X-ray NINGLA_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 57

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

XRay Images Whole Body Dorso Ventral NINGLA_XRY_034_001 | v1.3

seriesMediaParameter

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

Increments: Minimum 1

Number of cervical vertebrae NINGLA_XRY_013_001 | v1.0

simpleParameter

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

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Missing cranial rib NINGLA_XRY_068_001 | v1.0

simpleParameter

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

Options: No, Yes,

Mandibles NINGLA_XRY_004_001 | v1.0

simpleParameter

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

Options: abnormal, imageOnly, normal, unobservable,

Transitional vertebrae NINGLA_XRY_060_001 | v1.1

simpleParameter

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

Options: unobservable, no, yes, imageOnly,

Number of digits NINGLA_XRY_028_001 | v1.0

simpleParameter

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

Cervical vertebrae morphology NINGLA_XRY_070_001 | v1.0

simpleParameter

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

Options: imageOnly, unobservable, normal, abnormal,

Thoracic vertebrae morphology NINGLA_XRY_071_001 | v1.0

simpleParameter

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

Options: unobservable, imageOnly, abnormal, normal,

Xray equipment model NINGLA_XRY_038_001 | v1.4

procedureMetadata

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

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

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Skull shape NINGLA_XRY_001_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, imageOnly, normal,

Date Scanner equipment last calibrated NINGLA_XRY_053_001 | v1.1

procedureMetadata

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

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Scanner equipment model NINGLA_XRY_046_001 | v1.1

procedureMetadata

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

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Scapulae NINGLA_XRY_006_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, normal, imageOnly,

Scanner equipment ID NINGLA_XRY_044_001 | v1.1

procedureMetadata

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

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Date Xray equipment last calibrated NINGLA_XRY_047_001 | v1.3

procedureMetadata

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

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Xray equipment manufacturer NINGLA_XRY_037_001 | v1.4

procedureMetadata

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

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

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XRay Images Whole Body Lateral Orientation NINGLA_XRY_048_001 | v1.2

seriesMediaParameter

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

Increments: Minimum 1

Comment on XRay image NINGLA_XRY_032_001 | v1.1

simpleParameter

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

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XRay Images Skull Lateral Orientation NINGLA_XRY_050_001 | v1.2

seriesMediaParameter

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

Increments: Minimum 1

Settings time of exposure NINGLA_XRY_039_001 | v1.1

procedureMetadata

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

Unit Measured: s

Shape of vertebrae NINGLA_XRY_018_001 | v1.0

simpleParameter

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

Options: unobservable, imageOnly, normal, abnormal,

Rib morphology NINGLA_XRY_069_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, imageOnly, normal,

Shape of spine NINGLA_XRY_055_001 | v1.1

simpleParameter

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

Options: abnormal, unobservable, imageOnly, normal,

Ulna NINGLA_XRY_023_001 | v1.0

simpleParameter

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

Options: imageOnly, normal, abnormal, unobservable,

Number of ribs left NINGLA_XRY_009_001 | v1.0

simpleParameter

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

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Fusion of processes NINGLA_XRY_061_001 | v1.1

simpleParameter

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

Options: unobservable, no, yes, imageOnly,

XRay Images Forepaw NINGLA_XRY_049_001 | v1.1

seriesMediaParameter

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

Increments: Minimum 1

Voltage settings NINGLA_XRY_043_001 | v1.1

procedureMetadata

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

Caudal processes NINGLA_XRY_067_001 | v1.0

simpleParameter

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

Options: abnormal, normal, unobservable, imageOnly,

Scoliosis NINGLA_XRY_056_001 | v1.2

simpleParameter

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

Options: unobservable, imageOnly, no, yes,

Shape of ribs NINGLA_XRY_010_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, normal, imageOnly,

Xray equipment ID NINGLA_XRY_036_001 | v1.1

procedureMetadata

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

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Fusion of ribs NINGLA_XRY_011_001 | v1.0

simpleParameter

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

Options: unobservable, not fused, imageOnly, fused,

Shape of ribcage NINGLA_XRY_059_001 | v1.1

simpleParameter

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

Options: abnormal, imageOnly, normal, unobservable,

XRay Images Hind Leg and Hip NINGLA_XRY_052_001 | v1.1

seriesMediaParameter

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

Increments: Minimum 1

Tibia NINGLA_XRY_025_001 | v1.0

simpleParameter

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

Options: abnormal, normal, unobservable, imageOnly,

Alive NINGLA_XRY_035_001 | v1.0

simpleParameter

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

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Thoracic processes NINGLA_XRY_064_001 | v1.1

