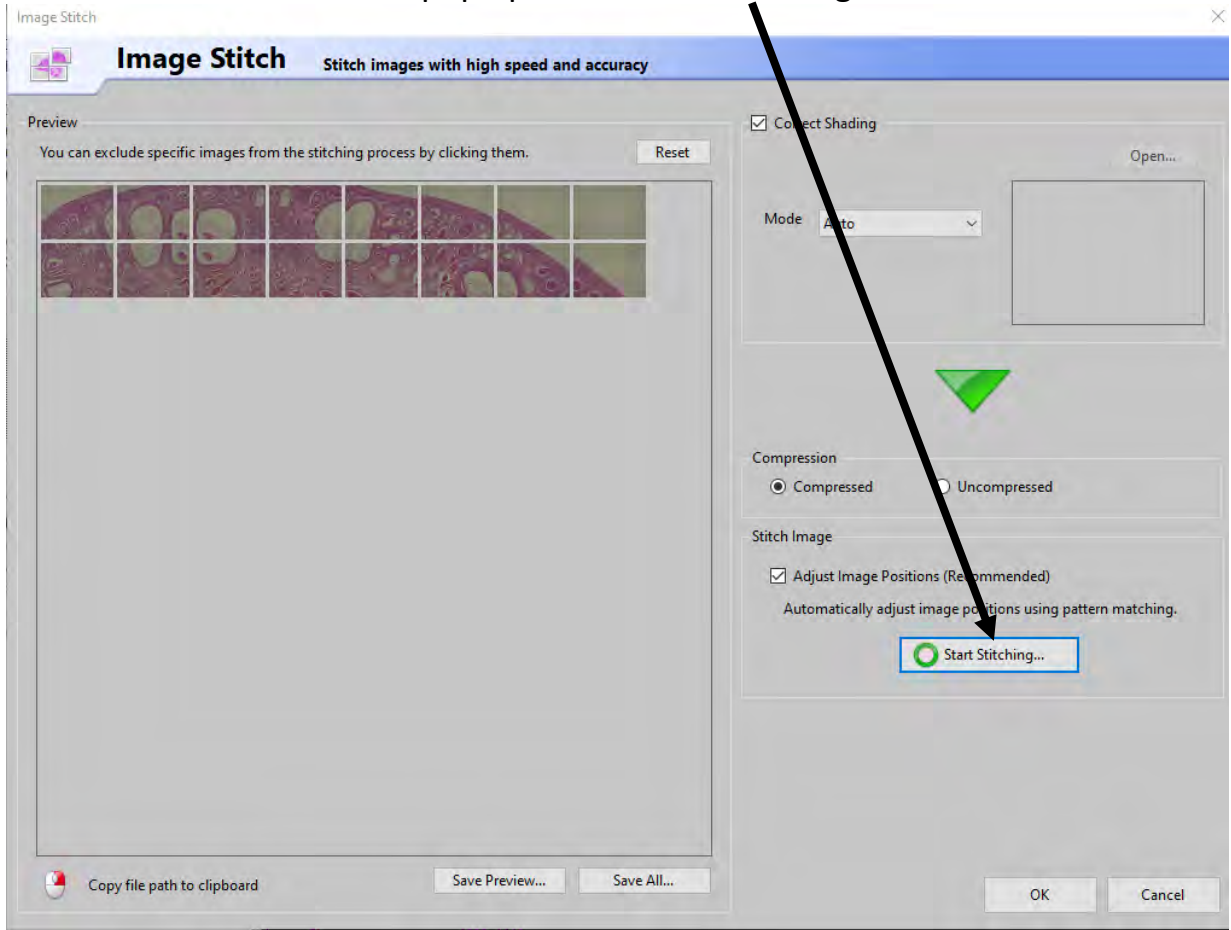


50. Select a file to save the images, after the images have been captured, click "Analyze Images"--> "Load" in the Analyzer Mode.



