X-ray HMGULA_XRY_001

Purpose

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

Experimental Design

- **Minimum number of animals :** 4M + 4F
- **Age at test:** Week 61

Procedure

Perform steps 3.1 and 3.2 unless the mouse is coming from DEXA analysis

3.1 Anesthetize the mice.

3.2 Monitor the animal carefully until unconsciousness by ensuring the mouse is adequately sedated.

3.3 Mount the anesthetized mouse onto an X-ray permeable plate. Curve the tail 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

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

3.3.2 Take an image using the software that is supplied by the X-ray scanner.

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

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

NTB digital X-ray scanner

3.4 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.

3.5 Analyze the image.

3.6 Or continue with ABR.

Notes

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

Digit integrity IMPC_XRY_031_001 *Definition:* **The state of being whole and undivided.**

Parameters and Metadata

Skull shape HMGULA_XRY_001_001 | v1.0

simpleParameter

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

Description: skull_shape

Options: normal, abnormal, imageOnly, unobservable,

Zygomatic bone HMGULA_XRY_002_001 | v1.0

simpleParameter

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

Description: zygomatic_bone

Options: normal, abnormal, imageOnly, unobservable,

Maxilla/Pre-maxilla HMGULA_XRY_003_001 | v1.0

simpleParameter

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

Description: maxilla

Options: normal, abnormal, imageOnly, unobservable,

Mandibles HMGULA_XRY_004_001 | v1.0

simpleParameter

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

Description: mandibles

Options: normal, abnormal, imageOnly, unobservable,

Teeth HMGULA_XRY_005_001 | v1.0

simpleParameter

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

Description: teeth

Options: normal, abnormal, imageOnly, unobservable,

Scapulae HMGULA_XRY_006_001 | v1.0

simpleParameter

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

Description: scapulae

Options: normal, abnormal, imageOnly, unobservable,

Clavicle HMGULA_XRY_007_001 | v1.0

simpleParameter

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

Description: clavicle

Options: normal, abnormal, imageOnly, unobservable,

Number of ribs right HMGULA_XRY_008_001 | v1.0

simpleParameter

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

Description: number_of_ribs_right

Number of ribs left HMGULA_XRY_009_001 | v1.0

simpleParameter

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

Description: number_of_ribs_left

Shape of ribs HMGULA_XRY_010_001 | v1.0

simpleParameter

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

Description: shape_of_ribs

Options: normal, abnormal, imageOnly, unobservable,

Fusion of ribs HMGULA_XRY_011_001 | v1.0

simpleParameter

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

Description: fusion_of_ribs

Options: not fused, fused, imageOnly, unobservable,

Pelvis HMGULA_XRY_012_001 | v1.0

simpleParameter

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

Description: pelvis

Options: normal, abnormal, imageOnly, unobservable,

Number of cervical vertebrae HMGULA_XRY_013_001 | v1.0

simpleParameter

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

Description: number_of_cervical_vertebrae

Number of thoracic vertebrae HMGULA_XRY_014_001 | v1.0

simpleParameter

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

Description: number_of_thoracic_vertebrae

Number of lumbar vertebrae HMGULA_XRY_015_001 | v1.0

simpleParameter

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

Description: number_of_lumbar_vertebrae

Number of pelvic vertebrae HMGULA_XRY_016_001 | v1.0

simpleParameter

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

Description: number_of_pelvic_vertebrae

Number of caudal vertebrae HMGULA_XRY_017_001 | v1.0

simpleParameter

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

Description: number_of_caudal_vertebrae

Shape of vertebrae HMGULA_XRY_018_001 | v1.0

simpleParameter

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

Description: shape_of_vertebrae

Options: normal, abnormal, imageOnly, unobservable,

Fusion of vertebrae HMGULA_XRY_019_001 | v1.0

simpleParameter

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

Description: fusion_of_vertebrae

Options: yes, no, imageOnly, unobservable,

Processes on vertebrae HMGULA_XRY_020_001 | v1.0

simpleParameter

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

Description: processes_on_vertebrae

Options: normal, abnormal, imageOnly, unobservable,

Humerus HMGULA_XRY_021_001 | v1.0

simpleParameter

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

Description: humerus

Options: normal, abnormal, imageOnly, unobservable,

Radius HMGULA_XRY_022_001 | v1.0

simpleParameter

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

Description: radius

Options: normal, abnormal, imageOnly, unobservable,

Ulna HMGULA_XRY_023_001 | v1.0

simpleParameter

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

Description: ulna

Options: normal, abnormal, imageOnly, unobservable,

Femur HMGULA_XRY_024_001 | v1.0

simpleParameter

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

Description: femur

Options: normal, abnormal, imageOnly, unobservable,

Tibia HMGULA_XRY_025_001 | v1.0

simpleParameter

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

Description: tibia

Options: normal, abnormal, imageOnly, unobservable,

Fibula HMGULA_XRY_026_001 | v1.0

simpleParameter

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

Description: fibula

Options: normal, abnormal, imageOnly, unobservable,

Joints HMGULA_XRY_027_001 | v1.0

simpleParameter

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

Description: joints

Options: normal, abnormal, imageOnly, unobservable,

Number of digits HMGULA_XRY_028_001 | v1.0

simpleParameter

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

Description: number_of_digits

Syndactylism HMGULA_XRY_029_001 | v1.0

simpleParameter

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

Description: syndactylism

Options: no syndactylism, Syndactylism, imageOnly, unobservable,

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Brachydactyly HMGULA_XRY_030_001 | v1.0

