# Professor Profiles

4980 Potential Supervisors for 2012-2013 Academic Year

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**Bai, Donglin**

Professor- Dr. Donglin Bai  
Contact Information- donglin.bai@schulich.uwo.ca  
Lab Location- DSB 00070  
Student will be trained by- Graduate Student  
Frequency of Supervisor Interaction- Will see you weekly  
Research Description- Our research is focused on the physiology and pathophysiology of gap junction channels. We use molecular, genetic, cellular models and electrophysiological approaches to study the distribution and function of gap junction channels. Fluorescent protein tagging, dye-uptake, dye transfer, dual patch clamp recording, cell culture and transfection are used to characterize the functional properties of normal, disease-linked mutants and chimeric gap junction channels. Our goal is to understand how gap junction channel works and how mutations of gap junction channel alter its function. It is expected that the student should spend about 1.5 days per week working on the project.  
Experimental models- cell lines and mouse tissues  
Additional Safety Courses- biosafety

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**Betts, Dean**

Professor- Dr. Dean H. Betts  
Contact Information- dean.betts@schulich.uwo.ca  
Lab Location- DSB 2019 & 2025  
Student will be trained by- Post-Doc  
Frequency of Supervisor Interaction- Will see you weekly  
Research Description- Our research program is aimed at understanding the molecular and cellular basis of pluripotency and self-renewal and to elucidate the reprogramming events necessary to reverse cellular aging and
differentiation processes that will facilitate the production of induced pluripotent stem cells in humans and dogs. We are particularly interested in the extra-telomeric roles of telomerase reverse transcriptase (TERT) isoforms in maintaining and facilitating pluripotency and self-renewal and deciphering novel redox signaling pathways that govern the naïve and primed pluripotent states.

**Experimental models**- embryonic and induced pluripotent stem cells (human, dog, mouse)

**Additional Safety Courses**- biosafety

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**Bhattacharya, Moshi**

**Professor-Dr. Moshi Bhattacharya**

**Contact Information**- moshmi.bhattacharya@schulich.uwo.ca (519) 661 2111 ext. 82970

**Location of Lab**- Western, MSB 229

**Student will be Trained by**- Technician/graduate students

**Frequency of Supervisor Interaction**- Daily

Research Description- The metastatic spread of cancer is the major cause of cancer related deaths. The Bhattacharya laboratory program is focused on understanding the molecular mechanisms regulating breast cancer cell migration and invasion, processes required for metastasis. In Canadian women, breast cancer is the most frequently diagnosed cancer, accounting for an estimated 30% of all cancer cases. The underlying mechanism(s) regulating metastasis are largely unknown. The Bhattacharya lab is interested in how the signaling and trafficking of G protein-coupled receptors regulates breast cancer metastasis, using various molecular and biochemical techniques to study gene expression and protein-protein interactions in cancer cells. We also use fluorescent reporter molecules to study receptor-mediated intracellular signaling events in real-time, in single live cells and visualized by laser scanning confocal microscopy. The research program is comprised of the following projects:

1. Lipid signaling in breast cancer
2. Crosstalk between GPCRs and growth-factor receptors in cancer
3. Regulation of cancer cell cytoskeleton by small GTPases

**Experimental Models**- Cell lines

**Additional Safety Courses**- Biosafety

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**Brown, Arthur**

**Professor- Dr. Arthur Brown**

**Contact Information**- abrown@robarts.ca, x24308

**Location of Lab**- Robarts Research Institute

**Student will be trained by**- Postdoctoral fellow

**Level of Supervisor Involvement**- Will see me most days

Research- Investigating Cellular and Molecular Strategies to Improve Recovery after Spinal Cord Injury

My laboratory is evaluating two different strategies to improve recovery and regeneration after central nervous system injury using a rodent model of spinal cord injury. The first is a cellular approach in which bone marrow-derived mesenchymal stem cells are transplanted into the rodent injured spinal cord. The second strategy is focused on manipulating gene expression in the injured spinal cord. We have identified a particular transcription factor that controls the expression of pro and anti-regenerative genes and we are currently evaluating the effect of inhibiting this factor on recovery from spinal cord injury.

**Experimental Model**- Cell culture and animal-based projects are available

**Additional Safety Courses**- Animal Training

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**Ciriello, John**

**Professor- Dr. John Ciriello**

**Contact Info**- 661-3484, john.ciriello@schulich.uwo.ca

**Location of Lab**- Rooms 2004 & 2005, Dental Sciences Building

**Students will be supervised by**- Dr. J. Ciriello

**Level of Supervisor Interaction**- Will see you daily to weekly. There will be weekly laboratory meetings throughout the year.

Research: Obstructive sleep apnea (OSA) is a disorder predominantly observed among middle-aged men and women. OSA is characterized by recurrent episodes of cessation of respiratory airflow and a resulting decreased blood-oxygen saturation during sleep. One of the major risk factors associated with OSA is obesity. The high
Prevalence of obesity today in North America represents a major public health issue, predisposing individuals to cardiac and vascular morbidity and mortality. Most notably, both experimental and epidemiological data consistently support a link between obesity and hypertension, although this relation is complex. Interestingly, intermittent hypoxia resulting from OSA also leads to hypertension. Taken together, this evidence suggests that a common mechanism may link these disorders. However, the underlying mechanisms linking OSA with obesity and hypertension are not known. The student will be involved in a series of either acute (or chronic) experiments in the anesthetized (or conscious) male rat model in which animals have been fed a high fat diet and exposed to intermittent hypoxia. Central neurons (and their connectivity) involved in these physiological processes will be studied using a combination of electrophysiological, immunohistochemical, tract-tracing or molecular techniques.

**Model Systems:** Animal model – *in vivo* studies.

**Additional Safety Courses:** Animal handling course and training by ACVS

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**Professor- Dr. Brian Corneil**

**Contact Information:** bcornel@uwo.ca, x34132

**Lab Location:** Robarts EB-12

**Student will be trained by:** Supervisor and technician

**Frequency of Supervisor Interaction:** Weekly

**Research Description:** I am interested in the neural control of movement. In my laboratory, we use the oculomotor system (which moves the line of sight) as the exemplar system. The 4980 project will investigate how a cortical structure in humans (the frontal eye fields) contributes to orienting, using a combination of electromyography and transcranial magnetic stimulation.

**Experimental Models:** Animal and human

**Additional Safety Courses:** To be determined

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**Professor-Dr. Sean Cregan**

**Contact Information:** scregan@robarts.ca, 931-5777 ext 24134

**Lab Location:** Robarts Research Institute 3250

**Student will be trained by:** Technician and/or senior graduate student

**Frequency of Supervisor Interaction:** Daily to weekly as needed

**Research Description:** Damaged or superfluous cells in the body are generally eliminated through the activation of a programmed cell death process referred to as “apoptosis”. Apoptosis is known to play an important role in the normal development of the nervous system by deleting neurons that do not form efficient synaptic connections. However, the inappropriate activation of the cell death pathway in mature neurons has been implicated as a major contributing factor to the neurodegeneration that occurs in stroke or diseases such as alzheimer's or ALS. In our laboratory we are examining the molecular signaling pathways that regulate the apoptotic cell death process following neuronal injury. We anticipate that this research will lead to the identification of therapeutic targets for neuroprotection. To examine these molecular pathways we utilize primary cortical or cerebellar neuron cultures derived from transgenic or knock-out mice. These neurons are then manipulated and studied in culture using pharmacological inhibitors or recombinant adenoviral gene expression vectors. A primary interest in the lab is to identify key transcriptional targets involved in the apoptotic pathway by examining changes in gene expression using DNA microarray and real-time PCR analysis in neurons undergoing cell death. *Time Requirements:* 12 hours per week. *Biohazards:* recombinant viral gene expression vectors (level 2). *Animals:* Primary neuronal cultures are generated from mice, but it will not be necessary for 4980 students to handle the mice.

