


X-Ray ESLIM_006_001

Purpose

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

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|---|--|-----------------------|
|  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:

Parameters and Metadata

Clavicle ESLIM_006_001_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Clavicle

Options: imageOnly, normal, abnormal,

Completeness of digits ESLIM_006_001_002 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Completeness_of_digits

Options: imageOnly, yes, no,

Digit integrity ESLIM_006_001_003 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Digit_integrity

Options: imageOnly, yes, no,

Number of digits ESLIM_006_001_004 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_digits

Femur ESLIM_006_001_005 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Shape_of_femur

Options: imageOnly, normal, abnormal,

Fibula ESLIM_006_001_006 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Fibula

Options: imageOnly, normal, abnormal,

Humerus ESLIM_006_001_007 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Shape_of_humerus

Options: imageOnly, normal, abnormal,

Joints ESLIM_006_001_008 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Joints

Options: imageOnly, normal, abnormal,

Mandibles ESLIM_006_001_009 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Mandibles

Options: imageOnly, normal, abnormal,

Maxilla ESLIM_006_001_010 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Maxilla

Options: imageOnly, normal, abnormal,

Zygomatic bone ESLIM_006_001_011 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Orbit

Options: imageOnly, normal, abnormal,

Pelvis ESLIM_006_001_012 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Pelvis

Options: imageOnly, normal, abnormal,

Radius ESLIM_006_001_013 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Radius

Options: imageOnly, normal, abnormal,

Fusion of ribs ESLIM_006_001_014 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Rib

Options: imageOnly, fused, not fused,

Number of ribs left ESLIM_006_001_015 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_ribs_left

Number of ribs right ESLIM_006_001_016 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_ribs_right

Shape of ribs ESLIM_006_001_017 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Shape_of_ribs

Options: imageOnly, normal, abnormal,

Scapulae ESLIM_006_001_018 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Scapulae

Options: imageOnly, normal, abnormal,

Skull shape ESLIM_006_001_019 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Skull_shape

Options: imageOnly, normal, abnormal,

Syndactylism ESLIM_006_001_020 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Syndactylism

Options: imageOnly, syndactylism, no syndactylism,

Teeth ESLIM_006_001_021 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Teeth

Options: imageOnly, normal, abnormal,

Tibia ESLIM_006_001_022 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Tibia

Options: imageOnly, normal, abnormal,

Ulna ESLIM_006_001_023 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Ulna

Options: imageOnly, normal, abnormal,

Number of caudal vertebrae ESLIM_006_001_024 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_caudal_vertebrae

Number of cervical vertebrae ESLIM_006_001_025 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_cervical_vertebrae

Fusion of vertebrae ESLIM_006_001_026 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Fusion_of_vertebrae

Options: imageOnly, yes, no,

Number of lumbar vertebrae ESLIM_006_001_027 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_lumbar_vertebrae

Number of pelvic vertebrae ESLIM_006_001_028 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Number_of_pelvic_vertebrae

Processes on vertebrae ESLIM_006_001_029 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Processes_on_vertebrae

Options: imageOnly, normal, abnormal,

Shape of vertebrae ESLIM_006_001_030 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: Shape_of_vertebrae

Options: imageOnly, normal, abnormal,

Number of thoracic vertebrae ESLIM_006_001_031 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Description: Number_of_thoracic_vertebrae

Comment on XRay image ESLIM_006_001_032 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Comment_on_XRay_descriptive_part

XRay images ESLIM_006_001_033 | v1.0

seriesMediaParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Description: XRay_images

Increments: Minimum 1

Alive ESLIM_006_001_034 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: Alive

Options: yes, no,

Tibia length ESLIM_006_001_035 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: mm

Description: Tibia_Length

Xray equipment name ESLIM_006_001_801 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: Xray_Equipment_name

Xray equipment manufacturer ESLIM_006_001_802 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: Xray_Equipment_manufacturer

Xray Equipment model ESLIM_006_001_803 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: Xray_Equipment_model

Settings time of exposure ESLIM_006_001_804 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

Description: Settings_time_of_exposure

Settings level ESLIM_006_001_805 | v1.0

procedureMetadata

Req. Analysis: false Req. Upload: true Is Annotated: false

Description: Settings_level

Experimenter (scan) ESLIM_006_001_806 | v1.0

procedureMetadata

Req. Analysis: false Req. Upload: true Is Annotated: false

Description: Experimenter_Scan

Experimenter (analysis) ESLIM_006_001_807 | v1.0

procedureMetadata

Req. Analysis: false Req. Upload: true Is Annotated: false

Description: Experimenter_Analysis

Voltage settings ESLIM_006_001_808 | v1.0

procedureMetadata

Req. Analysis: false Req. Upload: true Is Annotated: false

Description: Voltage_settings

Scanner equipment name ESLIM_006_001_809 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Scanner_Equipment_name

Scanner equipment manufacturer ESLIM_006_001_810 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Scanner_Equipment_manufacturer

Scanner equipment model ESLIM_006_001_811 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Scanner_Equipment_model
