

# Combined SHIRPA and Dysmorphology IMP

## C\_CSD\_002

### Purpose

SHIRPA and dysmorphology were originally always separate assessments. However they have recently been combined as assessments, so that they take place at the same time.

The purpose of the assessments is to examine mice for obvious physical characteristics, behaviors and morphological abnormalities.

Descriptions include abnormal locomotion/appearance/behavior/reflex reactions.

### Experimental Design

- **Minimum number of animals** : 7M + 7F
- **Age at test**: Week 9
- **Sex**: We would expect the results of this test to show sexual dimorphism

### Equipment

- Viewing Jar
- SHIRPA arena
- Grid above arena
- Click Box
- Geotaxis grid
- Tube for contact righting
- Photo and/or video camera

### Procedure

1. Allow the mice to acclimatise to the phenotyping room for a period of 30 minutes prior to testing.
2. Throughout the test note any vocalisation, aggression, salivation or unexpected behaviours.
3. During this test, note any unexpected dysmorphological characteristics (morphological irregularities are recorded by video sequences or photos).
4. Place the mouse in a clear cylinder over a wire grid and observe for activity and tremors.
5. Transfer the mouse out of the cylinder by removing the metal plate/grid whilst positioning 30cm over an arena and record the transfer arousal.

6. Record the number of 10cm<sup>2</sup> squares the mouse moves into in the first 30 seconds in the arena (locomotor activity).
7. Allow the mouse to move freely around the arena whilst being observed for gait and tail elevation.
8. Hold the click box approximately 30cm above the arena and press the button, record the response of the mouse.
9. Approach the mouse from the front with a bent finger, aiming to touch the mouse on the back of the neck rather than on the face. Ensure the mouse is looking at the finger before approach is started. Record whether the mouse moves away before the finger touches the mouse, when the finger touches the mouse or if the mouse does not move at all.
10. Pick up the mouse by the tail and observe for limp grasping and trunk curl. Trunk curl must only be recorded if the mouse curls forward without twisting its body, bending to one side is not scored as a trunk curl.
11. Place the mouse in a small transparent tube. Turn the tube quickly so the mouse is fully upside down and record if the mouse rights itself.
12. Record any vocalisation and/or aggression which were observed throughout the entire test

## Notes

1. If wiping down with ethanol prior to the use of equipment, make sure no ethanol residue remains as the ethanol may affect the behaviour of the animals.
2. The validity of results obtained from behavioural phenotyping is largely dependent on methods of animal husbandry. It is important that individuals following this procedure are experienced and aware of the animal's welfare, and is familiar with the animal being tested, in order to reduce the anxiety levels of the animal prior to testing.
3. The majority of mouse behavioural studies are age/sex/strain dependent. It is important to keep these parameters comparable throughout a single experiment.
4. Environmental factors may contribute to the levels of anxiety within the mouse. The temperature, humidity, ventilation, noise intensity and light intensity must be maintained at levels appropriate for mice. It is essential that the mice be kept in a uniform environment before and after testing to avoid anomalous results being obtained.
5. It is recommended that all phenotyping experimentation is conducted at approximately the same time of day because physiological and biochemical parameters change throughout the day.
6. When a number of mice are tested continuously, residual odours from the equipment used in the preceding test may affect the test results. The floor and walls of the arena, ruler, and metal net should be wiped clean before introducing the next mouse. To prevent infection, the equipment should be washed with water at the completion of the day's tests. Some specific pathogen-free facilities use ultraviolet irradiation when tests are not being performed. Care needs to be taken, however, to ensure that ultraviolet irradiation does not crack any acrylate equipment covered with residual alcohol.

