UNIVERSITY of GUELPH

ONTARIO AGRICULTURAL COLLEGE

DEPARTMENT OF ANIMAL BIOSCIENCES

MSc. Defence

The Effects of Arginine on Gene Expression in Bovine Mammary and Longissimus Dorsi Tissues

Madison Fox

Date: May 11th 2022 at 9:00am

The MSc Defence for Madison Fox has been scheduled for May 11th, 2022 at 9:00am. The defence will be held online via Teams: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODJhOThiZjItZGYzOS00MDZmLWFhOTctMDI1ZDE1YmQ1MDg0%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. Marcio Duarte

Advisor: Dr. John Cant

Adv. Committee Member: Dr. Lee-Anne Huber

Additional Graduate Member: Dr. Kate Shoveller

Abstract:

The objective of this study was to determine effects of Arg supply on the expression of a select set of genes related to AA metabolism, vascular function, cellular regulation of protein synthesis, and cell differentiation and turnover between the mammary and longissimus dorsi tissues. Six rumen-cannulated, lactating Holstein cows were used in a replicated 3 × 3 Latin square design with 14-d periods. Treatments were continuous abomasal infusion that supplied 0 (ARGx0), 49.2 (ARGx1), and 98.4 (ARGx2) g/d Arg in an otherwise complete AA mixture at 1054 g/d. Arg appeared to support milk production and maintain the protein synthesis setpoint in the mammary glands through up-regulation of genes related to Pro synthesis, AA transport, and protein synthesis regulators, whereas gene expression in muscle was consistent with an optimized response to Arg supply and supported the milk production setpoint by acting as a buffer to supply additional AA to the mammary glands.