MSc or MBS position: Innate immune responses in bovine respiratory disease

A 2-year MSc position is available in the Department of Pathobiology, University of Guelph, commencing January 2021 or May 2022. The research may also be suitable for a coursework MBS project. The advisor is Dr. Jeff L. Caswell (https://caswelllab.uoguelph.ca/). The research investigates effects of air quality on development of infectious diseases of the respiratory system, and specifically on harmful inflammatory responses induced by organic dusts in barn air. While the principles are applicable across species including agricultural workers, the focus of the research is on why housed dairy calves have increased susceptibility to bacterial pneumonia in the winter months.

Our prior studies showed that inflammation in the respiratory tract negatively affects how calves respond to subsequent bacterial infection. The current research addresses the hypothesis that healthy individuals can tolerate inhaled infectious agents without adverse outcomes, but prior exposure to inflammatory stimuli—such as bacterial products in barn air—cause loss of this tolerance and a harmful disease response to infectious agents. The project involves measuring barn air quality, sampling blood and bronchoalveolar lavage from dairy calves, measuring inflammatory responses in vivo, and investigating the in vitro effects of airborne particulates on macrophages using cytokine analyses and flow cytometry. The research aims to identify mechanisms of how barn air predisposes to infectious diseases, leading to novel approaches to disease prevention in cattle and other species.

The applicant should have completed a BSc with minimum ‘B’ average, with understanding of fundamental immunology and some experience in biomedical laboratory research.

Initial submissions should be sent to Dr. Jeff Caswell (jcaswell@uoguelph.ca) and include a statement of interests and career goals, a curriculum vitae, and transcripts. Review of applications will begin immediately, and continue until the position is filled.

General queries about graduate studies in the Department of Pathobiology should be directed to Ms. Jessie Beer, Graduate Program Assistant, Ontario Veterinary College, University of Guelph, Guelph, Ontario, N1G 2W1, Canada; e-mail: pathgrad@uoguelph.ca; information is available at https://ovc.uoguelph.ca/pathobiology/graduate-studies.