

Dear Prospective Graduate Student,

Welcome to the Department of Biology! With over 30 research laboratories and approximately 100 MSc and PhD students, the Department of Biology has one of the largest graduate programmes in the Faculty of Science at McMaster University. Our research-intensive department embraces a broad spectrum of fields of investigation including genetics, cellular and molecular biology, ecology and evolutionary biology, bioinformatics, physiology and developmental biology, plant biology and microbiology, and radiation biology. A list of research activities in Biology is provided in this brochure and on our web site: www.biology.mcmaster.ca.

Graduate students are central to the research activities of the Department of Biology. Our graduate supervisory structure and regulations acknowledge this role and promote the active participation of graduate students in all aspects of their studies. Graduate students will take ownership of their research project by contributing to the design, development and execution of their experimental programme. We also ensure that all graduate students, from Canada and abroad, are funded and provided with the resources to complete their degree in a timely manner and become successful scientists.

Graduate students in Biology are recognized for their hard work, dedication and contributions to graduate student life. The annual Graduate Research Day event showcases the research achievements of our students. Throughout the year, there are many additional opportunities for earning internal and external awards, including leadership experience as a "Biology Graduate Student Ambassador".

The Biology Graduate Student Society (BGSS) organizes numerous sporting, cultural and entertainment events including the annual summer picnic, "Welcome Events" for new students and the end of the year celebration: "The Holly Frolic". Members of the BGSS also coordinate a seminar series and serve on departmental committees.

We invite applications from prospective students throughout the year. Please see our website for preferred deadlines. Students may officially begin their graduate studies in January, May or September. If you are interested in a graduate career in Biology, please contact us by phone or e-mail. For information on our graduate programme, application procedure and deadlines, travel and entrance scholarships, please visit: www.biology.mcmaster.ca/graduate. We will be happy to answer your questions and organize a visit of the Department of Biology.

Best wishes,

Jianping (J-P) Xu

Professor and Associate Chair (Graduate Studies)



Thank you for your interest in Graduate Studies in Biology at McMaster University. For more information on the range of possibilities that relate to your specific interests, please feel free to contact us.

Check out our website:

www.biology.mcmaster.ca

If you are seeking information pertaining to the research of a particular faculty member, contact the researcher directly, and visit:

www.biology.mcmaster.ca/faculty

If you have specific questions, please contact:

Barb Reuter, Academic Program Assistant (Graduate)

Tel: (905) 525-9140, ext. 23546

E-mail: biograd@mcmaster.ca

We look forward to hearing from you.

Jianping (J-P) Xu

Professor and Associate Chair (Graduate Studies)

Department of Biology

Life Sciences Building

McMaster University

1280 Main Street West

Hamilton, Ontario, Canada L8S 4K1



BIOLOGY

McMaster
University 

Research Faculty

Our members engage in broad range of research activities including:

- ✓ **Bioinformatics and Functional Genomics (BFG)**
- ✓ **Cell and Developmental Biology (CDB)**
- ✓ **Ecology and Evolution (EE)**
- ✓ **Environmental Physiology (EP)**
- ✓ **Genetics and Molecular Biology (GMB)**
- ✓ **Microbiology and Plant Biology (MPB)**
- ✓ **Radiation Biology (RB)**

The descriptions below are intended to highlight major research activities underway. We welcome you to visit faculty websites or contact the members directly for more information.

André Bédard [CDB; GMB]

Characterization of cell proliferation and transformation

✉ abedard@mcmaster.ca

Ben Bolker [BFG, EE]

Mathematical and statistical analysis of ecological, evolutionary, and epidemiological systems, focusing on disease and spatial dynamics

✉ bolker@mcmaster.ca

Robin Cameron [GMB; MPB]

Understanding the signaling pathways and molecular genetic mechanisms responsible for plant immunity to microbial pathogens.

✉ rcamero@mcmaster.ca

Ana R. Campos [CDB; GMB]

Developmental neurobiology and behavioural genetics in *Drosophila melanogaster*

✉ camposa@mcmaster.ca

Patricia Chow-Fraser [EE]

Assessment of anthropogenic impacts on the functional ecology of freshwater ecosystems, in particular, lakes and wetlands of the Great Lakes basin

✉ chowfras@mcmaster.ca

Juliet Daniel [GMB]

Roles of cadherins, catenins and transcription factors in normal cell growth, cancer and development

✉ danielj@mcmaster.ca

Susan A. Dudley [EE]

Phenotypic plasticity of plants to the environment and to other plants, including kin recognition responses to relatedness of plant neighbours

✉ sdudley@mcmaster.ca

Jonathan Dushoff [EE; BFG]

Theoretical and computational investigations of the evolution and spread of infectious disease

✉ dushoff@mcmaster.ca

Ian Dworkin [EE, BFG, GMB, CDB]

Studying the evolution of complex phenotypes such as organismal shape and behaviour by integrating quantitative genetics, genomics, development and experimental evolution.

