Our lab focuses on infectious diseases of free-ranging wildlife, along with the complex interactions at the wildlife – human – domestic animal interface. We have a specific interest in pathogens transmitted by arthropod vectors (e.g., ticks, mosquitoes and biting midges), as well as the dynamics among vertebrate hosts, vectors and pathogens in a constantly changing environment.

**Powassan virus and other tick-borne pathogens in wildlife**

Global climate change is enabling the geographic range expansion of some species of wildlife, arthropod vectors, and the pathogens they harbor. We are surveying wildlife in Ontario to characterize tick-host relationships and look for evidence of infections with tick-borne pathogens. For example, Powassan virus is a zoonotic tick-borne pathogen maintained in a sylvatic cycle involving small wild mammals (e.g., groundhogs and skunks) and *Ixodes* ticks that was first identified in Powassan, Ontario. Additional collaborative research includes pathogenesis and serosurveillance for West Nile virus in ruffed grouse in Pennsylvania.

**Pathogen surveillance in wild turkeys**

Wild turkeys in Ontario have become well-established following reintroduction efforts in 1984 and are a popular game bird species. We are assessing hunter-harvested wild turkeys for infectious agents that may cause disease in both wild turkeys and domestic poultry. This work will allow us to assess the overall health of Ontario wild turkeys, establish baselines for future health surveys, and map potential disease “hot spots.”

**Additional wildlife disease research**

Additional wildlife disease research in our lab includes collaborative efforts with the Canadian Wildlife Health Cooperative, the Toronto Zoo, and others to detect, diagnose, and assess emerging and established diseases in Ontario wildlife.

Examples of these projects include surveillance for the protozoan *Babesia odocoilei* in Ontario cervids, evaluation of the red fox as a sentinel for the fungus *Blastomyces dermatitidis*, retrospective review of mortality causes in raptors, surveillance and pathogenesis of snake fungal disease (caused by *Ophiidomyces ophiiodicola*), and comparison of poxvirus diagnostic methods in wild turkeys.