**Experimental Models:** Primary neuronal cultures from mice (students will not be required to handle mice)

**Additional Safety Courses:** Biosafety

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**Professor- Dr. Lina Dagnino**

**Contact Information:** ldagnino@uwo.ca

**Lab Location:** MSB

**Student will be trained by:** Professor, Technician, Post-Doc, Graduate Students

**Frequency of Supervisor Interaction:** Will see you weekly, or more often if needed
## Research Description
The epidermis is the outermost layer of the skin. It is a protective layer against damage from UV light, mechanical and chemical insults. We have generated an immortalized cell line of epidermal keratinocytes. The characteristics of these cells will be determined, to establish whether they constitute appropriate models for studying the epidermis and its functions.

### Experimental models
- mouse epidermal cells

### Additional Safety Courses
- biosafety

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### Di Guglielmo, John

- **Professor**: Dr. John Di Guglielmo
- **Contact Information**: john.diguglielmo@schulich.uwo.ca
- **Lab Location**: Medical Sciences Building, M225
- **Student will be trained by**: senior grad student
- **Frequency of Supervisor Interaction**: will see you daily/weekly

### Research Description
The TGFβ superfamily regulates many cellular functions and its deregulation leads to human diseases such as cancer of the breast, colon, pancreas and lung. In normal lung epithelium, TGFβ is a tumor suppressor but in cancer cells it switches roles and promotes lung cancer metastasis. The underlying mechanisms by which TGFβ promotes this switch remain unclear and are under investigation in our laboratory. One area of our research program focuses on the relationship between TGFβ receptor trafficking and signal transduction. We use fluorescent reporter molecules and immunofluorescence microscopy to follow receptor endocytosis in live cells and various molecular and cell biological techniques to assess receptor signal transduction. A second area of our research involves the regulation of normal and cancer cell migration by synthetic triterpenoids. Triterpenoids are naturally occurring compounds that alter TGFβ signal transduction and have been found to inhibit tumor metastasis in animal models. We are investigating the cellular mechanisms that these compounds use to block metastasis using various in vitro cell migration and molecular approaches.

### Experimental models
- cell line

### Additional Safety Courses
- Biosafety

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### Dixon, Jeff

- **Professor**: Dr. Jeff Dixon
- **Contact Information**: jeff.dixon@schulich.uwo.ca
- **Lab Location**: Dental Sciences Building (Lower Ground Floor), Room 0079, Western
- **Student will be trained by**: All lab personnel as well as by the Professor
- **Frequency of Supervisor Interaction**: Available for consultations as necessary

### Research Description
Extracellular nucleotides such as ATP have been implicated in a wide range of biological processes including bone resorption and formation. Nucleotide receptors are subdivided into P2X and P2Y receptors. The P2X7 knockout mouse revealed an important role for this receptor in regulating bone remodeling. However, the mechanisms by which P2X7 receptors regulate bone cell function are poorly understood. Using genetically modified mice, we have found that loss of P2X7 function increases the lifespan of osteoclasts. We hypothesize that overexpression of P2X7 receptors in osteoclasts will decrease their lifespan and that expression of P2X7 receptors in osteoclasts from P2X7 knockout mice will rescue their phenotype. Osteoclasts will be isolated from long bones of neonatal rats as well as wild-type and P2X7 receptor knockout mice. To quantify survival, the number of viable osteoclasts will be assessed at time 0 and 18 h. Cells will be treated with P2X7 agonist or vehicle. In addition, selected samples will be transduced with adenoviral constructs encoding fluorescently tagged P2X7 receptors. Confocal microscopy will be used to estimate expression levels and observe localization. This will enable us to study (for the first time) the trafficking and subcellular localization of P2X7 receptors in living osteoclasts.

### Experimental models
- Primary cell cultures, mice

### Additional Safety Courses
- Biosafety/Animal care and use/Animal handling

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### Drysdale, Tom

- **Professor**: Dr. Tom Drysdale
- **Contact Information**: tadrysda@uwo.ca, 685-8500 x55072
- **Lab Location**: Victoria Research Labs
- **Student will be Trained by**: Professor and graduate students
Frequency of Supervisor Interaction: daily/weekly
Research Description: We are trying to understand the role of specific genes in the early development of organ systems with a special emphasis on the specification and patterning of the heart. All projects would involve understanding the early development of the embryo. We try to understand development by manipulating the embryo in order to try and test the role of specific signaling systems or transcription factors identified to be present at early time points. We also have projects involving the early patterning of the vascular system or patterning of the endoderm if interested.

Experimental Models: animal model Xenopus (frog) embryos, cell lines

Additional Safety Courses: Basic animal training and biosafety

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**Feldman, Ross**

**Professor**- Dr. Ross Feldman  
**Contact Information**- feldmanr@lhsc.on.ca  
**Lab Location**- RRI 4274  
**Student will be trained by**- Professor and Technician  
**Frequency of Supervisor Interaction**- Will see you weekly

**Research Description**

Estrogens have been increasingly appreciated as important physiological and pathophysiological regulators of cardiovascular and metabolic function. The traditional view of the cardiovascular actions of estrogens has focused on their roles as regulators of transcription via activation of their "classical" receptors (Estrogen Receptors -ER). However, it is now appreciated that estrogens have effects on regulation of smooth muscle contractility, cell growth and differentiation that are too rapid to be accounted for by transcriptional regulation. Recent studies performed in my laboratory have helped to elucidate the mechanism of rapid estrogen-mediated vascular regulation. A newly characterized "orphan receptor" GPR30, now designated a GPER1, has been implicated in mediating the rapid effects of estradiol and most recently those of aldosterone. Studies to date have taught us that to understand the rapid vascular mechanisms of steroids and the potential utility of selective activation of a receptor mediating rapid steroid actions one must know which receptor the steroid hormone is activating. Following up on these discoveries, we are exploring the role of GPER1 vs. the other classical steroid receptors in mediating the vascular effects of estradiol as well as those of aldosterone. We will focus on the impact of GPER1 activation on apoptotic pathways. This focus follows from our elucidation of the opposing pro- vs. anti- apoptotic effects of estradiol, dependent on whether it was acting via ER vs. GPER1 (respectively).

The student project will involve elucidating the role of GPER1 in regulation of the earliest indicators of impending cellular apoptosis, i.e., mitochondrial depolarization and caspase 3/9 cleavage and caspase activity. These studies are of importance for three reasons. These studies will be expected to elucidate the basis of the divergent effects of estradiol on apoptotic intermediate mechanisms that have been described to date, mostly prior to the appreciation of GPER1. Secondly, this experimental approach will be useful as a means to uncover other ligands which may act as GPER1 agonists or antagonists. Although, GPER1 was initially characterized as an estrogen-selective receptor, we demonstrated that aldosterone is also a very potent GPER1 agonist. Further, we and others have shown that previously thought-to-be “selective” ER and MR antagonists (ICI182780 and eplerenone, respectively) also act in part as GPER1 antagonists. Thirdly, these cellular studies identifying both the apoptotic pathway intermediates underlying the GPER1 pro-apoptotic effect as well as identifying other potential GPER1-interacting ligands will inform us in the development of further in vivo manipulations to modify GPER1-dependent vascular remodeling responses.