simpleParameter

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

Options: abnormal, unobservable, normal, imageOnly,

Number of pelvic vertebrae NINGLA_XRY_016_001 | v1.0

simpleParameter

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

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Lumbar processes NINGLA_XRY_065_001 | v1.1

simpleParameter

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

Options: abnormal, unobservable, normal, imageOnly,

Teeth NINGLA_XRY_005_001 | v1.0

simpleParameter

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

Options: normal, imageOnly, abnormal, unobservable,

Kyphosis NINGLA_XRY_057_001 | v1.1

simpleParameter

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

Options: yes, unobservable, no, imageOnly,

Pelvis NINGLA_XRY_012_001 | v1.0

simpleParameter

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

Options: imageOnly, abnormal, normal, unobservable,

Radius NINGLA_XRY_022_001 | v1.0

simpleParameter

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

Options: unobservable, normal, imageOnly, abnormal,

Processes on vertebrae NINGLA_XRY_020_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, normal, imageOnly,

Number of caudal vertebrae NINGLA_XRY_017_001 | v1.1

simpleParameter

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

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Syndactylism NINGLA_XRY_029_001 | v1.0

simpleParameter

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

Options: no syndactylism, Syndactylism, imageOnly, unobservable,

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Cervical processes NINGLA_XRY_063_001 | v1.1

simpleParameter

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

Options: imageOnly, normal, unobservable, abnormal,

Fibula NINGLA_XRY_026_001 | v1.0

simpleParameter

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

Options: normal, unobservable, imageOnly, abnormal,

Number of lumbar vertebrae NINGLA_XRY_015_001 | v1.0

simpleParameter

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

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Joints NINGLA_XRY_027_001 | v1.0

simpleParameter

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

Options: abnormal, normal, imageOnly, unobservable,

Settings level NINGLA_XRY_040_001 | v1.1

procedureMetadata

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

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Experimenter ID (scan) NINGLA_XRY_041_001 | v1.1

procedureMetadata

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

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Pelvic vertebrae morphology NINGLA_XRY_073_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Femur NINGLA_XRY_024_001 | v1.0

simpleParameter

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

Options: abnormal, imageOnly, unobservable, normal,

Number of ribs right NINGLA_XRY_008_001 | v1.0

simpleParameter

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

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Free Ontology NINGLA_XRY_054_001 | v1.0

simpleParameter

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

Caudal vertebrae morphology NINGLA_XRY_074_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, imageOnly, normal,

XRay Images Skull Dorso Ventral Orientation NINGLA_XRY_051_001 | v1.2

seriesMediaParameter

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

Increments: Minimum 1

Experimenter ID (analysis) NINGLA_XRY_042_001 | v1.1

procedureMetadata

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

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Number of thoracic vertebrae NINGLA_XRY_014_001 | v1.0

simpleParameter

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

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Lordosis NINGLA_XRY_058_001 | v1.1

simpleParameter

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

Options: imageOnly, unobservable, no, yes,

Brachydactyly NINGLA_XRY_030_001 | v1.1

simpleParameter

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

Options: unobservable, yes, imageOnly, no,

Humerus NINGLA_XRY_021_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, normal, imageOnly,

Sacral processes NINGLA_XRY_066_001 | v1.0

simpleParameter

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

Options: normal, abnormal, unobservable, imageOnly,

Scanner equipment manufacturer NINGLA_XRY_045_001 | v1.1

procedureMetadata

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

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Maxilla/Pre-maxilla NINGLA_XRY_003_001 | v1.1

simpleParameter

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

Options: normal, abnormal, unobservable, imageOnly,

Tibia length NINGLA_XRY_033_001 | v1.1

simpleParameter

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

Unit Measured: mm

Lumbar vertebrae morphology NINGLA_XRY_072_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, imageOnly, normal,

Zygomatic bone NINGLA_XRY_002_001 | v1.0

simpleParameter

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

Options: abnormal, imageOnly, normal, unobservable,

Clavicle NINGLA_XRY_007_001 | v1.0

simpleParameter

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

Options: imageOnly, normal, unobservable, abnormal,

Polysyndactylism NINGLA_XRY_062_001 | v1.1

simpleParameter

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

Options: yes, imageOnly, unobservable, no,

Fusion of vertebrae NINGLA_XRY_019_001 | v1.0

simpleParameter

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

Options: no, unobservable, imageOnly, yes,

Digit integrity NINGLA_XRY_031_001 | v1.0

simpleParameter

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

Options: imageOnly, unobservable, no, yes,
