**RMDSC Practicum Project B**

**Quantifying the forces applied during assisted calvings and the impacts on newborn beef calves**

1. *Internship position and duties.*

Position - Biostatistics Internship in Veterinary Medical Sciences (Production Animal Health - Beef Cattle)

Duties:

* data organization/cleaning and force outcome generation (see #2 below)
* statistical analysis, multivariable logistic and linear regression modelling
* report preparation/summarization of findings for a manuscript

1. *Brief background information on project.*

A difficult birth is recognized as a leading cause of calf morbidity and mortality. However, there is little available data that quantifies the forces applied during an assisted delivery and the associated compromise in the newborn calf. The objectives of this study were to: 1) quantify the force applied during manual and mechanical delivery of beef calves, and 2) examine the association of force with calf birthweight, vigour, acid-base imbalances, and tissue trauma.

Twenty-six cows requiring assistance at delivery were enrolled. Calvings were assisted by manual delivery (1 or 2 technicians) or mechanical delivery (fetal calf extractor, i.e. calf jack). Modified obstetric chains containing force measuring devices were applied to the calf for delivery. The modified obstetric chains were verified using known masses ranging from 25 kg to 200 kg in increasing increments of 25 kg. Force parameters (peak force, duration of pull, total applied force, and maximum jerk force) will be calculated and compared by delivery method. The associations of force parameters with calf birth weight and clinical indicators of vigour (suckle reflex), acid-base imbalances (blood L-lactate concentration; LAC), and tissue trauma (blood creatine kinase concentration; CK) will be determined.

1. *Timelines including deliverables and deadlines.*

Data collection is complete. The internship could start as soon as possible, but is flexible based on student availability. Data analysis should be complete prior to the end of August/early September 2018. Report/manuscript preparations could occur after this time.

1. *Relationship to thesis research or program of study: is this a research internship, skills internship, combination of both?*

Skills internship

1. *Learning outcomes including skills/knowledge development and specific project deliverables (list up to 5).*

-outcome generation using biomechanical data (converting time series energy values into clinically-relevant force parameters)

-multivariable linear and logistic regression modelling (determining a. associations between delivery type and force parameters; b. associations between force parameters and clinical outcomes)

-data reporting (preparation of tables, graphs, and figures for professional presentations and scientific manuscript publication)

1. *Conflicts of interest to declare: by supervisor (e.g., owner or co-owner of company), by student, other.*

None.

1. *Start date, End date, Expected number of hours per week*

Start: As soon as available

End: ~Sept 2018

Hours/wk: Flexible. Likely total of approximately 80-100hrs, depending on student’s level of skill.