

# X-ray HRWLLA\_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

### Syndactylism HRWLLA\_XRY\_029\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, Syndactylism, unobservable, no syndactylism,

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### Maxilla/Pre-maxilla HRWLLA\_XRY\_003\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, unobservable, abnormal, normal,

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### Transitional vertebrae HRWLLA\_XRY\_060\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Options:** no, imageOnly, unobservable, yes,

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## **Voltage settings** HRWLLA\_XRY\_043\_001 | v1.1

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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## **Lumbar processes** HRWLLA\_XRY\_065\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Options:** unobservable, normal, abnormal, imageOnly,

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## **Date Scanner equipment last calibrated** HRWLLA\_XRY\_053\_001 |

v1.1

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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## **Thoracic vertebrae morphology** HRWLLA\_XRY\_071\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: normal, imageOnly, unobservable, abnormal,

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## Processes on vertebrae HRWLLA\_XRY\_020\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: normal, imageOnly, unobservable, abnormal,

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## Number of pelvic vertebrae HRWLLA\_XRY\_016\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Shape of ribs HRWLLA\_XRY\_010\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: abnormal, imageOnly, normal, unobservable,

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## Rib morphology HRWLLA\_XRY\_069\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: normal, unobservable, abnormal, imageOnly,

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## Sacral processes HRWLLA\_XRY\_066\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: imageOnly, abnormal, normal, unobservable,

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## Kyphosis HRWLLA\_XRY\_057\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: unobservable, no, yes, imageOnly,

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## Shape of ribcage HRWLLA\_XRY\_059\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: normal, imageOnly, abnormal, unobservable,

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## Scapulae HRWLLA\_XRY\_006\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, normal, abnormal, unobservable,

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## Scanner equipment ID HRWLLA\_XRY\_044\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Pelvic vertebrae morphology HRWLLA\_XRY\_073\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: unobservable, imageOnly, normal, abnormal,

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## Number of digits HRWLLA\_XRY\_028\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Scanner equipment manufacturer HRWLLA\_XRY\_045\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Femur HRWLLA\_XRY\_024\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, normal, unobservable, abnormal,

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## Skull shape HRWLLA\_XRY\_001\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: unobservable, normal, imageOnly, abnormal,

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## Clavicle HRWLLA\_XRY\_007\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, unobservable, normal, abnormal,

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## Tibia length HRWLLA\_XRY\_033\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: mm

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## Lumbar vertebrae morphology HRWLLA\_XRY\_072\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: abnormal, normal, imageOnly, unobservable,

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## Shape of vertebrae HRWLLA\_XRY\_018\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, unobservable, normal, abnormal,

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## Tibia HRWLLA\_XRY\_025\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: abnormal, imageOnly, normal, unobservable,

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## Digit integrity HRWLLA\_XRY\_031\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: no, unobservable, yes, imageOnly,

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## XRay Images Skull Lateral Orientation HRWLLA\_XRY\_050\_001 | v1

.2

seriesMediaParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Increments: Minimum 1

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## **Alive** HRWLLA\_XRY\_035\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## **Humerus** HRWLLA\_XRY\_021\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: unobservable, imageOnly, normal, abnormal,

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## **Xray equipment ID** HRWLLA\_XRY\_036\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Polysyndactylism HRWLLA\_XRY\_062\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: yes, imageOnly, no, unobservable,

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## Number of thoracic vertebrae HRWLLA\_XRY\_014\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

## Settings time of exposure HRWLLA\_XRY\_039\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

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## Scoliosis HRWLLA\_XRY\_056\_001 | v1.2

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: no, unobservable, yes, imageOnly,

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## **Cervical vertebrae morphology** HRWLLA\_XRY\_070\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Options:** normal, imageOnly, unobservable, abnormal,

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## **Date Xray equipment last calibrated** HRWLLA\_XRY\_047\_001 | v1.3

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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## **XRay Images Forepaw** HRWLLA\_XRY\_049\_001 | v1.1

seriesMediaParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Increments:** Minimum 1

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## **Caudal processes** HRWLLA\_XRY\_067\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Options:** unobservable, imageOnly, normal, abnormal,