## Parameters and Metadata

**Tail - presence** IMPC\_CSD\_001\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** tail\_presence

**Options:** Absent, Present,

---

## **Tail - length** IMPC\_CSD\_002\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** tail\_length

**Options:** Long, Short, As expected, No data,

---

## **Tail - thickness** IMPC\_CSD\_003\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** tail\_thickness

**Options:** Increased, Decreased, As expected, No data,

---

## **Tail - morphology** IMPC\_CSD\_004\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** tail\_morphology

**Options:** As expected, Not as expected, No data,

---

## Coat - color - back IMPC\_CSD\_005\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_color\_back

**Options:** As expected, Not as expected, No data,

---

## Coat - color - head IMPC\_CSD\_006\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_color\_head

**Options:** As expected, Not as expected, No data,

---

## Coat - color - abdomen IMPC\_CSD\_007\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_color\_abdomen

**Options:** As expected, Not as expected, No data,

---

## Coat - color pattern - back IMPC\_CSD\_008\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_color\_pattern\_back

**Options:** As expected, Not as expected, No data,

---

## Coat - color pattern - head IMPC\_CSD\_009\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_color\_pattern\_head

**Options:** As expected, Not as expected, No data,

---

# Coat - color pattern - abdomen IMPC\_CSD\_010\_001 | v1.0

simpleParameter

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

Description: coat\_color\_pattern\_abdomen

Options: As expected, Not as expected, No data,

---

# Coat - hair distribution - back IMPC\_CSD\_011\_001 | v1.0

simpleParameter

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

Description: coat\_hair\_distribution\_back

Options: As expected, Not as expected,

---

# Coat - hair distribution - head IMPC\_CSD\_012\_001 | v1.0

simpleParameter

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

Description: coat\_hair\_distribution\_head

Options: As expected, Not as expected,

---

**Coat - hair distribution - abdomen** IMPC\_CSD\_013\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_hair\_distribution\_abdomen

**Options:** As expected, Not as expected,

---

**Coat - hair texture / appearance - back** IMPC\_CSD\_014\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_hair\_texture\_appearance\_back

**Options:** As expected, Not as expected, No data,

---

**Coat - hair texture / appearance - head** IMPC\_CSD\_015\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** coat\_hair\_texture\_appearance\_head

**Options:** As expected, Not as expected, No data,

---

# Coat - hair texture / appearance - abdomen IMPC\_CSD\_016\_001

| v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: coat\_hair\_texture\_appearance\_abdomen

Options: As expected, Not as expected, No data,

---

# Forelimbs - position IMPC\_CSD\_017\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: forelimbs\_position

Options: As expected, One forelimb only - not as expected, Both forelimbs - not as expected,

---

# Forelimbs - shape IMPC\_CSD\_018\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: forelimbs\_shape

Options: As expected, One forelimb only - not as expected, Both forelimbs - not as expected,



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## Forelimbs - size IMPC\_CSD\_019\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimbs\_size

**Options:** As expected, One forelimb only - increased, One forelimb only - decreased, Both forelimbs - increased, Both forelimbs - decreased,

---

## Hindlimbs - position IMPC\_CSD\_020\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimbs\_position

**Options:** As expected, One hindlimb only - not as expected, Both hindlimbs - not as expected,

---

## Hindlimbs - shape IMPC\_CSD\_021\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimbs\_shape

**Options:** As expected, One hindlimb only - not as expected,

Both hindlimbs - not as expected,

---

## Hindlimbs - size IMPC\_CSD\_022\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimbs\_size

**Options:** As expected, One hindlimb only - increased, One hindlimb only - decreased,  
Both hindlimbs - increased, Both hindlimbs - decreased,

---

## Vibrissae - presence IMPC\_CSD\_023\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** vibrissae\_presence

**Options:** As expected, Not as expected,

---

## Vibrissae - appearance IMPC\_CSD\_024\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** vibrissae\_appearance

**Options:** As expected, Not as expected, No data,

---

## Head size IMPC\_CSD\_025\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** head\_size

**Options:** As expected, Increased, Decreased,

---

## Head morphology IMPC\_CSD\_026\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** head\_morphology

**Options:** As expected, Not as expected,

---

## Ears IMPC\_CSD\_027\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** ears

**Options:** As expected, Not as expected,

---

## **Snout size** IMPC\_CSD\_028\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** snout\_size

**Options:** As expected, Increased, Decreased,

---

## **Activity (body position)** IMPC\_CSD\_029\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** activity\_body\_position\_

**Options:** As expected, Increased activity, Inactive,

---

## **Tremor** IMPC\_CSD\_030\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** tremor

**Options:** Absent, Present,

---

## Transfer arousal IMPC\_CSD\_031\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** transfer\_arousal

**Options:** As expected, Immediate movement, Extended freeze,

---

## Locomotor activity IMPC\_CSD\_032\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Unit Measured:** Squares crossed