**Experimental models**- vascular smooth muscle cells  
**Additional Safety Courses**- biosafety

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**Feng, Qingping**

**Professor**- Dr. Qingping Feng  
**Contact Information**- Qingping.Feng@schulich.uwo.ca  
**Location of Lab**- Medical Sciences Building, Rm. M253  
**Student will be Trained by**- Professor and Senior Research Associate  
**Frequency of Supervisor Interaction**- at least weekly

**Research Description**

The major goal of my research is to investigate novel pathophysiological mechanisms of heart failure at whole animal, organ, cellular and molecular levels, with applications to improve therapy and survival. Studies will be focused on heart failure following myocardial infarction (MI), cardiac dysfunction
During endotoxemia, and embryonic heart development during maternal diabetes. Here are the ongoing research projects in my lab:

1) Role of nitric oxide in embryonic coronary artery development and malformations induced by maternal diabetes.
2) Stem cell migration and cardiac repair post myocardial infarction
3) Molecular mechanisms on the regulation of cardiac function post myocardial infarction
4) Signal transduction mechanism in myocardial TNF-alpha expression and cardiac dysfunction in sepsis

**Experimental Models** - Cardiomyocytes, endothelial cells, fibroblasts, stem cells, myocardial infarction, myocardial ischemia and reperfusion, hemodynamic measurements, diabetes, sepsis, mice

**Additional Safety Courses** - Animal training, Biosafety

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**Ferguson, Stephen**

**Professor** - Dr. Stephen Ferguson

**Contact Information** - RRI 3246, Ferguson@robarts.ca, (519) 931-5706

**Lab Location** - Robarts Research Institute 303

**Student will be Trained by** - Professor and Post-Docs

**Frequency of Supervisor Interaction** - Weekly

**Research Description** - My research program focuses on unraveling the basic molecular mechanisms involved in the regulation of G protein-coupled receptor (GPCR) activity. My laboratory utilizes a combination of molecular pharmacological and cell biological techniques to examine the role of accessory protein such as small G proteins, GRKs and beta-arrestins in regulating the signaling, endocytosis and intracellular trafficking of GPCRs. The purpose of these studies is to gain a better understanding differences and similarities in the molecular mechanisms involved in signaling, desensitization and resensitization of distinct GPCRs. Projects include: 1. Regulation of metabotropic glutamate receptor internalization and trafficking, 2. Characterization of novel glutamate receptor interacting proteins linked to Huntington’s disease, 3. Role of CRF in sensitizing 5-HT2R signaling and its potential effect on anxiety behavior and depression. Students will have the opportunity to choose between projects in the laboratory and work in a team with postdoctoral and graduate students. The expected effort for a successful laboratory experience is 1½ days per week. This project involves the use of cultured cells, molecular biology and confocal microscopy but does not involve use of radioactive isotopes.

**Experimental Models** - Cell lines

**Additional Safety Courses** - None

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**Grahn, Jessica**

**Professor** - Dr. Jessica Grahn

**Contact Information** - jgrahn@uwo.ca

**Lab Location** - NSC, 229

**Student will be Trained by** - Professor + Graduate Student

**Frequency of Supervisor Interaction** - Will see you weekly

**Research Description** - Project will involve testing Psychology subject pool volunteers on tests of rhythm perception, and examining how beat perception in rhythm is affected by subject background (e.g., musical training) and stimulus properties. Research tasks include: developing auditory rhythmic stimuli using appropriate software (Audacity, Adobe Audition, or Matlab), piloting rhythm tasks to determine optimal instructions and task parameters, testing a full sample and analyzing the data using appropriate statistical procedures (repeated-measures ANOVA, correlations, etc.).

**Experimental Models** - Human behaviour

**Additional Safety Courses** - None

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**Gribble, Paul**

**Professor** - Dr. Paul Gribble

**Contact Information** - paul@gribblelab.org

**Lab Location** - Natural Sciences, 228

**Student will be Trained by** - Professor

**Frequency of Supervisor Interaction** - Will see you daily

**Research Description** - We use human behavioural experiments to examine current questions in motor learning and sensory-motor control including: (1) Effects of Motor Learning on Sensory Systems. Much research has explored how adaptation in sensory systems (e.g. vision and proprioception) affects motor
performance, however very little work has explored how motor learning affects the function of sensory systems. The goal of this project is to explore changes in visual and proprioceptive systems as a consequence of motor actions and motor learning. Experiments are designed to test the hypothesis that visual and somatosensory processing are modulated in specific ways as a result of recent motor actions and motor learning. (2) Motor Learning by Observing. A powerful new idea in neuroscience links motor control with action observation. Recent work has demonstrated that when we observe the actions of others we activate the same neural circuitry responsible for planning and executing our own actions. In this project we explore the idea that neural mechanisms linking observation and action facilitate learning novel motor skills. (3) Computational Models of Neuromuscular Control. We use computational models of neuromuscular systems such as the arm to test hypotheses about how the brain controls voluntary movement, and how motor learning is achieved.

Experimental models- human behavioural and neuroimaging experiments with robot arm

Additional Safety Courses- none

Goodale, Mel  
**Professor-** Dr. Mel Goodale  
**Contact Information-** mgoodale@uwo.ca  
**Lab Location-** Room 205, The Brain and Mind Institute, Natural Sciences Centre  
**Student will be trained by-** Postdoctoral Fellow or Senior Graduate Student  
**Frequency of Supervisor Interaction-** Will see you bi-weekly  
**Research Description-** We study the role of vision in perception and the control of skilled movements – and the neural substrates of vision-for-perception and vision-for-action. The project would examine some aspect of the role of vision in the planning and execution of grasping movements. The methods could involve eye and limb movement recording, the measurement of grip and load forces, fMRI, TMS, or ERP. There is also a possibility of working with blind individuals.  
**Experimental models-** Human  
**Additional Safety Courses-**

Gros, Robert  
**Professor-** Dr. Robert Gros  
**Contact Information-** 519-663-5777 ext. 24429, rgros@robarts.ca  
**Lab Location-** Robarts Research Institute  
**Student will be trained by-** Professor/Technician  
**Frequency of Supervisor Interaction-** daily to weekly depending on schedule  
**Research Description-** The focus of my laboratory is to investigate the cellular and molecular mechanisms involved in the regulation of vascular function. In particular, we are interested in the role and regulation of G-protein-coupled receptor signaling pathways in both vascular smooth muscle cell and endothelial cell function under physiological and pathological conditions (i.e. hypertension and diabetes). The regulation of vascular tone is complex and involves many different signaling pathways, including the large family of G-protein-coupled receptors (GPCRs), which play a crucial role in regulating overall vascular function. In hypertension, GPCR-mediated vasodilation is impaired, a finding observed in both human hypertensive subjects as well as animal models of hypertension. We and others have demonstrated that this impairment in GPCR-mediated vasodilation is in part due to increased expression and/or function of G-protein-coupled receptor kinases (a large family of kinases that phosphorylate GPCRs). However, the cellular/molecular mechanism(s) involved in the regulation of altered GRK expression during the hypertensive state (or other pathological conditions) in unknown and is the focus of my laboratory’s research effort. To dissect the role and regulation of these signaling pathways, a range of biochemical, cellular and molecular techniques as well as integrative approaches (such as adenoviral-mediated gene-transfer into isolated blood vessels) are utilized.  
**Experimental Model-** isolated cells and tissues  
**Additional Safety Courses-** Biosafety

