

# Opportunities for Students with External Funding (Fall 2014)

Program	Research project(s)
Agricultural Economics	Economics and pricing of maritime transportation
Animal and Poultry Science	Climate change adaptation, Greenhouse Gas emissions mitigation
Anthropology	Response of Feed Molecular Structure to Processing in Relation to Nutrient Utilization and Availability in Animals
Biochemistry	Culture and Mental Health
	Indigenous Peoples and Environment
	Cancer biology and genomics
Biology	Structural and functional study of helicases linked to cancers
	Plant Systematics, Plant Reproductive Biology
	Neural control of insect flight
	Evolutionary ecology of wild mammal populations
Biomedical Engineering	Mechanical-chemical interaction on biological systems
	Computational Systems Biology
Biostatistics	Development of portable MRI technology
Chemical and Biological Engineering	Pharmacoepidemiology
	Lifecycle Sustainability Analysis of Infrastructures
Chemical Engineering	Catalysis and Chemical Reaction Engineering
	Bioremediation, Microbial fuel cells, Waste treatment
	Environmental catalysis

Program	Research project(s)
	Fluidized bed drying; biomass gasification
Chemistry	Environment control of animal barns, greenhouses, industrial buildings
	Organocatalysis, organic synthesis
	Physical Chemistry, Environmental Science, Polymers, Adsorption Phenomena, Materials Science
	Design of Nanoparticle Catalysts; X-ray Absorption Spectroscopy at CLS; Nanoparticle Catalysis in Ionic Liquid Solvents
	Spectroscopy and photovoltaics
	Biodegradable polymers, gold chemistry, homogeneous catalysis
	Projects in the area of synthetic organometallic chemistry
Civil Engineering	Experimental investigations related to reinforced concrete and masonry members and structures
	Scour and erosion in cohesive soils, assessment of erodibility of soils
Community and Population Health Sciences	Environments (built, physical, social, cultural) and child health
	Tuberculosis control
Computer Science	Genomics, bioinformatics, hci, cloud computing
	Scientific computing
	Monitoring of human behaviour using Smartphones, Ubiquitous games
	Simulation modeling, Data Science/Machine Learning with Health Applications
	JIT and web-based languages (JavaScript); Formal Software Validation: especially Coq; language semantics and modularity (Aspect-Oriented Programming)
	Mobile Computing, Cloud Computing, Internet of Things (IOT)
	Bioinformatics, immuno-informatics, computational biology
Electrical Engineering	Electric power systems, renewable energy, reliability

Program	Research project(s)
	Computer engineering, computer architecture, computer arithmetic, biomedical engineering
	Building sensors and wireless sensor networks
Finance	Emergency room/ward optimization; robust scheduling optimization
	The intraday option price movements
Food Science	Food Nanotechnology, Emulsion science, colloids and nanocolloids
	Biosynthesis of bioactive compounds in plant or microorganism
	1. Food protein-polysaccharide interactions, 2. Extrusion, 3. Protein modificatio
	Quality of lamb meat, meat processing and oxidative stability, chicken meat quality
Geological Sciences	1. Mineral deposits, 2. EPR/ESR spectroscopy, 3. first-principles calculations of minerals, 4. speciation of heavy metals and radionuclides in minerals
Global Institute for Water Security	Water Security: Climate Change, Land-use Management, Sustainable Development of Natural Resources, Socio-hydrology, Water and Health, Water and Wastewater Treatment, and Groundwater and Hydrogeology
Health Sciences	Neural prostheses, EMG signal analysis, spinal cord occlusion
	Strength training, conditioning, and/or multi-element fitness training on health markers
	Mass Spectrometry-based Proteomics and Metabolomics
Indigenous Land Management Institute	Wildlife research at the interface with agriculture, including disease risk, GIS spatial mapping, and risk management
Kinesiology	Balance control in walking

