

# Open Field NINGLA\_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 52
- **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

### Periphery zone NINGLA\_OFD\_032\_001 | v1.2

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: cm

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

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### Arena Size NINGLA\_OFD\_034\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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

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## Whole arena average speed series NINGLA\_OFD\_002\_001 | v1.2

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm/s

Increments: 15, 10, 5, 20,

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## Equipment model NINGLA\_OFD\_025\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

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

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## Light beam barrier height (Z axis) NINGLA\_OFD\_049\_001 | v1.1

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: 6.8, 8.6, 8.0, 7.5,

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## Height of the wall

NINGLA\_OFD\_030\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: cm

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## Experimenter ID

NINGLA\_OFD\_035\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Central zone surface area

NINGLA\_OFD\_026\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: % of total area

Options: 41, 39, 42, 40,

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## Disinfectant

NINGLA\_OFD\_036\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Periphery average speed NINGLA\_OFD\_013\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm/s

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## Distance travelled NINGLA\_OFD\_005\_001 | v1.2

seriesParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm

Increments: 10, 20, 5, 15,

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## Distance travelled - total NINGLA\_OFD\_020\_001 | v1.2

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Unit Measured:** cm

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

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**Equipment manufacturer** NINGLA\_OFD\_024\_001 | v1.1

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

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

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**Number of animals per cage** NINGLA\_OFD\_028\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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**Type of analysis** NINGLA\_OFD\_033\_001 | v1.1

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

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

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**Center permanence time** NINGLA\_OFD\_016\_001 | v1.1

simpleParameter

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

Unit Measured: s

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**Center permanence time series** NINGLA\_OFD\_046\_001 | v1.2

seriesParameter

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

Unit Measured: s

Increments: 10, 15, 5, 20,

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**Latency to center entry** NINGLA\_OFD\_018\_001 | v1.1

simpleParameter

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

Unit Measured: s

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**Whole arena average speed** NINGLA\_OFD\_009\_001 | v1.1

simpleParameter

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

Unit Measured: cm/s

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**Center average speed** NINGLA\_OFD\_017\_001 | v1.0

simpleParameter

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

Unit Measured: cm/s

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**Center average speed series** NINGLA\_OFD\_047\_001 | v1.2

seriesParameter

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

Unit Measured: cm/s

Increments: 10, 20, 5, 15,

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**Equipment ID** NINGLA\_OFD\_023\_001 | v1.0

procedureMetadata



Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Number of rears - total NINGLA\_OFD\_021\_001 | v1.3

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

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

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## Periphery permanence time NINGLA\_OFD\_012\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Number of Rears NINGLA\_OFD\_006\_001 | v1.1

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Increments: 10, 5, 15, 20,

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

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: Transparent, Grey, Black, White,

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## Periphery distance travelled NINGLA\_OFD\_010\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cm

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## Center distance travelled series NINGLA\_OFD\_044\_001 | v1.3

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: cm

Increments: 20, 5, 15, 10,

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## Number of center entries NINGLA\_OFD\_019\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

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## Center resting time series NINGLA\_OFD\_045\_001 | v1.3

seriesParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Unit Measured:** s

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

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## Periphery distance travelled series NINGLA\_OFD\_003\_001 | v1.2

seriesParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Unit Measured:** cm

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

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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

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**Periphery permanence time series** NINGLA\_OFD\_042\_001 | v1.2  
seriesParameter

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

**Unit Measured:** s

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

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**Distance from light source: if direct illumination** NINGLA\_OFD\_031\_001 | v1.1  
procedureMetadata

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

**Unit Measured:** cm

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**Percentage center time** NINGLA\_OFD\_022\_001 | v1.2  
simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: %

Derivation:  $\text{mul}(\text{div}(\text{'NINGLA\_OFD\_016\_001'}, \text{'NINGLA\_OFD\_008\_001'}), 100)$

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**Whole arena permanence** NINGLA\_OFD\_008\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

**Whole arena resting time** NINGLA\_OFD\_007\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

**Date equipment last calibrated** NINGLA\_OFD\_041\_001 | v1.2

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Center resting time NINGLA\_OFD\_015\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Periphery resting time series NINGLA\_OFD\_004\_001 | v1.2

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: s

Increments: 5, 15, 10, 20,

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## Number of center entries series NINGLA\_OFD\_048\_001 | v1.1

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Increments: 15, 20, 5, 10,

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## Whole arena resting time series NINGLA\_OF01\_001 | v1.1

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: s

Increments: 5, 20, 10, 15,

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## Periphery resting time NINGLA\_OF01\_011\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: s

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## Periphery average speed series NINGLA\_OF01\_043\_001 | v1.3

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Unit Measured:** cm/s

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

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**Arena Material** NINGLA\_OFD\_040\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

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**Center distance travelled** NINGLA\_OFD\_014\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** true

**Unit Measured:** cm

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**Light intensity in the centre of the arena** NINGLA\_OFD\_027\_001 | v1.1

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Unit Measured:** Lux

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## Start Time NINGLA\_OFD\_037\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: %

Description: percentage\_center\_movement\_time

Derivation:

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

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## Resting definition threshold NINGLA\_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

NINGLA\_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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