

ONTARIO VETERINARY COLLEGE
Project Proposal Form:
Summer Research Assistantship



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1. BASIC INFORMATION

Advisor Name: Jeff Caswell

Department: Pathobiology

Proposed Start Date: 2019-05-06

CONTACT INFORMATION FOR STUDENT APPLICATIONS

Name: Jeff Caswell

Phone Extension: 54555

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2. DETAILS OF PROJECT

Title of Proposed Project:

BIP: bronchopneumonia with interstitial pneumonia, a newly recognized disease of beef cattle

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

BIP has never been described in the literature, yet it is the third most frequent cause of BRD mortality in Canadian feedlot cattle. It involves a non-fatal bacterial bronchopneumonia in the cranioventral lung, and fatal interstitial pneumonia in the dorsocaudal lung. The latter is thought to be a feed-related toxicity. The nature of the disease, its cause, and the relationship between these two disease processes are unknown. This project characterizes the pathologic and epidemiologic features of the disease, and investigates the hypothesis that chronic inflammation increases the sensitivity to feed-related toxins. The investigations use tissue samples from BIP cases and controls in Alberta feedlots to characterize the disease and to use immunohistochemistry for cytochrome P450s as indicators of sensitivity to feed-related toxicity. Furthermore, this process will be modeled in vitro in tracheal epithelial cell cultures, to determine how inflammation affects cytochrome P450 expression and susceptibility of these cells to 3-methylindole toxicity. The student will also be involved in developing an experimental model of *M. bovis* pneumonia in calves, and investigating the effect of an inflammatory stimulus on development of pneumonia in this model. Thus, the main activities of the project include histopathology and immunohistochemistry, in vitro culture of epithelial cells, and experimental studies in calves. The research is funded by a Canadian Cattlemen's Association Beef Science Cluster grant. For DVM student applicants, an additional opportunity is to participate (to a limited extent) in diagnostic pathology in the postmortem room.

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