Program	Research project(s)
	Cardiovascular physiology
	Exercise physiology, aging, physical activity and muscle/bone health, metabolic syndrome, diabetes
Mathematics and Statistics	
	Operator evolution equations, nonlocal quantum dynamics, composite quantum systems
Mechanical Engineering	
	Scaffold Bio-Fabrication, Tissue Engineering, Mechatronics, and Nano-Positioning
	Relating to nanostructured thin films/coatings and carbon based nanostructures
	Machine vision and image analysis in plant and animal systems; modelling light interaction in plant canopies; spectroscopy
Microbiology and Immunology	Automation of robots, Mechanics and vibration, FEA
	1. characterization of hyperactive Borrelia telomere resolvase mutants 2. investigation of a possible role for the Borrelia telomere resolvase in VlsE antigenic variation
Nursing	
	I Philosophy, Ethics, Interprofessional Collaboration, Education and Practice
Pharmacology	
	Signaling mechanisms in leukocyte recruitment
	Neuroinflammation and neurodegeneration in non-transgenic animal models of Alzheimers/Parkinsons disease
Pharmacy	
	Targeted nanoparticles for chemotherapy
Philosophy	
	All areas of Philosophy
Physics and Engineering Physics	

Program	Research project(s)
	Development of high efficiency organic-inorganic hybrid solar cells; Graphene electronics through band-gap engineering; Spin-based transistors and memory devices based on organic semiconductors
	Theoretical Plasma Physics, Space Plasmas, Magnetic Fusion, Computational Plasma Physics, Plasma Sources, Electric Propulsion
	Plasma Physics and Controlled Thermonuclear Fusion
	Theoretical particle physics
	Materials Science with synchrotron radiation
Plant Sciences	
Psychiatry	Breeding, Genetics and Genomics of Chickpea ( <i>Cicer arietinum</i> )
Psychology	Neuropharmacology, neurochemistry, behavior neuroscience
	Spatial cognition, Molecular biology of age-related spatial degeneration, spatial memory of food-storing birds, invertebrate spatial learning, age-related issues in human spatial cognition
Public Policy	Public-private mix of health insurance; Universal health care
	Co-operatives, social economy organizations, producer organizations, governance
Public Health	
	Health Policy, Health Economics, Health Program Evaluation
School of Environment and Sustainability	Forest-stream interactions in headwater catchments; Isotope hydrology; watershed modeling
	Community Resilience to Climate Change; Science, Policy and Decision Making Interactions
	Understanding and predicting harmful algal blooms
	Environmental impact assessment; energy development and policy; impact of mining on communities; watershed planning; environmental policy
Small Animal Clinical Sciences	

Program	Research project(s)
	1. Diagnostic yield of aspiration of normal-sized peripheral lymph nodes in dogs. 2. Direct Computed Tomographic Lymphography of the Pelvic Limb in Dogs. 3. Self-reported versus observed compliance
Toxicology	Wildlife conservation physiology, aquatic toxicology
	Toxicology, environmental chemistry
Vaccinology and Immunotherapeutics	Molecular biology of hepatitis B and hepatitis C viruses
	Non human adenoviruses
	Cancer Immunotherapy and vaccine development
Veterinary Biomedical Sciences	Structural and functional characterization of proteins implicated in psychiatric diseases. Understanding the neural basis of courtship behaviour in <i>Drosophila</i>
	Bovine reproduction, ovarian follicle development, in vitro fertilization and embryo culture, superovulation, effect of ergot on cow and bull fertility, control of GnRH release from hypothalamus
	Advanced reproductive technologies, reproductive physiology and endocrinology, testis stem cells, transgenic animals
	1. Reproductive technologies in wild ungulates 2. Ovarian synchronization in cattle
	The role of small stress proteins in uterine smooth muscle function during pregnancy (Reproductive Health)
Veterinary Microbiology, Vaccinology and Immunotherapeutics	Interactions between porcine reproductive respiratory syndrome virus and host cells. Interactions between porcine epidemic diarrhea virus spike protein and target cell receptor.
	Interaction between pathogenic bacteria and their hosts; bacterial vaccine development; food safety; water safety
Veterinary Pathology	Pathogenesis of <i>Enterococcus</i> infections in chicken embryos and neonatal chickens