Light-Dark Test IMPC_LDT_001

Purpose

To monitor the anxiety-related behaviour of mice in a two-chambered light-dark arena over a defined period of time in order to assess the anxiety phenotype.

Experimental Design

- **Minimum number of animals**: 7M + 7F
- **Age at test**: Week 10
- **Sex**: We would expect the results of this test to show sexual dimorphism

Procedure

1. Light levels are set so that the light intensity within the light arena is between 100 – 200 lux and the dark arena is at 4-7 lux. Light metering is performed at the start of each test day.

2. The method of recording is set up with each arena defined. The light arena is approximately one third to half of entire chamber.

3. One mouse is placed in each light arena and recording is started.

4. A minimum of 5 minute should be recorded up to a maximum of 20 minutes.

5. At the end of the trial, the mice are removed from the arena and returned to their home cages.

6. The chambers are cleaned with disinfectant between mice to decontaminate and remove scent cues from previously tested mice.

7. Analysis of the recording is done to measure the activity of each mouse in each of the two zones and the number of transitions between zones.

Notes

Local data processing may be implemented to calculate derived measures from this data.

Data QC

Local QC data to assure all data fields have recorded data. In the case all data fields have a value of 0 that particular mouse data will be removed.
1. Verify the total time of each run

Parameters and Metadata

**Latency to first transition into dark** IMPC_LDT_006_001 | v1.0

simpleParameter

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

**Unit Measured:** s

**Description:** latency_to_first_transition_into_dark

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**Percent time in dark** IMPC_LDT_007_001 | v1.0

simpleParameter

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

**Unit Measured:** %

**Description:** percent_time_in_dark

**Derivation:**

\[\text{mul}(\text{div}(...), 100)\]

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**Percent time in light** IMPC_LDT_008_001 | v1.0

simpleParameter
Unit Measured: %

Description: percent_time_in_light

Derivation:
\[
\text{mul}\left(\frac{\text{div}\left(\text{sub}\left(\text{sumOfIncrements('IMPC_LDT_002_001',1)}, 'IMPC_LDT_006_001'\right), \text{add}\left(\text{sumOfIncrements('IMPC_LDT_004_001',1)}, \text{sub}\left(\text{sumOfIncrements('IMPC_LDT_002_001',1)}, 'IMPC_LDT_006_001'\right)\right), 100\right)\right)
\]

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**Transition** IMPC_LDT_009_001 | v1.1

simpleParameter

Description: transition

Options: No, Yes,

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**Light level light chamber** IMPC_LDT_016_001 | v1.0

procedureMetadata

Unit Measured: Lux

Description: light_level_light_chamber

Options: 100 - 200, 275 Lux,
**Light level dark chamber**  IMPC_LDT_017_001 | v1.0

**procedureMetadata**

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

**Unit Measured:** Lux

**Description:** light_level_dark_chamber

**Options:** 4 - 7,

**Experimenter ID**  IMPC_LDT_018_001 | v1.0

**procedureMetadata**

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

**Description:** experimenter_id

**Start time**  IMPC_LDT_019_001 | v1.0

**procedureMetadata**

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

**Description:** start_time
**Arena ID**  IMPC_LDT_020_001 | v1.0

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

**Description:** arena_id

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**Arena version**  IMPC_LDT_021_001 | v1.0

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

**Description:** arena_version

**Options:** Custom made, MED-OFAS-RSU,

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**Equipment ID**  IMPC_LDT_022_001 | v1.0

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

**Description:** equipment_id

**Options:** Light-Dark Insert, Custom made, Dark Box Insert ENV-516,
### Equipment manufacturer

**IMPC_LDT_023_001 | v1.0**

**Description:** equipment_manufacturer

**Options:** Accuscan, Custom made, Med Association Inc., Med Associates,

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### Equipment model

**IMPC_LDT_024_001 | v1.0**

**Description:** equipment_model

**Options:** Versamax, Custom made, Activity Test Chamber ENV-515,

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### Disinfectant

**IMPC_LDT_025_001 | v1.0**

**Description:** disinfectant

**Options:** Alcohol, Pursept-A, 50% alcohol, 1% Virkon solution, 10% Nolvasan Solution, 70% ethanol, Clidox, 70% Isopropanol, Distel 2%, 50% Ethanol,
Starting position  
**IMPC_LDT_026_001 | v1.0**

