Open Field IMPC_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).

Description	MP Term or Comment
abnormal anxiety-related reponse	MP:0001362
abnormal locomotor activity	MP:0001392
abnormal response to novel environment	MP:0001449

Experimental Design

- **Minimum number of animals :** 7 per experimental group
- **Age at test :** 9 weeks.
- **Sex:** both males and females (sexually dimorphic)

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:

   a. 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.

   b. If using a videotracking system, set detection parameters appropriate for the coat color of the mice.

   c. 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

	Version	Type	Increment	Option	Derived	Unit	Data Type
Distance travelled IMPC_OFD_005_001	1.1	seriesParameter	5101520				FLOAT
Whole arena resting time IMPC_OFD_007_001	1.1	simpleParameter				s	FLOAT
Whole arena permanence IMPC_OFD_008_001	1.1	simpleParameter				s	FLOAT
Whole arena average speed IMPC_OFD_009_001	1.1	simpleParameter				cm/s	FLOAT
Periphery distance travelled IMPC_OFD_010_001	1.1	simpleParameter				cm	FLOAT
Periphery resting time IMPC_OFD_011_001	1.1	simpleParameter				s	FLOAT
Periphery permanence time IMPC_OFD_012_001	1.1	simpleParameter				s	FLOAT
Periphery average speed IMPC_OFD_013_001	1.1	simpleParameter				cm/s	FLOAT
Center distance travelled IMPC_OFD_014_001	1.1	simpleParameter				cm	FLOAT
Center resting time IMPC_OFD_015_001	1.1	simpleParameter				s	FLOAT
Center permanence time	1.1	simpleParameter				s	FLOAT

	Version	Type	Increment	Option	Derived	Unit	Data Type
IMPC_OFD_016_001							
Center average speed IMPC_OFD_017_001	1.0	simpleParameter				cm/s	FLOAT
Latency to center entry IMPC_OFD_018_001	1.1	simpleParameter				s	FLOAT
Number of center entries IMPC_OFD_019_001	1.1	simpleParameter					INT
Distance travelled - total IMPC_OFD_020_001	1.2	simpleParameter			IMPC_OFD_005_001 sum_of_increments	cm	FLOAT
Number of rears - total IMPC_OFD_021_001	1.3	simpleParameter			IMPC_OFD_006_001 sum_of_increments		INT
Percentage center time IMPC_OFD_022_001	1.2	simpleParameter			IMPC_OFD_016_001 IMPC_OFD_008_001 / 100 *	%	FLOAT

Metadata

	Version	Type	Increment	Option	Derived	Unit	Data Type
Equipment ID IMPC_OFD_023_001	1.0	procedureMetadata					TEXT
Equipment manufacturer IMPC_OFD_024_001	1.1	procedureMetadata		O'hara CO Ltd			TEXT
Equipment model IMPC_OFD_025_001	1.0	procedureMetadata		TijmeOF9			TEXT
Central zone surface area IMPC_OFD_026_001	1.1	procedureMetadata		40		% of total area	INT
Light intensity in the centre of the arena IMPC_OFD_027_001	1.1	procedureMetadata				Lux	TEXT
Number of animals per cage IMPC_OFD_028_001	1.0	procedureMetadata					INT
Color of arena IMPC_OFD_029_001	1.0	procedureMetadata		White			TEXT
Height of the wall IMPC_OFD_030_001	1.0	procedureMetadata				cm	FLOAT

	Version	Type	Increment	Option	Derived	Unit	Data Type
Distance from light source: if direct illumination IMPC_OFD_031_001	1.1	procedureMetadata				cm	FLOAT
Periphery zone IMPC_OFD_032_001	1.2	procedureMetadata		7.35		cm	FLOAT
Type of analysis IMPC_OFD_033_001	1.1	procedureMetadata		Video tracking			TEXT
Arena Size IMPC_OFD_034_001	1.0	procedureMetadata		40x40			TEXT
Experimenter ID IMPC_OFD_035_001	1.1	procedureMetadata					TEXT
Disinfectant IMPC_OFD_036_001	1.1	procedureMetadata					TEXT
Start Time IMPC_OFD_037_001	1.1	procedureMetadata					DATETIME
Arena ID IMPC_OFD_038_001	1.0	procedureMetadata					INT
Software Version IMPC_OFD_039_001	1.0	procedureMetadata		Image OF			TEXT
Arena Material IMPC_OFD_040_001	1.0	procedureMetadata					TEXT
Date equipment last calibrated IMPC_OFD_041_001	1.2	procedureMetadata					DATE