Potomac horse fever (PHF) is a seasonal, severe, and potentially fatal infectious disease of horses caused by Neorickettsia risticii. The life cycle of this bacterium involves flukes (trematodes) and vertebrates such as birds, bats and beavers. The bacterium survives and proliferates in the flukes and the flukes are parasites of freshwater snails and aquatic insects such as caddisflies, mayflies, and dragonflies, which are common sources of the bacterium. PHF is an endemic disease, especially in southern Ontario, but the extent of the affected areas is unknown. The disease incidence, seasonal risk factors, and the natural environmental reservoir of N. risticii have never been conducted in Ontario.

Our research group aim at determining whether snails, emergent insects and their larval stages, and vertebrates (such as bats) harbour N. risticii in different regions of southern Ontario and the strain types prevalent in each region. Bacterial strains isolated from horses with clinical disease in each region can be compare to those isolated from flukes and flies and confirm their role in the bacterial life cycle.

The student will be involve in analysis of samples and performing including snail and flies larvae (mayflies, caddisflies, dragonflies), and horse samples. We will test for the presence of N. risticii in these samples as well as, in collaboration with bat researchers, tissues from ~ 100 bats / per year (~200 total), which have been collected from different regions of the province. We will also develop a PCR for a new Neorickettsia species that has been recently identified in Ontario horses and causes similar clinical signs to PHF.