

# Animal and Bioscience Department

## Title

Development, calibration and validation of feed intake methodology to rapidly screen dairy, beef and sheep for feed intake and efficiency

## Abstract

With competition between livestock and humans for land to produce food for a rapidly growing human population feed conversion efficiency (FCE) within our livestock production systems has never been more important. The potential for genetic improvement of FCE in ruminants has been demonstrated under research conditions, but the means to attain large quantities of feed intake information on individual animals, particularly grazing livestock, has to date proven elusive. To derive genetic evaluations for FCE, the ability to capture accurate information pertaining to feed (energy) intake routinely must be possible. The primary focus of this research proposal is to develop, calibrate and validate novel low-cost methods of measuring feed intake (feed efficiency) in dairy, beef and sheep. Feed intake is chosen as our target, rather than FCE per se, because data on most energy sinks is already available. Once feed intake observations are available, FCE is obtainable. Three recently constructed genetically divergent research herds (flock) in dairy, beef and sheep will be used to develop the methodology. A further three independent research herds (flock) will be used for validation. The resulting technology will be implemented at a reduced scale at commercial farm level to evaluate feasibility. Genetic evaluations and genomic predictions for feed intake will finally be estimated. Two secondary objectives of the current proposal are 1) to verify the impact of current breeding goals in dairy beef and sheep on genetic gain in feed intake and efficiency, and 2) to evaluate the appropriateness of measuring FCE or intake indoors on an energy-rich diet as an indication of FCE or intake in grazing beef animals.

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