

# Fear Conditioning IMPC\_FEA\_001

## Purpose

This procedure is used for measuring aversive learning and memory. A neutral conditioned stimulus (CS) such as steady tone is paired with an aversive unconditioned stimulus (US) such as one or more mild foot shocks. After conditioning, the spatial context or the CS (tone) elicits a central state of fear in the absence of the US (shock) that is expressed as reduced locomotor activity or total lack of movement (freezing). Immobility time is used as a measure of learning/memory performances.

## Experimental Design

- **Minimum number of animals :** 7M + 7F
- **Age at test:** Week 10
- **Sex:** We would expect the results of this test to show sexual dimorphism

## Equipment

- Fear conditioning chambers
- Arenas and components for cue and conditioning phases
- Computer with recording software
- Olfactory substance

## Procedure

1. Day 1: Conditioning
  - a. Transport animals to the testing area.
  - b. Set up conditioning arenas in the chambers ensuring that shocker, tone delivery and camera / beam break system are working correctly. If using video tracking equipment, ensure camera lenses are free of dust.
  - c. Remove the animals from their cages and place in the arenas. Animals are conditioned using the training protocol which consists of a baseline period, audible tone, a single foot shock that co-terminates with the tone, and a period with no stimuli at the end.
  - d. Remove animals from arenas and place back in home cage. Clean arenas.
2. Day 2: Context
  - a. To be performed 24 hours after conditioning.
  - b. Transport animals to the testing area.
  - c. Set up conditioning arenas in the chamber as on day 1 except for shocker and tone delivery system which are not used.
  - d. Remove animals from their cages and place in the arena. No CS or US stimuli are presented.

- e. Remove animals from arenas and place back in home cage. Clean arenas.
3. Day 2: Cue
  - a. To be performed performed from 2 - 24 hours after the context protocol.
  - b. Set up cue arenas using different floors, walls, olfactory cues and / or lighting from the conditioning context. Ensure that tone delivery and camera / beam break system are working correctly.
  - c. Remove animals from their cages and place in the arena. Animals are exposed to a baseline period without any stimulus followed by the presentation of the tone.
  - d. Remove animals from arenas and place back in home cage. Clean arenas.
4. At the end of the cue protocol animals are placed back into their holding room and data is analyzed by collecting the number of freezing episodes and the total freezing /immobility time.

## Parameters and Metadata

### Conditioning: Near infra red light arena IMPC\_FEA\_078\_001 | v1.0 procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: On,

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### Conditioning Post-shock Maximum Motion Index IMPC\_FEA\_103\_001 | v1.0 simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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### Conditioning Post-shock Freezing Time IMPC\_FEA\_099\_001 | v1.0 simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

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**Experimenter ID** IMPC\_FEA\_072\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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**Cue Tone % Freezing Time** IMPC\_FEA\_021\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: %

**Derivation:**  
mul(div(sumOfIncrements('IMPC\_FEA\_020\_001',1), 'IMPC\_FEA\_060\_001'), 100)

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**Cue: Start time of baseline** IMPC\_FEA\_085\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: s

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## Conditioning: Tone stimulus frequency (Hz; conditioned stimulus) IMPC\_FEA\_035\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: kHz

Options: 2.8, 2, 10, 4,

---

## Conditioning Post-shock Freeze Count IMPC\_FEA\_098\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Conditioning Shock Minimum Motion Index IMPC\_FEA\_096\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Context: Mouse arena shape IMPC\_FEA\_045\_001 | v1.0

procedureMetadata

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

Options: Square, Rectangle,

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**Conditioning Baseline Average Motion Index** IMPC\_FEA\_004\_01 | v1.0

simpleParameter

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

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**Freeze definition** IMPC\_FEA\_077\_001 | v1.1

procedureMetadata

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

Unit Measured: s

Options: 2, 0.25, 1,

---

**Context: Total time** IMPC\_FEA\_049\_001 | v1.0

procedureMetadata

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

Unit Measured: s

Options: 360, 300,

---

**Cue Tone Average Motion Index** IMPC\_FEA\_022\_001 | v1.0  
seriesParameter

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

Increments: Minimum 1

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**Conditioning: Tone stimulus intensity ( dB; conditioned stimulus)** IMPC\_FEA\_034\_001 | v1.0  
procedureMetadata

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

Unit Measured: dB

Options: 85, 80, 70, 77, 75,

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**Cue: arena rotation** IMPC\_FEA\_088\_001 | v1.0  
procedureMetadata

