

# Lung mechanics by forced oscillations CCP

## \_LFO\_001

### Purpose

Measurement of lung mechanical parameters which are relevant to the respiratory function of the animal

### Experimental Design

**Minimum number of animals:** 7 mice of each gender

**Age at test:** 13 weeks

**Sex:** both genders

### Equipment

1. Scales
2. Intubation platform
3. Bend forceps
4. Modified catheter insertion needle (blunted and slightly bend)
5. Catheters: 18G, 1.16 inch
6. Catheters: 20G, 1.16 inch
7. Stopper to block tube during calibration
8. Flexivent FX
9. Computer with the Flexiware software linked to the Flexivent
10. Cold light source with Flexible light arm
11. Heating pad
12. Eye gel
13. Ketamine (10 mg/ml)/xylazine (1 mg/ml) in saline
14. Optional: Pulse-oximeter which is usable in mice

### Procedure

1. Weigh and anaesthetise mouse.
2. Set up the software program and perform tube calibration.
3. Intubate the mouse.
4. Attach the tube to the ventilator port and pulse-oximeter to a hind limb where applicable.
5. Check the tube was correctly inserted by checking the PAO curve. If required reintubate the mouse.
6. Perform 2 deep inflations to check for tube leakage.
7. Ensure that the oxygen saturation is adequate as indicated by minimum oxygen level of 95% or regular PAO curve.

1. If the saturation level is inadequate, leave the animal to be ventilated for 1 minute
2. If this does not improve the saturation increase the breathing frequency to 250 bpm and ventilate until oxygen saturation is adequate.
8. Start the measurements.
9. The ventilation frequency should be set to 180 bpm at the start. If necessary for obtaining valid measurements increase the frequency to 250 bpm allowing the oxygen saturation levels to recover before commencing measurements.
10. After execution of the script, repeat the perturbations which were excluded by the software until there are 5 valid measurements for each perturbation.
  1. Leave at least one minute of ventilation between the end of the script and the repeats
  2. Leave at least 20 seconds between individual perturbations.
  3. Perform a deep inflation every 5 perturbations
11. Stop ventilation and ensure the animal starts breathing spontaneously and then extubate the mouse.
12. Apply eye gel on the mouse and place it on a heat pad until it starts moving. Place back in its home cage.

## Parameters and Metadata

### Weight CCP\_LFO\_001\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: g

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### Rsn CCP\_LFO\_002\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O\*s/ml

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## Csn CCP\_LFO\_003\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ml/cmH2O

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## Esn CCP\_LFO\_004\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O/ml

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## Rqp CCP\_LFO\_005\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O\*s/ml

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## Gqp CCP\_LFO\_006\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O/ml

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## Hqp CCP\_LFO\_007\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O/ml

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## Rp8 CCP\_LFO\_008\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O\*s/ml

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## Gp8 CCP\_LFO\_009\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O/ml

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## Hp8 CCP\_LFO\_010\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: cmH2O/ml

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## Inspiratory capacity CCP\_LFO\_011\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ml

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## comment CCP\_LFO\_012\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Anaesthetic agent and dose CCP\_LFO\_013\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:**

Ketamine/xylazine: (0.1 mg/g + 1.0 mg) / (0.01 mg/g + 0.1 mg) males; (0.1 mg/g + 0.5 mg) / (0.01 mg/g + 0.05 mg) females,

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**Equipment manufacturer** CCP\_LFO\_014\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** Scireq,

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**Equipment model** CCP\_LFO\_015\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

**Options:** Flexivent FX,

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**Equipment module** CCP\_LFO\_016\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** true

**Is Annotated:** false

Options: 1, 2,

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## Software version CCP\_LFO\_017\_001 | v1.0

procedureMetadata

Req. Analysis: true

Req. Upload: true

Is Annotated: false

Options: 7.6,

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## Operator ID CCP\_LFO\_018\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

## Date of last calibration CCP\_LFO\_019\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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