



st. francis xavier university

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Website: <http://www.stfx.ca>

DEPARTMENT OF BIOLOGY

**St. Francis Xavier University** is situated on the Gulf of St. Lawrence in Antigonish, Nova Scotia, Canada. Researchers and students have ready access to extensive marine, estuarine, freshwater and terrestrial environments, fish hatchery, animal care, microscopy and molecular biology facilities, and well-equipped modern research laboratories. Students interested in biological research can consider BIOL 499 Directed Studies (3 or 6 credit projects), an Honours Degree with thesis and research project, summer research assistantships, and graduate Master of Science degrees. Contact individual faculty members with research of interest. PhD students can also conduct research in Biology at StFX via co-supervision with faculty at Memorial University of Newfoundland.

## RESEARCH – FACULTY

**Cory D. Bishop**, Associate Professor, Ph.D. Simon Fraser University, 2003, Postdoctoral studies at Kewalo Marine Lab (Hawaii), Friday Harbour Labs (Washington State) and Dalhousie University. I study an algal-salamander symbioses, involving genomics, molecular biology, microbial ecology, and evolution.

**Moira E. Galway**, Associate Professor, Ph.D., Australian National University, 1989; postdoctoral studies at the University of Saskatchewan and the University of Michigan. Genetics and development of flowering plants and algae, specifically (in collaboration with D. Garbary) the brown alga *Ascophyllum nodosum*. Cell structure, function and synthesis. Cellular morphogenesis and growth.

**David J. Garbary**, Professor, Ph.D., Liverpool, 1978, postdoctoral study at British Columbia. Seaweed ecology and physiology, especially algae of economic importance. Ecology of rare and invasive plants.

**Randolph L. Lauff**, Part-time Faculty, Senior Lab Instructor, M.Sc. University of Calgary, 1993. Breeding and migration ecology of the Boreal Owl and Northern Saw-whet Owl. Ecology of Diving and of Carrion Beetles. Curator of Zoological collections.

**Jesse McNichol**, Assistant Professor, Ph.D., 2016 MIT/WHOI Joint Program in Biological Oceanography, postdoctoral studies at Chinese University of Hong Kong / University of Southern California. My research program sits at the interface between the fields of ecology, oceanography, microbiology, and biogeochemistry. I use techniques such as PCR metabarcoding, microscopy, isotope probing, and bioinformatics to track how microbial ecosystems change across space / time and quantify how microbes contribute to the cycling of carbon, sulfur, nitrogen, and oxygen.

**Jen Perry**, Ph.D. University of Toronto, 2010. Postdoctoral studies at the University of Oxford and the University of East Anglia. Insect behaviour and evolution. Sexual selection and sexual conflict, and their consequences for insect adaptation. Mating and reproductive behaviour, feeding

behaviour, life history and nutritional ecology. Organisms include fruit flies, ladybugs and water striders. Field sampling, behavioural experiments, experimental evolution, genomics, metabolomics.

**Tammy Rodela**, Assistant Professor. My research program explores how aquatic vertebrates structure their biological responses to multiple environmental stressors. Broadly, my goals are to i) examine the mechanisms that teleost fish use to respond to their environments, ii) evaluate how changes in severity, sequence, or timing of an environmental challenge could influence the dynamics of tolerance, iii) use comparative approaches to explain the variation in resistance or sensitivity to multiple environmental stressors. The research in my lab takes an integrative approach to examine the molecular, biochemical, and physiological responses in zebrafish and aquaculture salmonid fish species.

**Ricardo A. Scrosati**, Professor and former Canada Research Chair, Ph.D., University of British Columbia, 1997; past Professor at the Northwest Biological Research Centre (CIBNOR, Mexico), Bamfield Marine Sciences Centre (British Columbia), and University of British Columbia. Marine Ecology, with particular emphasis on intertidal seaweeds and invertebrates.

**Barry R. Taylor**, Associate Professor, Ph.D., University of Calgary, 1985. Postdoctoral studies at Institut nationale de la recherche scientifique – eau, Québec. Aquatic ecology, litter decomposition and energy flow in streams and rivers, effects of disturbance, soil ecology, ecological restoration.