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

**Options:** 90 degrees,

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**Conditioning: Mouse arena colour** IMPC\_FEA\_031\_001 | v1.0

procedureMetadata

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

**Options:** Metallic, clear, White, Clear, Metallic, White and Clear,

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**Conditioning Tone % Freezing Time** IMPC\_FEA\_091\_001 | v1.1

simpleParameter

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

**Unit Measured:** %

**Derivation:** mul(div('IMPC\_FEA\_090\_001', 'IMPC\_FEA\_036\_001'), 100)

---

**Context Freezing Time** IMPC\_FEA\_008\_001 | v1.0

simpleParameter

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

**Unit Measured:** s

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## Conditioning: Mouse arena shape IMPC\_FEA\_029\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Rectangle, Square,

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## Cue: Mouse arena shape IMPC\_FEA\_053\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Cylinder, Rectangle, A frame ceiling,

---

## Cue Tone Minimum Motion Index IMPC\_FEA\_023\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Increments: Minimum 1

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Conditioning Baseline Minimum Motion Index

IMPC\_FEA\_005\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Cue Baseline Minimum Motion Index

IMPC\_FEA\_017\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Cue: Near infra red light arena

IMPC\_FEA\_080\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Options: On,

Context: Room acclimation time

IMPC\_FEA\_042\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: min

Options: 60, 30,

---

**Sound-proof box dimension** IMPC\_FEA\_071\_001 | v1.0  
procedureMetadata

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

Options: 71 cm L X 59.7 cm W X 31.7 cm H, other, 71 cm L X 63.5 cm W X 35.5 cm H, 47 cm L X 35 cm W X 49 cm H,

---

**Cue: Mouse arena colour** IMPC\_FEA\_055\_001 | v1.0  
procedureMetadata

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

Options: Black and white, Clear, Red, Beige, black and white,

---

**Conditioning: Start time of baseline** IMPC\_FEA\_081\_001 | v1.0  
procedureMetadata

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

Unit Measured: s

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**Conditioning Tone Maximum Motion Index** IMPC\_FEA\_094\_001 | v1.0

simpleParameter

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

**Conditioning Tone Freezing Time** IMPC\_FEA\_090\_001 | v1.0

simpleParameter

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

Unit Measured: s

**Cue: Mouse arena floor** IMPC\_FEA\_056\_001 | v1.0

procedureMetadata

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

Options: Plexi glass, PVC, Polyethylene, Perspex,

**Conditioning: Mouse arena floor** IMPC\_FEA\_032\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Steel rods, Metal grill, Clean saw dust,

---

Conditioning: Total timeIMPC\_FEA\_040\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

Options: 380, 300,

---

Freeze definition (minimum motion index)IMPC\_FEA\_104\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: false

Is Annotated: false

Options: 18, 30,

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Conditioning Tone Freeze CountIMPC\_FEA\_089\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Conditioning Post-shock Minimum Motion Index IMPC\_FEA\_1

02\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Conditioning Baseline Freeze Count IMPC\_FEA\_001\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Conditioning: Start time of each tone stimulus IMPC\_FEA\_082

\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: s

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## Conditioning Baseline Maximum Motion Index IMPC\_FEA\_006\_

001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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**Context: White house light level in arena** IMPC\_FEA\_043\_001 | v1  
.2

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: Lux

Options: 40, 26, 100, 200,

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**Conditioning: Length of time tone stimulus** IMPC\_FEA\_036\_001  
| v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: s

Options: 20, 30,

---

**Conditioning Tone Average Motion Index** IMPC\_FEA\_092\_001 | v1  
.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

**Mouse arenaID** IMPC\_FEA\_063\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Options: Arena 4, Arena 6, Arena 8, Arena 1, Arena 2, Arena 5, Arena 7, Arena 3,

**Date equipment last calibrated (shock)** IMPC\_FEA\_075\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

**Context % Freezing Time** IMPC\_FEA\_009\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: %

Derivation: mul(div('IMPC\_FEA\_008\_001', 'IMPC\_FEA\_049\_001'), 100)

## Date equipment last calibrated (tone) IMPC\_FEA\_076\_001 | v1.0

procedureMetadata

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

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## Tracking Method IMPC\_FEA\_067\_001 | v1.0

procedureMetadata

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

Options: Beam break, Video tracking,

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## Conditioning Post-shock % Freezing Time IMPC\_FEA\_100\_001 | v1.1

simpleParameter

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

Unit Measured: %

Derivation:  $\text{mul}(\text{div}(\text{'IMPC\_FEA\_099\_001'}, \text{'IMPC\_FEA\_039\_001'}), 100)$

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## Conditioning: Date and time IMPC\_FEA\_025\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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**Conditioning: Length of time no stimulus** IMPC\_FEA\_039\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