Hamilton, Douglas  
**Professor-** Dr. Douglas Hamilton  
**Contact Information-** douglas.hamilton@schulich.uwo.ca  
**Lab Location-** Dental Sciences Building, Room 0065
Guided tissue regeneration (GTR) is a dental surgical procedure that involves the use of barrier membranes to direct the growth of new bone and gingival tissue at sites where insufficient volumes or dimensions of bone or gingiva for proper function or prosthetic restoration. A barrier membrane is a device used in periodontal surgery to prevent oral epithelium, which regenerates relatively quickly, from growing into an area in which other, more slowly-growing tissue types, such as bone or gingival connective tissue, is desired. When barrier membranes are utilized, the superficial soft tissue flap remains separated from the underlying bone for the primary healing period and must survive on the vascular supply of the flap; it cannot rely on granulation tissue derived from the underlying bone. Membranes can be either resorbable or non-resorbable, with the latter requiring a second surgery. For this reason, resorbable barrier membranes are preferable. We have developed a membrane produced by electrospinning polycaprolactone into small diameter fibres. Into this scaffold we have incorporated fibroblast growth factor 2. The project will involve performing experiments to assess the effect of different concentrations of fibroblast growth factor 2 on gingival and periodontal ligament fibroblasts gene expression and extracellular matrix synthesis using immunocytochemistry and PCR.

Experimental models- cell type
Additional Safety Courses- biosafety
If age-dependent differences are found, these cells will be separated from dispersed pancreas preparations using FACS and their ability to form new beta cells tested in vitro.

**Experimental models** - Isolated tissues

**Additional Safety Courses** - Biosafety and Radiation Safety Nuclear

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**Jones, Doug**

Professor - Dr. Doug Jones  
Contact Information - doug.jones@schulich.uwo.ca, (519) 661-3480  
Location of Lab - Medical Sciences Building 263, Office MSB 262  
Student will be Trained by - Professor and Graduate Student  
Frequency of Supervisor Interaction - Will see daily to weekly basis, depending on their independence  
Research Description - Cardiovascular disease remains the number one killer world-wide. Atrial fibrillation, the most common arrhythmia seen by the general practitioner is associated with altered autonomic function. My research focuses on heart dysfunction, and the role of the autonomic innervation of the heart. Studies examine the organ, tissue and cellular mechanisms that underlie this dysfunction in mutant or gene knockout mice, causing electrical instability and heart failure. The student will be involved in one of the projects in mice looking at the electrical, biochemical, genetic or histological alterations involved in arrhythmia. Students are expected to be in the laboratory on average at least 1.5 days per week.  
Experimental Models - Mice, heart and cardiac cell lines.

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**Kim, Richard**

Professor - Dr. Richard Kim  
Contact Information - 519-663-3553, richard.kim@lhsc.on.ca  
Lab Location - LHSC-UH ALL 144  
Lab Size - large (Approx. 20 people)  
Student will be Trained by - Professor, post-doc, technician, graduate students  
Frequency of Supervisor Interaction - Weekly  
Experimental Models - cell lines, animal models, human studies  
Additional Safety Courses - Biosafety

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**Kowalchuk, John**

Professor - Dr. John Kowalchuk  
Contact Information - jkowalch@uwo.ca, (519) 661-1605  
Lab Location - Arthur & Sonia Labatt Health Sciences Building, Room 313  
Student will be Trained by - will work closely with a graduate student with plenty of interaction with me on a regular basis (and as needed). Also, will work closely on the same project with a senior UG research student from Kinesiology  
Frequency of Supervisor Interactions - Available to meet regularly depending on the needs of the students  
Research Description - Examine the integration of cardiovascular, respiratory and metabolic adjustments and their control during the transition to exercise (and thus an increase in energy requirement) in healthy adult humans using various physiological interventions which are intended to alter muscle blood flow and oxygen delivery to muscle and/or activation of muscle enzymes and substrate provision for mitochondrial oxidative phosphorylation.  
Model System - humans - usually with "exercise"  
Additional Safety Courses - not necessary

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**Laird, Dale**

Professor - Dr. Dale Laird  
Contact Information - dale.laird@schulich.uwo.ca, (519) 661-2111 ext 86827  
Lab Location - Dental Science Building Room 00076/00077  
Student will be Trained by - Overall supervision by Dr. Laird with day to day training under the direction of a Post Doc or Research Associate  
Frequency of Supervisory Interactions - I personally will meet with the student once per week plus at lab meetings
**Research Description** - Dr. Laird's research interests encompass studies related to the function of gap junction proteins in health and disease. Areas of focus include; intracellular connexin trafficking, gap junction assembly and turnover, fluorescent-based live cell imaging, connexin mutants and their link to human diseases, connexin regulation and relationship to breast cancer, and the role of connexins in tissue differentiation and carcinogenesis. His research program is funded by grants from the Canadian Institutes of Health Research, the Canadian Breast Cancer Foundation, the Canada Research Chairs Program and the Canadian Foundation for Innovation.

**Model Systems** - Students will primarily work with cell culture models and mouse tissues

**Additional Safety Courses** - Students will need to take Laser Safety training and the Biosafety course. In some cases, animal training will be involved.

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**Leask, Andrew**

**Professor** - Dr. Andrew Leask

**Contact Information** - Andrew.leask@schulich.uwo.ca

**Lab Location** - DSCI0067

**Student will be trained by** - Technician/Post-Doc

**Frequency of Supervisor Interaction** - Will see you daily

**Research Description** - We are interested in developing therapies for chronic diseases such as fibrosis, which accounts for ~40% of the health care costs/deaths in the Western world. Historically, attempts at developing therapies for fibrosis have targeted growth factors and their signaling cascades, but for a variety of reasons these have been unsuccessful. We are interested in targeting how diseased cells respond incorrectly to these growth factors. Based on our evidence accumulated thus far, we feel that targeting the cellular microenvironment, in particular by blocking activity of the so-called matricellular proteins, is the best strategy. We have focused on one member of the CCN family of matricellular proteins, CCN2 (formerly known as connective tissue growth factor). CCN2 is specifically found in connective tissue disorders such as scleroderma or idiopathic lung fibrosis. However, the related protein CCN1 appears to be co-regulated with CCN2. CCN2 and CCN1 have similar functions in vitro. We have used a conditional knockout strategy to show that CCN2 is required for tissue repair and fibrosis in vivo. However, whether CCN1 is required for fibrosis in vivo is unclear. The objective of this project is to use fibroblast-specific CCN1 knockout mice to assess whether CCN1 is required for the development of skin fibrosis, using the well-established bleomycin-induced model.

**Experimental models** - fibroblast cell culture/conditional knockout mice

**Additional Safety Courses** - biosafety/Animal handling

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**Leung, Stan**

**Professor** - Dr. Stan Leung

**Contact Information** - sleung@uwo.ca, phone ext. 82400

**Lab location** - MSB

**Student will be Trained by** - postdoctoral fellow/associate

**Frequency of Supervisor Interaction** - daily to weekly

**Description of research** - Synaptic and behavioral plasticity of the hippocampus, neural modulation by sleep and anesthesia

**Type of experimental models** - rats, mice, behaving or anesthetized animals, in vitro brain slice

**Safety training** - animal

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**Lewis, Jim**

**Professor** - Dr. Jim Lewis

**Contact Information** - jflewis @ uwo.ca, (519) 646-6288

**Location of Lab** - Lawson Research Institute, St. Joes

**Student will be Trained by** - Combination of Professor, Post-Doc, Technician and Graduate Students

**Frequency of Supervisor Interaction** - meet as required, daily if needed

**Research Description** - We investigate the role of the surfactant system in acute lung injury and multi-organ failure. Specific projects involve determine the pulmonary inflammatory response and physiological consequences of various forms of lung injury, and determine what mediators are released from the injured lung into the circulation. We will also determine what effect these mediators have on peripheral, non-pulmonary organs, such as the liver. We will determine what effect treatment with exogenous surfactant has on these
outcomes. We have shown that the mediators released from the lung have a significant effect on the liver and this can be prevented via surfactant treatment. We will probe the mechanisms responsible for these effects.

