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

simpleParameter

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

Unit Measured: s

Description: latency_to_leave_start_arm

Total arm entries IMPC_YMZ_002_001 | v1.0

simpleParameter

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

Description: total_arm_entries

Number of triplets IMPC_YMZ_003_001 | v1.2

simpleParameter

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

Description: number_of_triplets

Derivation: ifElse(greaterThan('IMPC_YMZ_002_001', 1), sub('IMPC_YMZ_002_001', 2),0)

Number of spontaneous alternations IMPC_YMZ_004_001 | v1.1

simpleParameter

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

Description: spontaneous_alternations

Alternation ratio per number of triplets IMPC_YMZ_005_001 | v1.2

simpleParameter

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

Unit Measured: %

Description: alternation_ratio

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

Number of alternate arm entries IMPC_YMZ_006_001 | v1.1

simpleParameter

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

Description: alternate_arm_entries

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

simpleParameter

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

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

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

Description: same_arm_entries

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

simpleParameter

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

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),'')

Feacal boli (count) IMPC_YMZ_010_001 | v1.0

simpleParameter

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

Description: feacal_boli_count

Acclimatisation time (minimum) IMPC_YMZ_011_001 | v1.0

procedureMetadata

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

Unit Measured: min

Description: acclimatisation_time_minimum

Options: 15, 60, 30,

Arm dimensions IMPC_YMZ_012_001 | v1.1

procedureMetadata

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

Unit Measured: cm

Description: arm_dimensions

Options: 33.65 L x 6 W x 15 H, 40 L x 3 W x 12 H,

Light level IMPC_YMZ_013_001 | v1.0

procedureMetadata

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

Unit Measured: Lux

Description: light_level

Options: 50, 20, 4,

Placement in start arm IMPC_YMZ_015_001 | v1.1

procedureMetadata

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

Description: placement_in_start_arm

Options: Mid-arm, End of arm,

Cleaning agent/disinfectant IMPC_YMZ_016_001 | v1.0

procedureMetadata

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

Description: cleaning_agent_disinfectant

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

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Tracking method IMPC_YMZ_017_001 | v1.1

procedureMetadata

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

Description: tracking_method

Options: Video, None,

Scoring method IMPC_YMZ_018_001 | v1.1

procedureMetadata

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

Description: scoring_method

Options: Manual, Automated,

Duration at centre prior to arm re-entry IMPC_YMZ_019_001 | v1.0

procedureMetadata

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

Unit Measured: s

Description: duration_at_centre_prior_to_arm_re_entry

Options: 1,

Experimenter ID IMPC_YMZ_020_001 | v1.0

procedureMetadata

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

Description: experimenter_id

Maze ID IMPC_YMZ_021_001 | v1.0

procedureMetadata

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

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,

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,

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

procedureMetadata

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

Description: tracking_equipment_manufacturer

Options: Accuscan, Noldus, O'hara Co.Ltd,

Tracking equipment model IMPC_YMZ_026_001 | v1.0

procedureMetadata

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

Description: tracking_equipment_model

Options: Opto-Varimex 4, Time YM2,

Date tracking equipment last calibrated IMPC_YMZ_027_001 | v1.0

procedureMetadata

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

Description: date_tracking_equipment_last_calibrated

Software IMPC_YMZ_028_001 | v1.1

procedureMetadata

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

Description: software

Options: Ethovision 13.0, Time YM2 software,

Alternating start arm IMPC_YMZ_029_001 | v1.0

procedureMetadata

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

Options: Yes, No,