Options: 120, 150,

---

**Context Average Motion Index** IMPC\_FEA\_010\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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**Cue: Start time of no stimulus** IMPC\_FEA\_087\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: s

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**Context: Mouse arena dimension** IMPC\_FEA\_046\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Unit Measured:** cm

**Options:** 16.6 cm L X 17 cm W X 25 cm H, 25 x 25 x 19 cm, 25 L x 21 W x 19 H cm, 17 x 17 x 25 cm, 30.5 cm L X 24.1 cm W X 24.5 cm H, 30.5 cm L X 24.1 cm W X 21 cm H,

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**Context Freeze Count** IMPC\_FEA\_007\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

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**Cue Tone Freezing Time** IMPC\_FEA\_020\_001 | v1.0

seriesParameter

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Unit Measured:** s

**Increments:** Minimum 1

---

## Cue: Total time IMPC\_FEA\_062\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

Options: 300, 480, 420, 240,

---

## Conditioning: Shock stimulus intensity (unconditioned stimulus) IMPC\_FEA\_037\_001 | v1.1

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: mA

Options: 0.75, 0.4, 0.5,

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## Conditioning: Start time of each shock stimulus IMPC\_FEA\_083\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: s

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# Conditioning: Length of time baseline IMPC\_FEA\_033\_001 | v1.0

procedureMetadata

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

Unit Measured: s

Options: 150, 240, 120,

---

# Sound generator model IMPC\_FEA\_070\_001 | v1.0

procedureMetadata

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

Options: 46000-165, VFC-100, other,

---

# Cue Baseline % Freezing Time IMPC\_FEA\_015\_001 | v1.1

simpleParameter

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

Unit Measured: %

Derivation: mul(div('IMPC\_FEA\_014\_001', 'IMPC\_FEA\_057\_001'), 100)

---

**Cue: Mouse arena dimension** IMPC\_FEA\_054\_001 | v1.0

procedureMetadata

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

Unit Measured: cm

Options: 25 x 25 x 19 cm, 25 L x 21 W x 19 H cm, 30.5 cm L X 24.1 cm W X 24.5cm H,  
30.5 cm L X 24.1 cm W X 21 cm H, 17 x 17 x 25 cm, 20 cm dia X 30 cm H,

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**Conditioning Shock Maximum Motion Index** IMPC\_FEA\_097\_001  
| v1.0

simpleParameter

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

**Cue: tone response measurement time** IMPC\_FEA\_060\_001 | v1.0

procedureMetadata

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

Unit Measured: s

Options: 180, 120,

---

**Conditioning: Room acclimation time** IMPC\_FEA\_026\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Unit Measured:** min

**Options:** 60, 30,

---

## Equipment Manufacturer IMPC\_FEA\_065\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Options:** Ugo Basile, San Diego Instruments, Med Assoicates,

---

## Context: Near infra red light arena IMPC\_FEA\_079\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Options:** On,

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## Cue: White house light level in arena IMPC\_FEA\_051\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: Lux

Options: 0, 14-18, 16,

---

## Cue Baseline Average Motion Index IMPC\_FEA\_016\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

---

## Conditioning: Start time of no stimulus IMPC\_FEA\_084\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Unit Measured: s

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## Conditioning Baseline % Freezing Time IMPC\_FEA\_003\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: %

Derivation:  $\text{mul}(\text{div}(\text{'IMPC\_FEA\_002\_001'}, \text{'IMPC\_FEA\_033\_001'}), 100)$

---

## Conditioning Shock Average Motion Index IMPC\_FEA\_095\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Cue Baseline Maximum Motion Index IMPC\_FEA\_018\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Cue Tone Maximum Motion Index IMPC\_FEA\_024\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Increments: Minimum 1

---

## Software IMPC\_FEA\_068\_001 | v1.0

procedureMetadata

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

Options: Med Associates Video Freeze, Anymaze, Freeze Monitor,

-----

**Context: Date and time** IMPC\_FEA\_041\_001 | v1.0

procedureMetadata

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

Options: Conditioning +24h,

-----

**Conditioning Post-shock Average Motion Index** IMPC\_FEA\_10

1\_001 | v1.0

simpleParameter

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

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**Equipment Model** IMPC\_FEA\_066\_001 | v1.0

procedureMetadata

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

Options: Freeze monitor, FearCS Mouse-46152, 46000, MED-FVC-SCT-M,  
MED-VFC2-SCT-M, MED-VFC-NIR-M SOP #1, MED-VFC-NIR-M SOP #2,  
MED-VFC-NIR-M SOP #3,