**Experimental Models** - various in vivo animal models, cell culture experiments, intravital microscopy on livers *in vivo*, biophysical measurements of surfactant function, various biochemical assays of mediators

**Additional Safety Courses** - Animal handling

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**Lu, Wei-Yang**

**Professor**- Dr. Wei-Yang Lu  
**Contact Information**- wlu53@uwo.ca  
**Lab Location**- Robarts Research Institute, Room 7240  
**Student will be trained by**- Professor Wei-Yang Lu and the Research Associate Dr. Yun-Yan Xiang  
**Frequency of Supervisor Interaction**- Will see you weekly, or daily if necessary.  
**Research Description**- An increasing pile of evidence shows that γ-aminobutyric acid (GABA), the primary inhibitory neurotransmitter in the central nervous system (CNS), is also widely used by non-neuronal cells for inter-cellular signaling. One research scheme in my laboratory is to study the cellular and molecular mechanisms of GABA signaling in the visceral organs. The 4th year student research project focuses on the role of GABA receptors in regulating pulmonary inflammation. Specifically, student(s) will study 1) the effects of inflammatory cytokines on the channel activity of ionotropic GABA receptors in alveolar epithelial cells using the techniques of patch-clamp recording, and 2) the effect of GABA receptor agonists and/or antagonists on the production and release of cytokines/chemokines by the alveolar epithelial cells through various assays.  
**Experimental models** - cultured alveolar epithelial cells as well as mouse lung sections  
**Additional Safety Courses** - biosafety

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**Lui, Ed**

**Professor**- Dr. Ed Lui  
**Contact Information**- elui@uwo.ca, (519) 661-2111 x83320  
**Lab Location**- Dental Sci 2003 and Biotron G-5 and G-20  
**Student will be Trained by**- Professor, Post-Doctoral Fellow and graduate student  
**Frequency of Supervisor Interaction**- once to twice weekly  
**Research Description**- The interest in complementary and alternative medicine (CAM) among the public, patients, healthcare practitioners, medical educators, researchers, industry and government regulators has continued to grow. This growth has created a demand of evidence for their efficacy and safety. My research focuses on elucidating the mechanisms of action of herbal products to provide the pharmacological plausibility for their medicinal use. Research is targeted at herbal medicines for the treatment of cancer, arthritis and cardiovascular diseases. Various *in vitro* (cell/organ culture, organ-bath) and *in vivo* experimental models are used to study treatment effects on angiogenesis, metastasis, inflammation, immunological functions, atherosclerosis, stroke and vascular reactivity. Chemical, biochemical, histological, intravital videomicroscopic and molecular biological techniques are used to examine the sites and mechanisms of action of selected products. These studies contribute to the evidence-based practice of Herbal Medicine. In addition, these data provide scientific basis for the use of herbal products as adjunctive therapy to improve the efficacy and/or minimize the toxicity of conventional drug therapy. Currently, Dr. Lui serves as the Scientific Director of the Ontario Ginseng innovation and Research Consortium ([www.uwo.ca/physpharm/ogirc](http://www.uwo.ca/physpharm/ogirc)) and majority of his research is focused on ginseng.  
**Experimental Models** - *in vitro* cell culture, organ-bath bioassay, *in vivo* animal model  
**Additional Safety Courses** - info not provided

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**MacDonald, John**

**Professor**- Dr. John MacDonald  
**Contact Information**- jfmacdonald@robarts.on.ca  
**Lab Location**- Robarts Research Institute  
**Lab Size**- medium  
**Student will be Trained by**- Professor and technician  
**Frequency of Supervisor Interaction**- will see me weekly  
**Research Description**- Examining properties of TRPM2 channels in neurons
Experimental Models- cultured neurons  
Additional Safety Courses- Biosafety

**MacDonald, Penny**

**Professor-** Dr. Penny MacDonald  
**Contact Information**- penny.macdonald@gmail.com  
**Lab Location**- Brain and Mind Institute RM 235  
**Student will be trained by**- Penny MacDonald  
**Frequency of Supervisor Interaction**- weekly or as needed  
**Research Description**- Discovering the neural substrates for cognitive processes is of great interest to neuroscientists. Uncovering brain regions that underlie specific cognitive operations will enhance our understanding and treatment of the cognitive abnormalities that arise in neurological disease. Whereas cortical structures have been the primary focus of these investigations, a role for sub-cortical structures in mediating higher-order cognitive functions is increasingly recognized.

The striatum is the input region of the basal ganglia, a collection of structurally and functionally connected sub-cortical nuclei that have been extensively linked to movement regulation. A growing number of studies suggest a role for the striatum in a variety of cognitive functions as well. A review of these processes reveals a diverse and almost confusing array, at first glance. More recent studies, including our own, however, explain that this apparent miscellany owes to regional functional specificity within the striatum. Ventral and dorsal portions of striatum are characterized by subtle cytoarchitectural differences and distinct cortical and dopaminergic afferents. By partitioning cognitive functions attributed to ventral (VS) and dorsal (DS) striatum, two, more cohesive sets of cognitive operations are beginning to emerge.

The VS, comprising the nucleus accumbens and most ventral portions of caudate and putamen, has been implicated in reward learning, with our own recent findings and those of others expanding the learning functions and contexts that appear to depend upon this region. The DS, constituting the bulk of the caudate nucleus and putamen, has been linked to executive functions, such as flexibly changing response strategies and shifting attention. A full understanding of VS- and DS-mediated cognitive functions is far from achieved. The unique operations performed by VS and DS relative to cortical regions also require further clarification.

Using convergent methodologies, we aim to define distinct cognitive functions performed by VS and DS. Parkinson’s disease (PD), typified by abnormal movements and increasingly by cognitive abnormalities, provides a model for dissociating these functions. The dopaminergic input to the VS derives from the ventral tegmental area (VTA), whereas that of the DS arises from the substantia nigra (SN). In PD, the VTA is relatively spared compared to the substantial cell loss that occurs in the SN by the time of clinical onset. Consequently, VS and DS functions are differentially impaired in PD and dissimilarly affected by the dopamine-replacement therapy, intended to treat the movement symptoms. Candidate cognitive functions will be tested in PD, knowing the behavioural signatures for DS-mediated processes—impaired at baseline and improved by dopaminergic treatment— and for VS operations—intact off medication and worsened by dopamine replacement. Using functional Magnetic Resonance Imaging (fMRI), we will investigate regional brain activity associated with these different cognitive operations in PD patients, on and off medication, and in healthy controls. The aim is to validate the interpretation of our behavioural studies and to further our understanding of how VS and DS cognitive functions differ from those implicating cortical regions.

