

# Open Field HMGULA\_OFD\_001

## Purpose

The Open Field test is used to assess anxiety and exploratory behaviors. It is based on the natural tendency of an animal to explore and to protect itself using avoidance which translates to a normal animal spending more time in the periphery of the Open Field arena than in the center (the most anxiogenic area).

## Experimental Design

- **Minimum number of animals** : 7M + 7F
- **Age at test**: Week 70
- **Sex**: We would expect the results of this test to show sexual dimorphism

## Procedure

1. Animals are transported to the testing room (or ideally an antechamber) and left undisturbed for 30 minutes before the test.
2. Ensure that lighting conditions are as desired (150-200 lux) and that all equipment is working correctly:
  1. If using a beam break system, ensure that beams are not interrupted before putting the mouse and if measuring vertical activity (rears), check that height of the infrared frame for rears is correctly set.
  2. If using a videotracking system, set detection parameters appropriate for the coat color of the mice.
  3. For analysis, each openfield arena is divided into a peripheral zone measuring 8 cm from the edge of the arena walls, and a central zone around 40% of the total surface of the arena.
3. Testing is conducted during the light phase of the cycle with 1 hour gap from the light/dark change. Testing should be conducted during the same period of day.
4. Wipe the apparatus clean and allow time for it to dry
5. Each mouse is placed in the middle of a peripheral zone of the arena facing the wall and allowed to explore freely the apparatus, with the experimenter out of the animal's sight.

*If more than one mouse can be tested in parallel, in adjacent open field arenas and mice are video-tracked, it is important to ensure that the tracking of each mouse starts as soon as the mouse is released to make data comparable.*

*Males and females must be run in separate tests; ideally males are tested first, then followed by females*

6. At the end of the 20 min run, animals are labeled (if necessary) and put back into their home cage.
7. After each run, any feces are removed and the arena is thoroughly wiped.
8. Analysis of the recording is done to measure the activity of each mouse in each of the zones per 5 minute bins.

## Notes

1. Please ensure that the mice are not handled prior to the test, except handling for cage change.
2. Ear clipping should be done after the test if necessary .

## Data QC

1. Verify total time of run.
2. Coherence between latency, number of entries and time in the center; e.g. it is not possible to have zero entries and have spent some time spent in the center.

## Parameters and Metadata

### Whole arena resting time series HMGULA\_OFD\_001\_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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### Whole arena average speed series HMGULA\_OFD\_002\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm/s

Increments: 5, 10, 15, 20,

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## Periphery distance travelled series HMGULA\_OFD\_003\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm

Increments: 5, 10, 15, 20,

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## Periphery resting time series HMGULA\_OFD\_004\_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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## Distance travelled HMGULA\_OFD\_005\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm

Increments: 5, 10, 15, 20,

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## Number of Rears HMGULA\_OFD\_006\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Increments: 5, 10, 15, 20,

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## Whole arena resting time HMGULA\_OFD\_007\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Whole arena permanence HMGULA\_OFD\_008\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

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## Whole arena average speed HMGULA\_OFD\_009\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm/s

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## Periphery distance travelled HMGULA\_OFD\_010\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm

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## Periphery resting time HMGULA\_OFD\_011\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Periphery permanence time HMGULA\_OFD\_012\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Periphery average speed HMGULA\_OFD\_013\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm/s

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## Center distance travelled HMGULA\_OFD\_014\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm

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## Center resting time HMGULA\_OFD\_015\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Center permanence time HMGULA\_OFD\_016\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Center average speed HMGULA\_OFD\_017\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm/s

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## Latency to center entry HMGULA\_OFD\_018\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Number of center entries HMGULA\_OFD\_019\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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## Distance travelled - total HMGULA\_OFD\_020\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm

Derivation: sumOfIncrements('HMGULA\_OFD\_005\_001', 4)

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## Number of rears - total HMGULA\_OFD\_021\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Derivation: sumOfIncrements('HMGULA\_OFD\_006\_001', 4)

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## Percentage center time HMGULA\_OFD\_022\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Unit Measured:** %

