



MSc. Defence

**FUNCTIONAL GENES AND REGULATORY ELEMENTS INFLUENCING IMMUNE RESPONSE OF SHEEP
TO GASTROINTESTINAL NEMATODE INFECTION**

Olivia Willoughby

Date: April 26th 2023 at 10:00am

The MSc Defence for Olivia Willoughby has been scheduled for April 26th, 2023 at 10:00am. The defence will be held in room 141 and online via Teams: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTA5Y2I1YTMtMTM1Ni00ZWQ1LTk4ZTEtMzExNjI2MDA4M2Vi%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. Andy Robinson

Advisor: Dr. Angela Canovas

Adv. Committee Member: Dr. Niel Karrow

Additional Graduate Member: Dr. Mike Steele

Abstract:

Infection with gastrointestinal nematodes is a challenging and costly disease for sheep producers that impacts the economic efficiency of farms and reduces the welfare of infected animals. There is evidence that resistance to gastrointestinal nematodes is a heritable trait in sheep, and genetic selection for this trait is a novel method for Canadian sheep producers to reduce levels of gastrointestinal nematode infection in their flocks. This thesis sought to identify functional regulatory elements including genes, mRNA isoforms, and long non-coding RNA that regulate the host immune response to gastrointestinal nematode infection in sheep using hepatic tissue collected from animals with various levels of gastrointestinal nematode infection and immune responsiveness. A list of candidate key regulatory genes, mRNA isoforms, and long non-coding RNAs were identified. These candidate regulatory elements may be used in future genomic selection programs to increase the resistance of grazing sheep to infection by gastrointestinal nematodes.