X-ray CCP_XRY_001

Purpose

Construct and analyse digital 3D reconstructions of immobilised mice using computed X-ray microtomography (CT).

Experimental Design

- **Minimum number of animals :** 4M + 4F
- **Age at test:** Week 14

Procedure

1. Anesthetize the mouse and monitor for adequate sedation until unconsciousness.
2. Place the mouse on the pad with the forepaws and hindpaws pointing anteriorly, the hindlimbs positioned below the body, and the tail curved along the right side of the mouse. Secure the mouse in position using tape.
3. Scan the mouse.
    1. Correctly position the mouse in the scanner.
    2. Run a scout scan.
    3. Check the scanning parameters and ensure that the scan area includes the entire mouse.
    4. Start the scan.
4. When the scan is complete, remove the mouse from the machine, untape it and check its condition.
5. Place the mouse on a heated mat (38°C) and monitor closely until consciousness is fully regained, before moving it back to its cage.
6. Reconstruct the scan with appropriate software and analyse the image.

Notes

Body composition analysis is conducted using the same CT scan.

Digit integrity IMPC_XRY_031_001 *Definition:* **The state of being whole and undivided.**< /</p>

Parameters and Metadata

Number of thoracic vertebrae CCP_XRY_014_001 | v1.0

simpleParameter

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

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Caudal vertebrae morphology CCP_XRY_074_001 | v1.0

simpleParameter

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Options: abnormal, imageOnly, normal, unobservable,

XRay Images Skull Dorso Ventral Orientation CCP_XRY_051_001 | v1.2

seriesMediaParameter

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

Increments: Minimum 1

Clavicle CCP_XRY_007_001 | v1.0

simpleParameter

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

Options: unobservable, abnormal, imageOnly, normal,

Date Xray equipment last calibrated CCP_XRY_047_001 | v1.3

procedureMetadata

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Ulna CCP_XRY_023_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, normal, imageOnly,

Shape of ribs CCP_XRY_010_001 | v1.0

simpleParameter

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Options: abnormal, unobservable, normal, imageOnly,

Thoracic vertebrae morphology CCP_XRY_071_001 | v1.0

simpleParameter

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Options: abnormal, imageOnly, unobservable, normal,

Number of lumbar vertebrae CCP_XRY_015_001 | v1.0

simpleParameter

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XRay Images Hind Leg and Hip CCP_XRY_052_001 | v1.1

seriesMediaParameter

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Increments: Minimum 1

Lordosis CCP_XRY_058_001 | v1.1

simpleParameter

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Options: no, imageOnly, unobservable, yes,

Maxilla/Pre-maxilla CCP_XRY_003_001 | v1.1

simpleParameter

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Options: imageOnly, normal, abnormal, unobservable,

Brachydactyly CCP_XRY_030_001 | v1.1

simpleParameter

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Options: imageOnly, no, unobservable, yes,

Comment on XRay image CCP_XRY_032_001 | v1.1

simpleParameter

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Transitional vertebrae CCP_XRY_060_001 | v1.1

simpleParameter

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Options: yes, imageOnly, no, unobservable,

Teeth CCP_XRY_005_001 | v1.0

simpleParameter

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Options: imageOnly, abnormal, normal, unobservable,

Joints CCP_XRY_027_001 | v1.0

simpleParameter

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Options: imageOnly, unobservable, normal, abnormal,

Xray equipment ID CCP_XRY_036_001 | v1.1

procedureMetadata

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XRay Images Skull Lateral Orientation CCP_XRY_050_001 | v1.2

seriesMediaParameter

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Increments: Minimum 1

Polysyndactylism CCP_XRY_062_001 | v1.1

simpleParameter

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Options: unobservable, imageOnly, yes, no,

XRay Images Forepaw CCP_XRY_049_001 | v1.1

seriesMediaParameter

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Increments: Minimum 1

Voltage settings CCP_XRY_043_001 | v1.1

procedureMetadata

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Number of pelvic vertebrae CCP_XRY_016_001 | v1.0

simpleParameter

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Caudal processes CCP_XRY_067_001 | v1.0

simpleParameter

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Options: abnormal, unobservable, imageOnly, normal,

Lumbar vertebrae morphology CCP_XRY_072_001 | v1.0

simpleParameter

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Options: unobservable, normal, imageOnly, abnormal,

