

MSc Defence

VITAMIN A ENRICHED DIET AT LATE GESTATION AFFECTS INTRAMUSCULAR FAT DEPOSITION IN BEEF OFFSPRING

Sarah Dean

Date: July 18th 2024 at 9:00am

The MSc Defence for Sarah Dean has been scheduled for July 18th, 2024 at 9:00am. The defence will be held online via Teams and in room 141: https://teams.microsoft.com/l/meetup-join/19%3ameeting_OTJkNmUwMjktZTI0OC00NWRkLTkzNDYtZjQ0ZjFkMTk1OTFm%40thread.v2/0?context=%7b%22Tid%22%3a%22be62a12b-2cad-49a1-a5fa-85f4f3156a7d%22%2c%22Oid%22%3a%22fd28915-dda5-478f-8ecb-a3682dcf0c3a%22%7d

The exam committee will consist of:

Examining Chair: Dr. John Cant

Advisor: Dr. Marcio Duarte

Advisory Committee Member: Dr. Katie Wood

Additional Committee Member: Dr. Angela Canovas

Abstract:

Marbling is an important factor of high-quality beef as it greatly increases the palatability and consumer satisfaction. Thus, a better understanding of the mechanisms of which intramuscular adipocytes develop is key to enhance marbling without compromising the beef production efficiency. The development of adipocytes begins in utero when a pool of mesenchymal progenitor cells differentiates into either myogenic or adipogenic/fibroblastic lineages. During the intrauterine development of skeletal muscle, myogenesis occurs first, leading to the formation of muscle fibers and satellite cells. In contrast, adipogenic cells develop during mid to late gestation. Promoting the increase of adipogenic cells, or their commitment to adipogenesis may increase the intramuscular fat deposition at early stages of life. Maternal nutrition has been shown to be an effective intervention through which offspring skeletal muscle development can be altered and thus, various studies have been done to evaluate timely nutritional strategies to enhance fetal programming. Additionally, studies in models other than cattle have suggested that vitamin A supplementation at early stages of life promotes the adipocyte hyperplasia through regulation of genes associated with adipogenesis. In this thesis it was demonstrated that vitamin A enriched diet during late gestation increases the intramuscular adipogenesis in the neonate calf and it is associated with an increase in intramuscular fat deposition postnatally.