# 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

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#### Total arm entries IMPC\_YMZ\_002\_001 | v1.0

simpleParameter

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

**Description:** total\_arm\_entries

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#### 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)

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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\_00

7\_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\_Y

MZ\_008\_001 | v1.1

simpleParameter

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

**Description:** same\_arm\_entries

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## Same arm entry ratio per total arm entries IMPC\_YMZ\_009\_001 |

v1.2

simpleParameter

**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

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,

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## 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,

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## 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,

## 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,

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## **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,

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## Experimenter ID IMPC\_YMZ\_020\_001 | v1.0

procedureMetadata

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

Description: experimenter\_id

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## 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,

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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,

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#### 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

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## 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,