

# PATHOBIOLOGY RESEARCH PROJECTS IN CLINICAL PARASITOLOGY

Clinical parasitology is the study of diagnostics, treatment and control methods for parasite infections in animals

## Genotype analysis to evaluate the occurrence of drug resistance in heartworms infecting dogs in Ontario

Drug resistance has recently been described in heartworm parasites in the Mississippi River Valley.

Blood samples are being collected from dogs infected with heartworm in Ontario and sent to McGill University where the parasites (microfilariae) are analyzed for potential genetic markers for resistance. Information collected through medical history questionnaires will be combined with the genetic analysis to determine the utility of the genetic markers for identifying drug-resistant infections, and to identify risk factors for dogs contracting drug-resistant parasites.

### Collaborators:

Dylan Engell and Andria Jones-Bitton, Ontario Veterinary College  
Jennifer Ogeer and Jonas Goring, Idexx Laboratories  
Catherine Bourguinat and Roger K Prichard, The Institute of Parasitology, McGill University



## Investigation of the immune response of sheep to gastrointestinal nematodes under Ontario grazing conditions

Gastrointestinal nematodes (GINs) have a serious impact on sheep health and productivity in Ontario. Since resistance of GINs to anthelmintic drugs is widespread, alternative strategies are needed to control GINs.

This project aims to describe how Ontario sheep develop immunity to GINs by following a commercial flock of ewe lambs for 2 grazing seasons. Animals will be monitored regularly throughout the study to identify traits that predict improved immunity to GINs, allowing selection of sheep resistant to GINs for breeding.

### Collaborators:

Emma Borkowski, Niel Karrow, Paula Menzies, Brandon Lillie, Jacob Avula, Ontario Veterinary College  
John Gilleard, University of Calgary



Heartworm microfilaria



Haemonchus sp.



## Prevalence and geographic distribution of *Echinococcus multilocularis* in coyotes and foxes in southern Ontario

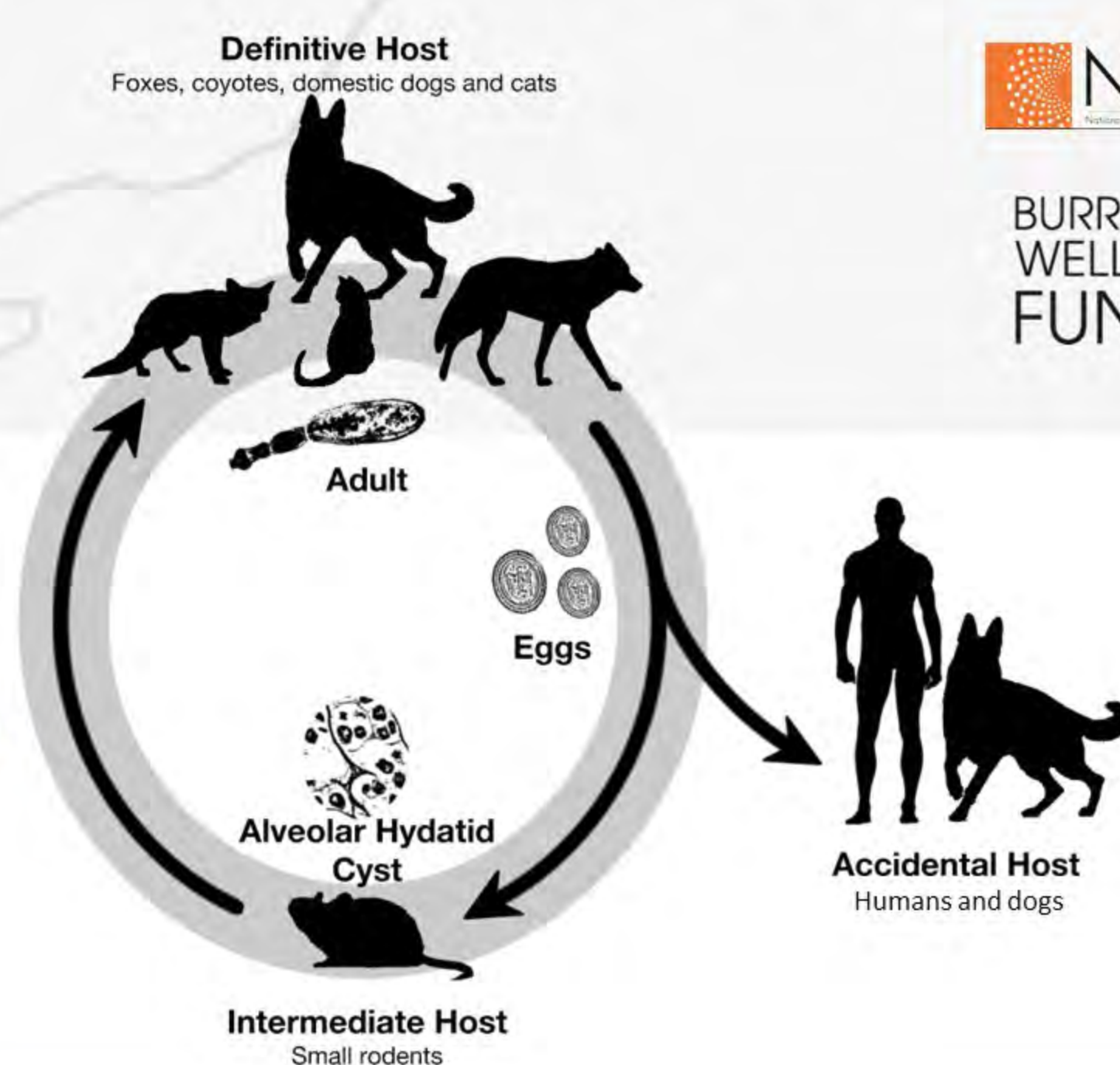
Alveolar echinococcosis (AE) is a potentially fatal disease caused by the intermediate stage of the zoonotic tapeworm *Echinococcus multilocularis* and can occur in both humans and domestic dogs. Prior to 2012, no case of *E. multilocularis* had been reported in Ontario. However, since then 4 cases of AE have been reported in dogs in southern Ontario; 3 had never left the province. This project is determining the prevalence of infection in coyotes and foxes (the most likely definitive hosts) across southern Ontario, and will identify risk factors for infection in these species.

### Collaborators:

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Life cycle of *Echinococcus multilocularis*



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