simpleParameter

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

Description: completeness_of_digits

Options: yes, no, imageOnly, unobservable,

Digit integrity HMGULA_XRY_031_001 | v1.0

simpleParameter

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

Description: digit_integrity

Options: yes, no, imageOnly, unobservable,

Comment on XRay image HMGULA_XRY_032_001 | v1.0

simpleParameter

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

Description: comment_on_xray_image

Tibia length HMGULA_XRY_033_001 | v1.0

simpleParameter

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

Unit Measured: mm

Description: tibia_length

XRay Images Whole Body Dorso Ventral HMGULA_XRY_034_001 | v1.0

seriesMediaParameter

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

Description: xray_images

Increments: Minimum 1

Alive HMGULA_XRY_035_001 | v1.0

simpleParameter

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

Description: alive

Xray equipment ID HMGULA_XRY_036_001 | v1.0

procedureMetadata

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

Description: xray_equipment_name

Xray equipment manufacturer HMGULA_XRY_037_001 | v1.0

procedureMetadata

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

Description: xray_equipment_manufacturer

Options: Faxitron X-Ray Corporation, Rigaku Corporation (Micro-CT), Bruker, Faxitron Bioptics LLC, Medikors,

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Xray equipment model HMGULA_XRY_038_001 | v1.0

procedureMetadata

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

Description: xray_equipment_model

Options: MX-20-DC12, MX-20-DC4, R_mCT (Micro-CT), MX-20, MS-FX Pro, UltraFocus 100, UltraFocus DXA, InAlyzer2 Model S,

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Settings time of exposure HMGULA_XRY_039_001 | v1.0

procedureMetadata

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

Unit Measured: s

Description: settings_time_of_exposure

Settings level HMGULA_XRY_040_001 | v1.0

procedureMetadata

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

Description: settings_level

Experimenter ID (scan) HMGULA_XRY_041_001 | v1.0

procedureMetadata

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

Description: experimenter_scan_

Experimenter ID (analysis) HMGULA_XRY_042_001 | v1.0

procedureMetadata

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

Description: experimenter_analysis_

Voltage settings HMGULA_XRY_043_001 | v1.0

procedureMetadata

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

Description: voltage_settings

Scanner equipment ID HMGULA_XRY_044_001 | v1.0

procedureMetadata

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

Description: scanner_equipment_name

Scanner equipment manufacturer HMGULA_XRY_045_001 | v1.0

procedureMetadata

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

Description: scanner_equipment_manufacturer

Scanner equipment model HMGULA_XRY_046_001 | v1.0

procedureMetadata

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

Description: scanner_equipment_model

Date Xray equipment last calibrated HMGULA_XRY_047_001 | v1.0

procedureMetadata

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

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XRay Images Whole Body Lateral Orientation HMGULA_XRY_048_001 | v1.0

seriesMediaParameter

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

Increments: Minimum 1

XRay Images Forepaw HMGULA_XRY_049_001 | v1.0

seriesMediaParameter

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

Increments: Minimum 1

XRay Images Skull Lateral Orientation HMGULA_XRY_050_001 | v1.0

seriesMediaParameter

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

Increments: Minimum 1

XRay Images Skull Dorso Ventral Orientation HMGULA_XRY_051_001 | v1.0

seriesMediaParameter

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

Increments: Minimum 1

XRay Images Hind Leg and Hip HMGULA_XRY_052_001 | v1.0

seriesMediaParameter

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

Increments: Minimum 1

Date Scanner equipment last calibrated HMGULA_XRY_053_001 | v1.0

procedureMetadata

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

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Free Ontology HMGULA_XRY_054_001 | v1.0

simpleParameter

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

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Shape of spine HMGULA_XRY_055_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Scoliosis HMGULA_XRY_056_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Kyphosis HMGULA_XRY_057_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Lordosis HMGULA_XRY_058_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Shape of ribcage HMGULA_XRY_059_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Transitional vertebrae HMGULA_XRY_060_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Fusion of processes HMGULA_XRY_061_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Polysyndactylism HMGULA_XRY_062_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Cervical processes HMGULA_XRY_063_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Thoracic processes HMGULA_XRY_064_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Lumbar processes HMGULA_XRY_065_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Sacral processes HMGULA_XRY_066_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Caudal processes HMGULA_XRY_067_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Missing cranial rib HMGULA_XRY_068_001 | v1.0

simpleParameter

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

Options: Yes, No,

Rib morphology HMGULA_XRY_069_001 | v1.0

simpleParameter

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

Options: normal, imageOnly, abnormal, unobservable,

Cervical vertebrae morphology HMGULA_XRY_070_001 | v1.0

simpleParameter

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

Options: normal, abnormal, unobservable, imageOnly,

Thoracic vertebrae morphology HMGULA_XRY_071_001 | v1.0

simpleParameter

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

Options: unobservable, normal, abnormal, imageOnly,

Lumbar vertebrae morphology HMGULA_XRY_072_001 | v1.0

simpleParameter

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

Options: normal, unobservable, abnormal, imageOnly,

Pelvic vertebrae morphology HMGULA_XRY_073_001 | v1.0

simpleParameter

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

Options: abnormal, normal, unobservable, imageOnly,

Caudal vertebrae morphology HMGULA_XRY_074_001 | v1.0

simpleParameter

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

Options: imageOnly, abnormal, unobservable, normal,
