X-ray BCMLA_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

Lordosis BCMLA_XRY_058_001 | v1.1

simpleParameter

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

Options: imageOnly, yes, no, unobservable,

Brachydactyly BCMLA_XRY_030_001 | v1.1

simpleParameter

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

Options: yes, no, unobservable, imageOnly,

Scapulae BCMLA_XRY_006_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, imageOnly, normal,

Number of ribs right BCMLA_XRY_008_001 | v1.0

simpleParameter

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

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Lumbar processes BCMLA_XRY_065_001 | v1.1

simpleParameter

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

Options: unobservable, imageOnly, abnormal, normal,

Comment on XRay image BCMLA_XRY_032_001 | v1.1

simpleParameter

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

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XRay Images Whole Body Dorso Ventral BCMLA_XRY_034_001 | v1.3

seriesMediaParameter

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

Increments: Minimum 1

Syndactylism BCMLA_XRY_029_001 | v1.0

simpleParameter

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

Options: imageOnly, unobservable, Syndactylism, no syndactylism,

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Pelvis BCMLA_XRY_012_001 | v1.0

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Options: imageOnly, normal, abnormal, unobservable,

Number of caudal vertebrae BCMLA_XRY_017_001 | v1.1

simpleParameter

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

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Tibia length BCMLA_XRY_033_001 | v1.1

simpleParameter

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

Unit Measured: mm

Settings time of exposure BCMLA_XRY_039_001 | v1.1

procedureMetadata

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

Unit Measured: s

Xray equipment manufacturer BCMLA_XRY_037_001 | v1.4

procedureMetadata

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

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

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Digit integrity BCMLA_XRY_031_001 | v1.0

simpleParameter

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Options: imageOnly, yes, no, unobservable,

Number of pelvic vertebrae BCMLA_XRY_016_001 | v1.0

simpleParameter

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Maxilla/Pre-maxilla BCMLA_XRY_003_001 | v1.1

simpleParameter

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Options: imageOnly, abnormal, normal, unobservable,

Sacral processes BCMLA_XRY_066_001 | v1.0

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Options: abnormal, imageOnly, unobservable, normal,

Processes on vertebrae BCMLA_XRY_020_001 | v1.0

simpleParameter

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Options: normal, abnormal, imageOnly, unobservable,

Xray equipment model BCMLA_XRY_038_001 | v1.4

procedureMetadata

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

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Fusion of ribs BCMLA_XRY_011_001 | v1.0

simpleParameter

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Options: not fused, imageOnly, fused, unobservable,

Fusion of processes BCMLA_XRY_061_001 | v1.1

simpleParameter

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Options: no, unobservable, yes, imageOnly,

Joints BCMLA_XRY_027_001 | v1.0

simpleParameter

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Options: normal, imageOnly, abnormal, unobservable,

Pelvic vertebrae morphology BCMLA_XRY_073_001 | v1.0

simpleParameter

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Options: imageOnly, unobservable, abnormal, normal,

Experimenter ID (analysis) BCMLA_XRY_042_001 | v1.1

procedureMetadata

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Alive BCMLA_XRY_035_001 | v1.0

simpleParameter

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

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Skull shape BCMLA_XRY_001_001 | v1.0

simpleParameter

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Options: unobservable, normal, abnormal, imageOnly,

Number of lumbar vertebrae BCMLA_XRY_015_001 | v1.0

simpleParameter

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

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XRay Images Skull Lateral Orientation BCMLA_XRY_050_001 | v1.2

seriesMediaParameter

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Increments: Minimum 1

Tibia BCMLA_XRY_025_001 | v1.0

simpleParameter

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Fibula BCMLA_XRY_026_001 | v1.0

simpleParameter

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Options: imageOnly, unobservable, normal, abnormal,

Ulna BCMLA_XRY_023_001 | v1.0

simpleParameter

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Options: unobservable, imageOnly, normal, abnormal,

Femur BCMLA_XRY_024_001 | v1.0

simpleParameter

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Options: unobservable, abnormal, normal, imageOnly,

Caudal vertebrae morphology BCMLA_XRY_074_001 | v1.0

simpleParameter

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Options: imageOnly, unobservable, abnormal, normal,

Scoliosis BCMLA_XRY_056_001 | v1.2

simpleParameter

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Options: unobservable, yes, no, imageOnly,

Scanner equipment model BCMLA_XRY_046_001 | v1.1

procedureMetadata

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Date Xray equipment last calibrated BCMLA_XRY_047_001 | v1.3

procedureMetadata

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Number of ribs left BCMLA_XRY_009_001 | v1.0

simpleParameter

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

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Shape of vertebrae BCMLA_XRY_018_001 | v1.0

simpleParameter

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Options: normal, imageOnly, unobservable, abnormal,