**Description:** locomotor\_activity

---

## **Gait** IMPC\_CSD\_033\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** gait

**Options:** Fluid movement, Lack of fluidity in movement,

---

## **Tail elevation** IMPC\_CSD\_034\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** tail\_elevation

**Options:** As expected, Straub / elevated tail, Dragging, No data,

---

## **Touch escape** IMPC\_CSD\_035\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** touch\_escape

**Options:** No response, Response to touch, Flees prior to touch,

---

## Startle response IMPC\_CSD\_036\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: startle\_response

Options: None, Present, No data,

---

## Unexpected behaviors IMPC\_CSD\_037\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: unexpected\_behaviors

Options: None, Circling, Jumping, Retropulsion, Other,

---

## Trunk curl IMPC\_CSD\_038\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: trunk\_curl

Options: Absent, Present, No data,

---

## Limb grasp IMPC\_CSD\_039\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** limb\_grasp

**Options:** Absent, Present, No data,

---

## Forelimb digit - size IMPC\_CSD\_046\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_digit\_size

**Options:** As expected, One forelimb - increased size, One forelimb - decreased size, One forelimb - fused, Both forelimbs - increased size, Both forelimbs - decreased size, Both forelimbs - fused,

---

## Hindlimb digit - size IMPC\_CSD\_047\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_digit\_size



**Options:** As expected, One hindlimb - increased size, One hindlimb - decreased size, One hindlimb - fused, Both hindlimbs - increased size, Both hindlimbs - decreased size, Both hindlimbs - fused,

---

## Skin color - whole body IMPC\_CSD\_056\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_whole\_body

**Options:** As expected, Not as expected,

---

## Skin color - snout IMPC\_CSD\_057\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_snout

**Options:** As expected, Not as expected,

---

## Skin color - ear IMPC\_CSD\_058\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_ear

**Options:** As expected, Not as expected,

---

## **Skin color - front paws** IMPC\_CSD\_059\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_front\_paws

**Options:** As expected, Not as expected,

---

## **Skin color - back paws** IMPC\_CSD\_060\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_back\_paws

**Options:** As expected, Not as expected,

---

## **Skin color - tail** IMPC\_CSD\_061\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_color\_tail

**Options:** As expected, Not as expected, No data,

---

## **Skin texture - whole body** IMPC\_CSD\_062\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_whole\_body

**Options:** As expected, Not as expected,

---

## **Skin texture - snout** IMPC\_CSD\_063\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_snout

**Options:** As expected, Not as expected,

---

## **Skin texture - ear** IMPC\_CSD\_064\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_ear

**Options:** As expected, Not as expected,

---

## **Skin texture - front paws** IMPC\_CSD\_065\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_front\_paws

**Options:** As expected, Not as expected,

---

## **Skin texture - back paws** IMPC\_CSD\_066\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_back\_paws

**Options:** As expected, Not as expected,

---

## **Skin texture - tail** IMPC\_CSD\_067\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** skin\_texture\_tail

**Options:** As expected, Not as expected, No data,

---

## Teeth presence IMPC\_CSD\_068\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** teeth\_presence

**Options:** As expected, Not as expected,

---

## Upper teeth appearance IMPC\_CSD\_069\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** upper\_teeth\_appearance

