

**WIU CENTENNIAL HONORS COLLEGE**  
**Thomas E. Helm Undergraduate Research Day 2022**

**Abstract**

Poster

Major Biological Sciences

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**Interactions Between Two Gastrointestinal Parasites in White-Footed Mice (*Peromyscus leucopus*)**

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Gut-inhabiting parasitic worms (helminths) infect and reduce the health of billions of people and all non-human mammalian species. Because gut parasitism is so widespread, it is critical to identify what determines gastrointestinal parasite loads. One possible determinant is interactions (negative or positive) between different gut-infecting species, but there have been no tests for interactions between most pairs of species. I examined whether there are interactions between the roundworm, *Pterygodermatites peromysci*, and the tapeworm, *Hymenolepis folkertsi*, in the gastrointestinal tract of white-footed mice (*Peromyscus leucopus*). I collected mice from natural woodlots at the Kibbe Life Sciences Station, determined parasite counts through dissections, and combined my data with previously collected data (2014–2021). Parasite counts were not normally distributed (most were 0 or 1), so I performed a series of non-parametric statistical tests to determine whether infection by one worm affected infection by the other. I found a positive pattern of co-infection: both worms co-occurred in one host significantly more often than expected by chance. However, there was a negative correlation between number of individuals of the two species when singly infected mice were included in the analysis, but no correlation when the analysis was restricted to doubly infected mice. Finally, there was no difference in median parasite counts between the two species, nor between single-species infections and co-infections when considering each species separately. These results (positive co-occurrences and negative or no correlations between parasite counts) suggest that shared transmission routes, and not positive facilitation between the species, explain these patterns.