Cognitive dysfunction is a feature of many neurological disorders that involve the striatum, such as PD and Huntington’s disease. In PD, cognitive dysfunction is undeniable and arises even in the absence of cortical compromise, implicating striatal impairment itself as a central cause of these deficits. Vascular dementia is the second most common cause of dementia. The DS is a frequent site of ischemic and hemorrhagic infarcts, and a relation between striatal lesions, cognitive impairments and, indeed, vascular dementia has been noted. Defining the cognitive functions mediated by DS and VS respectively, will allow clinicians to anticipate and better understand cognitive deficits in these neurological diseases. This understanding will lead directly to improved treatment strategies in PD and will hopefully inform investigations of new therapies for cognitive deficits generally.

**Experimental models-** human patients and fMRI  
**Additional Safety Courses-** Laboratory Safety

**Martin, Ruth**

**Professor-** Dr. Ruth Martin  
**Contact Information**- remartin@uwo.ca
**Owen, Adrian**

**Professor**- Dr. Adrian Owen  
**Contact Information**- uwocerc@uwo.ca  
**Lab Location**- Natural Science Centre, Room 225  
**Student will be trained by**- Post-Doc  
**Frequency of Supervisor Interaction**- Will see you daily/weekly depending on project  
**Research Description**- To be determined between supervisor and thesis student  
**Experimental models**- info not provided  
**Additional Safety Courses**- None

**Pasternak, Stephen**

**Professor**- Dr. Stephen Pasternak  
**Contact Information**- spasternak@robarts.ca  
**Location of Lab**- Robarts Research Institute  
**Students Will be Trained by**- Professor and Technician  
**Frequency of Supervisor Interaction**- 2-3x/week  
**Research**- Alzheimer’s disease is caused by the deposition in the brain of a toxic protein called beta-amyloid. This beta-amyloid is produced by the cleavage of the Amyloid Precursor Protein (APP) by a pair of enzymes referred to as the beta-secretase (BACE) and the gamma-secretase. The proposed project will involve studying the distribution and trafficking of these proteins in the endosomal lysosomal system using laser scanning confocal live cell imaging in cultured neuronal cells.  
**Model System**- neuronal cell lines  
**Additional Safety Courses**- Biosafety

**Pin, Chris**

**Professor**- Dr. Chris Pin  
**Contact Information**- cpin@uwo.ca (519) 685-8500 ext. 53073  
**Lab Location**- Children’s Health Research Institute, VRL A5-134  
**Student will be Trained by**- combination of professor, research assistant and postdoctoral fellow  
**Frequency of Supervisor Interaction**- at least weekly (we have a weekly lab meeting)  
**Research Description**- My laboratory studies the transcriptional and epigenetic factors that affect the susceptibility of individuals for exocrine pancreas diseases such as pancreatic cancer and pancreatitis. We use a number of techniques such as immunofluorescence, western blotting, chromatin immunoprecipitation and qRT-PCR to assess cell signaling and molecular events in animal models of pancreatic injury and assess these changes in human samples of the disease.  
**Experimental models**- human tissue, animal model and/or cell lines  
**Additional Safety Courses**- Biosafety, Animal Handling

**Poulter, Michael**

**Professor**- Dr. Michael Poulter  
**Contact Information**- mpoulter@robarts.ca, 519-931-5270  
**Lab Location**- Robarts Research Institute  
**Student will be Trained by**- depends on the project  
**Frequency of Supervisor Interaction**-daily as needed, weekly lab meetings  
**Research Description**- My lab looks at the molecular and functional problems that may be the underlying
causes of major depressive disorder and epilepsy. We are primarily interested in the plasticity of GABA-A receptors, what genetic factors control their expression and how they function on nerve cells and in neural circuits.

**Experimental Model** - use both cell lines and experimental animal models

**Additional Safety Courses** - depending on the project (Animal and/or Biosafety)

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**Prado, Marco**

**Professor** - Dr. Marco Prado  
**Contact Information** - mprado@robarts.ca  
**Lab Location** - Robarts Research Institute  
**Student will be Trained by** - Professor, Post-Doc and by graduate student  
**Frequency of Supervisor Interaction** - will see you daily  
**Research Description** - We are interested in understanding physiological roles of the cellular prion protein in the nervous system. We have identified a cellular prion ligand (STI1) that is secreted by glia and whose interaction with cellular prion causes neurotrophic-like activity. This research aims to: Investigate mechanisms involved with signalling between STI1 and cellular prion.

**Experimental Models** - cell lines, primary cultures  
**Additional Safety Courses** - Biosafety

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**Prado, Vania**

**Professor** - Dr. Vania Prado  
**Contact Information** - vprado@robarts.ca  
**Lab Location** - Robarts Research Institute  
**Student will be Trained by** - Post-Doc  
**Frequency of Supervisor Interaction** - will see weekly  
**Research Description** - Our work involves the generation and characterization of novel genetically-modified mouse models of cholinergic hypofunction. We propose to investigate how decreased VACHt expression in selected brain regions affects neurochemical circuits, synaptic plasticity and learning by examining novel inducible or brain specific VACHt KO mice. The student would be involved in using immunoblot signaling assays and qPCR to evaluate the levels of expression of neurotransmitter receptors, transporters and signaling molecules to understand how cholinergic tone regulates neurochemical circuits.

**Experimental models** - biochemistry and molecular biology  
**Additional Safety Courses** - None

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**Regnault, Timothy**

**Professor** - Dr. Timothy Regnault  
**Contact Information** - tim.regnault@uwo.ca  
**Lab Location** - DSB 2021  
**Student will be trained by** - Professor/Technician/Post-Doc/  
**Frequency of Supervisor Interaction** - Will see you daily with weekly lab meetings  
**Research Description** - We study fetal development and growth, in situations of placental insufficiency (fetal hypoxia) and endotoxin exposure that result in severe fetal growth restriction. We focus upon the molecular mechanisms of fetal growth restriction, with special interests in abnormal fetal liver, kidney and muscle development. These alterations lead to a predisposition for the development of hypertension, insulin resistance and obesity in later life. We study various nuclear receptors and energy metabolism related genes, tissue fatty acid and amino acid utilization and the signaling pathways involved and overall tissue metabolic function (oxidative ability) all in fetal life or situations mirroring the fetal environment.

These studies are conducted in the normal situation as well as in situations of abnormal placental development, and involve utilization of both animal and human (in vivo and ex vivo) and cell culture (in vitro) studies in the setting of acute and chronic hypoxic and endotoxin stress.

Current Research Projects Suitable for Student Participation:

1) Studies examining stress induced muscle type switching leading to a predominance of fast twitch, low oxidative fibers, predisposing the newborn to the Metabolic Syndrome.

2) Define gender-associated differences in immunity associated with relative protection against inflammation in male fetus, using plasma and tissues obtained from term caesarean sections.
3) Investigating aspects of stress induced changes in fetal chromatin structure and it relates to nutrient transport systems.

Time expectations and other notes:
Students would be expected to try and commit 1.5 to 2.5 days a week to the lab.
It is preferred that students have undertaken lab training courses recommended for students as set by UWO at http://www.uwo.ca/humanresources/facultystaff/h_and_s/training/training_idx.htm
This ensures the student can start straight away in the laboratory setting.

