# Motor evoked stimulation with a recovered head bar mouse.

(Ketamine/Xylazine edition with Antisedan antidote for faster recovery)

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Advice from Pat: The units in the table are in terms of 'ticks' in our insulin syringes so e.g. 2 ticks = 0.02 ml. In practice it is hard to dose anything finer than 0.5 tick. If the mouse is v light (~20g), we’d give it 2 ket + 1 xyl ticks. If heavier (~25-30g), it can get 2.5 ket + 1.5 xyl. I’d err on the side of caution because it is easy to overdose them and then the experiment is over. The mouse will be anaesthetized very fast if it is straight after isoflurane induction or may take several minutes if done from awake. Expect the mouse to wake up after an hour after first dose. Check for responses every 10 minutes. If you get a response, readminister 1 tick of ket and see if this is sufficient.

**Note**: I have updated and decreased the ketamine dosage based on (<https://pubmed.ncbi.nlm.nih.gov/21880935/>) to 75mg/kg. Previous dosage was 100mg/kg. Dosage of Xylazine is also in the lower range of 10mg/kg.

Ketamine/Xylazine recipe based upon a dose range of 70-100 mg/kg Ketamine, 10-20 mg/kg Xylazine. It is also ok to go below this for this recovery experiment.

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| --- | --- | --- |
| Drug | Initial Concentration | Dosage |
| Xylazine | 2% w/v | 0.01mg/g |
| Ketamine | 75mg/ml | 0.075mg/g |
| Antisedan | 5mg/ml | 0.001mg/g |

**Weight: Subtract 3g from the weighed weight of a head bar mouse, in order to get their weight sans headbar.**

|  |  |  |  |
| --- | --- | --- | --- |
| Weight (g) | 1:10 dilution Antisedan IP | Ket IP | Xyl IP |
| 20 | 4 | 1.5 | 1 |
| 22 | 4.4 | 1.7 | 1.1 |
| 24 | 4.8 | 1.8 | 1.2 |
| 26 | 5.2 | 2 | 1.3 |
| 28 | 5.6 | 2.1 | 1.4 |
| 30 | 6 | 2.3 | 1.5 |
| 32 | 6.4 | 2.4 | 1.6 |
| 34 | 6.8 | 2.6 | 1.7 |
| 36 | 7.2 | 2.7 | 1.8 |

**Experiment Pre- Prep:**

1. Get the programs ready to run and check all hardware arrangements the day before.
2. Turn on the oxygen tank for the experiment area to 15psi.
3. Turn on the heat mat, turn on the lights.
4. Check the isoflurane level and fill if needed.
5. Turn on heat mat.
6. Turn on gas canister, but not yet the motor or power up.
7. Turn on microscope light.
8. Ensure anaesthesia system is set to chamber.
9. Weight mouse and prepare Xylazine, Ketamine and Antisedan (antidote for Xylazine) based on mouse weight. Subtract 3g from the weighed mouse to account for the head bar when preparing dosages.
10. Prepare injectable saline syringe.
11. Place tissue in warming chamber and turn it in in preparation for mouse recovery period.

**Experiment:**

1. Anesthetize the mouse in the induction chamber. Iso to 3%, timer 2 minutes.
2. Take mouse out of chamber, and administer injection subcutaneously of Ket and Xyl based on weight (dosages shown above).
3. Turn off the oxygen cylinder for experiment rig, letting it flow out of anaesthetic apparatus.
4. Fit headplate into neurotar.
5. Apply Optix care eye lube to eyes to protect them from drying out.
6. Inject mouse with 0.25ml of saline through sub-cutaneous injection to stay hydrated.

**Stimulation Experiment:**

**run python aemeps\_rf.py**

**Clean Up and Power Down:**

1. When mouse whiskers start moving, inject mouse with subcutaneous does of antisedan.
2. Move mouse to warming chamber.
3. When mouse recovers and is moving freely return to cage with wet mash so it hydrates and eats more over the next 24 hours.