

NMR Body Composition Analyser

I. Objective

Measuring body fat and lean body mass in mice.

II. Comments and Recommendations

- This procedure has been written with specific reference to the Integrated Physiology Facility (IPF), the NMR unit comprises both software (Bruker Minispec Plus) and hardware (Minispec LF50 NMR Analyser) components and may only be used by an IPF approved experienced operators
- Use of the NMR must be described in a relevant animal ethics application
- Users should read and understand the associated Risk Assessment prior to operation: 3987 Use of NMR, 3657 UQBR Handling and restraint of laboratory animals; 3940 Handling rats and mice (available on the [UQSafe](#) website)
- Warning: strong magnetic field may interfere with pacemaker function
- Equipment/software failures and animal escapes need to be reported to the animal facility manager immediately
- All incidents/injuries should be reported via [UQSafe](#) online
- Spills must be cleaned up immediately
- Use of the NMR involves mouse handling and appropriate care should be taken, refer to [LAB 006 Handling and restraint in mice and neonates](#), and [LAB 039 Handling and Restraint in Rats and Neonates](#)
- Wild type and genetically modified animals must be transported to equipment as per OGTR guidelines and [LAB 003 Transportation of Laboratory Rodents](#)
- The IPF is a shared space with unknown commensal microbial status. Once transported to a shared space it is often not possible, for biosecurity reasons, to return rodents to their original animal facility. Arrangements for transportation and ongoing care of experimental animals must be made with relevant animal facility managers when planning projects that aim to use a shared facility

III. Equipment

- Minimum Personal Protective Equipment (PPE) consists of gloves, gown, closed in shoes, eye protection and face mask. Additional PPE may be required based on added risk e.g., working with infectious animals (P2 fitted mask and viral gown).
- Calibration tube (filled with mustard seeds)
- Restraint tube
- NMR imaging unit
- Scales
- Paper towel

- Disinfectant (1-2% Virkon), Ethanol (70%)
- Clinical waste bin

IV. Preparation

- The NMR is always left on. Confirm this prior to procedure by checking 2 green lights are visible on the processor unit. If for some reason the NMR is not on (e.g., loss of power), it may take up to 3 hours before it can be used
- Check booking date/s and time/s on PPMS
- All animal arrivals/departures and euthanasia's must be recorded on the Mosaic movement sheet available in the animal facility

V. Procedure

1. If the computer has been turned off the password on restart is "derik"
2. Open the Bruker Minispec program located on the desktop

Username: "Measure"

3. Use the software to perform 'daily check' (calibration) prior to use:

- Insert tube containing mustard seeds into NMR
- Select start
- Select measure
- Select OK

4. Analysis of mice:

- Name the measurement batch
- Select mouse lean fat mass in calibration drop down box
- Name the individual sample/mouse ID
- Enter weight of mouse
- Encourage the mouse to enter the red tube by holding it horizontal, carefully replace cover
- Select measure prior to restraining the mouse in the tube
- Press the plunger slowly downwards until the animal can no longer move but can still breath freely
- Insert tube containing the mouse into NMR (measurement will start automatically)
- % Fat mass and % Lean mass will be displayed on the machine
- Remove the tube and release the mouse back into home cage
- Clean the tube using water only and dry using a tissue
- Select next sample
- Data can be exported onto an excel file