

**ONTARIO VETERINARY COLLEGE**  
**Project Proposal Form:**  
**Summer Research Assistantship**



**ONTARIO**  
**VETERINARY COLLEGE**

**1. BASIC INFORMATION**

**Advisor Name:** Brandon Lillie

**Department:** Pathobiology

**Proposed Start Date:** 2019-05-06

**CONTACT INFORMATION FOR STUDENT APPLICATIONS**

**Name:** Brandon Lillie

**Phone Extension:** 54667

**Email:** blillie@uoguelph.ca

**2. DETAILS OF PROJECT**

**Title of Proposed Project:**

Development and analysis of a novel DNA-based vector/pathogen vaccine in cattle and sheep.

**Outline of Proposed Research Project (please keep concise, approximately ½ page or less):**

The proposed research project is looking at the safety of a novel vaccine approach designed to vaccinate against both pathogen and vector (in this case a tick). As climate changes occur and natural habitats for certain pathogen vectors expands, we are seeing a shift in the prevalence of certain livestock and companion animal disease (for example Lyme disease increasing in prevalence in Ontario and the tick vector of bovine theileriosis recently being found as far north as New Jersey). As part of a large CIHR funded research project looking at animal models and vaccination strategies to control Crimean-Congo Hemorrhagic Fever Virus (CCHFV), another vector-borne viral disease, the first phase of this project (already completed) tested three different DNA vaccines to the virus in sheep. The second and third phase of the project will be occurring during the summer semester. The second phase of this project will involve testing the most immunogenic of the three vaccines in cattle, using 3 different vaccine approaches, intramuscular, intramuscular with electroporation, and a novel intradermal tattoo-based approach. The third phase will test a tick-based vaccine in sheep with the final goal of combining the tick and viral vaccines together prior to challenging the animals with CCHFV at the National Lab in Winnipeg. The OVC summer student will work with the DVSc student on the project and be involved in all aspects of the project that occur during the summer. This includes, but is not limited to, animal health monitoring/records/physical exams and sample collection (e.g. blood collection), as well as sample processing and analysis (e.g. via flow cytometry) as well as data analysis.

The applicant must have proof of a protective rabies titre and being a DVM student would be desirable though is not mandatory. A driver's license would also be considered an asset. The student will also participate in the OVC Summer CORE program.

### **3. AVAILABLE ASSISTANTSHIPS**

Select assistantship most relevant to the proposed research project (multiple boxes may be checked).  
Please note restrictions.

- Andrea Leger Dunbar Summer Research Assistantship:**  
No restrictions
  
- James and Marjorie Pinkney Research Scholarship:**  
Projects in *animal health and welfare*, restricted to veterinary students
  
- OVC Summer Research Studentship:**  
Restricted to veterinary students
  
- Boehringer Ingelheim (previously Merial) Veterinary Scholars Program:**  
Projects in *veterinary medicine*, restricted to veterinary students