Date Scanner equipment last calibrated CCP_XRY_053_001 | v1.1

procedureMetadata

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XRay Images Whole Body Lateral Orientation CCP_XRY_048_001 | v1.2

seriesMediaParameter

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Increments: Minimum 1

Cervical processes CCP_XRY_063_001 | v1.1

simpleParameter

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Options: unobservable, normal, abnormal, imageOnly,

Scanner equipment model CCP_XRY_046_001 | v1.1

procedureMetadata

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XRay Images Whole Body Dorso Ventral CCP_XRY_034_001 | v1.3

seriesMediaParameter

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Increments: Minimum 1

Xray equipment model CCP_XRY_038_001 | v1.4

procedureMetadata

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Options: UltraFocus DXA, MX-20-DC12, UltraFocus 100, MS-FX Pro, R_mCT (Micro-CT), MX-20-DC4, MX-20, SkyScan 1176, SkyScan 1278,

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Scoliosis CCP_XRY_056_001 | v1.2

simpleParameter

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Options: imageOnly, yes, no, unobservable,

Humerus CCP_XRY_021_001 | v1.0

simpleParameter

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Options: abnormal, normal, unobservable, imageOnly,

Scanner equipment ID CCP_XRY_044_001 | v1.1

procedureMetadata

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Experimenter ID (analysis) CCP_XRY_042_001 | v1.1

procedureMetadata

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Number of cervical vertebrae CCP_XRY_013_001 | v1.0

simpleParameter

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Alive CCP_XRY_035_001 | v1.0

simpleParameter

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

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Tibia length CCP_XRY_033_001 | v1.1

simpleParameter

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

Unit Measured: mm

Pelvis CCP_XRY_012_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Digit integrity CCP_XRY_031_001 | v1.0

simpleParameter

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

Options: unobservable, yes, imageOnly, no,

Free Ontology CCP_XRY_054_001 | v1.0

simpleParameter

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

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Radius CCP_XRY_022_001 | v1.0

simpleParameter

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

Options: normal, unobservable, imageOnly, abnormal,

Skull shape CCP_XRY_001_001 | v1.0

simpleParameter

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Options: normal, abnormal, imageOnly, unobservable,

Tibia CCP_XRY_025_001 | v1.0

simpleParameter

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Options: imageOnly, unobservable, abnormal, normal,

Cervical vertebrae morphology CCP_XRY_070_001 | v1.0

simpleParameter

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Options: normal, unobservable, imageOnly, abnormal,

Sacral processes CCP_XRY_066_001 | v1.0

simpleParameter

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Options: normal, unobservable, abnormal, imageOnly,

Fusion of processes CCP_XRY_061_001 | v1.1

simpleParameter

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

Options: unobservable, no, imageOnly, yes,

Kyphosis CCP_XRY_057_001 | v1.1

simpleParameter

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

Options: imageOnly, unobservable, yes, no,

Shape of ribcage CCP_XRY_059_001 | v1.1

simpleParameter

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Options: abnormal, normal, unobservable, imageOnly,

Fusion of ribs CCP_XRY_011_001 | v1.0

simpleParameter

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

Options: not fused, unobservable, fused, imageOnly,

Rib morphology CCP_XRY_069_001 | v1.0

simpleParameter

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

Options: normal, unobservable, abnormal, imageOnly,

Syndactylism CCP_XRY_029_001 | v1.0

simpleParameter

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

Options: imageOnly, no syndactylism, unobservable, Syndactylism,

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Shape of spine CCP_XRY_055_001 | v1.1

simpleParameter

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

Options: imageOnly, unobservable, normal, abnormal,

Pelvic vertebrae morphology CCP_XRY_073_001 | v1.0

simpleParameter

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

Options: imageOnly, unobservable, abnormal, normal,

Number of digits CCP_XRY_028_001 | v1.0

simpleParameter

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

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Settings time of exposure CCP_XRY_039_001 | v1.1

procedureMetadata

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

Unit Measured: s

Fibula CCP_XRY_026_001 | v1.0

simpleParameter

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

Options: imageOnly, abnormal, normal, unobservable,

Xray equipment manufacturer CCP_XRY_037_001 | v1.4

procedureMetadata

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

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

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Mandibles CCP_XRY_004_001 | v1.0

simpleParameter

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

Options: imageOnly, normal, abnormal, unobservable,

Number of ribs right CCP_XRY_008_001 | v1.0

simpleParameter

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

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Scapulae CCP_XRY_006_001 | v1.0

simpleParameter

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

Options: normal, unobservable, imageOnly, abnormal,

Thoracic processes CCP_XRY_064_001 | v1.1

simpleParameter

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

Options: unobservable, imageOnly, abnormal, normal,

Number of ribs left CCP_XRY_009_001 | v1.0

simpleParameter

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

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Zygomatic bone CCP_XRY_002_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, imageOnly, normal,

