

Challenge 31: Moshers Surgery Q&As

Q. Do you need to know the mass of food consumed or could a proxy measure be used to assess feeding instead?

A. Knowing the exact weight of food consumed per mouse is unnecessary. A proxy measure such as the number of times each mouse visits the hopper would give an indication about food intake and could be validated. The feeding behaviour/ pattern is an interesting and appropriate measure.

Q. What constraints are there on the space the device can take up?

A. The device shouldn't take up space in the homecage, but preferably fit into the hopper or be attached somehow to the side. The cages should still sit in a normal IVC.

Q. Can you separate the mice out to eat, e.g. they must enter a tunnel to access the food, so you can identify each mouse specifically?

A. The Sponsor's preference would be that the homecage is unmodified externally to ensure it will still fit in the racks. Mice should not be isolated when eating, but consideration would be given to a partition in the cage if necessary. RFI chipping could be used to ID and monitor the mice of interest in studies.

Q. Can the hoppers be accessed by multiple animals at once?

A. Yes and the Sponsors do not wish to restrict multiple animals eating at once. The hoppers are generally 'V' shaped and can be accessed by animals on both sides.

Q. Could accelerometers/ movement sensors be used to assess the food consumption?

A. Yes, an accelerometer could be applied to the food hopper, but not to a mouse.

Q. What are the timescales for recording?

A. The Sponsors would like to record continuously and experiments may last from 12 hours to 12 weeks or more.

Q. If components of the device need replacing during recording, e.g. batteries, how frequently would this be possible?

A. The Sponsors would be happy to replace components weekly. Any shorter timeframe would become resource intensive.

Q. Would you like to assess liquid intake as well as food intake?

A. It would be a nice bonus but is unnecessary for this Challenge, food intake should be the focus.

Q. Is there space outside the cage to add components?

A. Components could be added to the homecage externally, but the Sponsors do not wish the device to take up too much space as it could prevent another cage being placed in the adjacent rack, reducing the number of animals and homecages it is possible to house and increasing the cost of monitoring food intake.

Q. Do you have multiple models of homecages to test the device in?

A. We have two types of homecages on site, but have contacts in other animal houses so can access different homecages to test the device in.

Q. What form is the mouse food in?

A. The mice are fed expanded pellets and these can be varying sizes depending on diet.

Q. Is it possible to add cables to the outside of the cage?

A. It is possible to do so, but ideally the device should be wireless to increase its usability and uptake.

Q. How would the device be cleaned before re-use?

A. VHP (vaporised hydrogen peroxide) is commonly used for cleaning devices.

Q. Is it possible to decrease the amount of food in the hopper to increase space for the device?

A. You can decrease the food in the hopper to 2-3 days' worth to increase space for the device. The device would need to sit above the food to ensure the mice still have easy access to the food in the hopper.

Q. Is real-time data analysis required or will the data be collected at the end of the day?

A. Real-time data analysis is not expected. A daily output of the accumulated activity would be fine or an alert system that identifies if a mouse has not approached the hopper in a specified time, e.g. 24 hours.

Q. Is it possible to use a different device to house the pellets?

A. No, the homecage and the hopper should remain the same because it takes time for mice to get used to their new surroundings so may change the animals eating habits.

Q. How many mice are housed per homecage?

A. The average number of mice house per homecage is three, but this can increase to five.

Q. Is the amount of time an animal spends at the food hopper important, e.g. a mouse with a muscular problem may spend longer eating the same quantity of food?

A. The amount of time spent eating can be averaged and validated, so changes can be used to identify animals where further metabolism studies may be required, e.g. using calorimetry.

Q. What is the maximum price this device should cost?

A. The price should be low to ensure the device is affordable for everyone and to increase uptake of the device in facilities. As a benchmark, we suggest the device costs less than £50 per cage although this is an optimistic target- the concept of widespread accessibility is important to the project.