51. Once in the next window, under the "Image Processing" tab, click "Image Stitch" ---> "Load a Group" ---> "Load"

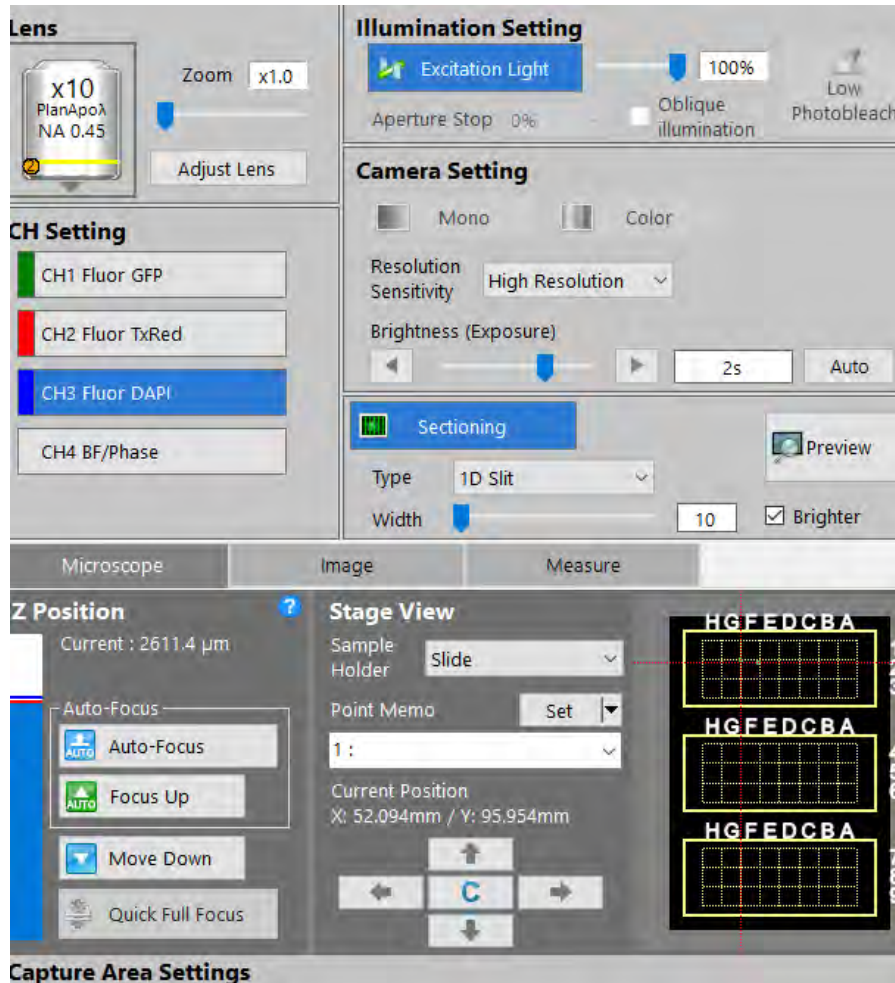
52. A new window should pop up. Click "Start Stitching"



53. Save the image into a folder

# Sectioning

54. With the image in focus, click "Sectioning" in the control panel.



55. Chose the desired fluorescent filter.

56. Select "1D slit" and set the slide bar to the right until clear, distinct lines are seen.

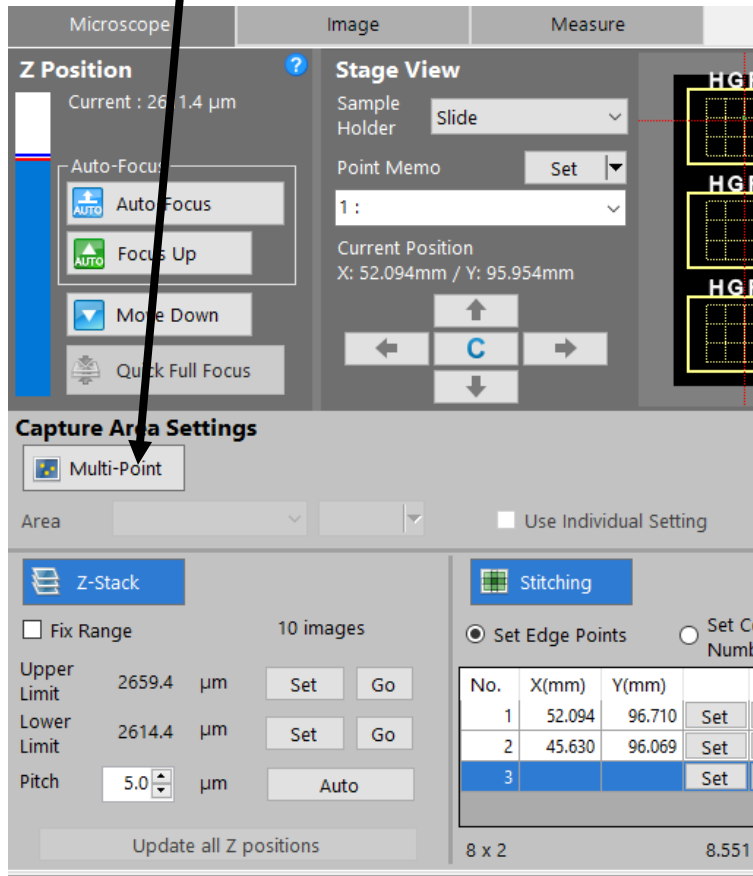
57. Click "Auto" for brightness

58. Click capture to save the image

Note- This mode illuminates the sample using a grid projecting pattern. With this, high resolution images can be captured.

# Capturing Multiple Images at Once

59. Click "Multi-Point" on the control panel



60. Next to the "Area" tab, select the area you want to capture, then click "set".

(This is best used with navigation mode in use.)

61. After all the points are set, click "Start Capture".



