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. 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.

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: biolgrad@mcmaster.ca

We look forward to hearing from you.

Bhagwati P. Gupta
Professor and Associate Chair (Graduate Studies)
Research Faculty

Our members engage in a 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
[andedb@mcmaster.ca](mailto:andedb@mcmaster.ca)

**Robin Cameron** [GMB; MPB]
Elucidation of the signal transduction pathways that lead to, and the processes responsible for, induced resistance responses, including Systemic Acquired Resistance (SAR) and Age-related Resistance (ARR)
[rcameron@mcmaster.ca](mailto:rcameron@mcmaster.ca)

**Ana R. Campos** [CDB; GMB]
Developmental neurobiology and behavioural genetics in Drosophila melanogaster
[acampos@mcmaster.ca](mailto:acampos@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](mailto:chowfras@mcmaster.ca)

**Juliet Daniel** [GMB]
Roles of cadherins, catenins and transcription factors in normal cell growth, cancer and development
[danielj@mcmaster.ca](mailto: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](mailto:sdudley@mcmaster.ca)

**Jonathan Dushoff** [EE; BFG]
Theoretical and computational investigations of the evolution and spread of infectious disease
[dushoff@mcmaster.ca](mailto: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](mailto:dworkin@mcmaster.ca)

**Marie Elliot** [BFG; MPB]
Development in multicellular bacteria, regulation by small RNAs; antibiotic production
[melliot@mcmaster.ca](mailto:melliot@mcmaster.ca)

**Ben Evans** [BFG; EE; GMB]
Molecular evolutionary analysis of biodiversity and gene duplication
[evansb@mcmaster.ca](mailto:evansb@mcmaster.ca)

**Turlough M. Finan** [BFG; MPB]
Molecular genetic analysis of the N2-fixing bacterium Sinorhizobium meliloti
[finan@mcmaster.ca](mailto:finan@mcmaster.ca)

**G. Brian Golden** [BFG; EE; GMB]
Molecular evolution, genomics, bioinformatics, computational biology
[golding@mcmaster.ca](mailto:golding@mcmaster.ca)

**Bhagwati P. Gupta** [CDB; GMB]
Molecular genetics of reproductive system development in nematodes
[guptab@mcmaster.ca](mailto:guptab@mcmaster.ca)

**Suleiman Igدورا** [GMB]
Human genetics and mechanisms of disease
[igdoura@mcmaster.ca](mailto:igdoura@mcmaster.ca)

**J. Roger Jacobs** [CDB; GMB]
Genetic regulation of heart morphogenesis, genetic approaches to cancer signaling
[jacobsr@mcmaster.ca](mailto:jacobsr@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](mailto:kolasa@mcmaster.ca)

**Grant McClelland** [EP]
Integrative physiology of muscle and animal performance, environmental stress
[grantm@mcmaster.ca](mailto:grantm@mcmaster.ca)

**Carmel Motherssill** [RB]
Biological effects of low doses ionising radiation on non-human species with particular interest in radiation protection and mechanisms
[mothers@mcmaster.ca](mailto:mothers@mcmaster.ca)

**Michael J. O’Donnell** [EP]
Ion regulation and excretion in invertebrates and fish: Cellular mechanisms and control of epithelial transport
[odonnell@mcmaster.ca](mailto:odonnell@mcmaster.ca)

**James S. Quinn** [EE]
Genetic relatedness, parentage and behavioural ecology of colonial and cooperative-breeding birds and anthropogenic induction of germline mutations in gulls and mice
[quinn@mcmaster.ca](mailto:quinn@mcmaster.ca)

**C. David Rollo** [EE; EP]
Exploration of the regulatory integration of mammalian form and function utilizing transgenic mice as probes
[rollocd@mcmaster.ca](mailto:rollocd@mcmaster.ca)

**Herbert E. Schellhorn** [BFG; GMB]
Global gene regulation in Escherichia coli and other pathogens
[schell@mcmaster.ca](mailto:schell@mcmaster.ca)

**Graham Scott** [EP]
Evolution of physiological systems important for exercise performance and stress tolerance in vertebrates
[scottg2@mcmaster.ca](mailto: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](mailto:seymouc@mcmaster.ca)

**Rama S. Singh** [BFG; EE; GMB]
Population and evolutionary genetics/genomics, molecular evolution and speciation
[singh@mcmaster.ca](mailto:singh@mcmaster.ca)

**Jonathon Stone** [BFG; CDB; EE; GMB]
Computational biology conducted at multiple hierarchical levels
[jstoner@mcmaster.ca](mailto:jstoner@mcmaster.ca)

**Elizabeth A. Weretilnyk** [BFG; MPB]
Plant abiotic stress tolerance; metabolomics; environmental genomics; chemical biology
[weretil@mcmaster.ca](mailto: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](mailto:joanna.wilson@mcmaster.ca)

**Jianping Xu** [EE; MPB]
Genetics of microorganisms, molecular evolution and speciation
[jianpingx@mcmaster.ca](mailto:jianpingx@mcmaster.ca)

**Jonathon Stone** [BFG; CDB; EE; GMB]
Computational biology conducted at multiple hierarchical levels
[jstoner@mcmaster.ca](mailto:jstoner@mcmaster.ca)

**Jiang Liu** [EE; MPB]
Molecular ecology and evolutionary genetics of microorganisms
[jlixu@mcmaster.ca](mailto:jlixu@mcmaster.ca)

**Xu-Dong Zhu** [GMB]
Deciphering the code of posttranslational modification essential for maintaining human telomere length and stability.
[zhuxu@mcmaster.ca](mailto:zhuxu@mcmaster.ca)