

# Microscope Image Capture with QColor Firewire Camera using QCapture Pro Software

## Standard Operating Procedure

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Tufts Emergency Medical Services are at x66911.

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## 1.0 Material Requirements:

- 1.1 Equipment: substrate, wafer tweezers
- 1.2 Personal Protective Equipment: nitrile gloves, safety glasses
- 1.3 Hardware: Qcolor Firewire CCD camera mounted to reflectance type microscope via the trinocular port. Computer with firewire input port and QCapture software, USB key.

## 2.0 Procedure:

### Turn on the system:

1. Turn on the computer.
2. Log in to the computer. The username and password are written on the computer.
3. Plug in the CCD camera to the firewire cable if it isn't already plugged in. (It should already be plugged in)
4. Load your sample on the microscope stage, turn on the microscope light (switch is on the base of the microscope on the left), and adjust the intensity of the light source to an intermediate level.

### Capturing a microscope image:

1. Start QCapture Pro by double-clicking on the desktop icon.
2. If QCapture complains it cannot find the camera, close the software, unplug the firewire cord from the camera and plug it back in, and try again. If it still cannot find the camera, reboot the computer.
3. Once QCapture has started correctly, click the "Preview" button at the top of the QImaging tool palette to see an image preview.
4. Make sure the top plunger on the left side of the microscope is pulled out and the bottom plunger on the left side of the microscope is pushed in. This redirects the light to the trinocular port where the camera is mounted, instead of to the eyepieces.
5. Focus and adjust the illumination on the microscope until you see your feature in the preview window.
6. Initially, the image illumination and color may not be good in the preview. Click the "Auto Set" button in the QImaging tool palette. The exposure will auto adjust.
7. A window will pop up that says "Select an area of interest..." for white balance. Select a region of your image that should be white. Click "calculate". The white balance will be adjusted.
8. Focus the microscope, and adjust the light level on the light source as needed to get a good picture. You may find some of the filter settings on the illumination tube to be helpful in getting uniform illumination.
9. When you have the image you want to grab, click the "Snap" button. The snapped image will be higher quality than the preview.
10. To save the snapshot to disk, select "File|Save As..." while viewing the snapshot. JPG images are much smaller than TIFs.
11. You can return to the preview under the "Window" menu and look around for other snapshots you want to take.

### **Making measurements in QCapture Pro:**

1. In QCapture Pro, you can directly make measurements in your snapped image.
2. *First, select the objective you are using from the drop-down menu in the “System spatial calibration” box. Click “Apply”.* The pixel to micron conversion for each objective has already been measured and is stored in QCapture Pro.
3. Select the snapped image. Click on the “Manual Measurements...” icon, which looks like a compass and ruler.
4. A toolbar will pop up with a few measurement tools. You can measure distances directly in your image. *Make sure you have the correct objective selected in the “System Spatial Calibration” box or you will not get the right measurements! Make sure to click “Apply”!!*

### **Shutting down:**

1. Turn off the microscope light.
2. Close the QCapture program.
3. Shut down the computer.

### **Note on image analysis:**

There is a free piece of software called ImageJ on the lab computer (you can also download it to your own computer). This software allows you to manipulate the captured images and measure features. There is another SOP that describes the use of ImageJ.

**Report all accidents or tool issues to Prof. White at x72210, r.white@tufts.edu.**