



MSc. Defence

Gastrointestinal development of pre-weaned dairy calves fed whole milk powder or a high fat milk replacer

Siobhan Mellors

Date: December 14th 2021 at 9:30am

The MSc Defence for Siobhan Mellors has been scheduled for December 14th, 2021 at 9:30am. The defence will be held online via Teams: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDRiNzdjMTktNzhkNS00MjdLThkMTEtNWFjMzg2ZTZkMDQ5%40thread.v2/0?context=%7b%22Tid%22%3a%22be62a12b-2cad-49a1-a5fa-85f4f3156a7d%22%2c%22Oid%22%3a%22fbd28915-dda5-478f-8ecb-a3682dcf0c3a%22%7d

The exam committee will consist of:

Examining Chair: Dr. Kate Shoveller

Advisor: Dr. Mike Steele

Adv. Committee Member: Dr. Katie Wood

Additional Graduate Member: Dr. Vern Osborne

Abstract:

Due to the high prevalence of gastrointestinal diseases and disorders in dairy calves, optimizing nutritional strategies to enhance gastrointestinal (**GIT**) development and improve calf health is at the forefront of industry concerns. This thesis investigates the effects of whole milk powder (**WP**) and milk replacer (**MR**) of similar macronutrient composition on GIT development, function, and composition in male Holstein calves. Calves fed the WP treatment had greater foregut and lower gut mass compared to MR fed calves, specifically the mass of the rumen and small intestine. When evaluating histomorphological measures, the surface area index of the distal jejunum of WP calves was increased compared to the MR. Additionally, the transcellular permeability of WP calves was increased. The treatments in this thesis also altered the free fatty acid and phospholipid profile of the jejunum and the ileum. These findings suggest that the fatty acid profiles of WP and MR affect GIT physiology from the gross morphology to the phospholipid composition, which may cause changes to membrane fluidity and cell function.