

# Combined SHIRPA and Dysmorphology BC

## MIP\_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 26
- **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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

**Lower teeth appearance** BCMIP\_CSD\_070\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

**Transfer arousal** BCMIP\_CSD\_031\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

**Options:** Absent, Present,

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

**Skin color - back paws** BCMIP\_CSD\_060\_001 | v1.0  
simpleParameter

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

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

---

**Skin texture - whole body** BCMIP\_CSD\_062\_001 | v1.0  
simpleParameter

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

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

---

**Location of test** BCMIP\_CSD\_082\_001 | v1.1  
procedureMetadata

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

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

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

procedureMetadata

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

Unit Measured: cm^2

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

simpleParameter

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

Unit Measured: Squares crossed

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

simpleParameter

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

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

---

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

simpleParameter

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

Options: Not as expected, As expected,

-----

**Experimenter ID** BCMIP\_CSD\_081\_001 | v1.0

procedureMetadata

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

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**Hindlimbs - shape** BCMIP\_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,

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**Images** BCMIP\_CSD\_085\_001 | v1.1

seriesMediaParameter

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Not as expected, As expected,

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

## Coat - hair distribution - abdomen BCMIP\_CSD\_013\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Not as expected, As expected,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** Present, Absent,

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Options:** Present, Absent,

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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



---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

**Comments (in English)** BCMIP\_CSD\_087\_001 | v1.2

simpleParameter

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

---

**Forelimbs - size** BCMIP\_CSD\_019\_001 | v1.0

simpleParameter

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

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

---

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

simpleParameter

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

Options: Not as expected, As expected,

---

**Number of days since cage changed** BCMIP\_CSD\_084\_001 | v1.1

procedureMetadata

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

## Forelimbs - shape BCMIP\_CSD\_018\_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,

---

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

simpleParameter

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

Options: As expected, Decreased, Increased,

---

**Hindlimb digit - shape** BCMIP\_CSD\_049\_002 | v2.0

simpleParameter

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

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

---

**Coat - color pattern - head** BCMIP\_CSD\_009\_001 | v1.0

simpleParameter

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

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

---

**Forepaw - shape** BCMIP\_CSD\_042\_002 | v2.0

simpleParameter

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

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

---

**Unexpected behaviors** BCMIP\_CSD\_037\_001 | v1.0

simpleParameter

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

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

---

**Coat - color pattern - abdomen** BCMIP\_CSD\_010\_001 | v1.0

simpleParameter

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

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

---

**Trunk curl** BCMIP\_CSD\_038\_001 | v1.0

simpleParameter

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

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

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

Options: As expected, Not as expected,

---

**Genitalia - presence** BCMIP\_CSD\_071\_001 | v1.1

simpleParameter

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

Options: As expected, Absent,

---

**Lower lip morphology** BCMIP\_CSD\_076\_001 | v1.0

simpleParameter

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

Options: As expected, Not as expected,

---

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

simpleParameter

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

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

---

**Startle response** BCMIP\_CSD\_036\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

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

---

**Upper lip morphology** BCMIP\_CSD\_075\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

**Teeth presence** BCMIP\_CSD\_068\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---



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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: As expected, Not as expected,

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

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

---

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

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Options: Inactive, Increased activity, As expected,

---

**Coat - hair distribution - head** BCMIP\_CSD\_012\_001 | v1.0

simpleParameter

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

Options: As expected, Not as expected,

---

**Coat - hair texture / appearance - abdomen** BCMIP\_CSD\_016\_001  
| v1.0

simpleParameter

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

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

---

**Head size** BCMIP\_CSD\_025\_001 | v1.0

simpleParameter

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

Options: Decreased, As expected, Increased,

---

**Coat - color - abdomen** BCMIP\_CSD\_007\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

## **Ears** BCMIP\_CSD\_027\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

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

---

**Aggression** BCMIP\_CSD\_079\_001 | v1.0

simpleParameter

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

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

---