



ONTARIO  
AGRICULTURAL COLLEGE

DEPARTMENT OF ANIMAL BIOSCIENCES

MSc Defence

The Metabolic Cost of Keel Bone Fractures in End-Of-Lay Hens Using  
Doubly Labelled Water and Respirometry

Jacob Brost

Date: January 10th 2024 at 2:00pm

The MSc Defence for Jacob Brost has been scheduled for January 10th, 2024 at 2:00pm. The defence will be held online via Teams and in room 230: [https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_ZWQyNzBmMzEtNWU1YS00MmE1LWlyMGQtYTRiMGUyNTFINTcy%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](https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZWQyNzBmMzEtNWU1YS00MmE1LWlyMGQtYTRiMGUyNTFINTcy%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. Dan Tulpan

Advisor: Dr. Alexandra Harlander

Advisory Committee Member: Dr. Don Powers

Additional Committee Member: Dr. Gregoy Bedecarrats

**Abstract:**

The prevalence and severity of keel bone fractures (KBF) among laying hens have become an increasing concern to industry partners, welfare researchers, and animal activists. The current body of research on KBF is highly condensed to hens in the peak-of-lay phase, and end-of-lay phase remains insufficiently examined, leaving the effects of KBF on these hens poorly understood. Little is known on the potentially chronic and long-term impact KBF, even when healed, may have on end-of-lay hens. To bridge this knowledge gap, our study utilizes metabolic measures, doubly labeled water (Chapter 2) and respirometry (Chapter 3), to explore the impacts KBF have on end-of-lay hens. While the mean metabolic measurements, from doubly labelled water and respirometry, between the two groups did not reveal statistically significant differences, intriguing findings related to variation of results within groups, the duration of activity, and allometry suggest a potential interplay between KBF and metabolism during the end-of-lay phase. Future research is necessary to determine the exact effects KBF has in end-of-lay hens.