

USRA position for Winter semester 2017

A USRA position to work on **antimicrobial resistance** is available in the laboratory of Dr. Patrick Boerlin, Department of Pathobiology, Ontario Veterinary College.

Starting date: January 9th

Duration: 16 weeks, 35hrs/week

Salary: \$11.40/hour

Application: Deadline is **4:00pm, November 13th**. Please send resume and transcript (unofficial is OK) by email to Patrick Boerlin at: pboerlin@uoguelph.ca.

Previous experience in bacteriology and molecular biology are an asset for this position.

Project description. As stressed recently by the United Nations, antimicrobial resistance is a worldwide and major problem for society. The use of antimicrobials in animals is thought to be an important contributor to the problem. Resistance to third generation cephalosporins (in particular through extended-spectrum beta-lactamases) and more recently to colistin (Mulvey MR, Mataseje LF, Robertson J, Nash JH, Boerlin P, Toye B, Irwin R, Melano RG. Dissemination of the *mcr-1* colistin resistance gene. Lancet Infect Dis. 2016 16:289-90; Schwarz S, Johnson AP. Transferable resistance to colistin: a new but old threat. J Antimicrob Chemother. 2016 71:2066-70) in human pathogens are particularly worrisome and bacteria from animals may be contributors to this problem.

The work for this project will consist in:

1. Participating to the characterization of resistance genes to cephalosporins in bacteria from beef cattle from Alberta through DNA sequencing and gene variant identification for purpose of comparison between bacteria from beef and other sources. See related publication by one of our former undergraduate students: Cormier AC, Chalmers G, McAllister TA, Cook S, Zaheer R, Scott HM, Booker C, Read R, Boerlin P. Extended-Spectrum-Cephalosporin Resistance Genes in *Escherichia coli* from Beef Cattle. Antimicrob Agents Chemother. 2015 60:1162-3.
2. Participating to the screening of fecal samples from swine in Ontario for the presence of *Escherichia coli* resistant to colistin by means of bacterial cultures using selective media and detection by real-time PCR. This part of the work is collaboration with researchers in the Department of Population Medicine.

The work will be conducted in the laboratory of Dr. Patrick Boerlin, Department of Pathobiology under the supervision of a qualified technician and of an experienced graduate student. The USRA student is expected to conduct the planned work during normal working hours.

Please note: Students must have been registered in the summer or fall term in order to qualify for the position (i.e. students who have graduated in the last 2 semesters would also qualify for this position). The candidate cannot have already taken up an award in the 2016-17 fiscal year, as students can only hold one per fiscal year, and can hold a maximum of 3 in their undergraduate program. The selected student can only be registered in 1 or 2 courses (possibly DE courses) during this term of this USRA placement.