Biomedical Sciences: MBS, MSc, PhD

The Department of Biomedical Sciences provides unique opportunities for translating fundamental research into practical applications that enhance animal and human health. Our expertise spans several disciplines including biomechanics, cancer biology, endocrinology, neuroscience, pharmacology and toxicology, reproductive biotechnology, cardiovascular biology, and stem cell and regenerative biology.

https://www.ovc.uoguelph.ca/biomedical-sciences/

Program

Master’s students can choose between a Master of Biomedical Science (MBS), a coursework plus a major research project/paper (approximately three semesters) or the Master of Science (MSc), which is the preparation and defense of a research-based thesis (approximately six semesters).

The PhD program requires the successful completion of a qualifying exam and the completion and defense of a research-based thesis.

Research Fields

- Reproductive Biology & Development
- Cellular & Molecular Basis of Disease
- Biomedical Toxicology & Pharmacology
- Neuroscience

Admission Requirements

Applicants should have an Honours BSc in biological sciences or a degree in veterinary medicine (or equivalent), with a minimum average “B+” standing for the last four semesters. Letters of reference from two of the applicant’s professors must be provided with the application.

Application Deadline:
Fall: August 1
Winter: December 1
Summer: April 1

"At Guelph, you have the ability to get to know professors personally, and relating with them on a professional level. This has been something that I would never think was possible until this year.” - Kathy Jacyniak (Biomedical Sciences, PhD)

Facilities

Facilities include individual labs, multi-investigator labs and common equipment areas that have been renovated with the aid of funding from the Canadian Foundation for Innovation. Research equipment includes an Applied Biosystems ViiA7 and multiple Bio-Rad CFX96 Real-Time PCR Detection Systems, NanoDrop Spectrophotometers, Accuri C6 System Flow cytometers, a full Proteomics suite consisting of a Typhoon scanner, spot picker and DeCyder analysis Software, ChemiDoc XRS+ Systems, a Histology core facility, Fluoview FV1200 Laser Scanning Confocal Microscope, fluorescent microscopes, a Neuronal Cell Imaging System, fluorescent plate readers, an Analytical HPLC Facility and as well as specialized laboratory equipment.

ARE YOU INTERESTED IN:

- How the brain works?
- How the heart and circulatory system work?
- How pregnancy is maintained and regulated?
- How drugs and toxins affect the body?

CAREER OPPORTUNITIES:

- Professor/Scientist
- Doctor (Veterinary or human)
- Dentist/Pharmacist
- Physiotherapist

CONTACT INFORMATION

Graduate Coordinator, MSc & PhD:
Dr. Jon LaMarre
jlamarre@ovc.uoguelph.ca

Graduate Coordinator, MBS:
Dr. Glen Pyle
gpyle@uoguelph.ca

Graduate Program Assistant:
Christina Voll
519-824-4120 ext 54780
bmsgrad@uoguelph.ca
Departmental Graduate Faculty with Research Areas

CARDIOVASCULAR HEALTH

Martino - Circadian regulation of cardiovascular health and disease; chronotherapy, sex differences, cardiac aging, circadian medicine, preclinical translation, “omics” and bioinformatics, heart-brain, microbiome.

Pyle - Sex differences in cardiovascular health and disease; heart failing; ageing

Saleh - Autonomic control of the heart following stroke

CANCER CELL BIOLOGY

Moorehead - Breast and lung tumor development and progression

Petrik - Novel therapies for the treatment of advanced stage ovarian cancer

Coomber - Biology of solid tumours

Viloria-Petit - Molecular mechanisms of breast cancer invasion and metastasis

Mutsaers - Metronomic chemotherapy and tumour angiogenesis

STEM CELL AND REGENERATIVE MEDICINE

Vickaryous - Wound healing and tissue regeneration; stem cells; non-mammalian species

Koch - Stem cell isolation, function and application, tissue-engineering, canine and equine studies

REPRODUCTIVE BIOLOGY

LaMarre - Small RNAs in the control of gene expression in gametes and embryos

King - Cytogenetic and morphologic aspects of fertilization and early development

Bartlowski - Hormonal control of ovarian antral follicle development in domestic ruminants

Madan - Cellular, molecular and genetic mechanisms regulating preimplantation embryogenesis

NETROSCIENCE

Bailey - mechanisms underlying the development and function of the prefrontal cortex and hippocampus, and how these may be altered in developmental brain disorders

MacLusky - Neurosteroid modulation of hippocampal structure and function

Kalisch - Regulation of gene expression in cholineric neuron function and Alzheimer Disease

Khokhar - Using animal models and advanced imaging techniques to study the neurobiological basis, and consequences, of substance use disorders in patients with serious mental illness

PHARMACOLOGY AND TOXICOLOGY

Johnson - veterinary clinical pharmacology, pharmacokinetics, clinical trials, human food safety, drug depletion studies

Kirby - Molecular Toxicology and Diagnostics

OTHER

Hanna - Assessment of the teaching of critical thinking and scientific literacy in DVM and BSc curricula, and development of new methods

Conlon - Communications: Veterinary - client interactions

Thomason - Biomechanics of the mammalian musculoskeleton

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