**Jantina Toxopeus**, Assistant Professor, Ph.D. Western University, 2018, Postdoctoral studies at University of Colorado Denver. The Toxopeus lab researches how insects survive freezing, using an array of techniques that include cell and molecular biology, biochemistry, bioinformatics, and physiology.

**Russell C. Wyeth**, Professor, Ph.D. University of Washington, 2004, postdoctoral studies at Dalhousie University and Bamfield Marine Sciences Centre. Behaviour and neurobiology of sea slugs, snails, lobster and other invertebrates. Understanding how sensory systems, the central nervous system and motor systems control behaviour. Field observation (including SCUBA) of behaviour, video analysis of field and lab behaviours, microscopy and electrophysiology. Also part of the Centre for Biofouling Research, studying settlement and development of communities on man-made surfaces in the ocean, and how to mitigate or reduce fouling.

## ADJUNCT FACULTY

**Jay M. Biernaskie**, PhD, University of Toronto (2010); postdoctoral research at the University of Oxford and the John Innes Centre (Norwich, UK). I study adaptations for living in groups (social adaptation), especially in plants. I apply these ideas from evolutionary biology to help improve the productivity and sustainability of food crops like wheat. My research has involved mathematical modelling, field experiments, and genetic analyses of plant social traits.

**Michael Cardinal-Aucoin**, Ph.D. York University, Toronto, 2014. Assistant Professor, Lakehead University (Orillia), Orillia, ON

**Nicholas Hill.** Ph.D. Dalhousie University, 1988. Fern Hill Institute for Plant Conservation, Berwick, Nova Scotia.

**Justin D. Gregg.** Ph.D. Trinity College Dublin, 2008. Justin is a Senior Research Associate with the Dolphin Communication Project. Justin has a research focus in dolphin social cognition, intelligence and cognition in non-human animals, and a background/interest in linguistics and the evolution of language.

## **CROSS APPOINTED FAULTY**

**Lindsay Berrigan,** Associate Professor, Department of Psychology. Ph.D. Psychology Carleton University, 2011, postdoctoral studies at Dalhousie University, Dept. of Psychiatry. Understanding how brain function supports cognitive processes and is disturbed in neurologic populations using neuroscience techniques including electroencephalography/event-related potentials (EEG/ERPs).

**Marcia English,** Associate Professor, Department of Human Nutrition. PhD. Dalhousie University, 2017. My research program advances knowledge in the areas of Functional Foods and Protein and Flavour chemistry. My research team is working to understand the functional properties of plant-based food systems and to elucidate the mechanisms that contribute to the release and retention of flavour and off-flavour compounds. We use model food systems based on Canadian pulses to study these interactions. Our work fills an important gap in the literature where there is a lack of fundamental studies aimed toward understanding flavour mechanisms in plant-based food systems.

**Derrick Lee,** Associate Professor, Department of Mathematics & Statistics. PhD. University of British Columbia, 2017. A cancer epidemiologist and statistician, my primary research focus on identifying environmental and genetic risk factors for cancer and in the interactions between genetic susceptibilities and environmental exposures, particularly in breast cancer and colorectal cancer. I am also interested in epidemiological and biostatistical methodologies, occupational exposure assessment methods, and bioinformatics and statistical learning, particularly in statistical genetics.

**Erin Mazerolle,** Assistant Professor, PhD Dalhousie University 2012. Dr. Mazerolle's main research interest is in understanding how cognition and plasticity is supported by the interplay of neural activity, brain energetics, and cerebral hemodynamics in the human brain. To this end, she applies advanced functional brain mapping acquisition and analysis techniques, which confer a high degree of physiological and anatomical specificity, to probe neurovascular coupling in health and disease. Dr. Mazerolle's work has included studies of essential tremor, multiple sclerosis, and cerebrovascular disease. Technologies include magnetic resonance imaging (MRI), focused ultrasound, and event-related brain potentials (ERPs). Ongoing projects in Dr. Mazerolle's lab include developing software to assess and improve reproducibility of fMRI research.

**For further information:**

**<https://www.stfx.ca/departement/biology>**