Experimental models- muscle and liver cell culture/Guinea pig and high fat diets
Additional Safety Courses- biosafety/Animal care and use/Animal handling

Richardson, Bryan

Professor: Dr. Bryan S. Richardson
Contact Information: brichar1@uwo.ca; 519-685-8500 (ext. 64926)
Project Title: Placental Inflammatory Response to Repetitive Umbilical Cord Occlusions with Worsening Acidemia in the Near-Term Ovine Fetus
Location of Lab: The Perinatal Research Lab is located on the fifth floor of the University Dental Science Building. Our Immunohistochemistry Core is located on the fifth floor of the Victoria Research Labs adjacent to London Health Sciences Centre – Victoria Hospital on Commissioners Road.
Students will be trained by: Dr. Richardson and Alex Xu
Frequency of Supervisor Interaction: Bi-Weekly
Research Description:
Variable fetal heart rate (FHR) decelerations due to compression of the umbilical cord with contractions during human labour is a common cause for non-reassuring FHR patterns and may give rise to an increase in the production of inflammatory cytokines by the placenta and associated membranes due to intermittent hypoxia and/or alterations in umbilical blood flow. The purpose of the present study is to determine the extent to which repetitive umbilical cord occlusions with worsening fetal hypoxic acidemia gives rise to an inflammatory response in placental tissues. Using pregnant sheep, studies are proposed to determine the effect of repetitive umbilical cord occlusions leading to severe fetal hypoxic acidemia on markers of placental/membrane inflammation, including H&E morphometry for neutrophils, toluidine blue staining for mast cells, and CD163 immunohistochemistry for identifying tissue macrophages. It is anticipated the trainee will spend approximately a day and a half per week with this project.

Experimental Models: This project will involve whole animal experiments using chronically-catheterized fetal sheep and placental tissue collected from these animals.

Additional Safety Courses: Biosafety

Rieder, Michael

Professor-Dr. Michael Rieder
Contact Information- (519) 685-8293, mrieder@uwo.ca
Lab location- Robarts Research Institute
Student will be trained by- Professor and Technician
Frequency of Supervisor Interaction- Supervisor will be in the lab 4 days of the week, informal meetings with supervisor two to three times a week, formal meeting once per week
Research Description- This project is studying the toxicity of reactive metabolites of the aromatic anticonvulsants. Human cells will be incubated with aromatic anticonvulsants plus or minus an activating system to study dose-related and time-related toxicity. End-points to be studied include assays of cellular viability and mitochondrial dysfunction. The student will conduct the experiments under the supervision of Dr. Rieder and his technician.

Experimental Model- Cellular model of drug toxicity
Additional Safety Courses- Biosafety

Rylett, Jane

Professor- Dr. Jane Rylett
Contact Information- jane.rylett@schulich.uwo.ca, (519) 663-5777 ext 34078
Lab Location- Robarts Research Institute 307
Student will be Trained by- info not provided
Frequency of Supervisor Interaction- info not provided
**Research Description** - Research in my laboratory deals with physiological mechanisms regulating neurochemical transmission in the nervous system, signal transduction events and intercellular communication. Most of the studies are on regulation of cholinergic neuron function, with relevance to neurodegenerative diseases such as Alzheimer Disease. Specific projects address how neurons maintain their differentiated phenotypes and regulate the synthesis and turnover of chemical mediators in response to information from the extracellular environment. Methods used in laboratory may involve cell cultures and *in vitro* tests at the cellular and molecular level, neurochemical assays such as membrane transporter measurements, recombinant DNA methodology, confocal microscopy to follow events in living cells, enzyme assays and quantification of neuroactive substances. Average time required in the laboratory is 1 to 1 ½ days per week.

**Experimental Models** - info not provided

**Additional Safety Courses** - info not provided

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**Séguin, Cheryle**

**Professor** - Dr. Cheryle Séguin

**Contact Information** - cheryle.seguin@schulich.uwo.ca, phone: 519-661-2111 ext 82977

**Lab Location** - DSB Lower ground, 0034

**Student will be Trained by** - initially, students will work with professor and eventually continue working with a graduate student who is working on a related research project.

**Frequency of Supervisor Interaction** - At least weekly to review accomplishments and plan further studies

**Research Description** - There are two separate research projects underway in the Séguin lab. The first is focused on understanding the process of mammalian spine development. We have developed novel mouse transgenic technologies in order to trace cells of notochordal origin and determine which tissue types they contribute to in the mammalian intervertebral disc. The current project is assessing the expression of candidate marker genes in the spine of the developing mouse. We will use in situ hybridization to localize the expression of a number of genes in the developing spine using mouse embryos harvested at specific stages of development. These studies will assist in the phenotypic characterization of specific tissue types, knowledge required for the development

**Experimental Models** - tissue isolated from mice

**Additional Safety Courses** - Biosafety

The second uses transgenic technologies to guide the differentiation of pluripotent human embryonic stem cells (hESC) to generate pancreatic beta cells. Our lab uses the forced expression of transcription factors to direct cell differentiation. Students will gain experience in the culture and manipulation of hESC as well as molecular biology techniques associated with cell characterization, including real-time PCR and immunohistochemistry.

**Experimental Models** - established human embryonic stem cell lines (CA1 & CA2)

**Additional Safety Courses** - Biosafety

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**Timney, Brian**

**Professor** - Dr. Brian Timney

**Contact Information** - timney@uwo.ca, (519) 661-2053 Office: Room 9438, Dean’s Office, Social Science Centre

**Location of Lab** - Room 6215, Social Science Centre

**Students will be Supervised by** - Students will be working directly with me and probably one graduate student

**Level of Supervisor Interaction** - At least weekly meetings, other times as necessary

**Research** - My work is in visual neuroscience. Although I work in several areas, my current main research focus is on the effects of alcohol on the visual system. The general approach is to use psychophysical techniques, in which human participants are required to view visual stimuli on a display screen and make judgments about them. In a typical study we would measure how subjects’ performance changes following the consumption of alcohol. For example, we might ask how well their ability to judge the speed or direction of a moving target might become impaired. The data we gather help us understand how alcohol may affect the neural mechanisms that underlie certain kinds of visual processing. Recently I have been doing more basic research on human motion perception. Specifically, my lab has been studying the visual perception of acceleration to gain a better understanding of the mechanisms that underlie our ability to discriminate stimuli that are accelerating from those that move at a constant speed.

**Model System** - All work will use human subjects.
**Tirona, Rommel**

**Professor- Dr. Rommel Tirona**  
**Contact Information-** rommel.tirona@schulich.uwo.ca  
**Lab Location-** University Hospital, Room C8-135  
**Student will be trained by-** Professor/Graduate Student  
**Frequency of Supervisor Interaction-** Will see you daily/weekly  
**Research Description-**  
The student will be involved in examining the role of the drug transporter, Organic Anion Transporting Polypeptide 2B1 (Oatp2b1), in the pharmacokinetics and biodistribution of the substrate antiarrhythmic drug amiodarone. Here, the drug and metabolite levels in plasma and various tissues will be determined by liquid chromatography-tandem mass spectrometry after oral administration of amiodarone to wildtype and Oatp2b1 knockout mice. Oatp2b1 gene expression in various tissues will be determined using quantitative polymerase chain reaction, Western Blot and immunohistochemistry. It is expected that the results will provide a basis for understanding the toxicity profile of amiodarone.  
**Experimental models-** animal model  
**Additional Safety Courses-** biosafety/Animal care and use/Animal handling

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**Urquhart, Brad**

**Professor- Dr. Brad Urquhart**  
**Contact Information-** Brad.Urquhart@schulich.uwo.ca  
**Lab Location-** Dental Sciences Building room 2011  
**Student will be trained by-** Graduate Student  
**Frequency of Supervisor Interaction-** Daily (or as required)  
**Research Description-** Patients with chronic kidney disease take between 6-12 medications at a time to control several co-morbidities. For this reason it is important to understand the determinants of drug response in this patient population. Although the effect of kidney failure on renal drug excretion has been well documented, recent research suggests changes in the expression and activity of drug transporters and drug metabolizing enzymes in the intestine and liver may cause changes in drug disposition in patients. Research in the laboratory is aimed at determining the mechanisms responsible for altered drug disposition in the setting of kidney disease. These studies aim to help clinicians optimize the dosage of drugs in this difficult to treat patient population. Studies span investigations in human subjects, rodent models and cell lines.  
**Experimental models-** Cell lines, rodent and human tissue. Student will do any animal work but may use tissues for experiments.  
**Additional Safety Courses-** Biosafety

