Light-Dark Test IMPC_LDT_001

Purpose

To monitor the anxiety-related behavior 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

Unit Measured: s

Description: latency_to_first_transition_into_dark

Percent time in dark IMPC_LDT_007_001 | v1.0

simpleParameter

Unit Measured: %

Description: percent_time_in_dark

Derivation:
mul(div(sumOfIncrements('IMPC_LDT_004_001',1), add(sumOfIncrements ('IMPC_LDT_004_001',1), sub(sumOfIncrements('IMPC_LDT_002_001',1), 'IMPC_LDT_006_001'))), 100)

Percent time in light IMPC_LDT_008_001 | v1.0

simpleParameter
Unit Measured: %

Description: percent_time_in_light

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

Transition IMPC_LDT_009_001 | v1.1

Description: transition

Options: No, Yes

Light level light chamber IMPC_LDT_016_001 | v1.0

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

---

**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

---

**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

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

**Description**: equipment_manufacturer

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

---

Equipment model
IMPC_LDT_024_001 | v1.0

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

**Description**: equipment_model

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

---

Disinfectant
IMPC_LDT_025_001 | v1.0

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

**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,

**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,

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

---

**Side changes** IMPC_LDT_001_001 | v1.0

**seriesParameter**

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

**Unit Measured:** count

**Increments:** 5, 20, 15, 10,

---

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

**seriesParameter**

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

**Unit Measured:** s

**Increments:** 10, 15, 5, 20,

---

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

**seriesParameter**

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

-----

Dark side time spent IMPC_LDT_004_001 | v1.0
seriesParameter


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

-----

Time mobile dark side IMPC_LDT_005_001 | v1.0
seriesParameter


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

-----

Light side distance travelled IMPC_LDT_010_001 | v1.0
seriesParameter

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

Dark side distance travelled IMPC_LDT_011_001 | v1.0
seriesParameter

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

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

Vertical activity (rearing) IMPC_LDT_012_001 | v1.0
seriesParameter

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

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

Horizontal activity IMPC_LDT_013_001 | v1.0
seriesParameter
Repetitive beam break ('stereotypy counts') IMPC_LDT_014_001
| v1.0

seriesParameter

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

Total distance travelled IMPC_LDT_015_001 | v1.0

seriesParameter

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

32_001 | v1.0

**simpleParameter**

**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**

**Unit Measured:** min

**Options:** 5, 20, 10, 15,

**Software version** IMPC_LDT_034_001 | v1.0

**procedureMetadata**

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