Teeth BCMLA_XRY_005_001 | v1.0

simpleParameter

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Options: normal, unobservable, imageOnly, abnormal,

Thoracic vertebrae morphology BCMLA_XRY_071_001 | v1.0

simpleParameter

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Options: normal, imageOnly, abnormal, unobservable,

Caudal processes BCMLA_XRY_067_001 | v1.0

simpleParameter

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Options: unobservable, normal, abnormal, imageOnly,

Radius BCMLA_XRY_022_001 | v1.0

simpleParameter

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Options: imageOnly, abnormal, unobservable, normal,

XRay Images Whole Body Lateral Orientation BCMLA_XRY_048_001 | v1.2

seriesMediaParameter

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Increments: Minimum 1

Scanner equipment ID BCMLA_XRY_044_001 | v1.1

procedureMetadata

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

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Xray equipment ID BCMLA_XRY_036_001 | v1.1

procedureMetadata

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Voltage settings BCMLA_XRY_043_001 | v1.1

procedureMetadata

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XRay Images Hind Leg and Hip BCMLA_XRY_052_001 | v1.1

seriesMediaParameter

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Increments: Minimum 1

Lumbar vertebrae morphology BCMLA_XRY_072_001 | v1.0

simpleParameter

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Options: abnormal, imageOnly, unobservable, normal,

Free Ontology BCMLA_XRY_054_001 | v1.0

simpleParameter

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

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Cervical vertebrae morphology BCMLA_XRY_070_001 | v1.0

simpleParameter

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Options: imageOnly, normal, abnormal, unobservable,

Shape of ribs BCMLA_XRY_010_001 | v1.0

simpleParameter

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Options: unobservable, abnormal, imageOnly, normal,

Clavicle BCMLA_XRY_007_001 | v1.0

simpleParameter

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

Options: normal, imageOnly, abnormal, unobservable,

Number of thoracic vertebrae BCMLA_XRY_014_001 | v1.0

simpleParameter

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Fusion of vertebrae BCMLA_XRY_019_001 | v1.0

simpleParameter

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

Options: imageOnly, yes, no, unobservable,

Kyphosis BCMLA_XRY_057_001 | v1.1

simpleParameter

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

Options: imageOnly, no, unobservable, yes,

Rib morphology BCMLA_XRY_069_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, normal, imageOnly,

Settings level BCMLA_XRY_040_001 | v1.1

procedureMetadata

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

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Number of cervical vertebrae BCMLA_XRY_013_001 | v1.0

simpleParameter

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

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XRay Images Forepaw BCMLA_XRY_049_001 | v1.1

seriesMediaParameter

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

Increments: Minimum 1

Shape of ribcage BCMLA_XRY_059_001 | v1.1

simpleParameter

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

Options: normal, unobservable, imageOnly, abnormal,

Mandibles BCMLA_XRY_004_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Experimenter ID (scan) BCMLA_XRY_041_001 | v1.1

procedureMetadata

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

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Scanner equipment manufacturer BCMLA_XRY_045_001 | v1.1

procedureMetadata

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

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Transitional vertebrae BCMLA_XRY_060_001 | v1.1

simpleParameter

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

Options: unobservable, yes, imageOnly, no,

Shape of spine BCMLA_XRY_055_001 | v1.1

simpleParameter

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

Options: abnormal, imageOnly, normal, unobservable,

Number of digits BCMLA_XRY_028_001 | v1.0

simpleParameter

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

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Humerus BCMLA_XRY_021_001 | v1.0

simpleParameter

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

Options: abnormal, normal, imageOnly, unobservable,

Date Scanner equipment last calibrated BCMLA_XRY_053_001 | v1.1

procedureMetadata

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

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Thoracic processes BCMLA_XRY_064_001 | v1.1

simpleParameter

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

Options: abnormal, normal, unobservable, imageOnly,

Cervical processes BCMLA_XRY_063_001 | v1.1

simpleParameter

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

Options: unobservable, normal, imageOnly, abnormal,

XRay Images Skull Dorso Ventral Orientation BCMLA_XRY_051_001 | v1.2

seriesMediaParameter

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

Increments: Minimum 1

Polysyndactylism BCMLA_XRY_062_001 | v1.1

simpleParameter

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

Options: imageOnly, no, yes, unobservable,

Zygomatic bone BCMLA_XRY_002_001 | v1.0

simpleParameter

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

Options: abnormal, imageOnly, normal, unobservable,

Missing cranial rib BCMLA_XRY_068_001 | v1.0

simpleParameter

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

Options: No, Yes,