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## **XRay Images Skull Dorso Ventral Orientation** HRWLLA\_XRY\_05

1\_001 | v1.2

seriesMediaParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Increments:** Minimum 1

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## **Ulna** HRWLLA\_XRY\_023\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** normal, imageOnly, abnormal, unobservable,

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## **Cervical processes** HRWLLA\_XRY\_063\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

Options: unobservable, normal, imageOnly, abnormal,

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## **XRay Images Whole Body Dorso Ventral** HRWLLA\_XRY\_034\_001 | v1.3

seriesMediaParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Increments: Minimum 1

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## **Number of cervical vertebrae** HRWLLA\_XRY\_013\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## **Free Ontology** HRWLLA\_XRY\_054\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## **Pelvis** HRWLLA\_XRY\_012\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: abnormal, normal, imageOnly, unobservable,

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## Number of ribs right HRWLLA\_XRY\_008\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Mandibles HRWLLA\_XRY\_004\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: abnormal, imageOnly, unobservable, normal,

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## Number of caudal vertebrae HRWLLA\_XRY\_017\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Fusion of processes HRWLLA\_XRY\_061\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: no, imageOnly, unobservable, yes,

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## Brachydactyly HRWLLA\_XRY\_030\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: unobservable, imageOnly, yes, no,

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## Xray equipment manufacturer HRWLLA\_XRY\_037\_001 | v1.4

procedureMetadata

Req. Analysis: true

Req. Upload: false

Is Annotated: false

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

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## XRy Images Whole Body Lateral Orientation HRWLLA\_XRY\_048\_001 | v1.2

seriesMediaParameter



Req. Analysis: false

Req. Upload: true

Is Annotated: false

Increments: Minimum 1

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## Shape of spine HRWLLA\_XRY\_055\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: unobservable, imageOnly, normal, abnormal,

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## XRay Images Hind Leg and Hip HRWLLA\_XRY\_052\_001 | v1.1

seriesMediaParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Increments: Minimum 1

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## Joints HRWLLA\_XRY\_027\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: imageOnly, abnormal, normal, unobservable,

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## Zygomatic bone HRWLLA\_XRY\_002\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: normal, unobservable, abnormal, imageOnly,

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## Number of lumbar vertebrae HRWLLA\_XRY\_015\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Scanner equipment model HRWLLA\_XRY\_046\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Xray equipment model HRWLLA\_XRY\_038\_001 | v1.4

procedureMetadata

Req. Analysis: true

Req. Upload: false

Is Annotated: false

**Options:** MS-FX Pro, MX-20-DC12, MX-20-DC4, MX-20, UltraFocus 100, UltraFocus DXA, R\_mCT (Micro-CT),

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## **Number of ribs left** HRWLLA\_XRY\_009\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

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## **Caudal vertebrae morphology** HRWLLA\_XRY\_074\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Options:** imageOnly, abnormal, unobservable, normal,

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## **Fusion of ribs** HRWLLA\_XRY\_011\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** unobservable, fused, imageOnly, not fused,

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## Missing cranial rib HRWLLA\_XRY\_068\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: Yes, No,

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## Fibula HRWLLA\_XRY\_026\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: unobservable, imageOnly, abnormal, normal,

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## Thoracic processes HRWLLA\_XRY\_064\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: imageOnly, abnormal, unobservable, normal,

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## Comment on XRay image HRWLLA\_XRY\_032\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Teeth HRWLLA\_XRY\_005\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: unobservable, normal, abnormal, imageOnly,

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## Settings level HRWLLA\_XRY\_040\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Radius HRWLLA\_XRY\_022\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: abnormal, unobservable, imageOnly, normal,

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## Fusion of vertebrae HRWLLA\_XRY\_019\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: yes, no, unobservable, imageOnly,

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## Experimenter ID (scan) HRWLLA\_XRY\_041\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Lordosis HRWLLA\_XRY\_058\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: imageOnly, yes, no, unobservable,

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## Experimenter ID (analysis) HRWLLA\_XRY\_042\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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