**Description:** starting_position

**Options:** Facing away from entry, Facing towards entry,

Light-Dark box's walls opaque  
**IMPC_LDT_027_001 | v1.0**

**Description:** light_dark_box_s_walls_opaque

**Options:** Yes, No,

Light-Dark box set-up  
**IMPC_LDT_028_001 | v1.0**

**Description:** light_dark_box_set_up

**Options:** Cabinet enclosure, Standalone,
Light side arena dimensions (L x W x H, in mm) IMPC_LDT_02
9_001 | v1.0

**procedureMetadata**

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

**Description:** light_side_arena_dimensions_l_x_w_x_h_in_mm

**Options:** 180 x 207 x 140, 431.8 x 212.725 x 203.2, 433 x 215 x 305, 250 x 190 x 250,

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Dark side arena dimensions (L x W x H, in mm) IMPC_LDT_030_001 | v1.0

**procedureMetadata**

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

**Description:** dark_side_arena_dimensions_l_x_w_x_h_in_mm

**Options:** 180 x 207 x 140, 431.8 x 212.725 x 203.2, 425 x 210 x 305, 150 x 190 x 250,

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Entry way dimensions (L x W x H, in mm) IMPC_LDT_031_001 | v1.0

**procedureMetadata**

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

**Description:** entry_way_dimensions_l_x_w_x_h_in_mm

**Options:**
Description: entry_way_dimensions_l_x_w_x_h_in_mm

Options: 5 x 100 x 40, 101.6 x 3.175 x 101.6, 90 x 3 x 115, 5 x 100 x 50,

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**Side changes** IMPC_LDT_001_001 | v1.0

seriesParameter

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

Unit Measured: count

Increments: 10, 5, 20, 15,

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**Light side time spent** IMPC_LDT_002_001 | v1.0

seriesParameter

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

Unit Measured: s

Increments: 20, 15, 5, 10,

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**Time mobile light side** IMPC_LDT_003_001 | v1.0

seriesParameter

- Req. Analysis: false
- Req. Upload: true
- Is Annotated: true
**Dark side time spent** IMPC_LDT_004_001 | v1.0

*seriesParameter*

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

Unit Measured: s

Increments: 15, 10, 5, 20,

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**Time mobile dark side** IMPC_LDT_005_001 | v1.0

*seriesParameter*

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

Unit Measured: s

Increments: 5, 10, 15, 20,

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**Light side distance travelled** IMPC_LDT_010_001 | v1.0

*seriesParameter*

**Req. Analysis:** false  **Req. Upload:** false  **Is Annotated:** false
Unit Measured: cm
Increments: 5, 20, 10, 15,

Dark side distance travelled IMPC_LDT_011_001 | v1.0
seriesParameter


Unit Measured: cm
Increments: 5, 20, 15, 10,

Vertical activity (rearing) IMPC_LDT_012_001 | v1.0
seriesParameter


Unit Measured: count
Increments: 5, 10, 15, 20,

Horizontal activity IMPC_LDT_013_001 | v1.0
seriesParameter
### Repetitive beam break ('stereotypy counts')

**Unit Measured:** count  
**Increments:** 5, 20, 15, 10,

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### Total distance travelled

**Unit Measured:** cm  
**Increments:** 20, 15, 5, 10,
**Time spent in the light side in the first 5 minutes** IMPC_LDT_0

32_001 | v1.0

*simpleParameter*

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

**Derivation:**

```
ifElse('IMPC_LDT_006_001' < 300, sub(incrementValue('IMPC_LDT_002_001', 1), 'IMPC_LDT_006_001'), 300)
```

**Test duration** IMPC_LDT_033_001 | v1.0

*procedureMetadata*

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

Unit Measured: min

Options: 20, 5, 10, 15,

**Software version** IMPC_LDT_034_001 | v1.0

*procedureMetadata*

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

Options: Activity Monitor V7.0.5.10, Activity Monitor V6.02, Versamap Version 1.7,