

# Combined SHIRPA and Dysmorphology IMP

## C\_CSD\_003

### 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. 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.
10. 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.
11. 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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

**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

**Options:** Absent, As expected,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: As expected, Not as expected,

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** No data, 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

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Absent, Present, No data,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** As expected, Excessive aggression,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true



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

---

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Unit Measured:** Squares crossed

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Not as expected, As expected,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Present, Absent,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Present, Absent,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: As expected, Not as expected,

---

## Coat - hair texture / appearance - abdomen IMPC\_CSD\_016\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** Absent, Present,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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



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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** No data, 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

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

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

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

---

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

simpleParameter

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

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

---

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

seriesMediaParameter

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

---

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

simpleParameter

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

Options: Not as expected, As expected,

---

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

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: cm<sup>2</sup>

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Not as expected, As expected,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Present, No data, Absent,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

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

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

---

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

simpleParameter

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

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

---

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

procedureMetadata

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: As expected, Not as expected,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

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

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

---

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

simpleParameter

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

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

---

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

simpleParameter

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

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: Immediate movement, As expected, Extended freeze,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: As expected, Not as expected,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter



**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Options:** None, Present, No data,

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**Teeth presence** IMPC\_CSD\_068\_001 | v1.0  
simpleParameter

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

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

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