**Options:** As expected, Not as expected, No data,

---

# Lower teeth appearance IMPC\_CSD\_070\_001 | v1.0

simpleParameter

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

Description: lower\_teeth\_appearance

Options: As expected, Not as expected, No data,

---

# Genitalia - presence IMPC\_CSD\_071\_001 | v1.1

simpleParameter

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

Description: genitalia\_presence

Options: As expected, Absent,

---

# Genitalia - size IMPC\_CSD\_072\_001 | v1.1

simpleParameter

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

Description: genitalia\_size

Options: As expected, Not as expected, No data,

---

## Genitalia - morphology IMPC\_CSD\_073\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** genitalia\_morphology

**Options:** As expected, Not as expected, No data,

---

## Mouth morphology IMPC\_CSD\_074\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** mouth\_morphology

**Options:** As expected, Not as expected,

---

## Upper lip morphology IMPC\_CSD\_075\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** upper\_lip\_morphology

**Options:** As expected, Not as expected,

---

# Lower lip morphology IMPC\_CSD\_076\_001 | v1.0

simpleParameter

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

Description: lower\_lip\_morphology

Options: As expected, Not as expected,

---

# Contact righting IMPC\_CSD\_077\_001 | v1.0

simpleParameter

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

Description: contact\_righting

Options: Present, Absent, No data,

---

# Vocalization IMPC\_CSD\_078\_001 | v1.0

simpleParameter

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

Description: vocalization

Options: As expected, Not as expected,

---



## Aggression IMPC\_CSD\_079\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: aggression

Options: As expected, Excessive aggression,

---

## Head bobbing IMPC\_CSD\_080\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Description: head\_bobbing

Options: Present, Absent,

---

## Experimenter ID IMPC\_CSD\_081\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

---

## Location of test IMPC\_CSD\_082\_001 | v1.1

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** location\_of\_test

**Options:** Open bench, LAF cabinet,

---

## Number of animals in cage IMPC\_CSD\_083\_001 | v1.2

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** number\_of\_animals

---

## Number of days since cage changed IMPC\_CSD\_084\_001 | v1.1

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

---

## Images IMPC\_CSD\_085\_001 | v1.1

seriesMediaParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

---

# Size of squares in arena IMPC\_CSD\_086\_001 | v1.0

procedureMetadata

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

Unit Measured: cm^2

---

# Comments (in English) IMPC\_CSD\_087\_001 | v1.2

simpleParameter

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

Description: General comments, in English

---

# Forepaw - size IMPC\_CSD\_040\_002 | v2.0

simpleParameter

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

Description: forepaw\_size

Options: As expected, One forepaw - decreased, Both forepaws - increased,  
Both forepaws - decreased, One forepaw - increased,

---

# Hindpaw - size IMPC\_CSD\_041\_002 | v2.0

simpleParameter

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

Description: hindpaw\_size

Options: As expected, One hindpaw - increased, One hindpaw - decreased,  
Both hindpaws - increased, Both hindpaws - decreased,

---

# Forepaw - shape IMPC\_CSD\_042\_002 | v2.0

simpleParameter

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

Description: forepaw\_shape

Options: As expected, One forepaw - not as expected, Both forepaws - not as expected,

---

# Hindpaw - shape IMPC\_CSD\_043\_002 | v2.0

simpleParameter

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

Description: hindpaw\_shape

Options: As expected, One hindpaw - not as expected, Both hindpaws - not as expected,

---

## Forelimb digit - number IMPC\_CSD\_044\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_digit\_number

**Options:** As expected, One forelimb - increased number, One forelimb - decreased number, Both forelimbs - increased number, Both forelimbs - decreased number,

---

## Hindlimb digit - number IMPC\_CSD\_045\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_digit\_number

**Options:** As expected, One hindlimb - increased number, One hindlimb - decreased number, Both hindlimbs - increased number, Both hindlimbs - decreased number,

---

## Forelimb digit - shape IMPC\_CSD\_048\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_digit\_shape

**Options:** As expected, One forelimb - not as expected, Both forelimbs - not as expected,

---

## Hindlimb digit - shape IMPC\_CSD\_049\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_digit\_shape

**Options:** As expected, One hindlimb - not as expected, Both hindlimbs - not as expected,

---

## Forelimb nail - number IMPC\_CSD\_050\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_nail\_number

**Options:** As expected, One forelimb - increased number, One forelimb - decreased number, Both forelimbs - increased number, Both forelimbs - decreased number, No data,

---

## Hindlimb nail - number IMPC\_CSD\_051\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_nail\_number

**Options:** As expected, One hindlimb - increased number, One hindlimb - decreased number, Both hindlimbs - increased number, Both hindlimbs - decreased number, No data,

---

## Hindlimb nail - length IMPC\_CSD\_053\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_nail\_length

**Options:** As expected, One hindlimb - increased length, One hindlimb - decreased length, Both hindlimbs - increased length, Both hindlimbs - decreased length, No data,

---

## Forelimb nail - length IMPC\_CSD\_052\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_nail\_length

**Options:** As expected, One forelimb - increased length, One forelimb - decreased length, Both forelimbs - increased length, Both forelimbs - decreased length, No data,

---

## Forelimb nail - shape IMPC\_CSD\_054\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** forelimb\_nail\_shape

**Options:** As expected, One forelimb - not as expected, Both forelimbs - not as expected,  
No data,

---

## Hindlimb nail - shape IMPC\_CSD\_055\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Description:** hindlimb\_nail\_shape

**Options:** As expected, One hindlimb - not as expected, Both hindlimbs - not as expected,  
No data,

---