Settings level CCP_XRY_040_001 | v1.1

procedureMetadata

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

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Femur CCP_XRY_024_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, normal, imageOnly,

Missing cranial rib CCP_XRY_068_001 | v1.0

simpleParameter

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

Options: Yes, No,

Fusion of vertebrae CCP_XRY_019_001 | v1.0

simpleParameter

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

Options: unobservable, yes, no, imageOnly,

Scanner equipment manufacturer CCP_XRY_045_001 | v1.1

procedureMetadata

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

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Number of caudal vertebrae CCP_XRY_017_001 | v1.1

simpleParameter

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

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Processes on vertebrae CCP_XRY_020_001 | v1.0

simpleParameter

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

Options: abnormal, unobservable, normal, imageOnly,

Lumbar processes CCP_XRY_065_001 | v1.1

simpleParameter

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Options: abnormal, unobservable, normal, imageOnly,

Experimenter ID (scan) CCP_XRY_041_001 | v1.1

procedureMetadata

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

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Shape of vertebrae CCP_XRY_018_001 | v1.0

simpleParameter

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

Options: abnormal, normal, unobservable, imageOnly,

Presence of baculum bone CCP_XRY_075_001 | v1.0

simpleParameter

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

Options: yes, no, imageOnly, unobservable,

Quality of enamel on incisors CCP_XRY_076_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Quality of enamel on molars CCP_XRY_077_001 | v1.0

simpleParameter

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

Options: normal, abnormal, imageOnly, unobservable,

Number of forepaw digits CCP_XRY_078_001 | v1.0

simpleParameter

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

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Number of hindpaw digits CCP_XRY_079_001 | v1.0

simpleParameter

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

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Total number of teeth CCP_XRY_080_001 | v1.0

simpleParameter

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

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Tooth formula (left side) CCP_XRY_081_001 | v1.0

simpleParameter

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

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Tooth formula (right side) CCP_XRY_082_001 | v1.0

simpleParameter

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

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Defect pixel masking CCP_XRY_083_001 | v1.0

procedureMetadata

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

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Beam hardening correction CCP_XRY_084_001 | v1.0

procedureMetadata

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

Unit Measured: %

Ring artefact correction CCP_XRY_085_001 | v1.0

procedureMetadata

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

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Smoothing CCP_XRY_086_001 | v1.0

procedureMetadata

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

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Maximum intensity CCP_XRY_087_001 | v1.0

procedureMetadata

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

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Minimum intensity CCP_XRY_088_001 | v1.0

procedureMetadata

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

Reconstruction software manufacturer CCP_XRY_089_001 | v1.0

procedureMetadata

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

Options: Bruker, InstaRecon,

Reconstruction software CCP_XRY_090_001 | v1.0

procedureMetadata

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

Options: NRecon, InstaRecon CBR Premium 15K,

Reconstruction software version CCP_XRY_091_001 | v1.0

procedureMetadata

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

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Averaging CCP_XRY_092_001 | v1.0

procedureMetadata

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

Options: Yes, No,

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180 or 360 degree scan CCP_XRY_093_001 | v1.0

procedureMetadata

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

Unit Measured: degrees

Options: 180, 360,

Rotation step CCP_XRY_094_001 | v1.0

procedureMetadata

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

Unit Measured: degrees

Filter CCP_XRY_095_001 | v1.0

procedureMetadata

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

Options: No Filter, 0.25mm Al, 0.5mm Al, 1mm Al, Cu+Al, 0.11mm Cu,

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Distance between camera and source CCP_XRY_096_001 | v1.0

procedureMetadata

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

Unit Measured: mm

Distance between object and source CCP_XRY_097_001 | v1.0

procedureMetadata

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

Unit Measured: mm

Image pixel size CCP_XRY_098_001 | v1.0

procedureMetadata

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

Unit Measured: pixels

Camera pixel size CCP_XRY_099_001 | v1.0

procedureMetadata

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

Unit Measured: pixels

Source current CCP_XRY_100_001 | v1.0

procedureMetadata

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

Unit Measured: uA

Source type CCP_XRY_101_001 | v1.0

procedureMetadata

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Date of sacrifice CCP_XRY_102_001 | v1.0

procedureMetadata

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