---

## Cue Baseline Freezing Time IMPC\_FEA\_014\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: s

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## Context Minimum Motion Index IMPC\_FEA\_011\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Cue: Tone stimulus frequency (Hz; conditioned stimulus) IMPC\_FEA\_059\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: kHz

Options: 4, 10, 2.8, 2,

---

**Cue: Date and time** IMPC\_FEA\_050\_001 | v1.0

procedureMetadata

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

Options: Context + 4h, Context + 2-4h, Context + 24h,

---

**Cue Baseline Freeze Count** IMPC\_FEA\_013\_001 | v1.0

simpleParameter

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

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**Conditioning: Mouse arena dimension** IMPC\_FEA\_030\_001 | v1.0

procedureMetadata

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

Unit Measured: cm

Options: 30.5 L X 24.1 W X 24.5 H cm, 30.5 cm L X 24.1 cm W X 21 cm H,  
16.6 L X 17 W X 25 H cm, 25 L x 21 W x 19 H cm, 17 x 17 x 25 cm, 25 x 25 x 19 cm,

---

**Cue: Length of time no stimulus** IMPC\_FEA\_061\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: s

Options: 0, 220, 120,

---

## Conditioning: White house light level in arena IMPC\_FEA\_027\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Unit Measured: Lux

Options: 40, 200, 100, 26,

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## Experimenter ID day 2 cue IMPC\_FEA\_074\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Experimenter ID day 2 IMPC\_FEA\_073\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

---

## Equipment ID IMPC\_FEA\_064\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Options: Machine B, Machine A, Machine 2, Machine 1,

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## Conditioning Tone Minimum Motion Index IMPC\_FEA\_093\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Conditioning: Olfactory cue IMPC\_FEA\_028\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Alcohol, None,

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## Context Maximum Motion Index IMPC\_FEA\_012\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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**Context: Mouse arena colour** IMPC\_FEA\_047\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Metallic, clear, White, Metallic, White and Clear, Clear,

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**Sound generator manufacturer** IMPC\_FEA\_069\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Options: Ugo Basile, San Diego Instruments, Med Associates,

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**Cue Tone Freeze Count** IMPC\_FEA\_019\_001 | v1.0

seriesParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Increments: Minimum 1

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**Context: Olfactory cue** IMPC\_FEA\_044\_001 | v1.0

procedureMetadata

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

Options: Alcohol, None,

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**Cue: Start time of each tone stimulus** IMPC\_FEA\_086\_001 | v1.0

procedureMetadata

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

Unit Measured: s

-----

**Cue: Length of time baseline** IMPC\_FEA\_057\_001 | v1.0

procedureMetadata

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

Unit Measured: s

Options: 120,

-----

**Conditioning: Length of time shock stimulus** IMPC\_FEA\_038\_0

01 | v1.0

procedureMetadata

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

Unit Measured: s

Options: 0.5, 2, 1,

---

**Conditioning Baseline Freezing Time** IMPC\_FEA\_002\_001 | v1.0

simpleParameter

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

Unit Measured: s

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**Context: Mouse arena floor** IMPC\_FEA\_048\_001 | v1.0

procedureMetadata

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

Options: Metal grill, Steel rods,

---

**Cue: Olfactory cue** IMPC\_FEA\_052\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: Cinnamon, 5% acetic acid, Vanillin,

---

**Cue: Tone stimulus intensity (conditioned stimulus)** IMPC\_FEA\_058\_001 | v1.1

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Unit Measured: dB

Options: 85, 75, 77, 70, 80,

---

**Difference in Context and Conditioning Baseline % Freezing** IMPC\_FEA\_105\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Derivation:

sub(mul(div('IMPC\_FEA\_008\_001', 'IMPC\_FEA\_049\_001'), 100), mul(div('IMPC\_FEA\_002\_001', 'IMPC\_FEA\_033\_001'), 100))

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# Difference in Cue Tone and Cue Baseline % Freezing IMPC\_

FEA\_106\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Derivation:**

sub(mul(div('IMPC\_FEA\_020\_001', 'IMPC\_FEA\_060\_001'), 100), mul(div('IMPC\_FEA\_014\_001', 'IMPC\_FEA\_057\_001'), 100))

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# Difference in Conditioning Post-shock and Conditioning Baseline % Freezing IMPC\_FEA\_107\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Derivation:**

sub(mul(div('IMPC\_FEA\_099\_001', 'IMPC\_FEA\_039\_001'), 100), mul(div('IMPC\_FEA\_002\_001', 'IMPC\_FEA\_033\_001'), 100))

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# Cue: Length of time tone stimulus IMPC\_FEA\_108\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: false

Is Annotated: false

Unit Measured: s

Options: 20, 120,

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