

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



**ONTARIO**  
**VETERINARY COLLEGE**

**1. BASIC INFORMATION**

**Advisor Name:** Sarah Wootton

**Department:** Pathobiology

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

**CONTACT INFORMATION FOR STUDENT APPLICATIONS**

**Name:** Sarah Wootton

**Phone Extension:** 54729

**Email:** kwootton@uoguelph.ca

**2. DETAILS OF PROJECT**

**Title of Proposed Project:**

Development of a cell culture based system for production of high titer recombinant Newcastle Disease Virus

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

Newcastle Disease Virus (NDV) is a single-stranded, negative-sense, enveloped RNA virus in the family Paramyxoviridae. NDV infects domestic poultry and other bird species causing respiratory disease. Naturally occurring avirulent strains of NDV are routinely used as live vaccines and recombinant NDVs expressing protective antigens from a range of avian and mammalian pathogens are being developed as veterinary vaccines. In addition to its use as a vaccine vector, NDV is a potent oncolytic virus that has been shown to be safe and effective in a variety of preclinical cancer models, as well as in human clinical trials. In order to produce vaccines or virus for clinical trials, NDV is currently amplified in embryonated eggs and purified from the allantoic fluid. Conventional methods for growing NDV in embryonated eggs are cumbersome, prone to contamination, and importantly from a production perspective, difficult to scale up. Additionally, virus purification from allantoic fluid is technically challenging due to the high levels of impurities, including host proteins, that must be removed.

The goal of this summer internship is to assist in the development and optimization of a cell culture system for producing high titer NDV for clinical applications. A proprietary GMP avian cell line has been obtained and using NDV engineered to express the reporter gene, GFP, optimal media, cell density, multiplicity of infection, and harvest times will be determined.

It is anticipated that the results of this study will lead to the development of a novel cell culture based process for large-scale production of high titer recombinant NDV that can be further purified for use as veterinary vaccines or in oncolytic viral therapy applications.

**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