

# PROTOCOLS FOR FORENSIC MITOCHONDRIAL DNA ANALYSIS

HAIR EVIDENCE EXAMINATION		
DATE EFFECTIVE 06-20-2016	APPROVED BY MITOCHONDRIAL DNA TECHNICAL LEADER	PAGE 1 OF 4

## Hair Evidence Examination

### General Guidelines

Refer to Evidence and Case Management Manual for general laboratory guidelines for evidence examination, note-taking, itemization, and preparation for evidence examination.

### A. Hair Evidence Examination

1. Record all packaging documentation and open packaging in a dead-air hood (preferred) or comparable (e.g. enclosed space).
2. Document the hair examination. Note the hair approximate length and whether or not the hair is mounted.
3. **If hair is <1 cm in length, see supervisor. If the hair will be consumed indicate in case notes that the sample will be consumed for testing and proceed.**
4. For hairs that are loose, proceed with step 5. For hairs that are mounted, proceed with demounting (See “Washing Hairs for Mitochondrial and Nuclear Testing”, part A) and then return to step 5.  
**Note: It is at the analyst’s discretion to photo document hair mounted on a slide at this step. In this case follow step 5 below prior to demounting hair.**
5. Take a picture of the full hair:
  - Digital or Mideo picture can be made.
  - If the hair is unmounted, it can be placed in a weigh boat.
  - Place hair on appropriate background for photo documentation. Brown, black, or darker colored hairs should be placed on a white sheet of clean paper. Blonde, white or light colored hairs should be placed on a darker background.
  - Take a digital/Mideo photograph of the full hair, including a ruler/measurement in the frame. For digital pictures, be sure the digital camera is set to Macro (flower) and the flash is off before taking the picture. For Mideo pictures, see Mideo Macro/Microscopic Digital Imaging System below (see part B).
    - i. Save /export pictures as the LIMS attachments.
    - ii. Print digital and Mideo images for case file (see part C).

### B. Mideo Macro/microscopic digital imaging system

1. Make sure the computer is on and all of the proper cables are connected between the Firewire camera and the computer.

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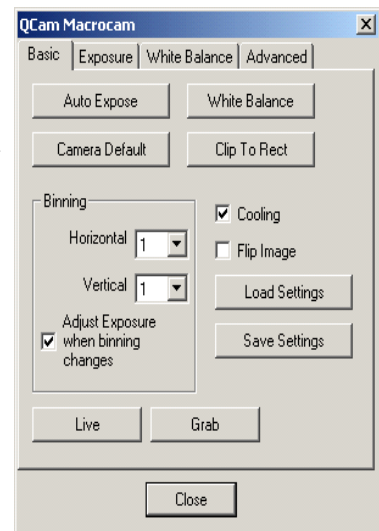
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2. Double-click on the desktop shortcut **EZDocPlus**.
3. The main program screen will appear. Click on “Camera” and select “Micro Cam M”. The QCam Microcam Control Panel will appear.
4. Make sure at this point that the stereo microscope is on, the light source is active, and the specimen is in focus. When viewing solid, dark objects, it is best to use the ocular light ring to illuminate the sample. When viewing slides or thin tissue samples, use the direct light from the lamp base of the microscope.
5. On the **Microcam Control Panel (shown to the right)**, perform the following:
  - a. Click the **Live** button.
  - b. Adjust the binning so that the setting is 3 for both the horizontal and vertical.
  - c. Check the **Flip Image** box.
  - d. Click the **Auto Exposure** button.
  - e. Adjust the intensity of the light and click **Auto Exposure** if the image is too bright or too dark.

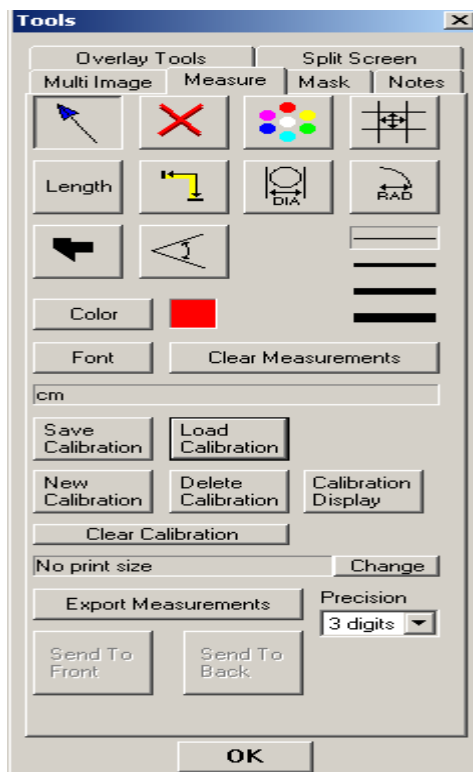
**NOTE:** If the background color is not white or off white, place a sheet of paper in view of the lens and click on the **White Balance** button. Repeat step 5d once completed.



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6. Once the image on the screen is in focus and there is proper contrast, click the **Grab** button on the control panel. This will freeze the image on the screen.
7. Under the **Tools** menu, select **Overlays**. Once the panel opens up, perform the following:
  - a. Click on the **Measure** tab.
  - b. Click the **Load Calibration** button.
  - c. Select the calibration based on the current microscope magnification level.
  - d. FOR LINEAR OBJECTS
    - 1) Click on the **Length** button.
    - 2) Select any of the length tools to measure the length of the imaged object.
  - e. FOR NON-LINEAR OBJECTS
    - 1) Click on the **Multilength** button
    - 2) Trace the non-linear object length by left-clicking the mouse at desired turns and corners. Hit “Enter” on the keyboard when finished.



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8. Save the image by going to the **File** menu and selecting **Export Image**.
9. Save image with case identifying name (e.g. FB07-04117 Item 1A-1).
10. Import the saved image into the LIMS as an attachment for the evidence item.

## **C. Printing digital and mideo images for case file**

1. Open Microsoft PowerPoint.
2. Go to File menu and select Page Set-up. Change slide orientation from landscape to **portrait**.
3. Import pictures
4. Add Sample ID. Add comments if needed.
5. Save as FB# in Photo Archives