

# 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:  $\text{ifElse}(\text{greaterThan}(\text{'IMPC\_YMZ\_002\_001'}, 1), \text{sub}(\text{'IMPC\_YMZ\_002\_001'}, 2), 0)$

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## Number of spontaneous alternations IMPC\_YMZ\_004\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** spontaneous\_alternations

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## 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),")

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## 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

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## 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),")
```

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## 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. 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),")
```

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## Feacal boli (count) IMPC\_YMZ\_010\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** feacal\_boli\_count

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## 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,

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## 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,

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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,

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## **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,

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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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Alternating start arm IMPC\_YMZ\_029\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** Yes, No,

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