**Derivation:** mul(div('HMGULA\_OFD\_016\_001', 'HMGULA\_OFD\_008\_001'), 100)

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## **Equipment ID** HMGULA\_OFD\_023\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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## **Equipment manufacturer** HMGULA\_OFD\_024\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** TSE Systems, MED Associates Inc, San Diego, O'hara CO Ltd., Panlab, Noldus, Accuscan, Columbus Instruments, Biobserve, Omnitech,

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## **Equipment model** HMGULA\_OFD\_025\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** ActiMot / MoTil, MED-OFA-RS, 2325-0248, TijmeOF9, LE8822, Unknown, ActiMot / MoTil 480 x 480 mm, VMX 1.4b, Opto-Varimex 4, SuperFlex Fusion,

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## Central zone surface area HMGULA\_OFD\_026\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: % of total area

Options: 39, 40, 41, 42,

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## Light intensity in the centre of the arena HMGULA\_OFD\_027\_001

| v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: Lux

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## Number of animals per cage HMGULA\_OFD\_028\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Color of arena HMGULA\_OFD\_029\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: Black, Transparent, White, Grey,

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## Height of the wall HMGULA\_OFD\_030\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: cm

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## Distance from light source: if direct illumination HMGULA\_OF

D\_031\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: cm

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## Periphery zone HMGULA\_OFD\_032\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

**Unit Measured:** cm

**Options:** 8, 7.6, 7.35, 9.39, 7.5, 7.9,

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## **Type of analysis** HMGULA\_OFD\_033\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** Wide beam break, Video tracking,

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## **Arena Size** HMGULA\_OFD\_034\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Options:** 45x45, 43.2x43.2, 40.5x40.5, 40x40, 44x44, 42x42, 44.5x44.5, 50x50,

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## **Experimenter ID** HMGULA\_OFD\_035\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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## Disinfectant HMGULA\_OFD\_036\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Start Time HMGULA\_OFD\_037\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Arena ID HMGULA\_OFD\_038\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Software Version HMGULA\_OFD\_039\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

**Options:** 06.15 / 07.01, Topscan Lite, Image OF, Actitrack system, Ethovision XT v8.5, Versamax 4.2, TSE ActiMot Vers. 08.00, Activity Monitor V6.02, Opto-Varimex 4 AutoTrack System 4.97, TimeOFCR4, Fusion v6.3, Ethovision XT v15, TSE ActiMot Vers. 08.10, TSE ActiMot Vers. 08.12, TSE ActiMot Vers. 08.10 (reconfigured),

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## **Arena Material** HMGULA\_OFD\_040\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## **Date equipment last calibrated** HMGULA\_OFD\_041\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## **Periphery permanence time series** HMGULA\_OFD\_042\_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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## **Periphery average speed series** HMGULA\_OFD\_043\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Unit Measured:** cm/s

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

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## **Center distance travelled series** HMGULA\_OFD\_044\_001 | v1.0

seriesParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Unit Measured:** cm

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

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## **Center resting time series** HMGULA\_OFD\_045\_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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## **Center permanence time series** HMGULA\_OFD\_046\_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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## Center average speed series HMGULA\_OFD\_047\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm/s

Increments: 5, 10, 15, 20,

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## Number of center entries series HMGULA\_OFD\_048\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Increments: 5, 10, 15, 20,

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## Light beam barrier height (Z axis) HMGULA\_OFD\_049\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: false

Is Annotated: false

**Unit Measured:** cm

**Description:** height of the Z axis light beam used to determine when mouse is rearing

**Options:** 8.6, 6.8, 8.0, 7.5,

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## Percentage center movement time HMGULA\_OFD\_050\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Unit Measured:** %

**Description:** percentage\_center\_movement\_time

**Derivation:**

$\text{mul}(\text{div}(\text{sub}(\text{'HMGULA\_OFD\_016\_001'}, \text{'HMGULA\_OFD\_015\_001'}), \text{'HMGULA\_OFD\_008\_001'}), 100)$

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## Resting definition threshold HMGULA\_OFD\_051\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** Parameter measuring how the equipment defines a 'resting' animal

**Options:** Stationary for > 1 second, Stationary for any time, Within grid for > 2 seconds,

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# Rearing definition threshold HMGULA\_OFD\_052\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** Parameter measuring how the equipment defines a 'rearing' animal

**Options:** No threshold, 1 second,

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