✉ dworkin@mcmaster.ca

Marie Elliot [BFG; MPB; GMB]

Development in multicellular bacteria; regulation by small RNAs; antibiotic production

✉ melliot@mcmaster.ca

Ben Evans [BFG; EE; GMB]

Molecular evolutionary analysis of biodiversity and gene duplication

✉ evansb@mcmaster.ca

Turlough Finan [BFG; MPB]

Microbiology & Synthetic Biology: Genomic analysis of the N₂-fixing bacterium *Sinorhizobium meliloti*

✉ finan@mcmaster.ca

G. Brian Golding [BFG; EE; GMB]

Molecular evolution, genomics, bioinformatics, computational biology

✉ golding@mcmaster.ca

Bhagwati P. Gupta [CDB; GMB]

Molecular genetics of reproductive system development in nematodes

✉ guptab@mcmaster.ca

Suleiman Igdoura [GMB]

Human genetics and mechanisms of disease

✉ igdoura@mcmaster.ca

J. Roger Jacobs [CDB; GMB]

Genetic regulation of heart morphogenesis, Extracellular matrix in growth and aging of the heart

✉ jacobsr@mcmaster.ca

Karen Kidd [EE]

Ecotoxicology; effects of contaminants on aquatic food webs; modeling of food web structure and trophic transfer of contaminants

✉ karenkidd@mcmaster.ca

Jurek Kolasa [EE]

Field and theoretical ecology of aquatic communities: Organization and function in context of heterogeneity, habitat hierarchy, and scale; responses to environmental gradients using tropical microcosms

✉ kolasa@mcmaster.ca

Grant McClelland [EP]

Integrative physiology of muscle and animal performance, environmental stress

✉ grantm@mcmaster.ca

Carmel Mothersill [RB]

Biological effects of low doses ionising radiation on non-human species with particular interest in radiation protection and mechanisms

✉ mothers@mcmaster.ca

Michael J. O'Donnell [EP]

Ionoregulation and excretion in invertebrates and fish: Cellular mechanisms and control of epithelial transport

✉ odonnell@mcmaster.ca

James S. Quinn [EE]

Genetic relatedness, parentage and behavioural ecology of colonial and cooperative-breeding birds

✉ quinn@mcmaster.ca

C. David Rollo [EE; EP]

Multidisciplinary Studies of Behaviour, Life Histories, Physiology and Aging (and nutritional/pharmaceutical interventions) with insect and mammalian models

✉ rollocd@mcmaster.ca

Herbert E. Schellhorn [BFG; GMB]

Global gene regulation in *Escherichia coli* and other pathogens

✉ schell@mcmaster.ca

Graham Scott [EP; EE]

Evolutionary and environmental physiology in vertebrate animals

✉ scottg2@mcmaster.ca

Colin Seymour [RB]

Biological effects and mechanisms of ionising radiation interaction with human normal and tumour cells and tissues

✉ seymouc@mcmaster.ca

Rama S. Singh [BFG; EE; GMB]

Evolution of sex and reproduction related genes: sexual selection, sexual dimorphism, and health

✉ singh@mcmaster.ca

Jonathon Stone [BFG; CDB; EE; EP; GMB; RB]

Computational biology conducted at multiple hierarchical levels

✉ jstoner@mcmaster.ca

Elizabeth A. Weretilnyk [BFG; MPB]

Molecular and physiological study of plant tolerance to extreme environments

✉ weretil@mcmaster.ca

Joanna Wilson [EP]

Environmental physiology and aquatic toxicology of vertebrates, cytochrome P450 enzymes, metabolism of drugs and contaminants

✉ joanna.wilson@mcmaster.ca

Jianping Xu [EE; MPB]

Molecular ecology and evolutionary genetics of microorganisms

✉ jpxu@mcmaster.ca

Xu-Dong Zhu [GMB]

Molecular mechanisms underlying DNA repair and telomere maintenance

✉ zhuxu@mcmaster.ca