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**Veldhuizen, Ruud**

**Professor- Dr. Ruud Veldhuizen**  
**Contact Information-** rveldhui@uwo.ca  
**Lab Location-** LHRI (St Joes Hospital) room F4-117  
**Student will be trained by-** Technician and/or Graduate Student  
**Frequency of Supervisor Interaction-** Will see you several times a week.  
**Research Description-** Our laboratory is interested in the mechanisms by which mechanical ventilation of the lung contributes to lung dysfunction in acute lung injury. The specific focus is on the role that pulmonary surfactant plays in this process. Previous studies in our lab have identified cholesterol as an inhibitor of surfactant function in animals with lung injury due to mechanical ventilation. Based on these findings we are testing the hypothesis that hypercholesterolemia predispose the lung to lung injury through a surfactant-cholesterol mediated mechanism. The specific research project involved exposing rats to a high cholesterol diet and exposing them to mechanical ventilation to induce lung injury. The susceptibility of the animals to lung injury will be examined by physiological measurements of lung function. Subsequently surfactant will be isolated and the biophysical mechanisms by which elevated cholesterol contributed to surfactant dysfunction will be analyzed utilizing various biochemical and biophysical analyses.  
**Experimental models-** animal model and/or in vitro approaches.  
**Additional Safety Courses-** Animal care and use, Animal handling
Wagner, Graham

**Professor-** Dr. Graham Wagner  
**Contact Information-** Graham.Wagner@schulich.uwo.ca  
**Lab Location-** Health Sciences Addition  
**Lab Size-** Small  
**Student will be supervised by-** Dr. Wagner  
**Frequency of Supervisor Interaction-** weekly  
**Research Description-** our laboratory is examining the role of stanniocalcin-1 (STC1) in renal function. STC-1 is made in collecting duct cells for targeting to thick ascending limb and distal convoluted tubule cells, and back onto collecting duct cells. The gene is massively induced by antidiuretic hormone (ADH), in response to conditions such as dehydration, low ECF volume and high ECF osmolality. The role of released STC-1 is to counter-regulate ADH action. Specifically how STC-1 counter-regulates ADH is currently under investigation and students would be expected to work on one or more aspects of this question.  
**Experimental Models-** wild type and STC-1 knock out mice  
**Additional Safety Courses-** Biosafety, Animal handling

Wang, Rennian

**Professor-** Dr. Rennian Wang  
**Contact Information-** rwang@uwo.ca, 519-685-8500 ext. 55098  
**Location of Lab-** Child Health Research Institute, 5th Floor, Victoria Research Laboratories  
**Lab Size-** 5-6 people  
**Student will be Trained by-** combination of professor, research assistant and graduate students  
**Level of Supervisor Interactions-** Daily/weekly  
**Research Description-** Our research is to understand cellular differentiation in pancreatic tissue in order to determine beta-cell regeneration pathways in diabetic individuals. There are three funded projects: 1) understanding c-Kit receptor tyrosine kinase involvement in beta-cell function; 2) determine the role of extracellular matrix and integrin interactions in supporting 2D and 3D islet growth and function; 3) determine transcriptional and biological profiles of pancreatic islet progenitors and newly formed islets during islet cell development. The student will work in a team with graduate students on one of these projects based on her/his interesting and background. Typical experimental techniques include cell culture, immunofluorescence, western blotting, and whole animal monitoring. The expected effort for a successful laboratory experience is 1½ days per week.  
**Experimental Models-** animal model and/or primary cell or cell line  
**Additional Safety Courses-** Biosafety, Animal handling (if involves it)

Watson, Andrew

**Professor-** Dr. Andrew Watson  
**Contact Information-** awatson@uwo.ca, (519) 685-8500 ext. 55068; (519) 661-2111 x89132  
**Location of Lab-** Children’s Health Research Institute; Victoria Research Laboratories;  
**Student will be Trained by-** Professor and Graduate Student  
**Frequency of Supervisor Interaction-** is available for daily discussion; will see you at least weekly.  
**Research Description-** Dr. Watson’s research is directed at defining the mechanisms that control the first week of development, the so-called preimplantation period. His research probes the origins of early pregnancy loss and seeks to uncover improved therapies for treating infertility. Dr Watson investigates the function of gene families that coordinate trophectoderm differentiation (the first epithelium) and blastocyst formation, and have included growth factors; growth factor binding proteins; anti-oxidant enzymes; cell adhesion molecules; tight-junction associated polypeptides; Na/K-ATPase isoforms; aquaporin water channels (AQP); and most recently RhoGTPases and p38 MAPK signaling pathway members. His research investigates these events during both murine and bovine preimplantation development. Both of these species are important models for human early development. The use of the murine species provides an opportunity to investigate gene function in transgenic and “gene knock-out lines” while the bovine species shares many reproductive events with the human including: 1) length of reproductive cycles; 2) ovulation rates; 3) sperm donation of centrosomes; 4) delayed full activation of embryonic transcriptional activity; and 5) similar cleavage and blastocyst formation frequencies in vitro. Dr Watson has published over 80 research papers in journals such as Developmental
Biology, Biology of Reproduction, Reproduction and Molecular Reproduction and Development. He has presented over 50 invited lectures at both the national and international conferences since 1992.

**Experimental Models** - cell lines and mice  
**Additional Safety Courses** - Animal handling and injections

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**Yamashita, Cory**

**Professor** - Dr. Cory Yamashita  
**Location of Lab** - Lawson Health Research Institute (St. Joseph's Health Centre)  
**Number of personal working in your lab** - Medium 4-6  
**Who will be training the student?** - Professor, Technician, Graduate student (PhD)  
**Level of supervisor involvement** - Daily  
**Current projects:**  
Role of Hypercholesterolemia in the Development of Acute Lung Injury; The Role of Matrix Metalloproteinase-3 in Acute Lung Injury and Multiple Organ Failure  
**Experimental models** - Cell culture, animal models  
**Additional safety courses** - none

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**Yang, Kaiping**

**Professor** - Dr. Kaiping Yang  
**Contact Information** - kyang@uwo.ca, phone ext. 55069/55456.  
**Lab location** - Victoria Hospital/Westminster campus  
**Lab Size** - 6  
**Student will be Trained by** - Technicians and/or graduate students  
**Frequency of Supervisor Interaction** - daily to weekly  
**Description of research** - Research interest:  
(1) Glucocorticoid actions and metabolism in pregnancy/fetal development;  
(2) Glucocorticoid actions and metabolism in obesity;  
(3) Molecular mechanisms of intrauterine growth restriction;  
(4) Early-life origins of central obesity; and  
(5) Effects of environmental pollutants/toxins on placental function and fetal development.  
Both in vivo (animal models) and in vitro (cell cultures and human tissues) as well as classic physiological/biochemical and modern molecular, proteomics and functional genomics approaches/techniques are being utilized.  
**Type of experimental models** - mice, rats, cell lines, and primary cells  
**Safety training** - Biohazard, radiation (if deals with it), animal (if involves it)