Y-maze IMPC_YMZ_001

Purpose

The Y-maze is used to assess spontaneous alternation performance as an index of active retrograde working memory in rodents.

Experimental Design

- **Minimum number of animals**: 7M + 7F
- **Age at test**: Week 11

Equipment

Y shaped arena with three arms of identical length at 120° angles.
Camera and computer with tracking software if using video tracking.

Procedure

1. Transport animals to testing room at least 15 minutes prior to testing.
2. Ensure lighting conditions are as desired and if using video tracking that the camera is working.
3. Remove mouse from its cage and place in the start arm. Allow the mouse to explore the arena for 8 minutes.
4. Either manually score the entries or use the automatic tracking while the mouse explores the arena for the duration of the test. Arm entry is defined differently depending on the scoring system.
   a. Manual: arm entry is scored when all four paws enter the new location.
   b. Automated tracking: arm entry is scored when the centre of the mouse enters the new location.
5. Remove mouse from the arena and place back in home cage.
6. Clean area with consistent disinfectant (i.e. ethanol/clidox) before testing next mouse.

Notes

Minimum of 5 arm entries are required for the ratios to be calculated to ensure the accuracy of the derived values.

Parameters and Metadata
Latency to leave start arm IMPC_YMZ_001_001 | v1.0

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simpleParameter

Description: latency_to_leave_start_arm
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Total arm entries IMPC_YMZ_002_001 | v1.0

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simpleParameter

Description: total_arm_entries
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Number of triplets IMPC_YMZ_003_001 | v1.2

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simpleParameter

Description: number_of_triplets

Derivation: ifElse(greaterThan('IMPC_YMZ_002_001', 1), sub('IMPC_YMZ_002_001', 2),0)
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Number of spontaneous alternations IMPC_YMZ_004_001 | v1.1
simpleParameter

**Description:** spontaneous_alternations

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**Alternation ratio per number of triplets** IMPC_YMZ_005_001 | v1.2

simpleParameter

**Description:** alternation_ratio

**Unit Measured:** %

**Derivation:**
ifElse(greaterThan('IMPC_YMZ_002_001',4), mul(div('IMPC_YMZ_004_001', sub ('IMPC_YMZ_002_001', 2)), 100), '')

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**Number of alternate arm entries** IMPC_YMZ_006_001 | v1.1

simpleParameter

**Description:** alternate_arm_entries

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**Alternate arm entry ratio per number of triplets**  IMPC_YMZ_007_001 | v1.3

*simpleParameter*

**Unit Measured:** %

**Description:** alternate_arm_entry_ratio

**Derivation:**
ifElse(greaterThan('IMPC_YMZ_002_001',4), mul(div('IMPC_YMZ_006_001', sub ('IMPC_YMZ_002_001', 2)), 100), '')

**Number of same arm entries by number of doublets**  IMPC_YMZ_008_001 | v1.1

*simpleParameter*

**Description:** same_arm_entries

**Same arm entry ratio per total arm entries**  IMPC_YMZ_009_001 | v1.2

*simpleParameter*

**Unit Measured:** %
Description: same_arm_entry_ratio

Derivation:
ifElse(greaterThan('IMPC_YMZ_002_001', 4), mul(div('IMPC_YMZ_008_001', 'IMPC_YMZ_002_001'), 100), '')

Feecal boli (count) IMPC_YMZ_010_001 | v1.0

simpleParameter


Description: feacal_boli_count

Acclimatisation time (minimum) IMPC_YMZ_011_001 | v1.0

procedureMetadata


Unit Measured: min

Description: acclimatisation_time_minimum

Options: 15, 60, 30,

Arm dimensions IMPC_YMZ_012_001 | v1.1

procedureMetadata
Light level IMPC_YMZ_013_001 | v1.0

Description: light_level

Options: 50, 20, 4,

Placement in start arm IMPC_YMZ_015_001 | v1.1

Description: placement_in_start_arm

Options: Mid-arm, End of arm,
Cleaning agent/disinfectant  IMPC_YMZ_016_001 | v1.0

Description: cleaning_agent_disinfectant

Options: 70% Ethanol solution, 6% sodium hypochlorite solution,

Tracking method  IMPC_YMZ_017_001 | v1.1

Description: tracking_method

Options: Video, None,

Scoring method  IMPC_YMZ_018_001 | v1.1

Description: scoring_method

Options: Manual, Automated,
Duration at centre prior to arm re-entry IMPC_YMZ_019_001 | v1.0


Unit Measured: s

Description: duration_at_centre_prior_to_arm_re_entry

Options: 1,

Experimenter ID IMPC_YMZ_020_001 | v1.0


Description: experimenter_id

Maze ID IMPC_YMZ_021_001 | v1.0


Description: maze_id

Options: y-maze 1, Arena 1, Arena 2,
**Maze manufacturer** IMPC_YMZ_022_001 | v1.0

procedureMetadata

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

**Description**: maze_manufacturer

**Options**: The Jackson Laboratory, O'hara Co.Ltd,

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**Maze model** IMPC_YMZ_023_001 | v1.0

procedureMetadata

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

**Description**: maze_model

**Options**: JAX_YM, YM-3002,

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**Tracking equipment ID** IMPC_YMZ_024_001 | v1.0

procedureMetadata

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

**Description**: tracking_equipment_id

**Options**: Y tracker, Ethovision, YM-1020,
Tracking equipment manufacturer IMPC_YMZ_025_001 | v1.1

Description: tracking_equipment_manufacturer
Options: Accuscan, Noldus, O’hara Co.Ltd,

Tracking equipment model IMPC_YMZ_026_001 | v1.0

Description: tracking_equipment_model
Options: Opto-Varimex 4, Time YM2,

Date tracking equipment last calibrated IMPC_YMZ_027_001 | v1.0

Description: date_tracking_equipment_last_calibrated
Software IMPC_YMZ_028_001 | v1.1

Description: software

Options: Ethovision 13.0, Time YM2 software,

Alternating start arm IMPC_YMZ_029_001 | v1.0

Options: Yes, No,