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 10cm² 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

Tail - presence IMPC_CSD_001_001 | v1.1

simpleParameter

Description: tail_presence

Options: Absent, Present,

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**Tail - length** IMPC_CSD_002_001 | v1.1

`simpleParameter`


Description: tail_length

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

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**Tail - thickness** IMPC_CSD_003_001 | v1.1

`simpleParameter`


Description: tail_thickness

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

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**Tail - morphology** IMPC_CSD_004_001 | v1.1

`simpleParameter`

**Description:** tail_morphology

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

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**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,

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**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

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

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**Coat - color pattern - head** IMPC_CSD_009_001 | v1.0

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

---

**Coat - color pattern - abdomen** IMPC_CSD_010_001 | v1.0

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

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**Coat - hair distribution - abdomen**  
IMPC_CSD_013_001 | v1.0

**simpleParameter**
Description: coat_hair_distribution_abdomen
Options: As expected, Not as expected,

Coat - hair texture / appearance - back IMPC_CSD_014_001 | v1.0
simpleParameter

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

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**

<table>
<thead>
<tr>
<th>Description: coat_hair_texture_appearance_abdomen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options: As expected, Not as expected, No data,</td>
</tr>
</tbody>
</table>

**Forelimbs - position** IMPC_CSD_017_001 | v1.0

<table>
<thead>
<tr>
<th>Description: forelimbs_position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options: As expected, One forelimb only - not as expected, Both forelimbs - not as expected,</td>
</tr>
</tbody>
</table>

**Forelimbs - shape** IMPC_CSD_018_001 | v1.0

<table>
<thead>
<tr>
<th>Description: forelimbs_shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options: As expected, One forelimb only - not as expected, Both forelimbs - not as expected,</td>
</tr>
</tbody>
</table>
**Forelimbs - size** IMPC_CSD_019_001 | v1.0

```
<table>
<thead>
<tr>
<th>Description: forelimbs_size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options:</td>
</tr>
<tr>
<td>As expected, One forelimb only - increased, One forelimb only - decreased, Both forelimbs - increased, Both forelimbs - decreased,</td>
</tr>
</tbody>
</table>
```

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**Hindlimbs - position** IMPC_CSD_020_001 | v1.1

```
<table>
<thead>
<tr>
<th>Description: hindlimbs_position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options:</td>
</tr>
<tr>
<td>As expected, One hindlimb only - not as expected, Both hindlimbs - not as expected,</td>
</tr>
</tbody>
</table>
```

---

**Hindlimbs - shape** IMPC_CSD_021_001 | v1.1

```
<table>
<thead>
<tr>
<th>Description: hindlimbs_shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options:</td>
</tr>
<tr>
<td>As expected, One hindlimb only - not as expected, Both hindlimbs - not as expected,</td>
</tr>
</tbody>
</table>
```
Hindlimbs - size IMPC_CSD_022_001 | v1.1
simpleParameter


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


Description: vibrissae_presence

Options: As expected, Not as expected,

Vibrissae - appearance IMPC_CSD_024_001 | v1.0
simpleParameter


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

---

**Head size** IMPC_CSD_025_001 | v1.0

simpleParameter


Description: head_size

Options: As expected, Increased, Decreased,

---

**Head morphology** IMPC_CSD_026_001 | v1.0

simpleParameter


Description: head_morphology

Options: As expected, Not as expected,

---

**Ears** IMPC_CSD_027_001 | v1.0

simpleParameter


Description: ears
Options: As expected, Not as expected,

---

**Snout size** IMPC_CSD_028_001 | v1.0

simpleParameter


Description: snout_size

Options: As expected, Increased, Decreased,

---

**Activity (body position)** IMPC_CSD_029_001 | v1.0

simpleParameter


Description: activity_body_position

Options: As expected, Increased activity, Inactive,

---

**Tremor** IMPC_CSD_030_001 | v1.0

simpleParameter

Description: tremor
Options: Absent, Present,

Transfer arousal IMPC_CSD_031_001 | v1.2

Description: transfer_arousal
Options: As expected, Immediate movement, Extended freeze,

Locomotor activity IMPC_CSD_032_001 | v1.2

Unit Measured: Squares crossed
Description: locomotor_activity

Gait IMPC_CSD_033_001 | v1.0

Description: trevor
Description: gait

Options: Fluid movement, Lack of fluidity in movement,

---

**Tail elevation**  IMPC_CSD_034_001  | v1.2

simpleParameter


Description: tail_elevation

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

---

**Startle response**  IMPC_CSD_036_001  | v1.1

simpleParameter


Description: startle_response

Options: None, Present, No data,

---

**Unexpected behaviors**  IMPC_CSD_037_001  | v1.0

simpleParameter

Description: unexpected Behaviors

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

Trunk curl IMPC_CSD_038_001 | v1.0

Description: trunk curl

Options: Absent, Present, No data,

Limb grasp IMPC_CSD_039_001 | v1.0

Description: limb grasp

Options: Absent, Present, No data,

Forelimb digit - size IMPC_CSD_046_001 | v1.1
**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**

**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**

**Description:** skin_color_whole_body

**Options:** As expected, Not as expected,
Skin color - snout  IMPC_CSD_057_001  | v1.0

simpleParameter


Description: skin_color_snout

Options: As expected, Not as expected,

Skin color - ear  IMPC_CSD_058_001  | v1.0

simpleParameter


Description: skin_color_ear

Options: As expected, Not as expected,

Skin color - front paws  IMPC_CSD_059_001  | v1.0

simpleParameter


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


Description: skin_texture_snout

Options: As expected, Not as expected,

Skin texture - ear IMPC_CSD_064_001 | v1.0


Description: skin_texture_ear

Options: As expected, Not as expected,

Skin texture - front paws IMPC_CSD_065_001 | v1.0


Description: skin_texture_front_paws

Options: As expected, Not as expected,
Skin texture - back paws  IMPC_CSD_066_001  | v1.0

simpleParameter


Description: skin_texture_back_paws

Options: As expected, Not as expected,

Skin texture - tail  IMPC_CSD_067_001  | v1.0

simpleParameter


Description: skin_texture_tail

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

Teeth presence  IMPC_CSD_068_001  | v1.0

simpleParameter


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


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**Location of test** IMPC_CSD_082_001 | v1.1

procedureMetadata


Description: location_of_test

Options: Open bench, LAF cabinet,

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**Number of animals in cage** IMPC_CSD_083_001 | v1.2

procedureMetadata


Description: number_of_animals

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**Number of days since cage changed** IMPC_CSD_084_001 | v1.1
procedureMetadata

Images IMPC_CSD_085_001 | v1.1

seriesMediaParameter

procedureMetadata

Size of squares in arena IMPC_CSD_086_001 | v1.0

procedureMetadata

Unit Measured: cm^2

simpleParameter

Comments (in English) IMPC_CSD_087_001 | v1.2

Description: General comments, in English
Forepaw - size  IMPC_CSD_040_002 | v2.0

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

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

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,

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**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


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


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

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

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

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,

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**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,