

COMPARATIVE MEDICINE
LABORATORY ANIMAL FACILITIES

STANDARD OPERATING PROCEDURES
LUNAR PIXIMUS MACHINE

- 1.0 Purpose
This procedure outlines precautions, maintenance and use of the Lunar PIXImus Machine housed in room 310 BEB.
- 2.0 Scope
This procedure applies to all CMLAF and principal investigator staff.
- 3.0 Procedure
 - 3.1 Abstract: The Lunar PIXImus is a fully integrated densitometer designed for the estimation of bone mineral density (BMD in g/cm²) and body composition.
 - 3.2 Instrument Layout: Lunar PIXImus densitometer with its attached PC laptop computer and HP Desktop printer. Located in room 310 BEB (the radiology room in the CMLAF).
 - 3.3 Reagents and Expendables:
 - Lunar PIXImus Corporation Headquarters
 - 726 Heartland Trail
 - Madison, WI 53717
 - Phone: 800-445-8627
 - Fax: 608-826-7102
 - 3.4 **Safety notes:** A dosimetry badge and ring must be worn. Stand 6 feet away from the machine behind the line on the floor when it is running. Within 6 feet of the machine, stand behind the lead-lined steel shield. For maximum personal protection, all exposures should be taken from behind the portable shield at or beyond the 6' line. Note that both the PIXImus unit and the computer have icons that indicate when the X-ray tube is on and the shutter open; this is the only time you have a possibility of being exposed.
 - 3.5 Anesthetics: Anesthetics must be used to immobilize the mouse. Use the agent that is approved on your IACUC protocol.
 - 3.6 Disposable plastic trays with sticky tape for immobilizing mice (these can be saved and re-used; they cost about \$ 2 each). If you re-use trays, clean and disinfect well with Sterilant, to prevent cross contamination of your mouse.
 - 3.7 Setup:
 - A. Obtain the Dell laptop from the locked cupboard in the developing room.
 - 1. Call CMLAF office (must call ahead, 829-2919) to have room opened for you.
 - 2. Dr. Gaffen will provide you with lock code to open the cupboard.
 - B. Connect the 3 cables to the computer: Red = USB cable to PIXImus, Yellow = printer cable, Blue = power cable.

- C. First turn on the Lunar machine (the switch is on the top at the back of the machine). Then turn on the computer. The software should open automatically. If not, go to the icon "Lunar PIXImus" and double click on it. This will bring you to the opening screen of the program.
- D. Turn on the printer (bottom button).
- E. If the machine has been moved, then you need to re-align it by performing a field calibration (this takes about 60 minutes). See page 9 of the Operating Manual. Print out the results. Put a printout containing the results of the Field Calibration into the binder in the appropriate section.
- F. Quality Control (perform daily, takes about 5 minutes): Click on **F6** for the quality control. To perform the quality control, you will put the phantom mouse (located in the cupboard designated for PIXImus items) in the designated spot and hit **F3** (Measure Quality Control Phantom). Use the tray, and put the phantom mouse towards the back, with its "head" to the left. Then click Quality Control Measurement (setting should be 1); then click OK. The Quality Control Measurement screen will be displayed. Click OK. NOTE: STAND A MINIMUM OF 6 FEET AWAY FROM THE MACHINE BEHIND THE LINE ON THE FLOOR, and PREFERABLY BEHIND THE X-RAY SHIELD, or just leave the room and wait in the hall.
- G. Once you have performed your quality control and get a "pass", you will then hit **F5** to print the copy for your records, and include a copy in the binder under the appropriate section. Hit **F8** to exit.
- H. When you return to the main program screen, you will be ready to start your work for the day.

3.8 Run:

- A. NOTE: STAND A MINIMUM OF 6 FEET AWAY FROM THE MACHINE WHEN IT IS RUNNING BEHIND THE LINE ON THE FLOOR, AND PREFERABLY BEHIND THE LEAD-LINED SHEILD (i.e., X-ray on and shutter open). Be sure your dosimetry badge is on.
- B. Once you have returned to the main screen of the program, you will need to click on **F3** to start your measurements. This is where you will add all of the mouse's information, i.e. the weight, born date, length and the histology number.
- C. Once the mouse is asleep, you will need to put it on the sticky tray. Make sure that you stay within the blue line and keep the mouse's back straight by aligning your two fingers along the spine/vertebrae of the mouse's back. You will also need to include the tail as well. Align mouse with head to the left and wrap tail around body.
- D. Put the sticky pad with the mouse on it under the beam path and begin your measurements by hitting **F3**.
- E. While the mouse is being x-rayed, you will want to start to anesthetize the next mouse. The x-ray will take about 5 minutes to run the full scan.
- F. When the measurement is completed, you will see a colored outline of the subject with red and green colored circle and square. You will need to click on **F3** to make measurement adjustments. You will then click on **F3** again to adjust ROI (region of interest). The area that you wish to achieve will be in red and not in green. You will use your arrow keys to

adjust the circle to the desired size. Holding the **Control** key down while doing this will enlarge or elongate the circle or square. Using the **Shift** key will allow you to do this rapidly. If you need to move the square to an odd angle, you can use your **Page Up** and **Page Down** keys. This will allow you to move it by rotating it left or right.

- G. When desired ROI is achieved, you will click **Enter**. Then click **F5** to print the scan. Click **F8** to **Escape**, and then click **F8** to take you back to your main menu screen again. You are now ready to begin your next subject by repeating these steps.
 - H. Save your data on the hard drive, but also on a zip disk or CD to take with you.
 - I. Close PIXImus software and shut down computer using shut down function in Windows. Wait for Windows to shut down, close laptop and disconnect the cables.
 - J. Turn off PIXImus machine and turn off printer.
- 3.9 Record all exposures on the radiographic log sheet, located inside the PIXImus machine binder.
- 3.10 **Clean Up:** Using 70% ethyl alcohol spray and wipe everything down that you have used. Clean the outer covers and panels occasionally with a damp cloth or sponge. Use a mild detergent to remove scuffs and stains. Disinfect trays & any other area in contact with mouse, with Sterilant.
- 3.11 **RETURN THE LAP TOP TO THE CUPBOARD IN THE DEVELOPING ROOM AND ENSURE IT IS LOCKED (ROOM 310A BEB).**