 Standard Operating Procedure	Title: X-ray	
	Doc. Number:ESLIM_006_001 Rev No.	Date Issued: 02/10/08

1.0 Purpose:

- 1.1 Construct and analyse digital X-ray images in immobilised mice using a Faxitron X-Ray system or NTB digital X-ray scanner.

2.0 Scope:

- 2.1 Individuals who are trained and competent in using the Faxitron X-ray system and in handling laboratory animals must follow this procedure.
- 2.2 Any queries, comments or suggestions, either relating to this SOP in general or to a specific problem encountered during a procedure, should be addressed to the Bone and Cartilage Research Project Leader.
- 2.3 Any deviances from this protocol must be reported to the Bone and Cartilage Research Project Leader.


3.0 Safety Requirements:

- 3.1 General laboratory procedures should be followed, which include prohibition of eating, chewing gum, drinking, and applying of cosmetics in the work area. Laboratory coats and gloves must be worn at all times in the work area, unless the protocol specifically describes the appropriate attire for the procedure.
- 3.2 The Faxitron X-ray system offers complete radiation safety with shielded and interlocked enclosure nevertheless specific X-ray safety procedures should be followed. Refer to legislation of the resident country for details on X-ray unit applications.

4.0 Associated Documents:

- 4.1

5.0 Notes:

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5.1 The protocol described herein employs anaesthesia using intraperitoneal (IP) administration; however, anaesthesia using isoflurane is also suitable.

6.0 Quality Control:

6.1 A monthly calibration of the X-ray Scanner is performed according to the manufacturer's instructions.

7.0 Equipment:

7.1 Faxitron X-Ray Model MX-20 Specimen Radiography System, Illinois

7.2 NTB Digital X-Ray Scanner EZ 40, NTB GmbH, Diepholz, Germany

8.0 Supplies:

8.1 Syringe 1ml

8.2 Needle (25 G, 0.5 mm)

8.3 Anaesthetic solution

9.0 Procedure:


9.1 Administer the anaesthetic solution by IP injection.

9.2 Monitor the animal carefully until unconsciousness ensues to the point of loss of the pedal reflex (toe-pinch).

9.3 Mount the anaesthetised mouse onto an X-ray permeable plate. Curve the tail upwards along the left side of the mouse. (Note: this will enable identification of the X-ray as a dorsal or ventral image.)

Faxitron X-ray system

9.3.1 Insert the plate into the Faxitron X-ray system.

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9.3.2 Note the level of the tray as metadata. The tray can be inserted into the X-ray scanner device with distinct distances to the X-ray source. The magnification of the image depends on the distance between mouse and X-ray source. These distinct distances are called settings level. Level 1 is at the bottom furthest from the X-ray source. Level 0 is the level of the scanner. The higher the number of the level, the lower is the distance between mouse and x-ray source (or the higher is the distance between mouse and scanner).

9.3.3 Set the machine to a voltage of 25kV with an integration time of 40ms.

9.3.4 Take an image using the iX-Pect software that is supplied by the X-ray scanner.

NTB digital X-ray scanner

9.3.5 [Add any details necessary for NTB digital scanner?]

9.4 Remove the mouse once the image is captured. Place the mouse on a heated mat, set at 37°C, in a cage and monitor closely until consciousness is fully regained.

9.5 Analyse the image.

10.0 Supporting information:

11.0 History Review:

12.0 Emergency Procedures: