Dr. Byron Van Nest
In the Van Nest Lab, our primary interest is in how brains produce behaviour. We strive to understand the neural circuitry that facilitates appropriate behavioural responses when an animal perceives specific cues and environmental conditions. We are also interested in learning and memory, sensory processing, senescence, and identifying genotypic contributions to cognitive ability. Using primarily honey bees and cockroaches as model systems, we employ immunohistochemistry, microscopy, electrophysiology, and a wide variety of behavioural assays.
I am currently looking for a student to work on a valance-learning project with honey bees (that is, remembering attractive versus repulsive cues).

Dr. Jake Stout
Evolution of specialized metabolism, genomics, Plant Metabolism, Natural Product Biochemistry, Alkaloids, Polyketides, Cannabis, Iboga, Kava, Cell and Development

Dr. Olivia Wilkins
Enhancing climate change resilience in plant crops

Dr. Dirk Weihrauch
The investigation of mechanisms involved in nitrogen excretion and acid-base regulation in invertebrate systems that includes crustaceans, insects, cephalopods, chelicerate, planarians and annelids.

Dr. John Markham
Biodiversity, Ecology and Environment, Interactions of plants with the biotic environment, Evolution of mutualisms, ecology and evolution of symbiosis between actinorhizal plants and Frankia

Dr. Jeff Marcus
Cell and Development, phylogenomics, evolutionary developmental genetics, computational biology, with emphasis on butterfly colour patterns, Phylogenetics

Dr. Kevin Fraser
Avian Behaviour and Conservation, migratory connectivity, migration timing.

Dr. Mark Fry
Cell and Development, Physiology, Regulation of energy homeostatsis by the central nervous system, In particular, the lab is interested in understanding patterns of electrical activity and gene expression in neurons that control food intake and appetite, Pathophysiology of the CNS associated with muscular dystrophy.

Dr. Gail Davoren
Investigating recruitment dynamics of key forage fish species and how these dynamics shape trophic and food web interactions in northern marine ecosystem

Dr. Anne Worley
Flowers determine mating opportunities in animal-pollinated plants because pollinators transport

male gametes (pollen) between flowers and plants. Thus, pollinators form an essential "ecosystem service" in natural and agricultural communities by ensuring seed production, and they contribute to the tremendous natural diversity in flowers and inflorescences. My current research explores how plant and pollinator communities, in concert with abiotic conditions, combine to affect reproductive fitness and selection on the flowers of native species.

Dr. Kevin Cambell
Paleophysiology of extinct Pleistocene mammals, Physiology, Evolutionary, molecular and environmental physiology of mammals, Evolutionary physiology of fossorial and semi-aquatic insectivores

Dr. Mark Belmonte
The Belmonte Laboratory is interested in the cellular and molecular functions of plant development and plant pathogenesis. Together, we strive to find new and innovative ways to enhance plant performance and protect some of Canada's most important crops.

Dr. Margaret Docker
Biodiversity, Ecology and Environment, evolutionary biology, molecular systematics and phylogeography, population genetics, conservation genetics of fish (particularly lampreys and salmonids), genetic basis of parallel phenotypic evolution, life history diversity and evolution (particularly in lampreys), environmental DNA (eDNA) for monitoring of secretive aquatic organisms

Dr. Jason Treberg
My research studies how external factors can influence the demands placed on physiological and biochemical systems. I am also interested in how the capacity to respond at the 'small scale', for example at the mitochondrial level, may influence whole animal responses to external challenge.

Dr. Jane Waterman
Biodiversity, Ecology and Environment, Evolution of sociality and mating systems, influence of sexual selection on morphology, behaviour, diseases & parasites, evolution of cooperative breeding

Dr. Steve Harris
Systems biology of fungal morphogenesis and development, Genetics of morphology and secretion in filamentous fungi. production of heterologous proteins in fungi, Engineered fungal mutualisms with algae, Fungal adaptations to extreme environments

Dr. Gary Anderson
There are two primary components to the research we do in my lab at the University of Manitoba, both with a focus on the physiology of ancient fishes. In our Lake Sturgeon work we are examining the impact of early rearing environment on phenotype and developing tools to better describe success and/or failures of current strategies toward conservation of the species. In our elasmobranch work we are examining the role of the intestine in nitrogen balance and are determining the function of key hormones involved in the regulation of energy balance and nutrient uptake across the intestine. Our interest in the endocrine control of gut function and

nutrient uptake integrates the elasmobranch and sturgeon work as both groups of fishes posses a spiral intestine, the functional relevance of this structure in these ancient vertebrates is currently unknown. I teach endocrinology at the 2nd (in Human Physiology BIOL 2410) and 4th year (Comparative Endocrinology BIOL 4480) and currently coordinate the core course for all MSc students in the department.

Dr. Ken Jeffries
Environmental and anthropogenic stressors can disrupt homeostasis and negatively affect aquatic organisms, potentially leading to impacts on growth, reproduction and survival over time. The focus of the research in the Jeffries Lab is to investigate how various environmental and contaminant stressors can affect an individual's fitness through examination of responses at cellular, tissue and whole organism levels of biological organization, and how these responses can potentially scale up to population level consequences. We use genomics techniques to characterize the cellular responses of fishes to abiotic, biotic, and anthropogenic stressors relevant to aquatic ecosystems. The cellular level responses are integrated with tissue or whole organism level performance indices to gain a more comprehensive understanding of the effects of exposure to environmental stressors and to address whether populations and species can persist in changing or disturbed aquatic environments. This work has focused on non-model fishes that are economically important, invasive or of conservation concern and combines approaches used in the fields of physiology, ecological genomics, fish ecology and ecotoxicology. We also examine how exposure to environmental stressors affects the expression of immune response genes and increases the susceptibility of stressed individuals to pathogen infections, a potentially significant and undetected cause of fish mortality in disturbed ecosystems. Because of the widespread influence of climate change, environmental disturbances and the impacts of human activity on ecosystems, much of this research is applicable for studying aquatic systems throughout North America.

Dr. Jillian Detwiler
I am an evolutionary ecologist that utilizes molecular techniques to address the ecology and evolution of host-parasite interactions. I use a variety of host-parasite systems in field and laboratory settings to address a broad range of topics. My research interests include the impact of host ecology and evolution on patterns of host specificity, and the roles and mechanisms of parasite-modified behaviour in parasite transmission. My approach integrates neutral markers with behavioural, ecological, phylogenetic, and population genetics methods.

Dr. Sylvie Renault
Physiology, Plant stress physiology, salinity stress, stress tolerance, interaction of plant abiotic and biotic stresses, salinity and herbivory interaction, land reclamation, revegetation of disturbed lands, Biodiversity, Ecology and Environment

Dr. Jim Roth
My research focuses on species interactions and population dynamics, with an emphasis on northern environments. I'm interested in how prey availability affects predators and their alternative prey, particularly within food webs that cross ecosystem boundaries (marine to

terrestrial). I'm also interested in predators that engineer the Arctic ecosystem by concentrating nutrients, and the cascading impact on a diversity of species. As predators play an important role in regulating ecosystems and sustaining biodiversity, much of my research is significant not only academically, but also has important implications for conservation.

Members of my lab investigate direct and indirect interactions among species within food webs using a combination of field methods (e.g., mark-recapture, surveys, behavioral observation) and lab techniques (e.g., stable isotope analysis).

Dr. Steve Whyard
Cell, molecular, and developmental biology; Biotechnology; Molecular mechanisms of insect development and sex differentiation; Insect olfaction; Genetic control technologies of pests and pathogens