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

**Side changes** IMPC_LDT_001_001 | v1.0

*seriesParameter*

- **Req. Analysis:** false
- **Req. Upload:** true
- **Is Annotated:** true
- **Unit Measured:** count
- **Description:** side_changes
- **Increments:** 5, 10, 15, 20,

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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
- **Description:** light_side_time_spent
- **Increments:** 5, 10, 15, 20,

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

*seriesParameter*

- **Req. Analysis:** false
- **Req. Upload:** true
- **Is Annotated:** true
- **Unit Measured:** s
- **Description:** time_mobile_light_side
**Dark side time spent**  IMPC_LDT_004_001  | v1.0

- **Series Parameter**
- **Req. Analysis:** false  **Req. Upload:** true  **Is Annotated:** true
- **Unit Measured:** s
- **Description:** dark_side_time_spent
- **Increments:** 5, 10, 15, 20,

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

- **Series Parameter**
- **Req. Analysis:** false  **Req. Upload:** false  **Is Annotated:** true
- **Unit Measured:** s
- **Description:** time_mobile_dark_side
- **Increments:** 5, 10, 15, 20,

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

- **Simple Parameter**
- **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*


Unit Measured: %

Description: percent_time_in黑暗

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

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

*simpleParameter*


Unit Measured: %

Description: percent_time_in_light

Derivation:
\[ \text{mul} \left( \frac{\text{div} \left( \text{sub} \left( \text{sumOfIncrements('IMPC_LDT_002_001', 1),} 'IMPC_LDT_006_001' \right),} \text{add} \left( \text{sumOfIncrements('IMPC_LDT_004_001', 1),} \text{sub} \left( \text{sumOfIncrements('IMPC_LDT_002_001', 1),} 'IMPC_LDT_006_001' \right) \right) \right) \right) \times 100 \]
**Transition**  IMPC_LDT_009_001 | v1.1

*simpleParameter*


Description: transition

Options: No, Yes,

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

*seriesParameter*


Unit Measured: cm

Description: light_side_distance_travelled

Increments: 5, 10, 15, 20,

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**Dark side distance travelled**  IMPC_LDT_011_001 | v1.0

*seriesParameter*


Unit Measured: cm

Description: dark_side_distance_travelled

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

Description: vertical_activity_rearing

Increments: 5, 10, 15, 20,

**Horizontal activity**  IMPC_LDT_013_001  | v1.0

*seriesParameter*

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

Unit Measured: count

Description: horizontal_activity

Increments: 5, 10, 15, 20,

**Repetitive beam break ('stereotypy counts')**  IMPC_LDT_014_0

01  | v1.0

*seriesParameter*

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

Unit Measured: count
**Total distance travelled**  IMPC_LDT_015_001 | v1.0
seriesParameter

**Description**: repetitive_beam_break_stereotypy_counts

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

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

**Description**: total_distance_travelled

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

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**Light level dark chamber**  IMPC_LDT_017_001 | v1.0
procedureMetadata

**Unit Measured**: Lux

**Description**: light_level_light_chamber

**Options**: 100 - 200, 275 Lux,
Unit Measured: Lux

Description: light_level_dark_chamber

Options: 4 - 7,

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**Experimenter ID** IMPC_LDT_018_001 | v1.0

Description: experimenter_id

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**Start time** IMPC_LDT_019_001 | v1.0

Description: start_time

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**Arena ID** IMPC_LDT_020_001 | v1.0

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

procedureMetadata

**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

**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,

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**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

*procedureMetadata*

Required Analysis: false  
Required Upload: true  
Is Annotated: false

Description: light_dark_box_s_walls_opaque

Options: Yes, No,

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

*procedureMetadata*

Required Analysis: false  
Required Upload: true  
Is Annotated: false

Description: light_dark_box_set_up

Options: Cabinet enclosure, Standalone,

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**Light side arena dimensions (L x W x H, in mm)**  
IMPC_LDT_029_001 | v1.0

*procedureMetadata*

Required Analysis: false  
Required 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

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

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,

Time spent in the light side in the first 5 minutes IMPC_LDT_032_001 | v1.0

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

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procedureMetadata


Unit Measured: min

Options: 5, 20, 10, 15,
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**Software version**  IMPC_LDT_034_001 | v1.0

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procedureMetadata


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