Introduction

- Intestinal nematodes infect an estimated 3.5 billion people worldwide.
- Nutrition and the immune response to intestinal nematode infection are intricately connected within a host.
- Protein supplementation to diet:
  - reverses parasitic infections
  - enhances development of immunity against intestinal nematode infection
  - is selected for by parasitized hosts

Objective of the Study

To determine how consumption of protein-rich plant and insect taxa changes during intestinal nematode infection.

Methods

- Trap mice and treat with drug to remove intestinal nematode infection
- Count parasite eggs present in fecal samples
- Use fecal DNA metabarcoding to determine the food consumed by mice
- Determine relative abundance of food sources at each of 4 field sites
- Determine relative abundance of protein rich plant and insect groups in infected and healthy mice.

Results

- Vaccinium species were the most prevalent food source; preliminary information suggest mice eat these plants.
- Acorns were also eaten by the mice, and were fairly prevalent.
- Plant distribution across all four study sites was varied.

- The most commonly observed nematode infection was that of Syphacia peromysci.
- Nematodes infected on average 25.2% of captured mice per day throughout the entire summer.

Discussion

- A variety of plant species are available to mice for consumption.
- Fecal samples used for diet analysis were representative of sex and treatment type.
- Syphacia peromysci was the most common nematode found.

Looking Ahead

- Sequence plant and insect DNA from fecal samples to determine relative abundance.
- Determine if diet composition changes during nematode infection and after treatment to remove infection.

Conclusion

- Adequate data and samples have been collected in order to analyze fecal DNA and determine potential changes to diet with infection.

Acknowledgements

I would like to thank Professor Andrea Graham and Sarah Budischak. I would also like to thank the Center for Health and Wellbeing, the Round Table Fund, and the EEB department for making this research possible.