

FIELD OF SPECIALIZATION

Microbes, Immunity and Inflammation



Research in this field focuses on fundamental questions at the cellular and molecular level involving viral and bacterial organisms and the immune system. Research areas include pathogenic and nonpathogenic organisms, inflammatory responses associated with infection, allergies, asthma, inflammatory bowel diseases, cancer and cardiovascular disease and advances in therapeutic strategies including drug and vaccine development.



CAREERS

Career opportunities range from research technician, scientist, administrator in academia, private sector (biotechnology pharmaceutical industry, consulting firms), or in the government sector (Health Canada, Ministry of the Environment and Agriculture).

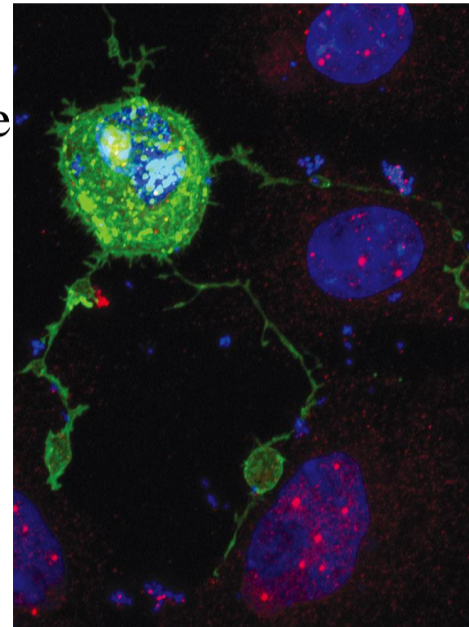
COURSES

The Biomedical and Molecular Sciences MSc requires, at minimum, the completion of 12 credit units at the graduate level. BMED 860* (3 credit units, Fundamentals of Academic Research and Research Proposal) and BMED 897*(3 credit units, Biomedical Sciences Seminar Program). Additional required credit units for the Microbes, Immunity and Field of Specialization are: MSc Students in this field must complete 6 credit units from any of the graduate courses offered by the Department in consultation with the supervisor.



FACULTY

B. Banfield: Molecular characterization/analysis of viral proteins important in signal transduction in herpes simplex virus, varicella-zoster virus and pseudorabies virus



S. Basta: Virus-host interactions, focusing on the immunobiology of antigen presenting cells

M. G. Blennerhassett: Effects of inflammation on the nerve-smooth muscle relationship of the intestine

E. B. Carstens: Cellular and molecular biology of viral replication, including roles and interactions of viral and host cell components in viral replication, diversity within a host and host range

A. Daugulis: Cell culture engineering, protein expression, partitioning bioreactors for biosynthesis and bioremediation, bioprocess development, modeling and simulation of bioreactors

A. Ellis: Allergic diseases

K. Gee: Cytokine expression and function regulation during infection and inflammation

K. F. Jarrell: The unique flagella of methanogenic archaea, from physiological, ultrastructural and genetic aspects

A. Majury: Respiratory viral infections, pandemic influenza, environmental microbiology, epidemiology, zoonotic diseases and public health

N. L. Martin: Understanding how *Salmonella typhimurium*, a common cause of food poisoning, senses and adapts to changes in environments relevant to infection

J. Martinez-Cajas: Optimization of HIV treatment and better, earlier detection of HIV infection and resistance

E. O. Petrof: Probiotics, microbial-epithelial cell interactions in the gut, and the effects of intestinal bacteria on inflammation

R. K. Poole: Bacterial multidrug efflux pumps and their role in antibiotic and biocide resistance and treatment failure. Role of iron transport in the pathogenesis of *Pseudomonas aeruginosa*

L. Raptis: Signal transduction in cell transformation and adipocytic differentiation

M. Szewczuk: Role of Toll-like receptors in inflammation and infection

V. Walker: Stress genes and the molecular basis of resistance

W. Wobeser: HIV and epidemiologic studies of Tuberculosis

